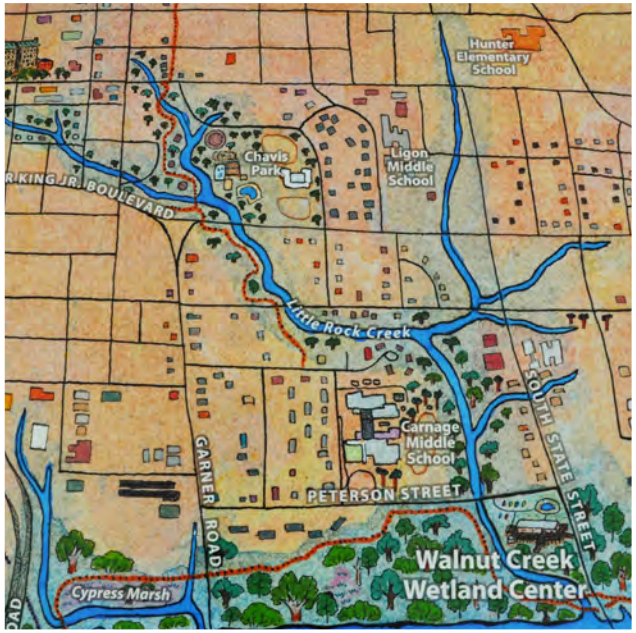


Walkable Watershed Concept Plan

for the lower Little Rock Creek Watershed

Raleigh, NC | September 2014

lower Little Rock Creek

Walkable Watershed

healthy waters : healthy communities

Acknowledgements

City Council

- Nancy McFarlane, City of Raleigh Mayor
- Thomas Crowder, Mayor Pro Tem
- Russ Stephenson, Council Member At Large
- Mary Ann Baldwin, Council Member At Large
- Wayne Maiorano, Council Member, District A
- John Odom, Council Member, District B
- Eugene Weeks, Council Member, District C
- Bonner Gaylord, Council Member, District E

The City of Raleigh project team included staff from across departments, including:

- Jen Baker, Walkable Watershed Project Lead, Office of Sustainability
- George Adler, Community Development
- Jennifer Baldwin, Office of Transportation Planning
- Kevin Boyer, Stormwater Management
- Vivian Ekstrom, Planning and Development
- Sherry Graham, Director, Walnut Creek Wetland Center
- Sheila Lynch, Community Services Department
- Jason S. Myers, Office of Transportation Planning
- David Shouse, Parks, Recreation and Cultural Resources
- Dhanya Sandeep, Raleigh Urban Design Center

Supported by:

- Paula Thomas, Manager, Office of Sustainability
- Scott Payne, Assistant Director, Parks, Recreation and Cultural Resources
- Ken Bowers, Interim Director, Planning and Development
- Grant Meacci, Planning + Design Manager, Raleigh Urban Design Center
- Mark Senior, Acting Manager, Stormwater Management Division
- Eric Lamb, Manager, Office of Transportation Planning
- Mike Kennon, Transportation Operations Manager
- Dwayne Patterson, Housing and Neighborhoods Department, Community Services Division
- Valerie Malloy, Interim Community Development Director

The following City staff also participated in the project : Jed Niffenegger, Jong Lee, Carmela Teichman, Leigh Ann Hammerbacher, Lauryn Coombs, Matthew Keough, Ray Aull, and Scott Bryant.

Representatives from the following organizations participated in the process through interviews, briefings, community meetings or working sessions:

Citizen Organizations

- Central CAC
- South Central CAC
- South CAC

Community Organizations

- Break Bread Together
- Inter-Faith Food Shuttle
- Partners for Environmental Justice
- Passage Home
- Triangle Greenways Council
- 86it - Wake County Anti-Litter Campaign

Watershed Organizations

- Albemarle Pamlico National Estuary Partnership
- NC State Watershed Stewardship Network
- River Guardian Foundation

Education

- Carnage Magnet Middle School
- Exploris Middle School
- Shaw University (Wetland Biology Club)
- North Carolina State University

County, State and Federal Agencies

- EPA Region 4, Office of Water and Office of Sustainable Communities
- North Carolina Department of Environment and Natural Resources
- Wake County Environmental Services
- Triangle J Council of Governments

Faith-Based

- Mary Magdalene Ministries

Table of Contents

Through a competitive process, the City of Raleigh was awarded technical services from Skeo Solutions to develop a walkable watershed concept plan. Skeo Solutions is an environmental consulting firm providing technical services to support community revitalization.

Forward

Restoring watersheds and communities

A Walkable Watershed integrates the flow of water and people into a cohesive strategy to improve the overall health of a community and the surrounding watershed. The concept is based on the idea that high-quality water goes hand-in-hand with a high quality of life, supporting access to the outdoors, enhanced community infrastructure and services, and increased health.

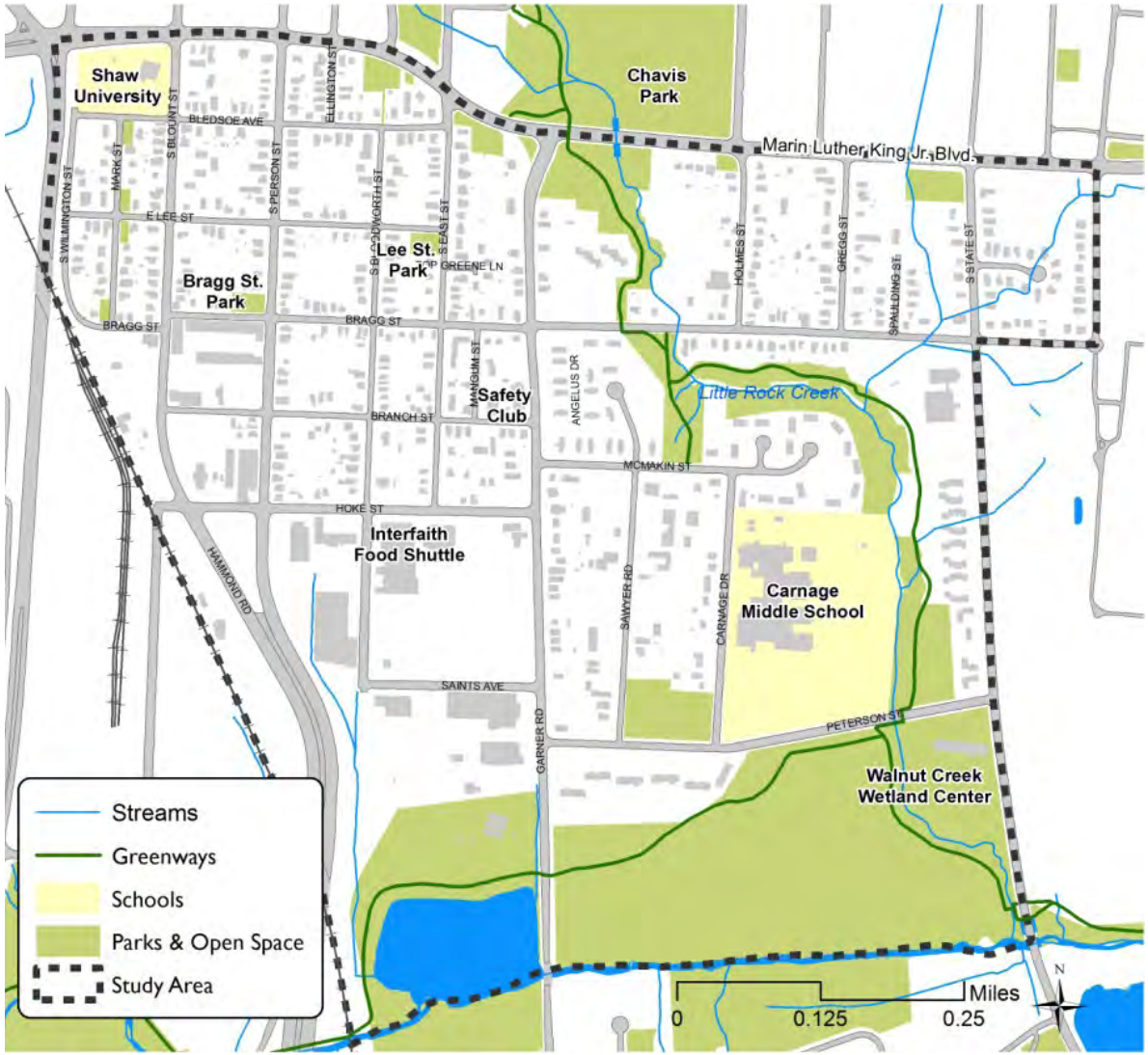
A Walkable Watershed process…

- provides an integrated planning approach to improve water quality and community health
- engages a broad range of stakeholders
- links environmental and social equity goals
- generates innovative, community-based solutions grounded in technical analysis
- creates multiple benefits, such as walkability, outdoor learning, revitalization, community stewardship and improved water quality
- attracts and leverages multiple funding sources
- provides a replicable process for any watershed

The lower Little Rock Creek Watershed in the City of Raleigh is one of the first of a series of pioneer communities to develop a Walkable Watershed Concept Plan to help build partnerships and guide investments in neighborhood-based watershed improvements.

