Green the Way

Moving Forward on an Allen Creek Trail

December 19, 2014

University of Michigan Urban and Regional Planning Program Capstone Report

Matt Bourke | Hannah Dean | Matt Ferris-Smith | Ashleigh Johnson

Christopher Johnson | Luke Norman | Tolu Olorode | Tricia Pontau

Arthur Prokosch | Lucas Reigstad | Pam Schaeffer | Douglas Smith

Under the direction of Larissa Larsen & Eric Dueweke

This page is intentionally left blank

ACKNOWLEDGEMENTS

Special thanks to Wendy Rampson and the City of Ann Arbor for the opportunity to complete this project and for providing knowledge and feedback throughout. Thanks as well to the City's Eli Cooper, Jerry Hancock and Ethan Miller.

We would like to extend a thanks to the Allen Creek Greenway Conservancy for their support and enthusiasm, in particular Bob Galardi, Joe O'Neal and Megan Barnes.

We would also like to thank the following individuals and organizations, who provided invaluable help and input to our project:

Robin Bailey, Ann Arbor Public Schools

Claudia Burns

Vince Caruso, Allen's Creek Watershed Group

Steve Coron, Community High School

Mark Ferrall, Washtenaw Area Transportation Study (WATS)

Chet Hill, Johnson Hill Land Ethics Studio

Michele Moon, Fairmount/Indigo Corridor Collaborative (Boston, MA)

Chris Nordstrom, Johnson Hill Land Ethics Studio

Josie Parker, Ann Arbor District Library

Laura Rubin, Huron River Watershed Council

Thank you to the Dow Sustainability Fellows program at the Graham Sustainability Institute for providing funding for our student art project.

We appreciate all the community members who took time to share their thoughts on an Allen Creek trail by stopping by our public outreach tables, completing our survey, or attending a community meeting on the the trail.

We thank Bethany Ramirez for her careful reading of this report.

Lastly, we would like to extend an enthusiastic thanks to our faculty advisors, Larissa Larsen and Eric Dueweke, for providing excellent guidance and leadership to our team.

This page is intentionally left blank

Table of Contents

i Acknowledgements

v List of Figures & Tables

1 Executive Summary

5 Introduction

7 Background & Context

13 Community Input

23 Trail Features & Design

55 Recommendations

75 Works Cited

77 Appendices

This page is intentionally left blank

LIST OF FIGURES & TABLES

FIGURES

Executive Summary

Overview of the proposed *Green the Way Route*
Source: Green the Way

Chapter 2. Background & Context

Figure 2-1
The City's 1988 Downtown Plan identified the City-owned 415 W. Washington Street site as a potential greenway park
Source: Green the Way

Figure 2-2
In 2013 the City unsuccessfully applied for funding to create a greenway anchor park at the 721 N. Main Street site
Source: Green the Way

Figure 2-3
Flooding at Felch Street and Ashley Street in 2013. The Allen Creek valley sees frequent floods
Source: mlive.com

Chapter 3. Community Input

Figure 3-1
Team members Matt and Arthur staffing our public outreach table at the Ann Arbor Farmers Market
Source: Green the Way

Figure 3-2
Green the Way's public outreach table at the YMCA
Source: Green the Way

Figure 3-3
Map showing where survey respondents in Ann Arbor live. Areas in red had the highest concentration of survey respondents.
Source: Green the Way

Figure 3-4
Map showing survey respondents' important destinations that should be linked to an Allen Creek trail
Source: Green the Way

Figure 3-5
Green the Way team member Luke facilitates a community meeting
Source: Green the Way

Figure 3-6
Washtenaw Biking and Walking Coalition members use maps to draw potential routes and identify important destinations
Source: Green the Way

Figure 3-7
Map showing overlay of trail routes drawn by participants at community meetings. Most participants drew routes along the railroad, although there is more variation to the north.
Source: Green the Way

Chapter 4. Trail Features & Design

Figure 4-1
Green the Way team studying route options
Source: Green the Way

Figure 4-2
Gateway parks, rail considerations, and road and sidewalk crossings
Source: Green the Way

Figure 4-3
Two-lane path striping
Source: www.americantrails.org

Figure 4-4
Safety, traffic, and mile markers on the trail surface
Source: www.americantrails.org

Figure 4-5
Trail signs and logos
Source: www.americantrails.org, www.localmotion.org/ctc, bordertoborder.org

Figure 4-6
Small rain garden at Miller Avenue
Source: Green the Way

Figure 4-7
Large rain garden at the Ann Arbor YMCA
Source: Green the Way

Figure 4-8
Mission City Bike Trail next to Metrolink commuter rail line, San Fernando, CA
Source: Rails to Trails Conservancy

Figure 4-9
Crossing gates installed beyond sidewalk edge to block sidewalk and road, Ft. Collins, CO
Source: Google.

Figure 4-10
Fencing and gates at rail-trail crossing, Irvine, CA
Source: Google Street View, accessed 2014.11.04.

Figure 4-11
Enhanced stop sign intersection along Indianapolis Cultural Trail, featuring high-visibility crosswalks and corner bump-outs
Source: ndyculturaltrail.org

Figure 4-12
A rendering of a speed table, a design solution to increase safety where the trail crosses streets mid-block
Source: NACTO Urban Street Design Guide

Figure 4-13
First Street and Liberty Street intersection
Source: Google.

Figure 4-14
First Street and William Street intersection
Source: Google.

Figure 4-15
Main Street and Madison Street intersection
Source: Google

Figure 4-16
Merge of on-road bicycle lane with side path
Source: Non-motorized Transportation Plan (Full source-Appendix A) Figure 2.3L, Pg. 41

Figure 4-17
Trail emergency call light or blue light
Source: Town of Chapel Hill, accessed on 12/16/2014

Figure 4-18
Green the Way study routes
Source: Green the Way

Figure 4-19
The Allen Creek Greenway Conservancy proposed this wide section of railroad property be used as a park featuring a historic railroad turntable
Source: Green the Way

Figure 4-20
Path serving different types of users in Madison, WI
Source: capitalbikeandwalk.org

Figure 4-21
Protected bicycle lanes like this one on Delaware Avene in Philadelphia can provide separate spaces for bicyclists and pedestrians
Source: thisoldcity.com

Figure 4-22
Miller Avenue rain gardens
Source: Green the Way

Figure 4-23
Football game day pedestrians using the railroad
Source: Green the Way

Figure 4-24
Segment A: S. State Street to Hill Street
Source: Green the Way

Figure 4-25
Burke-Gilman Trail near the University of Washington
Source: www.americantrails.org

Figure 4-26
Segment B: Hill Street to Liberty Street
Source: Green the Way

Figure 4-27
Segment C: Liberty Street to Miller Avenue
Source: Green the Way

Figure 4-28
This bicycle path along the Left Hand Creek in Boulder, CO was credited with reducing flooding in the surrounding neighborhood
Source: www.biked.og

Figure 4-29
A cycle track (two-way protected bicycle lane) paired with a sidewalk along the Indianapolis Cultural Trail
Source: indyculturaltrail.org

Figure 4-30
Indianapolis Cultural Trail, a bicycle and pedestrian path with rain gardens and local artwork
Source: indyculturaltrail.org

Figure 4-31
Segment D: Miller Avenue to the Huron River
Source: Green the Way

Figure 4-32
A conventional street (left) was tranformed into a bicycle and pedestrian friendly reoute (right) with the hlep of stormwater features in Portland, OR
Source: www.oregonlive.com

Chapter 5. Recommendations

Figure 5-1
Overview of proposed *Green the Way Route*
Source: Green the Way

Figure 5-2
Segment A: S. State Street to Hill Street
Source: Green the Way

Figure 5-3
On wide railroad property through UM athletic campus, we propose a Turntable Park in this section of the trail
Source: Green the Way

Figure 5-4
Suggested configuration for bikeway, roads, sidewalks, and trail at Liberty Street and First Street
Source: Green the Way

Figure 5-5
Segment B: Hill Street to Liberty Street
Source: Green the Way

Figure 5-6
A dedicated bicycle stoplight gives cars a red arrow when bicyclistis and pedstrians are crossing on the Dearborn Street cycle track in Chicago
Source: tcsidewalks.blogspot.com

Figure 5-7
Segment C: Liberty Street to Miller Avenue
Source: Green the Way

Figure 5-8
Segment D: Miller Avenue to the Huron River
Source: Green the Way

Figure 5-9
Phasing for the *Green the Way Route*
Source: Green the Way

Figure 5-10
Local Motion's bicycle ferry
Source: www.localmotion.org

Figure 5-11
Winooski River bridge, Vermont
Source: www.enjoyburlington.com

Figure 5-12
Suggested configuration for bikeway, roads, sidewalks, and trail at Kingsley Street and First Street
Source: Green the Way

Figure 5-13
Posters at local businesses inform residents of public meetings
Source: Green the Way

Figure 5-14
Overhead view of the City-owned 721 N. Main Street site. There are a number of potential ways to connect this site to the Border-to-Border trail.
Source: Allen Creek Greenway Task Force

Figure 5-15
Looking south along the railroad at the East Eisenhower Parkway
Source: Green the Way

Figure 5-16
A complete Allen Creek trail will be an asset in Ann Arbor, much like the Indianapolis Cultural Trail has become a part of that city's urban environment
Source: indyculturaltrail.org

TABLES

Chapter 3. Community Input

Table 3-1
Trail activity frequency by proximity of home to trail

Table 3-2
Trail activity frequency by household type

Table 3-3
Strengths and weaknesses of community outreach process

Chapter 4. Trail Features & Design

Table 4-1
Study Route statistics

Table 4-2
Study Route evaluation

Chapter 5. Recommendations

Table 5-1
Green the Way Route statistics

Table 5-2
Parking spaces removed and driveways crossed by the East Branch of the *Green the Way Route*

EXECUTIVE SUMMARY

Moving Forward on an Allen Creek Trail shares routing, design, and phasing recommendations for a proposed biking and walking trail in the City of Ann Arbor, Michigan. The trail would connect community destinations while providing attractive green space and enhanced stormwater management. The trail would also be an opportunity to improve one of the city's defining natural features, Allen Creek, which was buried in 1926 and has been badly polluted for over 100 years. Increased flooding and persistent pollution in Allen Creek, alongside a greater awareness of stormwater management, has created a new urgency for creative solutions like an Allen Creek trail.

This idea is not new. First mention of an Allen Creek trail emerged in the City's 1981 Plan for Park, Recreation, and Open Space, and the idea gained momentum in the early 2000s. Although no precise alignment of the trail has been chosen, efforts have focused on the Allen Creek valley and the active railroad corridor that runs through it. The railroad and the creek are closely aligned but follow separate paths at Miller Avenue, where the creek bends northeast towards the Huron River, presenting options for trail routing.

The Green the Way project team consists of 12 Master of Urban Planning students and two faculty members, whose aim it was to develop detailed recommendations for an Allen Creek trail. It has been a collaborative effort between the University of Michigan's Taubman College of Architecture and Urban Planning, the City of Ann Arbor, and the Allen Creek Greenway Conservancy. To create the recommendations, the Green the Way team followed a three-step process, with each step informing the next:

- **Reviewed** 65 existing documents and plans relevant to an Allen Creek Trail.
- **Engaged** the Ann Arbor community through an online survey (600+ responses), seven community meetings, 38 hours at a mobile information station, and a youth art ideas competition.
- **Created** trail routing options, evaluated their trade-offs, and identified next steps towards implementing an Allen Creek trail.

Our analysis reveals a wide range of motivations for an Allen Creek trail, including facilitating recreational and commuter use, connecting neighborhoods and downtown, mitigating flooding and stormwater issues, and enhancing quality of life. To explore the trade-offs between these interests we compared a route previously created by the Allen Creek Greenway Conservancy and three unique new routes created by the Green the Way team:

The *2008 Essential Route* would provide a basic route along the railroad. This study route is based on a proposal developed by the Allen Creek Greenway Conservancy.

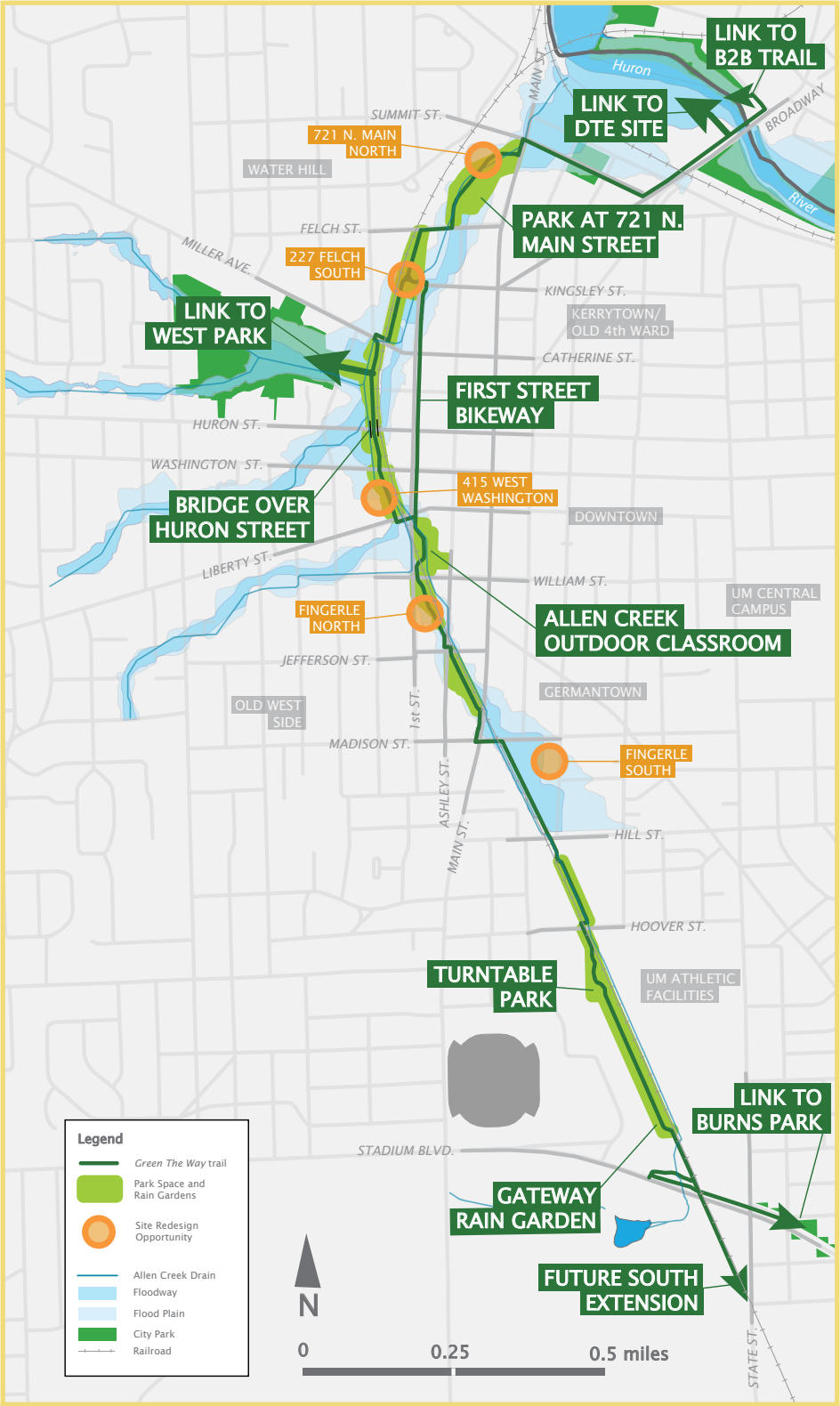
The *Minimal Rail Route* would follow the north-south orientation of the railroad while minimizing use of railroad private property.

The *Connections Route* would focus on non-motorized travel to destinations between the Huron River, downtown and the south end of the University of Michigan athletic campus, connecting users to identified destinations.

The *Stormwater Route* would prioritize stormwater and flooding issues in the Allen Creek Valley. This route deviates from the rail corridor near Kingsley Street and follows the Allen Creek floodway to the Huron River.

The best features of these four routes, in combination with our document review and community engagement, informed our final recommended route: the *Green the Way Route*. This trail option features stormwater infrastructure, educational opportunities, a new pedestrian and bicycle bridge, and connections to community identified destinations, including the Border-to-Border Trail, Michigan Stadium, and downtown.

Developing an Allen Creek trail presents challenges for the city, the University of Michigan, the railroad, businesses, and private property owners; however, if constructed, it would be an asset for generations to come, and its true legacy would be realized through a healthier community and improved environment. The Green the Way team recommends that this trail be implemented in three phases. As residents begin using completed parts of the trail, momentum to finish the greenway and connect it to other destinations will grow.



Overview of the proposed *Green the Way Route*

This page is intentionally left blank

1. INTRODUCTION

This report, *Moving Forward on an Allen Creek Trail*, shares routing, design, and phasing recommendations for a proposed trail in Ann Arbor, Michigan. The trail, first noted in City's planning documents in 1981, follows Allen Creek from the creek's source near Michigan Stadium to the Huron River, and could connect community destinations while providing attractive green space and improving stormwater management. Local leaders and advocates have included an Allen Creek trail in various City planning efforts, but a master plan for the project has not been created. The recommendations in this report are intended to inform both of these actions, helping Ann Arbor to move forward with an Allen Creek trail.

The Green the Way project has been a collaborative effort between the University of Michigan's Taubman College of Architecture and Urban Planning, the City of Ann Arbor, and the Allen Creek Greenway Conservancy. Our team includes 12 Master of Urban Planning students and two faculty members. In addition to urban planning, the students belong to programs in architecture, natural resources and environment, public policy, and social work. The team has worked with City staff and Conservancy members in an effort to produce action-oriented recommendations that are feasible and representative of the community's interests.

While an Allen Creek trail has been included and discussed in documents for many years, the need for a comprehensive plan became apparent in 2013 when an application to the Michigan Natural Resources Trust Fund was denied. The grant would have helped to transform the City storage yard at 721 N. Main Street into a park along the trail. In declining the application, reviewers noted that the application failed to link the park project to a larger trail plan. While a disappointment for trail proponents, the experience highlighted the value of having a trail master plan, and helped lead to the Green the Way project.

To create its recommendations, the Green the Way team followed a three-step process. First, we reviewed 65 city plans and supplemental documents about an Allen Creek trail in an effort to understand the history of the idea and the current context. Next, the team gathered community input both in person and through an online survey. Based on the document review and community input, the team created three route options, each of which pursue a particular goal: minimizing the use of railroad property; facilitating access to shops, trails, and other destinations; and maximizing stormwater management opportunities. We also adapted a 2008 proposal by the Allen Creek Greenway Conservancy to create a fourth study route, which follows the railroad to the Huron River.

Finally, we selected elements from each of the four study routes — using evaluation criteria informed by research and community input — to create a recommended *Green the Way Route*.

The Green the Way team carefully defined the scope of our project in order to give complex issues the attention they deserved. We intentionally did not consider the potential costs of our concept routes and *Green the Way Route*, at the recommendation of the City. We were told that City staff are better equipped to calculate those estimates, and that identifying a route would need to precede cost estimates. We also chose to not make specific recommendations for the three city-owned properties at 721 N. Main Street, 415 W. Washington Street, and the First Street and William Street site. Instead, we refer to the designs that previous planning efforts have created for these sites.

This report is divided into four additional chapters. Chapter 2 provides context for the project, including information on the history of trail efforts and our summary of previous documents related to the trail. Chapter 3 describes our community engagement process and summarizes the input we received. Chapter 4 introduces and analyzes the four study routes after describing features common to all routes. Chapter 5 details the *Green the Way Route*, proposes phasing for trail development, and makes recommendations on other next steps. Appendices to the report contain supplemental technical and reference material.

2. CONTEXT & BACKGROUND

One of the first tasks undertaken by the Green the Way team was a document review of previous work concerning Allen Creek and an Allen Creek trail. This review increased our familiarity with the project, informed our understanding of the motivations behind the trail, and helped shape our approach to trail routing. This chapter reviews and summarizes the history of the Allen Creek greenway trail from several planning documents created by the City of Ann Arbor, previous University of Michigan master's projects, and rails with trails studies, to name a few. These documents track the evolution of the project over time, which aided in our identification of key points for our project. See Appendix A for a list of the documents reviewed.

History

The first published mention of an Allen Creek greenway appeared in the City of Ann Arbor's 1981 *Plan for Park, Recreation and Open Space*. This plan recommended developing pathways along a number of drains through the city, including Allen Creek. This same plan also recommended converting a few downtown sites into parks, including the City-owned site at First Street and William Street.

The City's 1988 *Downtown Plan* connected the ideas of a pathway along the Allen Creek and downtown park development, into a single "greenway" concept (p.54). One of the plan's objectives was to "foster the development of a system of open spaces on the floor of the Allen Creek Valley" that were "linked by on-street walkways" (p.54-55). The plan also suggested that the City-owned properties at First and William and 415 W. Washington Street could serve as greenway parks.

Figure 2-1. The City's 1988 *Downtown Plan* identified the City-owned 415 W. Washington property as a potential greenway park

An Allen Creek greenway was subsequently mentioned in the City's *Park, Recreation and Open Space Plans* in 1988, 1994 and 2000. In 2004 the City began to explore an Allen Creek greenway in earnest, starting with an appointed Allen Creek Greenway Committee on the Park

Advisory Commission (PAC). This committee interviewed stakeholders, conducted research, and ultimately recommended that the City dedicate three City-owned parcels (721 N. Main Street, 415 W. Washington, and First and William) to the greenway. In addition, the committee recommended that the floodway portion of each site be dedicated as open space, and the floodplain portion of each site "be held by the City for uses in the public interest." (ACG Task Force, 2007, p. 13) With this in mind, the City recognized the flood mitigation potential of a greenway. The PAC's Greenway Committee also recommended a "paved pedestrian/bicycle path that would roughly parallel the route of the Ann Arbor railroad tracks" (ACG Task Force, 2007).

While the City contemplated a greenway, citizen groups also joined in the effort. Groups like Friends of the Ann Arbor Greenway, the Allen Creek Greenway Study Group, and later the non-profit Allen Creek Greenway Conservancy began investigating and advocating for a greenway beginning in the mid-2000s.

In 2005 the City took its biggest step towards a greenway, appointing the Allen Creek Greenway Task Force to explore a greenway along Allen Creek. The Task Force focused on how to develop the three city-owned parcels mentioned in previous plans. Their work resulted in an 80+ page report with a 650+ page appendix, completed in 2007. Many hoped that the Task Force's report would spark the beginning of work on a greenway. While the economic recession of 2008 stalled official progress, the Allen Creek Greenway Conservancy continued their efforts and proposed a specific route for a greenway that followed the railroad corridor.

In 2012, a group of master's students from the School of Natural Resources and Environment at the University of Michigan produced a report that further investigated a greenway along Allen Creek. Building off the work of the Task Force and the Conservancy, this student group investigated where to site a path to form the spine of a greenway. They followed the Conservancy's 2008 recommendation to locate the path along railroad property.

In the years after the Task Force's report, with no substantial progress made on a greenway, the City made efforts to keep the greenway idea alive. A 2010 City Council resolution expressed a desire to develop the 415 W. Washington parcel as a greenway anchor park. The City Council passed another resolution in 2011 expressing full support for an Allen Creek greenway.

The City again took concrete steps towards a greenway in 2013, centered on turning the decommissioned 721 N. Main Street site into an anchor park for a greenway. In the early part of 2013, the City secured a FEMA hazard mitigation

Figure 2-2. In 2013, the City applied unsuccessfully for funding to turn the 721 N. Main property into an anchor park for a greenway trail

grant to demolish two storage structures at the 721 N. Main Street property. Later that year, the City applied for a Michigan Natural Resources Trust Fund (MNRTF) grant to develop the 721 N. Main Street site "as the first part of the Allen Creek Greenway." As part of this application, the City secured $150,000 in matching funds from Washtenaw County Parks and Recreation Commission's Connecting Communities program for the project. The MNRTF grant application detailed the development of the 721 N. Main Street site, building off of the work of the City's North Main Vision Task Force. The application also described how the project site and trail would connect to the existing Border-to-Border (B2B) Trail network. When the City's application was denied, reviewers noted that the City failed to link the 721 N. Main Street site development to a larger trail plan. In response, the City and the Allen Creek Greenway Conservancy decided that pursuing a comprehensive plan for the greenway was a necessary step forward.

Past and Present Planning for an Allen Creek Trail

As part of our research we reviewed 65 documents related to an Allen Creek trail. These include the City's Allen Creek Greenway Task Force Report (2007); *Visioning the Allen Creek Greenway* (2012), written by master's students in the School of Natural Resources and Environment at the University of Michigan; Ann Arbor's Master Plan, Capital Improvements Plan, and City Code; additional stormwater, watershed, and transportation plans; and site assessments and proposals. While previous proposals have referred to the project as a "greenway," we have adopted the plainer term "trail" in an effort to reduce confusion. We have divided the content of these documents into six categories: Trail Location and Design, Adjacent Properties and Trail Crossings, Stormwater Management, Neighborhood Connections and Input, Rails and Transit, and Funding Opportunities.

Trail Location and Design

The existing approaches for greenway development can be divided into 1) approaches that place a greenway trail exclusively along the railroad corridor and 2) plans advancing the development of particular sites, especially City-owned parcels that lie within the Allen Creek floodway. Despite several past planning efforts, only the Allen Creek Greenway Conservancy document *Proposed Route of the Allen Creek Greenway* (2008) proposed a specific and detailed location for the trail. This route followed the railroad as opposed to the Allen Creek. The *Visioning the Allen Creek Greenway* (2012) report also investigated trail routing, but did not provide enough detail to be fully considered.

Past plans proposed dividing a trail into segments and implementing it in phases. The City's *Downtown Plan* (2009) divides a trail based on the distinctive character of the adjacent areas: the South Campus Athletic area, the Downtown commercial/residential area, and the North Main residential/industrial mix. *Visioning the Allen Creek Greenway* (2012) similarly divides a trail into three segments. The *Preliminary Feasibility Study* (2005), created at the University of Michigan's Ross School of Business, divides a trail into two design stages that are contingent on construction costs and land acquisition within the Ann Arbor Railroad's property. The first stage would follow the railroad from end to end, while the second stage would deviate from the railroad and cross over the floodway at the 721 N. Main site, leading to Wheeler Park and eventually connecting to the B2B Trail at the DTE site via a new underpass. Only the Ross report evaluated grading and construction costs, along with costs associated with an elevated trail adjacent to the railroad berm north of Liberty Street.

The City of Ann Arbor has studied possible connections between the 721 N. Main Street site and the B2B Trail, but solutions have proven difficult. The City submitted a Michigan Natural Resources Trust Fund Grant Application (2013) to fund the first part of the trail, but it was rejected; the grant proposed looped paths at 721 N. Main Street, linking Felch Street, N. Main Street, and Summit Street and identified several potential connections to the B2B Trail. The City also commissioned the *Allen Creek Berm: Feasibility of Flood Reduction and Pedestrian Options* (2013) report, which investigated several initiatives that could help connect 721 N. Main Street to the B2B Trail. The study recommends installing two parallel culverts underneath the railroad berm, one for the Allen Creek floodway and another for pedestrians and bicyclists, connecting Depot Street and the DTE site for an estimated cost of $3.9 million. In addition to pedestrain and bicycle links this project could dramatically reduce the Allen Creek floodplain.

Adjacent Properties and Trail Crossings

According to the *Parks & Recreation Open Space Plan 2011-2015,* the downtown area has a shortage of open space relative to the rest of the city. This limits both recreational and stormwater mitigation opportunities. Incorporating downtown and city-owned parcels into a greenway trail could help alleviate these problems.

The City's *Downtown Plan* (2009) sets a goal of reinforcing the stability of the residential neighborhoods surrounding downtown through incremental transitions including intermediate-scale residential development. According to the *Downtown Plan,* a greenway could act as an identifiable boundary between downtown and adjacent neighborhoods, buffering adjacent uses with "step-down" development (e.g., medium-density mixed-income housing). From an infrastructure improvement point-of-view, the City's *Non-motorized Transportation Plan* (2007, with update 2013) and the corresponding section of the *Capital Improvements Plan 2014-2019* identify design principles, funding, and sequencing for creating safe mid-block non-motorized crossings that would accommodate trail users and stitch together neighborhoods across the rail line. The City has identified railroad crossings at Liberty Street, Huron Street, and Miller Avenue as potential major mid-block crossings; Hill Street and Hoover Street are identified as potential minor mid-block crossings.

Finally, City plans propose that three city-owned parcels (415 W. Washington, First and William, and 721 N. Main Street) serve as major anchor sites along a trail. Each site has soil contamination and/or building deterioration issues. As stated in the Allen Creek Greenway Task Force's *Report* (2007), redevelopment for an Allen Creek greenway project must consider additional brownfield mitigation costs.

Stormwater Management

The Allen Creek valley is one of Ann Arbor's defining natural features. While the creek is now enclosed in a pipe beneath the ground, its northern most two miles are significantly impaired, and those living in this area experience flash flooding and poor water quality. The *Stormwater Model Calibration and Analysis Preliminary Results and Recommendations* (2014) found the Lower Allen Creek has the most frequent and severe flooding in the City. As stated in the *Watershed Management Plan for the Huron River* (2011), the Creek's culverts and drains are undersized; this often causes flooding that endangers the 707 properties within the 100-year floodplain. According to the Allen Creek Greenway Task Force's *Report* (2007) and the City's *Flood Mitigation Plan* (2007), 100% of National Flood Insurance Program claims from Ann Arbor have originated from properties within one quarter mile of Allen Creek. Based

Figure 2-3. Flooding at Felch Street and Ashley Street in 2013. The Allen Creek valley sees frequent floods.

on water samples, the amount of nutrients (phosphorus, nitrates, nitrites), suspended solids (sediment), and pathogens (E. coli) in this water exceed the City's new *Stormwater Calibration Model* and federal water quality guidelines. Ranked by the *Model* as the top area of flood risk and poor water quality in the City, expanding green space and integrating the best stormwater management practices along an Allen Creek trail would demonstrate Ann Arbor's commitment to progressive water management.

