MEADOW CREEK PARKWAY

FINAL REPORT · MAY 2001

Credits

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CONTENTS

INTRODUCTION

BACKGROUND

Beginning in 1967, the Virginia Department of Transportation (VDOT) proposed the development of a new north-south arterial at the northeast edge of Charlottesville. Initially named the McIntire Road Extension, the new road was intended to improve access to downtown Charlottesville, provide an alternative to Route 29 North, and relieve traffic volume on local residential streets and roads.

In 1979, following a series of design studies, a corridor was selected for the new road. Approximately 2 miles in length, the road corridor was made up of two segments; the first segment lay within the city limits of Charlottesville and traversed McIntire Park between SR250 and Melbourne Road, while the second segment lay on undeveloped land along Meadow Creek in Albemarle County between Melbourne Road and Rio Road.

As the route for the new road coalesced, and as funding was secured, the project came to be identified as Meadow Creek Parkway. Initially envisioned as a four-lane divided road with limited access, the City of Charlottesville resolved in the early 1980s that the road should be designed as "a true parkway which would follow the contours of the land." Through subsequent years of design and debate, the City placed other stipulations on the design of the new road, including a lowered design speed, use of an urban (curb and gutter) cross-section, consideration of a 2-lane versus 4-lane design, provision of separated pedestrian trail, and road engineering for passenger vehicles only. Continued debate over the need and design for the road finally prompted the City of Charlottesville to commission a study in early 1999 to evaluate alternative design approaches for Meadow Creek Parkway and to better convey to VDOT the City's preferences.

The study, referred to as the Rieley Report after the planning firm which prepared it, primarily focused on the design of the Parkway for the City's portion of the project, through McIntire Park from SR250 to Melbourne Road. Various alignments and lane configurations (2-lane, 3-lane, and 4-lane divided and undivided) as well as the VDOT design were compared. Alignment and design recommendations in the Rieley Report were based on design principles historically applied to other parkways and scenic roads. Design guidelines for the Parkway included the careful coordination of horizontal and vertical alignment to create a pleasing 3-D line, incorporation of transition spiral curves for safety and aesthetic value, use of minimum pavement widths, and variable side-slope grading to blend the road cut and fill slopes with the adjacent terrain. Basically, the Rieley Report promoted a design for the Parkway that was sensitive to the McIntire Park setting and blended with the terrain to ensure minimal impacts upon the park resources. The Report also recommended that the linear park setting for the road needed to continue north of Melbourne Road through the County's portion of the project to Rio Road.

In early 2000, following the City's initiative, Albemarle County decided to commission a study for their portion of the Parkway. This study as presented here is the culmination of a process in which design options for a Parkway were evaluated in conjuction with concepts for urban and park development. A "no build" option was not evaluated.

Introduction

Parameters

The purpose of this project is to develop design recommendations for a 2-lane parkway and adjacent park and urban development areas in a land corridor between Melbourne Road and Rio Road in Albemarle County, Virginia. The parkway corridor occupies mostly undeveloped land flanking a stretch of the Meadow Creek just outside the northeast city limits of Charlottesville. The corridor adjoins the north end of Charlottesville's portion of the parkway which extends from SR250 to Melbourne Road.

It is our vision that the parkway will be true to the idea of a "parkway;" that is, of a road joined with the creation of a linear park which acts as the framework for a scenic road. This type of vision has guided the development of the finest national parkways. The park simply cannot consist of planter strips or buffers along the road; rather, there must be sufficient capacity and open space area to support recreation and preserve natural features as well as provide a setting for the parkway. Moreover, the park needs to provide connections and linkages to other parks and open space areas and accommodate an extension of the Rivanna Trails System.

This study is also being conducted to suggest design concepts and strategies for areas in the corridor that possess potential for urban development. Design concepts for these areas must be consistent with the principles for density, mix, and connectivity set forth by the Albemarle Development Steering Committee (DISC) report. The County's Comprehensive Plan and other city and county planning documents also have influence upon the urban development concepts. In defining the urban concepts, continuous open space along the Parkway must be preserved to maintain the linear park character. Integration of park and open space throughout the urban development areas are also important project objectives.

While the park and urban development elements are important components of the project, this study considers the design of the Parkway to be the most pressing issue and the one requiring the greatest level of resolution. The Parkway design is to be based on state-of-the-art techniques and practices for parkway and aesthetic roadway design. Equal attention must be given to AASHTO and VDOT design standards and safety requirements. The Parkway portion within the County also needs to mirror the characteristics established in the Reiley Report for the City's portion of the parkway, including:

- coordination of the horizontal and vertical alignment to create a pleasing three-dimensional line
- use of a 35 mph design speed
- integration of stormwater management concepts into the road design
- incorporation of spiral transition curves to create a continuous curvilinear alignment
- use of variable side slope grading to blend cuts and fills for the new road into the adjacent terrain
- a road alignment that has negligible impacts on existing residential areas.

Consistent with the City's portion of the Parkway, the County has required their segment of the Parkway to be designed as a two-lane road with consideration that an additional two lanes could be added at some time in the future. Additionally, the MPO Meadow Creek Parkway Design Advisory Committee established design criteria for the project. These criteria, while fairly detailed, are utilized as only general guidelines in this study.

During the course of this project, the progress and findings of the study were reviewed during meetings with the Albemarle County Engineering and Planning Departments and the Planning Commission. These periodic review meetings provided the Consultant team with additional information about other issues in the study area and allowed the County an opportunity to have input on various issues and to give approval on the direction of the project.

Process

The design process began by looking at the characteristics of the land while at the same time collecting and reviewing planning studies relevant to the project. Following this, the design team developed alternatives that illustrated a range of values and approaches in response to various issues and project requirements. Finally, as a result of collaboration with the community, an optimal design was developed.

October 2000. The design team of Jones & Jones, Okerlund Associates, and Lochner Engineers visited Albemarle County to discuss goals for the project, investigate the project site and site vicinity, and collect existing reports and plans.

The design team synthesized their observations and reviewed existing materials into a series of maps and exhibits.

December 2000. The design team returned to review and discuss their analysis of the project vicinity and existing site conditions. This analysis formed the basis of a site suitability diagram that described the best use of various landscape units within the project area. The design team also presented examples of multi-modal transportation corridors. Impacts of the transportation corridor on the urban development and park areas were identified for further evaluation through a series of alternative design concepts.

The design team examined a range of parkway alignments and their implications on the development of urban neighborhoods and park and open space areas.

January 2001. The design team returned to present three alternative parkway alignments and urban development approaches. Alternative A explored building the parkway further west to create more continuity for the urban development and parkland areas. Alternative B was similar to the proposed VDOT alignment. Alternative C explored moving the transportation corridor to the west side of the CATEC high school. In the end, Alternative A was recommended by the design team and approved by the County as the direction for further refinement.

The design team refined the parkway alignment and urban development approach of Alternative A. The design team also developed a parklands strategy that included an assessment of the impacts of urbanization upon Meadow Creek and techniques for restoring and protecting the creek.

March 2001. The design team returned to present and discuss draft recommendations for the parkway, urban development area and parklands. The parkway alignment was resolved in greater detail and strategies for the urban development and parklands were illustrated.

The design team finalized the recommendations for the parkway, urban development, and parklands. Simulated views of the parkway, cost estimates, and a corridor land use concept were developed for inclusion in this report.

ANALYSIS

RESEARCH

Research and data collection for this study included a full review of existing planning reports and materials related to the project site. County staff were instrumental in assembling various documents and digital mapping files. Materials collected and reviewed include the following:

Existing VDOT and City data for the county and city portions of the parkway.

- The Rieley Report
- Horizontal and vertical alignments
- Topographic mapping
- Typical road cross-sections
- Bridge elevation and design data

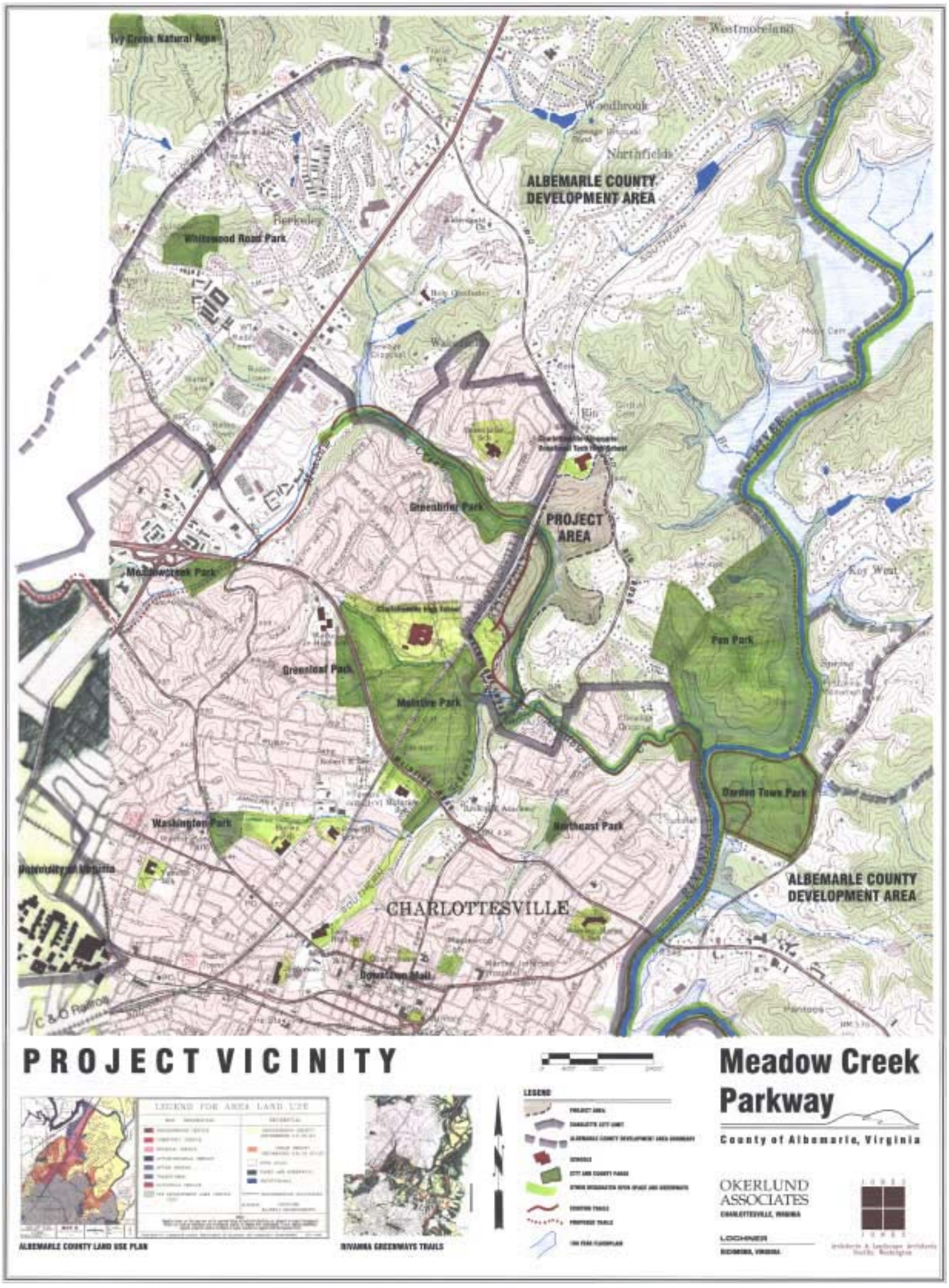
Mapping related to the project site.

- Digital mapping including 5' contours, structures and vegetation
- Property lines, parcels and owners
- 100-year flood boundary
- SCS soil survey
- Wildlife habitat & migration maps
- Orthophotos, 1996 and 2000
- Oblique aerial photography
- Surveyed location of 24" diameter & larger trees
- Gas and sewer utility information

Mapping and plans related to the project vicinity.

- Albemarle County Comprehensive Plan
- City of Charlottesville Comprehensive Plan
- The City as a Park: A Citizen's Guide to Charlottesville Parks
- The DISC Report
- Rivanna Trails Foundation's "Rivanna Greenways Trails"
- University of Virginia (UVA) Strategic Plan for Water Resources Management
- South Fork Watershed Study
- Rivanna River Basin Project "State of the Basin 1998"
- UVA Thesis, "Meadow Creek- A Model for the Future"
- Bicycle Plan for the City of Charlottesville and Albemarle County
- County GIS Mapping for community facilities, comprehensive plan development areas, comprehensive plan land use designations, greenways, hydrography, major residential development, major river & home watersheds, parks and recreation, physiographic provinces, registered historic properties & districts, scenic resources, and wetlands
- USGS topographic mapping

PROJECT VICINITY



The Meadow Creek Parkway project is located in a rapidly developing area of the Charlottesville metropolitan region. This area is identified in the Albemarle County Comprehensive Plan for promotion of higher density mixed-use development.