Walkable neighborhoods provide a range of benefits (see page 2).

healthy waters : healthy communities
www.walkablewatershed.com



Study Area Map.

Project Overview

Over the past year, the City of Raleigh and Skeo Solutions have partnered to bring together community members, nonprofit organizations and agencies to develop a Walkable Watershed Concept Plan for improving water quality and community health in the lower Little Rock Creek watershed.

Through a competitive process, the City of Raleigh was awarded technical services from Skeo Solutions to develop a walkable watershed concept plan. Located just south of downtown Raleigh, the lower Little Rock Creek watershed was selected as the study area based on specific criteria outlined in Skeo's Walkable Watershed technical assistance application. Criteria included a community bisected by a creek, close proximity to schools or parks, water quality impairments, and insufficient infrastructure (such as sidewalks and stormwater controls).

The Walkable Watershed Concept Plan provides an overview of the existing conditions analysis and community engagement that informed recommendations for the lower Little Rock Creek watershed. These community-based recommendations address stormwater and improve walkability.

To coordinate implementation over time, the City of Raleigh has developed an Action List to support the Concept plan. The Action List outlines a timeframe, potential partnerships, funding options and next steps for each recommendation and can be updated over time.

What's a Walkable Watershed?

A walkable watershed addresses stormwater, streams and pedestrian challenges simultaneously.

Walkable - *the neighborhood should have safe and pleasant routes for walking.*

Watershed - *all the land area where rainwater drains to Little Rock Creek.*

- The Little Rock Watershed includes downtown, John Chavis Memorial Park, the greenway and surrounding neighborhoods.
- Stormwater in this area flows through a network of pipes and ditches to Little Rock Creek, and eventually to Walnut Creek and the Neuse River.

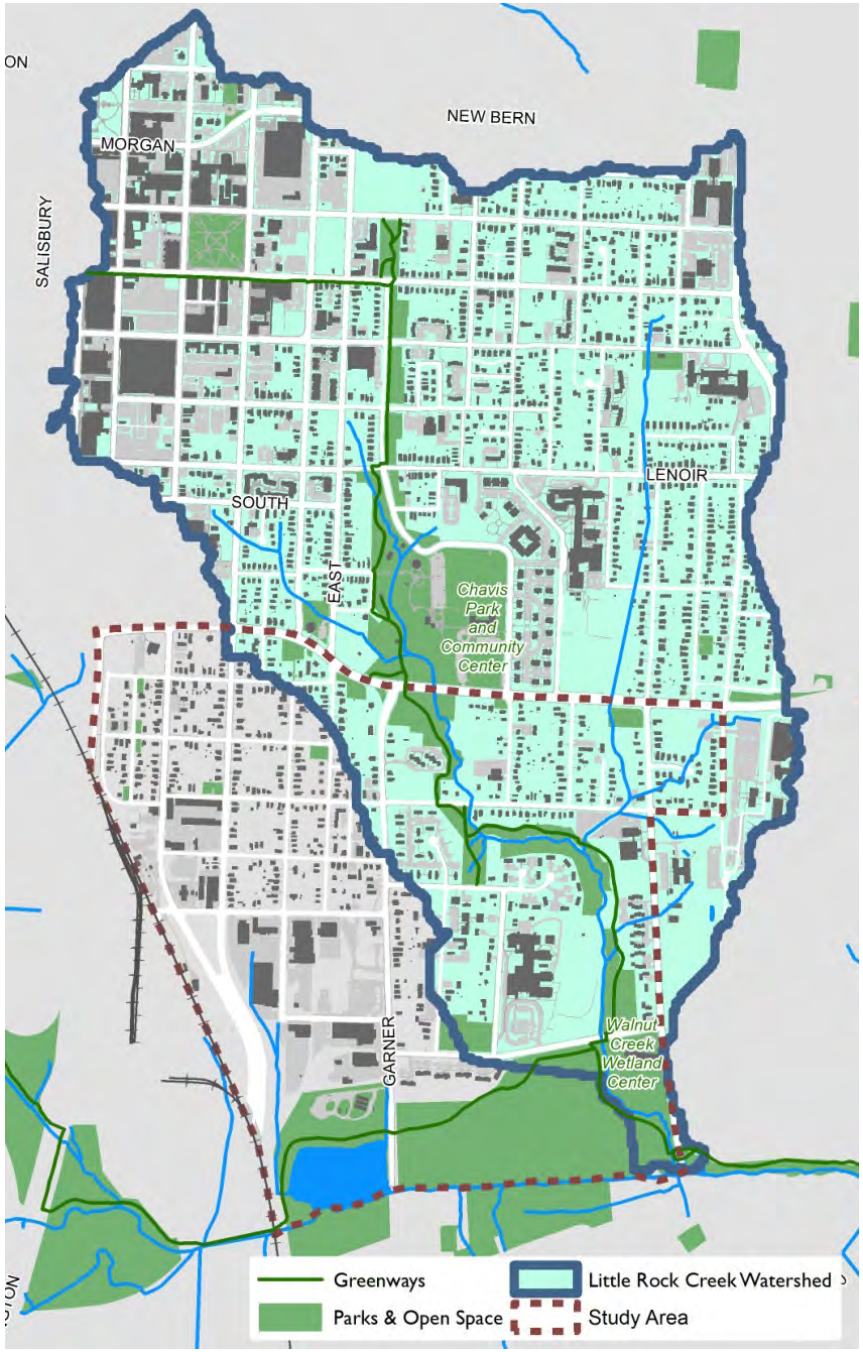
Benefits of a Walkable Neighborhood

Physical health benefits
- Reduce obesity rates in children, which have more than doubled over the past 20 years.
- Walking meets the Surgeon General's recommendation of 30 min/day of exercise.

Mental health benefits
- Walking is associated with an increased ability to concentrate, including for children with ADHD.
- Elderly have improved mental health when they can exercise, walk to local amenities.

Community benefits
- 88.2% less risk of a crash on sidewalks (versus roads)
- Decreases crime
- More "eyes on the street"
- Sidewalks clearly mark public space and discourage people from entering private space

Economic benefits
- Buyers willing to pay more for homes in walkable neighborhoods
- Sidewalks improve customer traffic for retail businesses



A watershed is the area of land where all of the rainwater drains to a water body. In urban areas, a storm system – or a series of underground pipes, open stream channels and ditches – are also part of the watershed. The blue line on the map above indicates the Little Rock Creek watershed and dashed red line indicates the study area.

Images from a variety of Walkable Watershed community engagement events.

Community Engagement

A series of interviews, public meetings, presentations and working sessions were conducted throughout the process to identify assets, challenges and opportunities. This report summarizes the information received during this phase of community engagement.

Initial Stakeholder Interviews
January 15, 2014
- Identify assets and challenges, related initiatives, community organizations and other considerations.

Community Open House
March 13, 2014
- Kick off project to gather information about community assets and challenges and who should be involved.

Presentation to Central and South Central CACs
April - May 2014
- Share information about the project and gather information.

Youth Surveys
March - May 2014
- Gather youth perspective on walking and accessing the creek.

Community Open House and Working Session
May 20 - 21, 2014
- Refine and prioritize strategies and a concept plan to improve walking and water flow in lower Little Rock Creek Watershed.

Working Session
August 19, 2014
- Discuss implementation and next steps.

Presentation to Central and South Central CACs
Fall 2014 (planned)
- Share project update and gather additional considerations to inform next steps.

Youth Input

Students at Carnage Middle School and youth visiting local park facilities were invited to complete surveys about how they walk or bike in the neighborhood, what activities they would like do at the creek and what they would like to learn about the creek or watershed. Key findings include:

Walking and Biking

- Youth living in the neighborhood shared an enthusiasm for biking.
- Most youth identified on-street routes rather than the greenway as preferred routes through the neighborhood.
- A few youth noted concerns about cars and safety.