Neighborhood Connections and Input

Community engagement directly and indirectly related to Allen Creek has been going on for over 10 years through citizen advisory groups, public meetings, interviews, and surveys. While individual comments vary, there is broad support for a greenway. Community engagement is important in creating an Allen Creek trail because of the trail's potential to connect different land uses, including residential neighborhoods, commercial centers, parks, and institutional activities (for example at the University of Michigan's athletic facilities). The vision that emerged from the public input process of the *North Main-Huron River Task Force Report* (2013) was for an Allen Creek corridor that increases connections between the above destinations, while being a recreational destination in itself. The Task Force's *Report* (2007) and *Visioning the Allen Creek Greenway* (2012) identified two key neighborhood stakeholders: the Downtown Development Authority (DDA) and the University of Michigan. These two stakeholders, in addition to the City and the owner of the Ann Arbor Railroad, could benefit from the creation of a trail along Allen Creek. For the DDA, a trail would help form a transition between the residential and commercial areas, while adding recreational and green space to downtown. According to the *Visioning* (2012) report, UM's involvement would form "part of the critical first step" that would make the creation of the trail viable in Ann Arbor.

Rail and Transit

Trails along rail corridors invariably raise safety and liability issues for railroad owners. The U.S. Department of Transportation's (USDOT) report, *Rails-with-Trails*: *Lessons Learned* (2002), found that accidents between trains and pedestrians are less frequent when closed fencing separates a trail from the rail. The Ann Arbor Railroad is a major thoroughfare for fans traveling to the game on football Saturdays, posing major liability issues for the rail owner (WATCO). A designated trail could help decrease rail trespassing. In addition, the USDOT report suggests that the liability of pedestrians using a trail could be shifted to the City through indemnification agreements, which could entice WATCO to support the Allen Creek trail.

Although the Ann Arbor railroad is currently used for infrequent short-line services (local line-haul railroads), proposed commuter projects could increase its use, which will increase the need for pedestrian safety. The North/South

Commuter Rail (WALLY) project's evaluation of downtown Ann Arbor station sites proposes eight commuter trains daily, connecting Howell to a proposed downtown station located between Washington Street and Liberty Street. Meanwhile, the AAATA is exploring six corridor options for local transit service known as the Ann Arbor Connector. One route would follow the railroad property starting at Madison Street and proceed south for 1.75 miles, thus complicating the trail's potential location within this stretch of the route.

Funding

Constructing an Allen Creek trail would most likely require a combination of funding sources that could necessitate phased implementation. The Allen Creek Greenway Task Force's *Report* (2007) reviewed funding options for a greenway trail. It suggested that funding requirements fall into three categories: land acquisition and easements, park and trail development, and on-going management and maintenance. Locally, a source of one time funds could be the time-limited 2004 Open Space and Parkland Preservation millage. Commonly known as the Greenbelt Millage, one-third of these funds are targeted for land acquisition. Other local funds might include mitigation funds from new development or a capital improvement millage.

The Ross School Study (2005) also identified many potential funding sources, recommending the Brownfield TIF and the Downtown Development Authority TIF as the most promising options. The study also identified numerous funding sources from the Michigan Department of Environmental Quality, the U.S. Department of Housing and Urban Development, the Federal Emergency Managment Agency, the Michigan Department of Transportation, and local government. Many of these are targeted at watershed improvements, trails, and brownfield development. Other possible sources of funding include local foundation support for capital costs, nonprofit and/or local business support for operating costs, and Michigan Department of Natural Resources trail funding. These funding sources should be revisited due to the time that has elapsed since the studies were written.

Conclusion

After reviewing 65 city plans and other documents concerning an Allen Creek greenway, several key findings emerge. We determined that only in the Allen Creek Greenway Conservancy's 2008 report was a detailed route for the path identified. In general the approaches for thinking about trail alignment fall into two categories: exclusively following the railroad corridor, or deviating from the railroad in downtown to follow Allen Creek to the Huron River. In all routes a portion of a trail will be adjacent to the railroad, which raises safety and liability concerns. The U.S. Department of Transportation offers guidelines that include physical design interventions, such as fences, and model indemnification agreements to reduce the railroad's liability concerns. Several plans suggest phasing the implementation of the project, and two plans divide the length of a trail into three distinct segments: South Campus/ Stadium, Downtown, and Residential/ Industrial Mix of North Main. Within Ann Arbor's Master Plan, the *Parks & Recreation Open Space Plan 2011-2015* noted the shortage of open space in downtown, and the *Downtown Plan (2009)* suggested that a trail could form a needed buffer between the downtown core and the residential Old West Side neighborhood. From a stormwater perspective, the project could address water quality and quantity problems, directly and through education. Together, these issues and plans framed our efforts as we sought community input and compared potential routes.

3. COMMUNITY INPUT

The Green the Way project began with the idea that an Allen Creek trail cannot be built without the support and commitment of the Ann Arbor community. To gauge this support, our first goal was to talk with residents at public outreach tables at the Ann Arbor Farmers Market, YMCA, and the Downtown Library of the Ann Arbor District Library. We also elicited feedback through an online survey open to all Ann Arbor residents to help understand specific areas of interest and concern. The public outreach tables and online survey were advertised by posters in local businesses. To engage the next generation of trail users, we launched an art competition for Ann Arbor students.

The Green the Way team was able to dig deeper into specific issues at meetings with key stakeholder groups like the Old West Side Association and the Washtenaw Bicycling and Walking Coalition. Finally, we concluded our project by inviting everyone we had engaged to Green the Way's public presentation of final recommendations on December 16, 2014, at Ann Arbor District Library's Downtown Library.

In this chapter we document key themes expressed by community residents, such as safety on the trail and linkages to neighborhood assets and existing trails. We used this feedback to help develop our recommended *Green the Way Route* and to incorporate trail features that are intended to help all users feel safe on the trail. Designing a trail that Ann Arbor residents want is key to building a trail that Ann Arbor residents will use.

Public Outreach Tables

Our team used public outreach tables to raise awareness of the Green the Way project with the general public in Ann Arbor. Starting in October, we staffed tables at the Ann Arbor Farmers Market and YMCA that contained a large map of the proposed trail, postcards with additional information, Green the Way buttons, and a sign-

Figure 3-1. Team members Matt and Arthur staffing our public outreach table at the Ann Arbor Farmers Market

Figure 3-2. Green the Way's public outreach table at the YMCA

up sheet for members of the public to receive additional updates on the project and online survey. Green the Way team members engaged with the public for 34 hours over five days at the Farmers Market and for four hours over two days at the YMCA. During this time, we solicited feedback and answered questions from over 160 people. In addition to our staffed outreach tables, we set up a standalone information table at the Downtown Library of the Ann Arbor District Library.

The Green the Way team gathered feedback at these public outreach tables on issues like trail use, safety, and access to destinations. This feedback helped us define and evaluate different study routes and trail configurations. The conversations at these tables also helped us to identify community and neighborhood groups to contact.

Key findings from our conversations at public outreach tables include:

- Ann Arbor residents and visitors expressed a strong interest in building a trail in this corridor, especially if it were safe and comfortable.
  - While the majority of the people we talked to supported the plan, some were concerned with implementation, specifically *when* the trail would get built, and *how* much it would cost.
- The highest interest destinations were recreational facilities along the Huron River, especially the Border-to-Border Trail.
  - Residents that lived near the trail were particularly interested in reaching downtown.
- The greatest interest in trail use was for recreation, followed by commuting, dog-walking, and accessing destinations.
- Some residents and visitors were particularly excited to have a safe space to bike with children, along a trail that would be separated from street traffic. One resident remarked that a lack of protected bikeways currently makes Ann Arbor "starkly different from Madison."
- Some residents were particularly interested in providing green space downtown and highlighting natural features like the Allen Creek.
  - A few residents hoped to daylight the creek, opening up storm sewers and reconstructing the creek.

Survey

The Green the Way team gathered feedback about trail preferences through an online survey. In a five-week period, 609 residents responded with 520 completed surveys. The survey was open to all members of the public.

To encourage residents to complete the survey, we distributed posters to over 50 Ann Arbor businesses to place on windows and community

boards. The Green the Way team also placed posters in university buildings, including the Michigan Union and the Central Campus Recreation Building, to encourage students to participate.

The survey contained seven questions about the trail and three questions about respondents' demographics, including years lived in Ann Arbor, number and age of household members, and the intersection closest to their home. For the purposes of analysis, we approximated respondents' distance from an Allen Creek trail using the existing railroad line; as a result, "distance from trail" is synonymous with "distance from railroad." Survey respondents chose from predefined options for all but one of the survey questions. In addition to completing the survey, 182 respondents provided their email addresses and were invited to Green the Way's final presentation. See Appendices B and C for survey questions and responses.

Most respondents (64 percent) indicated that they live more than half a mile from the trail. The specific areas with the highest number of respondents were, in order: the Old West Side, Kerrytown, and Burns Park near Packard Street and E. Stadium Boulevard. Twenty-two percent of respondents indicated that they live in a household with at least one child aged fifteen or younger. At the opposite end of the spectrum, 23 percent of respondents live in households with at least one person aged 61 or older. The average respondent had lived in Ann Arbor for 21 years, with a range of three months to 70 years of residence in the City.

A majority of respondents were familiar with the idea of an Allen Creek trail, with 64 percent reporting that they are familiar or very familiar with the project. Some respondents may have been familiar with an Allen Creek trail only

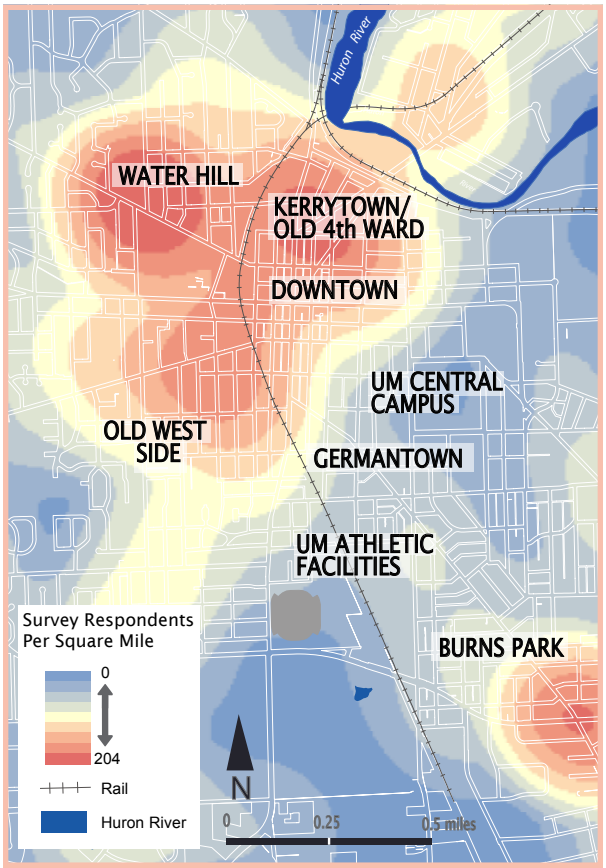


Figure 3-3. Map showing where survey respondents in Ann Arbor live. Areas in red had the highest concentration of survey respondents

because of their interactions with us at public outreach tables and community meetings. We encouraged both of these groups of people to take our survey, and the survey did not track other involvement with Green the Way project efforts.

The survey sought feedback about three main items related to the trail: routing, design, and implementation. This included specific questions on trail features, such as lighting and artwork. Other questions focused on preferences relating to a potential trail—such as concerns about flooding, willingness to walk farther to avoid difficult intersections, and individuals' comfort level around active railroads.

Key findings from the Green the Way Survey:

Most desirable trail activity: recreation or exercise

One of the key questions on trail use asked respondents to rank the following possible trail activities: *1) commuting, 2) social activities, 3) shopping or errands,* or *4) recreation or exercise.*

Survey respondents most desired to use a trail for recreation or exercise. Nearly all respondents reported that they would use the trail for these purposes at least monthly while, 43 percent reported that they would use the trail for these purposes at least several days a week. Social activities were the second most popular activity,

Table 3-1. Trail activity frequency by proximity of home to proposed trail (n=609)

	Commuting (%)	Social activities (%)	Errands or shopping (%)	Recreation or exercise (%)
Half mile or less from trail				
Daily or several times a week	30	33	38	53
Weekly or monthly	27	59	45	45
Never	43	8	18	2
Total	100	100	100	100
More than half a mile from trail				
Daily or several times a week	18	15	11	37
Weekly or monthly	21	68	55	58
Never	61	17	34	5
Total	100	100	100	100

Table 3-2. Trail activity frequency by housing type (n=609)

	Commuting (%)	Social activities (%)	Errands or shopping (%)	Recreation or exercise (%)
All respondents				
Daily or several times a week	23	22	21	43
Weekly or monthly	22	65	49	52
Never	55	14	30	5
Total	100	100	100	100
Houses with 1+ senior				
Daily or several times a week	13	16	17	40
Weekly or monthly	18	65	51	54
Never	69	18	32	6
Total	100	100	100	100
Families with young children				
Daily or several times a week	26	25	27	40
Weekly or monthly	22	61	46	56
Never	53	14	27	4
Total	100	100	100	100

with 87 percent of respondents indicating they would use the trail for this purpose at least monthly. This was followed closely by errands and shopping (70 percent). In contrast, 55 percent of respondents reported that they would never use the trail for commuting.

Recreation/exercise was popular even among subgroups unlikely to use the trail for other purposes; for example, 69 percent of households with at least one senior reported that they would never commute on the trail, yet 94 percent of these same households were interested in using the trail for exercise or recreation. Families with young children also selected recreation or exercise as their top choice, followed by social activities, errands or shopping, and commuting.

While 57 percent of respondents living within a half mile of the trail indicated they would commute on the trail at least once per month, that number dropped to 39 percent of respondents who live more than a half mile from the proposed trail. Instead of commuting, respondents living farther from the trail indicated a preference for recreation or exercise (95 percent), social activities (83 percent) and errands or shopping (66 percent). These findings suggest that people who live farther from the proposed trail see the trail as an opportunity to create a recreational amenity in downtown Ann Arbor.

Strong Support for Six Destinations

Respondents rated their desire to reach 10 different destinations along the trail. In order of popularity — based on the percentage of respondents who rated them "important" or "very important" — these destinations are:

- Border-to-Border Trail
- Argo Livery
- Bluffs Nature Area
- West Park

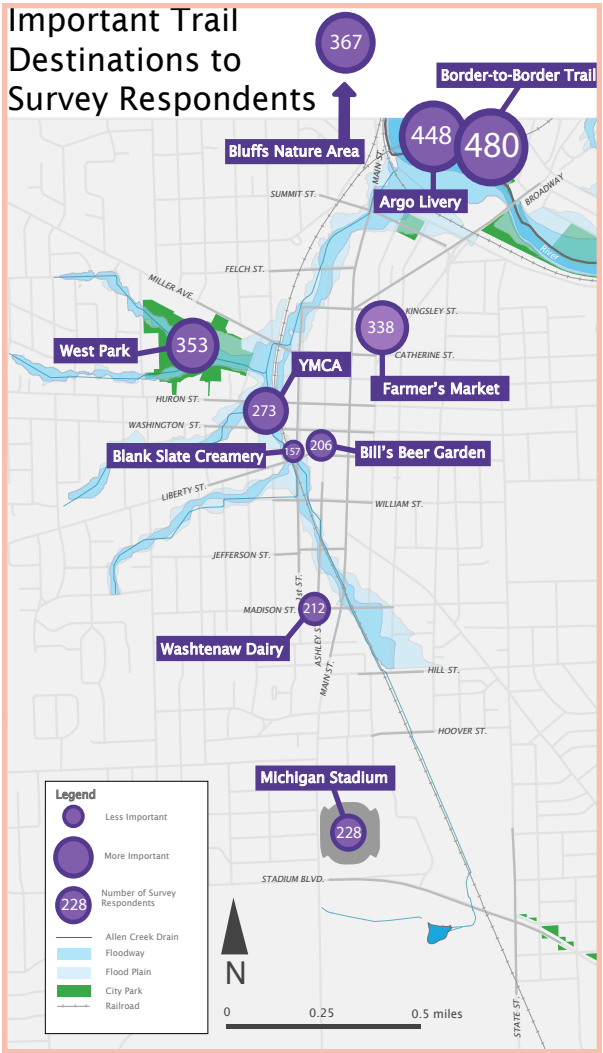


Figure 3-4. Map showing survey respondents' important destinations that should be linked to an Allen Creek trail

.

- Ann Arbor Farmers Market
- YMCA
- Michigan Stadium
- Washtenaw Dairy
- Bill's Beer Garden
- Blank Slate Creamery

Over 50 percent of respondents selected the top six destinations. In addition to the 10 pre-defined destinations in the survey, respondents

were able to to state additional locations in an "other" category. Locations identified included downtown (eight mentions), other parks (six respondents identified Bandemer Park), Argus Farm Stop (six mentions), the Huron River (five mentions), and the Amtrak station (four mentions). Please refer to Appendices D, E, and F for a full list of open-ended survey responses.

Important Trail Functions

Flood mitigation emerged as an important or very important trail feature among 89 percent of respondents. Both respondents living within a half mile of the proposed trail and those living farther away reported strong support for flood mitigation, with 91 percent and 89 percent, respectively, rating this trail function as "important" or "very important". This finding suggests that awareness of flooding and support for flood mitigation extends far beyond the immediate Allen Creek area.

Support for public artwork was notably lower than other trail features. Residents living close to the trail were the strongest supporters of public artwork, with 54 percent voicing support for this feature compared to 36 percent of respondents living farther away. This finding suggests that people living close to the trail are more concerned with the trail's appearance compared to more distant residents. Responses from the open-ended portion also echoed the need for beautification measures like greenery and natural landscaping.

Other observations

- For the majority of respondents, creating a trail next to the railroad was not a safety concern. More than 90 percent of respondents said that they are comfortable using a trail next to an active railroad.
- There is broad awareness of flooding. Seventy-seven percent of respondents believe that flooding is a problem in Ann Arbor.
- Ninety-six percent of residents want Huron River water quality to be improved.
- Three-quarters of respondents reported that they have walked or biked longer routes to avoid difficult intersections.

Survey respondents gave a fair amount of feedback on the open comment portion at the end of the survey. A total of 181 respondents took the time to write a comment and four major themes emerged:

General support: Many respondents were in support of the project, leaving comments like **"great idea!"** and **"Don't give up. This will take a lot of effort over the years."**

Action: Many respondents noted how eager they were for trail construction to begin. Comments included: **"Do something already!"** and **"I'd like to see this in my lifetime!"**

Daylighting: Although our research made it clear that daylighting the Allen Creek is not currently a viable option, some respondents were interested in making it part of the trail project. Specific comments urged plans to **"Bring Allen Creek back to the surface. There must be a way."**

Trail separation: Many respondents want the proposed trail to separate bicycle riders from other trail users. One respondent noted: **"Make it WIDE and put a painted divider line to encourage separation of high speed from lowspeed traffic. E.g., cyclist, joggers, rollerbladers from walkers and families with children."**

Although the overall sentiment from survey respondents about the trail was positive, not all respondents were supportive. A few respondents expressed doubt about the viability of the project, questioning the wisdom of building a trail next to

an active railroad. Another respondent suggested that the City should **"fix the infrastructure first."** Thus, some respondents feel that it is not worthwhile to construct a trail without assuring trail quality or addressing infrastructure needs.

Finally, we would like to acknowledge potential limitations with our survey. Although we received many completed surveys, these results should not be taken to represent the views of the entire Ann Arbor community. Sixty-four percent of survey respondents were already familiar or very familiar with the trail. The the majority of survey respondents also lived close to downtown. Because the survey was only available online, the results exclude the opinions of those without Internet access or those unwilling to use the Internet.

Art Competition

Youth are frequently excluded from traditional planning processes. In an effort to include them, we launched a youth public art ideas competition. With sponsorship from the Dow Sustainability Fellows Program, we had $5,000 to cover prizes and expenses.

In collaboration with the Allen Creek Greenway Conservancy, the Green the Way Student Art Ideas Competition encouraged students to integrate sustainability and environmental awareness into an Allen Creek trail by designing artwork that could complement the greenway. The competition was open to all students in Washtenaw County, grades 6-12. Students were asked to submit a unique works of art that could be replicated and placed at various points along the trail to mark its path.

The Green the Way project enlisted help of the Ann Arbor Public School art teachers to shape the call for submission and ensure that we engaged youth in a meaningful way. Award amounts were substantial with a first-place prize of $1,500, a second-place prize of $1'000 and a third-place prize of $500. Fourteen schools participated in the competition. The entries will be displayed in Ann Arbor and a jury will select the winners in January, 2015.

Community Meetings

We prioritized face-to-face meetings with community groups. These meetings helped to gather suggestions from residents and hear their concerns. At each meeting we asked residents to specify how they would use the trail, identify key local connections and safety considerations, and document additional route suggestions or concerns.

The Green the Way team reached out to 11 neighborhood groups who are geographically

Figure 3-5. Green the Way team member Luke facilitates a community meeting

close to the proposed trail and two advocacy groups representing possible key users of the trail. We attended seven community group meetings, with 65 total residents. These groups were:

- Washtenaw Biking and Walking Coalition (board meeting and general meeting);
- Sierra Club, Huron Valley Group, Michigan Chapter;
- North Central Neighborhood Association;
- Old West Side Association and Near West Side neighborhood (combined meeting);
- Water Hill neighborhood; and
- Germantown Neighborhood Association.

Figure 3-6. Washtenaw Biking and Walking Coalition members use maps to draw potential routes and identify important destinations

Any groups that were not able to meet with the Green the Way team were invited to provide their feedback through e-mail, the online survey, and attending the public presentation.

Additionally, the current council members for Wards 1, 4, and 5 were informed of the community meetings in their wards and invited to attend. All 10 council members were invited to attend the public presentation.

A few common themes emerged from our meetings with community members:

Safety was a common topic of discussion for community groups, including both personal safety and traffic safety. Personal safety concerns, which relate to fear of crime, included a desire for adequate lighting for evening use and a desire for an active and lively trail environment. Traffic safety concerns, which relate to avoiding crashes, included a desire for safety from cars at intersections and railroad crossings, as well as separation between bicyclists and pedestrians.

Desired links to different amenities was also discussed often in these sessions. Residents wanted the proposed trail to connect to destinations in Ann Arbor and serve as a recreational tool to get to certain destinations. These potential links included:

- Downtown area businesses;
- Other parks and trails (B2B trail, Argo Canoe Livery); and
- Briarwood Mall.

Much of the information gathered in these meetings closely mirrored our survey results, especially in terms of trail safety and destinations.

Additionally, in each community meeting participants were asked to draw their desired route for the proposed trail on a map of Ann Arbor. This collaborative mapping exercise garnered fruitful discussions about nearby amenities and how the proposed trail could benefit their daily lives and activities. Figure 3-7 is an aggregate map that combines all the community maps gathered in our meetings. The map indicates that many community members are familiar with the railroad as a primary routing option; few maps depicted routes that strayed far from the railroad. The most variation in participants' maps is seen in the northern section of the trail, where the

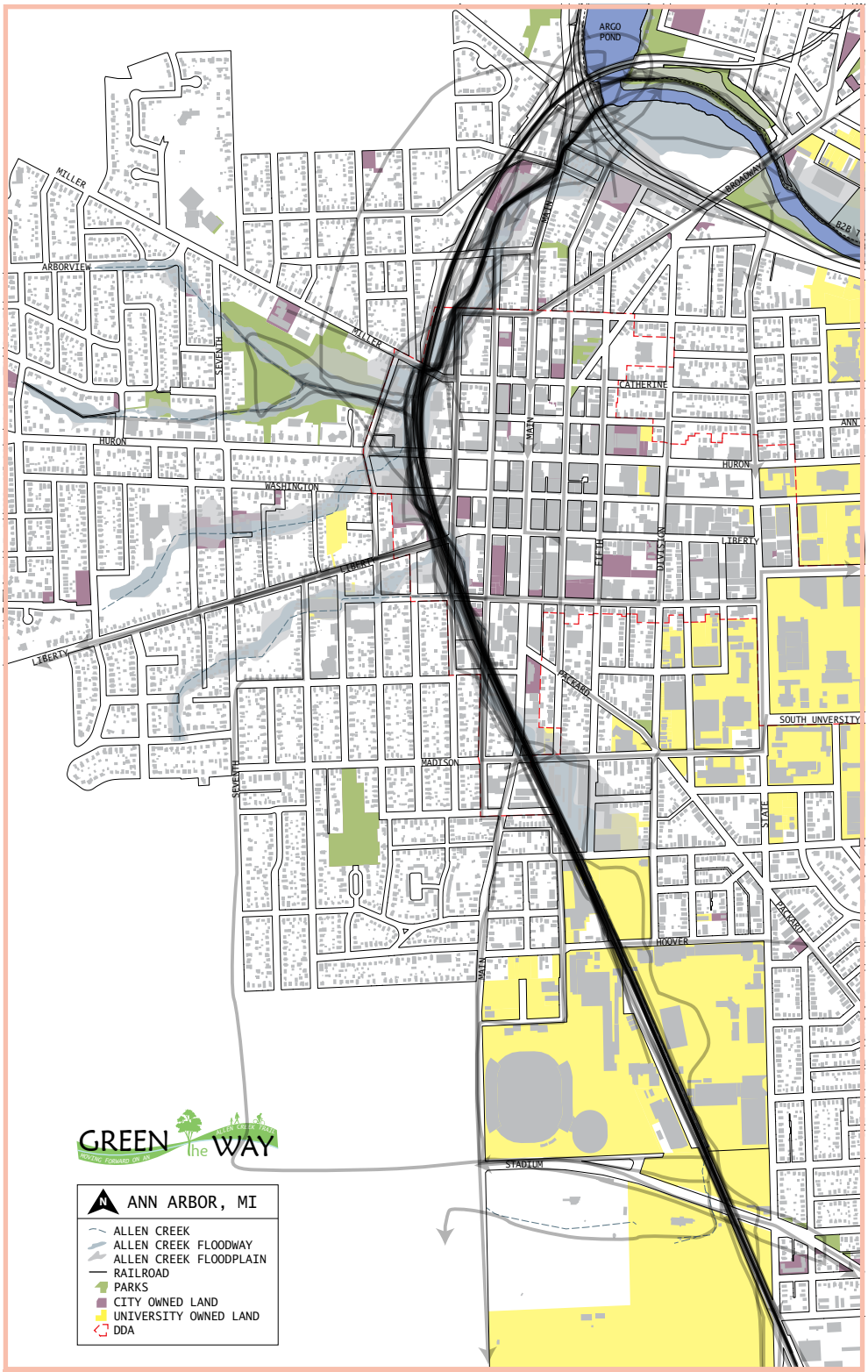


Figure 3-7. Map showing overlay of trail routes drawn by participants at community meetings. Most participants drew routes along the railroad, although there is more variation to the north.

Green the Way team had previously identified various routing options. This is especially true for a connection to the B2B Trail, where no consensus is evident on participants' maps. A number of participants also drew connections to West Park and down Liberty Street.

During the course of our community meetings, we found that residents of Ann Arbor were generally eager and excited about the prospect of an Allen Creek trail. Residents who had used urban trails in other cities were especially enthusiastic about about developing a similar trail in Ann Arbor.

Summary of Community Input

Our methods of community engagement allowed us to collect different types of input from a variety of community members. Nonetheless, a few themes emerged. Community members want:

- Recreational opportunities prioritized above commuter uses
- Stormwater and water quality issues addressed in the Allen Creek valley
- Safety prioritized along the trail. This encompasses different dimensions of safety: personal safety, safety from cars at crossings, safety at night, safety from fast moving bicyclists or other users
- Local destinations and amenities linked to the trail, especially those at the northern end of the trail

While we tried to be as inclusive and comprehensive as possible in our community engagement, our efforts were not without limitations. Table 3 summarizes some of the strengths and limitations of our community engagement efforts.

The wide-ranging community collected provides a solid base upon which we have built the trail features, study routes, and our recommended *Green the Way Route*, described in the following two chapters of this report. We recommend that future public engagement be targeted to solve more specific challenges in designing and implementing a trail. Please see Chapter 5 for recommendations about future community engagement.

Table 3-3. Strengths and weaknesses of community input process

Strengths	Limitations
Open process with multiple ways for residents to share their opinions	Narrow time frame from September to December 2014
Over 600 Ann Arbor residents responded to online survey	Online survey is only accessible to users with internet access
Community meetings provided a forum to better understand concerns raised in survey	Self-selection: participants who attended were more knowledgeable than the general community

4. TRAIL FEATURES & DESIGN

After describing trail features that are common to all routes, this chapter introduces and compares four study routes. In specifying these features and study routes, the Green the Way team used insights gained from previous studies and documents, as reported in Chapter 2, and community input, as reported in Chapter 3. The ideas and route evaluations contained in this chapter informed the recommended *Green the Way Route* that we describe in Chapter 5.

TRAIL FEATURES

As part of our route analysis we identified features that would be common to all routes. These *trail features* include gateway parks, design elements, railroad considerations, road and sidewalk crossings, and personal safety infrastructure.