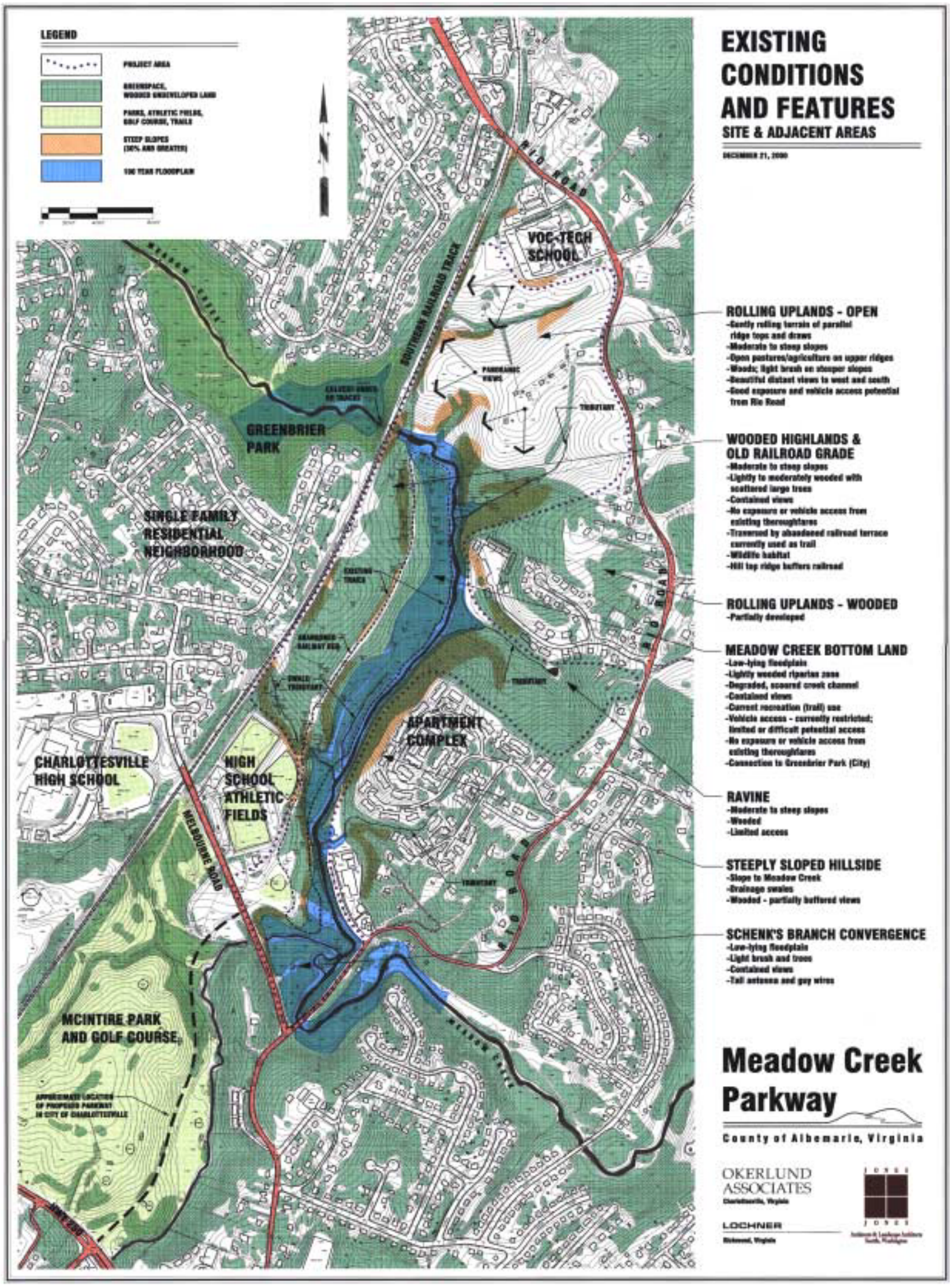
The open space associated with Meadow Creek Parkway has the potential to connect existing open space, parklands, habitat, and trails through Charlottesville and Albemarle County to create an interconnected and expanded park and trail system.

With its location and natural resources, the Meadow Creek Parkway project stands to be an important environmental educational tool for nearby schools. In addition to the University of Virginia, there are four high schools and an elementary school in the project vicinity.

Existing Site Conditions & Features

An early step in this study involved conducting an inventory and analysis of existing site conditions and features. This process entailed the mapping of obvious physical elements such as vegetation, creeks, and utilities as well as delineating less discernable features such as viewsheds, the 100-year flood plain, and slopes over 30%. The analysis was essentially a process of looking closely at the land, understanding what it was in the past, the reasons for its current condition, and its limitations and opportunities for future land uses.

Initially, site features and resources were mapped that were considered relevant to the planning of the urban development and park areas as well as to the transportation corridor. The site was then divided into seven distinct landscape units; these units consist of landscape elements and characteristics that give one a sense of being in a contiguous area with distinctive qualities.



Site Features

The Existing Conditions and Features map depicts the following elements within and adjacent to the study area:

- Existing Greenspace: areas that are wooded and undeveloped
- Existing Recreational areas: parks, athletic fields, golf course, and trails
- Steep Slopes: where the land slopes at 30% or greater
- 100-year Floodplain: areas that may be under water after a major storm
- Meadow Creek and its tributaries
- An existing abandoned railway bed (currently used as a walking/running/biking trail)
- Other existing trails
- Existing structures: schools, houses, apartments, businesses, etc.
- Roads and driveways
- Southern Railroad tracks
- Promontories which afford panoramic views over adjacent terrain

Landscape Units

The following is a description of the seven landscape districts that were identified in the Parkway corridor:

Rolling Uplands—Open

The northern portion of the site (south of the Charlottesville-Albemarle Vocational Technical School) consists of gently rolling terrain with parallel ridge tops and draws. The ridges and moderate side slopes are generally free of trees and are currently used as pastureland. Steeper slopes and draws near Meadow Creek are lightly to moderately wooded and likely provide wildlife habitat.

The scenic quality of the rolling pasture land itself is very high. Distant views to the west and south are afforded from the ridge tops. The area has good exposure and access potential from Rio Road.

Wooded Highlands & Old Railroad Grade

This landscape unit is bounded by railroad tracks to the west, Meadow Creek Bottomland to the east and north, and high school athletic fields to the south. The terrain here slopes gently up from the floodplain to the railroad tracks. An abandoned railroad bed, currently used as a recreational trail, is benched into the hillside. The slopes are mostly moderate, with some steeper areas. The hill is lightly to moderately wooded with scattered large trees, allowing for filtered views of adjacent areas. This secluded area is neither exposed to nor directly accessible from any existing thoroughfares or local streets. There are indications that the area is habitat to a number of animals—during one recent traverse, a surveyor was startled when he suddenly came within a few steps of a group of deer.

Rolling Uplands – Wooded

This unit extends from the high steep slopes east of Meadow Creek to Rio Road. The wooded uplands have been partially cleared in order to accommodate several housing developments and apartment complexes. Portions that have been left wooded generally are part of elongated private tracts associated with existing older homes. Access to this area is from Rio Road.

Meadow Creek Bottomland

This is a low-lying floodplain which is bordered by Meadow Creek on the east. It is a lightly wooded riparian zone and is depicted on the map by the limits of the 100-year floodplain. The channel of Meadow Creek is highly degraded and scoured by heavy flood flows caused by run-off from upstream development. A trail next to the Creek receives moderate use and is a quiet refuge within this developing urban area. This trail has potential for connection to the northwest into Greenbrier Park, provided a larger culvert could be constructed beneath the railroad tracks. The bottomland area is not accessed from existing streets. Signs of wildlife are visible throughout the area.

Ravine

A number of small tributaries branch from Meadow Creek. These drainages have created moderate to steeply sloped ravines that are generally wooded, with good scenic value. These ravines have little or no access due to the severity of their slopes.

Steeply Sloped Hillside

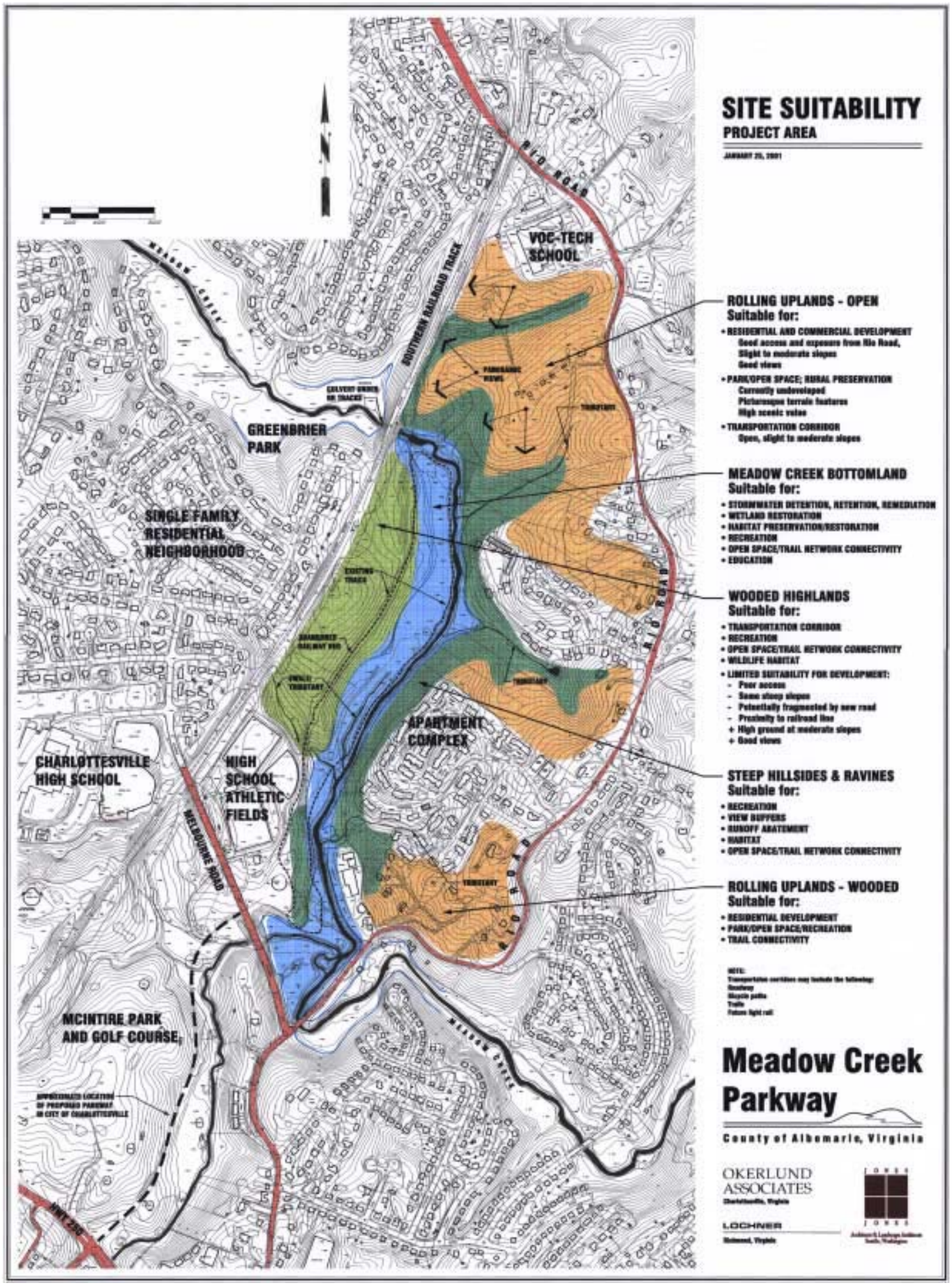
Rising up along the east side of Meadow Creek, the wooded slopes of this area help to buffer views of the upland apartments from the trails along the creek. The slopes here are greater than 30% and would be highly susceptible to erosion from any type of disturbance.

Schenk's Branch Convergence

This is a low-lying floodplain associated with Schenk's Branch—a tributary to Meadow Creek that flows from the south through McIntire Park and Golf Course. Light brush and trees contain the view within this small basin. Traffic noise from both Rio and Melbourne Roads, as well as a large antenna and guy wires, detract from the natural qualities of this area.

Site Suitability

The landscape units identified in the Existing Conditions and Features analysis were evaluated in terms of their suitability for the following three land uses: urban development (residential and commercial), park and open space, and transportation corridor (e.g. roadway, light rail, commuter bike path). In the following summary of the Suitability Analysis, the landscape units are grouped according to the land use that they can accommodate.



Transportation Corridor

For the purposes of this Suitability Analysis, the transportation corridor land use was seen as a multi-modal corridor capable of accommodating the 2-lane Parkway and bike and pedestrian paths as well as future bus-only lanes or a light rail commuter line. Only the first two landscape units listed below have characteristics favorable to a corridor containing car, bus, and train transportation modes. The other landscape units are suitable for only pedestrian and bike paths.

Rolling Uplands – Open

Mostly open, un-vegetated areas suitable for roads and trails

Transportation routes must traverse steep slopes in accessing this area from the south

Wooded Highlands & Old Railroad Grade

Gently to moderately sloped terrain suitable for roads and trails

Existing trail has potential for connections to regional trail network

Meadow Creek Bottomland & Schenk's Branch Convergence

Suited for pedestrian trails only

Steep Hillsides & Ravines

Suited for pedestrian trails only

Rolling Uplands—Wooded

Opportunity for connections to regional trail network and neighborhoods

Urban Development

The first two landscape units listed below were determined to have characteristics capable of supporting urban development. The third unit (Wooded Highlands) was seen to have some characteristics suitable for urban development but also has several limitations to development.

Rolling Uplands – Open

Large, contiguous area with slight to moderate slopes

Panoramic views from high vantage points

Good access and exposure from Rio Road

Rolling Uplands—Wooded

Good access from Rio Road

Slopes are slight to moderate

Wooded Highlands & Old Railroad Grade

High ground at moderate slopes

Good scenic value with views of Meadow Creek

Limitations to development:

- No current access, and future access from Parkway would not be permitted
- Some steep slopes
- Potential fragmentation (proposed roadway would bisect portions of area)
- Close proximity of railroad

Park and Open Space

All of the landscape units have characteristics suitable for park and open space. Certain units, however, have a preponderance of sensitive natural resources that are easily damaged or restrictive to urban development. These units have a higher priority for park and open space since these uses result in less disruption of sensitive natural systems.

