

COWLICK TRAIL FEASIBILITY STUDY



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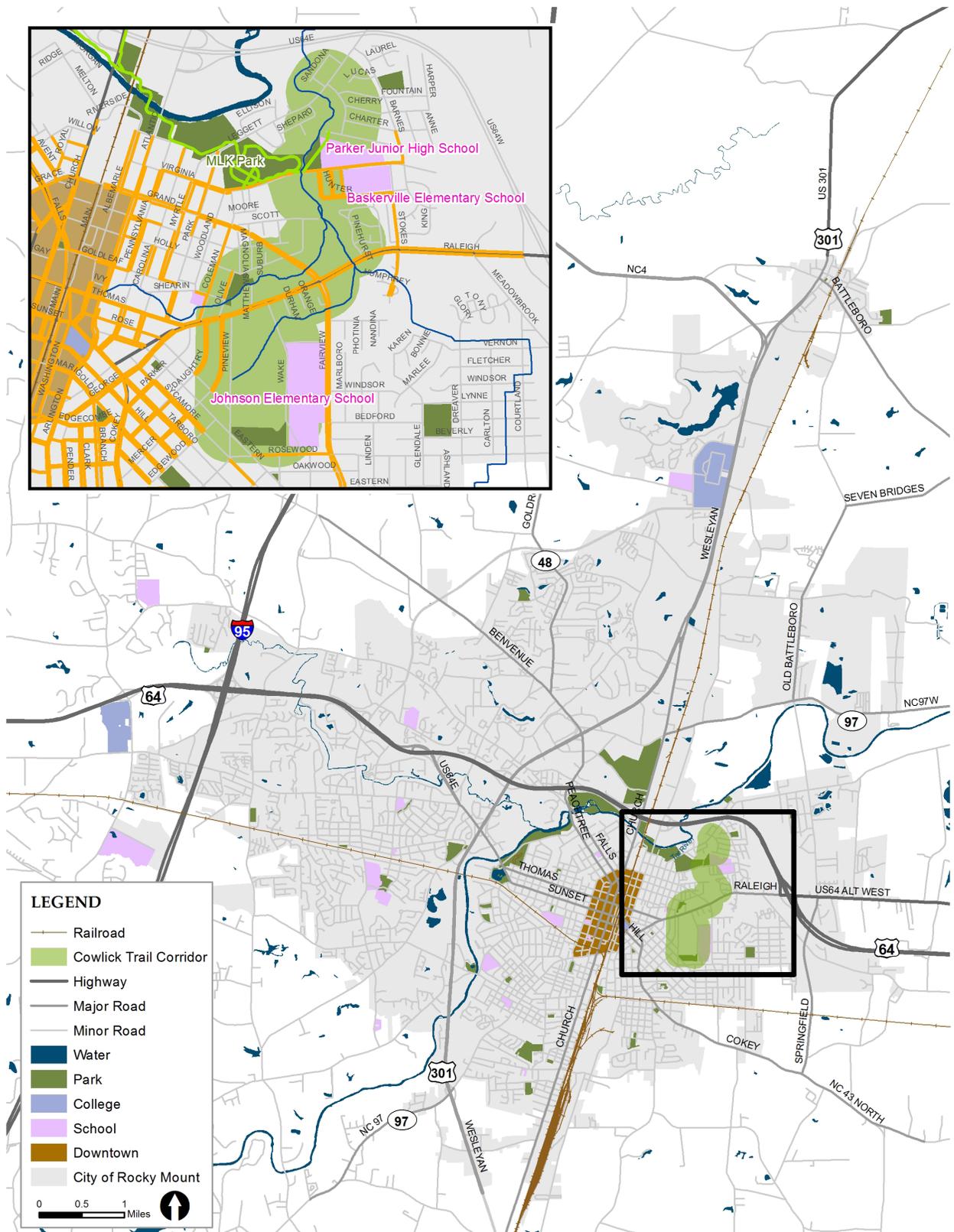


HIGH WATER MARK
SEPTEMBER 17, 1999
NATIONAL WEATHER SERVICE BALDWIN, NY
NATIONAL PARKS SERVICE
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
48082

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MAP 1.1: STUDY AREA CONTEXT MAP



CHAPTER 1: INTRODUCTION

OVERVIEW

In November 2013, the City of Rocky Mount commissioned Alta Planning + Design to prepare a feasibility study for the Cowlick Trail. The Cowlick Trail study was initiated by the City for the purposes of alternative transportation, recreation, and healthy-living opportunities. The Cowlick Trail is part of a broader city-wide pedestrian and greenway network laid out in the 2012 Rocky Mount Pedestrian Plan. The trail segment ranked high in the Pedestrian Plan prioritization because of its connectivity to multiple parks, schools, and other destinations. The trail also connects lower-income, underserved communities in Rocky Mount.

PROJECT PURPOSE

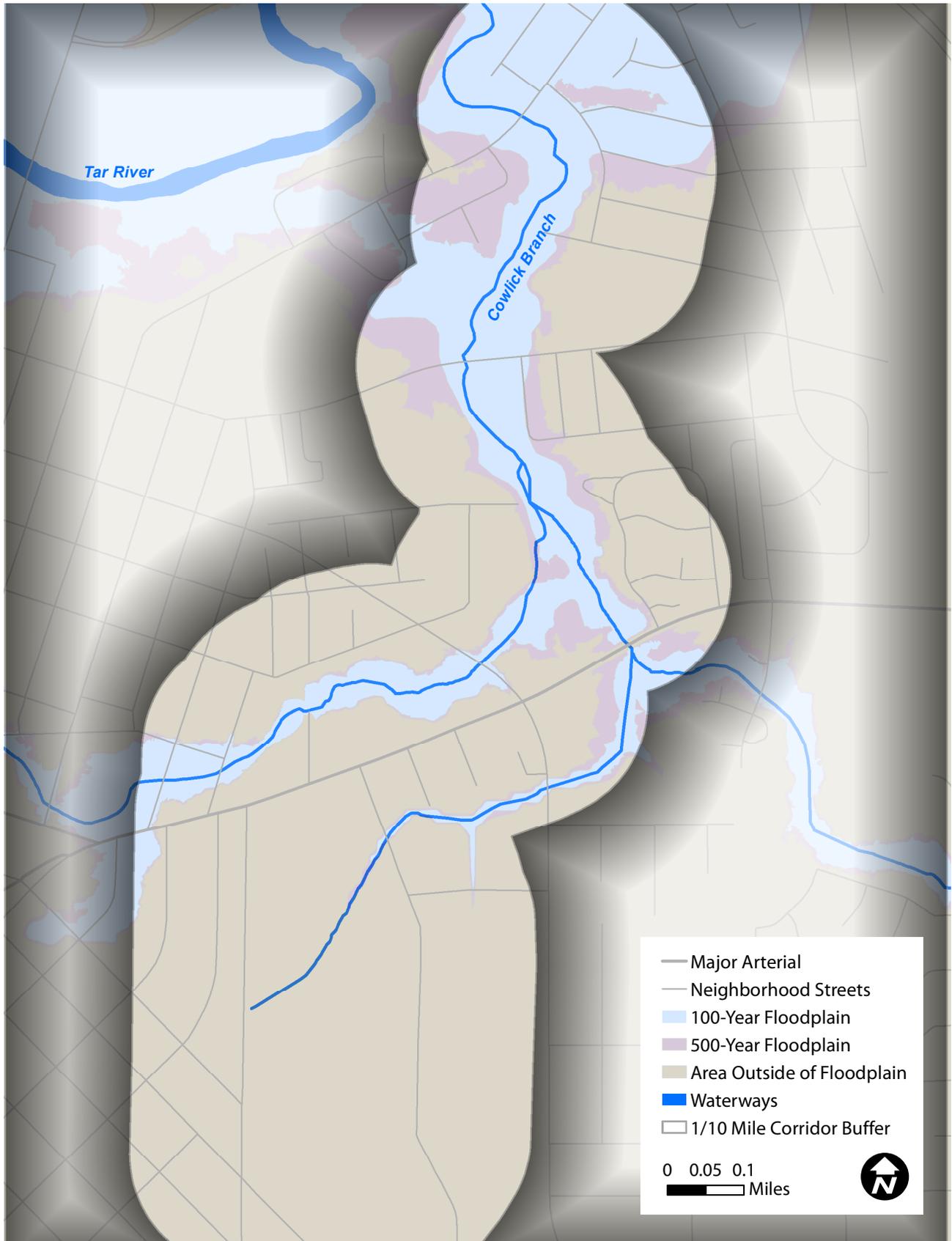
The Cowlick Trail will provide greater non-motorized connectivity to eastern Rocky Mount and extend the existing greenway system. The Cowlick Trail has the potential to enhance the environment, health, and quality of life of Rocky Mount citizens. This study provides a comprehensive overview of the necessary steps to transform the corridor into a shared-use trail suitable for public use. It provides a series of alternatives that were vetted by City officials to determine the preferred greenway alignment. It outlines recommendations for improvements and associated costs, provides pertinent permitting and other development

requirements, includes cross sections and renderings, and prioritizes trail segments into manageable segments for construction. In addition, the study will provide relevant design standards for shared use-trail construction for future use in construction documents.

STUDY AREA

The study area for this segment of the Cowlick Trail extends almost two miles with a northern starting point at Leggett Rd. The corridor extends to an existing greenway near Martin Luther King Junior Park. It continues southward across Virginia St. parallel to Cowlick Branch to the Grand Ave./E. Raleigh Blvd. intersection area. The corridor crosses E. Raleigh Blvd. southward to its terminus at the southern end of the Pineview Cemetery as seen in Map 1.1.

MAP 1.2: HYDROLOGY



CONTEXT

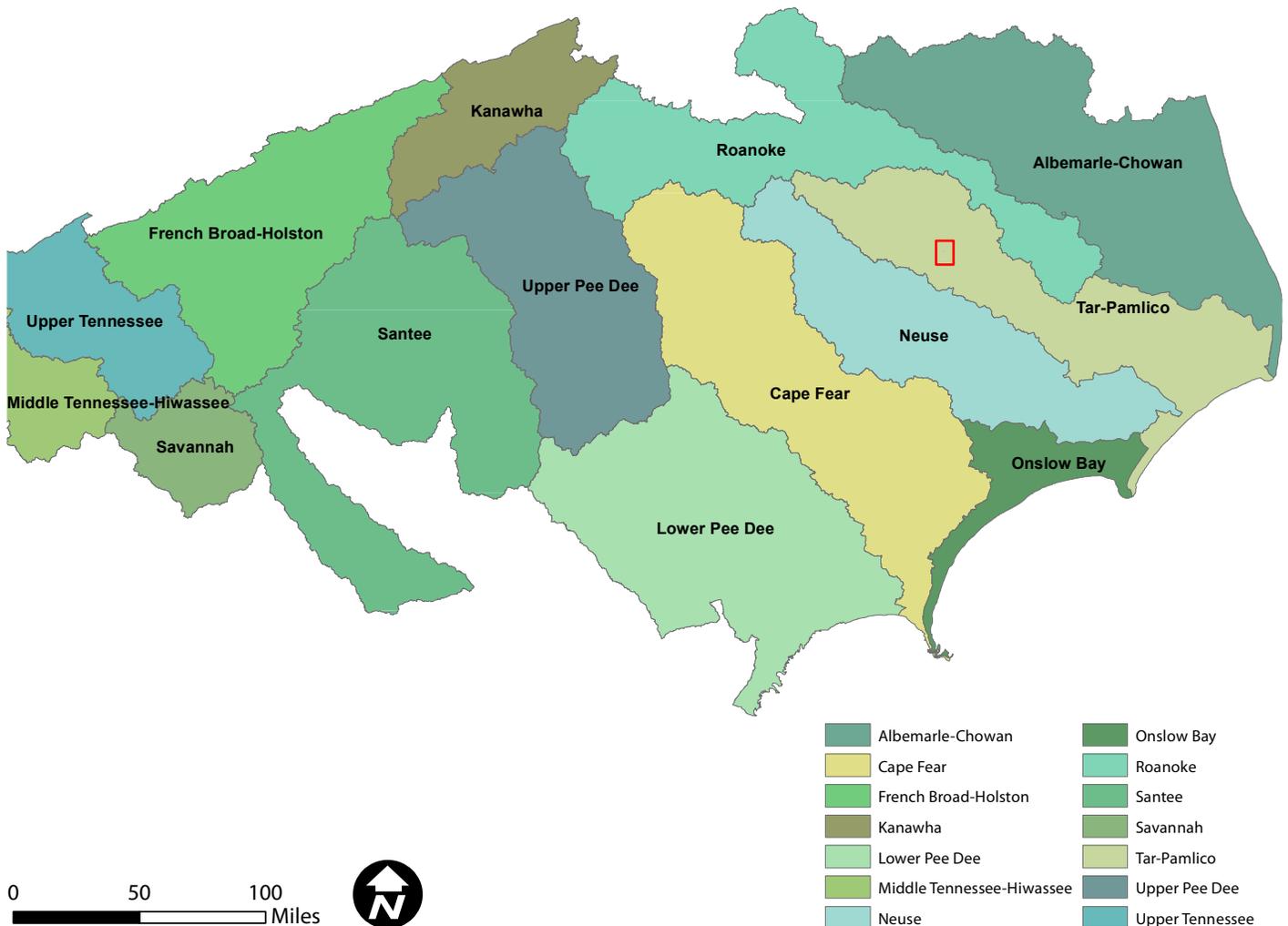
Hydrology

The Cowlick Branch stream corridor provides the backbone for the Cowlick Trail alignment. Cowlick Branch flows northward into the Tar River. The northern portion of the trail alignment primarily lies within the 100-year floodplain around the stream. The southern portion of the alignment, particularly the portion south of E. Raleigh Blvd., lies outside of the floodplain. Map 1.2 illustrates the hydrology in the study area.