Gateway Parks

While there would be many places to access an Allen Creek trail, *gateways* are unique spaces that orient users to the trail, Allen Creek, and Ann Arbor, and accommodate activities and users beyond dedicated trail use.

Figure 4-1. The Green the Way team studying route options

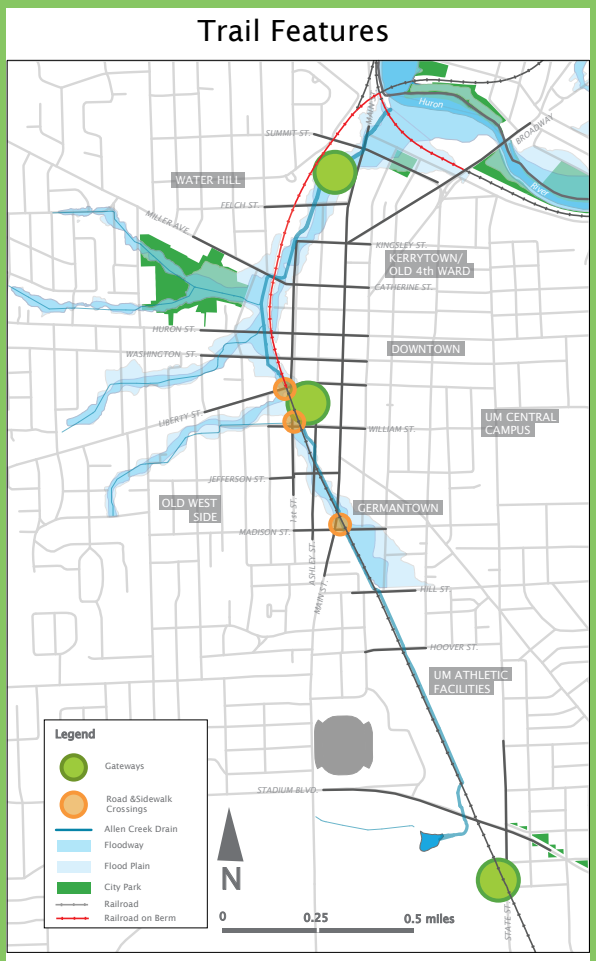


Figure 4-2. Gateway parks, rail considerations, and road and sidewalk crossings

North Gateway

The city property at **721 N. Main Street** would mark the northern edge of the trail. In the short term this property would include a small parking area, bicycle racks, a trail map and educational signage about Allen Creek. Long term, the park would include extensive rain gardens and stormwater infrastructure. There would also be demonstration areas with examples of native vegetation and "yard-type" rain gardens. This location would benefit from public restrooms and a small maintenance area.

We propose a short-term connection to the existing Border-to-Border Trail over the **Broadway Bridge**, following a path from 721 N. Main along E. Summit Street through **Wheeler Park**. Long-term plans could include a direct connection, for example through the proposed tunnel under the railroad berm or using a new bridge over N. Main Street. For further detail, see "North Extension and Connection to the Huron River" in Chapter 5.

Downtown Gateway

The City-owned property at **First Street** and **William Street,** currently used as a surface parking lot, would mark the downtown anchor of the trail. In the short term this area would contain rain gardens, bicycle racks, a trail map, and educational signage about Allen Creek. Long-term this area would be a gathering point for a network of downtown trails, and include an outdoor classroom with interactive exhibits about water flow in Allen Creek.

South Gateway

The southern boundary of the trail would occur where the railroad crosses S. State Street, near the intersection of **S. State Street** and **Stimson Street**. There are no City properties or

undeveloped parcels in the immediate vicinity to provide a clear south gateway. At a minimum, the southern gateway should include bicycle racks, car parking, open space for rain gardens, and trail signage with a map and information on Allen Creek.

Ann Arbor residents indicated that the trail should make connections to the south, including to the **Briarwood Mall** area and **Ann Arbor Airport**. We recommend that future work on an Allen Creek trail consider these southern extensions, along with connections to existing trails and parks along E. Stadium Boulevard and Washtenaw Avenue. For further detail, see "South Extension to Pittsfield Township" in Chapter 5.

Design Elements

The basic features of a trail are surface, signage, and rain gardens. Many of these features have well-established standards, and any recommendations here would be updated to match Ann Arbor and Washtenaw County standards when construction begins. Further, specific details are best handled during the landscape design phases of construction.

Trail Specifications

Width. At a minimum the path would be 10 feet wide with 2 feet wide shoulders, creating a 14 foot wide trail. In most locations the "greenway" characteristics of the trail, rain gardens, green open space, and activity areas, will extend beyond the 14 foot trail width. Further, at locations with high user volumes or complex merging of different types of users, the trail should be wider if possible. This could happen near Michigan Stadium, or at the "gateways".

Surface, Striping, and Markings.

The surface of the trail would be asphalt or concrete in a limited number of locations. The mix and trail surface should be chosen with year-round maintenance and heavy use in mind. The high water table in the Allen Creek floodway means that pervious surfaces are not recommended; during rain events it is possible that water could rise through the surface, which is detrimental to the trail and stormwater management. Run-off from the trail would be handled through rain gardens.

The majority of the trail would be striped with two lanes, separating two-way traffic and creating passing zones for users traveling at different speeds (see Figure 4-3). The striping material should be reflective, increasing its visibility during the early morning and evening.

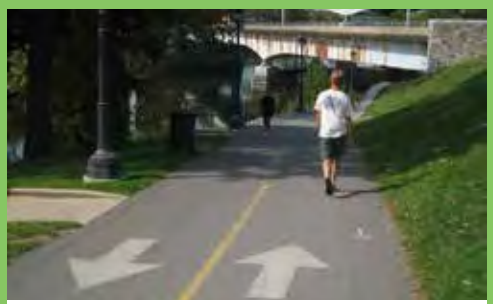


Figure 4-3. Two-lane path striping

Figure 4-4. Safety, traffic, and mile markers on trail surfaces

There are a number of different markings that could be applied to the trail surface: distance and mile markers; traffic and safety directions at intersections; branding graphics; and active children's games (see Figure 4-4). Markings should be coordinated with other forms of signage and can help create an active trail by engaging the surface of the trail itself in telling the story of Allen Creek or Ann Arbor. However, all marking should be clear and consistent, adding to wayfinding along the trail.

While trail sections are being constructed, temporary connections on city sidewalks and streets will be required. Consistent markings applied to these temporary routes could create a continuous route before trail completion.

Signage

Signage is one of the most important aspects of a well-defined trail. Creating an identifiable trail logo, and coordinating colors, fonts, map, and diagram styles, would help users recognize the trail and follow it. The types of signage that would be part of the trail include:

- User safety, including traffic signs, warnings at railroad and road crossings
- User guidelines
- Wayfinding, including maps and directional signposts for neighborhood destinations
- Education, including information about Allen Creek, stormwater management, Ann Arbor history, and neighborhood assets
- Public engagement, featuring signs to encourage physical activity, mark special events, and include public art

Figure 4-5. Trail signs and logos

Rain Gardens

An Allen Creek trail would be as much a piece of stormwater management infrastructure as it would be a trail. Rain gardens handling trail and adjacent surface runoff in order to help mitgate flooding issues in the floodway are as integral to trail design as the trail itself.

Figure 4-6. Small rain garden at Miller Avenue

Rain Gardens are shallow detention areas that store stormwater during small storms or handle overflow during large rain events. Best planted with deep-rooted plants, they are adaptable to linear locations, adjacent to sidewalks and roads, wider trail side areas, and large yards and fields. There are rain gardens in Ann Arbor along Miller Avenue and at the YMCA similar to those that would be installed along a trail or at the gateway parks (see Figures 4-6 and 4-7).

Railroad Considerations

Rail-with-trail projects are well-established. Three key concepts describe how active railroads interact with trails: buffer space separating rail from trail, physical barriers, and rail crossings. The recommended buffer widths and barrier types vary based on railroad traffic and right-of-way widths. (The railroad property which surrounds the railroad tracks is also referred to as railroad right-of-way. This report uses the two terms interchangeably.) Trail crossings also require special attention.

Buffer Space

Michigan Department of Transportation (MDOT) rail standards identify a space 8.5 feet from the center of railroad tracks as the "minimum clear space," where no "bridges, structures, poles, or obstructions" can be located (MDOT, n.d.). Similarly, the Federal Highway Administration's *Manual on Uniform Traffic Control Devices* recommends a six-foot "dynamic envelope" measured outward from each rail, which is equivalent to 8.5 feet from the center of the tracks (FHWA, p. 767). This space allows for overhang from freight cars and the natural "wobble" that occurs as trains move. The study routes presented later in this chapter each exceed this minimum separation distance even at the narrowest clearance points between rail and trail, including space for a barrier and additional room between the barrier and trail surface.

Figure 4-7. Large swale at the Ann Arbor YMCA

Figure 4-8. Mission City Bike Trail next to Metrolink commuter rail line, San Fernando, CA

Physical Barriers

Proper barriers, such as ornamental iron picket fences and chain link fences, deter trespassing on railroad tracks (FHWA, 2002). Ornamental iron picket fences are more difficult to climb and vandalize, but are also more expensive. Any fence that divides the rail from the trail would be at least six feet high (See Figure 4-8).

Fencing would be installed south of Hill Street where trespassing occurs frequently on football game days. The fencing would help contain foot traffic to a safe and designated area. In general, fencing would be installed whenever the rail is relatively level with the trail (south of Washington Street), and especially on segments where the railroad property is narrow, such as between Hill Street and Madison Street.

While fencing helps to prevent pedestrians from interfering with rail operations, it could be impractical at locations where the rail crosses closely-spaced streets. The railroad occupies small triangles of land adjacent to many downtown crossings such as William Street and Liberty Street. These areas would not be fenced. Also, fencing would not be required where the path runs next to elevated railroad segments with steep side slopes. This is the case from Washington Street northward.

Rail Crossings

Most study routes suggest east-west track crossings mid-block on Hill Street and/or Hoover Street. In these locations, the trail would cross the tracks perpendicularly using existing or

Crossing Gates

Currently, there are no road or sidewalk gates at railroad crossings in downtown Ann Arbor. Increased pedestrian and bicycle traffic may require upgrades.

Figure 4-9. Crossing gates installed beyond sidewalk edge to block sidewalk and road, Ft. Collins, CO

Figure 4-10. Fencing and crossing gates at rail/trail crossing, Irvine, CA

expanded sidewalks. The mid-block street crossing would follow the guidelines described in the paragraphs that follow. Additionally, a crosswalk beacon may be appropriate and crossing gates spanning both the street and sidewalk could be used to guard the railroad crossing itself.

Road and Sidewalk Crossings

A trail through the central area of Ann Arbor would require road and sidewalk crossings. A greenway presents an opportunity to prioritize and design these crossings to safely accommodate all users. Many crossings along these routes fall into *typical crossing types* based on their common features. At a few *specific road and sidewalk crossings*, common to many routes, current conditions pose special challenges.

Figure 4-11. Enhanced stop sign intersection along Indianapolis Cultural Trail, featuring high-visibility crosswalks and corner bump-outs

Typical Crossing Types

Stop Sign Intersections- When any of our study routes encounters a stop sign, generally the route makes a sharp, right-angle turn at the same intersection. Thus, pedestrians and bicyclists would cross a street at a crosswalk and immediately turn to either continue on the trail or cross another street. This type of intersection presents two challenges. First, providing safety from cars; and second, allocating sufficient space for bicyclists to maneuver without blocking other trail users.

Figure 4-12. A rendering of a speed table, a design solution to increase safety where the trail crosses streets mid-block

We propose narrowing the road at stop sign intersections and expanding the sidewalk, giving bicyclists and pedestrians more space. Additionally the intersection and crosswalks should include lighting for nighttime visibility, pavement markings, and signage to increase the visibility of the trail and its users (see Figure 4-11).

Mid-block Crossings- This report describes locations drivers do not expect to stop, either between intersections or at intersections where the larger street does not stop, as mid-block crossings. To make mid-block crossings as safe

as possible, we propose using widened and raised crosswalks, otherwise known as *speed tables*. At a speed table the road is raised where the trail crossing occurs and for a short distance ahead and behind it (see Figure 4-12). Speed tables slow cars down and eliminate grade change in the trail by keeping it at curb and sidewalk height. We also recommend that speed tables be accompanied by curb-bump outs to reduce the street crossing distance, along with lighting to increase visibility at night. In some locations, it may be too difficult to design speed tables that also accommodate stormwater drainage. In those cases as well as in higher traffic areas, flashing crossing beacons could be considered.

Figure 4-13. First Street and Liberty Street intersection

Figure 4-14. First Street and William Street intersection

Specific Road and Sidewalk Crossings

First Street and Liberty Street

At the intersection of **First Street and Liberty Street** the trail would connect from the **Downtown Gateway**, otherwise known as the Allen Creek Outdoor Classroom, to the **415 W. Washington Street** parcel. This would require two crossings of busy streets (See Figure 4-13). The crosswalk across First Street is the longest in the proposed route, exposing pedestrians and bicyclists to traffic for a longer period of time. The sidewalks around the intersection are narrow, providing little room to accommodate trail users. Driveways into Blank Slate Creamery and 305 W. Liberty (Liberty Lofts Annex) create conflict points for cars and sidewalk users. The railroad tracks also cut through the southwest corner of the intersection, limiting the amount of space for crossing.

In the short term, we suggest that the trail follow existing crosswalks on the south and west sides of the intersection. This solution would involve widening sidewalks, using bump-outs, and increasing trail visibility. In the long term, this could be an intersection where grade separation is explored.

First Street and William Street

The intersection of **First Street and William Street** presents similar challenges to the intersection at Liberty Street. The railroad tracks cross William mid-block at an angle, and limit the amount of space around the intersection. Furthermore, the tracks would have to be crossed to reach the proposed **Downtown Gateway** park.

We suggest routing a trail through the triangular parcel of railroad property on the northeast corner of First and W. William in order to bridge the connection from the trail south of William to the Downtown Gateway park (See Figure 4-14). This allows the trail to cross W. William and the railroad tracks at a right angle, which is ideal for safe crossings.

Figure 4-15. Main Street and Madison Street intersection

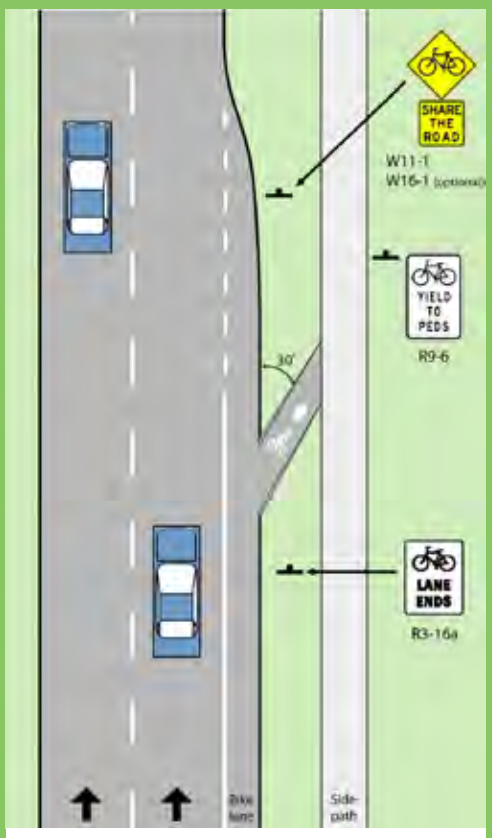


Figure 4-16. Merge of on-road bicycle lane with side path

S. Main Street and Madison Street

The trail approaches **Madison Street** close to where the street intersects with **S. Main Street**, requiring two crossings in a short distance. The crossings are complicated by the fact that S. Main is wide with heavy traffic flow and narrow sidewalks. The City's *Non-motorized Transportation Plan Update* recommends that S. Main be converted from two lanes in each direction to one lane in each direction, plus a center turn lane, and on-road bike lanes (Ann Arbor, 2013, p. 178-179). The reconfiguration would be an opportunity to allocate some road space to make it easier for trail users as well as on-road bicyclists to traverse this intersection.

We propose crossing the intersection using the south and west crosswalks. This represents the

Figure 4-17. Trail emergency call light or blue light

safest way to move trail users from one corner of the intersection to the other, with a minimum of right-angle turns. This crossing will be improved when the City's *Non-motorized Transportation Plan* recommendations are implemented. At that point it may be possible to widen the S. Main Street sidewalks, providing extra space for trail users. One potential option to explore is for the new bike lanes to merge up onto the curb and into the trail, similar to how bicycle lanes merge on and off the sidewalk on Nixon Road (See Figure 4-15).

Personal Safety Infrastructure

Personal safety was a recurring theme in community meetings, at the public outreach tables, and in survey responses. In addition to the traffic safety measures previously noted, we recommend incorporating specific elements to increase personal safety and evening use of the trail. The trail should be well lit at night, particularly in narrow and constrained sections. Additionally, blue lights with police call buttons could be distributed along the route (See Figure 4-17). The route itself should have frequent and well-defined entry and exit points.

THE STUDY ROUTES

Our analysis of previous plans and documents revealed a range of motivations for an Allen Creek trail. These include facilitating recreational and commuter use, connecting neighborhood and downtown destinations, mitigating stormwater and flooding issues around Allen Creek, and increasing green space in downtown Ann Arbor. Additionally, the documents show two approaches for aligning a trail, either following the historic creek bed or the railroad.

To explore the trade-offs between these interests the Green the Way team specified four study routes and compared their differences:

The *2008 Essential Route* would provide a basic route along the railroad. This study route is based on a proposal developed by the Allen Creek Greenway Conservancy.

The *Minimal Rail Route* would follow the railroad while minimizing use of railroad private property.

The *Connections Route* would focus on non-motorized travel to destinations between the Huron River, downtown and the south end of the University of Michigan athletic campus, connecting users to identified destinations.

The *Stormwater Route* would prioritize stormwater and flooding issues in the Allen Creek valley. This route deviates from the rail corridor near Kingsley Street and follows the Allen Creek floodway to the Huron River.

Evaluating Routes

We developed a list of *evaluation criteria* based on the various motivations articulated for an Allen Creek trail. These criteria allow us to compare how well the different routes would perform.

Evaluation Criteria

Stormwater

- Improve water flow in the Allen Creek valley
- Incorporate rain gardens and other stormwater infrastructure
- Foster public awareness of Allen Creek and the environmental challenges in urban watersheds

Commuting

- Create a protected trail environment for bicyclists and pedestrians
- Create a continuous travel experience by minimizing crossings

Community Resources

- Provide bicycling and walking connections to residential neighborhoods
- Highlight historic features of nearby neighborhoods or natural environments

Safety

- Minimize secluded areas and provides trail users with visibility into their surroundings
- Minimize mid-block and non-perpendicular pedestrian and bicycle crossings of roads and railroad
- Minimize railroad crossings

Feasibility

- Minimize structure removal
- Minimize property acquisition
- Minimize linear feet of easements on non-railroad private property
- Minimize linear feet on railroad property


Segment D
Segment C
Segment B
WATER HILL
SUMMIT ST.
MAIN ST.
BROADWAY
Huron
721 N. MAIN ST.
PROPOSED B2B LINK
FELCH ST.
MILLER AVE.
KINGSLEY ST.
KERRYTOWN/ OLD 4th WARD
LINK TO WEST PARK
CATHERINE ST.
HURON ST.
WASHINGTON ST.
DOWNTOWN
DOWNTOWN GATEWAY PARK
LIBERTY ST.
WILLIAM ST.
JEFFERSON ST.
OLD WEST SIDE
1st ST.
GERMANTOWN
UM CENTRAL CAMPUS
MADISON ST.

Figure 4-18. Green the Way study routes

In order to apply the criteria, we developed qualitative and quantitative descriptions for each route. For qualitative analysis, each route has a set of goals and a brief description of the trail as it proceeds through the city. The quantitative analysis provides a set of common metrics for each route. These metrics include: length of the proposed trail, with breakdowns into length on city, railroad, University of Michigan and other private property; number of railroad and street crossings; number of parcels requiring easements; and number of structures identified for removal.

ROUTE GOALS

2008 Essential Route

Adapted from the Allen Creek Greenway Conservancy's *Proposed Route of the Allen Creek Greenway: Essentail Route and Future Opportunities*; January 2008 Draft

Goals

- Create a continuous trail route adjacent to railroad property
- Identify railroad and other private property along the route requiring easements
- Establish a rationale for a downtown greenway park at 415 W. Washington Street

The *2008 Essential Route* would largely run within railroad property, and create a direct north-south connection from the Huron River to the railroad crossing at S. State Street. The route identifies parcels and property owners adjacent to and in the path of the route. *Note*: the Green the Way team inferred the goals listed above from the route's path and accompanying descriptions; the goals were not explicitly listed in the documents we reviewed.

Advantages
The *2008 Essential Route* would:

- Create a direct and legible route
- Propose property acquisitions and structure demolition that could improve water flow in the Allen Creek valley
- Link to existing walking and cycling routes, including the bicycle lanes on E. Stadium Boulevard and the Border-to-Border Trail
- Address issues surrounding development in the floodplain and floodway by recommending parks and open space

Figure 4-19. The Allen Creek Greenway Conservancy proposed this wide section of railroad property be used as a park featuring a historic railroad turntable

Limitations
The *2008 Essential Route* would:

- Require negotiating many property easements with the railroad and other private property owners
- Increase cost by relying more on property easements and acquisitions relative to the other study routes
- Require further development to assess the safety of pedestrian, bicycle, car and railroad crossings at many locations along the route

- Require a clear and feasible solution for the acknowledged challenge of crossing the railroad berm separating the northern trail segment from the Huron River
- Recommend construction of significant new infrastructure elements, mainly bridges, that may require phasing

Minimal Rail Route

Goals

- Maximize distance between the route and railroad-owned property
- Control the interface between rail and route

The *Minimal Rail Route* is designed to minimize interaction between a trail and the railroad. In some areas, rail-trail crossings and railroad property easements are difficult to avoid without jeopardizing the continuity and feasibility of the trail. Avoiding railroad property requires easements on property located next to the railroad property. It also requires engaging with the University of Michigan and the City of Ann Arbor, owners of approximately 60 percent of the property within this route. With willing partners, the *Minimal Rail Route* would only require railroad easements along 12 percent of its length.

The *Minimal Rail Route* acknowledges that the rail corridor is active and may see new passenger service in the future. Trains currently travel along these tracks at a maximum speed of five miles per hour; still, it is important to separate the route from the rail with a barrier of some kind (FHWA, 2002, p. 52). The *Minimal Rail Route* would control the interface between the railroad and trail users through signage and pedestrian crossing treatments at rail intersections, and by minimizing rail-trail crossings.

Advantages

The *Minimal Rail Route* would:

- Avoid railroad property except for 1,600 feet of trail at five pinch points where there is no other feasible option
- Promote safe travel along the trail by minimizing the danger of pedestrians walking out onto the rail
- Respect railroad operations by exceeding the minimum required separation distance between the rail and trail

Limitations

The *Minimal Rail Route* would:

- Cross several private properties and a considerable amount of UM property on the south end of campus
- Rely on private property easements outside of railroad property
- Require removal of a number of private parking spaces within potential trail easements

Figure 4-20. Path serving different types of users in Madison, WI

Connections Route

Goals

- Prioritize safety at crossings and along the route
- Minimize distance and time of reaching destinations
- Connect directly to destinations identified by the community
- Support different users by splitting the route into an east branch and a west branch, designed specifically for bicyclists and pedestrians

Figure 4-21. Protected bicycle lanes, like this one on Delaware Avenue in Philadelphia, can provide separate spaces for bicyclists and pedestrians

The *Connections Route* would emphasize *continuity, trail environment,* and *directness*. *Continuity* minimizes interruptions of the trail and abrupt turns. *Trail environment* stresses the presence of greenery along the trail and separates high-speed or high-volume vehicular traffic from trail users. *Directness* minimizes the distance traveled between destinations, it would be provided by a split in the route. Starting at First Street and William Street, trail users heading north could choose to follow an east branch of the trail that travels along First Street. This branch would provide separate spaces for bicyclists and pedestrians and would be the most direct route for trail users wanting to travel north or south. Alternatively, trail users could follow a west branch that provides a quieter and greener trail experience. The west and east branches would rejoin at First Street and Miller Street.

The *Connections Route* also would prioritize safety by using active and well-lit streets, and by improving crossings. The branches would present trail users with choices, including the option to travel in a loop on exercise and recreational trips. Overall, the trail would offer bicyclists, runners, dog-walkers, and other route users, including those with limited mobility, with a safe and clear route to a wide range of destinations.

Advantages

The *Connections Route* would:

- Create a comfortable, landscaped trail environment, anchored by small parks
- Provide trail users with direct north-south access to downtown
- Improve traffic safety along First Street by separating car, bicycle, and pedestrian traffic and by giving bicyclists and pedestrians a dedicated green light at intersections
- Allow for rain gardens between separated lanes for cars, bicyclists, and pedestrians
- Connect to West Park, creating a link for recreational users and connecting to West Park's stormwater infrastructure

Limitations

The *Connections Route* would:

- Require multiple property easements and acquisitions to fully implement the route

- Cross five driveways, including two public parking facility entry/exit points to public parking facilities, along the east branch
- Require removal of 10 on-street parking spaces and two loading zone spaces along the east branch
- Require wayfinding signs to help trail users navigate the west branch and east branch
- Lessen personal safety along the west branch, which is comparatively isolated and would see fewer trail users than a combined trail

Stormwater Route

Goals

- Support healthy water flow and water quality in Allen Creek
- Reduce risk of flood damage to Allen Creek valley properties
- Build awareness of the presence of the Allen Creek and its impacts on the Huron River
- Engage nearby property owners to become part of the greenway by building green infrastructure

The *Stormwater Route* would accomplish its goals by minimizing obstructions to water flow in the floodway and by maximizing vegetation cover with rain gardens. This would reduce the unusually high peak water flows in the Allen Creek valley and improve the quality of the water entering the Huron River. The *Stormwater Route* proposal does not recommend daylighting the creek within the near future due to the high level of urban development in and around the floodway, poor water quality, and extreme peak flows; however, this route does not preclude future daylighting.

The *Stormwater Route* would build awareness of Allen Creek's impact on the Huron River by serving as a continuous learning experience. Trail markers, and historic and environmental education installations would inform trail users about the creek and stormwater management. The route would also connect to existing stormwater management efforts, such as those at the YMCA, West Park, and the small park with fish sculptures at First Street and Kingsley Street.

Figure 4-22. Miller Avenue rain gardens

Advantages

The *Stormwater Route* would:

- Educate users about creek flow and water quality through interactive exhibits and signage
- Facilitate natural water flow and reduce flooding impacts by removing structures and obstructions in the path of floodwaters

- Offer trail users a mixture of natural, urban, and neighborhood experiences
- Add green space to help absorb stormwater wherever possible
- Highlight the community's role in stormwater management and Huron River water quality issues

Limitations
The *Stormwater Route* would:

- Remove a large number of structures, reducing feasibility of this route
- Increase trail maintenance costs for the upkeep of educational features and specialized vegetation that may be damaged by game-day foot traffic
- Not connect to the point where Allen Creek flows into Huron River, a key feature of the Allen Creek valley
- Not completely address widespread flooding issues in Allen Creek valley, although structure removel would improve the current conditions

ROUTE DESCRIPTION

In order to analyze and describe study routes more simply, the Green the Way team divided the study area into four segments. Starting at the south end, we highlight opportunities, challenges, common route characteristics, and any outstanding differences between the study routes.

Segment A: S. State Street to Hill Street

This route segment begins on the west side of S. State Street, at the Stimson Street intersection, and continues to the north side of Hill Street (Figure 4-24).

Opportunities

- Stormwater infrastructure here, in the upstream segment of Allen Creek, could reduce flooding risk in all other segments
- Contains widest section of railroad property within the study limits, and an abandoned turntable
- Area at the railroad and adjacent properties is relatively flat with little grade change
- Current high volume of use on University of Michigan football game days implies that trail would be frequently used

Game-Day Pedestrian Traffic

Figure 4-23. Football game day pedestrians using the railroad

As part of our research on possible trail use we conducted a survey of football game day pedestrian traffic. We selected a Saturday afternoon game and counted people traveling north or south along the railroad at **Hoover Street** between 12:00pm and 4:00pm. In total, we observed **1,076 people**, including one person in a wheelchair who had difficulty crossing the rails on the sidewalk at Hoover St., and one bicyclist riding alongside the railroad tracks. Trash accumulated as people passed through the area.

See Appendix G for hourly counts.