Rolling Uplands – Open

The majority of this area is currently undeveloped

Picturesque terrain

High scenic value

Meadow Creek Bottomland & Schenk's Branch Convergence (High Priority Open Space)

Picturesque natural area

Existing recreational trail system, with potential for more

Opportunity for storm water detention, retention and water quality enhancement

Habitat preservation and restoration

Wetland restoration

Environmental education opportunities

Wooded Highlands & Old Railroad Grade

Currently used as recreational open space

Existing recreational trail

Existing wildlife habitat

Steep Hillsides and Ravines (High Priority Open Space)

Existing green spaces that also function as view buffers

Existing wildlife habitat

Runoff abatement

Potential for light trail development and pedestrian links

Suitable for resources preservation

Rolling Uplands – Wooded

Potential for development of recreational trails

Connectivity to greater trail network and adjacent neighborhoods

Potential for green space/open space enhancement in the form of small neighborhood parks

ALTERNATIVES

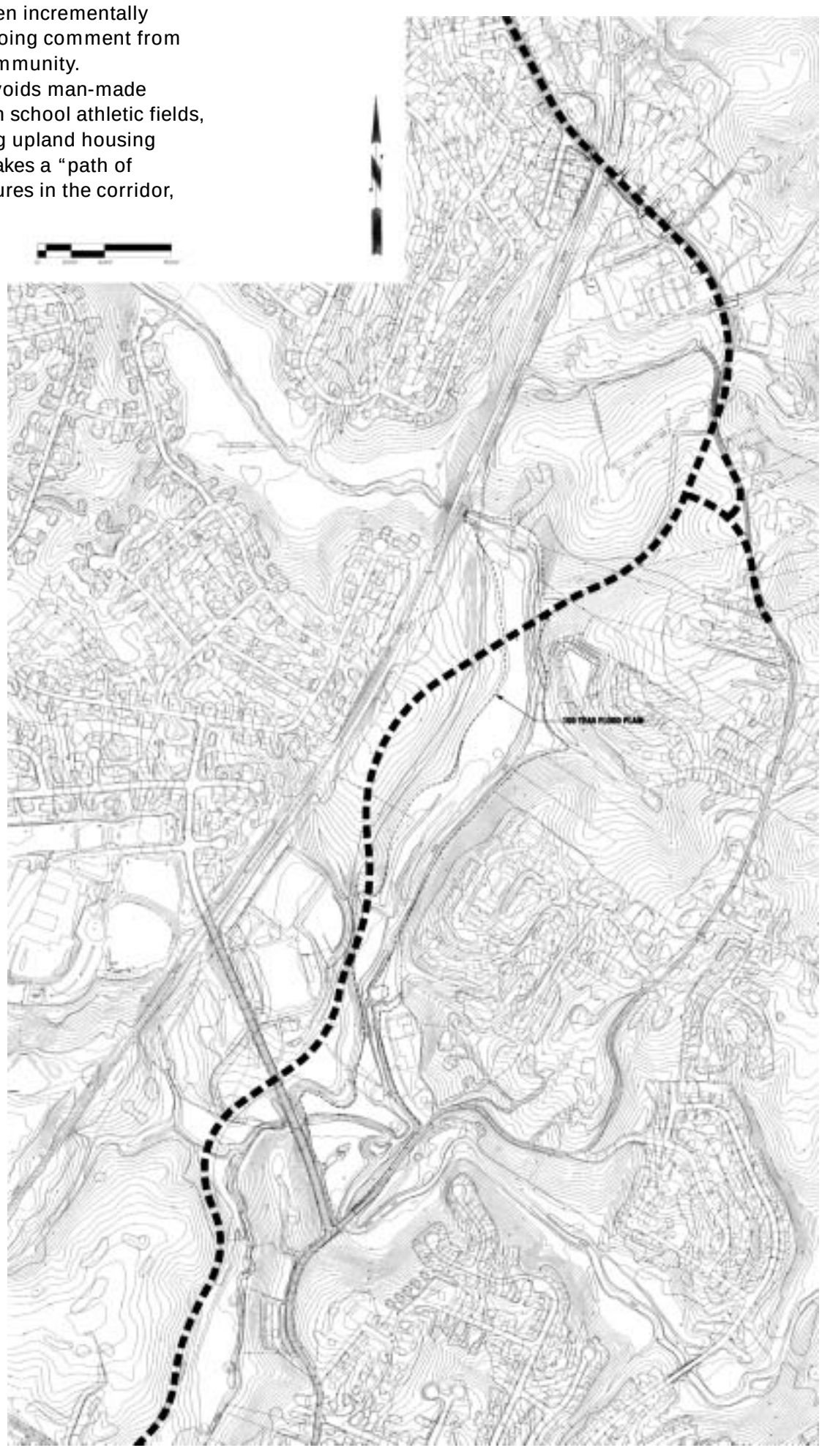
The Suitability Analysis helped in assessing the site's capabilities to support certain land uses. However, there still remained considerable variation in where the road might be located and how the park and urban development areas would lay out. The relationship of the three elements—road, park, and development areas—was seen to be vital. The placement of the road would have a demonstrative effect on the character and quality of the other two components. Therefore, it was important to look at various options for the road and its relationship to the park and urban development areas. Several roadway, park, and urban development configurations were considered, and three proved viable and worthy of further study. The following is a description and comparison of the Alternatives A, B, and C as well as the proposed VDOT alignment.

VDOT ALIGNMENT

The VDOT design for the Parkway has been incrementally refined over the years in response to ongoing comment from County and City officials and the local community. The current proposed VDOT alignment avoids man-made features in the corridor, including the high school athletic fields, CATEC facilities, railroad line, and existing upland housing development. The proposed alignment takes a "path of least resistance" over natural terrain features in the corridor, thereby reducing the need for large cuts and fills through the hilly topography. Where the alignment approaches Meadow Creek, a fill berm would be required through the flood plain to carry the proposed roadway above the 100-year flood elevation. At the crossing of Meadow Creek, an open span bridge structure of approximately 230 feet in length is required. North of the bridge, through the area proposed for urban development, the alignment travels up through a wooded ravine, gaining elevation as it approaches the tie-in to Rio Road.

After studying the VDOT alignment, the design team identified a number of liabilities linked to the plan. The southern portion of the alignment, which consists of linked curves, would result in a road that responds to the rolling topography. However, fairly long tangents proposed off both ends of the bridge would appear incongruous or out-of-sync with the curvilinear segments of the road. Additionally, the bridge span and fill berms are perhaps longer than they would need to be if the alignment crossed a narrower reach in the floodplain. Another liability of the VDOT alignment, which VDOT did not have the benefit of studying, is that the proposed road travels through the middle of the proposed urban development area in the northern portion of the corridor. As a limited access road, the VDOT alignment would significantly limit vehicle and pedestrian connectivity and linkages within this developed area.

Following this analysis, the design team evaluated three roadway alternatives, which are outlined on the following pages.



Roadway Alternatives

Overview

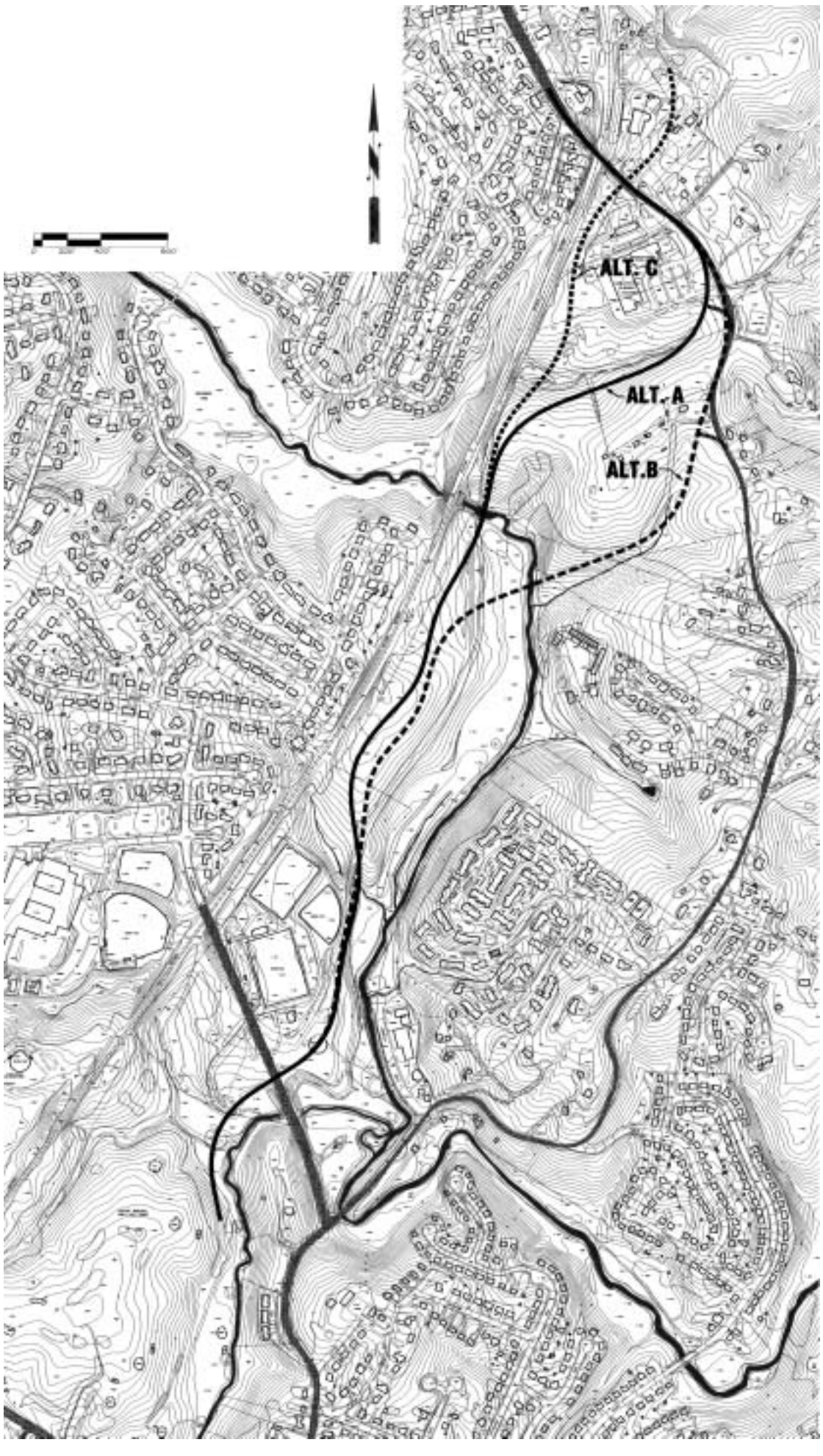
Within the study area from Melbourne Road to Rio Road, three roadway alternatives were evaluated. All alternatives were seen to lie within the following three landscape units:

1. Schenk's Branch Convergence: All roadway alternatives will need to cross an existing baseball practice field and curve to pass around a formal fenced baseball field farther north. The roadway must allow room for narrow service access along the outside of the baseball field fence. At the same time, the roadway cannot move too far to the east without requiring extensive filling of the Meadow Creek Bottomlands.
2. Wooded Highlands: One alternative roadway alignment crosses this area at a lower elevation, near the abandoned railroad bed; another gradually ascends the highlands farther west, closer to the existing railroad, thus allowing more room for contiguous open space and habitat preservation near Meadow Creek.
3. Open Rolling Uplands: Three distinct alignments were developed for this area:

   Alternative A crosses the steep hill close to the existing railroad berm over Meadow Creek and continues up the ravine south of the CATEC school. This alignment travels along the west edge of the proposed urban development area.

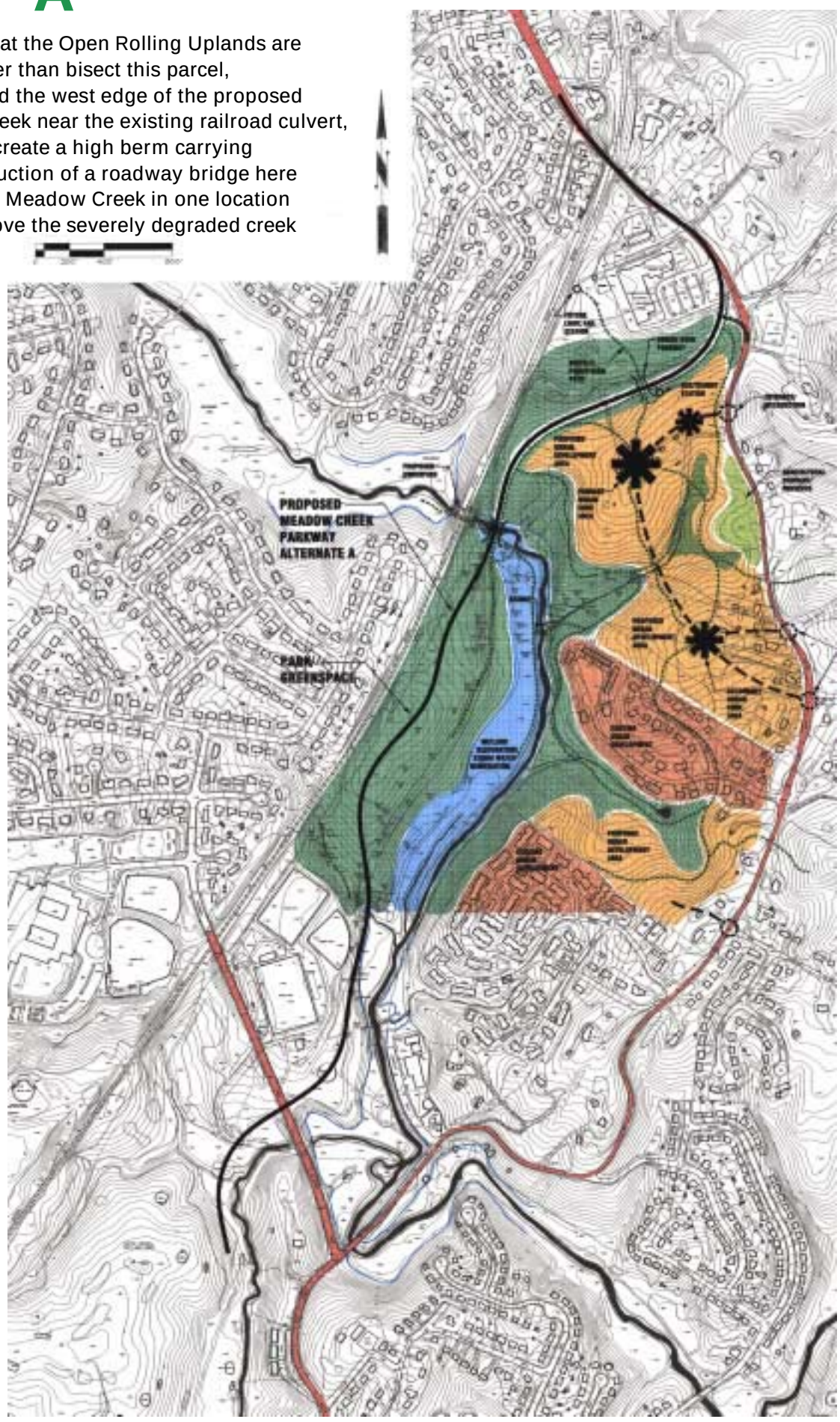
   Alternative B is similar to the route developed in the VDOT proposal. It traverses the wooded ravine south and east of the existing farmstead and would pass through the middle of the proposed urban development area.

   Alternative C crosses the steep hill near the existing railroad (as in Alternative A) and continues north fairly close to the rail line, passing along the west side of CATEC and a church before intersecting with Rio Road.



Alternative A

The Site Suitability Analysis suggested that the Open Rolling Uplands are well suited for urban development. Rather than bisect this parcel, the Alternative A alignment travels around the west edge of the proposed development area. It crosses Meadow Creek near the existing railroad culvert, where the creek valley has been filled to create a high berm carrying the railroad tracks over the creek. Construction of a roadway bridge here would consolidate bridge disturbances to Meadow Creek in one location and would create an opportunity to improve the severely degraded creek channel below the railroad culvert.