Favorite Places

- Key destinations included Walnut Creek Wetland Center, Carnage Middle School, Safety Club and John Chavis Memorial Park.

Creek Perspective

Many experienced the creek through trash cleanup events or programs at the Walnut Creek Wetland Center. When asked what comes to mind when you think of the creek, youth shared the following:

- Many describe a beautiful natural setting that suffers from a lot of litter and lack of care, a "ruined paradise."
- Interest in playing, climbing and wading in the creek.
- A curiosity to further explore the creek and wetlands.
- "Why are humans so careless when it comes to taking care of the creek?"

Creek Questions

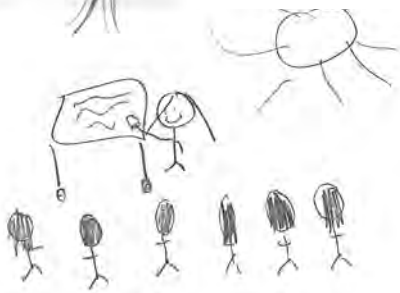
When asked, "what would you like to learn about the creek and watershed," common interests included learning more about:

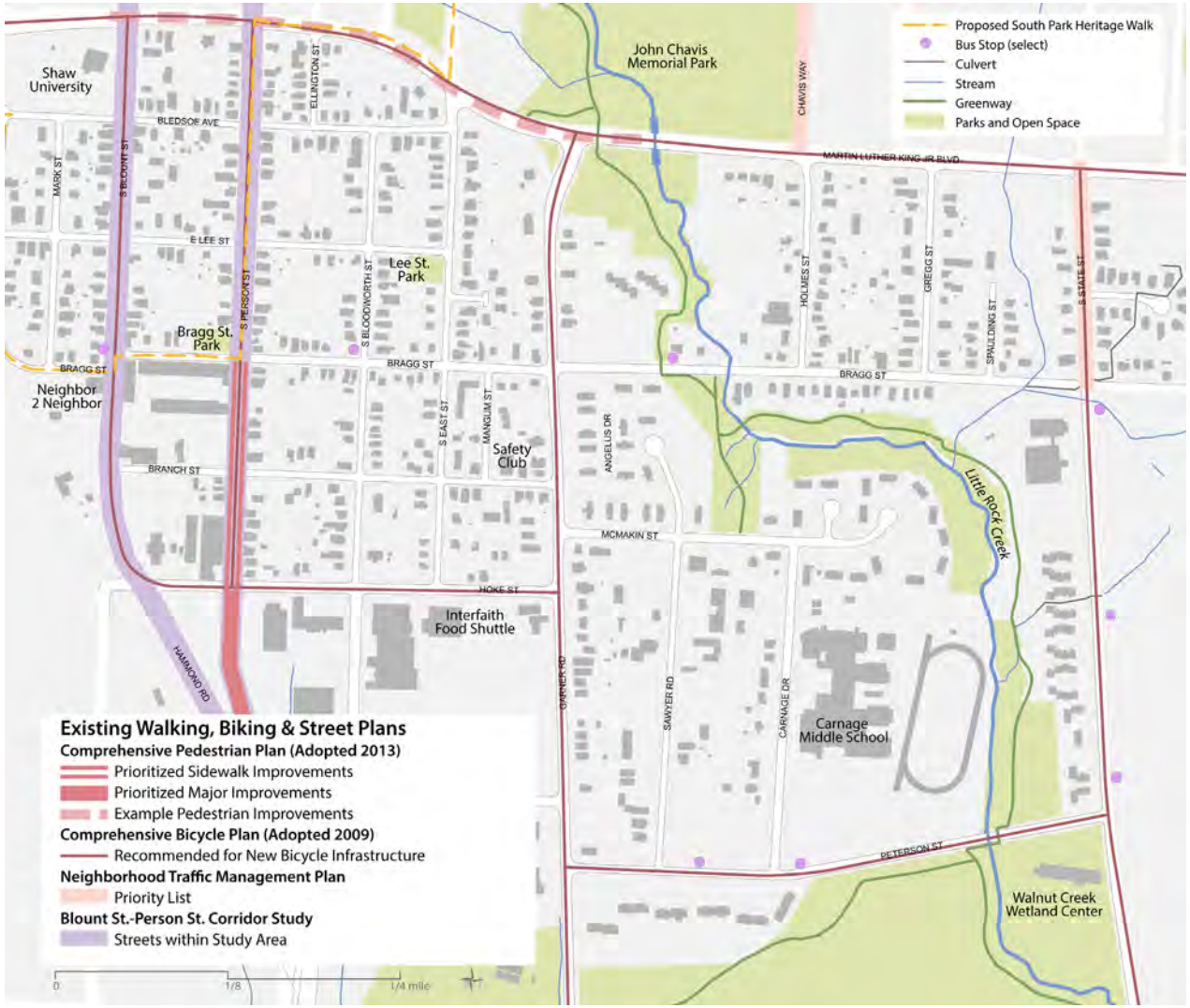
- Creek ecosystems and the plants and animals that live there.
- Where the water in the creek comes from.
- Where the creek begins and ends.
- How clean the water is.
- "How to make a big difference in our ecosystem."

Youth Sketches

What comes to mind when you think of the creek?

If you could answer some of your questions about the creek outside, instead of in your classroom, what would it look like?





Existing City Programs and Plans

The City of Raleigh has a number of initiatives and existing design standards that have informed the lower Little Rock Creek Watershed Concept Plan. The following initiatives also offer design guidance and programs to help facilitate plan implementation:

- Neighborhood Traffic Management Program
- Bicycle Program
- Stormwater Quality Cost Share Program
- Sidewalk Petition Program
- Comprehensive Pedestrian Plan
- Bicycle Transportation Plan
- Street Design Manual
- Blount Street-Person Street Corridor Plan
- Revised Master Plan for John Chavis Memorial Park
- Stormwater Green Infrastructure Study
- Greenway Accessibility Improvements
- Streetscape Capital Program
- Proposed South Park Heritage Walk

Community Assets and Challenges

Stakeholder interviews and community input identified the following set of assets and challenges within the study area.

Assets

- John Chavis Memorial Park
- Inter-Faith Food Shuttle and Urban Garden
- Fertile Ground Food Cooperative
- Raleigh Community and Safety Club
- Carnage Middle School
- Capital Area Greenway
- Walnut Creek Wetland Center
- Little Rock Creek and natural environment
- African American cultural heritage sites

Top row: Capital Area Greenway entrance at Bragg Street; View from Greenway of Little Rock Creek at confluence with Walnut Creek.
Bottom row: John Chavis Memorial Park Carousel; Walnut Creek Wetland Center

Challenges

- Pedestrian safety crossing intersections
- Lack of sidewalks on major pedestrian routes
- Narrow street right-of-ways, which make it harder to build sidewalks within existing right-of-way
- Flooding and mud on sidewalks/greenways
- Perception that walking in neighborhood and greenway is not safe
- People may be unaware there is a creek or see the creek as a nuisance
- Lack of community service-related destinations within the neighborhood

Creek may be seen as a nuisance or as a dumping area.