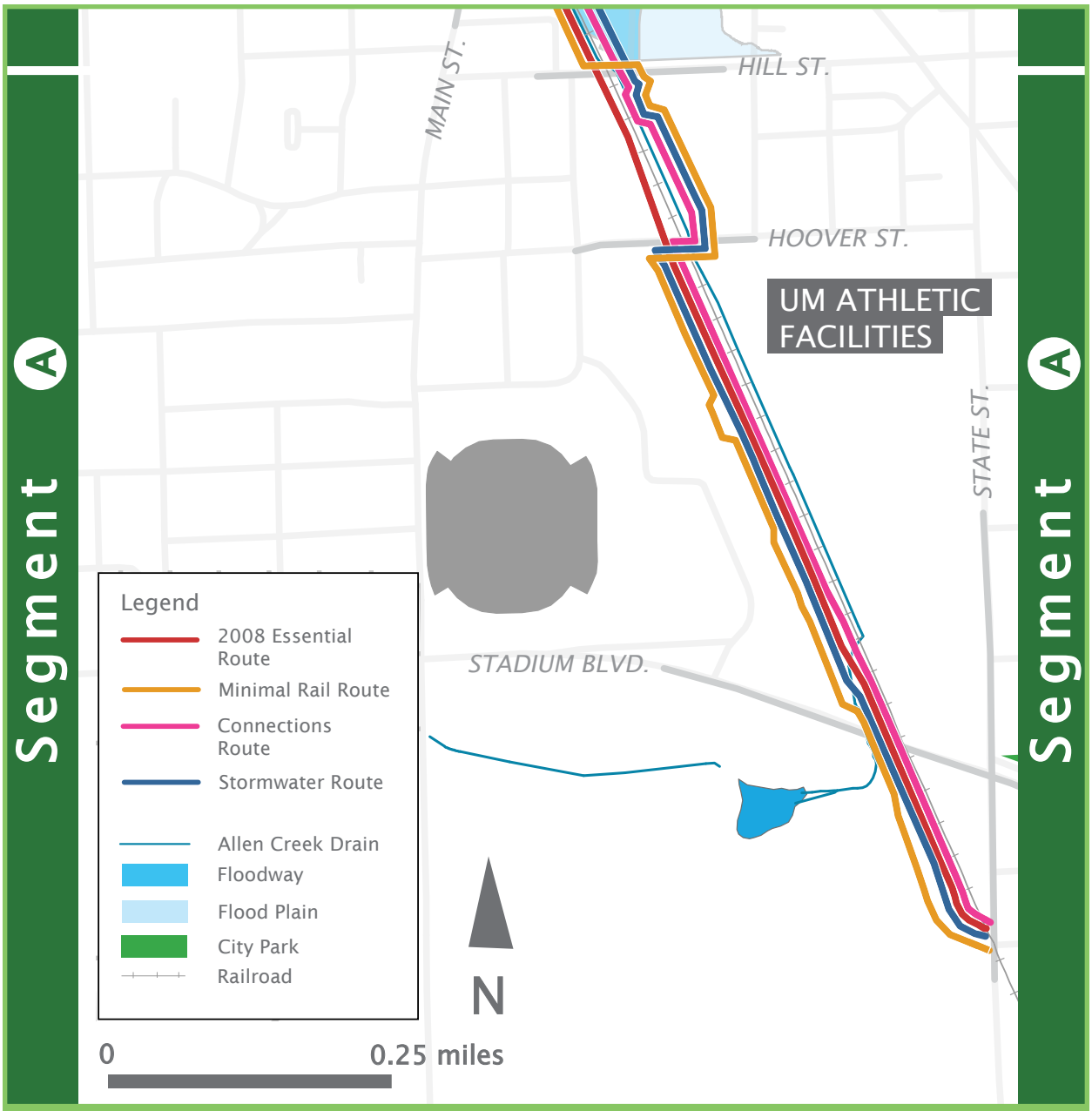


Figure 4-24. Segment A: S. State Street to Hill Street

- Presence of two primary landowners, the University of Michigan and the railroad, could streamline negotiations required for trail construction

Challenges

- Lack of a clear location for a south gateway
- Narrow clearances around railroad property near University of Michigan's Elbel Field
- High traffic volumes on game day could damage gardens and installations
- Difficult connection to E. Stadium Boulevard due to large grade differences

General Routing

All study routes would begin at **S. State Street** and **Stimson Street**, on the **west side of the railroad** property, and remain on the west side until Hoover Street. In order to avoid the narrow clearances on the west side of the track **north of Hoover St**., the *Minimal Rail*, *Connections* and *Stormwater Routes* would cross to the **east side of the railroad.** From there they would continue north on the east side of the tracks, using an easement along the University of Michigan's Elbel Field. The *2008 Essential Route* would continue on the east side of the track.

The *2008 Essential*, *Connections* and *Stormwater Routes* would take advantage of the wide railroad property between the **E. Stadium Boulevard bridge** and **Hoover Street** for trail use. The *Minimal Rail Route* would remain outside of railroad property, with the exception of a small area near the abandoned turntable.

Unique Features of Study Routes
2008 Essential Route would:

- Connect to the sidewalks and bicycle lanes on **E. Stadium Boulevard**
- Use abandoned turntable as anchor point for linear park

Minimal Rail Route would:

- Require easements at the UM Golf Course, parking facility (removing 46 parking spaces), and Elbel Field
- Require railroad easements near abandoned turntable and to avoid encroaching into the artificial turf field within Elbel Field

Connections Route would:

- Reconfigure Elbel Field in order to allow the trail to remain out of railroad property and maintain width and character of trail

Stormwater Route would:

- Uses wide area of railroad property for a linear park with rain gardens and stormwater infrastructure

Segment B: Hill Street to Liberty Street

This route segment begins on the north side of Hill Street and continues to the north side of Liberty Street, at 415 W. Washington (Figure 4-26).

Opportunities

- Adjacent to community-identified destinations
- Area at the railroad and adjacent properties is relatively flat with little grade change
- Includes City property at First Street and W. William Street
- Connects to existing bicycle routes at Hill Street, Madison Street, and Liberty Street, as well as proposed bicycle lanes on Main Street and William Street

Challenges

- Difficult trail, road, and railroad crossings at Madison Street and S. Main Street, First Street and William Street, and First Street and Liberty Street

General Routing

From Hill Street the *Minimal Rail*, *Connections* and *Stormwater Routes* would proceed north on the **east side of the railroad tracks until reaching Madison Street.** On the east side of the tracks, the routes would require an easement through the Fingerle Lumber site. At Madison Street these three routes would cross to the west side of the tracks, joining the *2008 Essential Route.*

All routes would remain on the **west side of the tracks until reaching W. William Street**,

SEATTLE, WA

The Burke-Gilman Trail

The Burke-Gilman Trail was built in the 1970s along a portion of the Seattle, Lake Shore and Eastern Railway corridor and was among the first rails-with-trails projects. In the years since, the trail has expanded alongside the Northern Pacific and Burlington Northern railroads. It is approximately 18.8 miles long, starting at Puget Sound, running through the University of Washington campus, and around the north end of Lake Washington to Bothell, WA. The Burke-Gilman Trail typically serves 2,000-3,000 people a day, especially students and faculty affiliated with the University of Washington, who use the trail to commute across campus and connect to Downtown Seattle. The trail is managed by the City of Seattle, King County, and UW.

Figure 4-25. Burke-Gilman Trail near the University of Washginton

Safety and Liability

The Burke-Gilman is next to operating railroads with freight service running at speeds no more than 10 mph. To alleviate the railroad's liability concerns the City purchased the rail property adjacent to the trail. The trail itself is 10.0 to 12.0 feet wide, and is set back 10.0 to 25.0 feet from the rail centerline. Chain link fencing is installed along the trail and is generally 3.5 feet high. According to both the City and railroad, trespassing and trash dumping problems have decreased significantly since the trail was built. The reduction in trespassing can be credited to trail activity and policing.

Seattle has been improving pedestrian and traffic signaling equipment as well as making improvements at busy intersections. These improvements include retiming traffic signals and constructing speed tables which slow cars, and give drivers a visual cue that they are entering a walking and biking zone.

Lessons for an Allen Creek trail

The Burke-Gilman Trail demonstrates how to manage a trail along an operating railroad, and connect residents with multiple destinations in a city. It is also an example of how county and city agencies, railroad companies, and universities can work together to manage a trail. The heavy use of the Burke-Gilman by UW students and faculty is an example for the UM community, and should encourage UM to adopt UW's trail management practices at the South Athletic Campus.

where the *2008 Essential*, *Connections*, and *Stormwater Routes* cross the tracks to enter the **City property at First Street and W. William Street**.

All routes would cross Liberty Street and enter the City property at **415 W. Washington** at its southeast corner.

All routes would leave the railroad at the intersections of **Madison Street** and **S. Main Street**, and **Jefferson Street** and **Ashley Street** to make use of existing sidewalks and road crossings. See "Trail Features – Specific Road and Sidewalk Crossings" for information on crossings at First and William, and First and Liberty.

Unique Features of Study Routes
2008 Essential Route would:

- Propose future acquisition of Fingerle Lumber site for stormwater infrastructure
- Use First and William property for downtown gateway

Minimal Rail Route would:

- Require easements at property adjacent to 521 S. Ashley Street, removing of 23 parking spaces
- Use existing sidewalks between William and Liberty on the west side of First Street, entering railroad property near Liberty

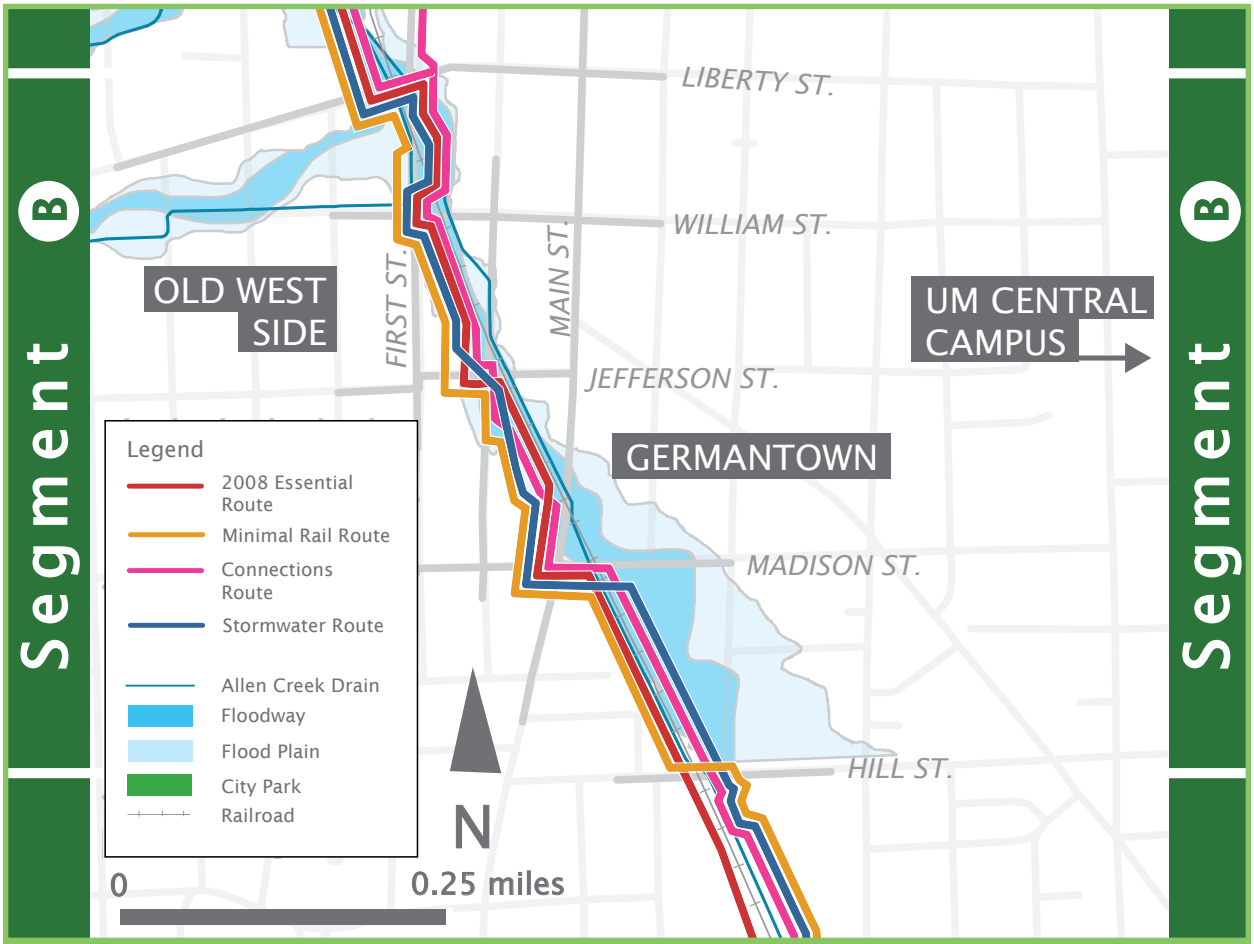


Figure 4-26. Segment B: Hill Street to Liberty Street

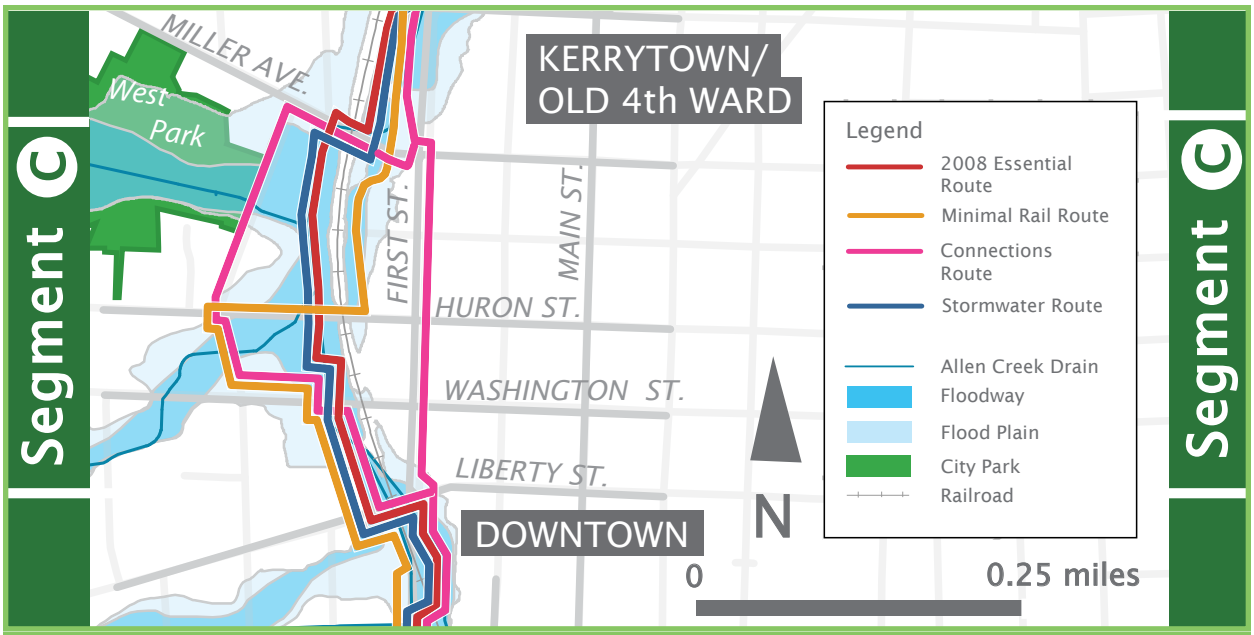


Figure 4-27. Segment C: Liberty Street to Miller Avenue

- Cross Liberty on the west side of the railroad

Connections Route would:

- Propose acquisition of properties at 507, 511, and 527 S. Ashley Street for trail and stormwater infrastructure
- Use First and William property for downtown gateway, including the south end of the First Street bikeway

Stormwater Route would:

- Use First and William property for downtown gateway with outdoor classroom features, including interactive exhibits that simulate the water cycle of the creek and demonstrate current water quality conditions in the creek.

Segment C: Liberty Street to Miller Avenue

This route segment begins on the north side of Liberty Street and continues to the north side of Miller Avenue, crossing the 415 W. Washington site, the YMCA property, and areas adjacent to West Park (Figure 4-28).

Opportunities

- Includes City-owned property at 415 W. Washington Street
- Includes existing stormwater infrastructure at the YMCA and West Park
- Adjacent to West Park, a community identified destination

Challenges

- Potential mid-block crossings at Washington Street, Huron Street, and Miller Avenue
- Railroad on elevated berm 14 feet above ground level between Huron Street and Miller Avenue
- Small parcel sizes mean that the City would have to negotiate with multiple property owners to complete even short distances of trail

BOULDER, CO

Bicycle Paths and Flooding

Like many urban areas, Boulder, CO faces flooding challenges. In 2013 major 1,000-year floods struck Colorado. The current floodway mapping, meant to assess risk from 100-year storms, can no longer protect residents.

Faced with expanded flooding that poses a substantial risk to people and property, Boulder developed a comprehensive strategy to keep residents safe. A key part of the strategy was developing bicycle paths that run along existing rivers to help channel water quickly and safely out of the city. To prevent bridges from washing out, the path bridges contain giant hinges that swing out under the pressure of flood waters. When flooding is expected, the City shuts gates to exclude trail users and allows floodwaters to overflow safely into the bicylcle paths. Following a 1,000-year flood in 2013, City officials credited the bicycle paths with reducing property damage and protecting residents.

Figure 4-28. This bicycle path along the Left Hand Creek in Boulder, CO was credited with reducing flooding in the surronding neighborhood

However, bicycle paths and adaptive infrastructure alone are not sufficient to deal with the challenges caused by urban floods. These strategies have to be complemented by efforts to reduce risks that keep residents and structures out of potential flood areas. Boulder began by preventing expensive and potentially hazardous industrial uses from locating in the floodplain. The City expanded this effort by using taxpayer dollars to purchase land near urban rivers. It removed any structures from this property and has currently been able to purchase almost 50,000 acres. All of these efforts support the goal of city planner David Driskell, who stated "We just need to move the water through our community as quickly as possible with as little damage as possible" (Next City, 2013).

Lessons for an Allen Creek Trail

New mapping systems, like Boulder's focus on the 1,000-year floodplain and Ann Arbor's Stormwater Calibration Model, highlight growing risks to property and life. In light of these growing risks future infrastructure investments should be multi-purpose, such as bicycle paths that provide safe routes for bicyclists and help channel flood water safely out of the city. However, to truly address urban flooding, taxpayers must be willing to purchase and remove structures in flood prone areas.

General Routing

All routes would enter 415 W. Washington at the southwest corner and proceed north within the floodway area of the property. All routes would complete this segment of trail on the north side of Miller Avenue, and on the east side of the railroad. Between these endpoints, each route would take a different path.

Unique Features of Study Routes
2008 Essential Route would*:*

- Proceed adjacent to the west side of the railroad; due to the railroad berm, this could require easements and property acquisitions between Washington Street and Huron Street, and Huron Street and Miller Avenue
- Propose future acquisition of a home on the east side of Chapin Street to make a connection to West Park

Minimal Rail Route would*:*

- Proceed on existing sidewalks on Washington, Third Street, and Huron Street, going around the Ann Arbor YMCA and the rain garden at the corner of Third and Huron Street
- Cross to east side of railroad at Huron Street
- Proceed north between Huron Street and Miller through a parking lot, requiring removal of 40 parking spaces

Connections Route:

From Liberty to Miller the *Connections Route* would split into two different branches; a bicyclist-oriented east branch **along First Street**, offering more direct access to downtown destinations, and a pedestrian-oriented west branch designed to engage recreational users, Ann Arbor YMCA patrons, and West Park visitors. Both branches would welcome all trail users, although we expect that trail users would self-select to some degree.

East Branch would*:*

- Consist of a two-way cycle track on the east side of First Street with an adjoining sidewalk for pedestrian use.
- Be protected from motor vehicle traffic by continuous raised planters. Sidewalks would be at least 6.5 feet wide and would have linear rain gardens separating them from the cycle track. For more details, see "Segment D: Miller Avenue to the Border-to-Border Trail" in Chapter 5.
- Dedicate traffic signals for bicyclists and pedestrians ensuring their safety by prohibiting motor vehicles from turning when trail users have a green light.
- Eliminate 10 on-street metered parking spaces and two loading zone spaces along First Street and reduce First Street to a consistent two lanes wide, eliminating the third lane at those intersections where it exists

Figure 4-29. A cycle track (two-way protected bicycle lane) paired with a sidewalk along the Indianapolis Cultural Trail

West Branch would:

- Proceed on existing sidewalks on W. Washington and Third Street traveling past the Ann Arbor YMCA and the rain garden at the corner of Third Street and Huron Street
- Cross Huron Street at the existing crosswalk and pedestrian-activated stoplight, also known as a HAWK beacon (High-Intensity Activated crossWalK)
- Continue on the west side of Chapin Street, adjacent to West Park; proposes widening the sidewalk and adding rain gardens along Chapin Street, which would be accomplished by turning Chapin Street into a one-way street for motor vehicles
- Follow the sidewalk on the south side of Miller Avenue under the railroad bridge and to the intersection with First Street

Stormwater Route would:

- Use 415 W. Washington Street for landscaping and educational features
- Proceed adjacent to the west side of the railroad; due to the railroad berm, this could require easements and property acquisitions between Washington Street and Huron Street, and Huron Street and Miller Avenue.
- Propose acquisition of two properties between Huron Street and Miller Street
- Require and easement to make connection to West Park
- Propose installation of extensive rain gardens and stormwater infrastructure between Huron Street and Miller Avenue with educational signage over the confluence of the West Park and Allen Creek waterways

Segment D: Miller Avenue to 721 N. Main Street

This route segment begins on the north side of Miller Avenue, crosses to the east side of the railroad, and continues to the 721 N. Main Street site (Figure 4-31).

Opportunities

- Includes City-owned property at 721 N. Main Street
- Includes existing stormwater infrastructure at the small park at First Street and Kingsley Street, the Fish Garden
- Adjacent to the Huron River, the most important community identified destination

Challenges

- Handling grade differnces between railraod berm and adjacent property
- Creating a clear connection to the Border-to-Border trail

General Routing

All study routes would proceed north from Miller Avenue adjacent to the railroad berm, requiring easements and/or property acquisitions at 410 Miller, 310 Miller, and 227 Felch Street.

At Felch the *Minimal Rail*, *Connections*, and *Stormwater Routes* would connect to the City property at 721 N. Main Street through a City-owned access drive located between 128 and 220 Felch Street.

The *Minimal Rail*, *Connections,* and *Stormwater Routes* would connect to the Huron River and Border-to-Border Trail using existing roads and sidewalks through Wheeler Park and over the Broadway Bridge. The *2008 Essential Route* envisions a N. Main Street overpass, adjacent to the railroad bridge.

INDIANAPOLIS, IN

The Trail

The Indianapolis Cultural Trail (ICT) is an 8-mile urban bicycle and pedestrian path in downtown Indianapolis that opened in 2013 and serves as the downtown hub for central Indiana's greenway system. Private donations and a federal transportation grant funded the $63 million project, negating the need for local tax money. The ICT circulates through downtown Indianapolis, providing a safe, convenient, and attractive connection to major cultural districts, historic attractions, and entertainment venues. Areas of the trail feature split pathways where plantings separate bicyclists and pedestrians, while other sections feature combined paths where bicyclists and pedestrians coexist. Linear rain gardens and infiltration beds manage stormwater and provide a protective barrier between the trail and the road. Art installations along the trail include work by local artists, highlight the character of the different cultural districts, and celebrate historic figures who made peaceful contributions to humanity. The ICT contains multiple loops and spurs that encourage exploring and connect to other trails and greenways. The resulting network has increased recreation, tourism, and bicycle commuting.

Figure 4-30. Indianapolis Cultural Trail, a bicycle and pedestrian path with rain gardens and local artwork

Trail Management

Indianapolis Cultural Trail, Inc. (ICT, Inc.) is a local nonprofit that manages, maintains, and promotes the trail. ICT, Inc. is largely responsible for hardscape and electrical maintenance, landscaping, and snow removal. However, a city ordinance tasks adjacent property owners with clearing snow from the sidewalks or pedestrian paths that are adjacent to their properties. Additionally, ICT, Inc. utilizes volunteer help to clear the trail of litter and organizes a "Trail Watcher" program that assigns a second set of eyes and ears to different sections of the trail for maintenance issues. Donations to ICT, Inc. are tax deductible and yearly donations of $100 or more earn the contributor perks with participating businesses and attractions along the trail.

Lessons for an Allen Creek Trail

The Indianapolis Cultural Trail offers several lessons for an Allen Creek trail. First, potential funding mechanisms exist that could minimize the use of local tax dollars to fund the trail. Next, a well-designed trail would allow pedestrians and bicyclists to safely and productively use a shared path. Lastly, creating a non-profit organization to manage and maintain the trail could relieve the City of the added responsibility after it builds the trail.

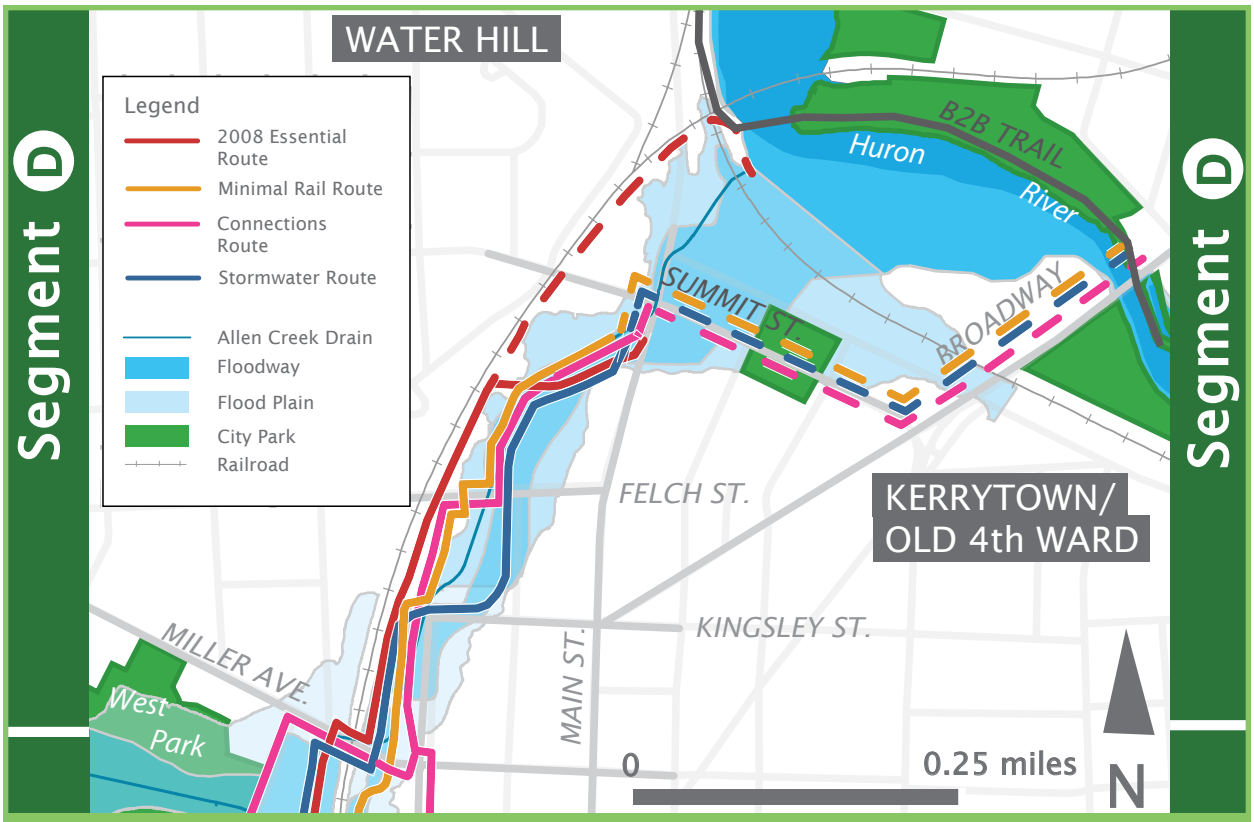


Figure 4-31. Segment D: Miller Avenue to 721 N. Main Street

Unique Features of Study Routes

2008 Essential Route would:

- Proceed adjacent to the east side of the railroad berm, possibly requiring an easement at 220 Felch in addition to those listed above
- Connect through the propsed 721 N. Main gateway park to a pocket park at N. Main Street and Depot Street

Minimal Rail Route would:

- Proceed adjacent to the east side of the railroad berm, requiring an easement at 220 Felch in addition to those listed above

Connections Route would:

- Join the **West Branch** and **East Branch** at the intersection of First Street and Miller Avenue
- Propose acquisition of 310 Miller Avenue for trail connections and stormwater management

Stormwater Route would:

- Phase acquisition of structures on Ashley Street, between Kingsley Street and Felch Street, for removal; these structures face some of the highest risk in the floodway, and would be integrated into the trail using rain gardens and other stormwater infrastructure. Removing these structures could also improve upstream flooding; these benefits could be calculated using the City's new stormwater calibration model.

SUMMARY

The four study routes described above reflect an array of options for advancing the design of

PORTLAND, OR

Stormwater features serve dual purpose in Portland

Bioswales in Portland, OR, are designed to help the environment and make streets safer. The city's bioswales capture runoff from roads, and produce narrower streets and wider sidewalks. This shortens crossings, and encourages drivers to slow down. According to Catherine Ciarlo, a former transportation advisor for the City, "If we're doing traffic calming with curb extensions, why not use the opportunity to treat stormwater?"(Mayer, 2010).

Figure 4-32. A conventional street (left) was transformed into a bicycle and pedestrian friendly route (right) with the help of stormwater features in Portland, OR

The City's environmental services and transportation bureaus work together to identify locations where bioswales serve stormwater and safety purposes. This process can be challenging. Transportation planners in Portland want to add bicycle facilities farther from the City Center, while stormwater planners want bioswales closer to downtown. After initially proposing to spend $20 million on dual-purpose bioswales, the City scaled back the effort in 2013, committing to spend $11.4 million on 13 projects.

The bioswales are key elements in the City's effort to retrofit select streets into "neighborhood greenways." These are low-traffic roads that support walking and bicycling while minimizing stormwater runoff. In one example on N.E. Holman Street the City's Bureau of Environmental Services provided about three quarters of the $950,000 project budget to make a neighborhood greenway with bioswales at key intersections.