The Alternative A alignment allows a contiguous area of parkland and open space to be created across the wooded highland and Meadow Creek bottomland. It also crosses Meadow Creek at a point where the floodplain is narrower than where Alternative B crosses. This will presumably allow the Alternative A bridge to be shorter in length than the Alternative B bridge. Visual intrusion of the bridge into proposed park areas along Meadow Creek will be less for Alternative A than for Alternative B.

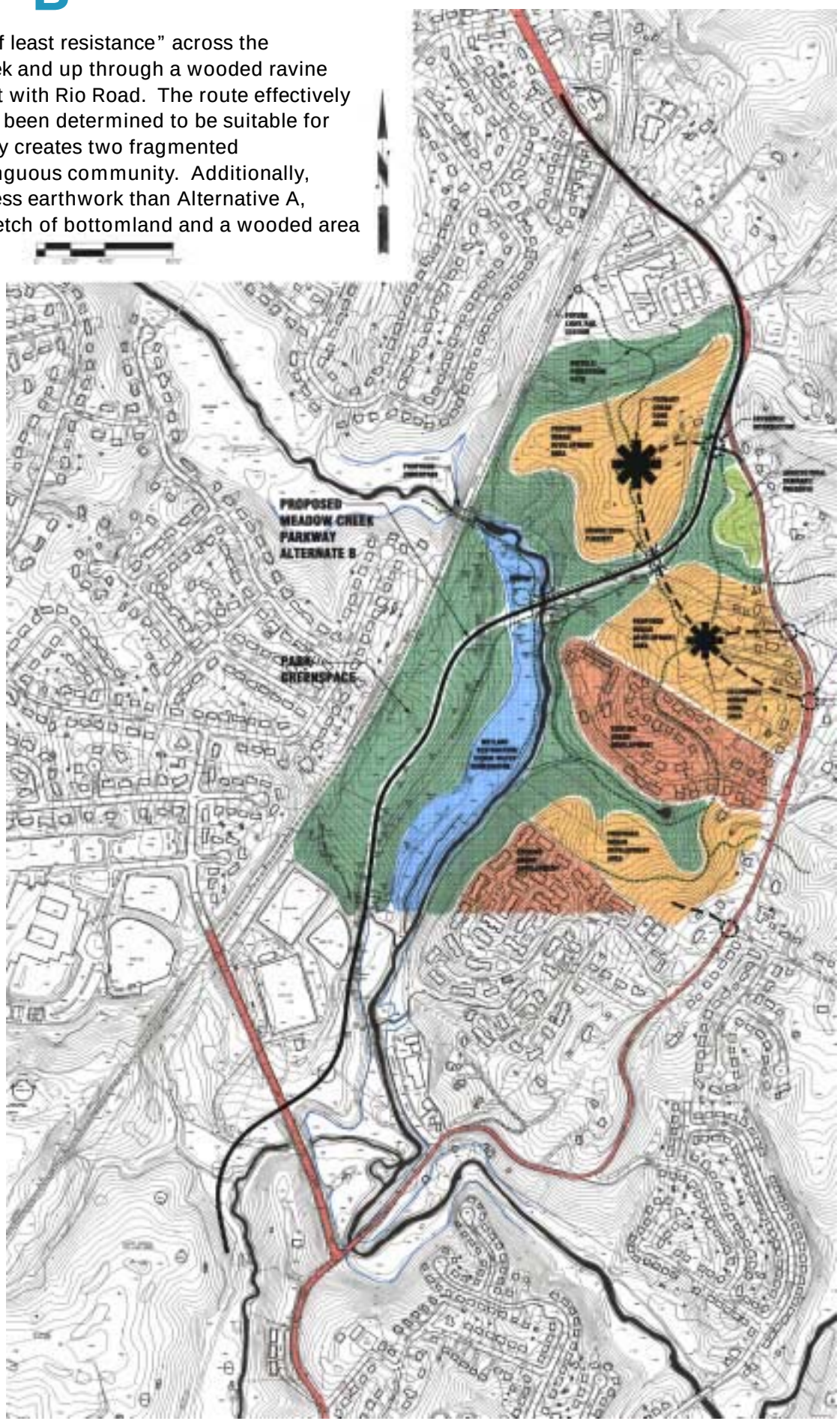
There are two slight disadvantages associated with the Alternative A roadway alignment. First, the steep hill to the north of the proposed creek crossing would be cut through in order to keep the road at a comfortable gradient. The cut, however, would not have to appear as a scar upon the land. It would occur on a curved section of the proposed alignment and could be blended into the existing topography and re-vegetated so that it would appear as a natural landform.
In addition, the view to the west from the bridge in Alternative A will be of the railroad berm. Trees planted between the bridge approaches and the Southern Railroad will help soften the severity of the berm.

Urban Development Concept:
The Alternative A parkway alignment skirts the edge of the urban development area, thus creating an available “critical mass” of approximately 40 contiguous acres —an area that can support a compact, walkable, mixed-use community.
The Alternative A development concept concentrates commercial development on two high points on the site with lower intensity residential development extending outward from these centers. The concept enables uninterrupted pedestrian and vehicular circulation between the centers with major vehicular access from Rio Road at points north and south. The ravine and draw that bisect the site allow lower intensity development (in the draw) transitioning to park and open space (in the deeper ravine). Alternate A’s compact and connected development patterns create opportunities to maximize open space and view retention along Rio Road and southward down the slopes and ravines to the Meadow Creek corridor.

Within the development area, pedestrian-oriented streets, parks, and squares will enhance walkability and connectivity between commercial, residential, and recreational areas. Pedestrian circulation linkages beyond the site would include access to CATEC, via a bridge over the parkway with possible connections to the hike/bike trails paralleling the parkway as well as access to any future transit line whether along the parkway or on the existing railroad line. Opportunities also exist to extend pedestrian linkages to the southeast through existing neighborhoods and future development areas. Pedestrian links from the development area across Rio Road would provide access to existing and potential recreation resources to the east including Pen Park and the Rivanna River. Careful attention would need to be given to providing safe and convenient pedestrian and bicycle crossings of Rio Road.

Alternative B

Alternative B alignment follows a "path of least resistance" across the wooded highlands down to Meadow Creek and up through a wooded ravine into the Open Rolling Uplands to intersect with Rio Road. The route effectively bisects the uplands area, an area that has been determined to be suitable for urban development. Alternative B thereby creates two fragmented development areas rather than one continguous community. Additionally, while Alternative B may require slightly less earthwork than Alternative A, Alternative B passes through a longer stretch of bottomland and a wooded area north of Meadow Creek which would result in the loss of a greater number of trees than Alternative A. The bridge location for Alternative B also would diminish the park user's experience with the roadway and bridge located in the midst of the proposed park area.



Urban Development Concept:
The urban development concept for Alternative B shares some of the characteristics of Alternative A. The major difference between the two is that the Alternative B parkway bisects the development area, thus dividint the area and reducing the available "critical mass" that can support a true compact, mixed-use community. The developable land area resulting from Alternative B would be more attractive to "single use" developments on individual parcels rather than a mixed-use development.

Alternative B allows concentrated development on the two high points of the site with lower intensity development to occur outward from these centers. The draw or large drainage swale through the site is traversed by the Parkway in Alternative B. Thus the Parkway effectively divides the development area into two pieces. A bridge over the parkway would provide a vehicular and pedestrian connection, but the development would still lack cohesiveness. Traversing the ravine with the parkway also diminishes the open space and view retention qualities of the ravine. The parkway's central location, however, provides for a more direct access from development areas to the hike/bike trails paralleling the parkway, as well as to any future transit along the parkway.

Alternative C

The parkway route for Alternative C is basically the same as for Alternative A from Melbourne Road to slightly beyond the Meadow Creek bridge. From just north of the bridge, after ascending the steep hill, the route stays close to the railroad tracks and passes along the west side of the CATEC school and the church at Rio Road. The terrain in this area is quite varied and steep, and constructing a road here would require extensive re-grading. This regrading would necessitate the removal of most of the vegetation in the area and possibly some modification to the church parking lots. It would be difficult to maintain a "parkway" feel through such a constricted area with little room for vegetation.

It was also determined that, should it be required in the future, constructing an additional two lanes would be nearly impossible along Alternative C without significant additional impacts to the CATEC school and the existing church.

Although the Alternative C alignment met Rio Road with a simple "T" intersection, it was concluded that this alternative would generally not meet the goals of the project, and it was excluded from further consideration.

Urban Development Concept: The Alternative C development concept is similar to Alternative A. Alternative C's additional characteristics include minimal encroachment on site ravines and the swales, increased open space corridors, and a direct, uninterrupted link to CATEC from the developed areas. However, access is less direct from developed areas to the hike/bike trails paralleling the parkway and to any future transit along the parkway. Also visual, noise, and environmental intrusions of the Alternative C parkway may be more severe on CATEC and the church.

Planning & Design Criteria

The design criteria established by the County, in combination with various other planning reports and studies, suggested a range of values or goals for the parkway, urban development, and parklands. A matrix was constructed to compare the three alternatives in terms of these values and goals.

Parklands

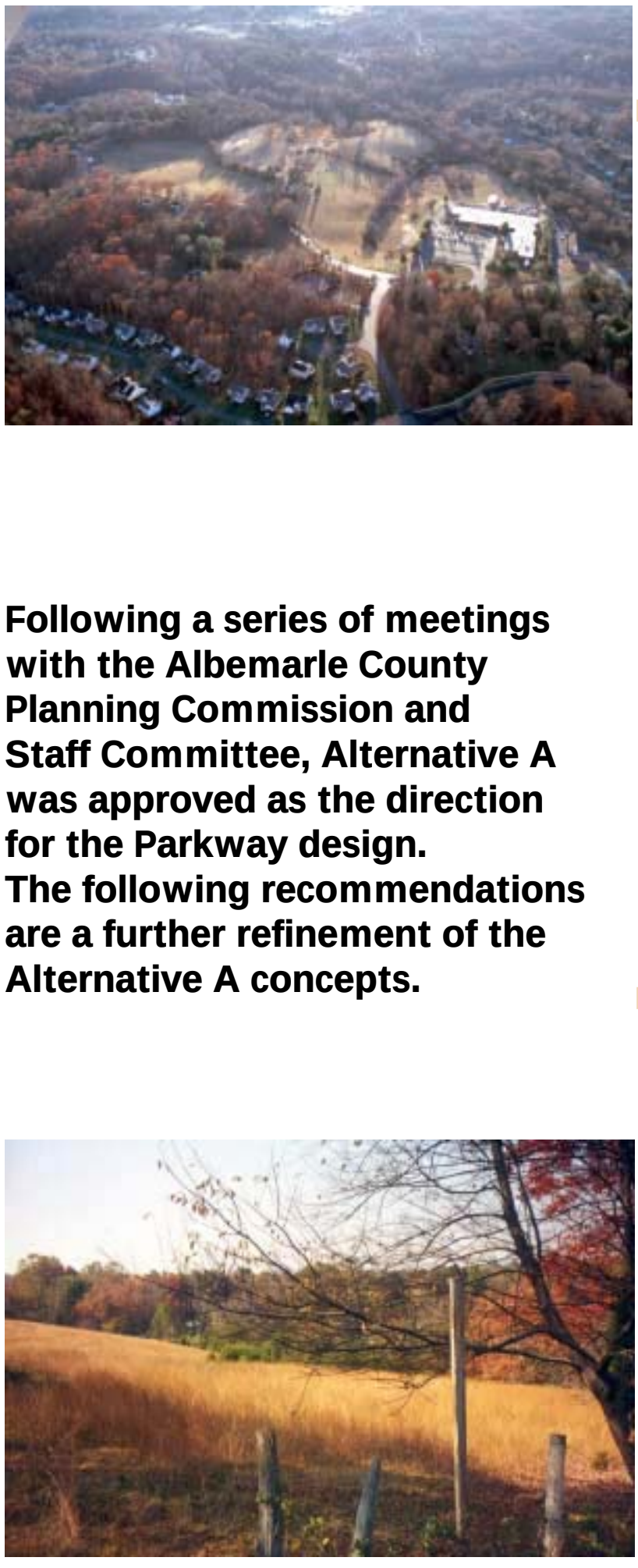
			Albemarle County Contract Scope & Design Advisory Committee Criteria
A	B		Evaluate potential as a linear park
A		C	Capacity to support recreation, maintain and enhance ecological integrity and rural and historic quality
A		C	Protection of natural and historic resources: ...smallest possible negative impact on natural and historic resources such as water, air, soils, wildlife and their habitats, archeological and historic sites. Particular care should be taken to protect Meadow Creek and its tributaries...
A			Landscaping...should reflect a park-like setting, create a gateway setting, respect and reinforce existing natural settings, be pleasing in all seasons, screen and preserve certain views, be low maintenance, etc.
			Albemarle County Comprehensive Plan
A		C	Urban open spaces objective: recognize the value of urban open spaces (including among others: greenways, greens, squares...) as a structuring element in emerging urban areas, and as part of a larger network of urban open space which may be linked to the rural open space system.
A		C	Greenways objective: establish a countywide network of greenway trails for conservation, recreation, transportation, and education throughout Albemarle County and linked to City trails.
			Rieley Report
A			A parkway is not a road, even a beautifully landscaped road. A parkway is a linear park that contains a scenic road. If you don't have a park, you don't have a parkway.
			The City as a Park: A Citizen's Guide to Charlottesville Parks
A		C	Vision: recognizes the park as a system; it also acknowledges that which is special in each park.
A		C	Sustainability: every place ultimately connects to our region's natural systems.
A		C	Maintenance: sustainable parks require less money...there are sensible and sustainable means of reducing the cost of parks maintenance.
A		C	There is a strong desire to build connections between parks through a greenbelt and trails system.
A		C	Safe connections between parks and adjacent neighborhoods are seen as a necessity; there is a need to provide suitable pedestrian access for local residents.
A	B	C	There is interest in providing a diversity of plantings for environmental education.
A		C	Stormwater runoff and drainage are a problem.
A	B	C	There is a need for bank stabilization throughout the city.
A		C	Parks should embody sustainable principles.
A		C	Public lands should be developed as a system.
A		C	Park sites should be both a recreational and educational resource.
			DISC Report
A			Parks and open space should be understood on a civic and environmental scale.
A		C	The Greenway should extend between villages and neighborhoods as well as through them, connecting the countryside to urban parks and squares.
A		C	The Commons is a public park of 2-5 acres that is clearly defined, possibly irregular in shape, and available for civic gatherings and unstructured recreation. A Commons may be designed around an existing natural feature such as a wetland or pond, a stand of mature trees or even a knoll or swale.
A		C	A Commons may incorporate stormwater retention.
	B	C	All schools can be connected to Greenways, Greenbelts, or Meadows.
A		C	A heath or meadow can be preserved by clustering development...Landscaping is usually informal and consists of native plants and grasses that require minimal maintenance.