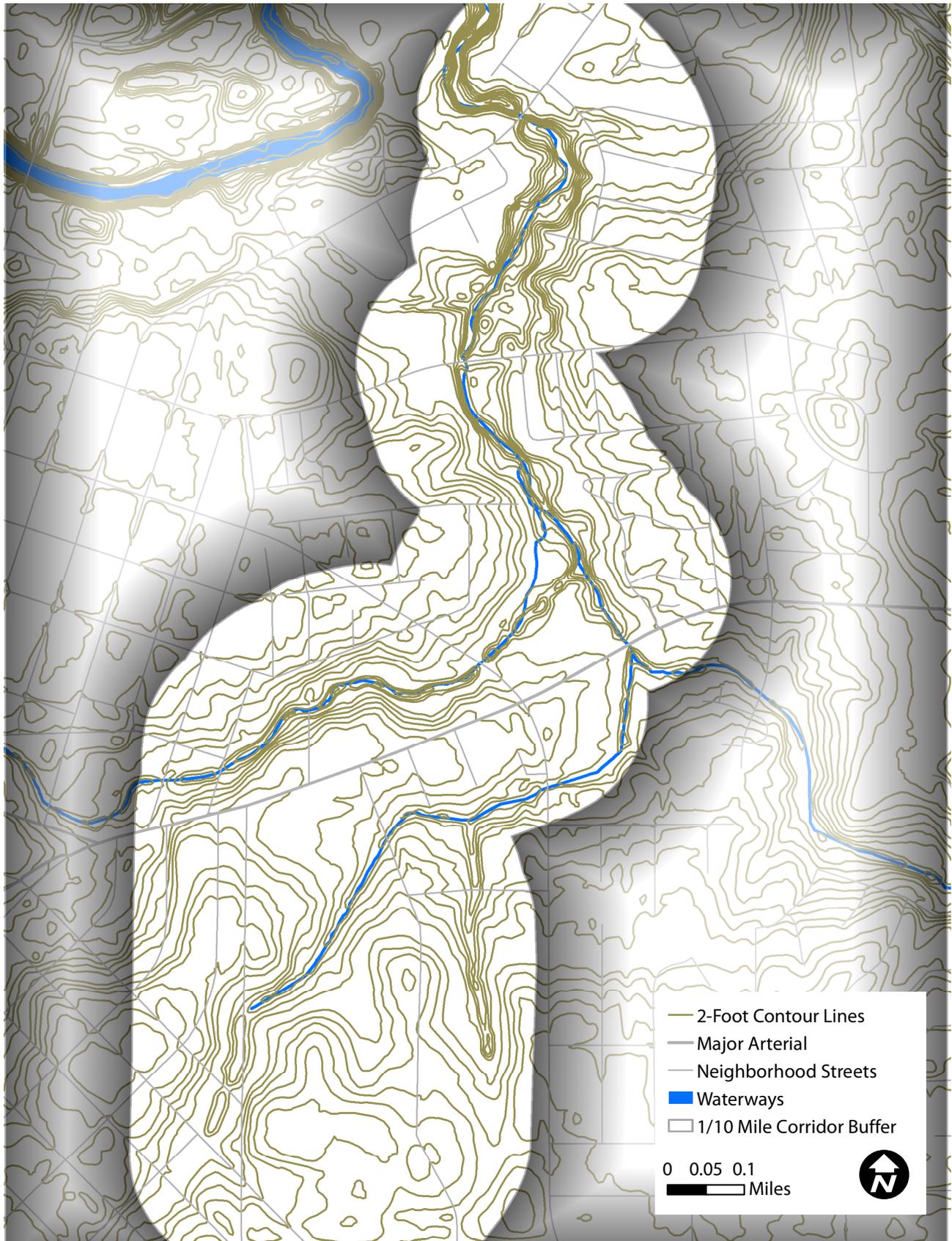
River Basin

As seen in Figure 1.1, North Carolina has 17 designated river basins. A river basin is defined as the land area within which all water drains into a series of streams and creeks and eventually to a single river. The Cowlick Trail study area is located in the Tar-Pamlico River Basin, the fourth largest basin in the state. It spans 5,440 square miles from the Piedmont in the north-central portion of the state and east to the Atlantic Ocean. The Upper Tar River watershed of the basin, which includes Rocky Mount and the Cowlick Trail study area, is a priority area for land conservation and habitat protection.

FIGURE 1.1: NORTH CAROLINA RIVER BASINS



MAP 1.3: TOPOGRAPHY



Topography

The topography around the Cowlick Trail corridor and Cowlick Branch stream can be seen in Map 1.3. The elevation change along the stream's banks is greater than the surrounding lands in the corridor, with the stream's banks being steepest in the northern portion of the corridor. The surrounding areas within the Cowlick Trail corridor are characterized by more gradual elevation changes that create a gently rolling landscape.

Soils

The Cowlick Trail study area contains several different types of soil that can be generally categorized as sandy loam, loamy sand, and urban land complex soils. Urban land complex soils are a combination of original soil material, fills, and reworked soils that are associated with developed areas. These soils account for a substantial portion of the soil in the study area as illustrated in Map 1.4.

Destinations

Map 1.5 shows destinations in and near the Cowlick Trail study area. Several schools are located within the alignment corridor or within walking distance, including JW Parker Middle School, Baskerville Elementary School, Pope Elementary School, Fairview Early Childhood Center, and Johnson Elementary School. The proposed trail alignment is also adjacent or close to many parks and community facilities: Lancaster Park, Martin Luther King Jr. Park, Community Center, Holly Street Park, Sycamore Street Park, Pineview Cemetery, Northeast Cemetery, Unity Cemetery, and Eastern Avenue Park are all in or within one-quarter mile of the corridor.

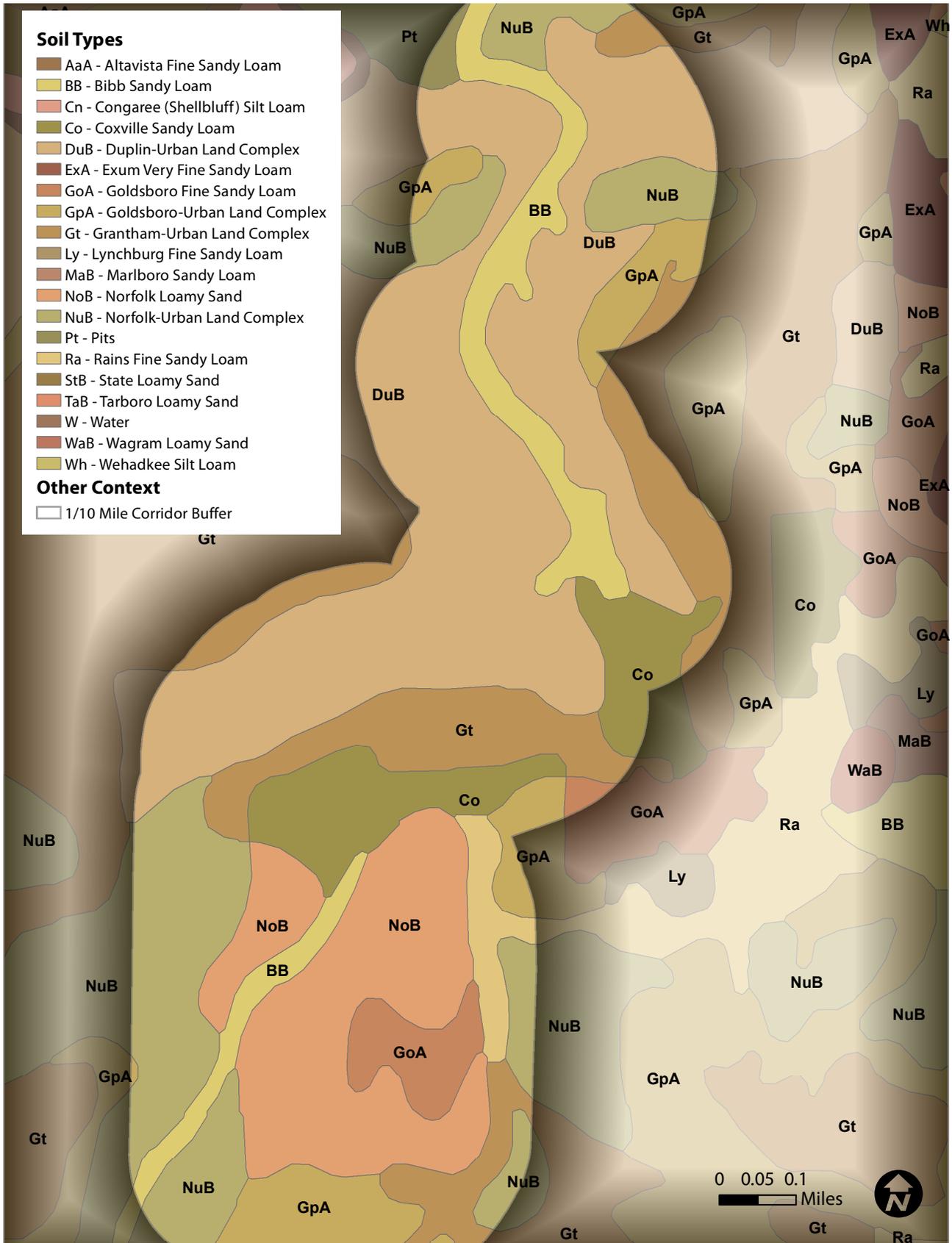
Transportation

Map 1.6 shows transportation options in and around the Cowlick Trail study area, including existing roadways, sidewalks, bus stops, and trails. The proposed alignment would link to the existing Tar River Trail in Martin Luther King Jr. Park. Sidewalks provide connectivity from the corridor along thoroughfares and into surrounding neighborhoods. In addition, nearly 30 bus stops are within a one-quarter mile radius of the proposed alignment.

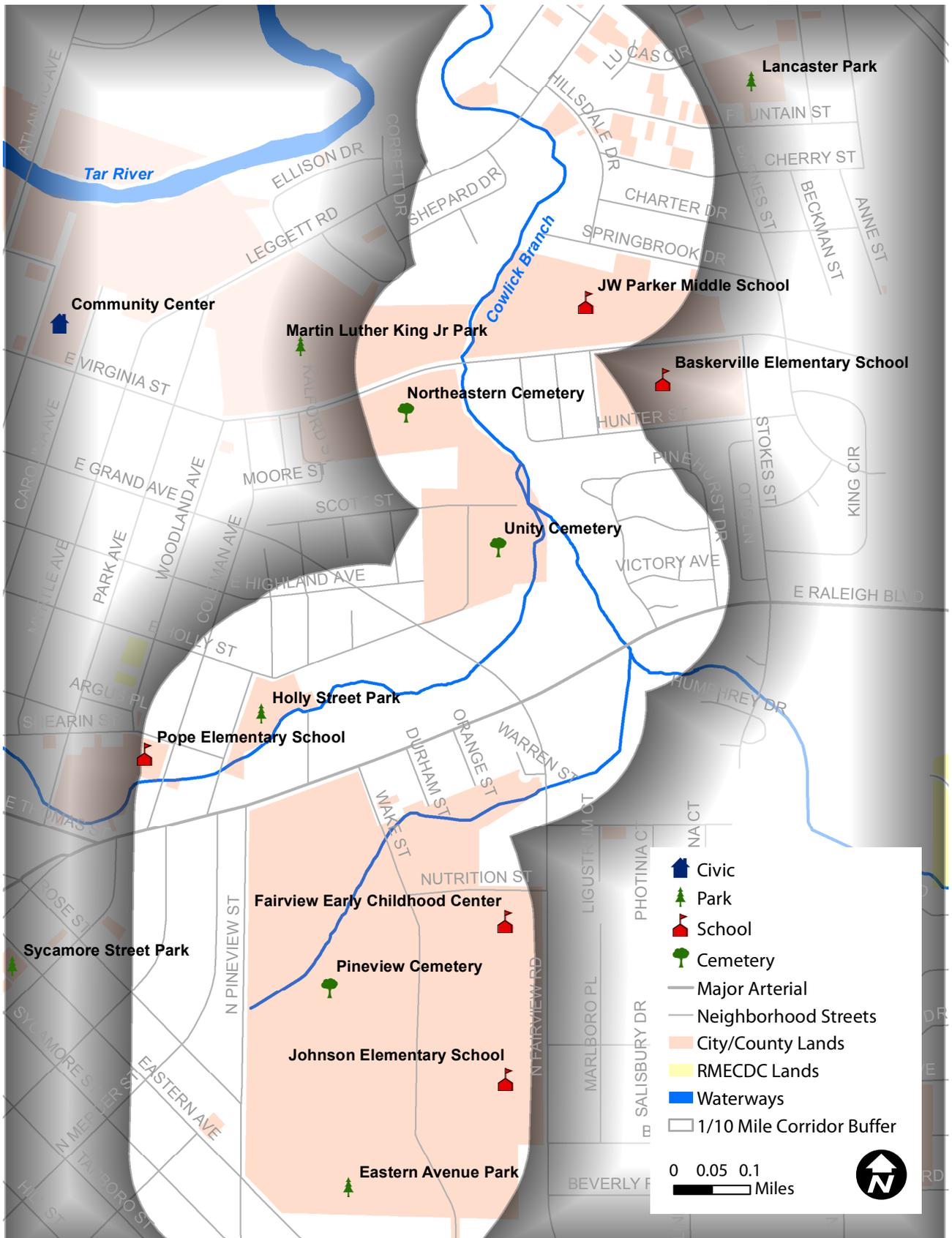
Land Use

Single-family and multifamily residential properties are located along Cowlick Branch and the trail corridor, particularly on the northern end of the alignment. The trail corridor then passes through large parcels of city park land, next to school and multifamily residential property. Near E. Raleigh Blvd., the proposed alignment crosses a commercial corridor and a multi-family residential area. Schools and public parks are the dominant land uses for the southern portion of the alignment and can be seen in Map 1.7.