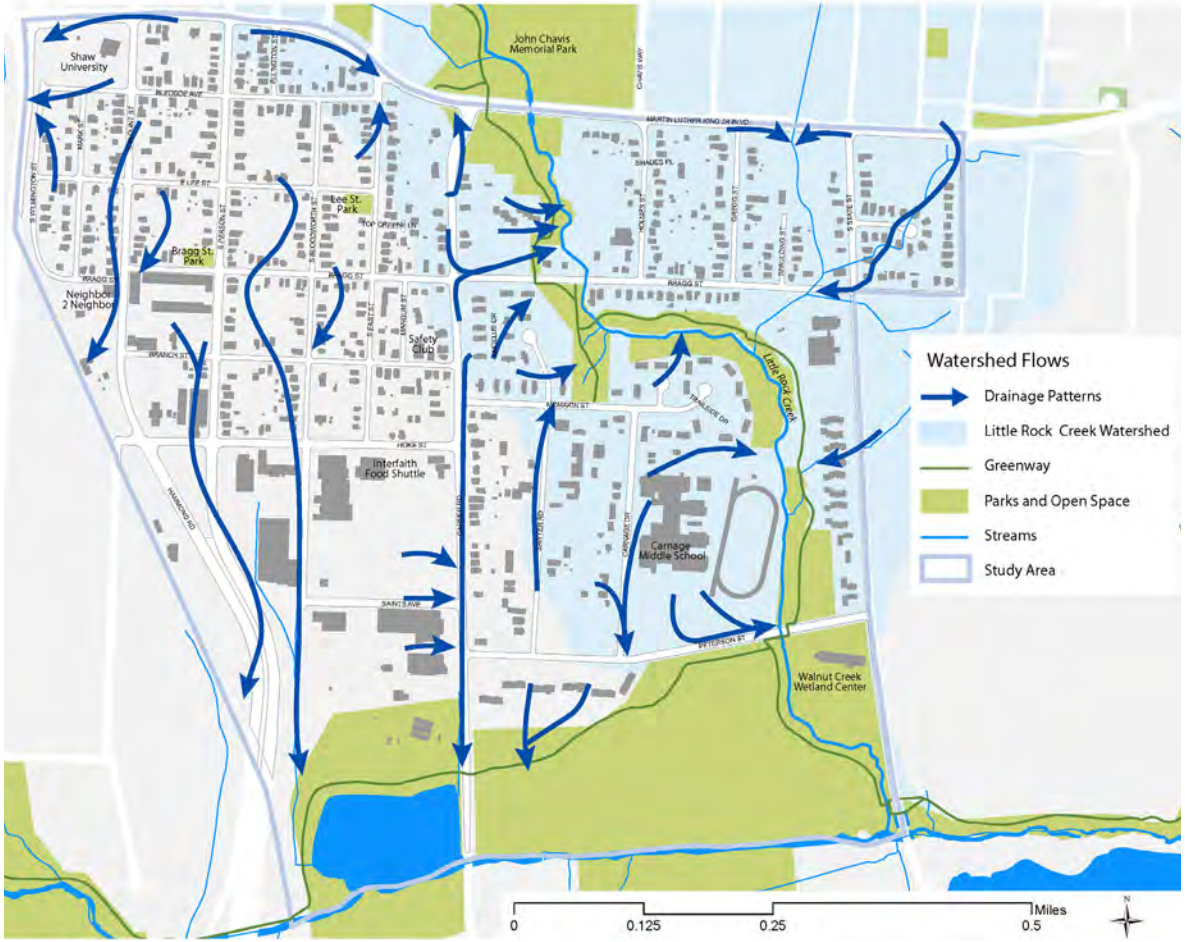
View of Bragg Street lacking sidewalks.

Water Flow

A series of underground pipes, open stream channels and ditches form the storm system to receive and direct stormwater into Little Rock Creek. The blue arrows on the map show the general direction water travels either over land or through pipes to the creek.

Challenges

- Litter and illegal dumping
- Erosive flows
- Polluted water
- Local flooding



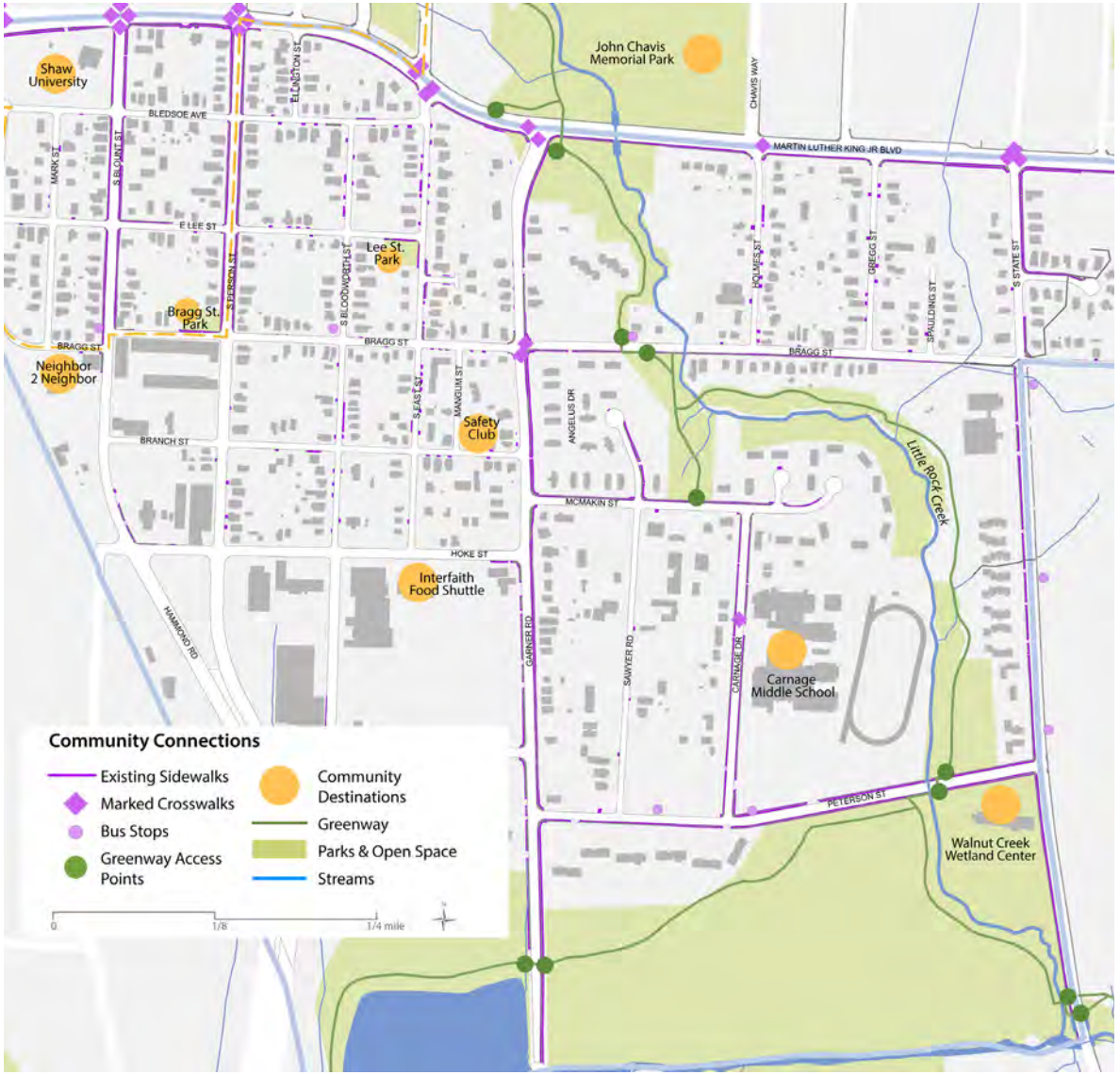
Water Flows Map.

Top left: Litter along Little Rock Creek.
Top right: Eroding creek banks undercut parking lot.
Bottom: 50 gallon drum dumped in Little Rock Creek.

Community Connections

Pedestrian infrastructure includes sidewalks, crosswalks and trails to connect people to community destinations and assets.

The map at right shows community destinations, existing sidewalks and marked crosswalks. The map also helps identify blocks that may benefit from additional pedestrian infrastructure, such as sidewalks, greenway access or marked crosswalks.



Community Connections Map.

Creek and Greenway

The map on the left shows the Capital Area Greenway from John Chavis Memorial Park to the Walnut Creek Wetland Center. The greenway trail parallels Little Rock Creek and provides many scenic views of the creek.

The yellow circles on the map indicate existing greenway access points. There are no public greenway access points from the northeast and between Carnage Middle School and State Street.

View north of greenway access point on Peterson Street at the Walnut Creek Wetland Center. This portion of the Capital Area Greenway is called the Little Rock Trail.

There are a range of nationally recognized natural drainage strategies designed to improve the flow and quality of urban rainwater and also provide community benefits. These natural drainage strategies use plants and amended soil to slow, cleanse and absorb urban rainwater before it reaches creeks, rivers, lakes and bays. These strategies also provide community benefits including shade, landscaped areas, education and traffic calming.

Strategies for integrating walkability and stormwater improvements are described below and on the following page. The next section focuses on how these strategies can be applied within the lower Little Rock Creek Watershed.