Parkway

			Albemarle County Contract Scope and Design Advisory Committee Criteria
	B		Two-lane parkway, within a right-of-way to accommodate a four-lane divided parkway, along its entire length.
	B		Consideration for the current VDOT alignment.
	B		Roadway scenario shall link historic, cultural and scenic elements; shall provide a geometry that is sensitive and reflective of the natural terrain and is adjusted to minimize the impact to the inherent and visual quality of the existing landscape; shall provide a smooth flowing alignment without abrupt changes; shall provide cross-sections that are blended into the existing terrain.
A	B		The excavated roadway roadway should incorporate smooth rolling shoulders and slopes.
	B		The Parkway should enhance efficient traffic movement and appropriate capacity for current and projected needs...
A	B	C	Bicycle and pedestrian paths, with safe crossings and tie-ins to existing facilities and trails should be provided.
A	B	C	Safe pedestrian and bicycle crossings should be assured at all intersections.
			Albemarle County Comprehensive Plan
A			Objective: Maintain the visual integrity of all of Albemarle's roadways. Roadways are important to protect for the impression that they convey to residents and visitors alike. Design standards should be used tohelp maintain the visual integrity of all roadways.
	B		Scenic roadways...offer scenery representing the best of Albemarle's varied terrain, water features, forests, agricultural uses, and architectural and landscape design heritage.
A		C	The appearance of urbanizing corridors such as Route 29 North is a specific concern. Route 29 North serves as a major entrance and travel route through the community...Areas of intensive land use require a design vision to ensure that future development is compatible with the County's natural beauty.
			Rieley Report
A	B	C	Using a 35 mph design speed.
A	B		Coordinating the centerline location and the horizontal/vertical alignment to create a pleasing three-dimensional line.
A		C	Coordinating stormwater management concepts with road design.
A	B	C	Incorporating transition spirals and widening on horizontal curves.
A	B		Incorporating variable side slope grading to to ensure that the road prism is blended as gracefully as possible into the adjacent landform.
A	B	C	Geometry of the roadway was designed within the framework of the American Association of State Highway and Transportation Officials (AASHTO) and the VDOT standards.
			The City as a Park: A Citizen's Guide to Charlottesville Parks
A		C	Create a continuous system of paths and trails that encircles the City, and follows the major waterways: Meadow and Moore's Creeks, and the Rivanna River.
A		C	Trail system to connect Charlottesville's parks and schools, with neighborhoods and workplaces. Reduce automobile dependence.
			DISC Report
A		C	A parkway is a rural version of a boulevard. It is a long-distance thoroughfare, traversing rural areas and edges. It can link neighborhoods to each other.
		C	The main road should be kept relatively free of intersections.
A		C	An off-road pedestrian and bicycle way, usually traversing a park or traveling along a greenspace corridor (greenway). Paths may also be used to connect neighborhoods
A	B		Transportation Options—Convenient routes for pedestrians, bicyclists, and buses and other transit including light rail will augment the street network. Public transit stops will be located within each Development Area. Walking to them will be safe and convenient. Waiting for transit will be a comfortable and normal part of activity in the Neighborhood Center.

Urban Development

			Albemarle County Contract Scope and Design Advisory Committee Criteria
A			Preserving continuous band of open space along each side of the Parkway.
A			Maintaining the linear park atmosphere while meeting the goals of the Comprehensive Plan and perhaps enhancing the overall value of future developments.
A			Planning for access to the linear park from future developments.
A		C	The design should minimize the disruption of neighborhoods, schools, and businesses as much as possible, avoiding such effects as the physical division or prevention of circulation within communities.
			Albemarle County Comprehensive Plan
A		C	Goal: Protect and efficiently utilize the County resources by A. Emphasizing the importance of protecting the elements that define the Rural Area-agricultural and forestry resources, water supply resources, natural resources, scenic resources, historic and cultural resources, limited service delivery. Of these the protection of agricultural and forestry resources is the highest priority. B. Designating Development Areas where a variety of land uses, facilities, and services are planned to support the County's future growth with emphasis on infill development.
A			Urban Area (Neighborhoods 1-7) is comprised of: a full array of residential types and densities; with the upper ranges of proposed densities anticipated; all service levels of retail, professional business, and industrial activities; geographically defined neighborhoods
A		C	Encourage greater utilization of land in designated Development Areas.
A		C	Discourage extensive linear style development along major roads.
			Rieley Report
			The City as a Park: A Citizen's Guide to Charlottesville Parks
A			That Charlottesville's neighborhoods possess unique qualities should be seen as an asset to build upon. Certainly, the segregation of past decades is not to be advocated. By contrast, however, recognizable physical characteristics and strong social networks give a neighborhood its identity. Favorable qualities should identified and preserved.
			DISC Report
A			Centers-Neighborhoods will have centers or focal points for congregating. These may include schools, parks, civic centers, or small commercial and social areas. Such features will be an easy walk for most residents in the neighborhood.
A			Network—A network of streets, bikeways, pedestrian paths, and bus routes will connect new neighborhoods, existing residential areas and nonresidential districts.
A			Mixed Uses—Neighborhoods will contain a true mix of uses, including residences, shops, places of employment, and civic, religious, and cultural institutions.
A	B	C	Building Placement and Scale—Consideration will be given to massing, height, setbacks, and orientation of buildings so that these characteristics enhance the public realm.
A	B	C	Alleys—Where topography permits, alleys will provide rear access to parcels, allowing for and facilitating the provision of garages and utilities to the rear of houses.
A	B	C	Relegated Parking—Parking for the automobile will not result in an excessive amount of paved area.
A		C	Variety of Housing Types—Each neighborhood will possess a variety of housing types accommodating a range of incomes. Affordable units will be dispersed.
A		C	Appealing Streetscapes—As the fundamental element of public space with the neighborhood, the street will make the neighborhood inviting with street trees and landscaping. Sidewalks and paths that connect houses to each other and to centers and common areas will be the norm.



Following a series of meetings with the Albemarle County Planning Commission and Staff Committee, Alternative A was approved as the direction for the Parkway design.
The following recommendations are a further refinement of the Alternative A concepts.

alternatives

RECOMMENDATIONS

In this section, our recommendations and design concepts for the Meadow Creek Parkway project are identified for the three components of the project—parkway, urban development, and parklands. These concepts are followed by photographic simulations of the proposed road, a diagram of overall land use within the project, and an estimate of costs associated with development of the transportation corridor.

PARKWAY CONCEPT

The preferred alignment for the Parkway presented here meets the criteria for the project set forth by Albemarle County. The Parkway design is consistent with both the design philosophy and the techniques that have guided the design of the nation's best parkways. At a fundamental level, the preferred alignment has minimal impacts on the natural resources and man-made features in and along the corridor. Additionally, the alignment complies with design standards for an urban collector as established by VDOT. The alignment also maintains and enhances the integrity of the proposed park and urban development areas. Finally, the preferred road alignment has been carefully designed to create an aesthetically pleasing composition as it winds through the hilly landscape corridor.

The most prominent feature of the Meadow Creek corridor is the terrain. Moderate to steeply sloping hills and ravines flank the Meadow Creek channel and floodplain. Although obscured and softened by summer foliage, the rounded hills and the relatively flat Meadow Creek floodplain are the defining features of the corridor. Apartment buildings and other constructed features such as the railroad and the high school athletic fields are visible at certain locations in the corridor, but these man-made features do not diminish the prominence of the natural landforms.

In order for the Parkway to appear or feel like it is part of the landscape, the road needs to move with and around the natural landforms rather than cut through them. Over rolling and curving terrain, a horizontal alignment that curves and bends with the terrain will be visually and physically integrated with the land. The preferred alignment thus makes use of a continuous curvilinear horizontal alignment—that is, an alignment made up of simple curves, spiral transition curves, and short tangents. The curvilinear alignment blends with the curving, rolling terrain resulting in a road that will be visually attractive as well as safe to drive. Since curved roads are conducive to lower speeds, the curvilinear alignment also will have a traffic calming effect.

Like the horizontal alignment, the vertical alignment consists of a series of curves which closely follow existing land forms. Care was taken to coordinate the vertical and horizontal alignment so that horizontal curve vertices generally coincide with vertical curve vertices to enhance the curvilinear character of the road. Another benefit of having the vertical alignment closely following the terrain is that less cut and fill will be required, thereby reducing disturbance to existing terrain and vegetation and reducing earthwork costs. The only area of relatively extensive cut is through the knoll north of the proposed bridge where an excavation 10' to 14' deep will be required. Fortunately, this cut is over a short distance, and the cut banks can be rounded to blend into the existing knoll.

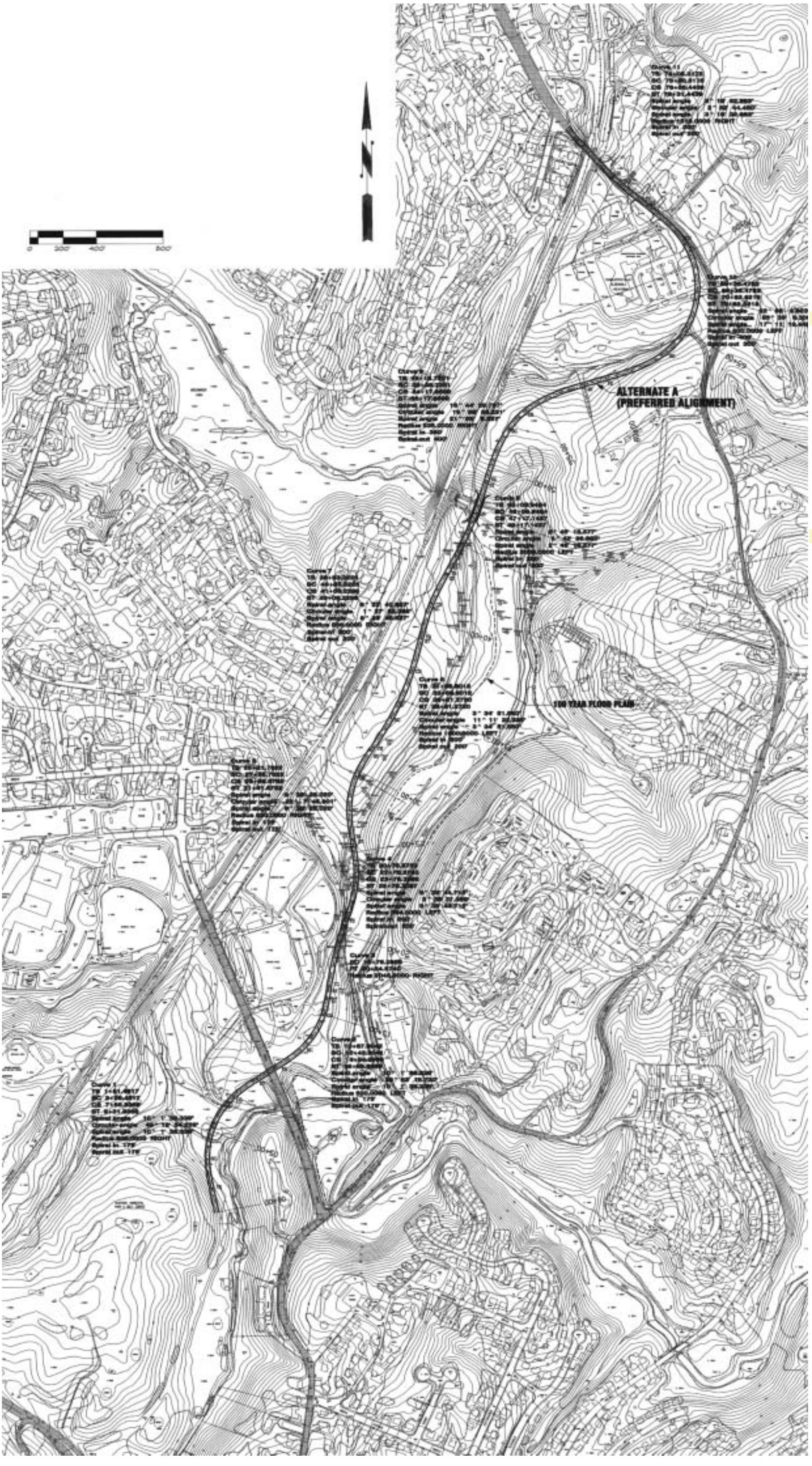
The preferred alignment crosses Meadow Creek just east of the current Southern Railroad crossing. As a result, disturbances to the creek due to the parkway and railroad crossing structures will be consolidated in one location. Construction of the Parkway bridge here would provide an opportunity to repair the severely degraded Meadow Creek channel just below the railroad culvert. Ideally, design and construction of the Parkway bridge would spur replacement of the existing railroad culvert with a larger structure that accommodates flood flows and provides for a pedestrian connection into Greenbriar Park.

The preferred alignment also crosses Meadow Creek at a point where the floodway is relatively narrow. The bridge span at this location is estimated to be approximately 180' as compared to a 230' span that would be required for the proposed VDOT bridge. The bridge elevation for the preferred alignment would be approximately 404' MSL, which is well above the 100-year flood elevation and about 14' below the railroad crossing. Due to the narrow floodway and high banks at both ends of the proposed bridge, large fill berms will not be required for the bridge approaches. Geotechnical information and additional engineering analysis will be needed to determine the structural system, actual span lengths, and final deck elevation for the bridge.

Given the proposed location of the bridge, views over the Meadow Creek basin would be afforded from the bridge approaches. From the bridge itself, views eastward of the creek would occur if the bridge rail is of an open design. Views to the west from the bridge would be of the heavily vegetated berm below the railroad line.

Views of the bridge will be afforded from the trails along Meadow Creek and possibly from developed upland areas north of the bridge. Sidewalks on the bridge will link pedestrian trails in the park and open space areas flanking the creek. It is important that the bridge be aesthetically designed, as it will be viewed from many different vantage points by motorists and pedestrians.