Lessons for an Allen Creek Trail

While Ann Arbor's "green streets" policy adds stormwater features to improve water quality, Portland's experience highlights how these features can also support the safety of bicyclists and pedestrians.

an Allen Creek trail. In order to synthesize the unique features and challenges of each route option, we created two summary tables. First, we tabulated potential impacts based on property ownership, as well as each route's count of street and railroad crossings (Table 1). With this information and descriptions the Green the Way team rated each route on how well it appeared to meet evaluation criteria relating to Stormwater, Commuting, Community Resources, Safety, and Feasibility (Table 2). Together, these statistics and ratings helped the team make decisions about how to balance these routes and form our recommended *Green the Way Route*, detailed in the next chapter.

Table 4-1. Study route evaluation

Key ● High ● Medium ● Low	**Connections Route**	**Stormwater Route**	**Minimal Rail Route**	**2008 Essential Route**	**Green the Way Route**
Stormwater & Flooding					
Improves water flow in the Allen Creek Valley	●	●	●	●	●
Incorporates rain gardens and other stormwater infrastructure	●	●	●	●	●
Fosters public awareness of Allen Creek and the environmental challenges in urban watersheds	●	●	●	●	●
Commuting					
Creates a protected trail environment for bicycles and pedestrians	●	●	●	●	●
Creates a continuous travel experience by minimizing crossings	●	●	●	●	●
Community Resources					
Provides bicycling and walking connections to residential neighborhoods	●	●	●	●	●
Highlights historic features of nearby neighborhoods or natural environments	●	●	●	●	●
Safety					
Minimizes secluded areas and provides trail users with visibility of surroundings	●	●	●	●	●
Minimizes mid-block and non-perpendicular pedestrian and bicycle crossings	●	●	●	●	●
Minimizes rail crossings	●	●	●	●	●
Feasibility					
Minimizes structure removal	●	●	●	●	●
Minimizes property acquisition	●	●	●	●	●
Minimizes linear feet of easements on non-railroad private property	●	●	●	●	●
Minimizes linear feet on railroad property	●	●	●	●	●

Table 4-1. Study route statistics

	Connections Route	Stormwater Route	Minimal Rail Route	2008 Essential Route	Description
Total length of trail					
	2.82 mi 14,930 ft	2.82 mi 12,060 ft	2.49 mi 13,130 ft	2.71 mi 14,320 ft	
Length of trail (ft) within:					
City property	1,620	1,640	1,270	1,400	Parks, parking lots, and vacant sites currently owned by the City
Sidewalks and streets	5,670	1,070	3,840	2,560	Existing public right-of-way, including bridges
University property	1,280	1280	3,180	120	
Railroad property	3,460	5,890	1,690	8,970	
Other private property	2,890	3,470	3,170	1,310	Includes property to be acquired/redesigned
Crossings					
Railroad crossings	4	5	2	3	
Street crossings	18	11	15	16	All street crossings, including mid-block crossings
mid-block crossings	1	6	6	7	Street crossings where cross traffic currently does not stop
Changes proposed to existing property					
Parcels which would require easements	9	9	24	0	Counts U-M property and private, non-railroad property. Multiple parcels belonging to the same owner are counted separately.
Parcels to acquire/redesign	5	19	1	2	Consists entirely of private, non-railroad parcels. Multiple parcels belonging to the same owner are counted separately.
Structures impacted	6	21	1	0	

This page is intentionally left blank

5. RECOMMENDATIONS

As a culmination of the findings gathered from community input and our evaluation of the study routes, the Green the Way team developed a recommended route, or the *Green the Way Route*. We begin this chapter with a summary of the *Green the Way Route* before describing its unique features in greater detail. *Phasing* follows and then *Next Steps* to implement the trail closes this section.

GREEN THE WAY ROUTE

Goals

- Maximize connections to community-identified destinations
- Combine the best aspects of the study routes and community input
- Provide short-term and long-term implementation options

Trail Description

Insights from Study Routes and New Ideas

We developed the *Green the Way Route* by combining the best features of the four study routes:

- *2008 Essential Route*: big ideas like the Turntable Park and the bridge over Huron Street
- *Minimal Rail Route:* acquiring easements and properties adjacent to the route to enhance the trail experience
- *Connections Route*: connection to West Park and separate options for cyclists and pedestrians
- *Stormwater Route*: acquiring easements and properties within the floodway, and route features like extensive rain gardens and environmental education opportunities

The *Green the Way Route* stands out in several ways when compared to the study routes. It would provide the longest trail, use the largest amount of existing City property, and has the greatest length of trail on existing streets and sidewalks.

The *Green the Way Route's* impacts on railroad private property and university property would be relatively moderate compared to the other routes; however, because the route would directly address flood mitigation and stormwater through property acquisition and structure removal, it has larger implications for non-railroad private property owners.

The *Green the Way Route* would also incorporate common trail features identified in the previous chapter, including gateway parks, trail design elements, railroad considerations, road and


Segment D
Segment C
Segment B
LINK TO B2B TRAIL
LINK TO DTE SITE
PARK AT 721 N. MAIN STREET
FIRST STREET BIKEWAY
415 WEST WASHINGTON
ALLEN CREEK OUTDOOR CLASSROOM
FINGERLE SOUTH
721 N. MAIN NORTH
227 FELCH SOUTH
FINGERLE NORTH
LINK TO WEST PARK
BRIDGE OVER HURON STREET
BROADWAY
River
Huron
MAIN ST.
SUMMIT ST.
WATER HILL
FELCH ST.
MILLER AVE.
KINGSLEY ST.
KERRYTOWN/ OLD 4th WARD
CATHERINE ST.
HURON ST.
WASHINGTON ST.
DOWNTOWN
LIBERTY ST.
WILLIAM ST.
UM CENTRAL CAMPUS
GERMANTOWN
JEFFERSON ST.
MADISON ST.
OLD WEST SIDE
1st ST.

Figure 5-1. Overview of proposed *Green the Way Route*

sidewalks crossings, and safety infrastructure. For more information on these features, refer to Chapter 4, "*Trail Features*."

While the proposed *Green the Way Route* adopts features from the study routes, it also contains new features and routing decisions. Of special note is the southern extension to E. Stadium Boulevard. This link would increase the trail's visibility and provide a connection to the Burns Park neighborhood. We also propose a new cyclist and pedestrian bridge over Huron Street.

Community Input: Desires & Concerns

Community input gathered from our information tables, online survey, and community meetings have been incorporated into the *Green the Way Route's* proposed design. Community members identified the *Green the Way Route's* major linkages, including: the Border-to-Border (B2B) trail, West Park, and the DTE Site. To address safety concerns, we've developed conceptual diagrams that create potential solutions at challenging intersections and crossings.

Community members expressed concerns about water quality and flooding in the Allen Creek valley. To address these concerns, the *Green the Way Route* would include rain gardens and educational displays to improve stormwater management. The majority of the trail would also be surrounded by linear park space minimizing obstructions to water flow in the floodway. Finally, the trail would be located primarily in the floodway, which presents opportunities to preserve open space and remove structures where there is danger of flooding.

Segment A: S. State Street to Hill Street

The *Green the Way Route* would begin south of downtown at the intersection of State Street and Stimson Street. Residents of the Burns Park neighborhood would also be able to access the

Table 5-1. *Green the Way Route* statistics

Total length of trail		
	3.56 mi 18,840 ft	
Length of trail (ft) within:		
City property	1,620	Parks, parking lots, and vacant sites currently owned by the City
Sidewalks and streets	7,170	Existing public right-of-way, including bridges
University property	850	
Railroad property	3,960	
Other private property	4,420	Includes property to be acquired/ redesigned
Crossings		
Railroad crossings	4	
Street crossings	22	All street crossings, including mid-block crossings
mid-block crossings	9	Street crossings where cross traffic currently does not stop
Changes proposed to existing property		
Parcels which would require easements	7	UM property and private, non-railroad property; multiple parcels belonging to the same owner are counted separately
Parcels to acquire/ redesign	12	Private, non-railroad parcels; multiple parcels belonging to the same owner are counted separately
Structures impacted	13	

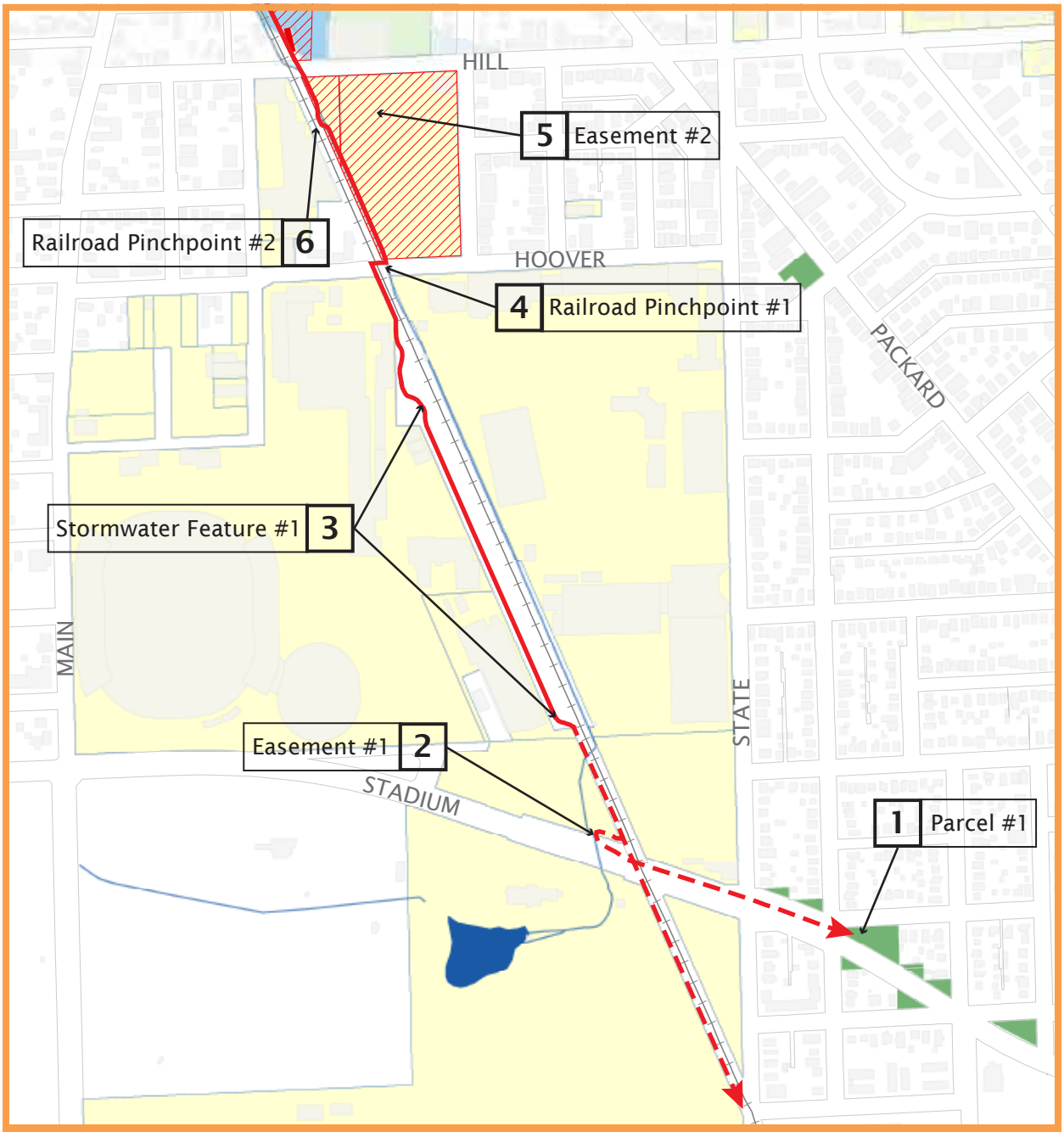


Figure 5-2. Segment A: State Street to Hill Street

1. Parcel #1: The western tip of Rose White Park would be conected to the greenway
2. Easement #1: A switchback trail from the railroad right of way to the E. Stadium Boulevard bridge
3. Stormwater Feature #1: Linear garden in railroad property leading to Turntable Park, the southern gateway park
4. Railroad Pinchpoint #1: Distance from west rail to east trail edge is 9.7 feet along 180-foot trail segment
5. Easement #2: Easement on two university parcels that comprise Elbel Field
6. Railroad Pinchpoint #2: Distance from east rail to west trail edge is 12 feet along 40-foot trail segment

trail by a new ADA-compliant ramp constructed along the University athletic parking lots (Call-outs 1 and 2). This ramp would directly connect the trail to E. Stadium Boulevard. The ramp's design would need to consider potential issues with bicycle velocity and switchbacks. As an alternative to E. Stadium Boulevard,. pedestrians could travel along Rose Avenue and use the existing stairs to reach Stadium.

Heading north, the trail would feature Turntable Park (Figure 5-3) a linear park which would act as the trail's south gateway (Call-out 3). The trail would weave through the linear park on the west side of the railroad. The park would include extensive rain gardens and stormwater infrastructure, which could possibly receive stormwater from the adjacent structures and parking lots.

Figure 5-3. On wide railroad property through UM's athletic campus, we propose a Turntable Park through this section of trail

At its north end, Turntable Park would widen to include the historic railroad turntable, and include educational signage. As with the north gateway at 721 N. Main Street, this south gateway would include a trail map and educational signage about the Allen Creek. Parking for trail users driving from other parts of Ann Arbor could be accommodated at the nearby University of Michigan parking lot.

Heading north from Turntable Park the trail would run through railroad property (Call-out 4). After crossing Hoover Street, the trail would require an easement from University of Michigan along the west side of Elbel Field up to Hill Street, as the railroad property narrows (Call-outs 5 and 6). Athletic event patrons could use this part of the trail to reach Michigan Stadium and Crisler Center.

Segment B: Hill Street to Liberty Street

From Hill Street to Liberty Street, the *Green the Way Route* would follow the the Allen Creek floodway. As a consequence of being in the floodway we propose a number of property acquisitions and structure removals to aid stormwater efforts and an Allen Creek Outdoor Classroom in the Downtown gateway at First Street and William Street.

Moving north from Hill, the trail would require an easement along the west side of the Fingerle

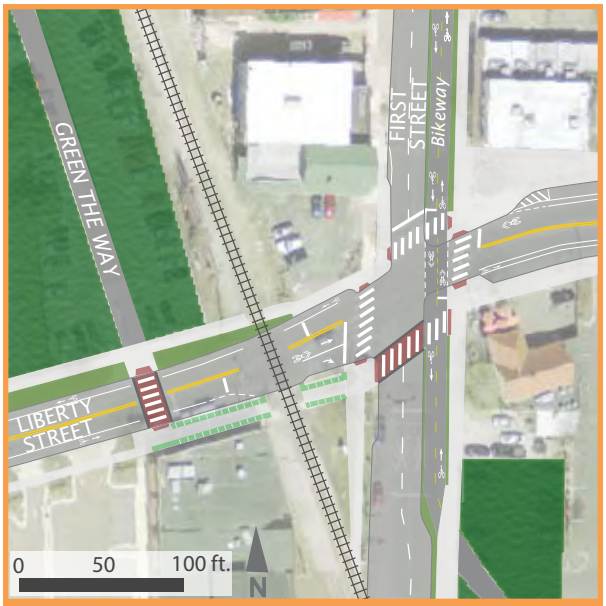


Figure 5-4. Suggested configuration for bikeway, roads, sidewalks, and trail at Liberty Street and First Street

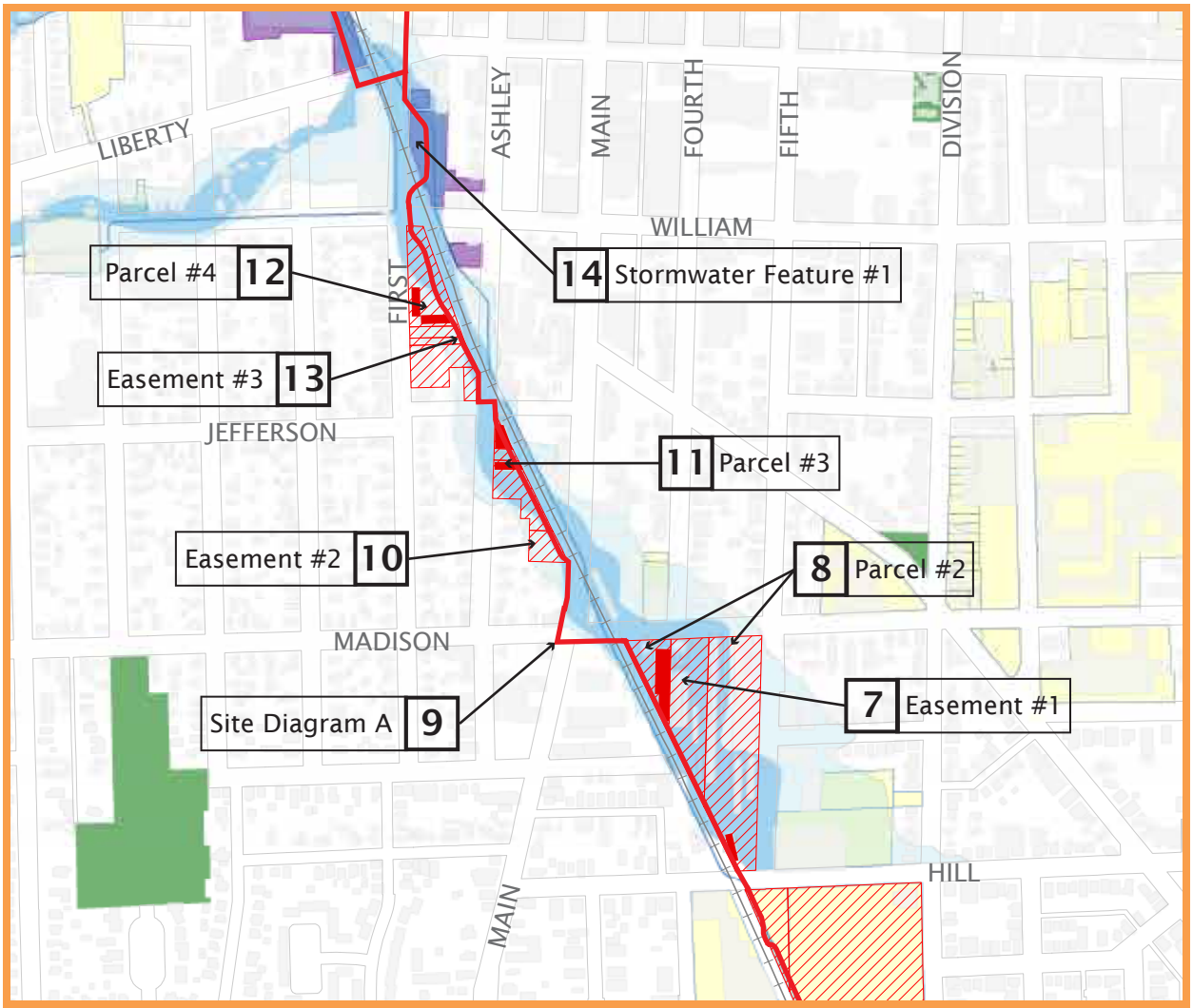


Figure 5-5. Segment B: Hill Street to Liberty Street

7. Easement #1: Easement across central Fingerle Lumber parcel.
8. Parcel #2: Acquire east and west Fingerle Lumber parcels and remove two structures.
9. Site Diagram A: Widen sidewalks on south side of Madison and west side of Main and reconfigure roadways.
10. Easement #2: Easement on parking lot at 544 S Main. Owner: 516-518 S. Main.
11. Parcel #3: Acquire three parcels (507, 511, and 521 South Ashley) and remove two structures.
12. Parcel #4: Acquire 221 West William and remove two structures. Owner: Fingerle Lumber.
13. Easement #3: Easement along backyards of parcels (200 W Jefferson, 431, 435, 441 and S First).
14. Stormwater Feature #1: 1st and William parcel would be an outdoor classroom featuring innovative educational displays of an active Allen Creek.

Lumber property, with two structures needing to be removed (Call-outs 7 and 8). If this property is redeveloped, the route could be integrated into future site redesign.

At Madison Street the route would cross to the west side of the tracks, widening the existing crosswalks to cross Main and Madison (Call-out 9). Continuing north through the intersection

of Jefferson Street and Ashley Street to William, the trail would require property acquisitions and easements immediately west of the railroad (Call-outs 10-13). On part of these acquired properties, the existing structures would be removed and replaced with stormwater infrastructure.

Continuing north, the trail would first cross William and then the railroad tracks to reach the Downtown gateway featuring the Allen Creek Outdoor Classroom. The Classroom would feature elements intended to educate the public on Allen Creek (Call-out 14). For information on crossings at Madison and Main, First and William, and First and Liberty, see Chapter 4, "*Trail Features – Specific Road and Sidewalk Crossings.*"

Leaving the Classroom, the route would split into a West Branch and an East Branch (Call-out 15). The East Branch would continue north as a bikeway along First, while the West Branch would cross First and Liberty to reach the City-owned 415 W. Washington Street property (see Figure 5-5).

Segment C: Liberty Street to Miller Avenue

The East and West Branches of the *Green the Way Route* would remain separate through this segment. The East Branch would continue along First Street, providing a direct route for bicyclists, while the West Branch would remain close to the railroad, providing a pleasant trail environment for pedestrians.

East Branch

The East Branch of the route would be a two-way bikeway along the east side of First through Catherine Street. The bikeway would be configured as a cycle track, a physically separated space between pedestrians and motor vehicles to create a more comfortable and safe bicycling environment.

As a result, pedestrians could use the expanded sidewalks and bicyclists could travel in both directions alongside First Street, which would remain one way running south for vehicles. To protect bicyclists and pedestrians crossing Liberty, Washington, Huron, and Miller, we propose adding dedicated bicycle stoplights at intersections. These would be green when cars had a red left arrow, preventing all turns across the bikeway and crosswalk. Dedicated bicycle signals have worked well on a cycle track on Dearborn Street in Chicago, a similar but busier one-way street (Figure 5-7).

West Branch

The West Branch of the route would continue north in the Allen Creek floodway to the 415 W. Washington Street property (Call-out 16). This City-owned site has been identified by the City for potential redevelopment. Heading north from 415 W. Washington, the branch would cross Washington mid-block. On the north side of Washington the ramping for a new pedestrian and bicycling bridge over Huron Street would begin. This bridge would require an easement from the YMCA (included in the YMCA's development agreement) and the acquisition of 401 W. Huron Street with removal of its structure (Call-out 17

Figure 5-6. A dedicated bicycle stoplight gives cars a red arrow when bicyclists and pedestrians are crossing on the Dearborn Street cycle track in Chicago

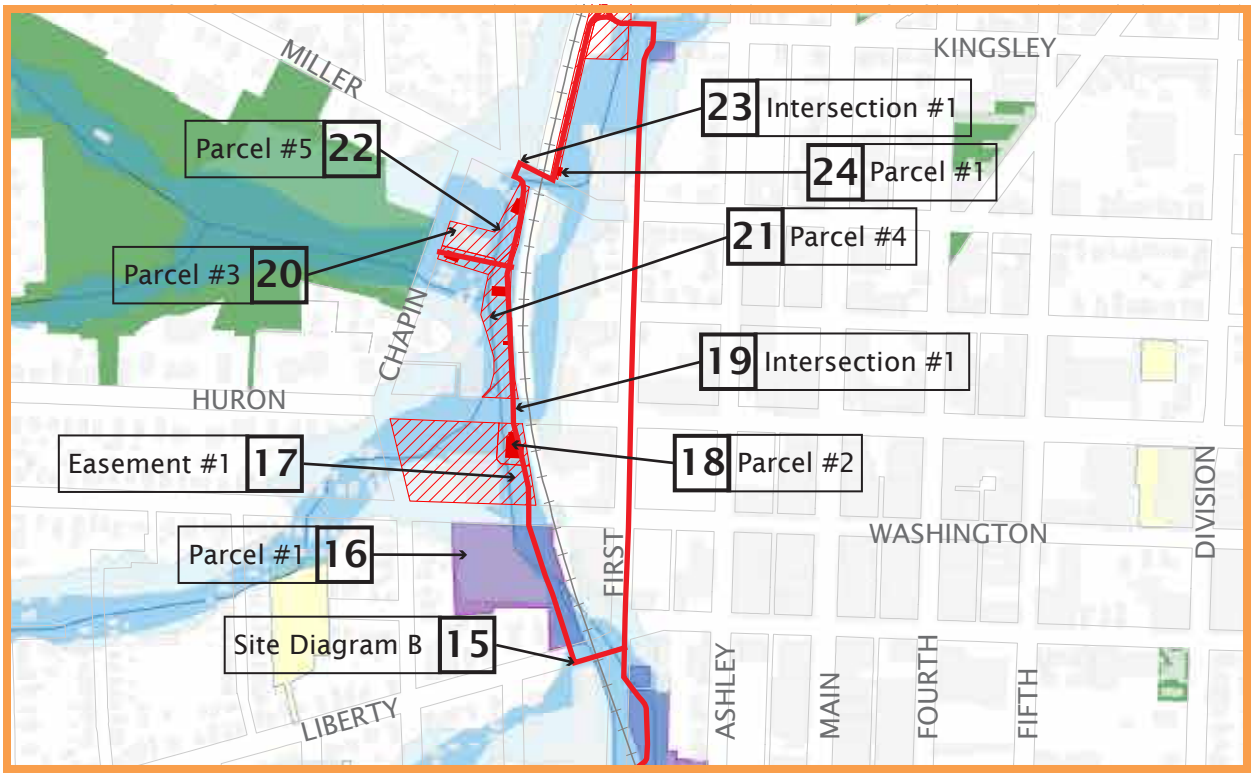


Figure 5-7. Segment C: Liberty Street to Miller Avenue

15. Site Diagram B: Intersection reconfiguration to accommodate trail crossings and First St. bikeway.
16. Parcel #1: 415 W. Washington redesign opportunity.
17. Easement #1: Easement along east edge of YMCA property.
18. Parcel #2: Acquire 401 W Huron and remove one structure.
19. Intersection #1: Bridge over Huron St. provides safe crossing, highlights the greenway, and creates a prominent gateway to downtown.
20. Parcel #3: Acquire 208 Chapin St. and remove one structure to provide connection to West Park.
21. Easement #3: Acquire eastern portion of 390 W. Huron St. and remove two structures.
22. Parcel #5: Acquire eastern portion of 218 Chapin St and remove one structure fronting Miller Ave.
23. Intersection #1: Use intersection at Spring St and Miller Ave to create visible crossing.

and 18). The bridge would provide a safe way to cross Huron Street, highlight the trail, and create an entry gate for downtown Ann Arbor.

The West Branch would descend from the bridge on the north side of the Huron Street, requiring property acquisition and structure removal to travel through the next block to Miller Avenue (Call-outs 21 and 22). A property along Chapin Street would be acquired to create a direct connection to West Park from the trail (Call-out 20). The confluence of the Allen Creek branch running through West Park and Allen Creek occurs within this city block, and signage would draw the attention of trail users.

Segment D: Miller Avenue to the Huron River

The East and West Branches of the route would rejoin in this segment of trail and connect the City-owned property at 721 N. Main Street to the Border-to-Border (B2B) Trail.

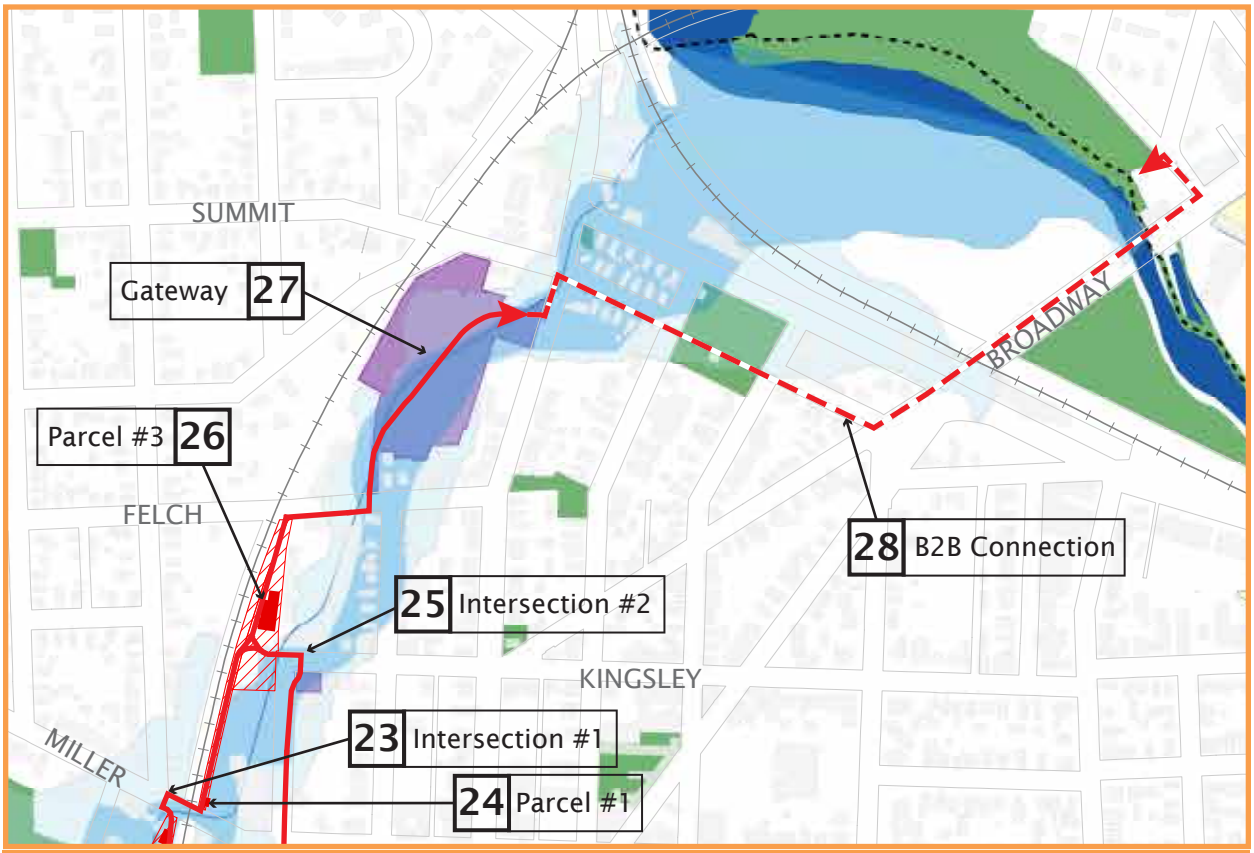


Figure 5-8. Segment D: Miller Avenue Street to the Huron River

23. Intersection #1: Use intersection at Spring St and Miller Ave to create visible crossing
24. Parcel #1: Acquire 410 Miller Ave and remove one structure.
25. Intersection #2: Connection of East Branch and West Branch
26. Parcel #3: Acquire property to connect to Felch Street
27. North Gateway: 721 N. Main Street
28. North Extension: Connection to Hurn River and B2B

East Branch

Heading north from Miller Street, the bikeway would continue along the east side of First Street to the intersection with Kingsley Street. After passing by the Fish Garden, the branch would cross Kingsley and head west to reconnect with the West Branch (Call-out 25). Between Liberty and Kingsley, the bikeway would cross 11 total driveways and require the removal of 19 parking spaces (Table 5-2). For more detail on how we propose modifying First Street in order to create a bikeway, enhance sidewalks, and add linear rain gardens, please refer to Appendix H.