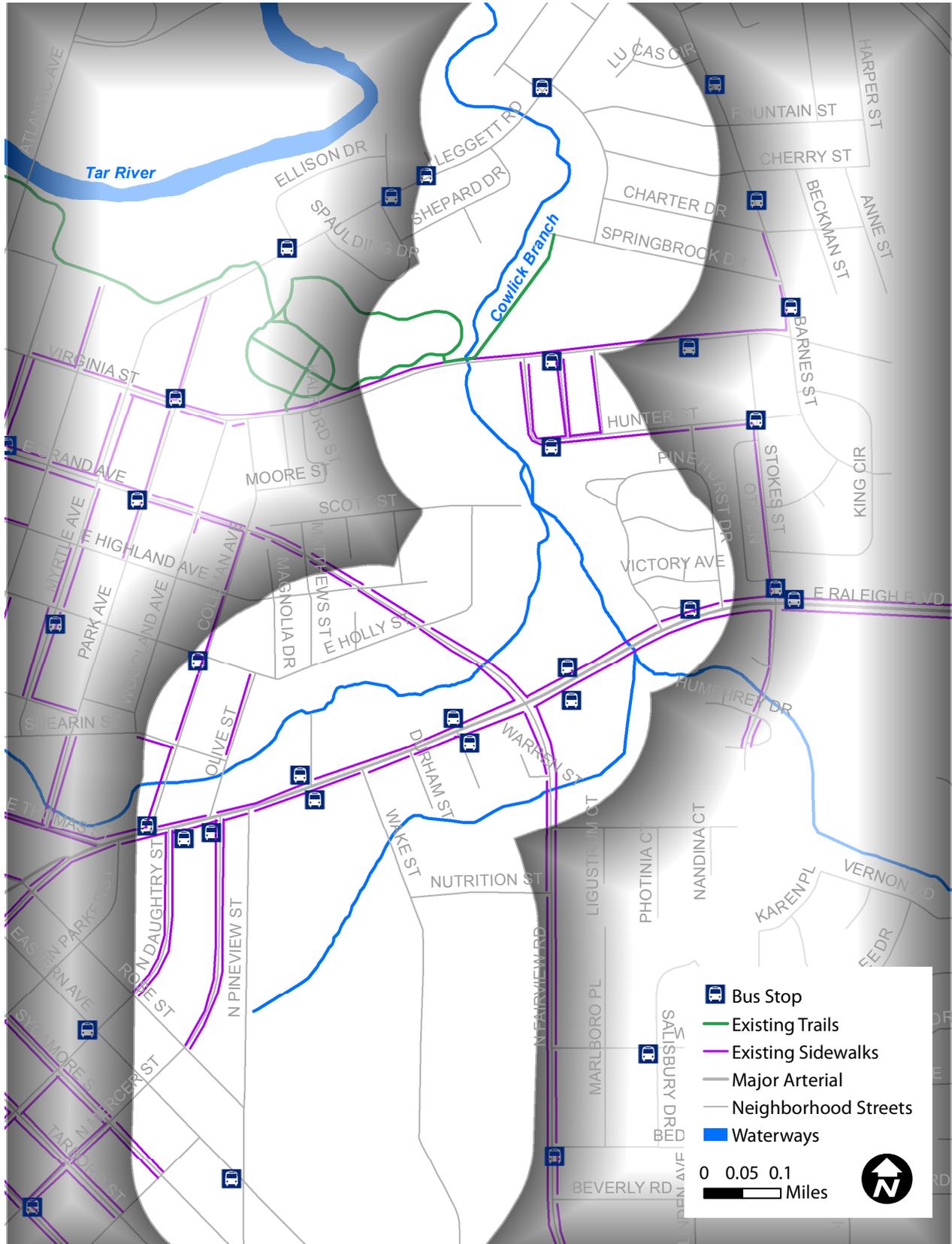
MAP 1.4: SOILS



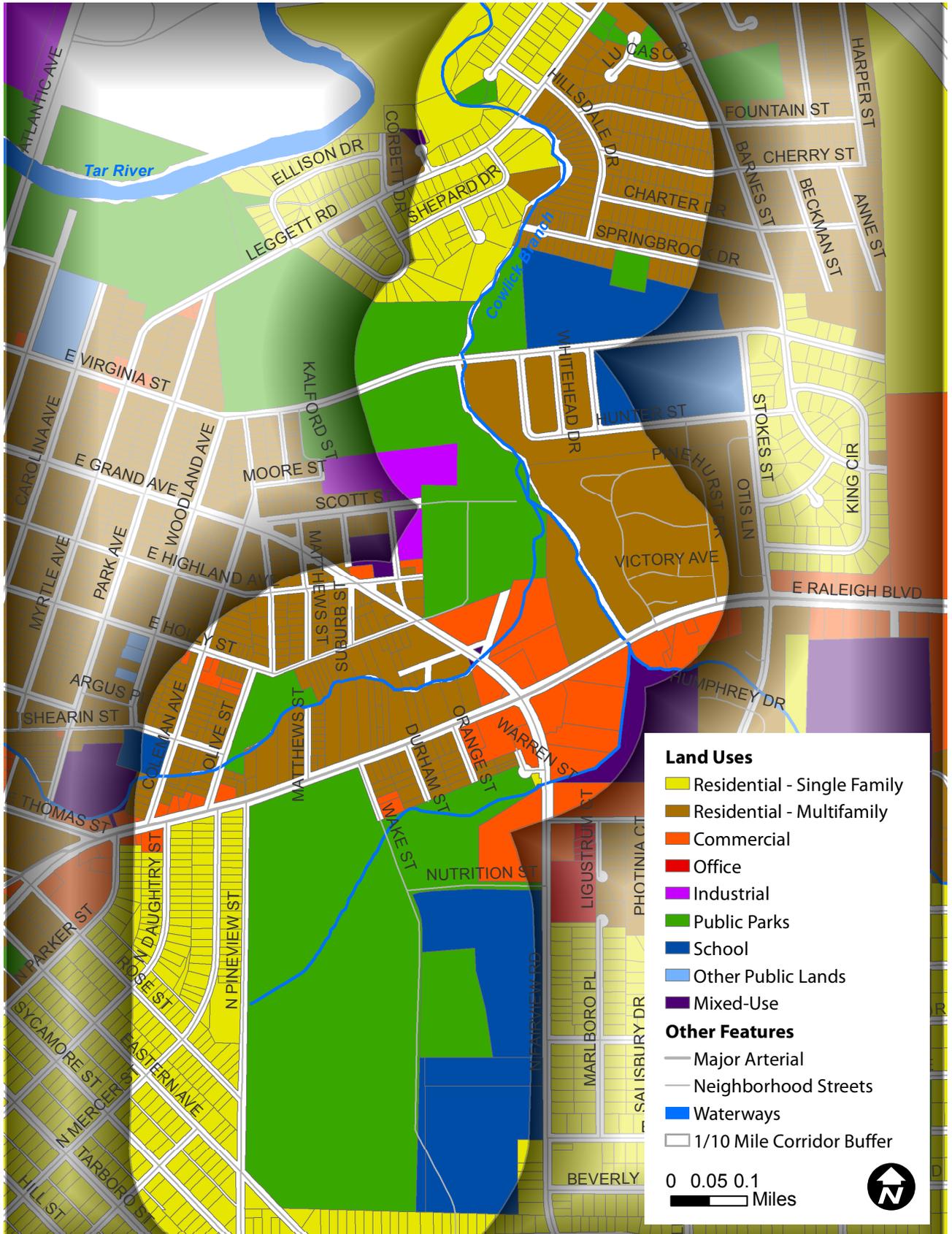
MAP 1.5: DESTINATIONS



MAP 1.6: TRANSPORTATION



MAP 1.7: LAND USE



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INVENTORY & ANALYSIS



To obtain a complete inventory of the trail corridor, consultants ground-truthed potential alternatives and noted project constraints, such as this tributary that would require a bridge for bicycle and pedestrian access.

CHAPTER 2: INVENTORY & ANALYSIS

OVERVIEW

Project consultants conducted a thorough in-field evaluation of the Cowlick Trail project study area including potential routing alternatives. Prior to entering the field, the team evaluated existing conditions using Geographic Information Systems (GIS) to determine land uses and resources adjacent to the project study area. Once in the field, all corridor conditions were mapped and inventoried using photography. The team evaluated natural features (water, floodplains, wetlands, geology and sensitive habitat), existing utilities (water, sewer, electrical, gas, telephone, etc.), roadway intersections, stream crossings, and circulation. Links to other trails, local parks, schools, local government buildings and private sector lands were also evaluated. Following fieldwork and inventory, opportunities and constraints were identified which could have impacts on trail development and adjacent land uses and vice versa.

OPPORTUNITIES & CONSTRAINTS ANALYSIS

The project study area was broken into three parts to more closely study trail development opportunities and constraints. The sections that follow begin at the northern terminus (Leggett Rd.) and end at the southern terminus of the corridor (Eastern Avenue Park). They are shown on Map 2.1 on the following page.

SECTION 1: LEGGETT RD. TO VIRGINIA ST.

The northern section of the Cowlick Trail corridor from Leggett Rd. to Virginia St. is characterized by single family residential neighborhoods and public schools. An existing greenway trail and nearby MLK Park provide a recreational setting that will be enhanced by the future Cowlick Trail.

Much of the creek has been incised and severe erosion has occurred from Leggett Rd. to Springbrook Dr. A riparian alignment would require some form of stream restoration and embankment modification to accommodate a paved shared-use trail. Additionally, environmental permits will be required for any impacts to the stream.

Opportunities

- Ample parking at MLK Park, potential for shared-use trailhead
- Connection to existing trail system at MLK Park and trail at Springbrook Dr.
- Gateway/walk-up trailhead opportunity on vacant parcel at corner of Leggett Rd./Hillsdale Dr.
- Vacant parcels along Hillsdale Dr. could be potential opportunity for trail easements
- Potential for stream restoration from existing trail north to Leggett Rd. if trail is implemented along stream



Hillsdale Dr. is a quiet, wooded, residential street.



Vacant parcel for potential trailhead at Leggett Rd. and Hillsdale Dr..



Existing trail from Springbrook Dr. to Virginia St.



Along Cowlick Branch to the north, a bridge as well as stream restoration will be necessary to avoid continued erosion.



Private property exists along the Cowlick Branch and easements will need to be obtained for trail development.



There are no existing bicycle or pedestrian facilities along Leggett Rd., for those who will access the trail by foot or bike.

Constraints

- Greenway trail connection to Leggett Rd. will appear to “dead-end” at terminus
- Trail development along stream at north section has topographical and environmental limitations
- Private property constraints at residential areas in north section will require multiple easement acquisitions/negotiations
- Trail development along stream at north section will require tree removal, stream bank stabilization/restoration, and permits which can be costly
- There are no existing bicycle or pedestrian facilities on Leggett Rd.

PERMITTING OVERVIEW

The construction of any greenway trail will require permits for construction. Depending on the alignment location, some greenway trails will require coordination with various agencies at the state and federal level.

Potential permits which may be required for greenway trail construction include:

- » Edgecombe County/City of Rocky Mount Stormwater Management (National Pollutant Discharge Elimination System General Permit)
- » Edgecombe County Floodplain Development Permit
- » Edgecombe County/City of Rocky Mount Land Disturbance Permit
- » Edgecombe County/City of Rocky Mount Building Permit (for structures)
- » North Carolina Department of Transportation Encroachment Permit
- » Building Permit (for structures)
- » FEMA Conditional Letter of Map Revision (CLOMR)
- » FEMA Letter of Map Revision (LOMR)
- » U.S. Army Corps of Engineers Section 401/404 Permit

Prior to undertaking design or construction, determine current local requirements with Rocky Mount Stormwater Management and Planning and Development departments.

SECTION 2: VIRGINIA ST. TO E. RALEIGH BLVD.

From Virginia St. extending south, Section 2 becomes more urbanized and includes a large public housing development to the east and Unity Cemetery to the west. There are opportunities to connect to commercial areas near the E. Raleigh Blvd. corridor, single family and multi-family housing, and Holly Street Park. The sewer easement located in Unity Cemetery is an excellent opportunity to provide a more natural, separated user experience.

As the corridor becomes more urbanized, there are considerable challenges for trail development. Mid-block crossing facilities will need to be implemented at Virginia St. and Grand Ave., as well as a potential bicycle and pedestrian bridge across Cowlick Branch to safely convey trail users. There is very limited horizontal space along Cowlick Branch from Grand Ave. to Holly Street Park, where housing neighborhood lots extend to the creek's banks.

Opportunities

- Where the existing trail ends at the intersection of Virginia St., there is adequate site distance to consider an at-grade mid-block crossing to continue trail across the roadway
- East side of Cowlick Branch alignment would provide direct connection to public housing/underserved neighborhood
- Direct connection to playground, community garden, and community center on east side
- East side along housing is flat, open floodplain area adequate for trail development
- Sewer easement on west side offers expedited development opportunity

due to existing paved roads that could be used as trail in Northeastern Cemetery

- Trail can link to cultural element/historic marker on Grand Ave.
- Unity Cemetery is unique in its forested and overgrown nature; there is little in terms of interpretation; opportunity for historic preservation and interpretation, particularly for Rocky Mount History; could include new monuments/features along the greenway at cemetery entrances
- If the Baptist Church is willing to grant an easement along the border of their property, a connection could be made directly from Holly Street Park to E. Raleigh Blvd.



The sewer easement is an ideal corridor for the Cowlick Trail.



Near the public housing community, there is adequate clearance for a trail.

Constraints

- Unity Cemetery not publicly owned, unmaintained with unkempt head stones, potential for use conflict if not adequately signed
- Bridge needed over Cowlick Branch (routing on west side will require bridge crossing to connect to housing authority, and alternatively, routing on east side would require a bridge to continue the trail across Grand Ave. to Holly Street Park)
- A culvert or low water bridge will be needed within the easement where a small tributary crosses
- Grand Ave. is busy roadway with multiple lanes and close proximity to a large intersection
- Little to no horizontal space along Cowlick Branch from Holly Street neighborhood lots to Holly Street Park
- Existing footbridge at end of Matthews St. is not to bicycle design or ADA standards and will need replacement
- If trail is routed along stream, it will require easement negotiation with private property owners
- Difficult routing and alignment/ connection to E. Raleigh Blvd.; will require negotiation with church or other property between Holly St. and E. Raleigh Blvd.



As the corridor approaches Holly St. along the sewer easement, there is not adequate horizontal space for a trail.



Grand Ave. is a busy roadway with multiple lanes.



The existing pedestrian bridge at Matthews St. will need replacement to make it suitable for ADA and AASHTO compliance.

SECTION 3: E. RALEIGH BLVD. TO EASTERN AVE. PARK

Section 3 includes the E. Raleigh Blvd. corridor, commercial areas, Pineview Cemetery, DS Johnson Elementary School, single family residential neighborhoods to the east and west, and Eastern Avenue Park. This section of the corridor has the potential to connect many residents to the surrounding uses and the trail system by bike or foot. Historically, cemeteries were some of our country's first open space parks, and Pineview Cemetery has the potential to become more of a park-like use if the trail is extended through the property.