Landscaping along the proposed road should be consistent wit and restorative of the existing native vegetation. Existing trees and woods near the road should be preserved and new trees and plants should be planted near the road to integrate the road into the wooded setting. Vegetation close to the road will create a cross-section that is visually narrow and conducive to lower traffic speeds. The close proximity of plants and woods should be contrasted with open areas at appropriate intervals along the road. Open sections in the roadside landscaping might correspond to existing open areas or vegetation breaks in the corridor and where distant views occur such as at the crests of hills. The proposed alignment for the parkway will create an opportunity to remove the kudzu along the railroad tracks and replant this area with native trees and shrubs. A series of de3nsely planted bio-filtration swales and small detention channels should be integrated into th roadside landscape to filter and slow roadway run-off. Although the roadway's impacts upon adjacent residential areas should be slight, landscaping along the road will increase the buffering of the road from nearby homes and schools.



recommendations

Urban Development Concept

Introduction

There are valuable opportunities for the planning, design, and development of privately owned parcels designated for urban development in the study area. These opportunities are only heightened by the proposed location of the Meadow Creek Parkway with its linear park, bike and pedestrian circulation, and open space components. The intent of the urban design concept presented here is to balance density and development opportunities with the protection of sensitive landscapes and the enhancement of open space and recreation opportunities. This concept is consistent with the Albemarle County Comprehensive Plan which states growth should occur in "…areas where a variety of land uses, facilities, and services are planned to support the County's future growth with an emphasis on infill development."

The following design is conceptual, providing a framework for a development pattern that encompasses multiple parcels and multiple ownership while allowing development flexibility based upon changing needs, markets and conditions. Future development plans and refinements should respect and evolve from the special characteristics of their setting and embody the principles of community and mixed use development as described in the Neighborhood Model of the Development Area Initiatives Project.

Objectives

The following is a summary of objectives drawn from various sources for mixed use, cohesive, walkable urban developments. These objectives helped to define and influence the development patterns and concepts presented in this study.

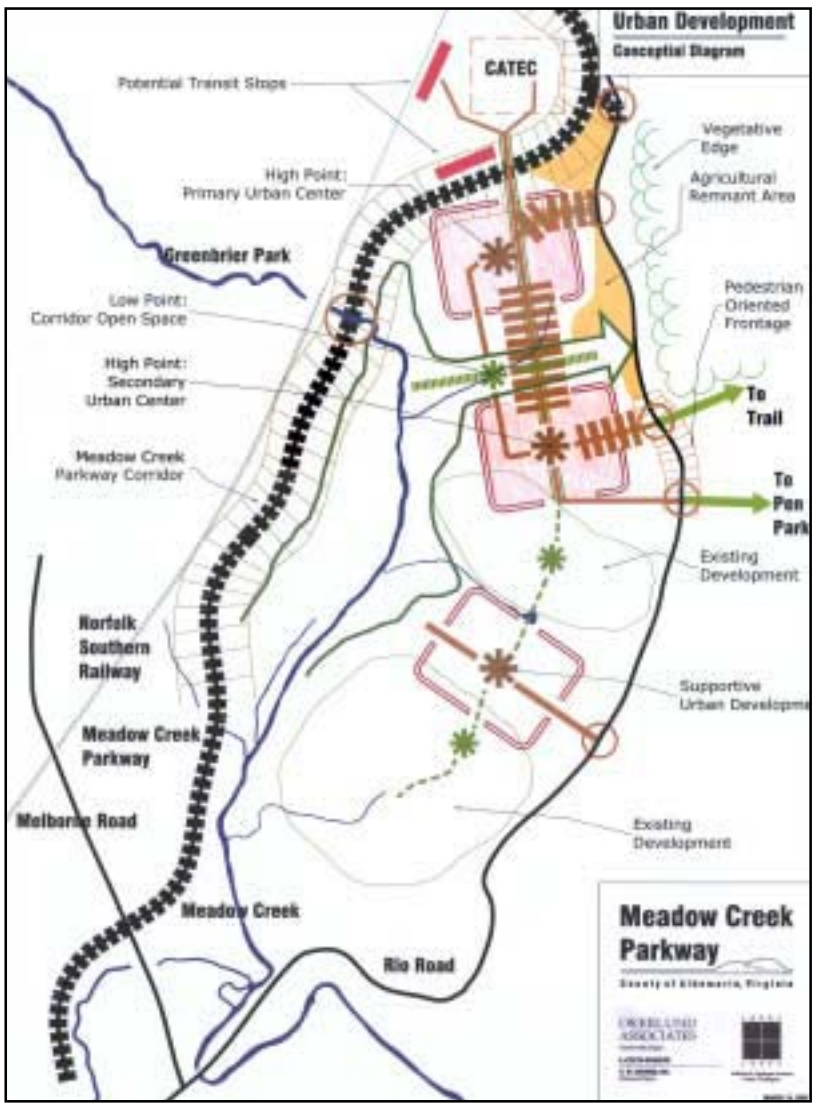
- Discourage excessive linear-style development (strip development) along major roads; instead encourage compact communities with strong centers and clearly defined boundaries.
- Maintain the linear park atmosphere along the parkway, thus enhancing the overall value of future developments bordering the parkway.
- Create districts and neighborhoods that have centers or focal points for congregating. These centers may include parks, plazas, schools, community centers, or small commercial and social areas. Centers should be within easy walking distance for most residents in the neighborhood.
- Establish mixed-use areas and neighborhoods made up of residences, shops, places of employment, and civic, religious, and cultural institutions.
- Ensure that there is adequate developable area to provide the necessary "critical mass" for a mixed-use center.
- Establish an ordered network of streets, bikeways, pedestrian paths, and transit routes that will connect new neighborhoods, existing residential areas and non-residential districts.
- Create appealing streetscapes and public spaces with street trees and landscaping to make the neighborhood inviting and to connect residential areas to each other as well as to commercial centers and common areas.
- Integrate residential and commercial development with open space and recreation opportunities, including the parkway, parks and natural areas, and pedestrian/bike paths. Connect to surrounding park and recreation amenities such as Pen Park and the proposed Rivanna river walk, as well as to other existing developed areas.
- Protect and enhance existing views and capitalize on newly available views from the parkway.
- Encourage new development that respects the existing landscape and that is compatible in scale, form, and character with the terrain features.

Description

The following development concept is an elaboration on the preferred Alternative A scheme. Future refinements of site development schemes should be subject to a detailed design development, economic and market analyses, development and infrastructure cost assessments, and topographic and environmental assessment. The urban development concept provided here is described first as an overall concept followed by descriptions of specific components: the urban development pattern, pedestrian circulation and open space, and vehicular circulation.

Conceptual Diagram

The development concept is proposed for the area bordered by the proposed parkway, the existing railroad, Rio Road, Meadow Creek, CATEC, and other residential development. Two high points on the site are proposed as primary and secondary urban, mixed-use centers. These centers would be joined by a connecting link of lower intensity development to form a spine of the concept. Open space corridors including the parkway and the open space in the low area between high points would provide important trail and recreational connections within the area and beyond.



Urban Development Pattern

As shown on the diagram below, the suggested development revolves around two centers, each anchored by parks or plazas and occupied by a relatively high density of mixed-use development. Denser development is recommended on the hilltops because the topography of slight to moderate slopes is better suited to higher densities, higherground affords good views over adjacent terrain, and hilltops are centrally located within the development area and readily accessible by foot to surrounding areas. Surrounding the high-density development is lower-density, primarily residential development. A partially gridded street pattern, adapted to topographic changes, gives structure and cohesion to the development. Streets would have differing levels of function but all should be "pedestrian-friendly." Primary entrances or "gateways" into the development occur off of Rio Road at the north and south ends.

Build-out of the entire developable area is most likely to be incremental, taking place over a period of time. The plan shown here should be viewed as a long-term framework to guide this development. The area in Zone 1 is currently in single ownership and may be developed at one time. Zone 2, however, is in multiple ownership, is underdeveloped, and can be expected to be redeveloped over time. Zone 3 is underdeveloped and offers the opportunity for additional development and the creation of a coordinated path and trail system throughout the area.

Pedestrian Circulation and Open Space

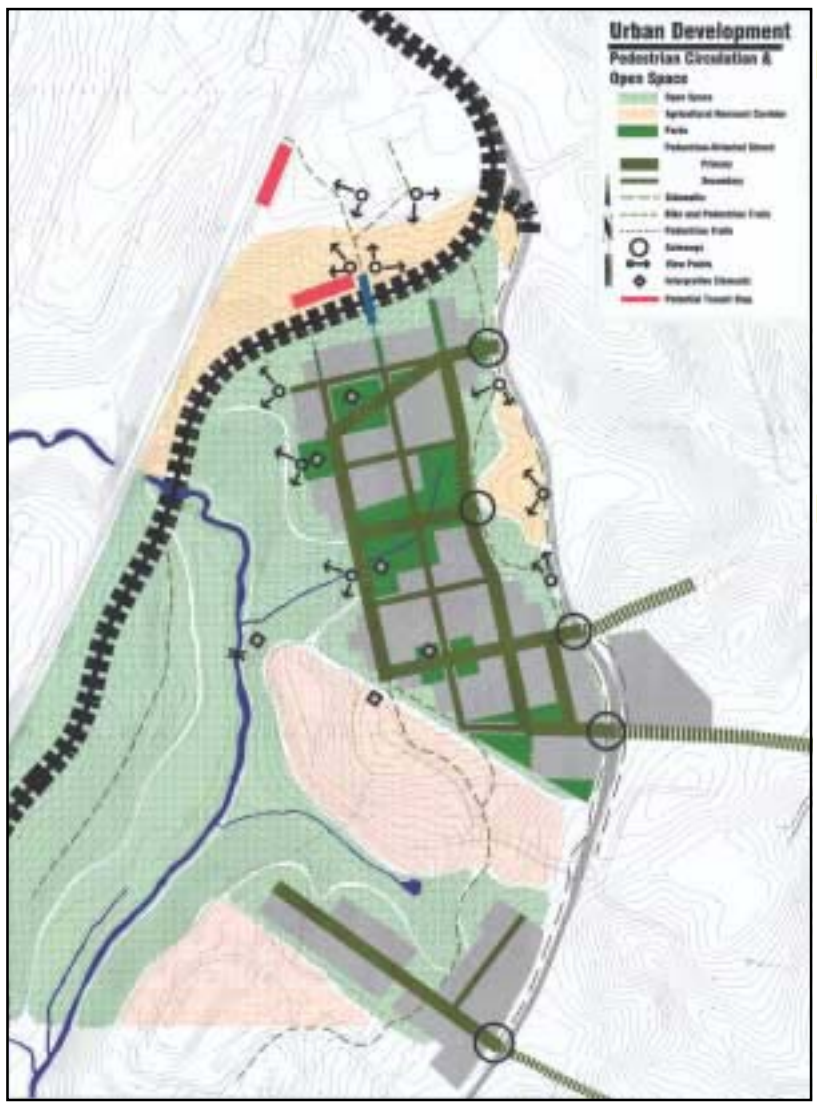
A network of pedestrian paths and open space corridors creates a circulation system within the urban development area and provides links with the larger park and trail system beyond. Key elements in the proposed urban development area include formal parks and plazas, pedestrian-oriented streets, and continuous sidewalks and bike and pedestrian trails. Paths would help define the outer boundaries of development and the edges of open spaces. These paths connect with the adjacent park path system and could include signing, wayfinding assistance, viewpoints, and interpretive elements.

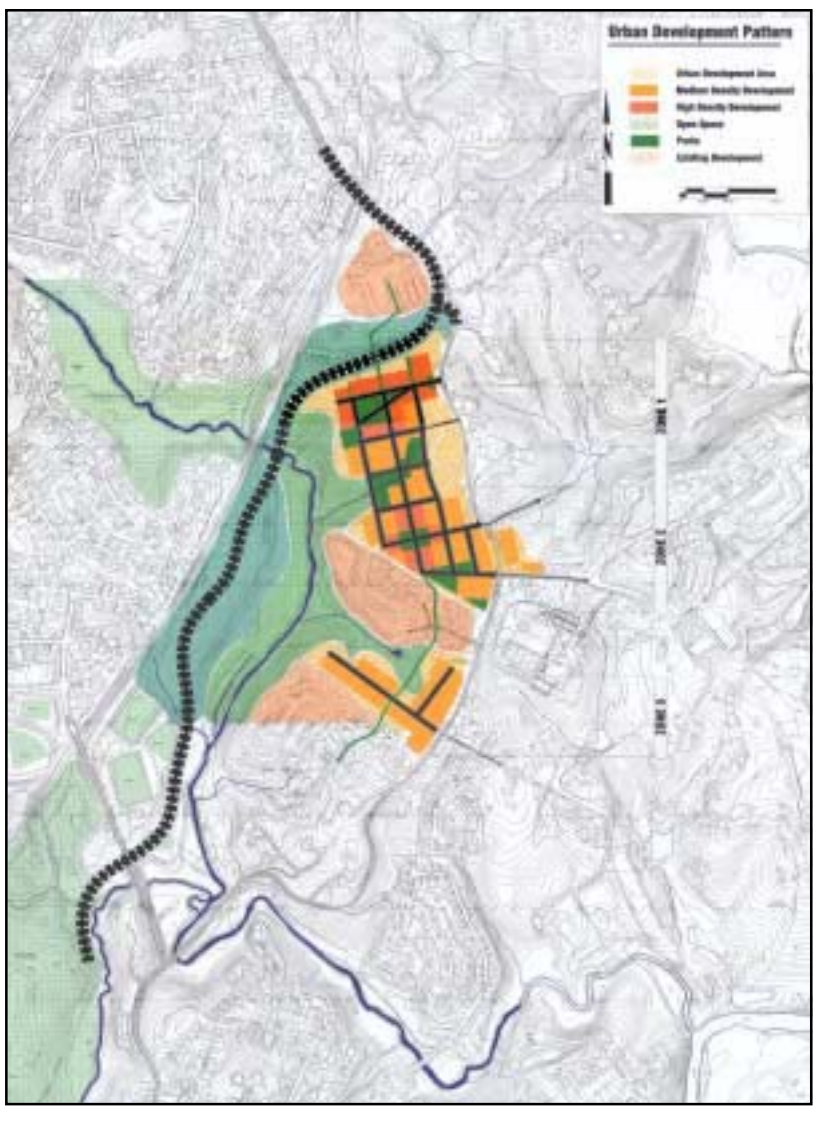
While creating an architectural image and character that is sensitive to the land is important, so too is the creation of open spaces that fit with existing intrinsic landscape qualities. Preserving agricultural remnants along the Rio Road corridor and utilizing open space areas for run-off remediation, wildlife habitat, and view protection as well as for recreation activities, all would contribute to a multifaceted open space system that reinforces place character and "fit" to the land.

