



**Environmental  
Regulations and  
Policy Review Project:  
Existing Conditions  
and Recommended  
Areas of Study**



# Background

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Comprehensive Plan implementation priorities include:

- Implement zoning changes to support housing choice and affordability throughout the city, protect the natural environment, mitigate the effects of climate change, increase walkability
- Implement the Climate Action Plan
- Preserve and enhance the natural environment
- Prioritize locations for green infrastructure
- Increase and protect urban tree canopy cover

New Development Code adopted in 2023 to implement the updated Comprehensive Plan

- Challenges with implementation of by-right development, especially on smaller infill sites with less room for grey/green infrastructure

Other identified challenges and opportunities include:

- Mitigate and prepare for the effects of climate change
- Plan for relevant infrastructure replacement and upgrades needed in the next 5-10 years
- Implement and coordinate on related City plans and policies



# Project Objectives

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## Objectives

- Balance community and Comprehensive Plan priorities of housing/by-right density with protecting the natural and built environments
- Increase community resilience, including to increased flooding and extreme heat risks
- Ensure alignment between regulations across topics (e.g. stormwater management and floodplain management)
- Use an equitable framework for prioritization and implementation

## Potential project outcomes

- City Code updates, including the Development Code
- Updated policies for the 5-year Comprehensive Plan review
- Updates to City programs and policies
- Coordination on related projects and plans



# Comprehensive Plan: Balancing Priorities

## Housing & Land Use Recommendations include:

- Support a wide range of rental and homeownership **housing choices** throughout the city, incorporating walkability/bikeability and access to transit, food, jobs, parks, libraries, and other resources
- Increase the **energy and water efficiency** of housing throughout the city
- Encourage **infill** in existing neighborhoods at an appropriate scale and help preserve existing units

## Environmental & Land Use Recommendations include:

- Require zoning changes to **preserve and enhance natural resources and sensitive environmental areas, designated flood plain areas, steep slopes, rivers, and streams**
- Incentivize **green infrastructure** in development projects
- Increase **tree canopy** protection and replacement, incorporating **urban heat island** analyses into the process
- Balance the **competing priorities** for properties adjacent to the **Rivanna River** and other **stream corridors**
- **Regional collaboration**



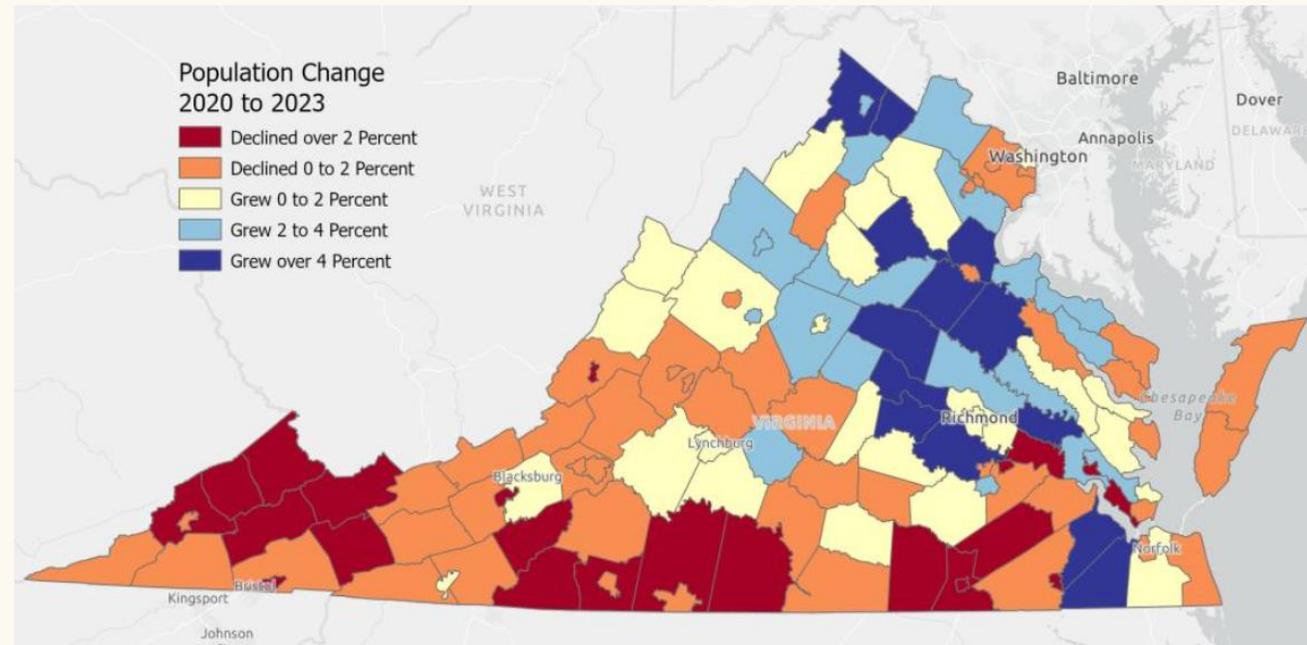
# Comprehensive Plan: Implementation

## Comp Plan implementation priorities include:

- Implement zoning changes to: support housing choice and affordability throughout the city; protect the natural environment; mitigate the effects of climate change; increase walkability
- Implement the Climate Action Plan
- Preserve and enhance wetlands, floodplains, and other features that provide natural resilience to climate impacts.
- Continue to advance the understanding of best policy and practice related to the City's public/private stormwater conveyance system with the goal of integrating public responsibility and private needs and incorporating green infrastructure wherever feasible.
- Value and protect the Rivanna River and watershed as a major natural resource for the city and region.
- Prioritize locations for green infrastructure improvements, including strategies outlined in GreenPrint 1.0
- Monitor, protect, and expand the urban tree canopy cover both at citywide and neighborhood levels
- Identify and prioritize acquisition of properties that can serve a cross functional purpose as parkland/public space and provide an opportunity to enhance environmental performance including through green infrastructure investments

# Regional Considerations

- Charlottesville and Albemarle County are projected to continue to grow (see [Weldon Cooper Center](#))
  - As employers also add jobs, surrounding counties will also continue to build housing, especially Louisa, Fluvanna, and Greene
- If population growth cannot be accommodated within the city/urban areas, other counties will likely accommodate some of that demand instead, resulting in longer commute times and less walkable and connected development. Urban/connected growth also protects farmland, forests, and other ecosystems in the rural areas.
- The City and Albemarle County have shared and overlapping systems and resources, including watersheds. An analysis by the EPA's Smart Growth Program found that when growth is not accommodated in more urban locations, it typically moves to suburban/rural areas, but is often within the same watershed



Source: Weldon Cooper Center

- There could be opportunities for regional collaboration within shared watersheds and other natural systems



# Adopted and Ongoing Related Plans and Programs

## Water Resources Protection Program (WRPP)

- Includes Stormwater Utilities/fee, addressing the aging stormwater infrastructure system, using Green Stormwater Infrastructure, water quality/quantity management, and resource stewardship

## CityGreen initiative (launched 2016) / GreenPrint 1.0 (published 2020)

- Highlights watershed protection and increased tree canopy as key tools for managing runoff and improving urban resilience; shows opportunities for tree planting locations

## Climate Action Plan (adopted 2023)

- Framework to reach carbon neutrality by 2050: buildings + energy, transportation, waste, nature-based solutions
- Actions include code updates and coordination on land use/transportation planning

## Flood Resilience Plan (adopted 2023)

- Including DCR grant to support an updated floodplain management program
- Stormwater modeling: Moore's Creek watershed complete, Meadow Creek and Rivanna River in progress

## Stormwater Management Program / MS4 permitting

- 6 key elements for MS4 permitting: education on stormwater pollution prevention, community involvement in pollution prevention programs, programs for detecting and eliminating illicit discharge, stormwater runoff control requirements, post-construction stormwater management program, and pollution prevention program for local government operations



# Concurrent Related Plans and Programs

## Resilient Together Initiative (in progress, anticipated adoption in 2026)

- Actionable and equitable strategies to strengthen community adaptation resilience, adapt to the effects of climate change, improve public health/ecosystems/economic vitality, & reduce greenhouse gas emissions

## **Community Flood Preparedness Fund Grant (awarded fall 2025)**

- Conduct a program review of the City's current Floodplain Management Program, assist in program administration, and update the Flood Resilience Plan with the goal of building a more robust, future-forward, climate-informed program

## **Urban Forest Management Plan (in progress)**

- Existing conditions analysis and recommendations to increase tree canopy, remove and prevent invasive species, and find ways to fit street trees into constrained right of ways

## **5-Year Comprehensive Plan Review (will be completed in 2026)**

- This Environmental Review project will inform updated Comp Plan policies

## **Code Amendments (in progress/ongoing)**

- Coordination on ongoing Development Code Tier 1-3 updates
- This Environmental Review project will likely inform updates to portions of the Development Code and other sections of City code



# Stormwater Management



# Stormwater Management: Comprehensive Plan Recommendations

## Chapter 7 Environment

- Value and protect the Rivanna River and watershed as a major natural resource for the city and region
- Continue to implement the Water Resources Protection Program (WRPP) to meet a range of water resources goals and challenges, including regulatory compliance, stormwater conveyance infrastructure rehabilitation, drainage issues, and water quality stewardship.
- Implement the Water Resources Master Plan capital improvement programs to make drainage and water quality improvements and comply with TMDL.
- Repair, enhance, and maintain City-owned stormwater management and conveyance infrastructure, utilizing green stormwater infrastructure where practicable.
  - Consider the impacts of climate change and changes in impervious surfaces from density
  - Discourage stream piping and encourage stream daylighting
  - Explore watershed scale compliance strategies to meet project/site SWM requirements
- Encourage property owners to implement water resources stewardship practices through educational materials and incentives, with a focus on retrofitting sites that lack adequate stormwater treatment.
- Prioritize locations for green infrastructure improvements (including from Greenprint 1.0) to improve stormwater management, flood mitigation, air and water quality, and habitats.