E. Raleigh Blvd. presents significant challenges for trail users to safely cross, and a controlled intersection may be necessary. And while Pineview Cemetery offers opportunity for potential shared use, adequate signage will be necessary to avoid conflicts with services and those seeking respite within the cemetery.

Opportunities

- With the adequate amount of open space and existing interior circulation, there is an opportunity to create a looped trail option within Pineview Cemetery.
- Unique user experience through Pineview Cemetery and opportunity for shared use
- Existing foot path along perimeter of Pineview Cemetery offers attractive shared-use trail opportunity including shade trees
- Opportunity for interpretive signage within cemetery
- Pineview Cemetery city-owned and operated
- Logical terminus at Eastern Ave. Park with parking and access to existing park facilities

Constraints

- E. Raleigh Blvd. is a high volume, high speed road and crossing will require significant safety measures and a potential signalized crossing which will impact cost
- Potential user conflict within Pineview Cemetery unless adequate signage is provided for shared use
- Existing perimeter path on west side of cemetery will require narrowing of the trail to 8-feet to save existing trees



The existing path along Pineview St. provides a shaded route with historic headstones and opportunities for interpretation.



E. Raleigh Blvd. is a busy commercial corridor and crossing it safely will require a treatment to stop traffic.

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ROUTING ALTERNATIVES



The sewer easement extending through Unity Cemetery is an excellent candidate for trail development with its wide, cleared passage.

CHAPTER 3: ROUTING ALTERNATIVES

OVERVIEW

As described in the Introduction, the purpose of this study is to provide a shared-use trail to accommodate all potential users, providing access and connectivity to open space, parks and other City resources. If there are opportunities that exist to protect and restore wildlife habitat and water quality along Cowlick Branch, environmental impacts will be minimized and positive stewardship bestowed on users of the trail.

ALTERNATIVES GENERATION

To get to the goal of a preferred greenway trail route, various routing and alignment alternatives were explored for the Cowlick Trail. The intent is to provide options that are distinctly different from one another so that user needs and preference, origins, and destinations can be determined and weighed against constraint factors such as cost, permitting, and consistency. Map 3.1 on the following page illustrates the various alternatives that were explored and vetted by City staff.

Alternative One

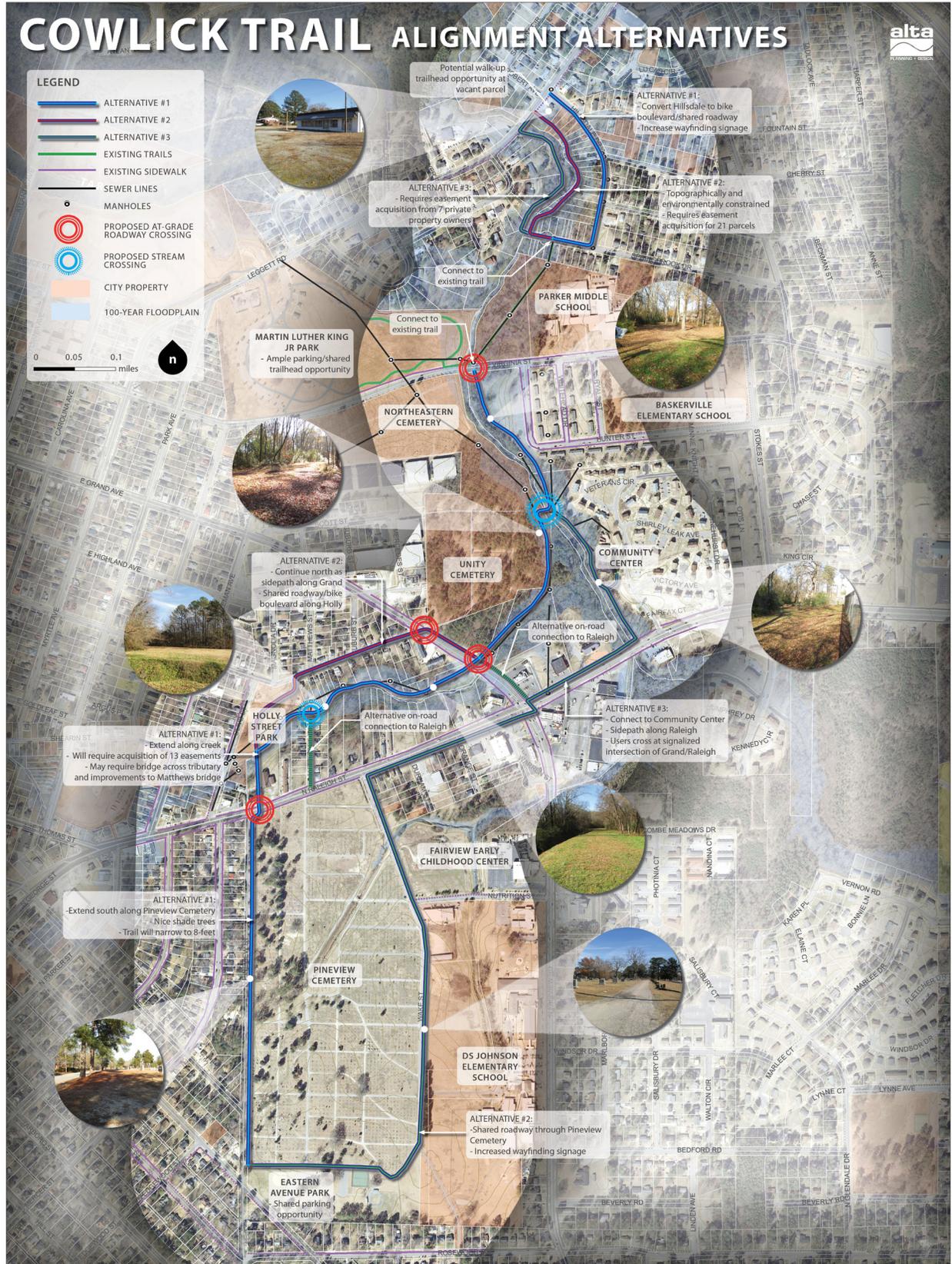
Starting from Leggett Rd., Alternative One explored routing the trail along Hillsdale Dr., a quiet residential street. The trail would be installed as a separated facility from traffic but potentially be at-grade with the roadway elevation. The existing roadway is 34-feet and could accommodate lane width reductions as well as a 10-foot-wide shared-use facility. The alignment would extend west on Springbrook Dr. and connect with the existing trail at the end of the road.

From Virginia St., the alignment would continue at the south point of the existing trail along the sewer easement on the east side of Cowlick Branch. This route would preserve the cemetery access and plots on the west and provide a connection to the public housing and community center off Pinehurst Dr.

Where a 12-inch sewer main crosses Cowlick Branch, there is opportunity to extend a pedestrian bridge over the creek to extend the trail through the sewer easement on Unity Cemetery. The alignment continues to Grand Ave., crossing at grade. Specific intersection treatments are discussed in the next chapter. Once across Grand Ave., the sewer easement provides adequate horizontal clearance until the easement and creek merge at the single family housing lots. **As discussed in Chapter 2, this area will be challenging to route a trail due to a tributary crossing which will require a bridge, and easement negotiation with private property owners.**

Alternative One would ideally connect with Holly Street Park and could be done through a spur. The best location to cross the creek would be at the existing Matthews St. bridge which is to be replaced in the short term. **Easements will need to be negotiated along properties on the south side of the creek as well as a significant amount of vegetative clearing to open up visibility and provide a more secure environment for trail users.** If the Matthews St. crossing is not pursued, an alternative could be located further west downstream to connect to the Baptist church property.

MAP 3.1: COWLICK TRAIL ALTERNATIVES



The Baptist Church property offers the most feasible routing to connect the alignment to E. Raleigh Blvd. There is little grade change, and the fence line could be used along the perimeter of the property to extend users from the park to Pineview Cemetery. **Discussions with the church are recommended to determine this option.** At E. Raleigh Blvd., a controlled intersection will likely be necessary due to the high volume and speeds of the roadway. Alternative One continues along Pineview Cemetery along an existing path beneath the trees and terminating at Eastern Avenue Park.



A RRFB crossing device such as this one should be considered at Grand Ave. and E. Raleigh Blvd. intersections

Alternative Two

This alignment includes many of the routing options discussed in Alternative One, with the exception of the connection from Leggett Rd. to the existing trail, and the connection from Grand Ave. to E. Raleigh Blvd.

Alternative Two would be routed along Cowlick Branch on the east side of the creek. A stream bank support structure would be required because many trees will need to be removed along the banks to accommodate a shared-use trail. **This structure will be very costly and exhibit significant permitting constraints since the trail is proposed to be constructed within the floodway. In addition, there are 21 parcels that would require easement negotiation with private landowners.**

Where the sewer easement daylights at Grand Ave., Alternative Two would extend northwest on the east side of the roadway and cross at Holly St. where site lines are improved. Holly St. is a quiet residential roadway approximately 34 feet wide and with a lane width reduction, could support a 10-foot-wide shared-use trail. The alignment would continue down Holly St. as a shared-use facility with visual separation (see Chapter 4 for more information). The alignment would connect with Holly Street Park and either cross the creek at the Matthews St. bridge or another crossing location. This alignment would connect to E. Raleigh Blvd. and Pineview Cemetery along the Baptist church property as discussed in Alternative One.

Alternative Three

From Leggett Rd., Alternative Three explored the west side of the creek where the floodplain is more flat. There will also be less tree removal along the stream banks. If the vacant parcel at the corner of Hillsdale Dr. and Leggett Rd. is transformed into a trailhead, **a bridge will be required to cross over to the east side of**

3

ROUTING ALTERNATIVES

the creek to connect users unless a sidewalk is installed as an alternative connection along Leggett Rd. **Additionally, seven parcels will require easement negotiations with private property owners. The alignment will also require a pedestrian bridge crossing to connect to the existing trail at the end of Springbrook Dr.**

The alignment continues across Virginia St. as described in Alternative One but does not cross Cowlick Branch at the sewer main. Instead, the alignment extends south on the east side of the creek connecting to the public housing development and community center.

At E. Raleigh Blvd., Alternative Three extends west along the north side as a sidepath where it would use the existing controlled intersection at E. Raleigh Blvd. and Grand Ave. The City has made a request to NCDOT to install accessible pedestrian signals at E. Raleigh Blvd. & Grand Ave. To connect users to the commercial areas along E. Raleigh Blvd., the trail would cross over E. Raleigh Blvd. and continue west on the south side as a

sidepath. At Pineview Cemetery, users would turn left at Wake St. where the alignment becomes a shared-use roadway with signage and pavement markings. It is currently a low volume roadway mostly used for the cemetery and adjacent school and connecting directly to parking at Eastern Avenue Park.

Alternative Links

Two alternative links were explored to route users safely to E. Raleigh Blvd. Where the alignment connects with Grand Ave., there is adequate horizontal space along the roadway to widen the existing sidewalk and connect to the controlled intersection at Grand Ave. and E. Raleigh Blvd.

The consultant team also explored the option of routing users across the Matthews St. bridge and along Matthews St. to E. Raleigh Blvd. as a shared roadway. **Matthews St. is very narrow and the setback distances are limited between the homes and roadway.** Where Matthews St. intersects with E. Raleigh Blvd., the alignment would need to be routed along the north side of E. Raleigh Blvd. where some of the adjacent use is less desirable and no current bicycle or pedestrian facilities exist.



The internal roadways in Pineview Cemetery are low volume and potential candidates for shared use.

CHAPTER 4: PREFERRED ALIGNMENT RECOMMENDATIONS

OVERVIEW

This chapter presents detailed recommendations for the alignment and physical attributes of the Cowlick Trail. The recommendations take into account the impact of physical and environmental factors and the relationships between these factors that govern the successful creation of a trail. Special attention is given to how users will perceive the built and natural environments surrounding the proposed trail, how citizens will use it, and how trail use will impact the surrounding built and natural environments.

This chapter also provides information on typical trail user types and trail surface types. Recommendations for support facilities and locations, corridor enhancements, intersection crossing treatments, and a trailhead area is also included. Enlargement maps synthesize the recommendations in graphic format and can be found within this chapter.

CORRIDOR DESIGN

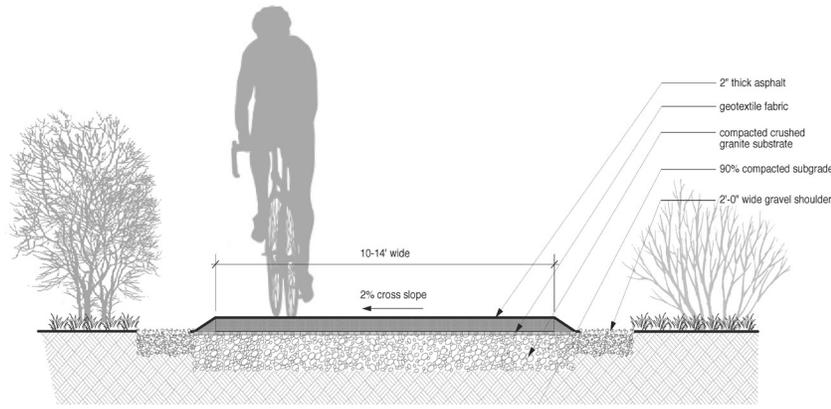
RECOMMENDATIONS

User Types

A trail's surface can be the determining factor for the expected types of use and overall trail aesthetics. Paving a trail with a hardened surface encourages use by the most diverse range of recreational and transportation users.

Deciding on the surface treatment for the bridges can be driven either by aesthetics or economic feasibility. Bridge surfaces could be constructed as a timber boardwalk and be braced and prepared for a continuous asphalt surface. The decision to utilize a specific bridge surface should be made with cost, maintenance, safety, and volume of use in mind.

Where right of way permits, consideration can also be given to provide a shoulder with stone fines or crushed gravel surfacing for those users desiring a more natural trail experience or a softer surface for running or walking. Several governing factors that will have to be considered in the selection of the surfaces for both the main trail and bridges are construction cost, maintenance cost, and expected types of use.



Typical cross section of the asphalt Cowlick Trail.