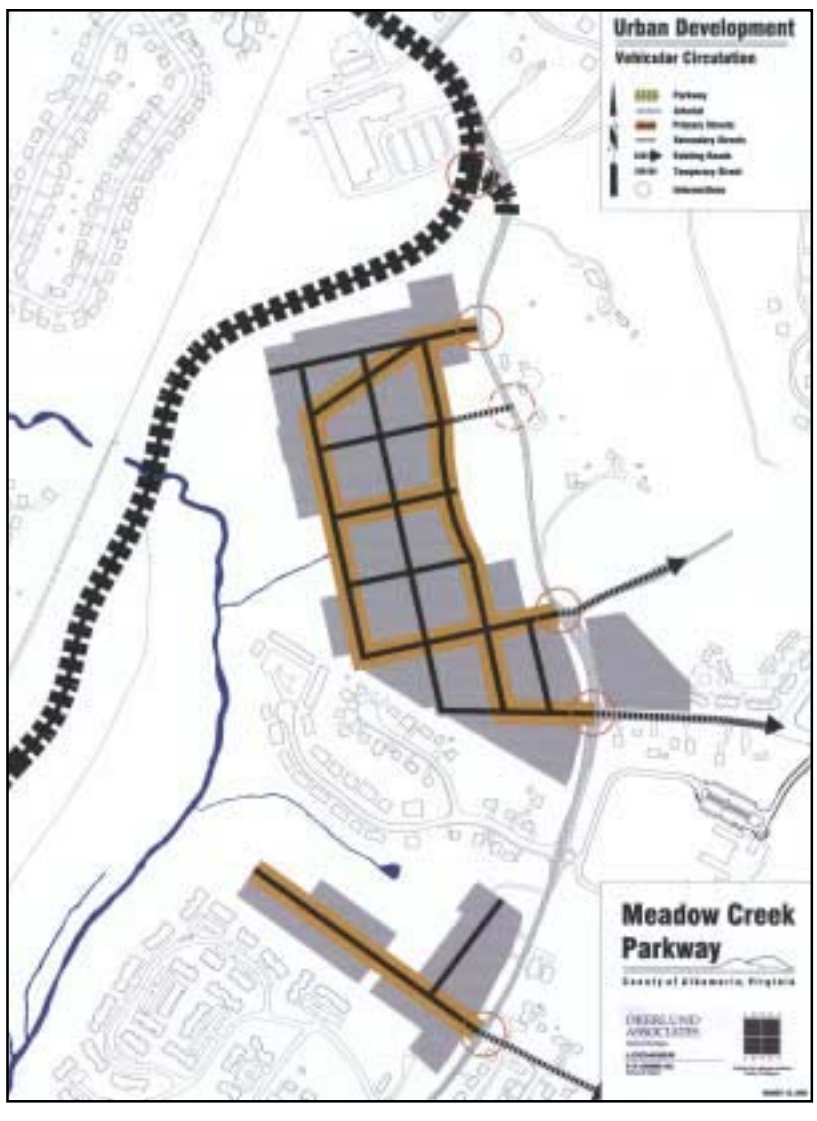
Vehicular Circulation

Vehicular circulation, in the form of a hierarchical system of parkway, roads, streets, and their intersections, provides a functional network for access. A cohesive system of roads and streets also contributes to orientation as well as gives shape to development patterns. Direct vehicular access to the urban development area is not permitted from the parkway. Major access points are provided from Rio Road: one intersection at the northern end and possibly two at the southern end of the development.

The interior streets are proposed in the form of a grid modified by topography. This network defines development blocks, pedestrian paths, and connections to the broader landscape.







Park Concept

Goals

The Meadow Creek Parkway project parklands concept is based on some simple, but aggressive goals to improve the environmental and civic quality of Meadow Creek and adjacent lands. The first goal is to restore and protect the natural and cultural resources. The second goal is to connect and integrate the park and its neighbors. The third goal is to make the park a place of environmental learning that leads to action beyond the park.

Restore and Protect:

The main channel of Meadow Creek and the bottomlands associated with its floodplain have been seriously impacted by urbanization of the watershed. The project should involve environmental restoration of the creek and its floodplain.

The project area covers some landscapes that exemplify the distinctive rural character of Albemarle County. The project should interpret and protect the scenic and historic quality of this place.

Most of the project area is unpaved and this pervious surface is critical to groundwater recharge in the region. The project should retain significant open space in order to protect the hydrologic functioning of the place.

Connect and Integrate:

The project lies on the seam between Charlottesville and Albemarle County and adjacent to open space resources of each. The project should connect the City and County park and trail systems to form a green network for the region.

The project area is adjacent to many schools and neighborhoods. The project should connect these places of learning and living to nature and each other.

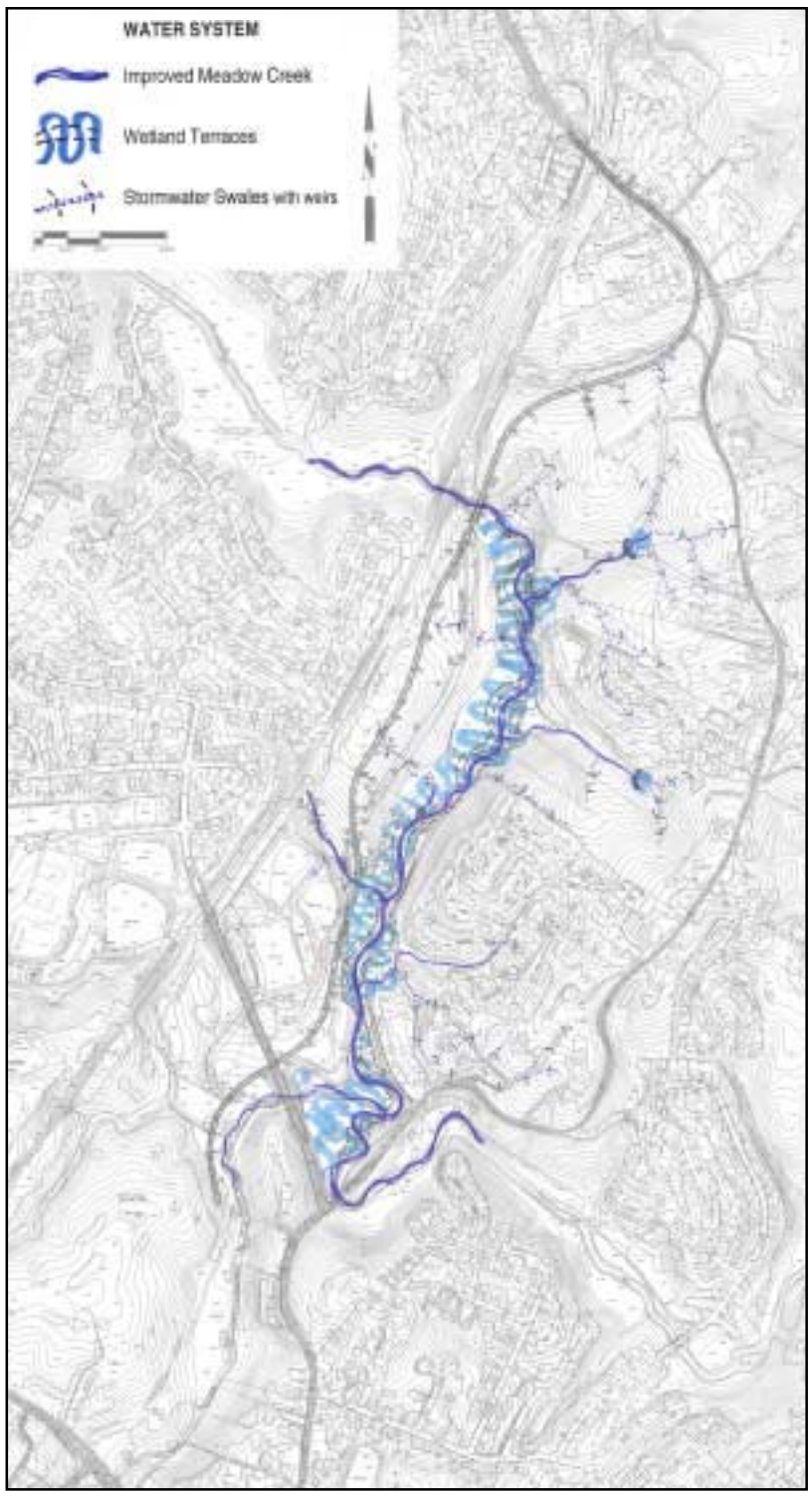
There are a number of barriers to the movement of wildlife that have been created by the degradation of Meadow Creek and the development of a roadway is an extreme barrier to movement. The project should repair the creek corridor and create viable crossings to ensure the connectivity of terrestrial and aquatic habitat.

Learn and Act:

The landscapes of the project area reflect natural processes that shape our world. The project should interpret the natural history of the creek, valley and region.

These landscapes also reflect the impacts humans have had on the land. The project should create opportunities for environmental education about impacts of urbanization and remediation techniques that might repair some of the damage.

The project can only succeed if transportation is linked to understanding of development patterns and landscape ecology. The project should illustrate the interdependence of parks, urban development, and transportation for healthy communities.



Systems

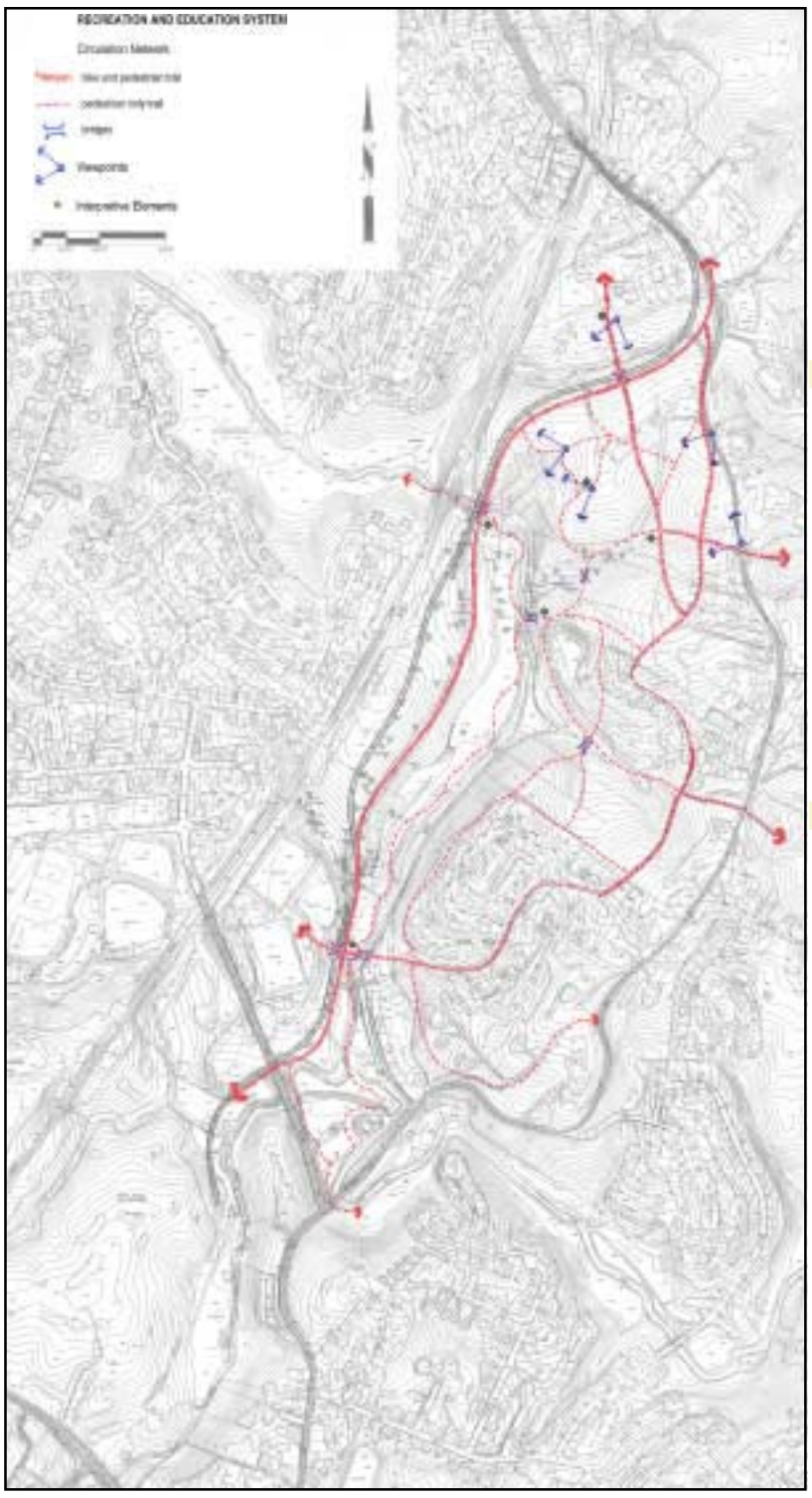
These goals led to the development of systems that can be considered the layers of the park. The first layer is design for water quality. The second layer is planting vegetation appropriate to the distinct conditions of the park. The final layer is recreation and education—the use of the park by people.

Water System:

Meadow Creek could be improved through immediate physical interventions such as constriction of the aperture of the creek in places to spread flood flows over adjacent wetland and bottomland terraces; restoration of sinuous meanders to slow the water velocity; and establishment of a pool and riffle sequence and a low flow channel to improve aquatic habitat.

Wetland terraces could be built to receive flood flows. These terraces would require stabilizing banks and vertical surfaces through bio-engineering techniques. The horizontal surfaces would be planted in appropriate wetland species and the terrace elevation and configuration would be specific to the character and capacity required for a 1, 5, 10, or 100 year storm event. These terraces would provide significant stormwater detention, retention, and remediation.

A system of stormwater swales could be integrated with neighborhoods and the roadway. Periodic weirs would detain and retain stormwater for absorption and slow release. These swales would be planted with appropriate water-tolerant species.



Vegetation System:

Scenic meadows are an important part of the rural and historic character of the project area. They could also form part of the open space network for the neighborhoods and provide critical pervious surface for the replenishment of groundwater.

Meadow Creek's wetlands and bottomlands are an important ecological resource. These places detain and retain stormwater, reduce downstream flooding, and improve water quality. They also provide habitat diversity and connectivity and are a great place for learning and passive recreation.