# Stormwater Management: Comprehensive Plan Recommendations

## Chapter 9 Community Facilities and Services

- Inventory the stormwater conveyance network and assess conditions; use inventory to inform needed improvements
  - Consider gathering community input during this process
- Modernize and repair infrastructure
- Improve water quality where feasible when improvements are made to infrastructure
- Integrate public responsibility and private need for the City's public and private stormwater conveyance system
- Incorporate green infrastructure where feasible
  - Consider GreenPrint 1.0 green infrastructure guide
  - Add open space for neighborhoods where feasible
- Incorporate stormwater management into parks planning
- 'Dig Once' policy for utilities and street projects



# Stormwater Management: Definitions

- **Adequate channel:** A channel that will convey the designated frequency storm event without overtopping the channel bank nor causing erosive damage to the channel bed or banks.
- **Agreement in Lieu of Plan:** A contract between the VESMP administrator and a property owner that specifies methods that shall be implemented to comply with the requirements of the VESMA and this article for the construction of a single-family detached residential structure or a farm building/structure with an impervious cover of less than 5%.
- **Storms:** 10-year storms have a 10% probability of being equaled or exceeded in any given year. 2-year storms have a 50% chance.
- **Best Management Practice (BMP):** Structural or non-structural methods used to control both quantity and quality of runoff generated by a development. Most land development projects (residential and commercial) provide a BMP onsite prior to receiving approval. Examples include detention ponds, biofilters, rain gardens, and underground storage tanks. The onsite BMPs usually address water quantity, with the majority of developers using off-site nutrient credits to satisfy water quality requirements.



# Stormwater Management - Definitions

- **Stormwater conveyance system:** A combination of drainage components that are used to convey stormwater discharge, either within or downstream of the land-disturbing activity. This includes:
  - **Manmade:** A pipe, ditch, vegetated swale, or other stormwater conveyance system constructed by man except for restored stormwater conveyance systems;
  - **Natural:** The main channel of a natural stream and the flood-prone area adjacent to the main channel;
  - **Restored:** A stormwater conveyance system that has been designed and constructed using natural channel design concepts. Restored stormwater conveyance systems include the main channel and the flood-prone area adjacent to the main channel.
- **Chapter 10 Administrators:**
  - Article II VESMP: **Public Works Engineering**
  - Article IV Stream Buffers: **Neighborhood Development Services**
  - Article V Storm Sewer Discharges and Article VI Stormwater Utility: **Utilities**

# Water Resources Protection Program

- **Water resources protection fund:** the **stormwater utility fee** provides a dedicated funding source for the Water Resources Protection Program
- **Purpose** of Water Resources Protection Program: comply with federal and state stormwater regulations, rehabilitate the City's aging stormwater system, address drainage and flooding problems, and pursue environmental stewardship
- **Goals** are to address the following:
  - Aging and deteriorating stormwater system
  - Backlog of drainage and floodplain projects
  - Decades of water resources degradation
  - Increasingly stringent stormwater management regulations

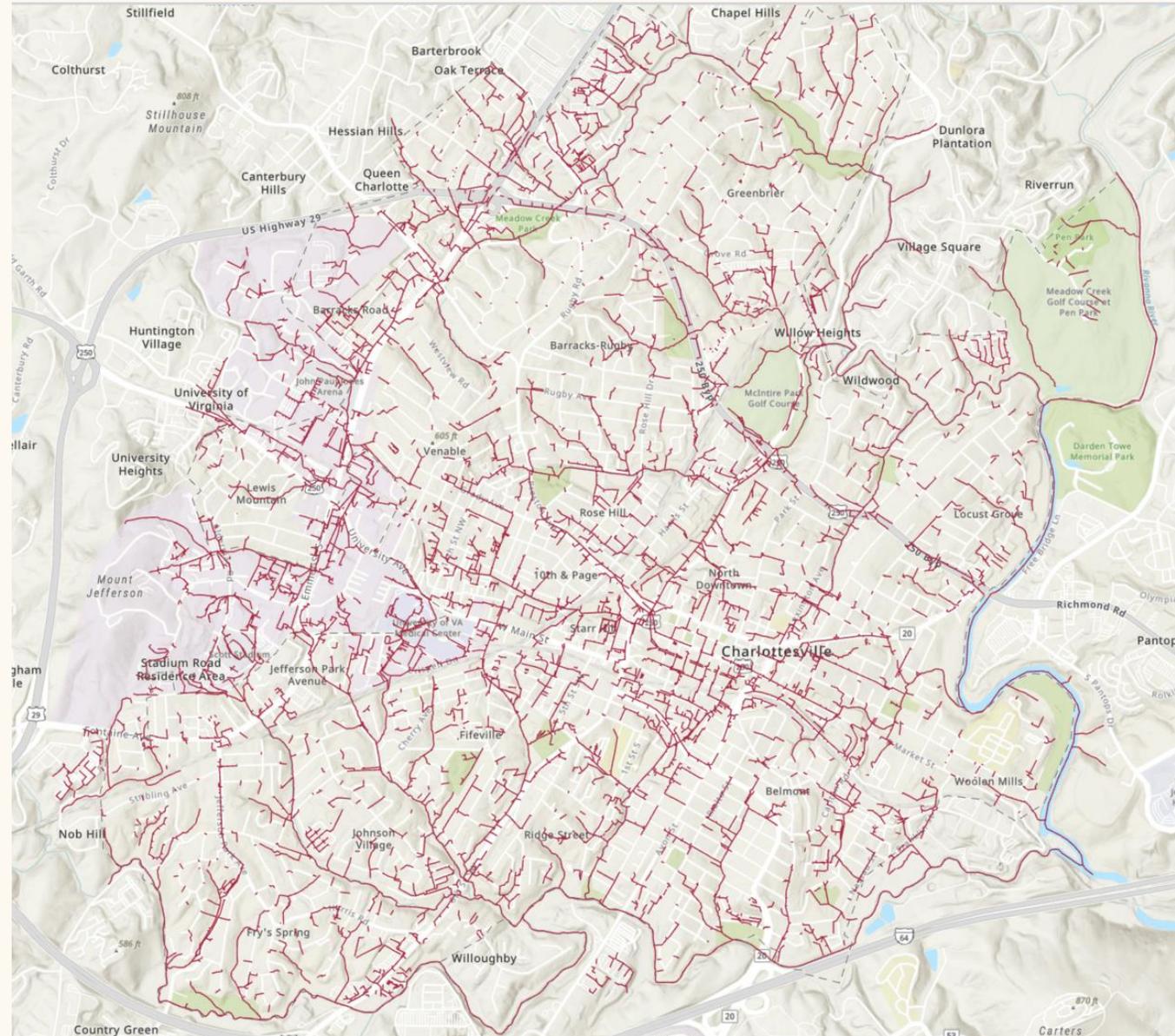


Infill development example in Charlottesville (Grove Street). Rain barrels and future green roofs over the porches (left side) and permeable paver driveways are being used to meet some stormwater management requirements onsite

# Water Resources Protection Program: Stormwater Infrastructure

The stormwater infrastructure system (both grey and green and both public and private) includes:

- 35 miles of open waterways
  - 130 miles of storm drains
  - 8,250 stormwater structures (e.g. inlets, manholes, junction boxes)
  - 460 outfalls
  - 294 Best Management Practices (BMPs)
  - 445 acres of zone AE floodplain
- **Flood Resilience Plan** compiles existing data sources
    - Historic stormwater CIP projects
    - Drainage complaint database
    - GIS inventory of SWM infrastructure, flood zones, public land, Streets That Work, etc.
    - CIP drainage and erosion issues prioritization matrix



Map of Stormwater Infrastructure Pipes. Source: City GIS OpenData

# Stormwater Utility Fee

- Dedicated funding stream for Water Resources Protection Program
- Implemented in 2014
- Charges fee for each property based on the amount of impervious surface
  - \$1.20 per 500 sq ft of impervious surface area per month
- Can reduce bill by removing impervious surface area and/or receiving credit for operating and maintaining a stormwater management facility
  - To receive credit, the stormwater facility needs to have been installed and functioning properly
  - Property owner must maintain the facility and it must meet City design standards
  - Property owner must enter into maintenance agreement with the City
  - The maximum credit that a property owner may receive for a stormwater management facility required as a condition of development is a 40% credit of the fee for the impervious area treated. The maximum credit is 100% for the impervious area treated by a voluntary stormwater management facility.



Examples of practices that can receive credit – bioretention facility (top); cistern (middle); permeable pavement (bottom).





# Stormwater Management Regulations: Chapter 10

- City's land disturbance threshold for stormwater management (SWM) is 6,000 sq ft. The following are scenarios for single-family detached homes:
  - **Single independent lot:** does not need to comply with SWM unless 1 acre or more of land disturbance occurs.
  - **Common Plan of Development or Sale** (e.g. Lochlyn Hill, PUD's) or where there are 3 or more lots with contiguous borders & under same ownership or unified control: SWM plan would need to be created for the whole development.
  - **Exemptions:** [10-27.\(c\).\(a\)](#) can only be applied to a single-family home on one lot, that is not part of a common plan of development. A single-family homes on adjacent lots (two total) could be built and not considered a common plan of development, but once the third lot with contiguous boarder is introduced, it becomes a common plan. Townhomes/duplexes (single family attached) structures do not qualify for the exemption.
- **State Code Requirements:**
  - Erosion and sediment control and SWM (quantity) required to be regulated at 10,000 sq ft or more
  - Changes to Chapter 10 VESMP requirements (including land disturbance thresholds) generally need to be approved by the State Water Resources Board



# Meeting Stormwater Management Requirements

- **Plan elements:**
  - Control measures to minimize pollutants in stormwater discharges
  - Erosion and sediment control; protecting environment and other properties from negative impacts
  - Description of proposed stormwater management facilities, including location and acres treated
  - Calculations for stormwater quantity and quality
  - Provisions for long-term maintenance of facilities; must be recorded
  - Agreement in-lieu of plan: smaller developments under the common plan of development threshold can avoid full engineering
- **Water quality** addresses phosphorous (as a proxy for other pollutants) load entering waterways
  - Developers can buy off-site nutrient credits to meet water quality requirements. This benefits large watersheds overall, but not necessarily the city's waterways/water quality
  - Different standards for new development vs redevelopment (existing impervious surface)
  - Locality must allow nutrient credits in some cases, including when less than 5 acres of land will be disturbed
- **Water quantity** addresses channel protection and flood protection
  - Based on 1 and 2-year 24-hour storms for channel protection and 10-year 24-hour storms for flooding
  - Typically, underground detention BMPs are implemented for compliance with the water quantity standards listed in [9VAC25-875-600](#)

# Stormwater Management & Flood Resilience Plan

The Flood Resilience Plan prioritizes 10 Watershed Management Areas and recommends **Watershed Management Plans**:

- Watershed-scale solutions that require planning & assessment for the entire watershed
  - Many of these are stormwater management projects
- Allows the City to assess the cumulative effect of watershed-scale and site-scale solutions and integrates watershed management with neighborhood and transportation planning
- Top 3 priority watersheds: Rock Creek, Schenks Branch, Meadow Creek

**Stormwater issues** identified in the Flood Resilience Plan:

- Flooding and erosion issues
- Issues of aging infrastructure and privately owned infrastructure
- Outdated and undersized infrastructure
- Stormwater utility fee funds not sufficient to meet needs; need to identify additional funding sources and possible public private partnerships

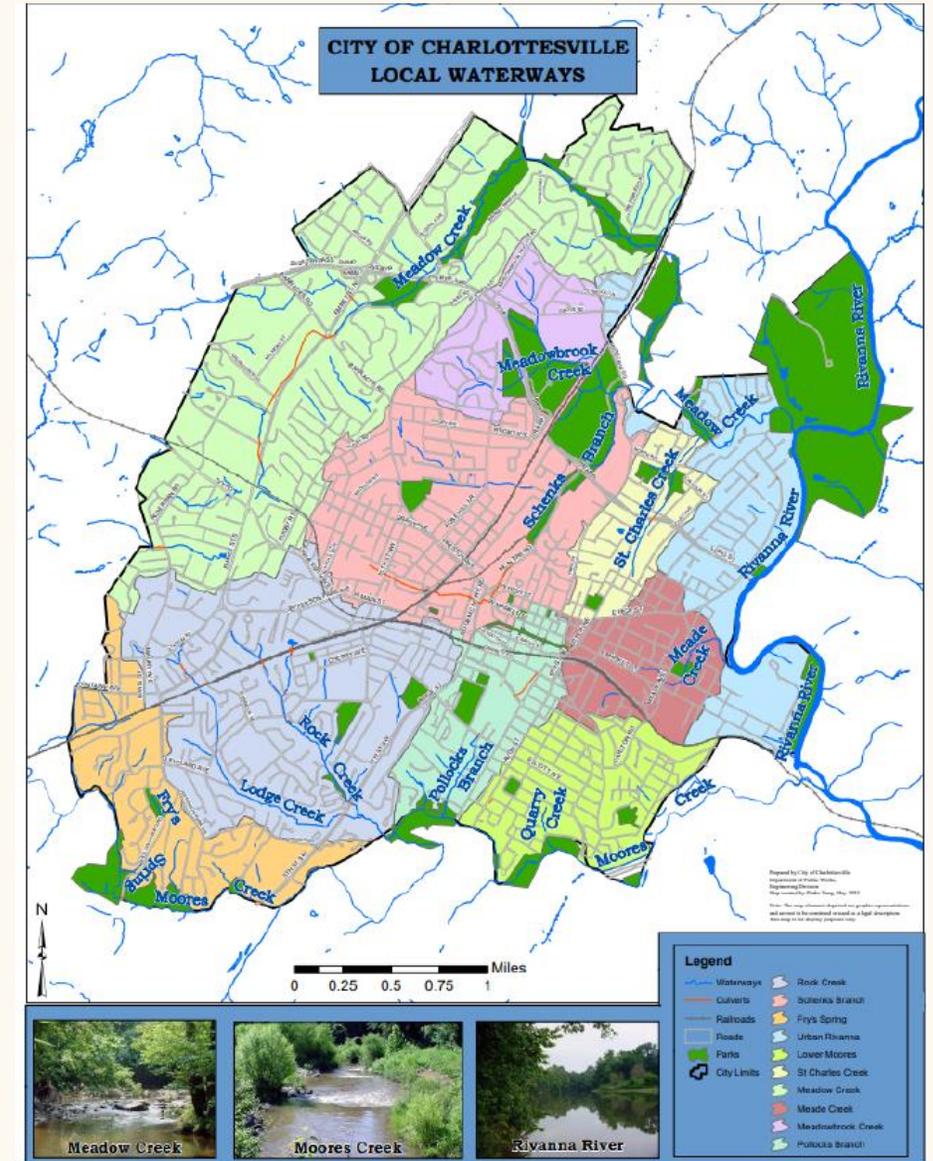


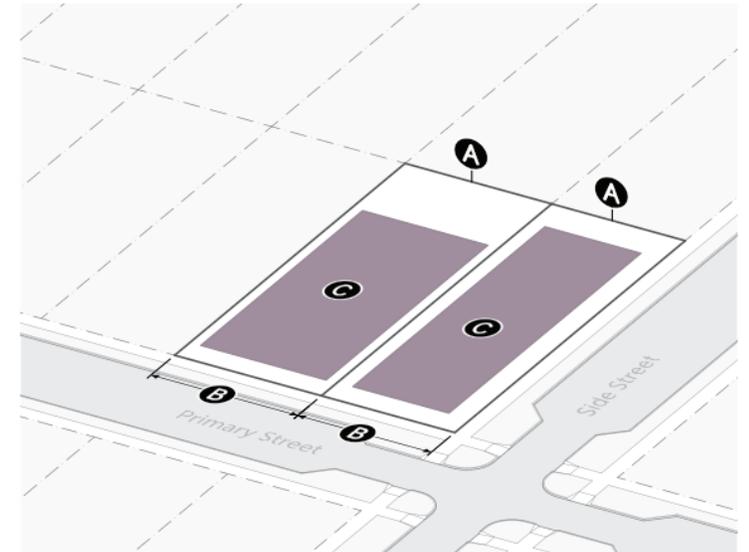
Figure 4. Watershed Management Areas

# Stormwater Management and Infill Development

- 2023 Development Code allows for infill development throughout the city.
  - Development Code provisions allow for up to 65% lot coverage for 4+ units in R-A districts and up to 70% lot coverage for 8+ units in R-B and R-C districts
- The smallest lots requiring stormwater management may not be large enough to add additional housing units and lot coverage allowed by the Development Code and accommodate required on-site stormwater infrastructure

## 2.2.2. R-A RESIDENTIAL A

### A. LOT



3. COVERAGE	Sec. 2.10.4.
<b>C</b> Building coverage (max) <ul style="list-style-type: none"> <li>Up to 2 units</li> <li>3 to 4 units</li> <li>More than 4 units</li> </ul>	55% 60% 65%
Building footprint (max)	3,000 SF
Outdoor amenity space (min)	None



# Stormwater Management: Recommended Areas of Study

## Review and consider updates to the City's stormwater management requirements

- For by-right infill development, the smaller lots requiring stormwater management (ones that have a land disturbance of 6,000 sq ft or more) may not be large enough to add additional housing units and lot coverage allowed by the Development Code and fit required on-site stormwater management infrastructure
- Developers can buy offsite nutrient credits to meet water quality requirements. This benefits large watersheds overall, but not necessarily the city's waterways/water quality

## Evaluate stormwater management infrastructure needs

- Stormwater utility fee funds alone may not be sufficient to meet needs
  - Reference: 2023 Flood Resilience Plan for Charlottesville
- Nuisance flooding and drainage complaints already occur, and could increase with projected increases in rainfall volumes due to climate change



# Floodplain Management



# Flood Plains: Comprehensive Plan Recommendations

## Chapter 4 Land Use, Urban Form, and Historic & Cultural Preservation

- Require that zoning changes preserve and enhance natural resources and sensitive environmental areas, designated floodplain areas, steep slopes, rivers, and streams.

## Chapter 6 Transportation

- Develop policies and strategies to incorporate green infrastructure as an integral part of transportation planning, and ensure transportation projects are sited and designed to avoid sensitive environmental resources and natural resiliency features such as floodplains, stream buffers, and wetlands.

## Chapter 7 Environment, Climate, and Food Equity

- Ensure the review of development proposals includes consideration and minimization of impacts to floodplains and other natural resiliency features.
- Prioritize locations for green infrastructure improvements, including strategies outlined in GreenPrint 1.0, to improve stormwater management, flood mitigation, air and water quality, habitat, species migration, connectivity, and livability.
- Acquire land and encourage conservation easements along stream buffers and in floodplains

# Flood Plains: Definitions

**Base flood elevation (BFE):** The water surface elevations of the base flood in relation to the datum specified on the FIS/FIRM. This is the flood that has a 1% or greater chance of occurrence in any given year.

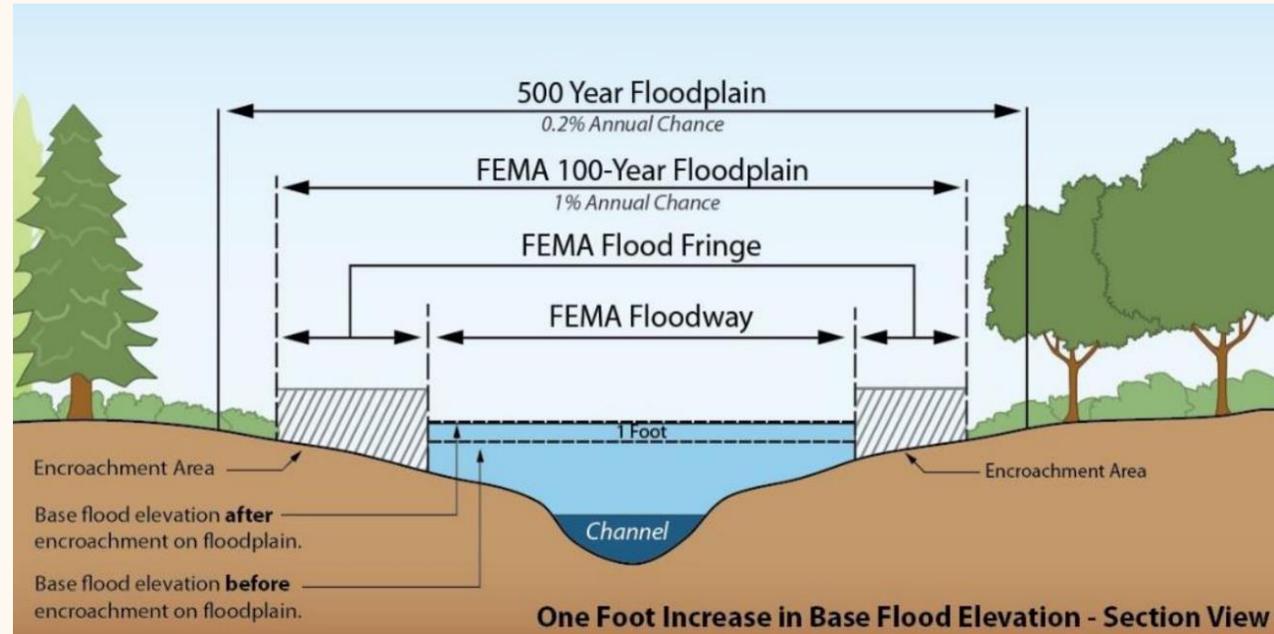
**“AE” zone:** The areas shown on the City’s FIS/FIRM as areas for which BFEs have been provided and the floodway has not been delineated.