Surface Type

Based on the physical site analysis and the metrics of shared-use trail design, a 10-foot-wide tread is recommended for the Cowlick Trail. The City of Rocky Mount should monitor user types, number of users, and needs once the trail is open for public use to determine future characteristics or amenities as necessary. Ultimately, to serve the greatest range of users for transportation and recreation, a 10-foot-wide asphalt trail with a two-foot-wide shoulder is recommended. Specific design characteristics of the various trail types and circumstances are detailed in the Design Guidelines Appendix.

PREFERRED ALIGNMENT

The results of the alternatives generation were that a combination of the three alignment options described in Chapter 3 would provide the greatest number of connections and benefit to trail users. The Preferred Alignment, (shown in blue on Map 4.1) is the most successful in terms of serving the largest number of uses along the corridor. Further, the Preferred Alignment provides the greatest diversity of options for accessing the trail. The preferred alignment for the Cowlick Trail is a combination of on-road and off-road

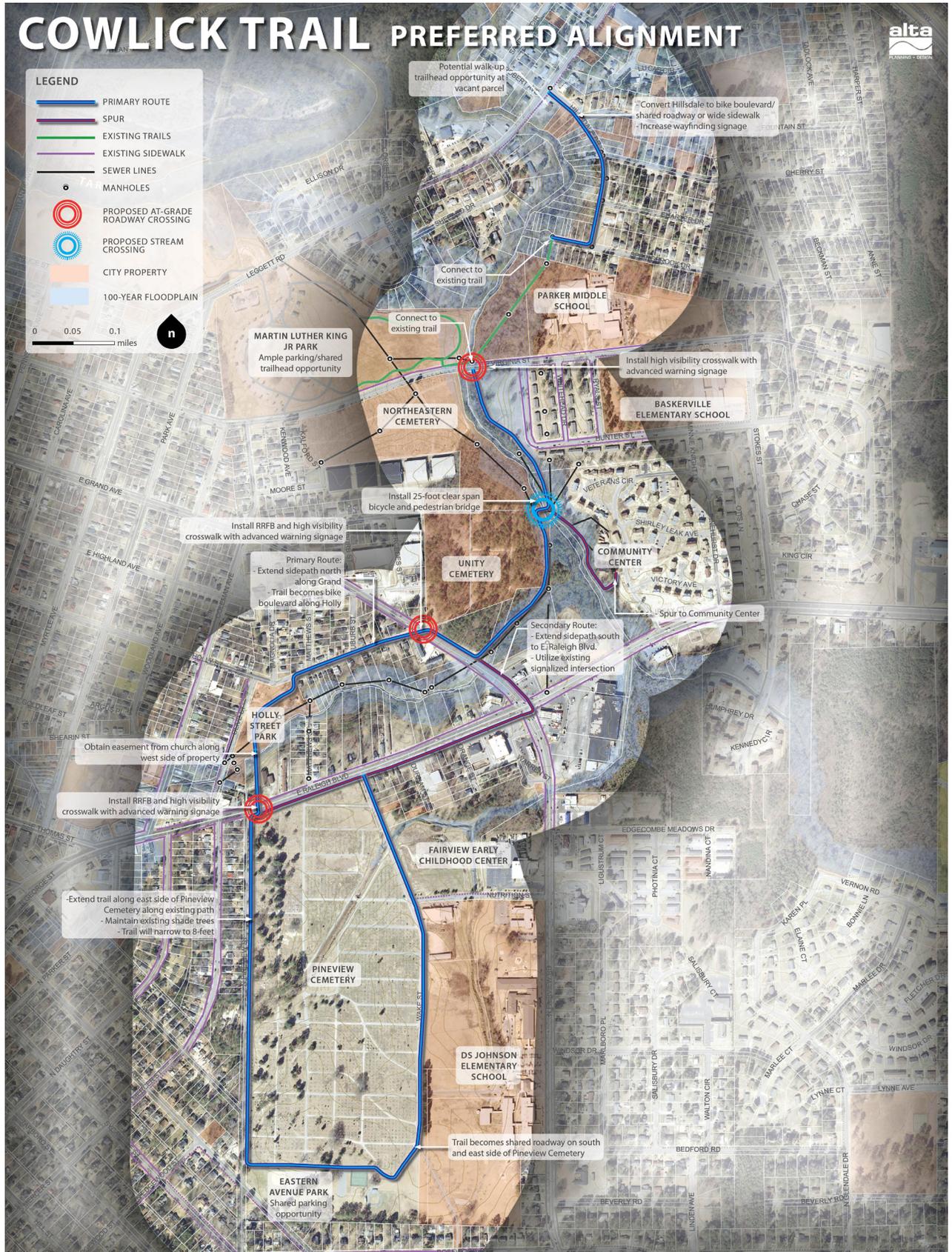
trail facilities that provide the most logical connections to adjacent uses including three parks, neighborhoods, a public housing community including a community center and garden, existing greenway trails, three schools, two cemeteries, and commercial areas of Rocky Mount.

Once constructed in the recommended form, the Cowlick Trail will have two loop options as can be seen on Map 4.1. These sections will likely be completed in phases as described in Chapter 5. Enlargements of the Preferred Alignment and a description of the associated recommendations begin on page 30.

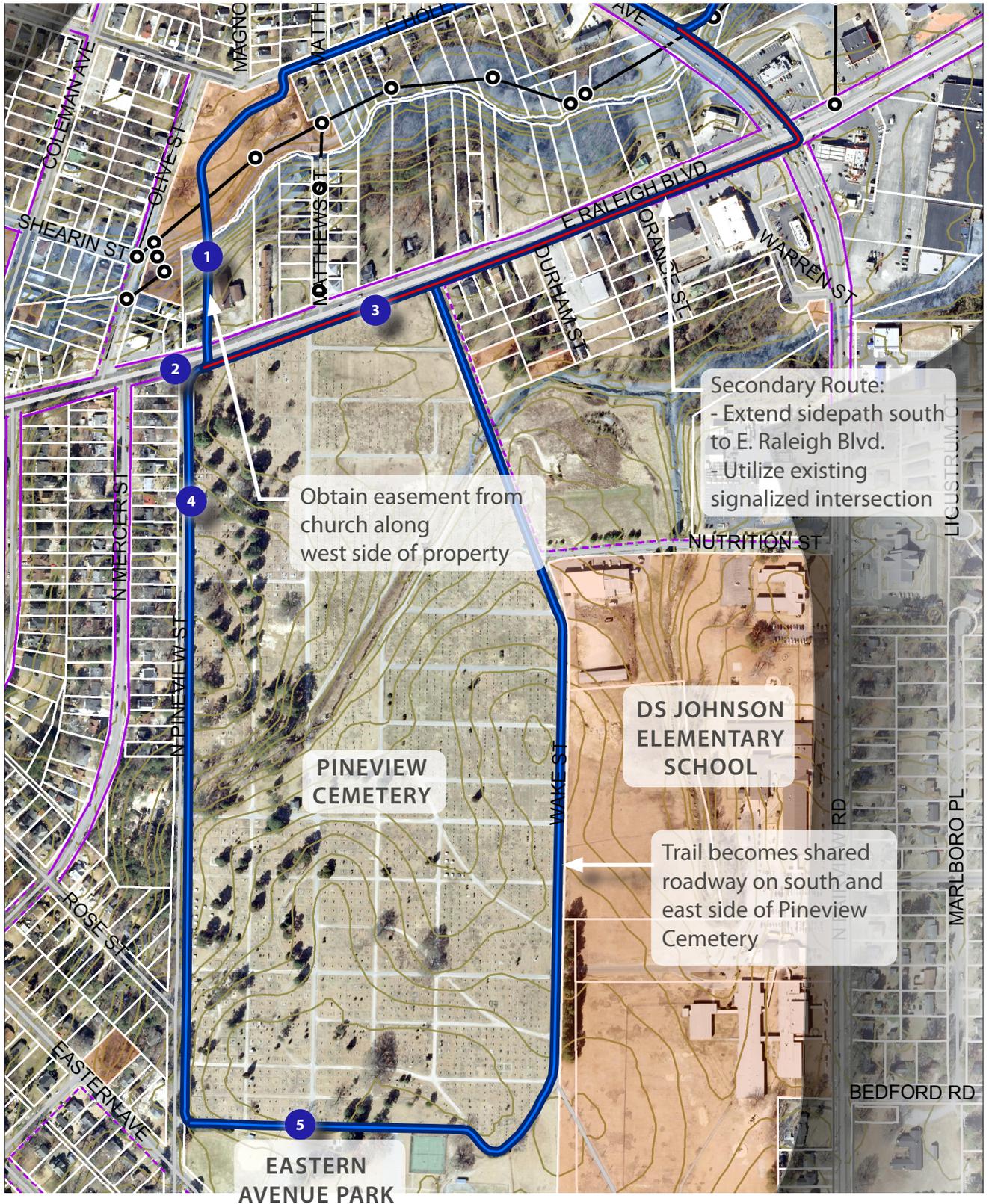
The following pages detail the recommendations for the preferred alignment. A series of keyed maps and descriptive text provide the basis for the recommended routing and alignment. Similar to the sections in Chapter 2, the corridor description moves north to south along the route, terminating at Pineview Cemetery and Eastern Avenue Park.

In Chapter 5, the project is broken into phases and includes trail surface material recommendations, budget costs, right-of-way issues, summary of constructability, suggested schedule for completion, and other concerns to be taken into consideration.

MAP 4.1: PREFERRED ALIGNMENT COMPOSITE



MAP 4.2: SECTION 1 PREFERRED ALIGNMENT



4

PREFERRED ALIGNMENT RECOMMENDATIONS

- 3 At the northwest corner of Pineview Cemetery, the trail will split into two directions giving users the option of creating a loop. The trail will extend to the east along the south side of E. Raleigh Blvd. as a sidepath. Provide high visibility crosswalk and signage at all driveway crossings where the trail crosses along the commercial area.
- 4 Where the trail enters Pineview Cemetery, it will narrow to eight feet wide to accommodate the existing cedars and headstones that are iconic to this part of the corridor. Provide interpretive panels at one or two locations indicating the history of the cemetery. Install etiquette signage where the trail enters the cemetery.

Rendering of Cowlick Trail on Pineview Street

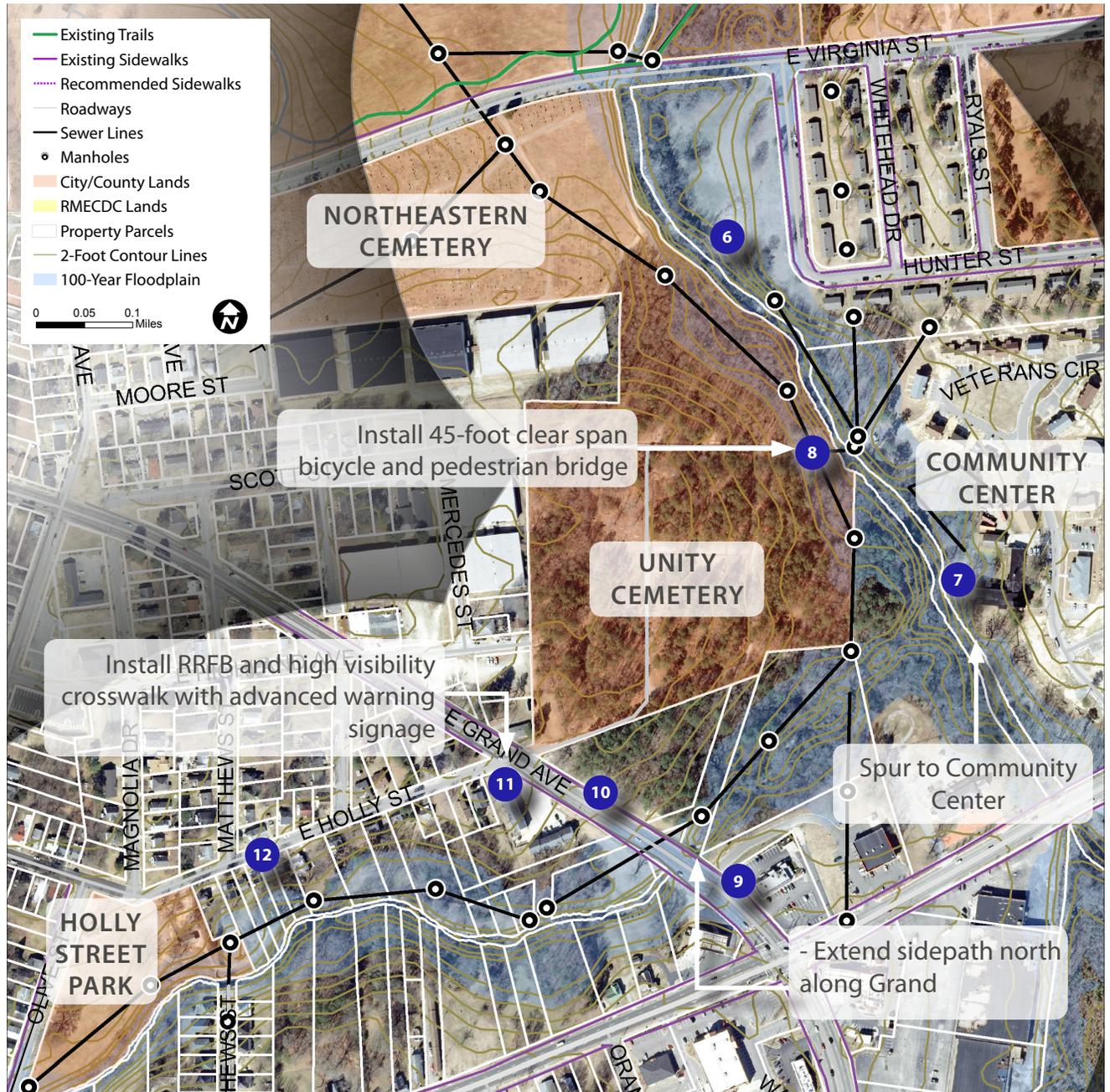


- 5 Using the existing roadways within Pineview Cemetery, install pavement markings indicating shared use as well as regulatory and wayfinding signage.