The urban forest is essential to making a city livable and desirable. It filters out air pollution, produces oxygen, and moderates temperatures. Shade from trees improves creek habitat and vegetation visually buffers the road from developed areas and developed areas from each other. The forest also provides habitat diversity and connectivity and pervious surfaces for groundwater recharge.

Recreation and Education System:

Use of the park by people requires a circulation network for convenience and to protect the natural habitat. The largest scale of circulation would be the 2-lane parkway. The next level would be a network of bike/ pedestrian trails that connect the schools and neighborhoods. Smaller pedestrian-only trails would allow intimate contact with the natural world. A series of bridges would connect the two sides of Meadow Creek.

The project area has a number of scenic vistas and viewpoints that should be incorporated in the park system. There are dramatic views from upland meadows, from Rio Road, and from the CATEC school. The parkway would offer some exciting views of the landscape but should be designed so as not to impact the views from other parts of the park.

Navigational signage in the park would be located at path entrances, intersections, and footbridges. Overlooks and viewpoints would be appropriate for interpretive signage about the parks significant natural and cultural features.

Stewardship

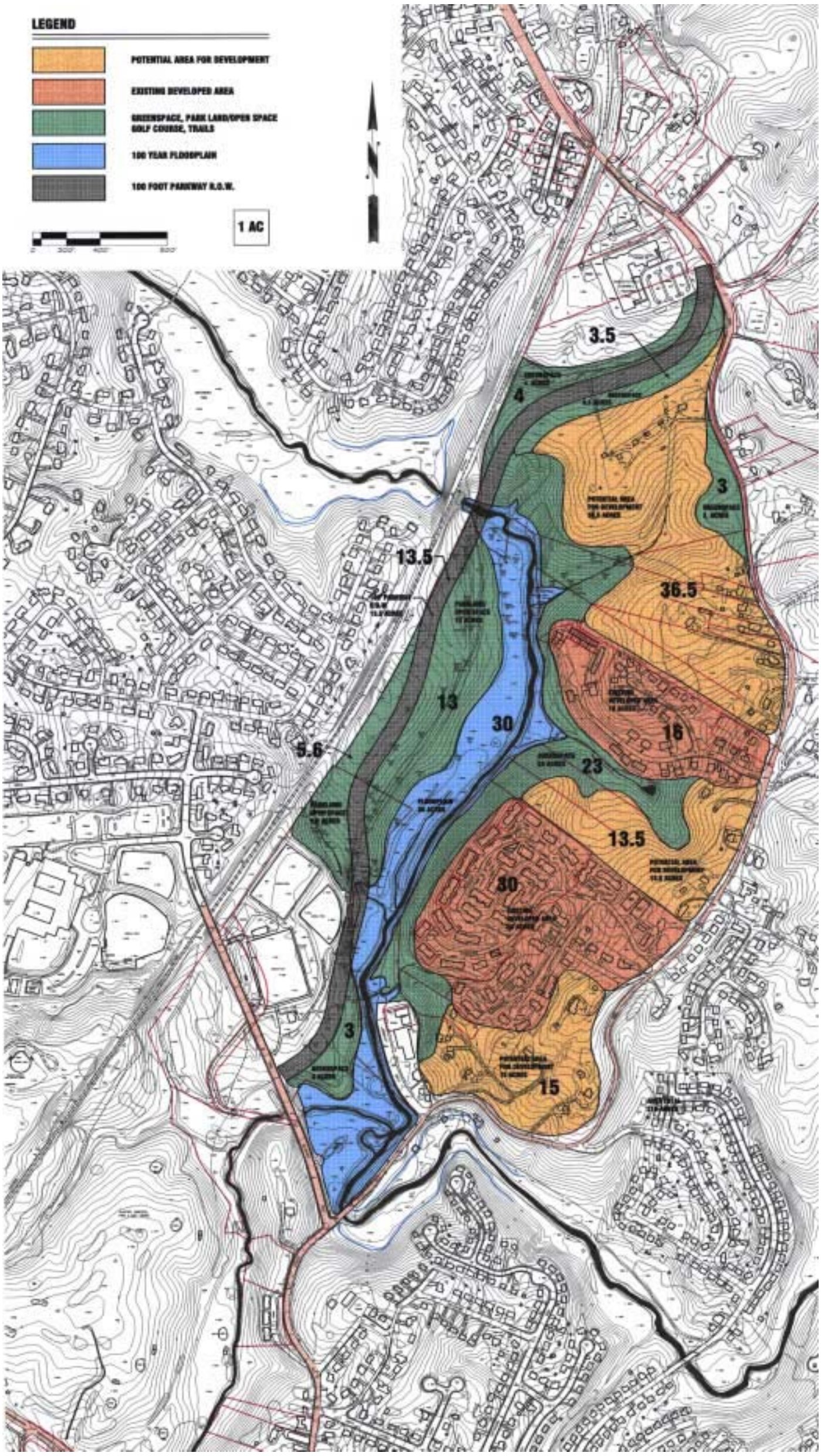
The physical development of a park can only succeed with an informed and excited community to support and activate it. Community participation could be cultivated for such projects as the restoration and maintenance of wetlands, planting native vegetation, removing invasive species, and building trails and interpretive signage.

The University of Virginia and local conservation organizations such as the Environmental Education Center, the Rivanna Trails Association, and the Natural History Museum could provide leadership in the design and stewardship of the park and the park could be a living laboratory for environmental restoration.

Students from schools such as CATEC, Charlottesville High School, a new Catholic high school, Greenbrier School, the Living Education Center, and a potential new Crossroads Waldorf School could be invited to participate in the design and stewardship of the park to cultivate future environmental leaders.

Corridor Land Use Concept

The diagram below shows land uses that would begin to take shape in the corridor as a result of the recommended conceptual design. The acreages shown for the areas are approximate. Many of the areas occupy multiple parcels under multiple ownership. It is not the purpose of this study to determine how contiguous land areas are created out of these multiple parcels; rather, this diagram is intended only to show an overall land use strategy.



ESTIMATE

The following Estimate of Probable Construction costs has been developed only for the parkway (road), parkway-associated landscaping, and a separate pedestrian trail in the project corridor between Melbourne Road and Rio Road.

Estimate of Probable Construction Cost for Selected Items

Road Construction Item	Quantity	Units	Unit Cost	Cost
CG-6 curb and gutter	4,908	M	$ 43.56	$ 213,792.48
GR-2 guardrail	100	M	$ 66.95	$ 6,695.00
Cut volume	56,904	CU. M.		
Fill volume	78,072	CU. M.		
Regular excavation	56,904	CU. M.	$ 10.50	$ 597,492.00
Borrow excavation	21,168	CU. M.	$ 7.50	$ 158,760.00
Asphalt Concrete Type SM-9.5A	1,900	metric ton	$ 51.10	$ 97,090.00
Asphalt Concrete Type BM-25 (175mm)	8,680	metric ton	$ 36.90	$ 320,292.00
Aggregate Base Material, Type 1, No. 21A (140mm)	7,273	metric ton	$ 15.00	$ 109,095.00
Bridge	720	SQ. M.	$ 1,450.00	$ 1,044,000.00
Subtotal				**$ 2,547,216.48**

Site Amenities	Quantity	Units	Unit Cost	Cost
8' crushed rock trail (4" depth @ 6,000 l.f.)	4,460	SQ. M.	$ 4.55	$ 20,293.00
Finegrading, seeding, and mulch	54,534	SQ. M.	$ 3.77	$ 205,593.18
Trees	250	ea.	$ 300.00	$ 75,000.00
Shrubs	2,000	ea.	$ 25.00	$ 50,000.00
Subtotal				**$ 350,886.18**

Total	**$ 2,898,102.66**
Contingencies (15%)	**$ 434,715.40**
GRAND TOTAL	**$ 3,332,818.06**

recommendations

View of proposed parkway in northern portion of corridor looking toward Rio Road

Existing view

Simulated view of proposed parkway in southern section of corridor just north of Melbourne Road

Existing view

APPENDIX A

LANDSCAPE CHARACTER

Rolling Uplands






Forested Highlands

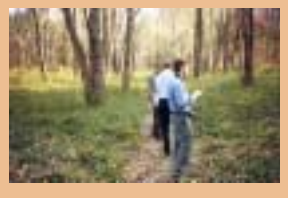




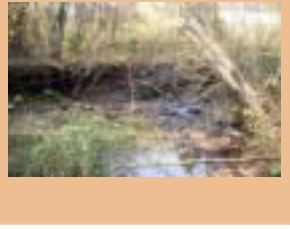


Creek Bottomlands







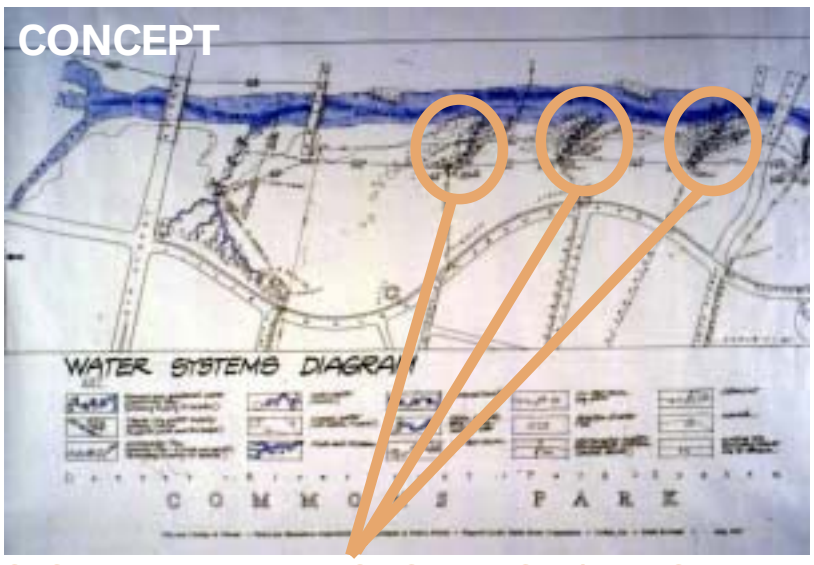


Appendix

APPENDIX B

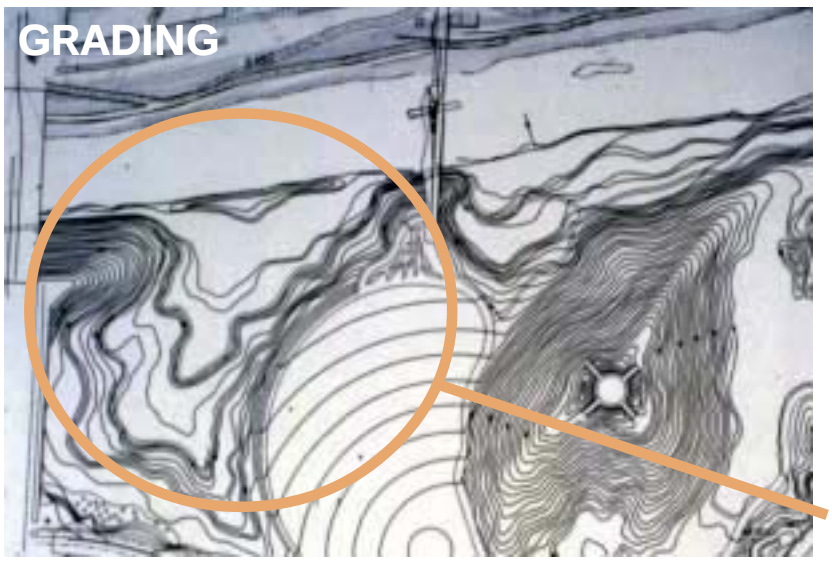
DENVER COMMONS EXAMPLE

A Jones & Jones project with Civitas



Would these concepts be appropriate in the restoration of Meadow Creek and the detention of stormwater from the transportation and urban development elements of the Meadow Creek Parkway project?

STORMWATER RELEASE SWALES W/WEIRS
to detain stormwater



TERRACED WETLAND SWALES
to absorb some river flood waters

APPENDIX C

PRECEDENTS

Bike & Foot Paths











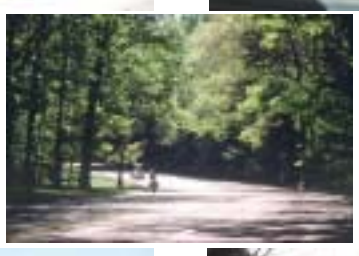


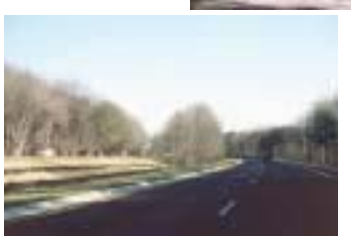





Parkways






Bike Paths

Class I







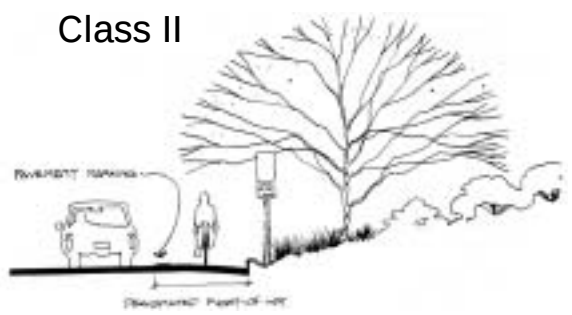








Class II



APPENDIX D

URBANIZATION IMPACTS ON MEADOW CREEK

What are some methods & techniques we can propose to accomplish the following:

1. slow down the flow of the creek
2. protect the banks against further erosion
3. give the creek a floodplain again
4. detain stormwater that enters the creek
5. plant for shade over the banks
6. plant wetland plants that can filter creek water
7. restore pool and riffle sequence
8. remove vertical obstacles to connectivity

velocity gradient revealed by drop out of materials

is some kind of planting appropriate here?

can we restore a pool and riffle sequence here with vortex weirs? other techniques? can we restore a low-flow channel? how about meanders?

long straight shallow pool

how do we get water up on a floodplain? do we cut down in some areas? is the cut away soil of any use in other areas?

“abandoned” floodplain characterized by small trees and underbrush

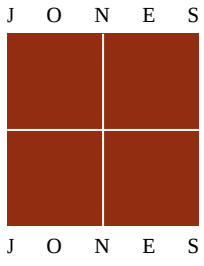
how will the sanitary sewer lines impact decisions to cut into the banks? construction?

sanitary sewer travels under much of the site

how about considering the denver example for this and future stormwater outfalls?

stormwater outfall from development

creek has cut down to the bedrock over much of its course



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