Green Streets

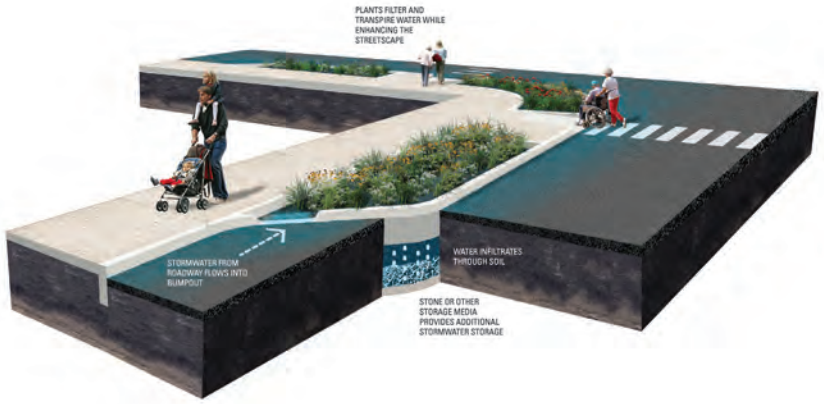
- Enable **safe** access for all users (including pedestrians, bicyclists, motorists and transit riders of all ages and abilities), and
- Enhance **water quality** by cleaning stormwater runoff.

Example of green street in Portland, Oregon.
Credit: ASLA.

Safe Crossings

- Stormwater treatment can be integrated with safe pedestrian crossings.

Mid-block Stormwater Bump-out



Corner Stormwater Bump-out

Source: City of Philadelphia Green Streets Design Manual

Stormwater Flow - On Street

Swales are grassy or vegetated channels that safely hold and direct water from one place to another. They can be located adjacent to streets and parking lots to slow and clean the water before it flows to the creek.

Curb extension retrofit
(Portland, OR. Credit: Mike Houck)

Water-filled planted swale during 25-year storm event *(Seattle, WA)*

Grassy swale

Stormwater Flow - Off Street

Rain gardens are planted areas that are sunken into the ground to collect rainwater runoff from impervious urban areas (such as roofs, driveways and parking lots). Rain gardens can be added to front yards, public spaces and vacant lots.

Integrated into a community park
(Doyle-Hollis Park, Emeryville, CA)

Terraced rain gardens provide a visual attraction
(Oregon Convention Center. Credit: Travel Portland)

In public places with educational signage *(Mount Tabor Middle School, Credit: DJC Oregon)*

Building on existing plans, initiatives and input received during the process, the following recommendations have been identified to address stormwater and improve walkability.

Site specific recommendations are identified on the map on the adjacent page and are organized by type:

Street Opportunities include those streets where sidewalks and natural drainage strategies can be integrated to improve walkability and stormwater management.

Safe Crossings at intersections can be integrated with stormwater treatment to provide safe pedestrian crossings. Intersections lacking crosswalks, greenway access points and intersections where narrow street right of way might limit full block sidewalks are highlighted.

Stormwater Flows include off-street natural drainage opportunities, such as swales and rain gardens that can be aligned with the greenway and sidewalks.

Greenway Access provides additional access points to increase use and activity along the greenway.

Education opportunities include environmental education signage to improve creek awareness and stewardship. Additional "cues to care" can be incorporated to communicate that natural drainage areas are important, see page 19 for more information.

Recommendation Details

Each recommendation is described in more detail on the following pages. These recommendations are initial ideas that can be further refined during a design phase and additional community input. The key below describes how the recommendation details are organized.

Current Conditions

Current conditions are described and illustrated using black and white photographs taken between October 2013 and May 2014.

Potential Opportunities

Examples of the recommended approach from other communities are shown as color images.

Plans and cross sections provide additional information about the recommended approach. The following color scheme is used to illustrate the potential opportunities:

- New sidewalk (existing sidewalks are shown in white)
- Bike lanes (to be painted on street)
- Enhanced planting strip between street and sidewalk that could be modified to absorb rainwater
- New curb extension / stormwater bump-out
- Existing greenway

Recommendations

Street Opportunities

- Enhanced Connections
- Potential Connection

Safe Crossings

- Intersections
- Greenway Crossings

Stormwater Flows

- Swales
- Rain Gardens

Greenway Access

- Connections

Education

- Outdoor Education

Detailed Recommendations

Site Specific

1. Garner Road
2. S. Person Street
3. Bragg Street
4. Parking Lot Conversion
5. State Street
6. Park Swales & Rain Gardens
7. McMakin Street
8. New Connections
9. Peterson Street

Not Site Specific

10. Rain Gardens
11. Community Engagement
12. Greenway Enhancement

1 Garner Road at Martin Luther King Jr. Blvd. Intersection

Current Conditions

- Intersection identified in Pedestrian Comprehensive Plan for improvements.
- Additional right-of-way and city-owned property presents opportunities to improve pedestrian safety and stormwater runoff.
- Martin Luther King Jr. Blvd. is maintained by NC Department of Transportation (NCDOT) and Garner Road is maintained by the City of Raleigh.

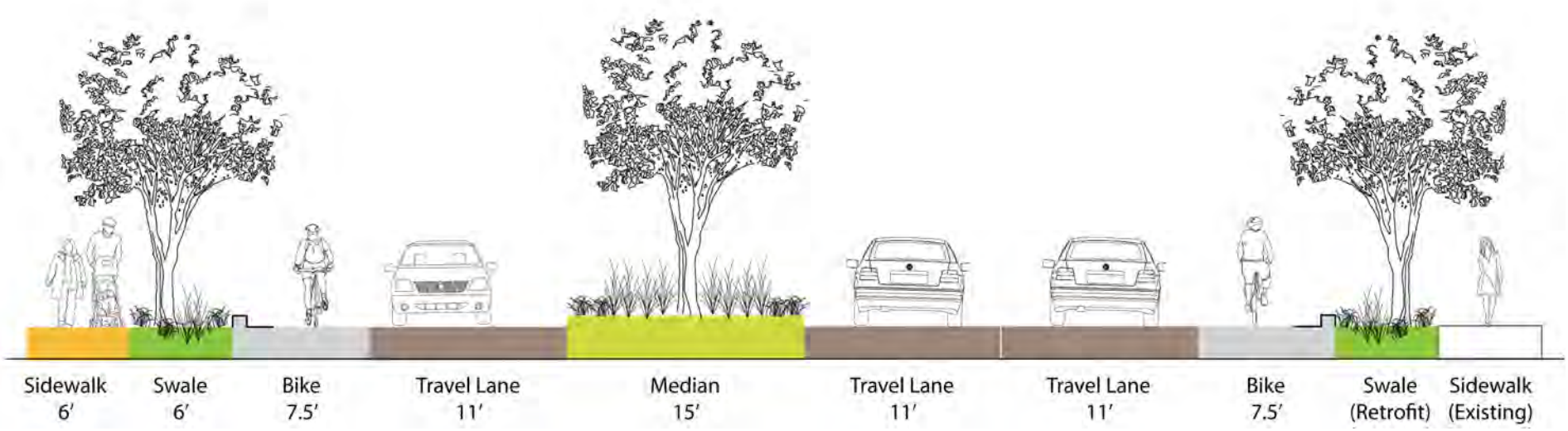
Garner Road at Martin Luther King Jr. Blvd. intersection.

1 Garner Road at Martin Luther King Jr. Blvd. Intersection

A) Potential Opportunities - On Street

- Integrate bike lanes, planted median and planted sidewalk bump outs to increase pedestrian safety and reduce stormwater runoff.
- Revisit streetscape prioritization for Martin Luther King Jr. Blvd. to address neighborhood and non-vehicular needs.
- Coordinate stormwater improvements with NCDOT.

A) On Street and B) Off Street Opportunities

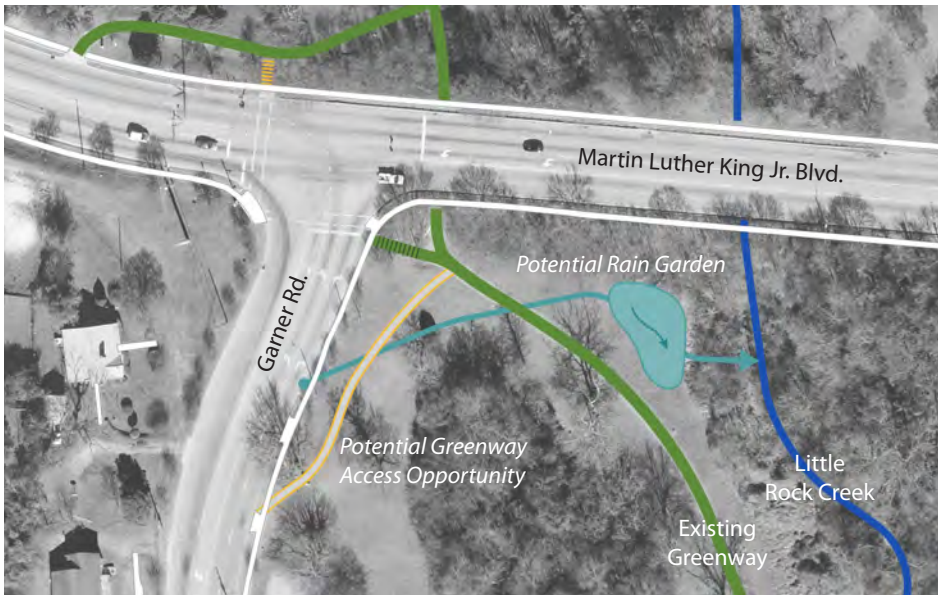


Example street that integrates planted median and sidewalks within 90 ft right-of-way

1 Garner Road at Martin Luther King Jr. Blvd. Intersection

B) Potential Opportunities - Off Street

- Add greenway access from Garner Road just south of Martin Luther King Jr. Blvd as alternative to crossing Martin Luther King Jr. Blvd.
- Potential to capture water from street inlet and route to rain garden in greenway to slow water and provide educational opportunity.