**Base flood:** The flood having a 1% chance of being equaled or exceeded in any given year. Also known as “regulatory flood,” the “100-year flood,” and the “1%-annual-chance flood”.

**Floodway:** The channel of a river or other watercourse and the adjacent land areas that must be reserved to carry and discharge the base flood without increasing the water surface elevation more than 1 foot at any point.

**Floodplain or “special flood hazard area”:** Any land subject to 1% or greater chance of flooding in a given year.

**Floodway fringe:** Area within the floodplain but outside of the floodway.



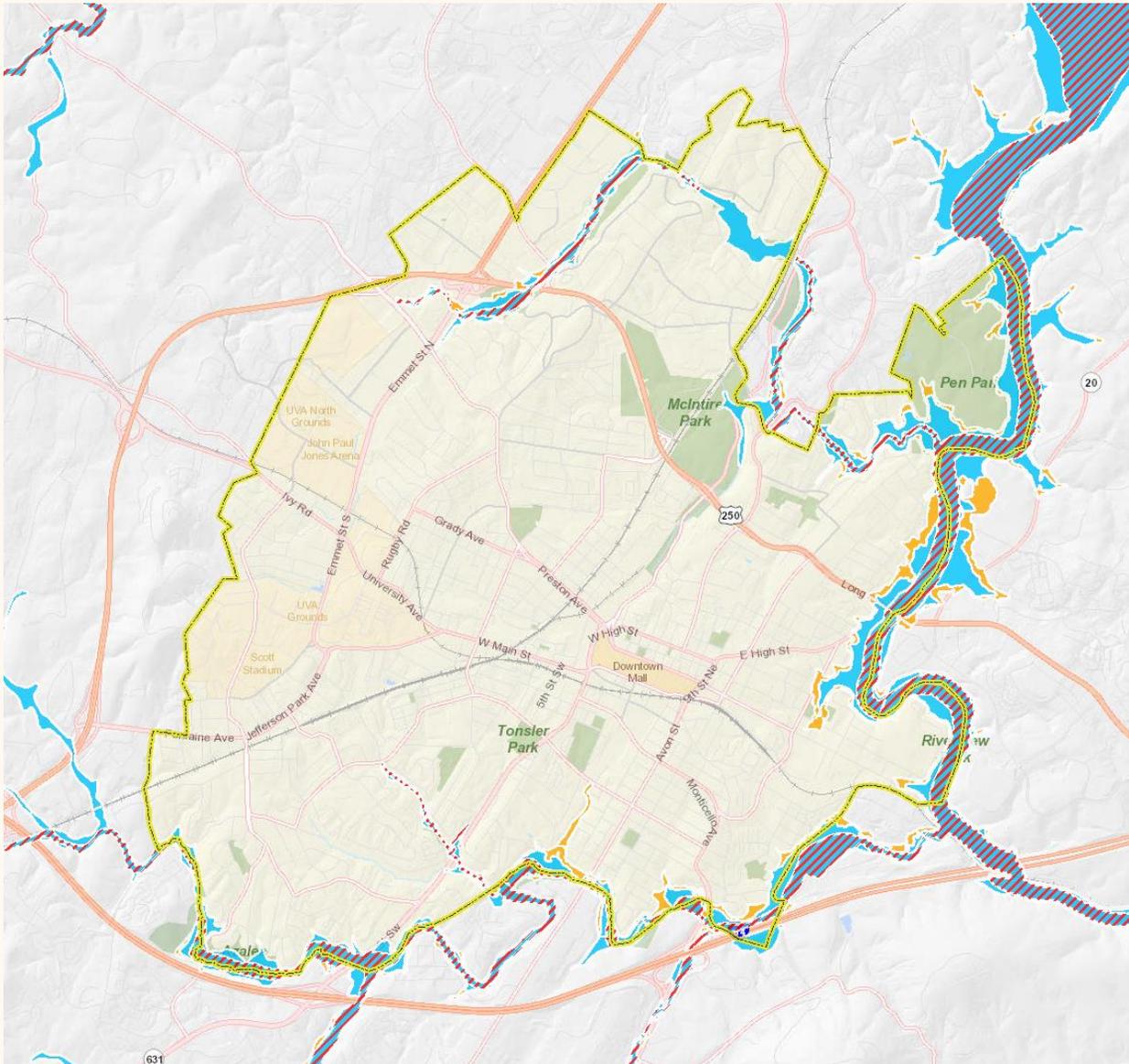


# Flood Plains: Regulations

## Div. 2.9.1. Flood Hazard Protection District

- *Intent:* prevent loss of life and property; deter the creation of health and safety hazards;
- Flood maps provided by the Federal Emergency Management Agency (FEMA) to the City.
- Local Floodplain Development Permit required for any development activity in a flood zone.
  
- **Zone AE requirements**
  - No new construction must be permitted, unless it is demonstrated that the cumulative effect of the proposed development will not increase the BFE more than 1 foot at any point within the City.
  - Approx 445 acres in the city, per the 2023 Flood Resilience Plan
  
- **Regulatory Floodway requirements**
  - No encroachments are permitted unless it has been demonstrated through hydrologic and hydraulic engineering analysis that the proposed encroachment will not result in any increased flood levels within the community (No Rise Certification).
  
- **No requirements for Zone X (Shaded / 500-year floodplain)**

# Flood Plain: 100-year, 500-year, and Floodway



## LEGEND



Orange – Zone X (Shaded, 500-year floodplain) (0.2% annual flood chance)



Blue – Zone AE (100-year floodplain) (1% annual flood chance)



Red Hatched – Regulatory Floodway



# Flood Plains: Letter of Map Revision (LOMR) Process

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- When development in the floodplain causes, or will cause, a change in any BFE, then the landowner, including any state or federal agency, must notify FEMA by applying for a CLOMR (conditional letter of map revision) and then subsequently, a LOMR (letter of map revision)

Examples of when a LOMR is needed include:

- Any project that causes an increase in the BFE's within a floodway
- Any project in Zones A and AE without a designated floodway, which will cause a rise of more than 1 ft in the BFE
- Any alteration or relocation of a stream, including but not limited to installing culverts, bridges, and crossings



# City's Flood Resilience Plan

Phase 1 Flood Resilience Plan completed in 2023 as part of the Water Resources Protection Program:

- Makes the City eligible for funding/grants; City has been awarded DCR Community Flood Preparedness grants
- Flood threats primarily come from:
  - Riverine flooding
  - High intensity storm events, which can cause urban/flash flooding or 'pluvial flooding', which occurs when heavy rainfall overwhelms the capacity of drainage systems
  - Stormwater management challenges: older and/or privately owned infrastructure and inadequate conveyance and/or storage
- 3-prong approach for implementation
  - Projects
    - Improved conveyance and storage
    - Green infrastructure
    - Land management/acquisition
  - Programs
    - Floodplain development and stream buffer regulations
    - Community preparedness and education
    - Increased staff/funding for implementation
  - Planning tools
    - Watershed Management Area Plans; Rock Creek watershed highest priority



# Floodplain Management: Recommended Areas of Study

## Evaluate the City's floodplain management program

- Opportunity for cross-departmental coordination on the DCR Community Flood Preparedness Grant to build a more robust floodplain management program

## Review and consider updates to the City's floodplain development regulations

- City requirements comply with FEMA minimum requirements for the National Flood Insurance Program (NFIP). The City cannot go below these standards without risking compliance with NFIP
- The City can adopt higher standards, which would need to consider other City policies and goals.
  - Currently, no new construction is allowed in the 100-year floodplain unless it is demonstrated that the cumulative effect of the proposed development will not increase the Base Flood Elevation (BFE) by more than 1 foot anywhere in the city
- Mapped flood zones impact less than 7% of City parcels. However, there are areas outside of mapped flood zones that flood, due to topography, inadequate drainage infrastructure, and other factors
  - FEMA floodplains do not account for 'urban' or pluvial flooding when stormwater infrastructure is overwhelmed; they are focused on riverine flooding



# Tree Canopy





# Tree Canopy: Comprehensive Plan Recommendations

## Chapter 7 Environment

- Create, protect, and expand robust urban forests/tree canopy
- Implement Urban Forestry Management Plan
  - Use an environmental justice lens for equitable implementation, including by using tree canopy and heat index data
- Incorporate trees into streetscape plans
- Find ways to increase tree canopy on private land
- Use GreenPrint 1.0 map of possible planting areas
- Evaluate possible reforestation in City-owned parks/rec land

## Chapter 4 Land Use

- Entrance Corridors: Incorporate street trees and landscaping along streetscapes for shade and buffering pedestrians from traffic
- Encourage retaining and replenishing shade trees, particularly large trees, in all historic neighborhoods.
- Pursue healthy, interconnected urban ecosystems that deliver valuable ecosystem services, and support diverse native plant communities and wildlife habitats.
- Contribute to the creation, protection, and expansion of robust urban forests