Rendering of Shared Use Roadway within Pineview Cemetery



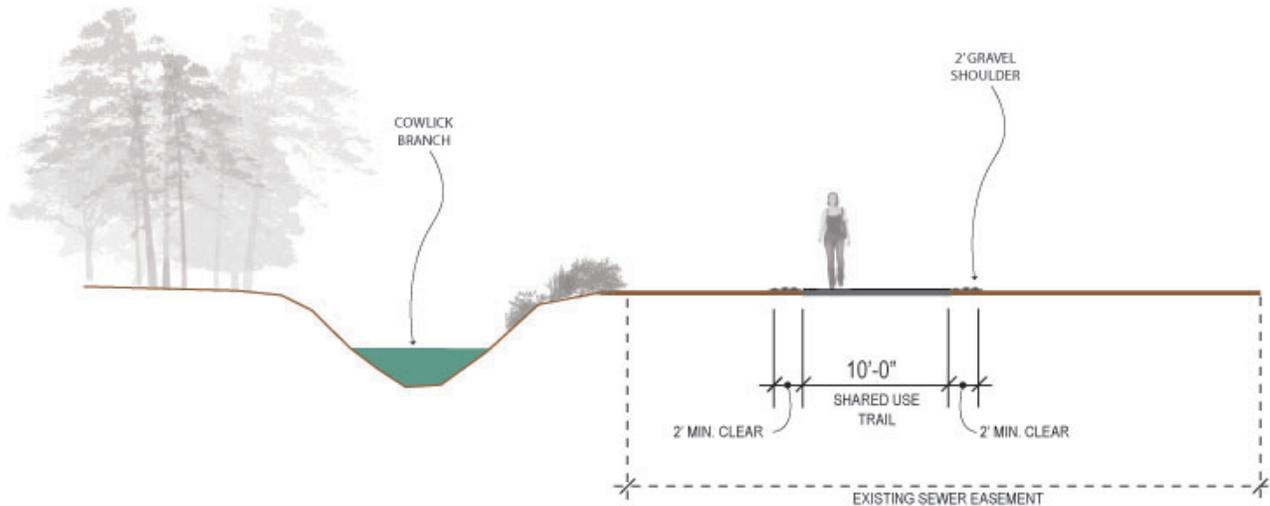
MAP 4.3: SECTION 2 PREFERRED ALIGNMENT



SECTION 2

- 6 The alignment will extend approximately 1,000 feet along the sewer easement on the east side of Cowlick Branch before crossing the creek at the existing sewer main.

Cross Section of Trail Near Public Housing



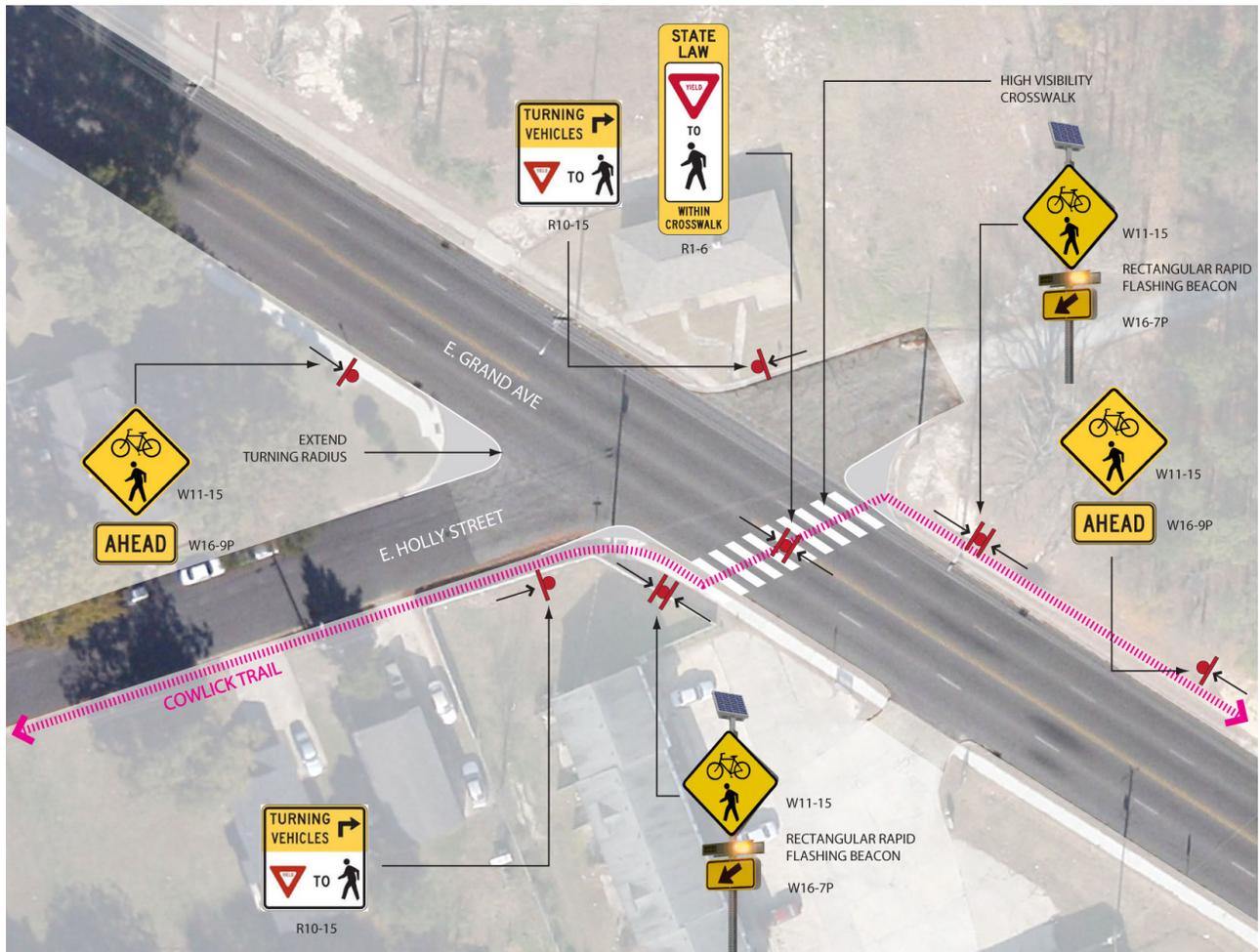
- 7 Provide a spur trail to the public housing neighborhood and community center along the rear side of the building. Connect the trail to the parking area near the playground.
- 8 Install a 45-foot clear span prefabricated pedestrian bridge to safely cross users to the sewer easement on Unity Cemetery property. Work with Unity Cemetery to provide access and potential interpretive signage along the perimeter of the property.
- 9 At Grand Ave., the trail will split in two directions. In the short term, a connection can be made to the existing Grand Ave./E. Raleigh Blvd. intersection as a sidepath on the north side of Grand Ave. Provide high visibility crosswalk striping on all driveway intersections along Grand Ave. where the trail will cross.
- 10 A longer term solution will be to continue the trail along the north side of Grand Ave. extending west.

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PREFERRED ALIGNMENT RECOMMENDATIONS

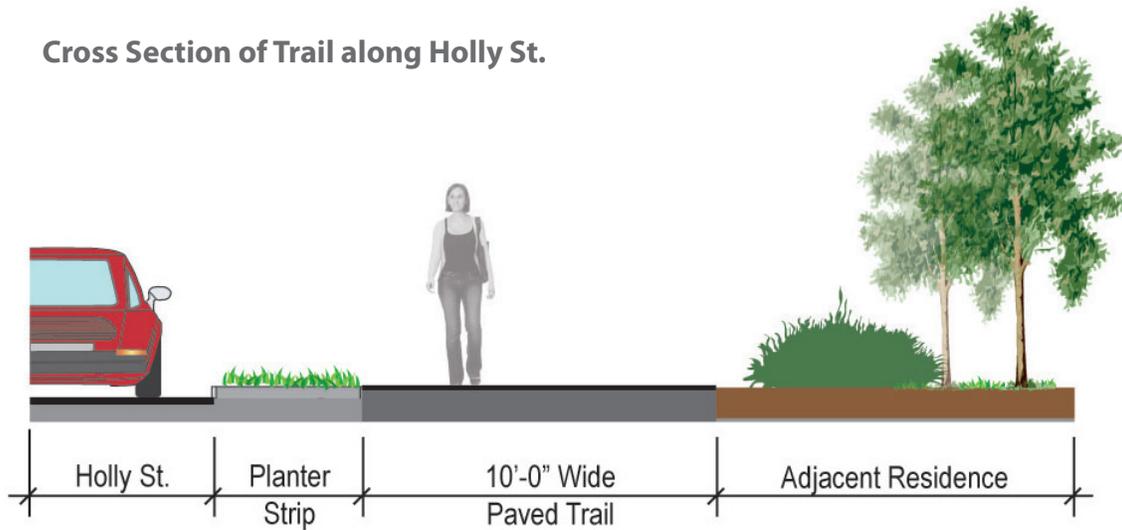
- 11 Grand Ave. is a four-lane roadway with a posted 35 mph speed limit and approximately 10,000 ADT. The curb-to-curb width is approximately 55'. **The best scenario for a trail crossing would involve a road diet for Grand Ave., reducing the four-lane section to three-lane, thus allowing for a median refuge.** However, given today's conditions, it is recommended to extend the trail west along Grand Ave., crossing at East Holly St. A high-visibility marked crosswalk is recommended on the south/east side of the intersection. Curb extensions or bulbouts should be added at all corners to tighten curb radii, slow turning traffic, and shorten crossing distances. Rectangular rapid-flash beacons (RRFBs) are recommended in concert with pedestrian crossing signs (MUTCD W11-2). For traffic entering Grand Ave. from Holly St., a "Turning Traffic MUST Yield to Pedestrians" sign (MUTCD R10-15) is recommended. In addition, the RRFBs would be equipped with a wrap around light bar so the flashing would also be visible to traffic on Holly St.

Cowlick Trail at Grand Avenue Intersection



- 12 On Holly St., the trail will become a wide sidewalk on the south side. A new curb will be extended into the travel lane and a trail constructed for shared use. At Holly Street Park, the trail will connect users to a proposed pedestrian bridge across Cowlick Branch.

Cross Section of Trail along Holly St.



4

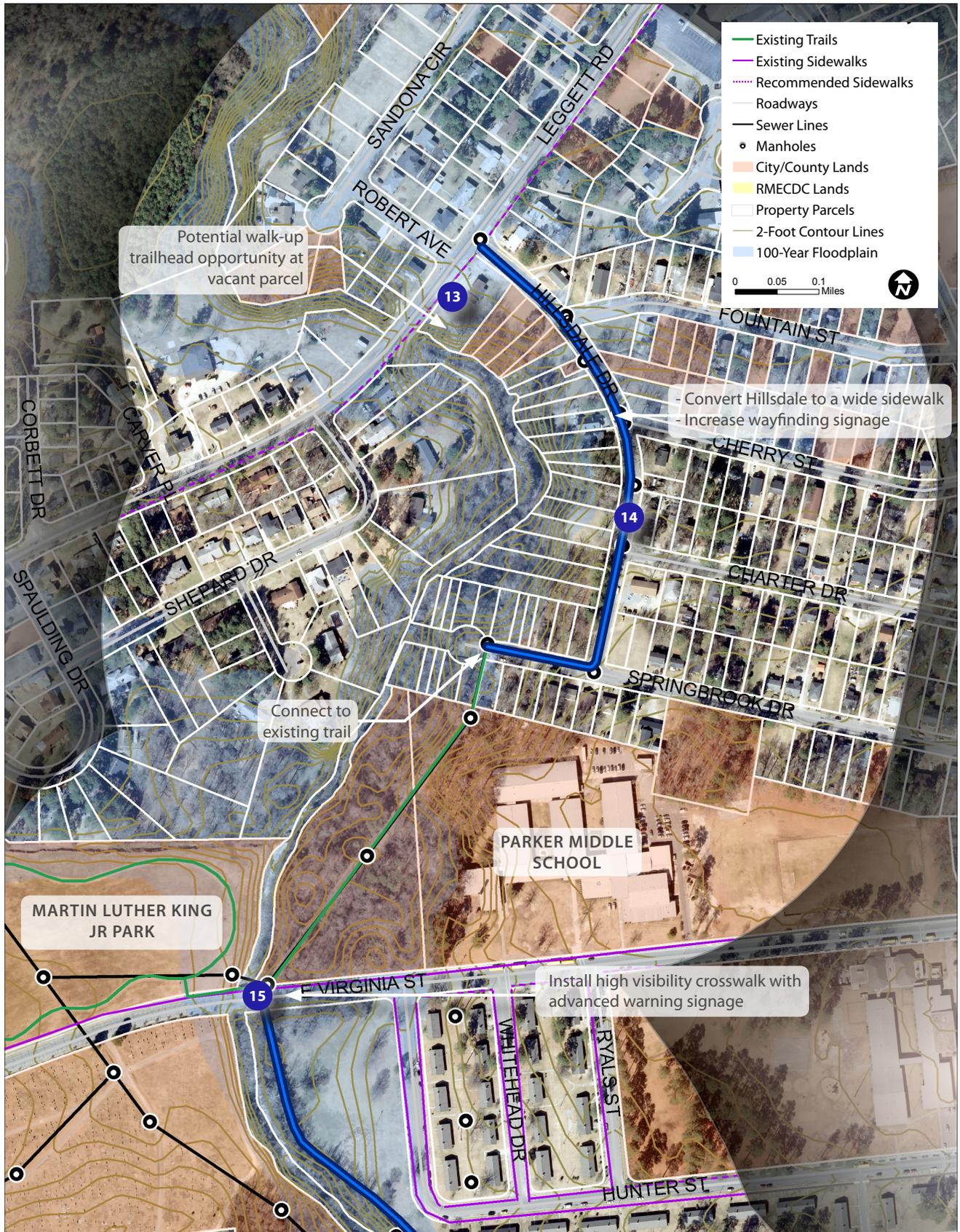
PREFERRED ALIGNMENT RECOMMENDATIONS

SECTION 3

- 13 A small trailhead is proposed at the vacant parcel on the corner of Leggett Rd. and Hillsdale Dr. Once this parcel is obtained by the City of Rocky Mount, the vacant building on site should be demolished and improvements made to accommodate vehicle parking, a restroom building or shade structure, trail kiosk, and landscaping to improve the site and provide a gateway to the Cowlick Trail.