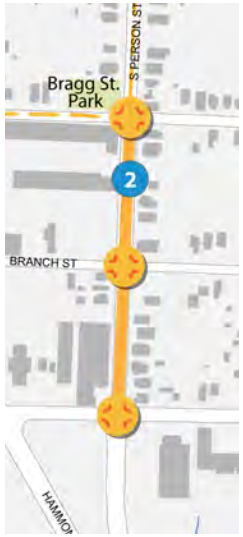
Potential off-street opportunities.


Example of a trail adjacent to a rain garden.
Source: Metropolitan Sewer District of Greater Cincinnati


View from tunnel to Garner Road.


View from Garner Road to greenway.

2 S. Person Street (between Bragg St. and Hoke St.)



Current Conditions

- Comprehensive Pedestrian Plan identifies S. Person Street between Bragg Street and Hoke Street for sidewalk improvements. Construction is estimated to be completed by Fall 2015.
- Blount Street – Person Street Corridor Study explores two basic design alternatives: 1) road diet and 2) two-way restoration to improve this multi-modal corridor.
- Storm drains at intersections of Branch Street and Hoke Street capture stormwater runoff.

Complete Street: Opportunity to integrate natural drainage strategies within the recommended landscaped bulb-outs along S. Person St. (Blount St.-Person St. Corridor Study "Road Diet Alternative").

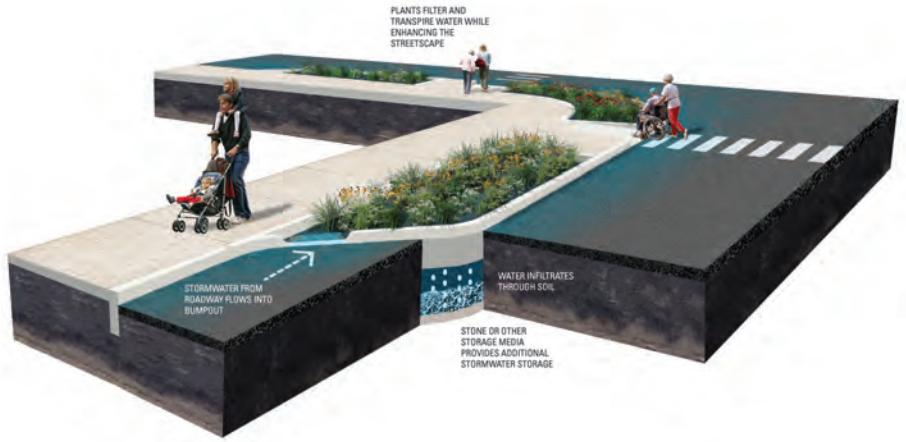
Potential Opportunities

- Build on Blount Street – Person Street Corridor Study by integrating natural drainage strategies into corridor improvements.

Integrate stormwater strategies into sidewalk improvements such as:

- Explore planted bump-outs at key intersections or midblock during sidewalk improvement design phase to slow street runoff draining along gutters.
- Extend pedestrian and green street amenities through narrower residential streets and connect to the South Park Heritage Trail and Bragg Street Park.

Example of a curb cut that allows stormwater from street gutter to flow into a planted swale.



Corner Stormwater Bump-out.

Source: City of Philadelphia Green Streets Design Manual

3 Bragg Street (between Garner Road and State Street)

Current Conditions

- No sidewalk on north side of Bragg Street.
- No pedestrian crossing connecting greenway access points. (Bus stop located at north greenway access point.)
- Street stormwater is piped to creek.
- Street may be wide enough to incorporate additional improvements.

View looking east along Bragg Street.

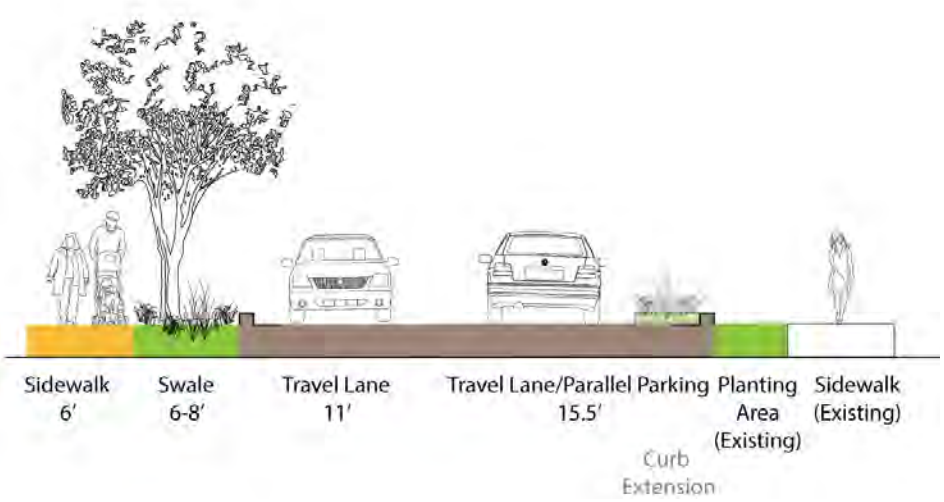
Bragg Street current conditions.

3 Bragg Street (between Garner Road and State Street)

Potential Opportunities

- Evaluate adding planted swale and sidewalk along north side of street.
- Add curb extension, planted sidewalk bump outs or other treatments at Greenway trail entrances.
- Improve pedestrian crossing at Garner Road intersection
- Consider relocating bus stop to Garner Road intersection
- Enhance safety fences and install "Little Rock Creek" signs at creek crossings as a "cue to care."

The City of Raleigh Sidewalk Petition Program provides citizens an opportunity to initiate sidewalk construction. To request a new sidewalk, residents would sign a petition requesting a sidewalk. Successful petitions are ranked citywide. No direct costs are incurred by the residents for installing new sidewalks.



Example of a street that integrates planted swale and sidewalks within 50 ft right-of-way.

"Cues to care" are landscape design and management approaches to communicate that an area is being maintained and cared for. These cues provide a cultural context for ecological function, such as a riparian corridor that might be perceived as wild or messy. A "cue to care" could be native flowers or public art along the edge of denser riparian vegetation as a cue that the area is important and is being maintained.

(Adapted from Joan Iverson Nassauer, Landscape Architecture Professor at the University of Michigan)

4 Parking Lot Conversion

Current Conditions

- Parking lot on private property has become unstable, sink holes and undercutting is visible.
- Creek banks are eroding due to high flow following rain events.

Existing parking lot and eroded creek bank.