# Tree Canopy (2023) and Heat Index (2021) by Neighborhood

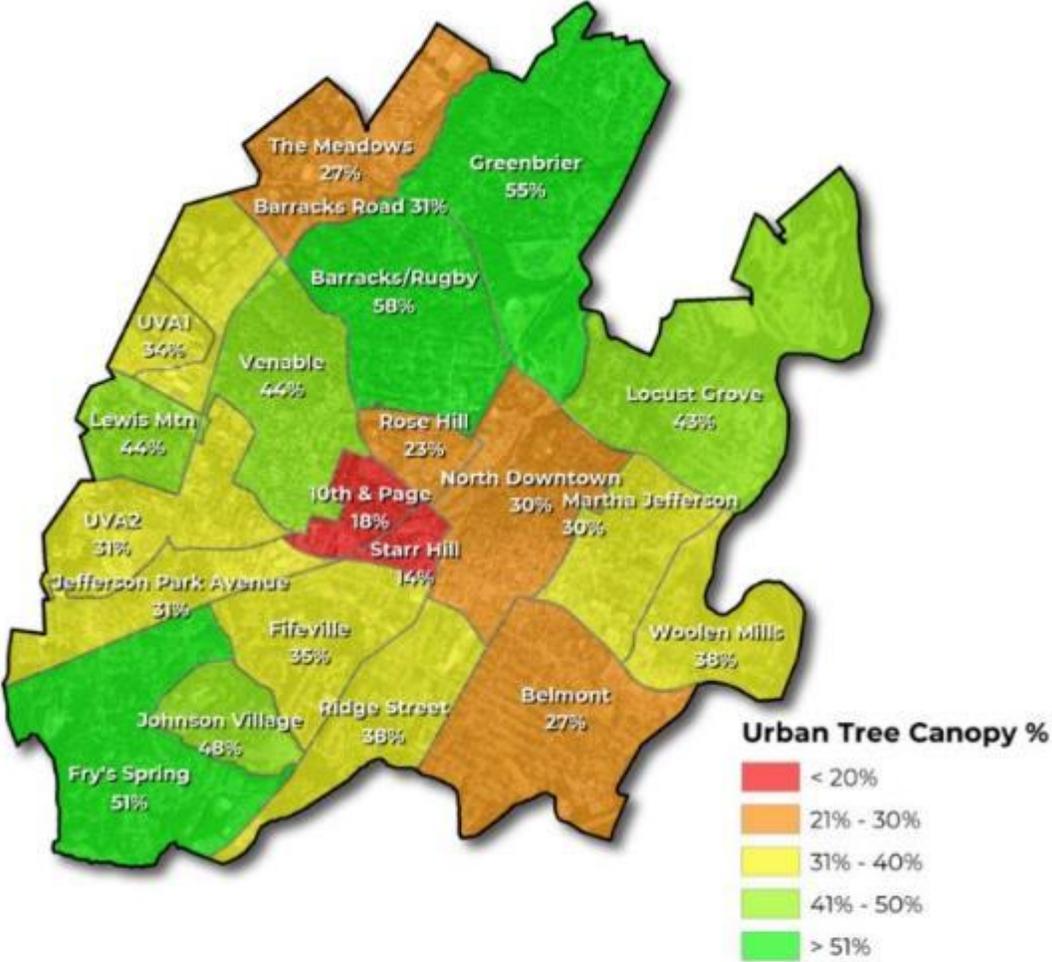
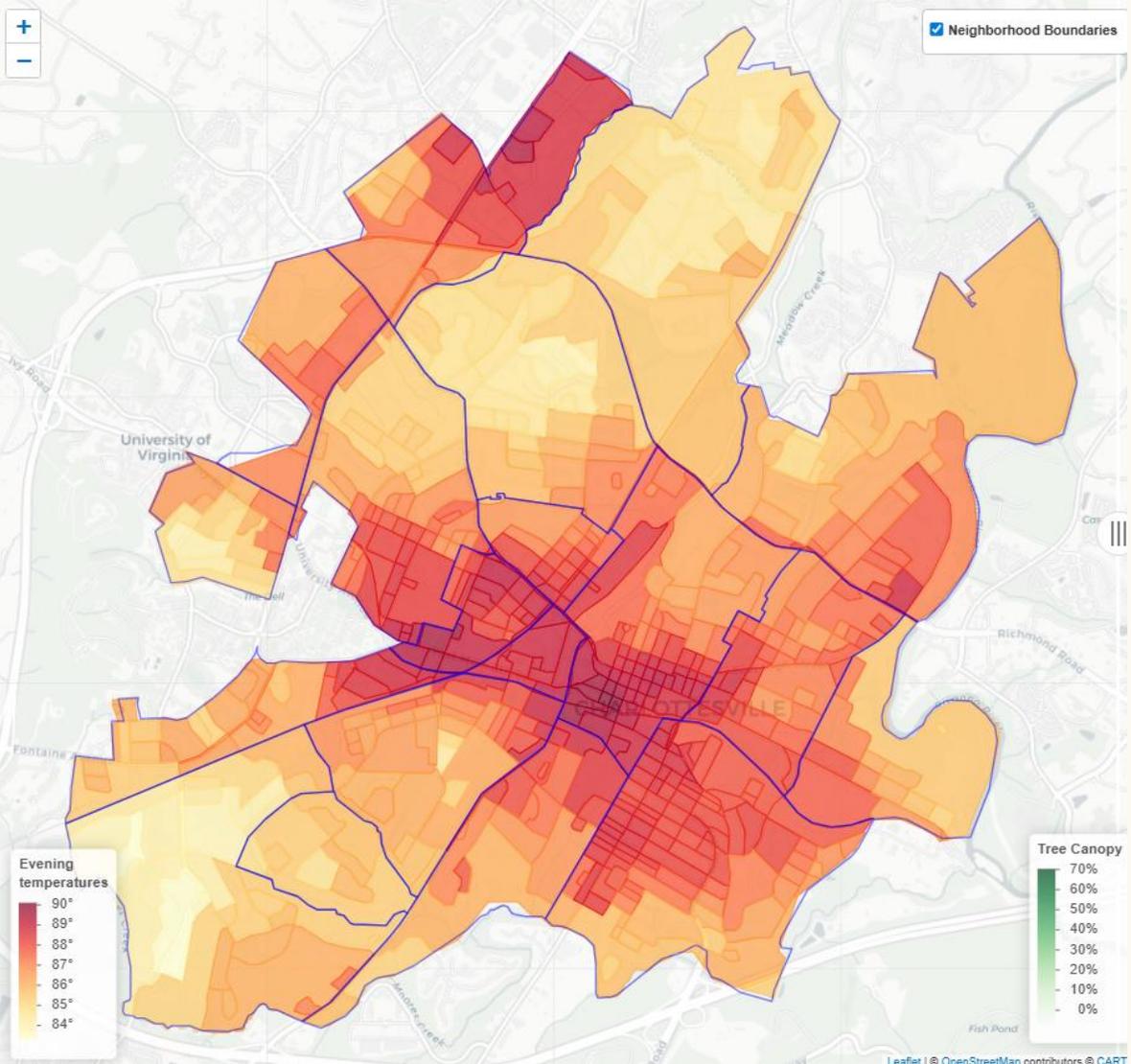


Figure 1: Map of Charlottesville Neighborhoods and Canopy Coverage.<sup>4</sup>

Source: City's 2023 State of the Forest Report



Source: UVA Center for Community Partnerships 2021 Analysis



# Tree Canopy and Landscaping Requirements: Development Code 4.9.1

- **Tree canopy requirements:**
  - **Canopy cover requirements** for each zoning district (e.g. 10% minimum canopy cover in Corridor Mixed Use districts)
  - Use the City's Master Tree List to calculate 10-year canopy
  - **Preservation** of existing trees counting toward canopy
    - Trees 8-inch+ diameter, ornamental trees (any size), trees in required setbacks or along boundaries, streams, and shade trees
    - 1.5x canopy bonus for existing trees
  - Administrative waiver for dedicated school sites/recreation areas, preserving wetlands, and unnecessary hardship
  - Streetscape, parking lot, and screening trees count toward total
- **Tree removal** permit required for 8-inch+ diameter trees
- **Reference** City's Best Management Practices for Tree Preservation, Transplanting, Removal and Replacement Manual to develop a **tree protection plan** for tree preservation to count toward canopy

# Street Trees

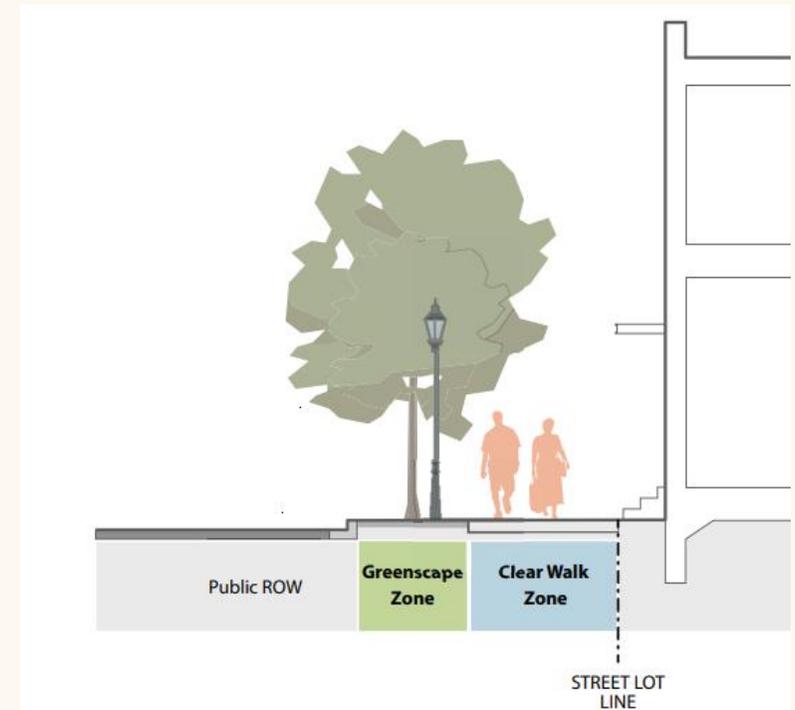
## City Streetscape Requirements (Development Code 4.4.5)

- Greenscape width requirements based on street type (see table on the right)
  - To avoid underground utility conflicts, can use alternative layout, including smaller greenscape zone
- Large street trees required every 30 feet
  - To avoid aboveground utility conflicts, can plant small or medium trees every 15 feet
- Can be privately owned/maintained if outside public right of way
- In residential districts, if surrounding properties do not have an existing streetscape, developer can contribute to streetscape fund instead of planting street trees

## Local challenges to increasing street trees

- Draft Urban Forestry Report findings (June 2025): City averages **fewer street trees per mile than the national average**
- **City street tree planting faces spatial limitations**, with few right of way spaces suitable for large trees

Street Classification	Width (min)	
	Clear Walk Zone	Greenscape Zone
Mixed Use Corridor	8'	12'
Mixed Use A	7'	8'
Mixed Use B	7'	6'
Downtown	6'	8'
Industrial	6'	6'
Neighborhood A	6'	5'
Neighborhood B	6'	5'
Local	6'	5'





# State Code Requirements and Limitations

- § 15.2-961 sets **tree canopy maximums (% canopy cover)**
  - State Code requires localities to include tree preservation as an option to meet at least part of the total required tree canopy
  - Must allow for exceptions for preserving wetlands or unnecessary/unreasonable hardship
    - In those cases, a tree canopy bank/offsite planting is allowed
  - § 15.2-961.1 allows higher tree canopy requirements (still up to a maximum) but only for Planning District 8 (Northern Virginia)
- § 10.1-1127.1 Can designate individual heritage, specimen, memorial, and street trees through a public hearing for **individual preservation; City has already adopted this ordinance**
  - **Maximum penalty for tree removal = \$2,500; City already meets**