West Branch

The West Branch would cross Miller, travel east under the railroad bridge, and continue north through an acquired property that is immediately east of the railroad (Call-outs 23 and 24); this may require upgrades to sidewalks and installing a crosswalk at Spring Street. Just past Kingsley, the branch would be reunited with the East Branch and continue as a single trail.

Continuing north, the reunited trail would require property acquisitions to reach Felch Street (Call-out 26). These acquisitions would create opportunities for redevelopment near the First

Table 5-2. Parking spaces removed and driveways crossed by the East Branch of the proposed *Green the Way Route*	
Type of parking space	
half-price meter	13
full-price meter	4
loading zone	2
Total parking spaces removed	**19**
Type of driveway	
residential	5
private parking lot	4
public parking lot	2
Total driveways crossed	**11**

and Kingsley intersection and provide additional rain gardens. Lighting and visibility would require special consideration in this segment of trail. At Felch, the trail would turn east and cross Felch to reach the 721 N. Main Street site, another potential redevelopment site. 721 N. Main Street would also serve as the north gateway for the trail. This site would include bicycle racks, a trail map, and educational signage about Allen Creek (Call-out 27).

From the northeast corner of the 721 N. Main Street site, the route would follow Summit Street through Wheeler Park to the Broadway Bridge, where it would cross over the Huron River to connect to the DTE Site and the B2B Trail (Call-out 28). This connection would represent the best short-term solution for connecting to the B2B. For a more detailed discussion of future options to connect the two trails, please see *North Extension and Connection to the Huron River,* later in the chapter..

PHASING

Phasing the implementation of the *Green the Way Route* would allow for the gradual construction of the trail. In the short term, phasing would give Ann Arbor residents a wanted amenity and increase connections inside the City. As residents begin using completed parts of the trail, the momentum to finish the greenway and connect it to other destinations will grow.

The following phases are arranged based on the complexity of construction, popularity of individual trail segments, and avoidance of gaps between completed trail segments. Complexity in later phases relates to negotiations with the University, Railroad, and other private property owners. These negotiations could begin during the construction of early trail segments to speed the development of a full, continuous trail.

Inclusion in the Master Plan

Before construction could begin, the City would need to first adopt the recommendations from this report, along with other documents identified in Chapter 2, into a master plan focused on trail and stormwater goals. That plan would be adopted into the City's Master Plan, for example within the Parks and Recreation Open Space plan or Sustainability Framework. These steps would clearly show the importance of the trail in City policy, better position trail-related projects for grant funding, and demonstrate the City's commitment so that other property owners such as the University of Michigan could plan accordingly.

Phase 1: Use City properties and streets

In this phase, trail construction in **Segment C** and **Segment D** would depend on coordination with City units, including Parks and Recreation and Systems Planning, as well as the Downtown Development Authority (DDA), but would not require property negotiations with other entities.

First, we recommend developing the trail through the 721 N. Main Street site and to the Border-to-Border trail. **Second,** we recommend creating the Bikeway on First Street and the Downtown gateway with the Outdoor Classroom at the

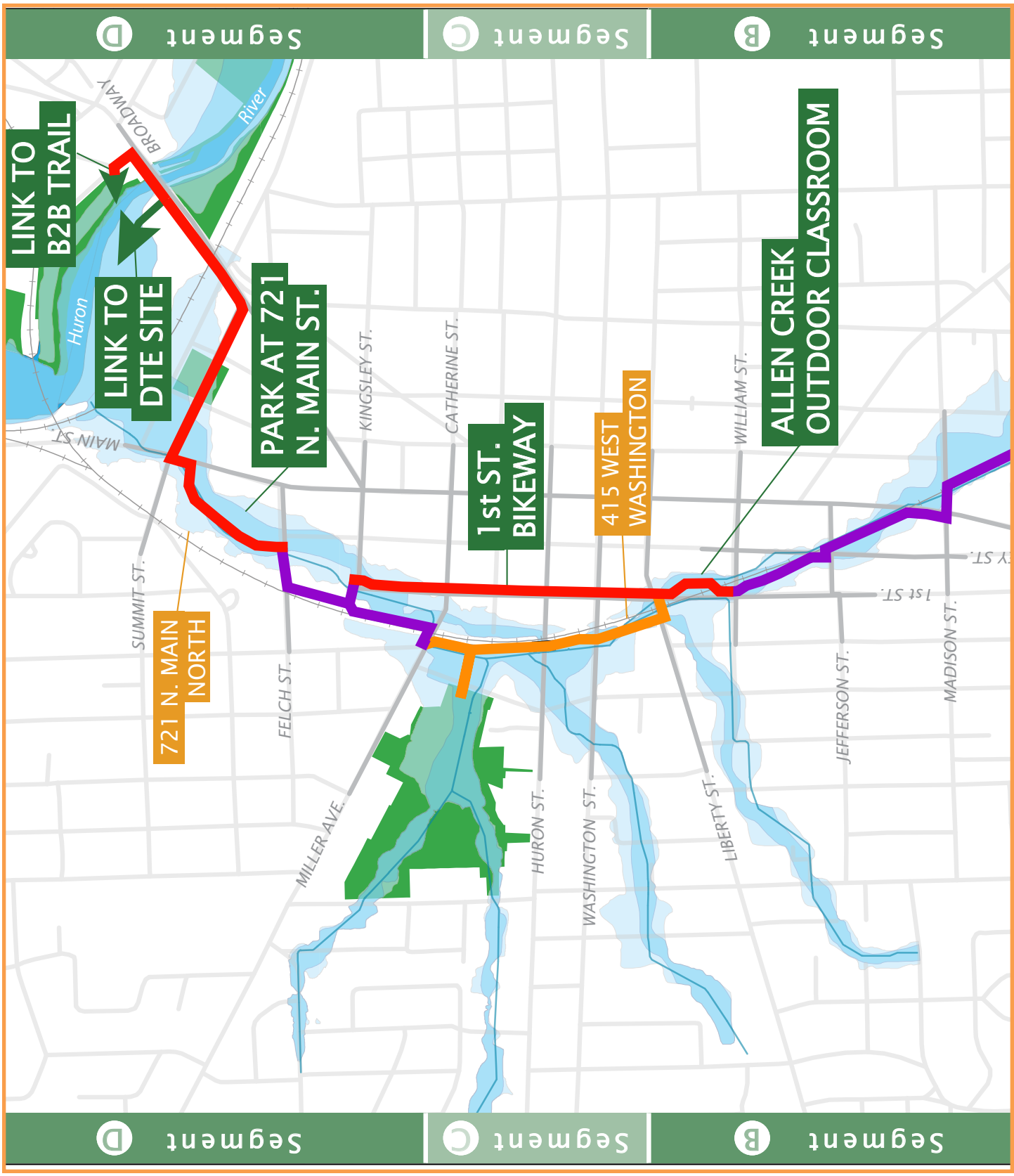

Segment D
Segment C
Segment B
LINK TO B2B TRAIL
LINK TO DTE SITE
PARK AT 721 N. MAIN ST.
1st ST. BIKEWAY
415 WEST WASHINGTON
ALLEN CREEK OUTDOOR CLASSROOM
721 N. MAIN NORTH
BROADWAY
River
Huron
MAIN ST.
SUMMIT ST.
FELCH ST.
MILLER AVE.
KINGSLEY ST.
CATHERINE ST.
HURON ST.
WASHINGTON ST.
LIBERTY ST.
WILLIAM ST.
JEFFERSON ST.
MADISON ST.
1st ST.
Segment D
Segment C
Segment B

Figure 5-9. Phasing for proposed *Green the Way Route*

BURLINGTON, VT

Burlington's Island Line trail

Burlington, VT has a well developed recreational trail network. The centerpiece of the network is the Island Line Trail, which follows an abandoned rail bed along Lake Champlain. The Island Line connects to a 10-mile "Cycle in the City" loop connecting Burlington parks, historic districts and shopping streets. The system has paved and gravel paths, bicycle lanes on city streets, dedicated bridges and even a bicycle ferry.

Figure 5-10.Local Motion's bicycle ferry

From 1971 to 1988 the trail was constructed in sections as property issues were settled. This allowed Burlington residents to use parts of the trail as soon as possible, making it part of the culture of the City. The trail started in 1971 when a group of volunteers cleared the first three miles of the abandoned Island Line rail bed. Ownership of the railroad propoerty was unclear, so in 1981 the City began to clear titles and acquire the parcels needed for the 7-mile trail section within city limits. Construction started in 1985 and was largely complete within a year, however some properties were contested and unconnected until 1988 (Smith, p.6).

The next extension of the trail was also an example of incremental expansion. Local Motion, a non-profit organization working to expand "people-powered transportation" in Burlington, started a bicycle ferry service across the Winooski River in 1997. Originally operated by volunteers, the City assumed service in 2000 and eventually a new bridge opened in 2004. Local Motion now runs a ferry at the next gap in the Colchester Causeway across Lake Champlain.

Lessons for an Allen Creek Trail

The Island Line trail shows that extensive trail networks are built over time. Further, it demonstrates how a small start and incremental expansion can build public use, creating support for larger investments. The Burlington experience was summed up by a Kerrytown Market visitor from Vermont who offered this advice, "The best thing is just get started. We began clearing trees in the 70's, ran a ferry, and just a few years ago opened a new bridge. We did it in parts and people just started using it."

Ficure 5-11. Winooski River Bridge

First and William site. A temporary connection between the Bikeway and the 721 N. Main Street site along existing sidewalks could be indicated through new signs and pavement markings. **Third,** we recommend developing the trail and stormwater features in the 415 W. Washington site, connecting the Outdoor Classroom to the YMCA.

When complete, this phase would result in improved **flood control** by removing structures at the base of the floodway, better **access to recreational destinations,** especially the B2B trail, and improved **traffic safety** for bicyclists and pedestrians traveling downtown.

Phase 2: Complete a continuous route

In this phase, the City would negotiate easements across non-City properties in Segments A, B, and D, including railroad properties, and acquiring others as needed (see Figures 5-2, 5-4, 5-6). Some structures would be removed. Plans for this phase would need to be coordinated with The Connector transit study.

For this phase we recommend starting in **Segment A**, where the trail crosses larger properties, including the longest proposed railroad easement, and where there are fewer property-owners with which to negotiate. However, exact sequencing will depend on property-owners' situations and the progress of negotiations. Temporary signs and pavement markings along Madison Street to First Street and/or Ashley Street can avoid a gap in Segment B during trail construction.

When complete, this phase would result in a **continuous trail** from the Stadium area to the Huron River, a direct connection to many **neighborhoods and downtown,** and improved **flood control** and **water quality** through structure removal and rain gardens.

Phase 3: Connect the Huron Street Bridge

In this phase, the City would negotiate an easement, acquire properties, and demolish structures in **Segment C** in order to construct the West Branch of the trail and its connection to West Park. Building the bridge over Huron Street, which is a designated as a state highway, would involve negotiations with the Michigan Department of Transportation .

Completing this last phase of the *Green the Way Route* would result in a high-quality continuous path with **more options and connections** for all trail users, including a safe, barrier-free way to cross Huron. Structure removal would also result in a continuous path for floodwater to leave the Allen Creek valley, further improving **flood control**.

Figure 5-12. Suggested configuration for bikeway, roads, sidewalks, and trail at Kingsley Street and First Street

CONTINUED COMMUNITY ENGAGEMENT

As stated in our community engagement chapter, we believe that the *Green the Way Route* will not be built unless the Ann Arbor community supports it. To earn that support, we have begun a conversation with the community through public outreach, surveys, and community group meetings. We have outlined a couple ways for the City of Ann Arbor to continue that conversation.

The first step is to share the *Green the Way Route* with neighborhood and advocacy groups. The *Green the Way Route* incorporated feedback from the groups with which we were able to meet in the fall of 2014, so sharing our recommendations with them lets them tell us what we got right and what still needs to be changed. Additionally, a special effort should be made to engage groups that weren't able to meet with the Green the Way team to make sure their feedback is reflected in future decisions.

The second step is to hold targeted meetings on specific issues of concern and design decisions related to the trail development. While some residents may support the Allen Creek trail as a broad concept, they may have differing opinions on certain key features. For example, implementing the bikeway along First Street and Kingsley Street would include speaking with residents and business owners near the path in order to incorporate their feedback into the final design (Figure 5-12).

Finally, the City of Ann Arbor should hold public meetings on the Green the Way trail recommendations to gather feedback from the general community. Residents who provided e-mail addresses through the public outreach and survey should be invited to attend, in addition to announcements in local newspapers and public gathering places. These public hearings will allow the City to inform residents of the Green the Way recommendations that have been selected and prioritized for implementation. These meetings are especially important for engaging residents who are interested in using the trail, but don't live in one of the nearby neighborhoods.

As the City of Ann Arbor continues this conversation it is important to communicate that these recommendations are a step toward a Master Plan and actionable Allen Creek trail. The

Figure 5-13. Posters at local businesses can inform residents of public meetings on an Allen Creek trail

support for the trail we have witnessed should grow as the community sees the City taking steps to make the plans a reality.

NORTH EXTENSION AND CONNECTIONS TO THE HURON RIVER

There are challenges to connecting an Allen Creek trail to the Border-to-Border (B2B) trail and destinations at the Huron River. The Huron River itself blocks access to the B2B, and the east-west (MDOT) railroad tracks must also be crossed. Additionally, the DTE site on the south river bank has long made that area inaccessible. However, DTE has completed soil remediation and solicited site plan proposals. As this bank opens up for development the City should require clear public access to the river. As part of the 2013 Michigan Natural Resources Trust Fund grant application Ann Arbor prepared a map showing possible future connections (see Appendix I.) Currently, there are only two places to cross the Huron River in the vicinity of an Allen Creek Trail: Argo Dam and the Broadway Bridge.

Immediate Connection

In the short-term, we recommend using the Broadway Bridge to cross the Huron River and the MDOT railroad tracks. The primary advantage of this solution is that it uses existing infrastructure to connect to the B2B trail, making it a feasible short-term option. Additionally, this solution incorporates Wheeler Park into an Allen Creek trail (for additional details see "*Phasing*" earlier in the chapter). One potential challenge is the complex intersection where Summit, Broadway, Beakes, Detroit, and Division Streets all come together. This intersection would require some upgrading for clear trail access.

Stormwater and Trail Connections to the Huron River

Looking into the near future, the City plans to begin construction of a tunnel under the east-west MDOT railroad berm along Depot Street that will be useable by pedestrians. This presents another opportunity to connect an Allen Creek trail to the B2B Trail, as this tunnel would be easy to reach from 721 N. Main Street site. The

Figure 5-14. Overhead view of the City-owned 721 N. Main Street site; there are a number of potential options to connect this site to the Border-to-Border trail

berm tunnel would connect to the DTE site. Part of the DTE site is intended for open space as part of a larger project in the next few years, and could add to the trail's recreational destinations. The tunnel, which is primarily intended to enhance water flow to the Huron River during flood events, would also increase awareness of stormwater in the Allen Creek valley.

Crossing Over N. Main

A potential long-term solution to connect an Allen Creek trail to the B2B trail is a walking and bicycling bridge over N. Main Street north of Depot. The City considered this idea in its N. Main-Huron River Task Force Report,

and the Conservancy has supported the idea. While such a bridge poses feasibility challenges, including cost and limited space, it could become a recognizable symbol for the trail and create a striking entry into Ann Arbor from the north.

SOUTH EXTENSION TO PITTSFIELD TOWNSHIP

Although the southern boundary of our study area is S. State Street and E. Stadium Boulevard, we recognize opportunities for the trail to extend farther south. The S. State Street area has a mix of commercial, industrial, residential, and retail land uses. A southern extension could connect Ann Arbor residents to jobs and leisure opportunities, while also connecting Pittsfield Township to the Border-to-Border Trail.

Figure 5-15. Looking south at Eisenhower Parkway East in Ann Arbor

Support in Existing Plans

The concept of a southern non-motorized trail is already part of planning efforts. Most recently, the S. State Street Corridor Plan makes a recommendation to create a non-motorized trail that links an Allen Creek trail to Pittsfield Township. More specifically, it recommends using a city-owned parcel that is 66 ft wide to create an east-west connection from S. State Street to S. Industrial Highway. These recommendations are further supported by the City's Non-motorized Transportation Plan, which recommends bicycle facility improvements along S. State Street, and the Master Plan Land Use Plan, which suggests increasing parkland to accommodate further residential development.

Opportunities for Trail

The railroad south of S. State Street and E. Stadium Boulevard has a variety of characteristics that give it potential for extending the Allen Creek trail. The railroad property is consistently 100 feet wide across relatively flat land, which offers some potential for trail development. Additionally, the adjacent land uses are primarily commercial and industrial and have large lot sizes with spacious landscaping and underused parking lots. While the railroad property may be wide enough to accommodate a trail, it may be aesthetically beneficial to create more separation between it and the industrial nature of the railroad by securing easements from nearby landowners. Nonetheless, between the right-of-way and adjacent land uses there exists space for a 14-foot wide trail that conforms to AASHTO standards.

Residential Trail Users

The nearby residential neighborhoods could provide users for the trail. The residential areas directly east of S. Industrial Highway are zoned as R1B, R1C, and R1D and are fairly compact single units. On November 7th, members of our team observed people using several informal paths to cross the railroad in the area between Stimson Street and E. Ellsworth Road, suggesting that there is demand for pedestrian facilities in the area.

ENVISIONING AN ALLEN CREEK TRAIL IN 2024

In our community engagement efforts, we witnessed a lot of excitement in the Ann Arbor community for an Allen Creek trail. We close our report with an imagined future for the trail, that is meant to capture that excitement:

Figure 5-16. Indianapolis Cultural Trail

It is 2024, and the Allen Creek Trail is an amenity that Ann Arbor residents are proud to have invested in. The Trail and its parks buzz with activity most hours of the day. Bicyclists and walkers on the Border-to-Border Trail use the Trail to reach destinations in downtown Ann Arbor. It provides a comfortable place for senior walking groups to walk and talk, and for children learning to bicycle to test out their new wheels. Downtown residents appreciate having parks within walking distance of their homes. On football Saturdays, thousands of fans use the Trail to walk between the stadium and downtown.

The Trail has positively affected stormwater issues in the Allen Creek valley. Rain gardens have improved water flow during flooding events. Educational materials along the trail have created an awareness of flooding issues in the valley, prompting residents to install rain gardens and barrels at their own homes. Children enjoy interacting with the exhibits in the Allen Creek Outdoor Classroom.

The Allen Creek Trail has become an important part of Ann Arbor's identity, enjoyed by residents and visitors alike. Many cannot imagine Ann Arbor without it.

This page is intentionally left blank

WORKS CITED

Ann Arbor Area Transportation Authority. (2014). *Connecting our Communities: Summary Report for Evaluation of Downtown Ann Arbor North-South Commuter Rail (WALLY) Station Sites*. Retrieved from http://www.theride.org/Portals/0/Documents/5AboutUs/WALLY/2.4.10%20NS_CommuterRail_AA%20Report%202014_0701%20low%20res.pdf

City of Ann Arbor. (1981). *Plan for Park, Recreation and Open Space*. Ann Arbor, MI.

City of Ann Arbor. (1988). *Ann Arbor Downtown Plan*. Ann Arbor, MI.

City of Ann Arbor. (2013). *Michigan Natural Resources Trust Fund 2013 Grant Application for 721 North Main Street Improvements*.

City of Ann Arbor. (2013, November 18). *Non-motorized Transportation Plan Update*. Retrieved from http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx

City of Ann Arbor, Allen Creek Greenway Task Force. (2007). *The Allen Creek Greenway - Findings and Recommendations*. Retrieved from: http://www.a2gov.org/greenway/Pages/AllenCreekGreenwayHome.aspx

Federal Highway Administration (FHWA). (2002, August). *Rails-with-Trails: Lessons Learned*. Retrieved from http://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/index.cfm

Federal Highway Administration (FHWA). (2009). *Manual on Uniform Traffic Control Devices*. Part 8: Traffic Control for Railroad and Light Rail Transit Grade Crossings. Retrieved from http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm

Mayer, James. (2010, March 6). "Mayor Adams Finds $20 Million for Bike Boulevards." Oregonian. Retrieved from http://www.oregonlive.com/portland/index.ssf/

Michigan Department of Transportation (MDOT). (n.d.). *Required Clearances Near Railroad Tracks*. Retrieved from http://www.michigan.gov/mdot/0,4616,7-151-11056_22444_56495---,00.html

Sanderson, P., Sebastian, J., & Shaw, A. (2012). *Visioning the Allen Creek Greenway: Designing a Path, Creating a Place*. Retrieved from http://natureforcities.snre.umich.edu/about/student-masters-projects/

Smith, Melissa (unknown). "The Beginnings of the Burlington Bike Path and the Cycle the City Route, 1971-1999." Retrieved from http://www.localmotion.org/images/BurlingtonBikePathReportFINALbyMelissaSmith.pdf

Washtenaw County Water Resources Commissioner. (August 6, 2014). *Rules and Guidelines: Procedures and Design Criteria for Stormwater Management Systems.*

CASE STUDY RESOURCES

Seattle, WA

www.traillink.com/trail/burke-gilman-trail.aspx

www.americantrails.org/resources/railtrails/RWTcasestudies.html

www.seattlebikeblog.com/2014/11/12/raised-crosswalk-bike-leaning-rail-better-signal-timing-coming-to-burke-gilman-near-u-village/

Boulder, CO

nextcity.org/features/view/you-cant-stop-urban-flooding

303cycling.com/Boulder-flooded-bike-paths-helped-move-waters

www.bikede.org/2013/09/25/boulder-biking-slowed-by-floods/

www.nytimes.com/2014/09/07/travel/to-ride-again-another-day-in-colorado.html

www.dailycamera.com/colorado-flood-2013-one-year-later/ci_26388288/historic-storm-recalled-its-lessons-learned - Photo 2

Indianapolis, IN

indyculturaltrail.org/

Portland, OR

Schmidt, Brad. (2013, November 5). "City Scales Back Utility Money for Bike Boulevards: Portland City Hall Roundup." Oregonian Retrieved from http://www.oregonlive.com/portland/index.ssf/2013/11/city_scales_back_utility_money.html

Schmidt, Brad. (2014, April 24). "Portland Utility Lawsuit: City Wants to Appeal Judge's Decision over Authority, Misspent Money." Oregonian. Retrieed from http://www.oregonlive.com/portland/index.ssf/

Burlington, VT

www.enjoyburlington.com/Parks/BikePath1.cfm

www.localmotion.org/

APPENDICES

78 Appendix A: List of Docs Reviewed

85 Appendix B: Survey Questions

90 Appendix C: Survey Results

91 Appendix D: Open Ended Suggestions

97 Appendix E: Open Ended Trail Features

101 Appendix F: Open Ended Trail Connections

104 Appendix G: Pedestrian Counts

105 Appendix H: Cycle Track Configurations

111 Appendix I: 721 N. Main Potential B2B Connection

Title	Year	Organization	URL
Allen's Creek Watershed Management Plan	2001	Allen's Creek Watershed Group	http://www.hrwc.org/publications/watershed-management-plans/
Rails-with-Trails: Lessons Learned	2002	US Department of Transportation	http://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page00.cfm
City of Ann Arbor Natural Features Master Plan	2004	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx
Allen Creek Greenway Preliminary Feasibility Study	2005	Stephen M. Ross School of Business at the University of Michigan (Student Report)	http://www.bus.umich.edu/MAP/AllenCreek/AllenCreek_FinalReport_v4.pdf
Recommended Vision & Policy Framework for Downtown Ann Arbor: Downtown Development Strategies Project	2006	Prepared by Calthorpe Associates and Strategic Economics for City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Documents/MasterPlans/DevelopmentStrategiesReport_02-17-06.pdf
The Allen Creek Greenway - Findings and Recommendations	2007	Allen Creek Greenway Task Force, City of Ann Arbor	http://www.a2gov.org/greenway/Pages/AllenCreekGreenwayHome.aspx
City of Ann Arbor Flood Mitigation Plan	2007	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/Sustainability/sustainability/Pages/FloodMitigation.aspx
Proposed Route of the Allen Creek Greenway: Essential Route and Future Opportunities	2008	Allen Creek Greenway Conservancy	N/A
Request for Proposal for the Acquisition and Redevelopment/Reuse of City-Owned Property 415 West Washington Street	2008	City of Ann Arbor	http://www.mitn.info/Bids/Attachments.asp?TN=110746&GroupID=1077
Frequently Asked Questions 415 W. Washington Request for Proposals	2008	City of Ann Arbor	http://www.mitn.info/Bids/Attachments.asp?TN=110746&GroupID=1077
Proposal in response to 415 W. Washington RFP	2008	Ann Arbor Art Center	N/A

Proposal in response to 415 W. Washington RFP	2008	Morningside Equities Group	N/A
Proposal in response to 415 W. Washington RFP	2008	Old Westside Square Development Group	N/A
City of Ann Arbor Downtown Plan	2009	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx
City of Ann Arbor Master Plan: Land Use Element	2009	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx
City of Ann Arbor Transportation Master Plan Update	2009	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx
Planning Along the Huron: Huron River and Impoundment Management Plan	2009	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/Sustainability/sustainability/Pages/HRIMP.aspx
Washtenaw County Brownfield Redevevlopment Program Guide	2009	Washtenaw County	http://www.ewashtenaw.org/government/departments/community-and-economic-development/housing-and-community-infrastructure/wcbra/wcbra_administrative_documents/wcbra_program_guide_sep_09
City Council Resolution R-10-28 calling for the Creation of an Innovative Process of Community Collaboration to Explore a Greenway Park and Arts Center at 415. W. Washington	2010	City of Ann Arbor	N/A
Middle Huron Stormwater Plan for Addressing T otal Maximum Daily Loads	2010	Middle Huron Watershed Stormwater Advisory Group	http://www.hrwc.org/our-work/programs/middle-huron-sag/

Public Education Plan Template for Middle Huron Stormwater Advisory Groups Members Participating in the Waterhshed Municipal Stormwater Permit	2010	Middle Huron Watershed Stormwater Advisory Group	http://www.a2gov.org/departments/systems-planning/water-resources/Stormwater-Permit/Pages/PEP.aspx
Public Participation Plan for the Middle Huron River Subwatershed (Washtenaw County)	2010	Huron River Watershed Council	http://www.wcroads.org/sites/default/files/pdf/Environmental-PDFs/Middle_Huron_PPP.pdf
City of Ann Arbor Parks & Recreation Open Space Plan 2011-2015	2011	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx
City Council Resolution R-11-325 in Support of the Allen Creek Greenway	2011	City of Ann Arbor	N/A
Survey Data from City of Ann Arbor Parks & Recreation Open Space Plan 2011-2015	2011	City of Ann Arbor	N/A
City of Ann Arbor 2011 Storm Water Management Program	2011	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/water-resources/Stormwater-Permit/Pages/PEP.aspx
Ann Arbor Connector Feasbility Study: Final Report	2011	Prepared by URS for City of Ann Arbor, Ann Arbor Area Transportation Authoriry, Univeristy of Michigan and the DDA	http://www.aaconnector.com/about.html
Bacteria Reduction Implementation Plan for the Middle Huron River Watershed	2011	Middle Huron Watershed Partners and Stormwater Advisory Group	http://www.hrwc.org/publications/watershed-management-plans/
Watershed Management Plan for the Huron River in the Ann Arbor - Ypsilanti Metropolitan Area	2011	Prepared by the Huron River Watershed Council for the Washtenaw County Drain Commissioner	http://www.ewashtenaw.org/government/drain_commissioner/project-status/huron_plan/hrwp.pdf
Visioning the Allen Creek Greenway: Designing a Path, Creating a Place	2012	School of Natural Resources and Environment at the University of Michigan (Student Report)	http://natureforcities.snre.umich.edu/about/student-masters-projects/