Potential opportunity to coordinate with property owner to:

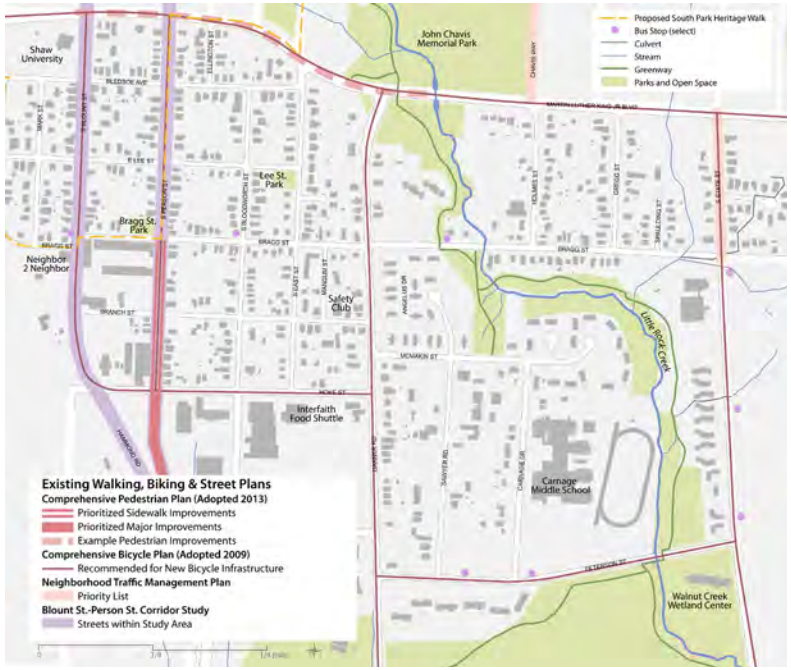
- Remove unused paving,
- Stabilize creek bank erosion,
- Repair bridge,
- Add a rain garden, and
- Integrate greenway access from the northeast.
- Participate in Stormwater Quality Cost Share program (City would fund 75% of the project and the property owner would be responsible for the remaining 25%, but this could include funding from other sources).

Example of a rain garden designed to handle a large amount of stormwater.

5 State Street

Current Conditions

- Identified in Bike Comprehensive Plan for bicycle infrastructure improvements.
- Major route to Walnut Creek Wetland Center and Carnage Middle School.
- Lack of designated pedestrian crossings at intersections.
- Bus stops located at intersections and midblock.
- Neighbors concerned about speed of through-traffic.
- Wide street presents opportunity for improvements.



View north along State Street near Peterson Street intersection.

View south along State Street at Bragg Street intersection.

5 State Street

Potential Opportunities

- Add bike lane.
- Remove midblock bus stops in favor of bus stops at intersections. Integrate planted sidewalk bump outs to improve pedestrian safety at intersection/bus stops.
- Consider covered seating and resting places along long walking routes. Explore placemaking opportunities to improve public spaces.
- Explore right-of-way bioretention opportunities that can also provide additional safety benefits to pedestrians and bicyclists.
- Improve accessibility from Walnut Creek Wetland Center to greenway entrance at Walnut Creek Bridge.

Sit On It Detroit - an initiative started by two Wayne State University students to build benches for Detroit's bus stops. Benches are built from recycled or reclaimed materials with help from volunteers. Each bench includes a built-in bookshelf with a plexiglass covering. Citizens are encouraged to read, borrow, and donate books. The network of benches will act as a free library.
Source: http://sitonitdetroit.com/

Mural painted on bus shelter in Hartford, CT. *Source: http://hartforddailyphoto.blogspot.com/2013/10/another-bus-shelter-mural.html*

Placemaking capitalizes on a local community's assets, inspiration, and potential, with the intention of creating public spaces that promote people's health, happiness, and well being.[1]

Some communities have identified bus stops and shelters as placemaking opportunities. These small public spaces have been transformed to celebrate a community's identity, significant local people or share educational information.

[1] *Project for Public Spaces, www.pps.org/*

6 Park Swales and Educational Rain Garden

Current Conditions

Existing ditch adjacent greenway trail.

Potential Opportunities

- Transform ditches to swales and add rain garden to slow the water.
- Integrate educational signage, along with a community garden at this greenway access point.
- Integrate "cues to care" to highlight that this area drains to Little Rock Creek.
- Coordinate with initiatives such as Passage Home and City tree planting programs.

Examples of planted swales.

7 McMakin Street

Current Conditions

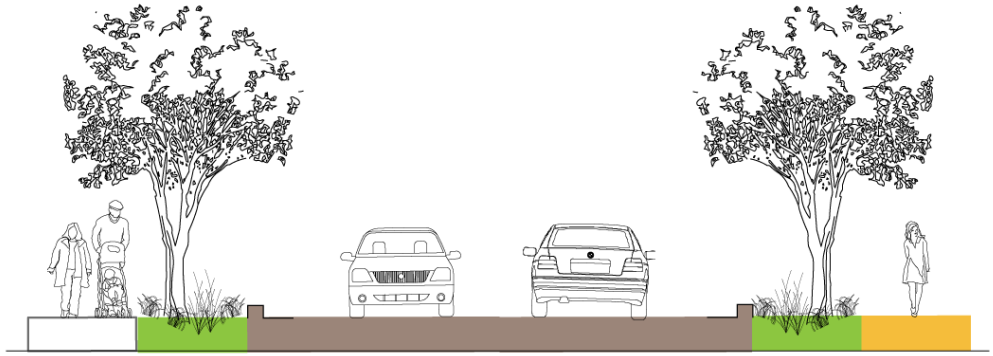
- Walking route to middle school.
- No sidewalk on south side of street.
- No pedestrian crossing connecting greenway access point.
- Lack of ramp at greenway access.
- Street stormwater is piped to ditch that drains to creek.
- Street may be wide enough to incorporate additional improvements.

View east along McMakin Street.

7 McMakin Street

Potential Opportunities

- Integrate planted swales and sidewalk to slow rain water and increase pedestrian safety.
- Add planted curb extensions with curb cut at greenway trail entrance.
- Add greenway and wayfinding signage, and incorporate watershed and environmental education information.



Example of a street that integrates planted swale and sidewalks within 55 ft right-of-way.

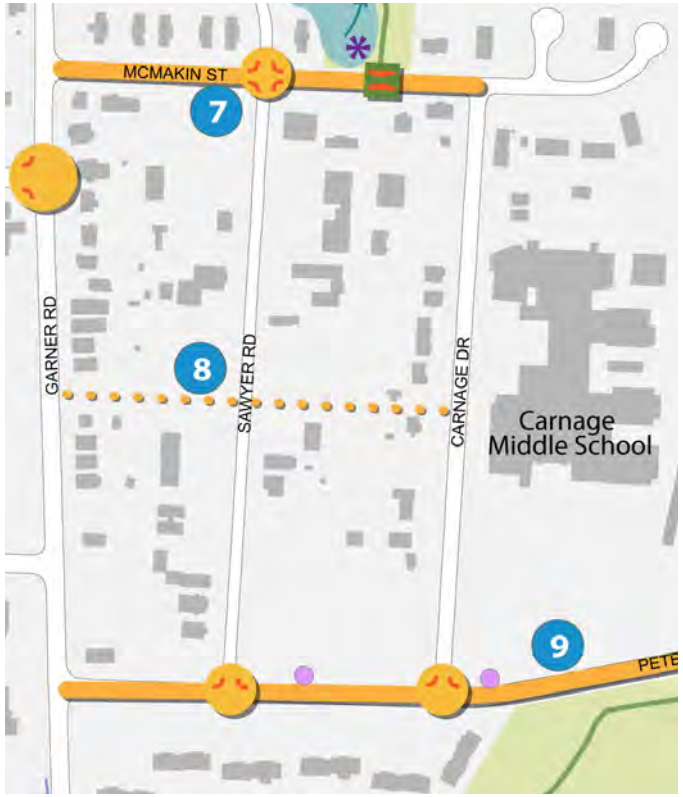
8 New Connection

Current Conditions

- Extremely long blocks (greater than 1/5 mile) reduce walkability.

Potential Opportunities

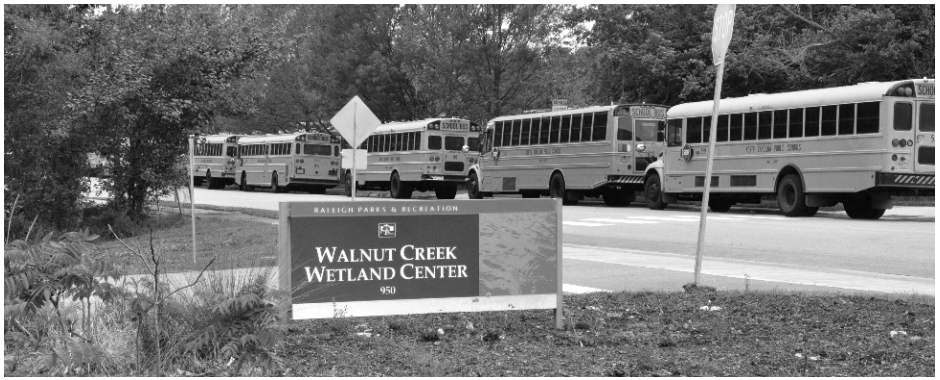
- Potential to integrate new green street or pedestrian way with planted swales and sidewalks in future residential developments to increase pedestrian connectivity and improve stormwater flow.