MAP 4.4: SECTION 3 PREFERRED ALIGNMENT



4

PREFERRED ALIGNMENT RECOMMENDATIONS

- 14 The trail will begin at the Leggett Rd. trailhead and extend along the west side of Hillsdale Dr. as a 10-foot-wide sidewalk. The existing curb will be demolished and reconstructed. The new curb edge will extend approximately six feet into the existing roadway as a series of bulbouts to control traffic and provide an undulating tread. This will also prevent the removal of several large trees along Springbrook Dr. This condition will continue west down Springbrook Dr. and connect with existing trail. A high visibility crosswalk is recommended on Springbrook Dr. where the trails meet.

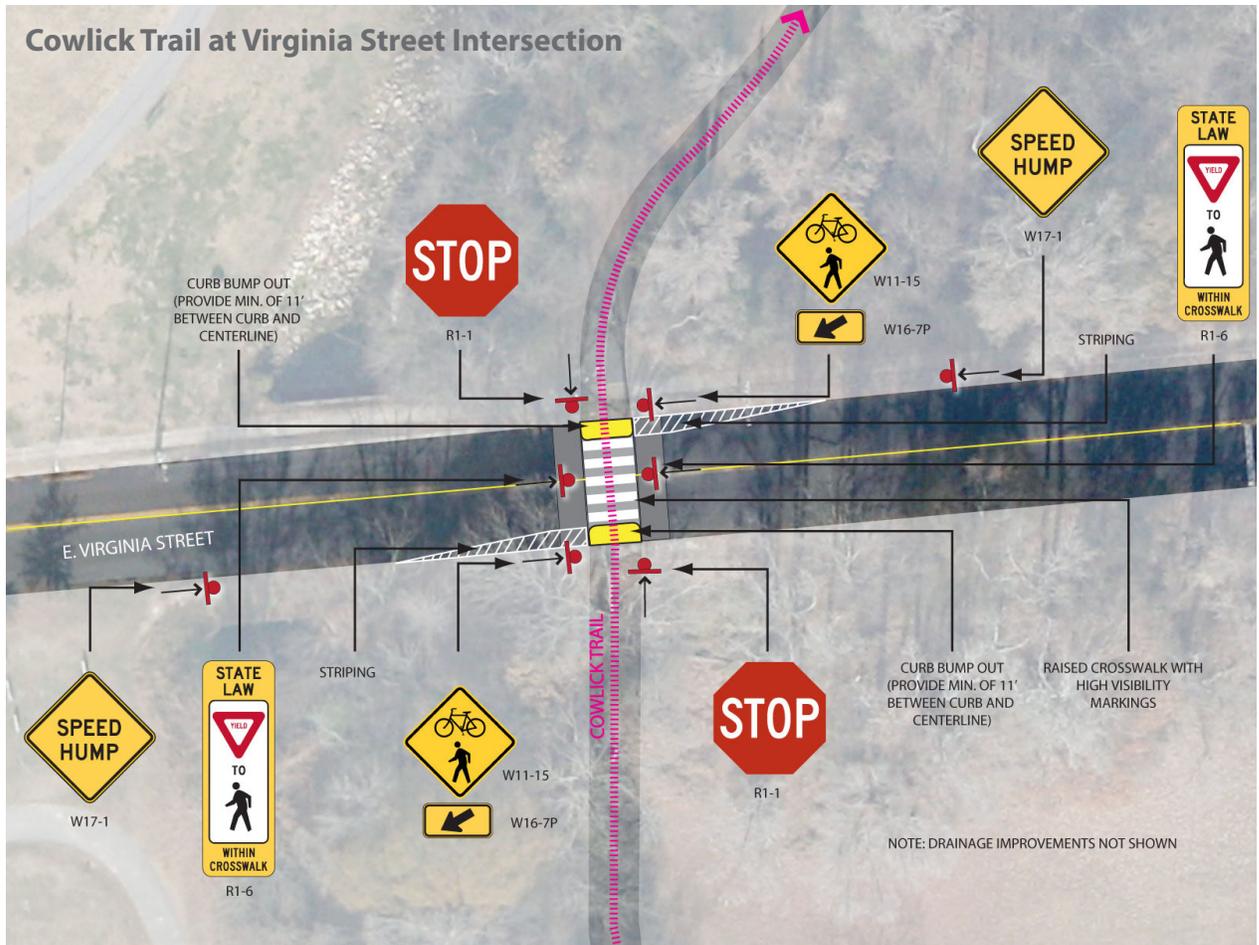
Plan View of Alignment along Hillsdale Dr.



Rendering of Proposed Trail along Hillsdale Dr.



- 15 A high-visibility raised crosswalk should be constructed for the trail crossing at Virginia St. The crossing falls between MLK Park and Parker Junior High School. Pedestrian crossing signs (MUTCD W11-2) should be placed in advance of the crossing and at the crossing with arrow pointing to the crosswalk. With the 38' curb to curb width of Virginia St., there is ample opportunity to extend curb bulbouts and still leave enough lane width for school buses. Two seven foot bulbouts/extensions with curb ramps are recommended to shorten the crossing distance and to slow traffic, thus leaving two 12' lanes on Virginia St.



5

DEVELOPMENT PLAN



Typical scene of a paved asphalt trail under construction.

CHAPTER 5: DEVELOPMENT PLAN

OVERVIEW

In order to determine the steps necessary to begin developing the Cowlick Trail, it is important to recognize that the recommendations within this study will require continued leadership and dedication to trail development by Rocky Mount staff. Equally critical, and perhaps more challenging, will be meeting the need for a recurring source of revenue for maintenance and programming.

PHASING PLAN

This study considers the proposed Cowlick Trail as one complete, linear project with multiple access points and associated trail amenities such as the Leggett Rd. Trailhead. While the desired outcomes and anticipated benefits of trail development will not be fully realized until the project is complete, social and economic impacts can begin to be felt by the community as soon as construction commences. In addition, significant cost savings can be gained by designing, permitting, and constructing the trail as a single project. For these reasons it is recommended the trail be developed, if possible, as a single phase.

However, it is likely that financial constraints will require the trail to be completed in several sections as funding becomes available. The

Cowlick Trail extends a total of three miles as recommended, including spurs and trail splits. The phasing strategy proposed in this chapter represents realistic goals for project implementation, assuming there is local support and cooperation. Regardless of available funds or willing parties, it is necessary to prioritize construction of the trail into functional segments of development.

The following criteria was used as a guide to prioritize segments of trail for development:

- Point-to-point connections, to avoid trail “dead-ends”
- Service areas and population density
- Overall number of connections to public property and commercial areas
- Safety
- Public support
- Ease of construction
- Development costs

5

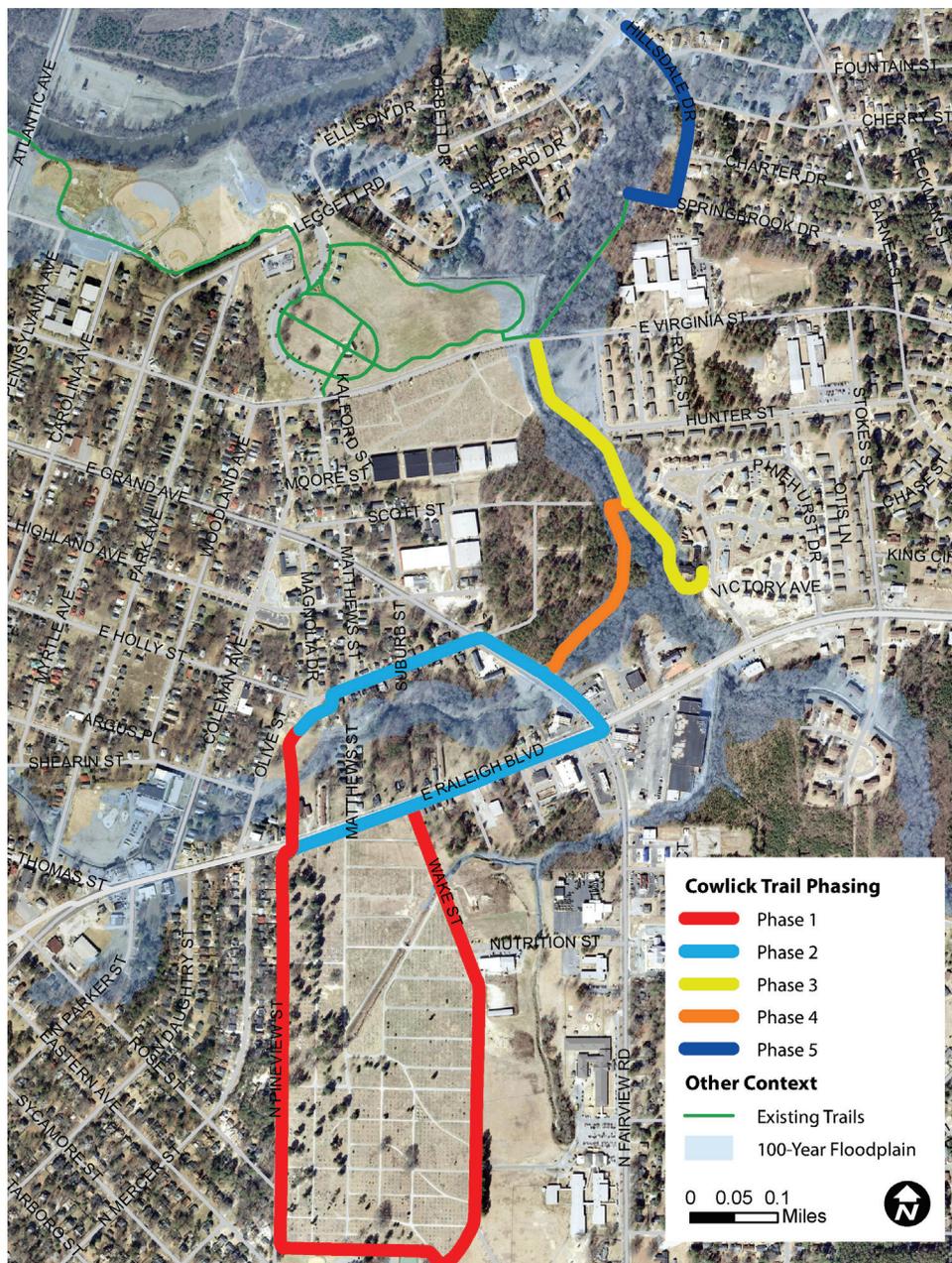
DEVELOPMENT PLAN

Those sections that fulfilled multiple criteria were given higher priority. The criteria should be revisited when closer to implementation. It is important to note that the phasing plan for physical development is contingent upon the successful completion of responsibility for trail operations and maintenance by Rocky Mount. No public facilities can be developed until these tasks have been completed.

Phase 1

Beginning from the south, Phase 1 includes all recommendations within Pineview Cemetery to take advantage of city-owned property. Phase 1 includes the intersection improvement at E. Raleigh Blvd. and the connection to Holly Street Park (not including the pedestrian bridge).

Phasing Map



Phase 2

Phase 2 includes the Grand Ave. midblock crossing, sidepath along Grand Ave. (to Holly St. and E. Raleigh Blvd.), sidepath along E. Raleigh Blvd. to Grand Ave., and the sidepath along Holly St.

Phase 3

Phase 3 extends from the pedestrian bridge to the Community Center spur, and along the sewer easement to the Virginia St. intersection improvement.

Phase 4

Phase 4 includes trail within sewer easement on Unity Cemetery property and the pedestrian bridge across Cowlick Branch.

Phase 5

The final phase will be to construct the trailhead at Leggett Rd. and the trail along Hillsdale Dr. to Leggett Rd.

The table below shows the phases broken out by segment, total length, and cost.

OPINION OF PROBABLE COSTS

Tables on the following pages indicate development costs by phase. All cost estimates should be considered with the following notes and limitations in mind:

This “Opinion of Probable Cost” (OPC) should not be considered a guaranteed maximum cost, but instead is a professional opinion of probable construction costs at the time of this study. Costs should be revisited every two years and updated accordingly. It should be anticipated that bids and actual costs will vary from this OPC.

The “Cost Factor”, as utilized, is a percentage of calculated costs, which is added to the subtotal. The Cost Factor helps compensate for unknown elements or conditions, variations in quantities used, and other unforeseen circumstances.

A separate “Contingency Fund” should be developed above and beyond the total figure in the OPC. This fund will provide for modifications to the design, higher than anticipated costs, and other program alterations after construction initiation.