City of Ann Arbor FY2014-2019 Capital Improvements Plan: Transportation - Alternative Transportation	2012	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/capital-improvements/Pages/FY2014-2019CapitalImprovementsPlanDocument.aspx
City of Ann Arbor FY2014-2019 Capital Improvements Plan: Municipal Facilities – City Owned Buildings	2012	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/capital-improvements/Pages/FY2014-2019CapitalImprovementsPlanDocument.aspx
City of Ann Arbor FY2014-2019 Capital Improvements Plan: Municipal Facilities – Parks and Recreation	2012	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/capital-improvements/Pages/FY2014-2019CapitalImprovementsPlanDocument.aspx
City of Ann Arbor FY2014-2019 Capital Improvements Plan: Utilities – Storm Sewer System	2012	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/capital-improvements/Pages/FY2014-2019CapitalImprovementsPlanDocument.aspx
Phase I Environmental Assessment: 721 North Main Street	2012	Prepared by Tetra Tech for City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Documents/721%20N%20Main/1%20ESA1%20pg%201-44.pdf
AASHTO Guide for the Development of Bicycle Facilities	2012	American Association of State Highway and Transportation Officals (AASHTO)	N/A
City of Ann Arbor Non-motorized Transportation Plan (with 2013 update)	2013	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx

City of Ann Arbor South State Street Corridor Plan	2013	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx
City of Ann Arbor Sustainability Framework	2013	City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Pages/City-Master-Plan.aspx
721 North Main Street Existing Facility Assessment: Final Report	2013	Prepared by inForm Studio for City of Ann Arbor	http://www.a2gov.org/departments/planning-development/planning/Documents/North%20Main/721NMainBuildingAssessment-Final.pdf
The North Main Street - Huron River Corridor Vision for the Future	2013	City of Ann Arbor The North Main-Huron River Corridor Vision Task Force	http://www.a2gov.org/departments/planning-development/planning/Pages/NorthMainHuronRiverCorridorProject.aspx
Michigan Natural Resources Trust Fund Grant Application for 721 North Main Street Improvements	2013	City of Ann Arbor	N/A
Allen Creek Berm: Feasibility of Flood Reduction and Pedestrian Options Memo	2013	Prepared by OHM Advisors for City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/water-resources/Stormwater/stormwater-projects/Pages/AllenCreekBermStudy.aspx
Ann Arbor Connector Preliminary Route Alternatives	2013	Ann Arbor Connector	http://www.aaconnector.com/presentations.html
2040 Long Range Transportation Plan for Washtenaw County	2013	Washtenaw Area Transportation Study (WATS)	http://www.miwats.org/2040lrp/home/
Floodplain Management in Michigan: Quick Guide	2013	Michigan Department of Environmental Quality	http://www.michigan.gov/documents/deq/lwm-quickguide_202673_7.pdf
NACTO Urban Street Design Guide	2013	National Association of City Transportation Officials	http://nacto.org/usdg/

America's Rails-with-Trails: A Resource for Planners, Agencies and Advocates on Trails Along Active Railroad Corridors	2013	Rails-to-Trails Conservancy	http://www.railstotrails.org/ourWork/reports/railwithtrail/report.html
Ann Arbor Allen Creek Greenway Collected Parcel Information	2014	Peter Allen & Associates	N/A
Ann Arbor Stormwater Model Calibration and Analysis Project - Public Meeting 11/6/2014	2014	City of Ann Arbor	N/A
Ann Arbor Station Environmental Review Site Tour Itinerary	2014	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/Transportation/Documents/AAS--Tour_Packet_9-15-2014_Combined.pdf
Connecting our Communities: Summary Report for Evaluation of Downtown Ann Arbor North-South Commuter Rail (WALLY) Station Sites	2014	Prepared by Smithgroup JJR and Quandel Consultants for the Ann Arbor Area Transportation Authority	http://www.theride.org/Portals/0/Documents/5AboutUs/WALLY/2.4.10%20NS_CommuterRail_AA%20Report%202014_0701%20low%20res.pdf
North-South (Wally) Commuter Rail History and Status Report - June 2014	2014	Ann Arbor Area Transportation Authority	http://www.theride.org/AboutUs/Initiatives/NorthSouthCommuterRail/CurrentEfforts
Rules and Guidelines: Procedures and Design Criteria for Stormwater Management Systems	2014	Washtenaw County Water Resources Commissioner	http://www.ewashtenaw.org/government/drain_commissioner/dc_webPermits_DesignStandards/dc_Rules/wcwrc-rules-2014-08-06_book.pdf
WATS FY 2014-2017 Transportation Improvement Program	2014	Washtenaw Area Transportation Study (WATS)	http://www.miwats.org/tip/
NACTO Urban Bikeway Design Guide	2014	National Association of City Transportation Officials	http://nacto.org/cities-for-cycling/design-guide/
Ann Arbor City Code Chapter 29: Sewer Rates	N/A	City of Ann Arbor	https://www.municode.com/library/mi/ann_arbor/codes/code_of_ordinances
Ann Arbor City Code Chapter 33: Stormwater System	N/A	City of Ann Arbor	https://www.municode.com/library/mi/ann_arbor/codes/code_of_ordinances
Ann Arbor City Code Chapters 47-50: Streets and Sidewalks	N/A	City of Ann Arbor	https://www.municode.com/library/mi/ann_arbor/codes/code_of_ordinances

Ann Arbor City Code Chapter 57: Land Use Control	N/A	City of Ann Arbor	https://www.municode.com/library/mi/ann_arbor/codes/code_of_ordinances
Ann Arbor City Code Chapter 63: Stormwater Management	N/A	City of Ann Arbor	https://www.municode.com/library/mi/ann_arbor/codes/code_of_ordinances
Required Clearances Near Railroad Tracks	N/A	MDOT	http://www.michigan.gov/documents/rcbook_55515_7.pdf
WALLY Corridor and Surroundings Map	2013	Ann Arbor Area Transportation Authority	http://www.theride.org/AboutUs/Initiatives/NorthSouthCommuterRail/NSRailQuickFacts
Best Management Practices for Storm Water: A Developers' Guide for Ann Arbor	2005	City of Ann Arbor	http://www.a2gov.org/departments/systems-planning/water-resources/Documents/DevelopersGuide_4-6-05.pdf
City of Ann Arbor Floodplain and Floodway Maps	2010	City of Ann Arbor	http://www.a2gov.org/services/data/Pages/default.aspx

Green the Way survey questions

This brief survey is anonymous and will take about six minutes to complete. For questions about this survey, you can email the Green the Way project. Thanks for participating!

How familiar are you with efforts to build an Allen Creek trail, also known as the Allen Creek Greenway?

Very familiar	Familiar	Unfamiliar	Very unfamiliar
○	○	○	○

The Allen Creek trail is a new walking and biking path that Ann Arbor is considering building. The trail would follow the general path of the Ann Arbor Railroad and Allen Creek (see map). The creek flows underground from near Michigan Stadium north to downtown, connecting to the Huron River near the Argo Dam.

Your survey responses will help determine a route and design for an Allen Creek trail. A University of Michigan graduate student team is conducting this survey in cooperation with with the City of Ann Arbor. You can visit the project webpage to learn more about the UM team's work.

How important would you rate the following features of an Allen Creek trail?

	Very important	Somewhat important	Somewhat unimportant	Very unimportant
Flood mitigation	○	○	○	○
Lighting along the trail	○	○	○	○
Water quality improvements	○	○	○	○
Public artwork	○	○	○	○
Access to shops, parks, trails or other destinations	○	○	○	○
Other (please specify)	○	○	○	○

How important is it to you to link an Allen Creek trail to the following destinations?

	Very important	Somewhat important	Somewhat unimportant	Very unimportant
Border to Border Trail	○	○	○	○
Bluffs Nature Area	○	○	○	○
Argo Livery	○	○	○	○
West Park	○	○	○	○
Ann Arbor Farmer's Market	○	○	○	○
YMCA	○	○	○	○
Washtenaw Dairy	○	○	○	○
Blank Slate Creamery	○	○	○	○
Bill's Beer Garden	○	○	○	○
Michigan Stadium	○	○	○	○
Other _____	○	○	○	○
Other _____	○	○	○	○
Other _____	○	○	○	○

About how often would you use an Allen Creek trail for the following activities?

	Daily	2-3 times per week	Once per week	1-2 times per month	Never
Commuting	○	○	○	○	○
Social activities	○	○	○	○	○
Errands or shopping	○	○	○	○	○
Recreation or exercise	○	○	○	○	○

How much do you agree with the following statements?

	Strongly agree	Agree	Disagree	Strongly disagree
Ann Arbor should build an Allen Creek trail	○	○	○	○
Flooding in Ann Arbor is not a problem	○	○	○	○
Ann Arbor needs more off-street walking and biking options	○	○	○	○
Huron River water quality should be improved	○	○	○	○
An Allen Creek trail should serve people with limited mobility	○	○	○	○

I am comfortable using a trail next to an active railroad	○	○	○	○
I sometimes walk or bike farther to avoid difficult intersections	○	○	○	○

Ann Arbor would likely build an Allen Creek trail in sections over time. Referring to the map, which sections should be built soonest?

Enter a number in each box to respond. (1=build first, 2=second, 3=last)

- ☐ Section A (north)
- ☐ Section B (middle)
- ☐ Section C (south)

Is there anything else you would like to add about the effort to build an Allen Creek trail?

If you live in Ann Arbor, how many years have you lived there?

If you live in Ann Arbor, what is the street intersection nearest to your home? (E.g., West Liberty & 3rd Street)

Including yourself, how many people live in your household, and what are their ages?

	Ages 0-15	Ages 16-31	Ages 32-60	Ages 61 or older
Number of people in household				

If you would like to receive occasional updates about the Green the Way project, please enter your email address below.

APPENDIX C

Activities frequency	Commuting		Social activities		Errands or shopping		Recreation or exercise	
	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute
All	n=	485	n=	497	n=	496	n=	513
Daily or several	23%	111	22%	108	21%	104	43%	221
Weekly or monthly	22%	109	65%	321	49%	245	52%	268
Never	55%	265	14%	68	30%	147	5%	24
Senior housing	n=	130	n=	136	n=	135	n=	140
Daily or several	13%	17	16%	22	17%	23	40%	56
Weekly or monthly	18%	23	65%	89	51%	69	54%	75
Never	69%	90	18%	25	32%	43	6%	9
Families with young children	n=	129	n=	133	n=	132	n=	136
Daily or several	26%	33	25%	33	27%	35	40%	54
Weekly or monthly	22%	28	61%	81	46%	61	56%	76
Never	53%	68	14%	19	27%	36	4%	6
Half mile or less	n=	175	n=	179	n=	181	n=	184
Daily or several	30%	52	33%	59	38%	68	53%	97
Weekly or monthly	27%	47	59%	105	45%	81	45%	83
Never	43%	76	8%	15	18%	32	2%	4
More than half a mile	n=	234	n=	238	n=	238	n=	246
Daily or several	18%	42	15%	36	11%	25	37%	91
Weekly or monthly	21%	49	68%	162	55%	132	58%	142
Never	61%	143	17%	40	34%	81	5%	13

Features frequency	Flood mitigation		Lighting		Water quality		Public artwork		Access to destinations	
	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute
All	n=	523	n=	522	n=	517	n=	524	n=	523
Important	89%	468	85%	445	86%	444	44%	229	87%	453
Not important	11%	55	15%	77	14%	73	56%	295	13%	70
Senior housing	n=	139	n=	137	n=	137	n=	138	n=	137
Important	88%	123	85%	117	85%	117	53%	73	86%	118
Not important	12%	16	15%	20	15%	20	47%	65	14%	19
Families with young children	n=	135	n=	136	n=	134	n=	136	n=	136
Important	91%	123	82%	111	89%	119	33%	45	90%	122
Not important	9%	12	18%	25	11%	15	67%	91	10%	14
Half mile or less	n=	183	n=	184	n=	182	n=	184	n=	182
Important	91%	167	90%	166	87%	158	54%	99	88%	161
Not important	9%	16	10%	18	13%	24	46%	85	12%	21
More than half a mile	n=	242	n=	241	n=	240	n=	243	n=	243
Important	89%	215	82%	197	85%	204	36%	88	86%	208
Not important	11%	27	18%	44	15%	36	64%	155	14%	35

Destinations frequency	B2B Trail		Bluffs		Argo Livery		West Park		Farmer's Market		YMCA		Washtenaw Dairy		Blank Slate		Bill's Beer Garden		Michigan Stadium	
	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage	Absolute
All	n=	516	n=	500	n=	515	n=	505	n=	514	n=	505	n=	502	n=	491	n=	501	n=	494
Important	93%	478	73%	367	87%	448	70%	353	66%	338	54%	273	42%	212	32%	157	41%	206	46%	228
Not important	7%	38	27%	133	13%	67	30%	152	34%	176	46%	232	58%	290	68%	334	59%	295	54%	266

APPENDIX D

Responses to the question, “Is there anything else you would like to add about the effort to build an Allen Creek trail?” Responses were grouped into categories by the research team.

Total responses - 181

Action- “Do something already”

1. Do something already!
2. Let's get started before anymore humungous buildings get built!
3. I'd like to see it in my lifetime.
4. Please get this built!
5. Do it now!
6. This project needs a champion to move from planning into action.
7. I live in Whitmore lake but grew up in and work in Ann Arbor. Keep up the good work! I am 58 years old.
8. I would support an effort to put a trail in that lacks certain amenities in the beginning if it means the trail could be used sooner. If the amenities (art, lighting, etc) came later.
9. Need to begin where possible in order to establish it as a reality.

General support – “Great idea”

1. great idea!
2. great idea!
3. Don't give up. This will take a lot of effort over many years.
4. I'm glad that there's still an effort to make it happen!
5. it would be a wonderful amenity to our town.
6. Our downtown area is woefully short of green spaces that enhance the quality of life at least as much, if not more, than our wide selection of restaurants. The Greenway would be a lovely addition. I think the trail should be paved or crushed blue stone, both of which would allow for bicycles and limited mobility comfortably.
7. I think it would be very successful. A comparison that could be used is the B-line trail in Bloomington, IN.
8. I appreciate the effort to help pedestrians and bicyclists; it's needed.
9. I'm excited to hear about this for the first time. I ride the Border to Border Trail almost every week...any extension or additions are needed and welcomed! Thank you!
10. THANK YOU! I hate biking/running on the streets in Ann Arbor. I moved here from Madison, WI which was just a series of connecting ped/bike trails, which I loved
11. Build it and they will come. We need this in Ann Arbor. While I don't mind a trail next to an active railroad, how about we just shut down the very lightly used railroad and make it a complete rail to trail conversion. Like many other mid-sized cities have done!
12. It would be a very valuable addition to the livability of Ann Arbor and perhaps help more people to bike to work or on errands instead of driving. It looks like a great start!!
13. It's about time that this area gets some attention. Would love to be able to ride a bike without doing it in traffic. We really need something like this. Sick of looking at the Road Commission building.

14. An Allen Creek trail would contribute greatly to quality of life in AA, and to our reputation as a livable city.
15. Ann Arbor is growing more dynamically all the time. This would add to the tall cement and make our city welcoming even with more concrete and high rises on the way.
16. A special place to walk and bicycle is a precious gift to our community.
17. I support it, but would only use it infrequently, as I live in the northeast part of town.
18. I enjoy using these sorts of off-road walking and biking trails, particularly when they aren't just loops through a park. While that is enjoyable, I do like the concept of having the trail be more of a commutable, point A to point B type of thoroughfare. Thank you for your efforts!

Nope- “No comments here”

1. No.
2. no, thank you
3. Sorry, I don't have an opinion on most of the questions. Incidentally, your map seems to have Michigan Stadium north of the downtown area.

Safety-“make it safe”

1. I think this is a great idea. As a bicyclist, there are places I cannot ride because of the lack of bike lanes or the shoddy quality of the roads, so I find myself driving instead. This trail would provide more opportunities for safe, active transportation, reducing the use of cars and improving our communities ability to walk, bike, or run, in a safe and beautiful environment, to the health improvement of all of us. There should be little to no concern about a trail next to a train, I grew up next to tracks my whole life, walking to and from school next to the tracks, and there was never any risk. I would avidly support this effort with my continued use of the trail.
2. I'm interested in how safe it might be for teenagers (13-16) to use safely alone. "Lighting doesn't calure this because they aren't often out w/o an adult too late.
3. Provide a safe way for kids to get to some of the schools on the west side of town
4. It would be great to have connected bike lanes through town that are safer than is currently available.
5. Keep it simple, clean and safe
6. This has an opportunity to create a safer way to cross (avoid) the downtown area with overcrowded sidewalks and bad traffic, please be extra thoughtful with road crossings to make sure they are safe for all (especially in situations when bikers choose not to wait for lights, or during rush hour when cars tend not to yield to pedestrians in crosswalk).
7. it must be very well policed so it feels and is safe and so vagrancy doesn't become a problem. It must also be very well maintained, meaning constant attention to snow removal & weed removal lest it not be pedestrian friendly in all seasons. It must also be designed to make it interesting (parks tend not to be very interesting because they are not utilized in most instances, but a connection to the Farmers Market and Argo would make it interesting.

Daylighting- “I think the effort should include plans to daylight Allen Creek”

1. I think the effort should include plans to daylight Allen Creek, at least sections of it. If it's out of sight it's out of mind.

2. The sooner the better. We feel certain that the naysayers will come to like it. It would be great if a special assessment could be approved for it. We are also hopeful that Allen Creek might eventually be opened & cleaned enough, along with the Huron River, for safe body contact with the water (yes, wishful thinking at this point).
3. daylighting the creek would be good in the long run, but just get the trail started and worry about this later -- if ever
4. I would like to see the creek exposed.
5. Bring Allen Creek back to the surface. There must be a way.
6. for all the proposed effort to build this, investigation should be had to open parts of the creek currently underground for both aesthetic and water quality points of view. it should be thought of in terms of a natural restoration issue rather than a civil engineered stromwater management condition
7. Please unearth the creek at points along the way. Also, please offer water fountains and dog amenities (waste collection, water bowl fountains) along the way. Also, please add a dog park somewhere along the route. Thanks!
8. I urge that you find someway to uncover as much of the creek as possible along the way. That will add an incentive to clean it and its tributaries up.

Separate Bikes and peds/ cars

1. Separate the bikes from the pedestrians, please. I don't walk where I am afraid of bikes. Which means that there are lovely places in Ann Arbor where I don't walk (Border to Border Trail, Gallup Park, Bandemer Park).
2. We really need a north-south bike trail that is SEPARATE from the street. The on-street, painted bike lanes do not work - they are dangerous and scary
3. SEPARATE PEDESTRIANS FROM BIKE USE
4. If you think of it as a street for peds and cyclists, it could be very valuable. If it's just another bike path that leads nowhere useful, we have plenty of that now.
5. Get rid of invasive plants and provide designated bike lanes and designated pedestrian lanes that are repeatedly and clearly marked.
6. Make it WIDE and put a painted divider line to encourage separation of high speed from low speed traffic. E.g., cyclist, joggers, rollerbladers from walkers and families with children.

Connections

1. It would be great if the trail could connect to a bike friendly way to get to briarwood mall. There is ample parking at the mall for people to park and get on their bicycles to ride into the city. It would also connect people in town to safe non-motorized transport to the mall.
2. If it mostly passes through residential neighborhood it's a poor idea. If it provides access to amenities and shopping and actual urban destinations, that'd be cool.
3. Its all about the Huron River. If you can connect to the trail will be a success. if you dont, it will not be.
4. Connecting downtown to the river (which is currently entirely isolated by the RR tracks from Bandemeer to Broadway) should be a primary focus. For pedestrians in the downtown area, the

riverfront is currently entirely unreachable. Good luck getting through the tracks, but I believe reconnecting downtown to the riverfront should be a priority.

5. Access to proposed Kline parking lot park
6. I hope it coincided with building a commuter rail!!!
7. Coordinate efforts around the Y with the preferred location for the WALLY commuter line downtown station.
8. Connecting to the border to border trail, Argo and the river is much more important than connecting to the Michigan stadium
9. Love to have it connect to the Dexter-Huron metro park so that we could easily connect to the Dexter Trail to Hudson Mills.
10. important to have lots of access points so you can join the greenway wherever you want. Should be an iterative process...build what we can and add as we can.

Railroad

1. I doubt if the railroad would give its approval. This is based on previous reports
2. I work directly next to the railroad line, and walk/drive sections of it most days as I do my job and live my life. Building an entertainment path next to it is one of the silliest ideas I've heard. This is an active rail line. With REALLY BIG TRAINS that come through often. I see people already trying to cut around the crossing bars when bells are ringing, and engaging in risky behavior. Trains produce products dangerous to small children (fumes, occasional shooting rocks from the train bed) -- this is a particularly silly place to put small children, including small children on bikes that may be fast-moving. Putting more people immediately next to working trains is beyond stupid -- it is criminally negligent. If you have to have a multi-million dollar boondoggle, put the walkers/bikers out in farmland where there are no deadly trains and cross roads every 70 yards, or somewhere like Burns Park or OWS that was built for pedestrians.
3. Different options for crossing the railroad tracks at Argo Dam have been proposed. I prefer the most direct route from Main Street to the dam. I cross there myself and know it is a busy crossing. I like the direct arrow on your website, but don't see much advantage (for myself) to the longer route on the poster.
4. what a lovely, and not in any way practical, idea. there is zero reason that the railroads would allow this, and without the railroads, there is no project. shameful hand-waving and typical townie stubbornness. it's astounding how much time and effort has been put into a project for which no leverage exists to make happen.
5. I hope we can also use the railway for a light rail line as part of the A2 connector project

Other

1. Fix the infrastructure first
2. By the way, it would be helpful to have had some "don't know" options in here. That's what I left blank.
3. Greenways in cities where I have seen them have had very positive effect on the community ecologically, economically and socially.
4. will this trail offer walking sidewalks? travelator?
5. Suggest separating public art from the greenway project. Public art should not be a driving factor for recreation and transportation issues.

6. Facilitated 5th grade Huron Watershed prjt in part that biked the blue painted drains & copy of historic A2 map from Eberwhite woods to Bandermere Park Huron R outlet
7. The city should work toward buying up parcels in the flood way that have houses that wouldn't be allowed to be built there today.
8. It would be great to add a few drinking fountains along the way and dog waste stations! This is great! We need more off-road locations to run, walk, and bike!
9. With the flood control questions, I wouldn't so much worry about what happens during a storm but how quickly it can be returned to use after. The trail is built on Allen Creek, its gonna have flooding problems. Worrying about what happens during a storm when few people would be using it should not be a high concern.
10. Should serve the community both recreationally and economically. Don't mess up any economic development in the name of recreation - there is plenty of space. Both goals can be accomplished.
11. Please consider incorporating a cycletrack around the perimeter of the golf course with a connector to Briarwood. With all of its superfluous parking Briarwood would make a great mode switch connection point. Folks could park at the mall and commute by bike downtown for work/entertainment or to the stadium for football games. Would be a great means of increasing bike-ability and reducing congestion downtown.
12. As someone who has frequently commuted by bicycle, it would be beneficial if the trail added a new route, rather than duplicating an already existing bike path or lane.
13. Would like to know if there is a longer term vision for it, or if it stops after those 3 segments are complete. Will it be uninterrupted path? (not have to cross streets) Boulder, CO does such a great job of this.
14. Knowing the university is involved with this project is both good and bad, coming from an Ann Arbor homeowner with no ties to the university. I fear that, like so many of their services, certain aspects will be off limits to those who don't possess an M-Card
15. Please add those workout things along the trail.
16. Consider using parkland acquisition millage funds to get it going. There are millions sitting in the bank from that millage. If it requires repurposing those funds, give voters that chance to say they want to fund the greenway with those dollars.
17. The city does not have funds available for such a project.
18. I think the city and the planners/designers should look at the "High Line" in New York City for inspiration. The High Line is a retro fitted above ground railroad line turned into green space for public enjoyment. http://www.thehighline.org Also, I think it is paramount that the City build a pedestrian crosswalk connecting the land right on the Huron River (near Michcon Site) to land on the West side of N. Main Street. The area's current configuration makes it very difficult for a person trying to cross the street at Main and Depot. I would like to see a pedestrian crosswalk in the N. Main Corridor incorporated into the Greenway Master Plan. Finally, the Master Plan should strongly reccomend and incorporate plans for the City to move ahead with the Allen Creek Berm Project. The North Main Corridor is being held back from too many properties being in the floodplain/floodway. The Berm Project would remedy this making the whole area more economically viable.

19. Wealthy Ann Arborites could sponsor construction and maintenance of small parks named in their honor along the trail. These parks should NOT have children's equipment in. Bright colors. They should be as close to nature as possible. Drinking water fountains would be ok.
20. What is the latest plan to Argo Dam? Is it a tunnel or an overpass over Main Street? Which is preferable and more attractive and innovative?
21. need to show some accomplishments to get more residents involved
22. I would rather see an investment in downtown parks.
23. Thanks for this work. We desperately need more off-street bike routes. "Share the Road" bike lanes do not work. The Allen Creek trail could be a good north-south route, next up should be a similar off-street east-west route
24. While improving Huron River water quality and flood resistance are desirable goals, don't let the perfect be the enemy of the good. Build a trail that joins at each segment to public streets or sidewaalks. Let the trail not worsen water quality or flooding. But don't insist that 1 project do all possible good things.
25. Good signage and maps
26. Need a celebrity donor, need to develop the 3 small parks at 1st and Williams, 415 W. Washington and 721 N. Main to serve as anchor parks for recreation and resting, music, art.
27. Flood mitigation, particularly in the middle section @W.Washington Street is essential.
28. There are some nice spots to bike in Ann Arbor, but nearly every commuting or shopping path requires some very unpleasant or even dangerous traffic situations.
29. More biking/running trails PLEASE!
30. BtoB is a big plus for funding Don't block flow to river Include daylight options even if years off, may happen sooner then most think Festival site Go for any grants we can Bike and walking friendly critical Thanks for your efforts! This could be a big change for the better for AA and the watershed and river
31. I think a greenway is a fine idea, but I would like to see it be very active (maybe with fitness trail/parcourse options along the way); open to as many forms of non-motorized traffic as possible; and maintained for safety, looks, and security. Wayfinding for people coming from the Stadium and clear links to downtown business and activities are important.

Trail Components

1. Please be sure that the trail isn't made using crushed rock (block top or cement preferred). Crushed rock makes bike riding difficult and unsafe.
2. Set up volunteer patrols (like in NYC's Central Park); make it accessible to inline skates. Be sure not to plant obnoxious deciduous plants that will litter the trail. Probably have emergency phone stations...a few benches for resting. :)
3. It would be nice if it extended further east.
4. Areas with child friendly activities which are lacking around Main Street - including playground and benches

APPENDIX E

Other features identified by respondents to the question, “How important would you rate the following features of an Allen Creek trail?” Responses were grouped into categories by the research team.

Total responses - 94

Safety

1. Safety
2. Safety
3. safe, attractive, well maintained
4. bike and walk path that safely avoids car traffic
5. The joy of walking some distance safe from auto traffic
6. Safety and peacefulness
7. personal safety
8. Emergency call phones
9. Safety
10. residential "eyes on the path"
11. eyes on the trail - adjacent housing development
12. movement without threat of vehicular traffic
13. traffic signals at major cross streets
14. safe intersections with existing streets
15. Safe well marked car free lanes. Mark a center dividing line and dedicate no passing zones in unsafe areas. Add signage for riding on right and pass to left.

Greenery/ beautification

1. beautiful/peaceful/green
2. natural features such as plants and rocks
3. trees & vegetation
4. greenway space to improve the railway-side landscape
5. landscaping
6. Keep it green and natural; except for pavement, less man-made stuff, the better.
7. Natural feel
8. trees, bushes, flowers
9. Native Plants/Greenery
10. Green space for mental health
11. Actual green views-- block traffic sounds/views
12. Nice natural landscaping like at Cascades
13. attractive, clean, intimate walking environment
14. Native plant gardens
15. Enjoy nature
16. cleared areas for exercise eg County Farm park. Also, Disc Golf!!
17. I would oppose artwork except at intersections and prefer an unpaved, natural trail.
18. To me the purpose of trail/greenspace is that it is away from art, lighting, and attractions. These are distractions from the purpose of greenspace.