9 Peterson Street

Current Conditions

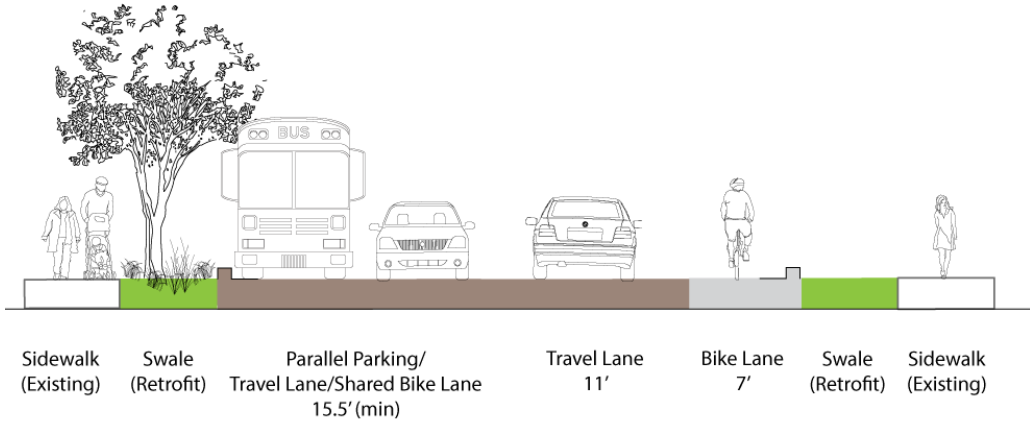
- No sidewalk on north side of street west of Carnage Drive.
- School buses park along north side of street daily during school.
- Local youth walk and bike to Walnut Creek Wetland Center.
- Street stormwater is piped to creek.
- Street may be wide enough to incorporate additional improvements. Identified for bike infrastructure improvements.



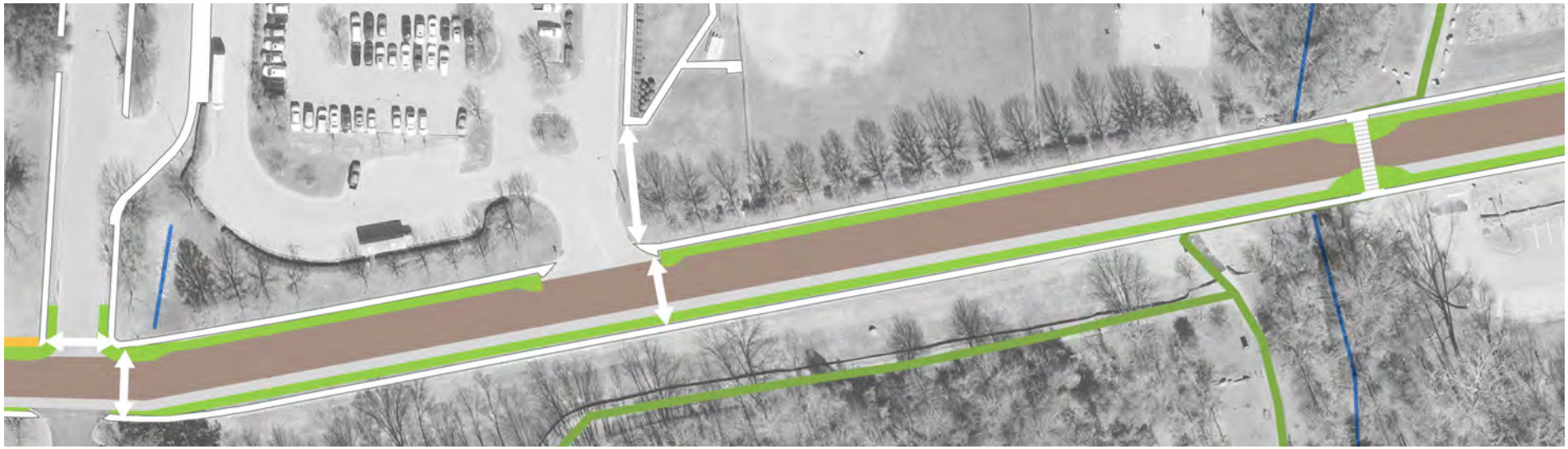
9 Peterson Street

Potential Opportunities

- Paint street to demarcate a dedicated bike lane on south side and a shared bike and vehicular lane on north side.
- Explore existing planting strip retrofit to add swale to improve stormwater draining from Carnage Street and middle school.
- Add swale to existing planting strip on south side.
- Extend sidewalks to Garner Road.
- Include planted sidewalk bump outs on both sides of the street at the greenway crossing to improve safety and visibility and avoid parked buses from blocking access.



Example of a street that integrates planted swale and sidewalks within 60 ft right-of-way.



10 Rain Garden Installation Enhancement

Potential Opportunities

- Potential to coordinate with public or private property owners in strategic locations to install rain gardens and transform detention area into rain garden with educational signage.
- 25% property owner cost share and maintenance agreement required.
- Incorporate plants into rain gardens that support pollinator species.

Rain garden with educational signage at middle school.
(Mount Tabor Middle School, Credit: DJC Oregon)

Rain garden integrated into a community park.
(Doyle-Hollis Park, Emeryville, CA)

11 Community Engagement

Potential opportunities for community members and organizations

- Participate in civic processes to raise awareness of community needs (such as a sidewalk petition to initiate sidewalk construction or providing comments to elevate priorities for street improvements).
- Increase community awareness and ownership of community assets through education, stewardship and volunteer activities.
- Coordinate with community organizations on: promoting litter prevention and removal, invasive plant management, storm drain marking, stream clean up days, stormwater best practices on private property, signs that identify and celebrate Little Rock Creek.

Potential opportunities to support community-led initiatives

- Identify and share implementation programs with the community.
- Develop community outreach strategy with dedicated resources for community education and engagement (such as door-to-door or other personal outreach opportunities).
- Work with community members and organizations on: promoting litter prevention and removal, invasive plant management, storm drain marking, stream clean up days, stormwater best practices on private property, signs that identify and celebrate Little Rock Creek.

Storm drain marking in the Bellemeade neighborhood in Richmond, Virginia.
Source: James River Association

12 Greenway Enhancement

Potential Opportunities

- Improve access and increase activity along greenway.
- Integrate fitness stations, signage, mileage markers, seating and water fountains.
- Clear vegetation in strategic locations to improve visibility.
- Promote activities such as bike and foot races to encourage activity.
- Create pollinator habitat along the greenway and mown utility right-of-ways. As a new federal priority, funding might be available to support these efforts.

Improve greenway access from the northeast.

Example of a fitness station.
Credit: Trust for Public Land

Example of a youth focused foot race along a greenway.

Principles for Implementation

The recommendations outlined in the walkable watershed concept plan reflect initial opportunities to improve walkability and water quality in the lower Little Rock Creek Watershed. Key principles for implementation include:

- **Grow Community Stewardship**
  Continue to grow and foster community stewardship through outreach, education and opportunities for community involvement.

- **Engage Youth**
  Build on existing youth programs and initiatives to engage youth in environmental education opportunities. As projects move forward, invite youth to participate in the design process and in the designing and building of outdoor play and learning areas.

- **Build Partnerships**
  Strengthen existing and develop new partnerships between federal, state and local governments and community organizations for implementation and stewardship.

- **Seek Funding**
  Develop a plan to seek funding, including a list of potential grants and associated deadlines. Assemble teams early to develop winning proposals. Continue to seek opportunities that cross programs and initiatives to leverage funding for projects.

- **Phase Projects Over Time**
  While some recommendations may be implemented in the near term, some projects will need to be phased over time. Develop an action list to coordinate initiatives and projects among partners. Continue to refine ideas during the design process.

- **Celebrate Successes!**
  Sustain momentum and support by celebrating successes along the way.

Action List

The Walkable Watershed Concept Plan includes a range of recommendations that can be implemented over time. Implementation will require a range of partners and funding sources, including public, private and community led efforts. Public investments will be phased consistent with city-wide priorities.

To coordinate implementation over time, the City of Raleigh has developed an Action List to support the Concept Plan. The Action List outlines a timeframe, potential partnerships, funding options and next steps for each recommendation and can be updated over time. The Action List is a living document and will be updated as new information is available. Please see the Walkable Watershed Action List for additional information.


CITY OF RALEIGH
NORTH CAROLINA


skeo
SOLUTIONS