	Description	Length	Cost
Phase 1	Pineview Cemetery/Holly Street Park Connector	2,871 linear feet	\$249,220.94
Phase 2	Grand Ave., E. Raleigh Blvd., Holly St.	3,901 linear feet	\$232,007.79
Phase 3	Virginia St. Connector	3,011 linear feet	\$257,637.33
Phase 4	Unity Cemetery	1,378 linear feet	\$318,713.71
Phase 5	Leggett St. Trailhead and Hillsdale Dr.	n/a	\$257,618.79
TOTAL ALL PHASES			\$1,315,198.56

Cowlick Trail: Phase 1

Cost Estimate Evaluation

March 2014

Trail Corridor Preparation	Quantity	Cost	Unit	Amount
Clearing and grubbing	1.97	\$11,072.50	AC	\$21,812.83
Trail Centerline Staking	2,871	\$1.03	LF	\$2,957.13
Dumping Fees @ 6%			6%	\$1,308.77
Subtotal				\$26,078.72

Asphalt Trail	Quantity	Cost	Unit	Amount
Grading	534	\$20.60	CY	\$11,000.52
Bank Stabilization		\$4.28	LF	\$0.00
Hydroseeding	2,871	\$0.32	LF	\$918.72
Aggregate Base Course	569	\$25.75	TN	\$14,652
SF9.5A Asphalt	348	\$108.15	TN	\$37,642
Geotextile Fabric	2,871	\$1.55	SY	\$4,450.05
Resurface Roadways in Pineview Cemetery	2,500	\$25.00	LF	\$62,500.00
Subtotal				\$131,162.68

Concrete Landing with Railing	Quantity	Cost	Unit	Subtotal
Concrete Landing	0	\$45.00	SY	\$0.00
Railing	0		LF	
Subtotal				\$0.00

Bicycle/Pedestrian Bridge	Quantity	Cost	Unit	Subtotal
Contech Bridge	0	\$60,000.00	LS	\$0.00
Subtotal				\$0.00

Erosion Control	Quantity	Cost	Unit	Subtotal
Silt Fence	5,742	\$2.42	LF	\$13,895.64
Stone Outlets	28	\$257.50	EA	\$7,210.00
Construction Staging Area	1	\$1,030.00	EA	\$1,030.00
Permanent Seeding	1	\$2,781.00	AC	\$3,337.20
Subtotal				\$18,068.49

Miscellaneous Items	Quantity	Cost	Unit	Subtotal
RRFB Crossing at Raleigh (includes all improvements)	1	\$12,125.00	LS	\$12,125.00
ADA Truncated Dome Bump Pads - 2x5 - Cast In Place	3	\$215.95	EA	\$647.85
Temporary Traffic Control Signage at Business Entrances	4	\$180.25	EA	\$721.00
Suitable Fill Allowance		\$10.30	CY	\$0.00
Unsuitable Soils Excavation Allowance		\$10.30	CY	\$0.00
Subtotal				\$13,493.85

Subtotal				\$188,803.74
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Mobilization Fee	Quantity	Cost	Unit	Subtotal
Mobilization Fee @ 10%	1	\$18,880.37	LS	\$18,880.37
SUBTOTAL				\$207,684.12
Contingency (20% of total)			20%	\$41,536.82

GRAND TOTAL				\$249,220.94
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Cowlick Trail: Phase 2

Cost Estimate Evaluation

March 2014

Trail Corridor Preparation	Quantity	Cost	Unit	Amount
Clearing and grubbing	0.67	\$11,072.50	AC	\$7,418.58
Trail Centerline Staking	3,901	\$1.03	LF	\$4,018.03
Dumping Fees @ 6%			6%	\$445.11
Subtotal				\$11,881.72

Asphalt Trail	Quantity	Cost	Unit	Amount
Grading	0	\$20.60	CY	\$0.00
Bank Stabilization	0	\$4.28	LF	\$0.00
Hydroseeding	3,901	\$0.32	LF	\$1,248.32
Aggregate Base Course	1,517	\$25.75	TN	\$39,063
SF9.5A Asphalt	566	\$108.15	TN	\$61,213
Geotextile Fabric	3,901	\$1.55	SY	\$6,046.55
Subtotal				\$107,570.52

Concrete Landing with Railing	Quantity	Cost	Unit	Amount
Concrete Landing	0	\$45.00	SY	\$0.00
Railing	0		LF	
Subtotal				\$0.00

Bicycle/Pedestrian Bridge	Quantity	Cost	Unit	Amount
Contech Bridge	0	\$60,000.00	LS	\$0.00
Subtotal				\$0.00

Erosion Control	Quantity	Cost	Unit	Amount
Silt Fence	3,901	\$2.42	LF	\$9,440.42
Stone Outlets	20	\$257.50	EA	\$5,150.00
Construction Staging Area	0	\$1,030.00	EA	\$0.00
Permanent Seeding	1	\$2,781.00	AC	\$1,863.27
Subtotal				\$18,068.49

Drainage Structures	Quantity	Cost	Unit	Amount
15" Reinforced Concrete Pipe		\$38.11	LF	\$0.00
Class A Rip-Rap Protection		\$49.44	TN	\$0.00
Subtotal				\$0.00

Miscellaneous Items	Quantity	Cost	Unit	Amount
RRFB Crossing at Grand Ave. (includes all improvements)	1	\$35,000.00	LS	\$35,000.00
ADA Truncated Dome Bump Pads - 2x5 - Cast In Place	5	\$215.95	EA	\$1,079.75
Temporary Traffic Control Signage at Business Entrances	12	\$180.25	EA	\$2,163.00
Subtotal				\$38,242.75

Subtotal				\$175,763.48
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Mobilization Fee	Quantity	Cost	Unit	Amount
Mobilization Fee @ 10%	1	\$17,576.35	LS	\$17,576.35
SUBTOTAL				\$193,339.83
Contingency (20% of total)			20%	\$38,667.97

GRAND TOTAL				\$232,007.79
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Cowlick Trail: Phase 3

Cost Estimate Evaluation

March 2014

Trail Corridor Preparation	Quantity	Cost	Unit	Amount
Clearing and grubbing	4.14	\$11,072.50	AC	\$45,840.15
Trail Centerline Staking	3,011	\$1.03	LF	\$3,101.33
Dumping Fees @ 6%			6%	\$2,750.41
Subtotal				\$51,691.89

Asphalt Trail	Quantity	Cost	Unit	Amount
Grading	560	\$20.60	CY	\$11,536.00
Bank Stabilization	0	\$4.28	LF	\$0.00
Hydroseeding	3,011	\$0.32	LF	\$963.52
Aggregate Base Course	1,170	\$25.75	TN	\$30,128
SF9.5A Asphalt	437	\$108.15	TN	\$47,262
Geotextile Fabric	3,011	\$1.55	SY	\$4,667.05
Subtotal				\$94,555.62

Concrete Landing with Railing	Quantity	Cost	Unit	Amount
Concrete Landing	0	\$45.00	SY	\$0.00
Railing	0		LF	
Subtotal				\$0.00

Bicycle/Pedestrian Bridge	Quantity	Cost	Unit	Amount
Contech Bridge	0	\$60,000.00	LS	\$0.00
Subtotal				\$0.00

Erosion Control	Quantity	Cost	Unit	Amount
Silt Fence	6,022	\$2.42	LF	\$14,573.24
Stone Outlets	30	\$257.50	EA	\$7,725.00
Construction Staging Area	1	\$1,030.00	EA	\$1,030.00
Permanent Seeding	1	\$2,781.00	AC	\$1,863.27
Subtotal				\$18,068.49

Drainage Structures	Quantity	Cost	Unit	Amount
15" Reinforced Concrete Pipe		\$38.11	LF	\$0.00
Class A Rip-Rap Protection		\$49.44	TN	\$0.00
Subtotal				\$18,068.49

Miscellaneous Items	Quantity	Cost	Unit	Amount
RRFB Crossing at Virginia St. (includes all improvements)	1	\$30,000.00	LS	\$30,000.00
ADA Truncated Dome Bump Pads - 2x5 - Cast In Place	4	\$215.95	EA	\$863.80
Subtotal				\$30,863.80

Subtotal				\$195,179.80
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Mobilization Fee	Quantity	Cost	Unit	Amount
Mobilization Fee @ 10%	1	\$19,517.98	LS	\$19,517.98
SUBTOTAL				\$214,697.78
Contingency (20% of total)			20%	\$42,939.56

GRAND TOTAL				\$257,637.33
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Cowlick Trail: Phase 4

Cost Estimate Evaluation
March 2014

Trail Corridor Preparation	Quantity	Cost	Unit	Amount
Clearing and grubbing	1.98	\$11,072.50	AC	\$21,923.55
Trail Centerline Staking	1,436	\$1.03	LF	\$1,479.08
Dumping Fees @ 6%			6%	\$1,315.41
Subtotal				\$24,718.04

Asphalt Trail	Quantity	Cost	Unit	Amount
Grading	2,102	\$20.60	CY	\$43,301.20
Hydroseeding	1,500	\$0.32	LF	\$480.00
Aggregate Base Course	558	\$25.75	TN	\$14,369
SF9.5A Asphalt	208	\$108.15	TN	\$22,495
Geotextile Fabric	1,436	\$1.55	SY	\$2,225.80
Subtotal				\$82,870.70

Concrete Landing with Railing	Quantity	Cost	Unit	Amount
Concrete Landing	500	\$45.00	SY	\$22,500.00
Railing	250	\$65.00	LF	\$16,250.00
Subtotal				\$38,750.00

Bicycle/Pedestrian Bridge	Quantity	Cost	Unit	Amount
Contech Bridge	1	\$60,000.00	LS	\$60,000.00
Subtotal				\$60,000.00

Erosion Control	Quantity	Cost	Unit	Amount
Silt Fence	2,872	\$2.42	LF	\$6,950.24
Stone Outlets	15	\$257.50	EA	\$3,862.50
Construction Staging Area	1	\$1,030.00	EA	\$1,030.00
Permanent Seeding	2	\$2,781.00	AC	\$4,171.50
Subtotal				\$18,068.49

Drainage Structures	Quantity	Cost	Unit	Amount
15" Reinforced Concrete Pipe	75	\$38.11	LF	\$2,858.25
Class A Rip-Rap Protection	50	\$49.44	TN	\$2,472.00
Subtotal				\$4,682.55

Miscellaneous Items	Quantity	Cost	Unit	Amount
Unsuitable Soils Excavation Allowance	1,200	\$10.30	CY	\$12,360.00
Subtotal				\$12,360.00

Subtotal				\$241,449.78
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Mobilization Fee	Quantity	Cost	Unit	Amount
Mobilization Fee @ 10%	1	\$24,144.98	LS	\$24,144.98
SUBTOTAL				\$265,594.76
Contingency (20% of total)			20%	\$53,118.95

GRAND TOTAL				\$318,713.71
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5

DEVELOPMENT PLAN

Cowlick Trail: Phase 5

Cost Estimate Evaluation

March 2014

DEMOLITION, MOBILIZATION, CLEARING & EROSION CONTROL	Quantity	Cost	Unit	Amount
Mobilization & Demobilization	1	LS	\$10,000.00	\$10,000.00
Clearing & Grubbing	0.5	AC	\$2,500.00	\$1,250.00
Silt Fence	313	LF	\$4.25	\$1,330.25
Construction Entrance	1	EA	\$2,500.00	\$2,500.00
Strip, Stockpile & Spread Topsoil	1,056	CY	\$5.00	\$5,280.00
Demolition Allowance	1	LS	\$15,000.00	\$15,000.00
Total Demolition, Mobilization, Clearing, & Erosion Control				\$35,360.25

EARTHWORK	Quantity	Cost	Unit	Amount
Fine Grading (Pavement, Slopes, Walkways, Etc)	7,382	SY	\$1.50	\$11,073.00
Total Earthwork				\$11,073.00

UTILITIES AND STORM DRAINAGE	Quantity	Cost	Unit	Amount
Water and Sewer Allowance	1	LS	\$10,000.00	\$10,000.00
Storm Drainage Allowance	1	LS	\$40,000.00	\$40,000.00
Total Utilities and Storm Drainage				\$50,000.00

GENERAL CONSTRUCTION	Quantity	Cost	Unit	Amount
2" Asphalt Surface Course (Parking Lot)	450	SY	\$7.00	\$3,150.00
6" Stabilized Aggregate Base Course	450	SY	\$10.00	\$4,500.00
18" Concrete Curb & Gutter	618	LF	\$9.00	\$5,562.00
10' Concrete Trail	1,111	SY	\$15.50	\$17,220.50
Striping, Paint & Signage	1	LS	\$7,500.00	\$7,500.00
Site Furnishings (Benches, Trash, Bollards, Etc)	5	EA	\$1,000.00	\$5,000.00
Sign Allowance	1	EA	\$7,500.00	\$7,500.00
Lighting	1	EA	\$20,000.00	\$20,000.00
Other	0	EA	\$0.00	\$0.00
Total General Construction				\$70,432.50

LANDSCAPING	Quantity	Cost	Unit	Amount
Canopy Trees	16	EA	\$400.00	\$6,400.00
Flowering Trees	7	EA	\$300.00	\$2,100.00
Shrubs	45	EA	\$30.00	\$1,350.00
Groundcover	1,400	EA	\$5.50	\$7,700.00
Sod	7,500	SF	\$0.50	\$3,750.00
Mulch	250	CY	\$28.00	\$7,000.00
Total Landscaping, Grassing, Etc.				\$28,300.00

SUBTOTAL ALL AREAS				\$195,165.75
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COST FACTOR	20%	Contingency		\$39,033.15
DESIGN AND ENGINEERING FEES	10%			\$23,419.89

GRAND TOTAL ALL AREAS				\$257,618.79
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IMPLEMENTATION

SCHEDULE

Every trail project is unique, and, therefore, it is important to develop an implementation schedule that will meet the needs of the community while also taking into account budgetary constraints. Significant streamlining occurs when various phases of construction are consolidated into larger projects, and design and permitting for the entire project can be reviewed as one project. In the event that the Cowlick Trail project is not able to be funded as a single construction project and must be phased by section, a general schedule for the implementation of a single phase or section can be seen by looking at “typical” time frames for the various processes that projects must go through.

These time frames are generally consistent, regardless of the size of a particular project. The general schedule presented below is based on similar trail project schedules. Since some of these processes occur simultaneously, the times listed are not cumulative. Items considered to be on the “critical path” are shown in the second column from the right.

PROCESS	DESCRIPTION	CRITICAL PATH TASKS (MOS)	CONCURRENT TASKS (MOS)
RFQ	Request for Qualifications and Consultant Selection	3	
Contracting	Contracting between the City and the Consultant	2	
Survey	Detailed survey of the project area	2	
Preliminary Design	Preliminary Design of the Project	3	
Review	Review of Preliminary Design by Regulatory Agencies	3	
Permits	Application for local, state, federal permits		18
Final Design	Final Design of the project		2
Review	Review of Final Design by Regulatory Agencies		1
CD's	Preparation of Construction Documents	2	
Bidding	Soliciting public bids for the project	2	
Contracting	Contracting between the City and the Builder	1	
Construction	Construction of the rail trail	8 - 18	
TOTAL TIME FOR ONE PHASE OF DESIGN/CONSTRUCTION: 26-36 MONTHS			

5

DEVELOPMENT PLAN

CONCLUSION

The Cowlick Trail will transform the landscapes of Rocky Mount. The corridor has the opportunity to **transform into a public amenity** that will **increase adjacent property values, fulfill a need for outdoor recreation opportunities, offer a safe route for bicycle commuting as an alternate to driving, raise recreational revenue, revitalize local communities, and improve the overall quality of life** in Rocky Mount.

There are obstacles to overcome before these benefits can be realized. Using the phasing plan outlined above, segments of the Cowlick Trail can be achieved with the patience and cooperative effort of adjacent property owners and project partners. **A foundation of local leadership, trail advocates, and citizen support will contribute to the successful planning, design, and consequent construction of the Cowlick Trail that will be enjoyed by generations to come.**