Maintained

1. Well maintained
2. good maintenance
3. winter maintenance
4. well maintained, e.g., snow cleared
5. 1) Maintenance!!!! 2) Shows off features of town

Specific infrastructure

1. Benches to sit, meditate, etc
2. Dog waste bags and trash bins,drinking fountains
3. water fountains
4. Benches, drinking fountains, shade
5. public bathroom access
6. drinking fountains
7. paved
8. Paved
9. Integrated play structures and equipment for kids
10. Smooth surface for inline skaters

Separation from bikes and peds

1. Dedicated cycling lanes
2. Bike path
3. separation between bicyclists and pedestrians
4. planning and posting/marking for bicycles and pedestrians
5. separating cyclists from pedestrians
6. a WIDE path with a line to separate walkers from joggers/cyclist/rollerbladers
7. provide a place to move bikers out if the streets.
8. nice wide path; could be like HIgh Line in NYC

Connections

1. It has to GO somewhere, not just be recreational.
2. creating pedestrian connection to the river
3. It would be better if the trail led to the Saline road overpass (and eventually on to Saline), but I understand it might be more feasible to follow the railroad line in town.
4. Access to B2B trail
5. grade separated access across north main connecting with b2b
6. connecting to other nearby biking trails
7. Safe contiguous access over main st to Argo Pond/Bandemer park
8. access to parking; city bus, B2B trails, children's parks
9. access to train station

Other

APPENDIX E

1. Above question should separate parks and trails from shops.
2. Buffer from denser downtown
3. Events like music festivals
4. creating amenities that make people want to live in and visit the city
5. bikeability
6. recreation and commuting through the city
7. Increase A2 as a walkable town
8. Long-lived materials, i.e. NOT asphalt.
9. Continuous hike/bike path with minimal interruptions or diversions
10. opening the creek to daylight
11. Dog-friendly
12. Good signage
13. Thoughtful planning to accommodate a variety of users: bikes, walkers, skaters, disabled, young children, the elderly, dog walkers.
14. Quality of Life
15. Traffic Relief/Non motorized option
16. This is a remarkably poorly conceived project. I work along what would be the trail, and this plan makes no sense. It is a working railroad.
17. educational concerning relation to Huron Valley Watershed and onto Rouge River and onto Detroit River and onto Great Lakes
18. minimizing forced stops (for commuters)
19. homeless people living on trail
20. Potential daylighting
21. Child friendly
22. view of the creek, bike lane
23. It will help with non-motor transportation
24. open wter w here possible
25. handicap accessability
26. recreation
27. Seamless, over the roads & Amtrak tracks
28. it's important that it be built!
29. social spaces
30. bike commuter friendly
31. Non-motorized transportation pathway and greenspace.
32. pedestrian commuting from the large unused parking at the old power plant site to the hospital. It would get people out of their cars off the streets and really using a path along the river next to the railroad tracts. Now that the site between the cascades and the train station is cleaned up take down the god damm fense already and use the parking lot for parking. People could use it for the cascades, argo and the river front as well as rent assigned parking spots for hospital employees or anyone else who needs a guaranteed spot. Can you just take down the fense and pick up the parking lot or is that going to take another eighty years?
33. Accessible by public transit, low-income communities, and disabled individuals

34. Other nodes of transportation or transportation infrastructure (bus stops, other trails pathways, bike repair shops, drinking fountain,etc)
35. Please don't (or do as little as possible) clearing of greenery and natural wildlife habitats, to make the trail. This unfortunately occurred along Argo park, as they cleared a large woodland area, so it's no longer a peaceful sanctuary to walk through, and thus the wildlife and their natural habitat was displaced. Please don't make a cement path, however, a path could be made of mulch, as it's in keeping with nature and it's peacefulness, and easier on joggers/walkers (injury prevention). Also, could you please consider avoiding gentrification, and allowing the preexisting buildings to remain, which are Ann Arbor's history and character. Please don't build more housing(condominiums/high-rises/ lofts)/shopping areas/restaurants (Ann Arbor has enough). Please use empty lands/vacant lots (such as the DTE property) for wildlife habitats and parks, but please ensure these areas are removed of pollutants/toxins. If buildings are converted (please use historical preservation-style)/or built, please consider fine arts/performing arts/cultural/environmental-ecological education/holistic-alternative therapy centers and performance centers for the community, which are low/no cost/sliding-scale/scholarships. This could be similar to the Neutral Zone or Ann Arbor's Rec and Ed. Could you please work with the SNRE, as they may offer many environmentally sound ideas and help. Thank you for your time and consideration! :)
36. Revenue production

APPENDIX F

Other destinations identified by respondents to the question, “How important is it to you to link an Allen Creek trail to the following destinations?” Responses were grouped into categories by the research team.

Total responses - 102

Parks/Trails

1. Trail at the South end
2. Greenview Nature Area
3. Bandamer Park
4. Future trail to Saline
5. Bandemer Park
6. Kuebler Langford Park
7. Vet's Park
8. County Farm Park
9. Bandemere Park
10. Wildwood Park
11. Bandemere park
12. Bandemer Park
13. Broadway Park
14. Bandemeer Park
15. Barton Pond trail
16. proposed downtown parks
17. County Farm Park
18. Huron River Drive area parks
19. Run out to Rolling Hills Park
20. Continue and the length along side Barton Pond

Schools

1. Possibly UM
2. Pioneer High School
3. Pass near schools
4. Pioneer High School

Library

1. Ann Arbor Library
2. Public Library
3. Library & adjacent lot

River

1. The Huron River
2. Huron River
3. Huron River
4. Huron River
5. Huron River

Downtown (general)

1. Clear link to downtown
2. Possibly City Hall
3. Downtown
4. Downtown
5. main street restaurants.
6. Downtown
7. Any downtown locations
8. access to downtown
9. downtown
10. historic downtown
11. downtown

Transit areas/ parking lots

1. Train station
2. Train station
3. Amtrak Station
4. State St. Commuter Lot
5. bus stations
6. AATA Routes/stops
7. ArborBike stations
8. Commuter rail stations
9. Amtrak Station

Streets/Roads

1. access at Main & Depot
2. Recycle Ann Arbor, S. Industrial
3. Ellsworth Rd
4. Huron River Drive
5. Summit St./Water Hill
6. huron river drive
7. summit street
8. Eisenhower Pkwy
9. 1st Street businesses

Specific Businesses

1. Produce Station
2. briarwood mall
3. argus farm stop
4. knights grocery
5. argus farm stop
6. Cobblestone Farm
7. Argus Farm Stop

8. Argo Farm Stop
9. Big City Bakery
10. Argus Farm Stop
11. Argus

Other

1. Pioneer Woods
2. Kerrytown - same as farmer's mkt, but let's make it explicit
3. A2 Rowing Club
4. SoPack area
5. connectivity to other attractions is important to make it a nonmotorized commuting route as well as a recreation destination
6. cycletrack around the golf course with connector to the mall--park and RIDE!
7. General good north south route through town
8. Railroad Depot (hopefully remaining at Depot St)
9. Eberwhite Woods
10. an actual view of the creek
11. Cascades Area
12. Ann Arbor Rowing Club
13. I will not want to use the trail if it is merely a way to get from one commercial space to another.
14. Less busy road crossings the better
15. Northeast side of town
16. safe led crossing at N Main and 14
17. HOUSING
18. North Main city yard
19. Crysler Arena
20. Boardwalk / State / Eisenhower offices
21. all the AA highlights
22. Eventually south to Saline
23. Most of these connections can occur via our street grid a fairly short blocks.
24. river walkways on both banks
25. 720 N. Main
26. Use the area under the broadway bridge next to the railroad station as a bus stop connecting to the pedestrian path like every city in Europe does. This makes it possible for multimodal non car transport.
27. Water Hill Music Fest
28. Public Housing
29. AADL
30. DTE site

GAME DAY PEDESTRIAN COUNTS

November 1 Pedestrian Counts at Hoover St Crossing. Game at 3:30PM

Time	Pedestrians
12:00 - 1:00 PM	33
1:00 - 2:00	87
2:00 - 3:00	239
3:00 - 4:00	717
3:00 - 3:30	*324*
3:30 - 4:00	*393*
TOTAL	**1076**

Notes:

- Represents all pedestrians who traveled along the rail right-of-way, either entering Hoover St from the North or South, or departing Hoover St to the North or South.

- A person using a wheelchair had a difficult time crossing the train tracks that intersected the sidewalk on the north side of Hoover. They were being assisted across the tracks, and the wheels got stuck in the wider than necessary gap between the rail and an aging wooden plank.

-There was one bicyclist using the rail right-of-way. He was "riding down the rail right-of-way"

-The vast majority of pedestrians entered Hoover from the North side rail right-of-way. A smaller but still significant number left Hoover onto the South side right-of-way towards the Golf Course, especially before 3-4pm.

- There was a lot of trash (Solo cups, beer bottles, pizza boxes) that seemed to be generated largely from the stadium fans, many of whom were using alcohol publicly; trail design should take these factors into account (i.e., trash receptacles, safety).

APPENDIX H

This appendix presents proof-of-concept designs to show that a safe and attractive trail could be feasibly placed into the east side of First Street, including a cycle track (or bikeway) and an enhanced sidewalk. The Green the Way team constructed these designs using conservative assumptions, listed below, such that more detailed designs may indicate the possibility for even safer, more attractive, and/or more convenient facilities. These proof-of-concept designs consider lane widths for bicyclists and motor vehicles, intersection crossings, traffic volumes, turning movements for vehicles, slope along and across First Street, and stormwater management concerns. Future stages of design should consider bicyclists' turning movements on and off the proposed bikeway at intersections, maintenance of the bikeway and planters, snow removal, and other issues which are not addressed here.

First, we display detailed cross-sections showing roadway dimensions as proposed (top portions of images) and as they currently exist (bottom grey rows.) Second, we provide detail on each element of the proposed redesign, for example the rain gardens between curb and sidewalk. Finally, we describe the principles and methodology that underlie our bikeway designs, both to document our work and in case they become useful to future design efforts.

Figure 1: Cycle Track Sections Key Map

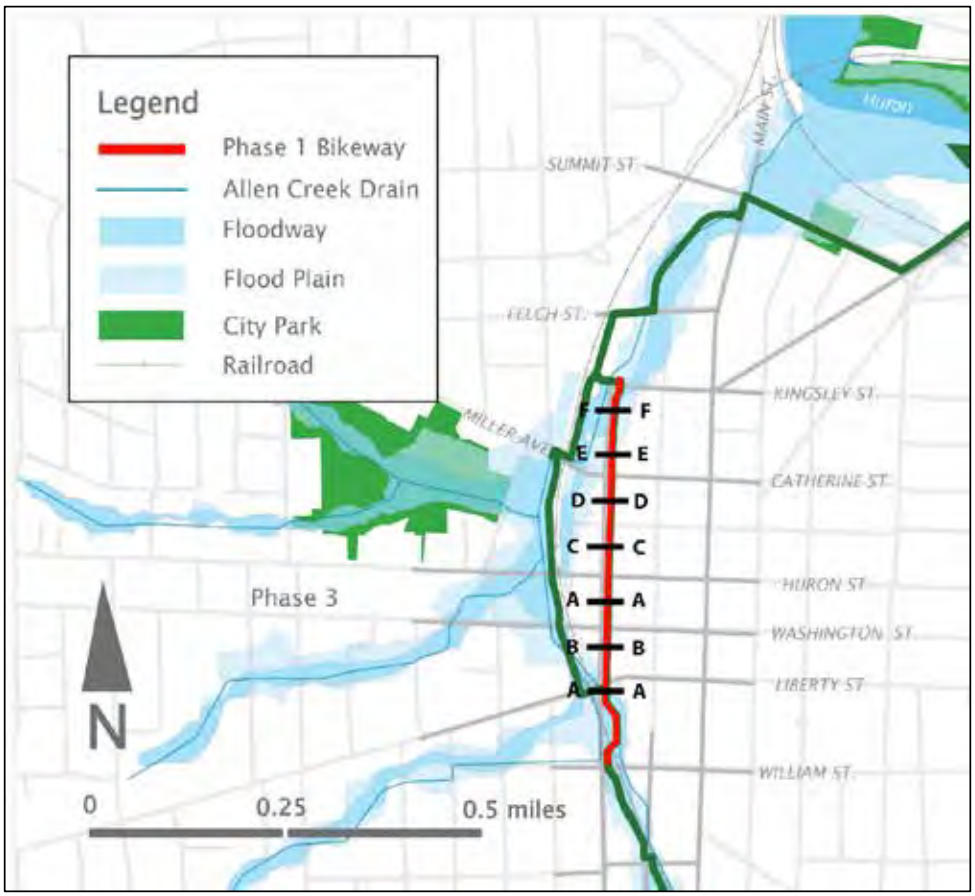


Figure 2: Cycle Track Section A

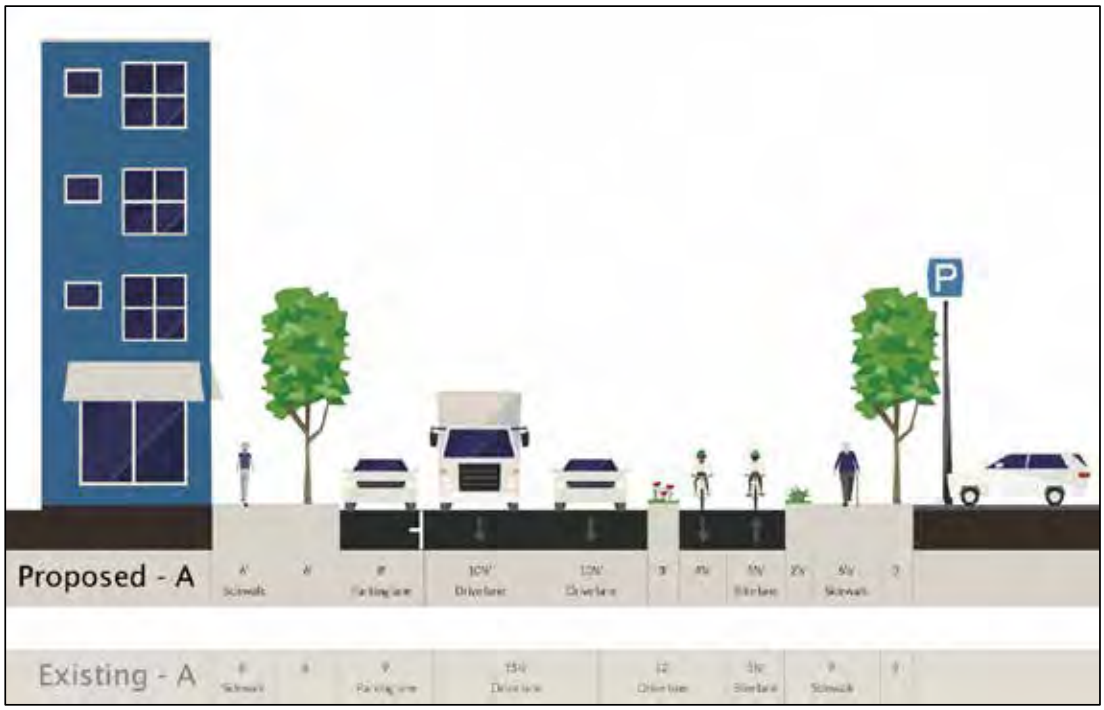


Figure 3: Cycle Track Section B

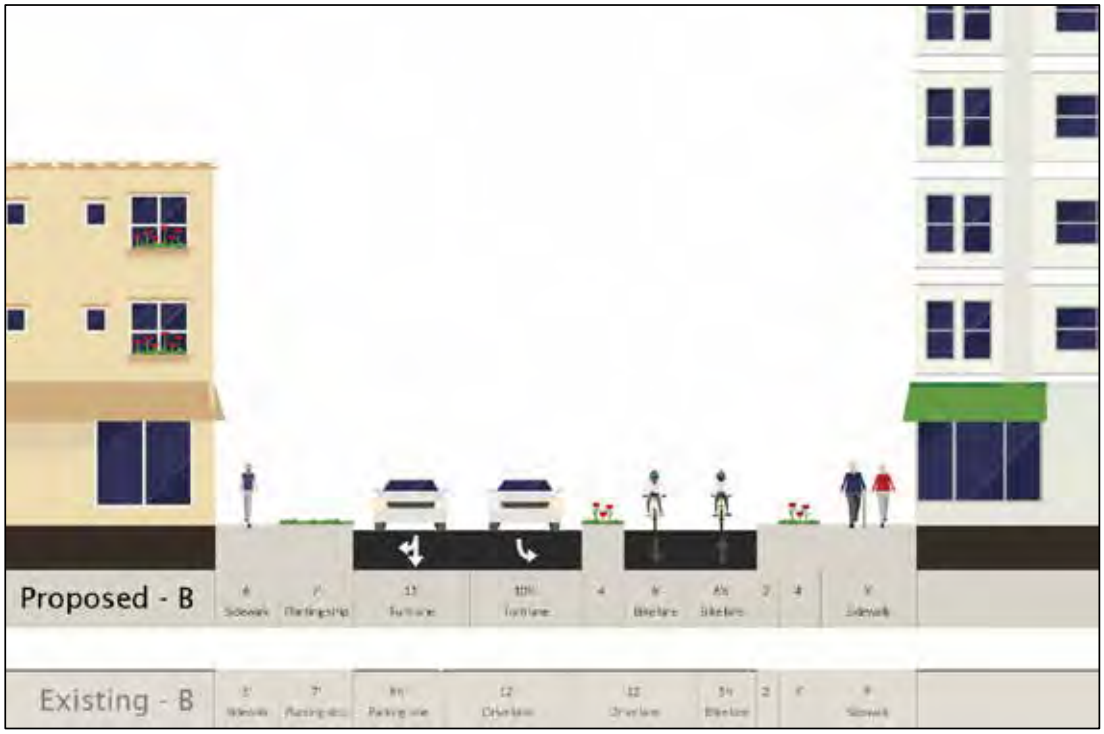


Figure 4: Cycle Track Sections C, D & E

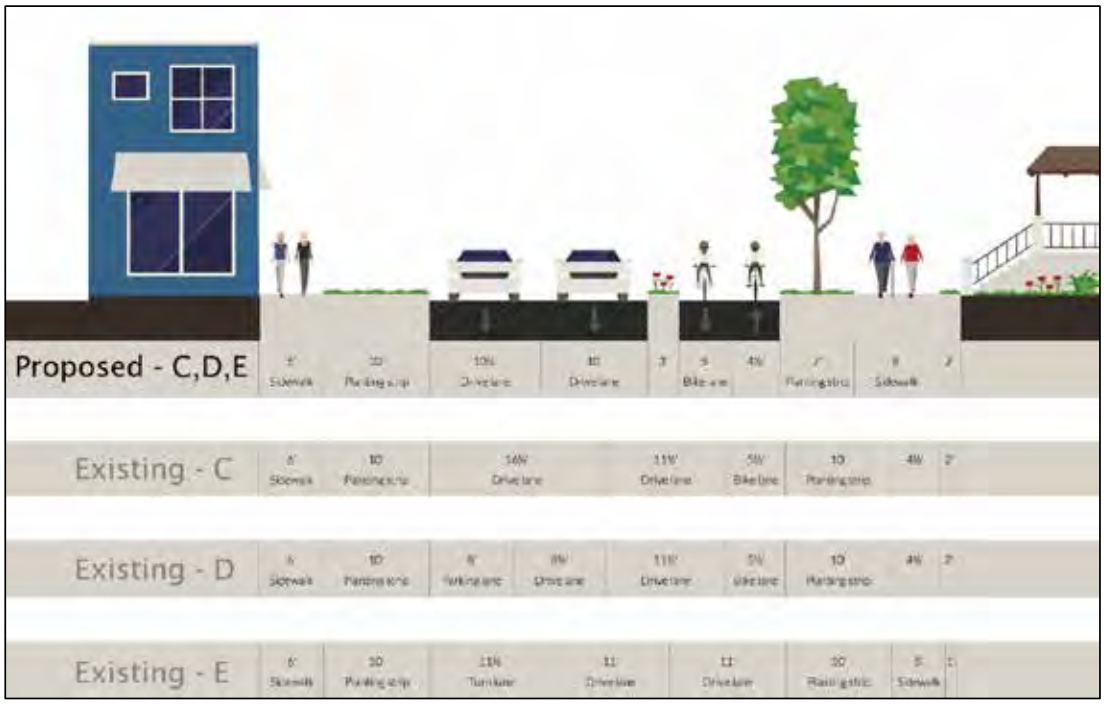
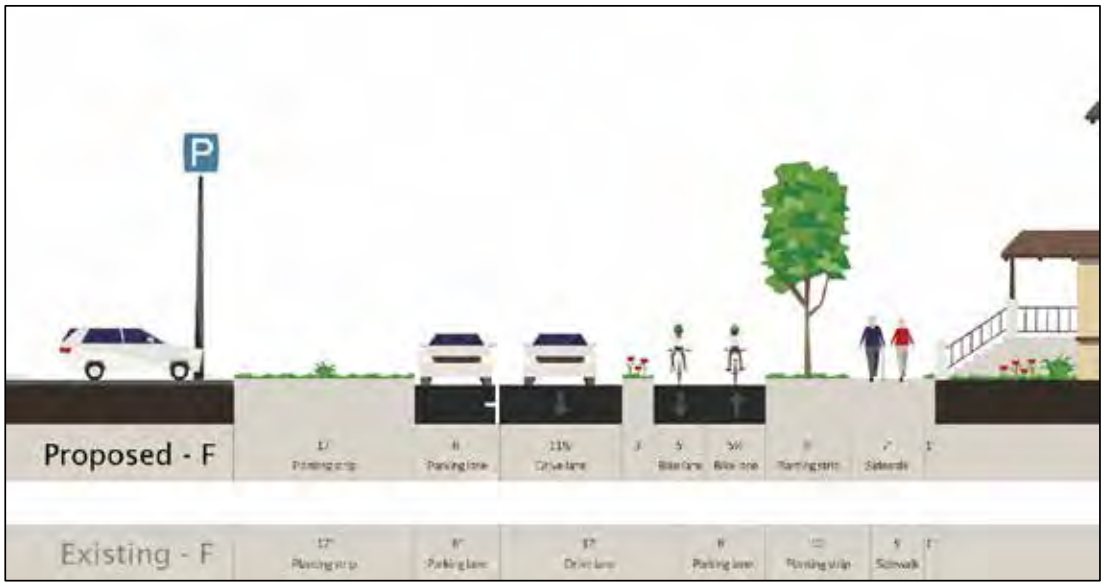


Figure 5: Cycle Track Section F



Detailed Elements

- **Cycle track barriers** would range from 3 to 4 feet wide, and would be approximately 3 feet high. These proposed barriers would be permanent and solid, constructed for example out of concrete,

with periodic gaps cutting underneath them for drainage onto the main travel lanes to the west, or downhill. In our proof-of-concept design, they would be filled with traditional plantings, because a true linear rain garden would need to be connected to a reconfigured storm sewer.

- **Cycle track width** would range from 9 to 12.5 feet. These dimensions correspond to a "desired minimum" of 12 feet, and 8 feet in "constrained conditions" (NACTO 2012, p. 45). They also reflect the reality that bicyclists should avoid the lip between the paved roadway and the gutter that is integral to the curb, which is often bumpy. When choosing widths for each direction of bicyclist travel within the two-way cycle track, we suggest allocating more width for bicyclists traveling uphill, when they would be traveling more slowly and would have a tendency to wobble more from side to side.
- **Vegetation between the cycle track and the sidewalk** would provide a buffer between bicyclists and pedestrians. Any existing trees in this space would be maintained. To improve stormwater capacity, existing grass and some existing pavement would be converted to rain gardens, following the specifics of Ann Arbor's "Green Streets" policies.
- **Widened sidewalks**, from the existing 4.5 feet to at least 6 feet and preferably 8 feet, would allow for side-by-side walking. Special care would need to be taken with the steep slope between the street and sidewalk between Ann and Miller.
- **Enhanced stoplights** along First Street would allow bicyclists to safely travel in both directions along the one way street. We propose that protected bike signal heads, extra stoplights which display bicycle symbols in place of arrows or solid circles, be used at these intersections (see Figure 5-7 in Chapter 5.) They are described in detail in NACTO's Urban Bikeway Design Guide (2012, p. 93-98).
- **Making driveway crossings more visible** to cars and to trail users would improve safety. Visibility could be improved by lowering the height of barriers between the bikeway and the roadway near driveways, by installing signs and/or mirrors allowing driveway users to see along the trail, and by painting driveway intersections distinctively as recommended by the NACTO Urban Bikeway Design Guide (2012, p. 93-98).
- **Relocating access points to public parking facilities** would reduce the number of potential conflict points. For example, the public parking lot at First and Huron has two entrances and two exits, one each on Ashley Street and First Street. The entrance and exit on First could be closed and the entrance on Ashley could be expanded to accommodate the extra traffic. For the City Apartments parking structure at First and Washington Street, access might be consolidated onto the existing Washington access point. If capacity or other issues prevent the First Street curb cuts from being removed completely, we suggest removing entrances to the parking facilities from First Street while leaving the exits in place. This would reduce the complexity of turns across the cycle track and would improve vehicle flow on First Street.

Design Principles and Assumptions

- **Create a cohesive trail that residents and visitors can easily understand and find.** Ann Arbor's Non-motorized Transportation Plan calls for a pair of one-way bicycle lanes on First and Ashley to bring bicyclists north and south. In order to create an identifiable trail and unify trail users, we looked for ways to avoid splitting the trail further than the East and West Branches of the *Green the Way Route.*

- **Follow accepted principles for safe bicycle facility design.** In general, we followed the American Association of State Highway and Transportation Officials (AASHTO) guidance on bicycle and roadway configurations. Unfortunately, AASHTO's latest design guide (2012) fails to recommend *any* protected bicycle facilities, which have been shown to be safer and attract more riders than the unprotected bicycle lanes and shared lane markings that the design guide does recommend (Lusk et al., 2011). Thus, in order to design the safest and most desirable bicycle facility, we follow guidance published by the National Association of City Transportation Officials (NACTO, 2012) for the design of the two-way bikeway itself.
- **Accommodate motor vehicle traffic along First St. and across the downtown Ann Arbor street network.** Vehicles must remain able to access local destinations and make trips that currently use First Street. Thus, motor vehicles would remain on First Street with enough lanes on First Street and the adjoining traffic network to accommodate traffic trends. In fact, traffic volumes have been falling over the past 10 years, on First Street and across downtown (WATS 2014). We see no indication that this trend will reverse; instead, the City's commitment to expanding local bus service, creating a new transit line (The Connector), and starting two new commuter rail projects suggests that auto traffic may decline even faster. Thus, even if First Street were to become a slightly slower route for cars, some cars would divert to nearby streets like Fifth Avenue, which would have plenty of excess capacity given overall falling traffic volumes. We conclude that motor vehicle travel along First Street can be slowed somewhat without causing a noticeable hardship on motor vehicle traffic in general.
- **Follow accepted principles for vehicle lane widths.** AASHTO (2012) recommends lane widths of 10-12' for urban streets designated as arterials and collectors. Research on city streets in Michigan and Wisconsin shows that smaller widths result in higher safety for all users, at the expense only of vehicular speed (Potts, Harwood, & Richard, 2007; Noland, 2013). We conclude that 10' lanes would be acceptable in the context of a busy downtown street where stopped traffic is usually the controlling factor slowing down cars, and we propose wider lanes, up to 11.5', to provide more room in portions of First St. that may experience higher traffic volumes and/or more truck traffic.
- **Avoid changing the location of curbs, except by extending the curb into the street for short areas, or bump-outs, at intersections.** Changing the location of curbs often requires street reconstruction and/or storm sewer reconfiguration, both of which are costly. If funding and logistics were to in fact permit curb movement, we recommend considering that the cycle track be raised to curb level in order to provide greater traffic safety at driveway crossings, to provide higher perceived safety, and to better link the bicycle and pedestrian components of the trail. Additionally, if curb movement were feasible, it might be possible to move vehicle lanes west, narrowing sidewalks or planting space on the west side of the street in order to expand the bikeway.
- **Avoid removing street trees.** Ann Arbor places a high value on street trees, which provide shade, an attractive streetscape, and cleaner air – and which are difficult to replace. Thus, we avoided proposing reconfigurations that would move the sidewalk or combine the sidewalk and bikeway in such a way that would remove street trees.
- **Minimize number of driveways a trail would cross and the number of on-street parking spaces taken.** Driveway crossings are potentially hazardous, and on-street parking is productive especially for local businesses. Additionally, on-street parking serves as a buffer that slows traffic

and protects pedestrians from motor vehicles. At an early stage, the Green the Way team considered placing a bikeway along Ashley Street, but rejected that option due to its comparatively larger number of driveways and on-street parking spaces.

Measurement methodology

The Green the Way team conducted measurements of curb-to-curb widths, sidewalks on the east side of the street, and the space between those sidewalks and the curb using a distance measuring wheel, Oct.-Nov. 2014. We also verified these measurements using Google Earth imagery dated 5/9/2010. Lane widths, parking lane widths, and widths of sidewalks on the west side of the street were estimated using Google Earth imagery, which displayed conditions before recent street work, and photographs taken in Oct.-Nov. 2014. Widths were cross-checked against the 66' distance between properties on either side of the street that we calculated using MapWashtenaw services (accessed via www.ewashtenaw.org.)

References

AASHTO. (2012). *Guide for the Development of Bicycle Facilities, 4th Edition.* Washington, DC: American Association of State Highway and Transportation Officials.

Lusk, A. C., Furth, P. G., Morency, P., Miranda-Moreno, L. F., Willett, W. C., & Dennerlein, J. T. (2011). Risk of injury for bicycling on cycle tracks versus in the street. *Injury Prevention*, *17*(2), 131–135.

NACTO. (2012). Two-way Cycle Tracks. In *Urban Bikeway Design Guide* (2nd ed., pp. 41-46). New York: National Association of City Transportation Officials, 41–46.

NACTO. (2012). Bicycle Signal Heads. In *Urban Bikeway Design Guide* (2nd ed., pp. 93-98). New York: National Association of City Transportation Officials, 93-98.

Potts, I. B., Harwood, D. W., & Richard, K. R. (2007). Relationship of Lane Width to Safety on Urban and Suburban Arterials. *Transportation Research Record*, *2023*, 63–82.

Noland, R. (2003). Traffic fatalities and injuries: the effect of changes in infrastructure and other trends. *Accident Analysis and Prevention, 35,* 599–611

WATS (Washtenaw Area Transportation Study). (2014). Traffic Count Web DB (Excel File, with data on Ann Arbor streets originally sourced from City of Ann Arbor counts.) Attachment to email communication from WATS staff to Green the Way team, October 2014.

Appendix 1A

Potential Trail-Connections from 721 to Border-to-Border Trail

Border-to-Border Trail

Shorter Term Opportunities

- *Broadway Bridge*
- *Main St. East Side*
- *Main St. West Side*
- *Lake Shore Via Bluffs Park (Nature Area)*
  *(*Not Universally Accessible)*

Longer Term Opportunities

- *Main St. Pedestrian Overpass (North)*
- *Main St. Pedestrian Overpass (South)*
- *Railroad Tunnel*
- *Depot St. Pedestrian Overpass*