# Tree Canopy Issues Identified during Development and Construction

- Developer feedback has indicated that the updated tree list (per the 2023 Development Code) reduced canopy counts per tree significantly, resulting in a perception that too many trees are required within smaller sites to meet the required tree canopy total.
- Concern about tree damage/removal during construction
  - Note: A new Zoning Inspector will be hired to ensure compliance with approved site plans, including tree preservation plans, during construction
- Currently, developers only need to protect existing trees that are being counted toward the tree canopy counts; they do not need to show other existing trees on the site plan that are outside the public ROW (and can't be required to)
- There are limited options under State Code for tree preservation, but incentives rather than requirements could be options
- For existing trees that do count toward preservation for canopy totals, developers have provided feedback that the current best management practices are too stringent and make tree preservation on small sites infeasible
  - Updated benchmarks, measurement protocols, and preservation techniques could be developed



# Tree Canopy and Landscaping: Recommended Areas of Study

**Review and consider updates to the City's requirements for tree canopy, street trees, and tree preservation with development**

- Development community concerns with fitting required trees (to meet tree canopy requirements) into smaller infill sites. Canopy cover percentages are regulated by zoning district (e.g. 10% in Corridor Mixed Use district) and maximum percentages are set by State Code.
- Improved guidance is needed for tree protection/preservation including during construction
- Current tree preservation incentives (1.5x canopy % bonus) do not seem sufficient to the development community to choose tree preservation over planting new trees

**Use data, findings, and recommendations from the Urban Forest Management Plan**

- Cross-departmental coordination on updated Urban Forest Management Plan
- Tree canopy and urban heat island effect vary significantly by neighborhood
  - Energy cost burdens also vary by neighborhood, which can be mitigated by shade from trees
- Analysis so far indicates significant spatial constraints for planting more street trees in the public right of way; updated Plan will provide recommendations for street tree opportunities



# Waterways and Stream Buffers



# Streams: Comprehensive Plan Recommendations

## Chapter 4 Land Use

- Require that zoning changes preserve and enhance natural resources and sensitive environmental areas, designated flood plain areas, steep slopes, rivers, and streams.
- Pair development along the Rivanna River and stream corridors with park space and environmental protection features. Balance competing priorities for properties adjacent to the River and other stream corridors to allow an appropriate number of different uses without impacting environmental quality of waterways and riparian buffers.

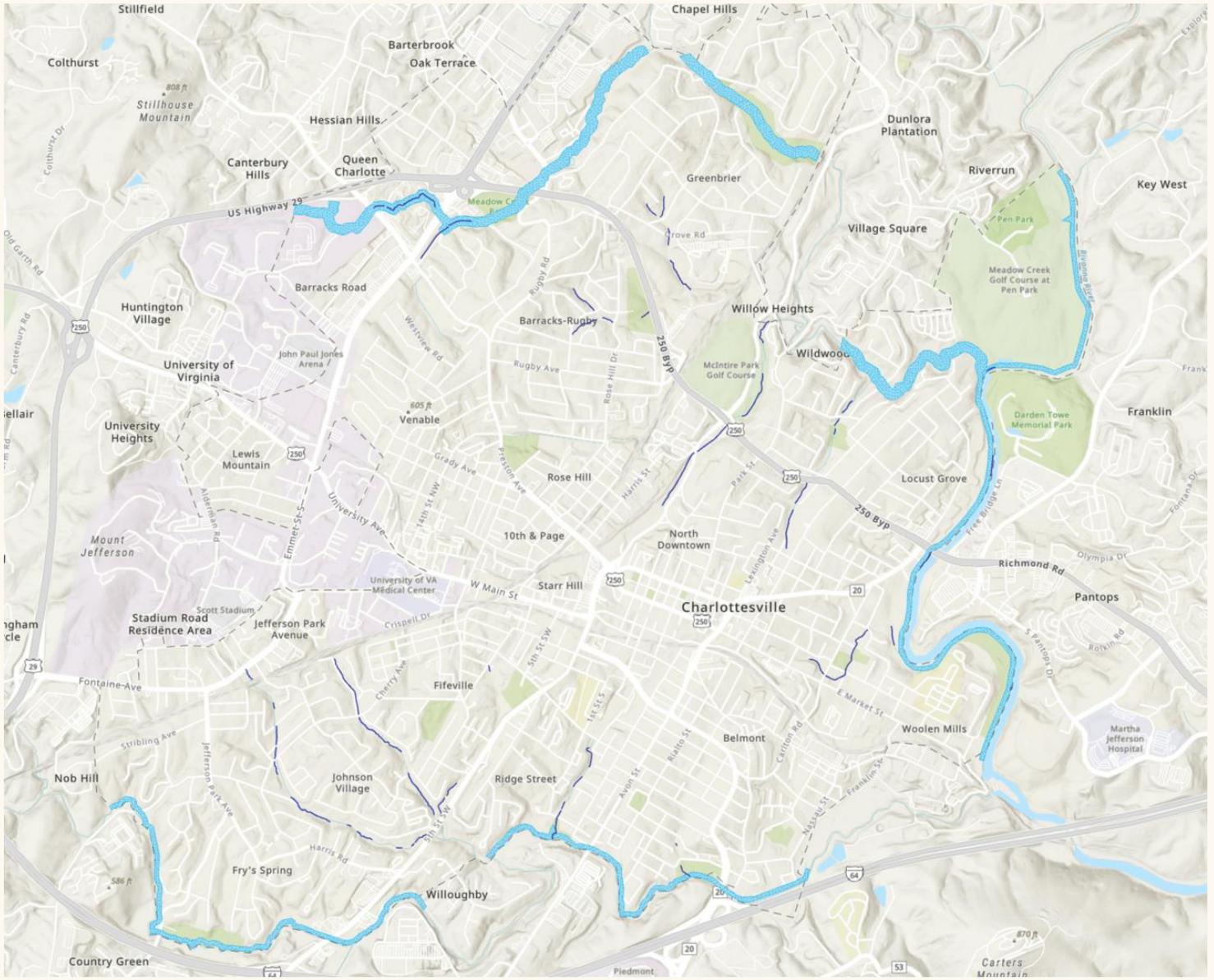
## Chapter 6 Transportation

- Incorporate green infrastructure as an integral part of transportation planning and design projects to avoid sensitive/resilient environmental resources such as floodplains, stream buffers, and wetlands.

## Chapter 7 Environment

- Enforce the 100' Water Protection Ordinance (WPO) stream buffer and consider locations for expansion of the buffer
- Improve stream and vegetated buffers to increase habitats and groundwater recharge/stream flow, improve water quality, and increase resilience
- Improve water quality and regional public access to the Rivanna River
- Implement the Rivanna River Corridor Plan

# Streams and Stream Buffers



**Stream Buffer:** An area of land at or near a tributary streambank and/or nontidal wetland that has an intrinsic water quality value due to the ecological and biological processes it performs or is otherwise sensitive to changes which may result in significant degradation to the quality of state waters.

Map of waterways with a locally regulated buffer:

- Rivanna River
- Meadow Creek + branch
- Moore's Creek

## LEGEND

- Water Protection Ordinance (WPO) Stream Buffer
- Waterway
- Waterways without a WPO buffer



## Water Protection Ordinance (WPO) Stream Buffers: Regulations (Chapter 10 Article IV)

- WPO stream buffers must be at least 100 feet wide on each side of the stream (measured from the top of the bank)
  - Must be maintained and incorporated into land development design
- Existing vegetation/trees in stream buffers must be retained for the 3 designated waterways
- Within a required WPO stream buffer, no indigenous vegetation shall be disturbed or removed, except:
  - Activities pertaining to the management of the stream buffer; requirements outlined in 10-72
  - Development activities authorized in a stream buffer, identified in section 10-74
    - Stormwater management facilities
    - Water dependent facilities, passive recreation access, paved trails 3+ feet, and historic preservation
    - There is no alternative option for a building site and/or driveway/roadway
  - Tilling, planting or harvesting of agricultural or horticultural crops in home gardens
  - Select utility work
- For allowed development activity, must have a mitigation plan:
  - Identify impacts, alternatives
  - Ensure minimal disruption
  - Use best practices to mitigate impacts

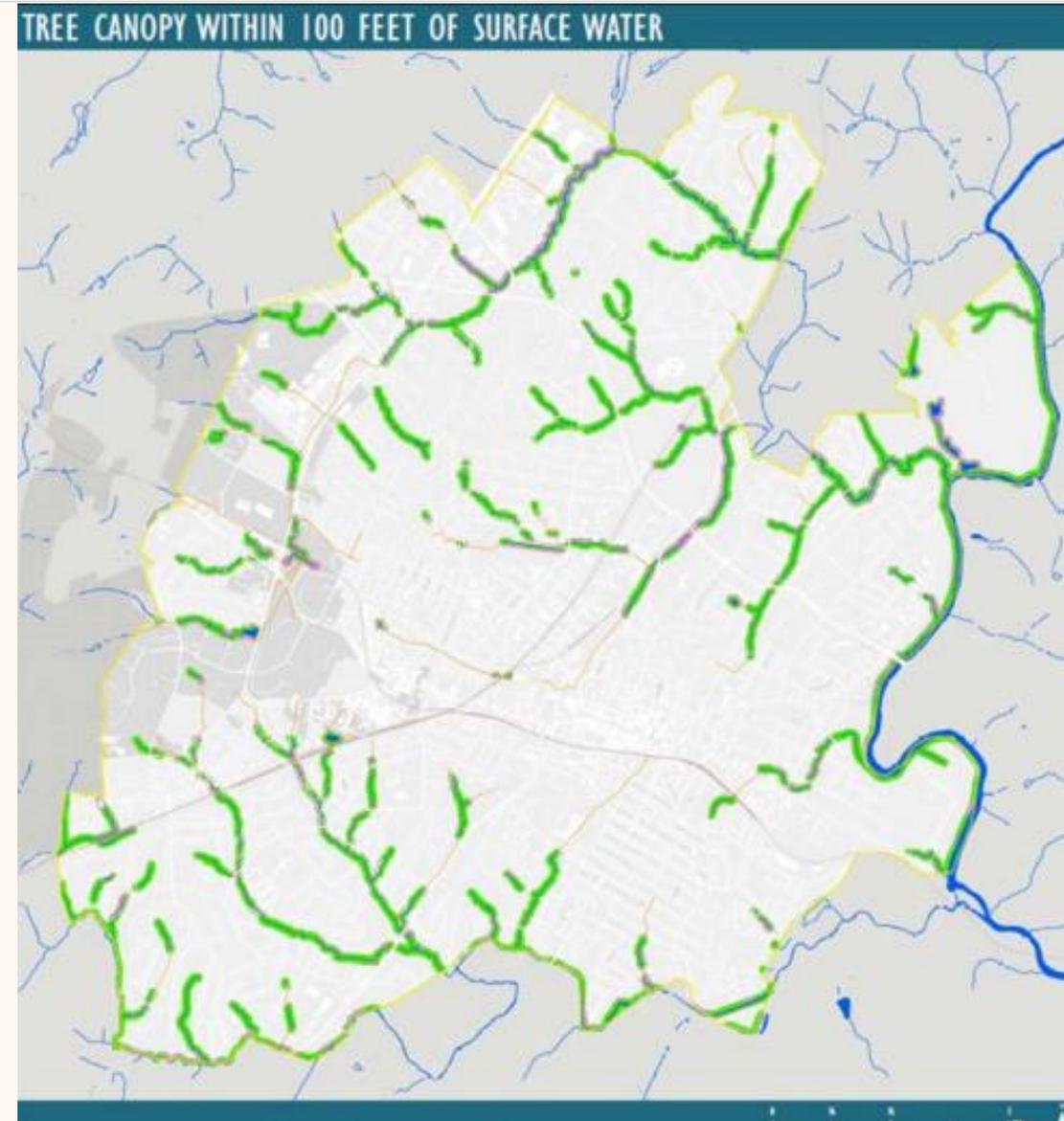
# Streams: Resilience and Green Infrastructure

## Flood Resilience Plan

- Stream buffers are included as part of the implementation strategy
  - Land management: Riparian buffer development, floodplain connection/benching, impervious cover disconnection, and urban reforestation
  - Policy recommendation: Expand requirements for stream buffers/setbacks for areas outside regulatory floodplains

## Green Print 1.0

- Map 10 shows tree canopy coverage within the riparian buffer zone (defined here as 100 feet) in the city. Overall, these riparian buffer zones have tree canopy coverage of 71.4 percent. The three stream buffer zones that are protected in the city along the Rivanna, Moore's Creek, and Meadow Creek have a tree canopy coverage of 71.7 percent. **About half (52.6 percent) of all 100-foot stream buffers in the city are protected in some form, through either the stream buffer ordinance, steep slope ordinance, a conservation easement, or are within a City park.**



Source: City's GreenPrint 1.0

# City Stream Restoration Projects

## Meadow Creek Stream Restoration Project

- \$3.95M collaboration of the City, RWSA and the Nature Conservancy funded by the Virginia Aquatic Resources Trust Fund
- Restoration of 9,000 linear foot section with permanent protection of over 70 acres
- Planted more than 15,000 native trees and shrubs
- Selected to address increased sedimentation, stream bank erosion, and lack of healthy forested riparian buffers that posed a threat to the health of Meadow Creek and the Rivanna River
- Over 93% of the restoration area is on City parkland; more than 40 acres were added to the park system through this project



## Schenks Branch Tributary Restoration

- Collaboration between City, consultants, DEQ, and Botanical Garden of the Piedmont
  - DEQ Stormwater Local Assistance Fund
- Restoration of 840 linear feet of stream, which also runs through the Botanical Garden
- Address active severe erosion which was sending excessive sediment and nutrients downstream
- A total of over 1,400 new native trees, shrubs, and herbaceous plants were installed





# Streams Buffers: Recommended Areas of Study

## **Review and consider updates to Water Protection Ordinance (WPO) regulations for stream buffers**

- Stream buffers help the City meet MS4 Permit requirements, make the City eligible for flood insurance points under the Community Rating System, and support Comp Plan goals
- Potential updates to WPO buffers would need data-driven rationale (e.g. U.S. Geological Survey or other reliable data source) and need to consider administration, enforcement, and property/development impacts

## **Evaluate if additional incentives and voluntary measures are needed to protect stream buffers**

- Many other waterways have existing buffers (i.e. existing vegetation and trees), though they are not regulated by the WPO
  - Based on GreenPrint 1.0, about half of all 100-foot stream buffers in the city are protected in some form: WPO buffer, located in a City park or conservation easement, or critical slopes
- Voluntary measures/incentives are especially useful for the many streams and stream buffers within private property



# Critical Slopes



# Critical Slopes: Comprehensive Plan Recommendations

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## Chapter 4 Land Use

- Require that zoning changes preserve and enhance natural resources and sensitive environmental areas, designated flood plain areas, steep slopes, rivers, and streams.
- Refer to other recommendations related to stream buffers, since many steep slopes are along waterways



# Critical Slopes: Regulations (Development Code 4.10.1)

**Purpose:** limit disturbance of steep slopes near waterways, adjacent properties, and environmentally sensitive areas to protect from impacts of erosion and stormwater and preserve habitats

## Critical slopes criteria

- Grade of 25% or greater;
- A portion of the slope has a horizontal run of greater than 20 feet;
- An area of 6,000 square feet or greater; and
- A portion of the slope is within 200 feet of any waterway protected by the Standard and Design Manual or Chapter 10 of the Charlottesville Code of Ordinances, or shown on the map entitled “Properties Impacted by Critical Slopes”, maintained by the Neighborhood Development Services

## Standards for development

- No buildings, structures, or other improvements within critical slopes
- No land disturbance within critical slopes
- Need to ensure all lots created have buildable area (outside slopes/floodplain/stream buffers)



## Critical Slopes: Administrative Exemptions (Development Code 4.10.1)

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The following are **exempt** from the requirements of this section when the Administrator determines there is no reasonable alternative locations or alignment and the applicant has identified protective and restorative measures:

- Driveways
- Public utility lines and appurtenances
- Stormwater management facilities
- Other public facilities necessary to allow the use of the parcel
- Environmental restoration projects



## Critical Slopes: Special Exceptions (Development Code 5.2.16)

An applicant may seek a Critical Slopes Special Exception with 5.2.16 to allow encroachment into any area of a project site that meets the Applicability requirements of this Section. Planning Commission provides a recommendation and City Council approves or denies the Special Exception. There can be conditions for the Special Exception.

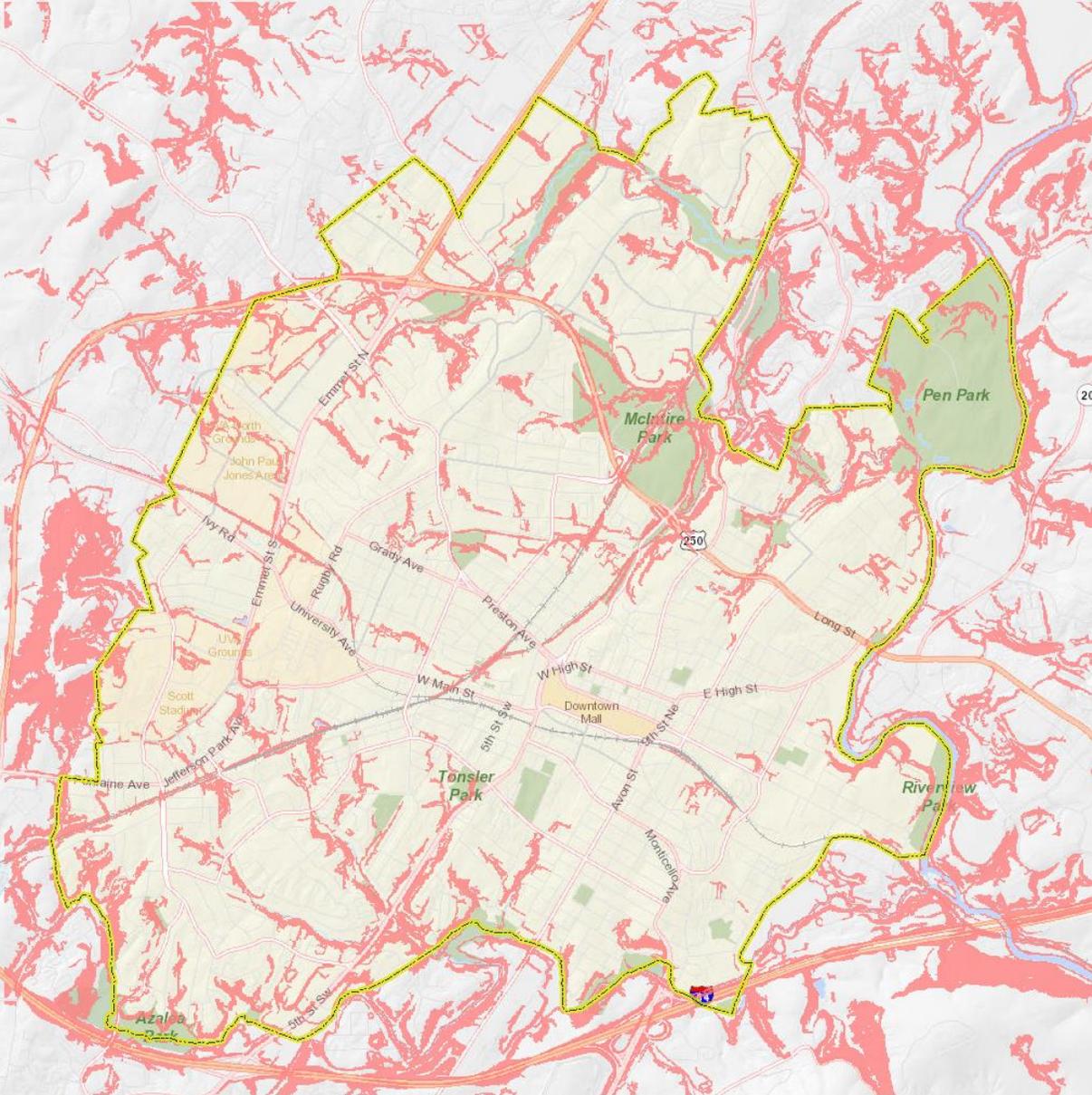
### A Special Exception can be granted with either of the following findings:

- Due to unusual size, topography, shape, location, or other unusual characteristics, or existing development of a property, the requirements of 4.10.1 would effectively prohibit or unreasonably restrict the use of a property or would degrade adjacent properties, or
- The public benefit of the proposed encroachment outweighs the public benefit of protecting the area

### Review Criteria:

- Whether the amount of impact has been limited to the greatest extent possible
- Whether sufficient mitigation is proposed
- Whether steps have been taken to limit or prevent impacts to slopes with environmental or scenic value or vulnerability to disturbance
- Whether the project is consistent with the zoning district and Comp Plan

# Critical Slopes

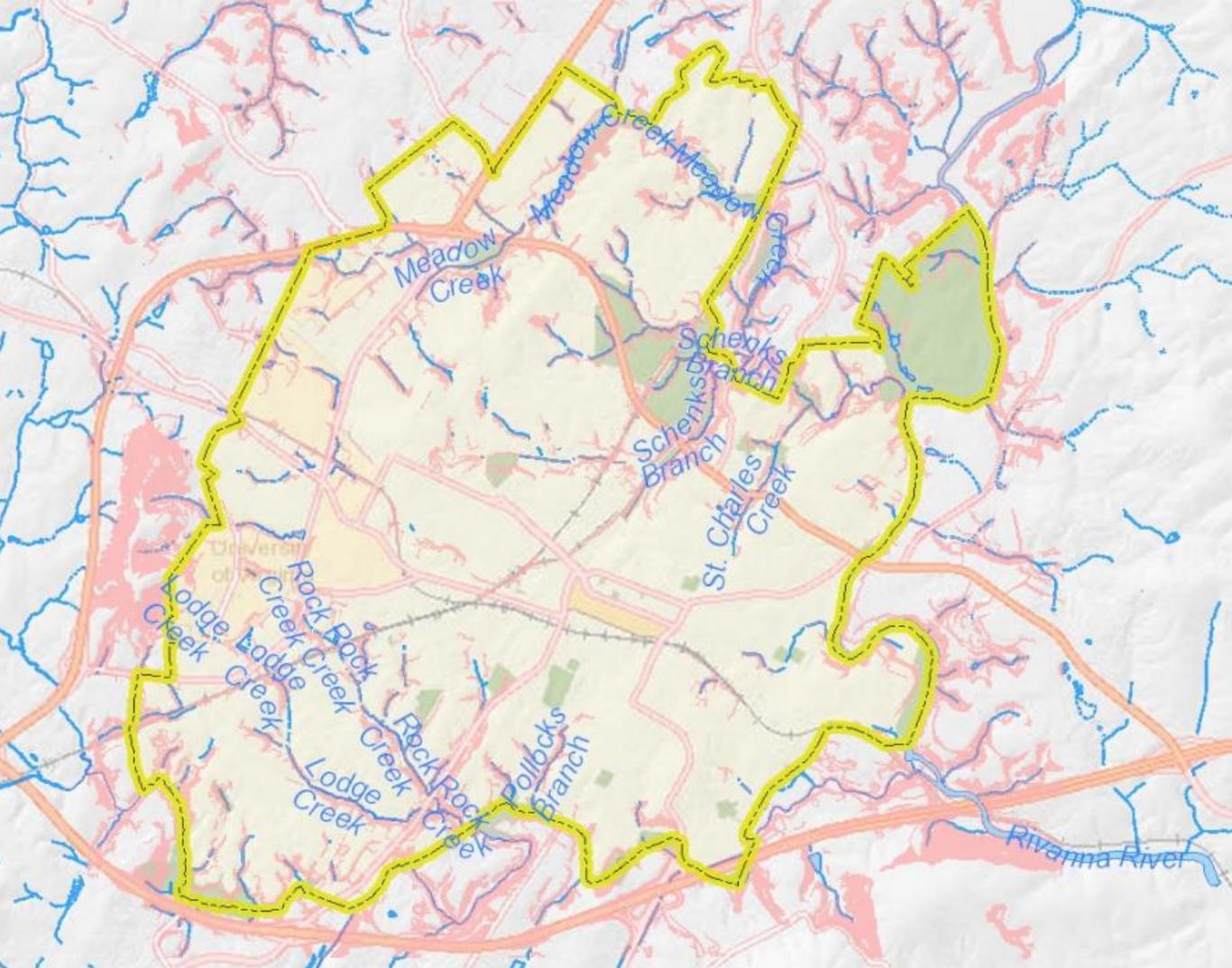


## LEGEND



Critical slopes (greater than 25% grade)

# Critical Slopes and Waterways



### LEGEND



Critical slopes (greater than 25% grade)



Waterway



# Critical Slopes: Recommended Areas of Study

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## Review and consider updates to the City's critical slopes regulations

- Special exception process: review criteria should be updated to be more objective and clear
- Consider different regulations for natural slopes vs human-made slopes

## Review and consider updates to Comprehensive Plan guidance

- Only one Comprehensive Plan recommendation related to critical slopes and the value of slopes is not clearly defined
  - For example, there is no distinction between human-made and natural slopes



# Energy Efficiency and Green Buildings



# Energy Efficiency: Comprehensive Plan Recommendations

- **Chapter 5 Housing**
  - Energy and water efficiency programs to increase housing affordability
  - Encourage energy efficient buildings (e.g. LEED, Energy Star)
  - Promote existing Green Building incentives and programs
  - Encourage solar-ready and EV-ready building standards
- **Chapter 6 Transportation**
  - Use alternative energy sources as feasible to power City equipment, e.g. solar power and battery storage
  - Increase the use of electric vehicles and integrate EV charging infrastructure in the city
    - Design standards for EV charging
    - EV charging on City-owned land and at park and rides
    - Encourage and support EV charging throughout the city
  - Increase the use of fuel efficiency through fleet updates
- **Chapter 7 Environment**
  - Improve energy performance of existing and new buildings community-wide
  - Pursue cleaner energy sources/renewable energy
  - Similar to chapter 5, encourage high performance green buildings, e.g. LEED and Energy Star



# Reduced Tax Rate for Certain Energy Efficient Buildings

- Buildings within the City of Charlottesville that meet the energy efficiency standards as described below are eligible for a reduced tax rate of 50% on the building value for one tax year.

"Energy-Efficient Building" means any building that:

- Exceeds the energy efficiency standards prescribed in the Virginia Uniform Statewide Building Code by 30%,
- Meets or exceeds performance standards of the Green Globes Green Building Rating System of the Green Building Initiative,
- Meets or exceeds performance standards of the Leadership in Energy and Environmental Design (LEED) Green Building Rating System of the U.S. Green Building Council,
- Meets or exceeds performance standards or guidelines under the EarthCraft House Program, or
- Is a Home Performance with Energy Star qualified home, the energy efficiency of which meets or exceeds performance guidelines for energy efficiency under the Energy Star program developed by the United States Environmental Protection Agency



# Energy Efficiency: Local Government (Public) Buildings

## State Code requirements for Local Government Projects (§ 15.2-1804.1)

- VA HB2001 went into effect for Charlottesville in 2023. Requires local government new construction projects over 5,000 sq ft and renovations with a cost of 50%+ of the existing building value to meet energy efficiency requirements
- Minimum requirements include the following, and localities can adopt more stringent requirements:
  - Energy efficient standards (e.g. LEED)
  - Sufficient EV charging
  - Metered utilities to measure energy consumption and associated CO2 emissions
  - Resilience and distributed energy features (e.g. elevated building, resilience hub)
- Buildings or renovations less than 20,000 sq ft can choose to meet ENERGY STAR certification instead of meeting the above requirements

## Office of Sustainability is leading development of High Performance Building Standards for Public Buildings

- This will update the City's Green Building Policy adopted in 2008, which is a resolution to implement green building practices for City construction projects; use LEED standard for all major City owned-buildings and renovations projects
- Will also update City Energy and Water Management Policy for City-owned buildings
- Locally, 7 public buildings are currently LEED certified



# Energy Efficiency: Private Buildings

- Virginia localities cannot require energy efficient requirements more stringent than the Building Code, though they can have higher standards for projects that require legislative review and approval
- They can also **use tools to encourage the private sector** to meet higher energy efficiency standards, such as:
  - Bonus density
  - Tax abatement/credits
  - Reduced permit fees
  - Technical assistance and marketing
  - Local Green Development Zone per § 58.1-3854
  - Modeling best practices with public sector buildings



# Solar Tax Credits

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- Local tax credit for certified solar energy equipment, facilities or devices that are attached to real estate within the city. The tax credit applies a portion of the total cost of the solar equipment, facilities, or devices as a credit on the real estate tax bill for 5 years. As of 2025, this represents a credit equal to 4.9% of system costs.
- In 2024 approximately 100 properties received a solar energy abatement through this local program
- Solar equipment must be fully installed and inspected by Building Inspector before receiving tax credit
- Federal tax credits cover about 30% of the cost for rooftop solar for homeowners, but this tax credit will no longer be available starting at the end of this year (2025)



# EV Charging

- **Development Code requirements:**
  - Where a parking lot with 6 or more spaces is provided, 20% of the parking spaces must be equipped with conduit and electrical capacity to accommodate the installation of electrical vehicle charging equipment.
  - Electric vehicle charging equipment, including pedestals, bollards, or cables, must not encroach into drive aisles or pedestrian walkways.
- Office of Sustainability is working with a consultant on an **EV Charging Plan** for the city
  - Preparing for an estimated increase of thousands of additional electric vehicles in the city by 2035
  - Regulations, incentives, and policies to proactively plan for this increase in EV's
  - Includes location gaps/recommendations
- One issue that has come up is **electric charging cables crossing the ROW** where people charging their cars do not have driveways (and therefore do not have an alternative way to charge their cars)



# Energy Efficiency: Recommended Areas of Study

## Update energy efficiency standards for public/local government buildings

- City is working on updated High Performance Building Standards

## Evaluate potential updates to energy efficiency tax credits and guidance for private development

- City has existing local tax incentives for certain energy efficient buildings and solar
  - Changes to tax incentives at the federal level may limit or slow the uptake of energy efficiency projects and products, especially solar
- Virginia localities cannot require energy efficiency requirements more stringent than the Building Code, though they can have higher standards for projects that require legislative approval. They can also have incentives.

## Use the forthcoming EV Charging Plan to inform potential regulatory or policy changes

- Continue working with the consultant on an EV charging plan in anticipation of continued increasing demand for EV charging
- EV charging cables crossing public right of way (PROW) can pose a safety hazard when not properly covered. Other localities have been adopting PROW cord policies, as dwelling units without driveways often do not have another option for EV charging at home