City of Charlottesville Parks Department

Environmental Efforts Update

March 2012

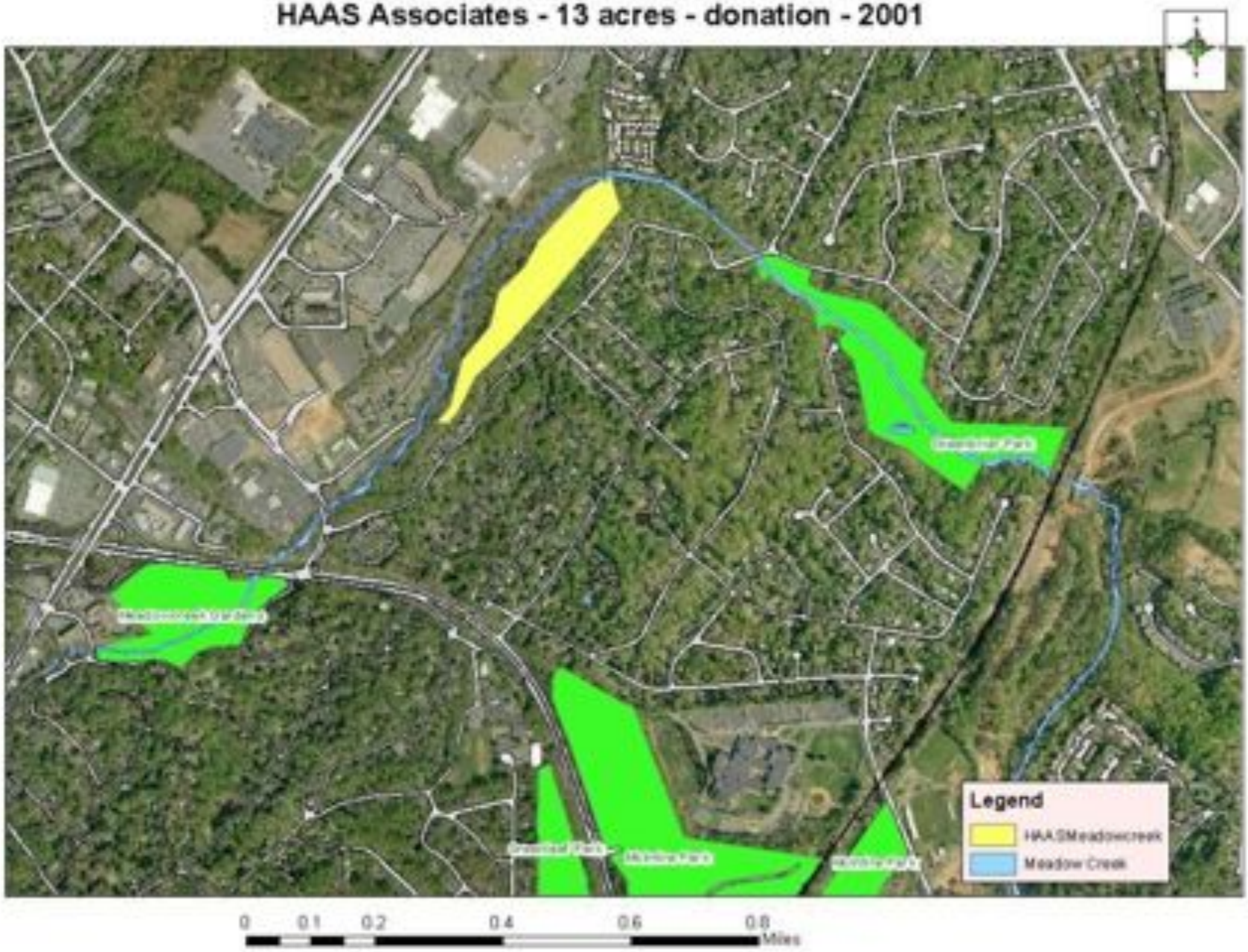
- Parkland Acquisition
- Trail Network Development
- Urban Forest Management
- Invasive Plant Management
- Stream Restoration
- River Access

Parkland Acquisition

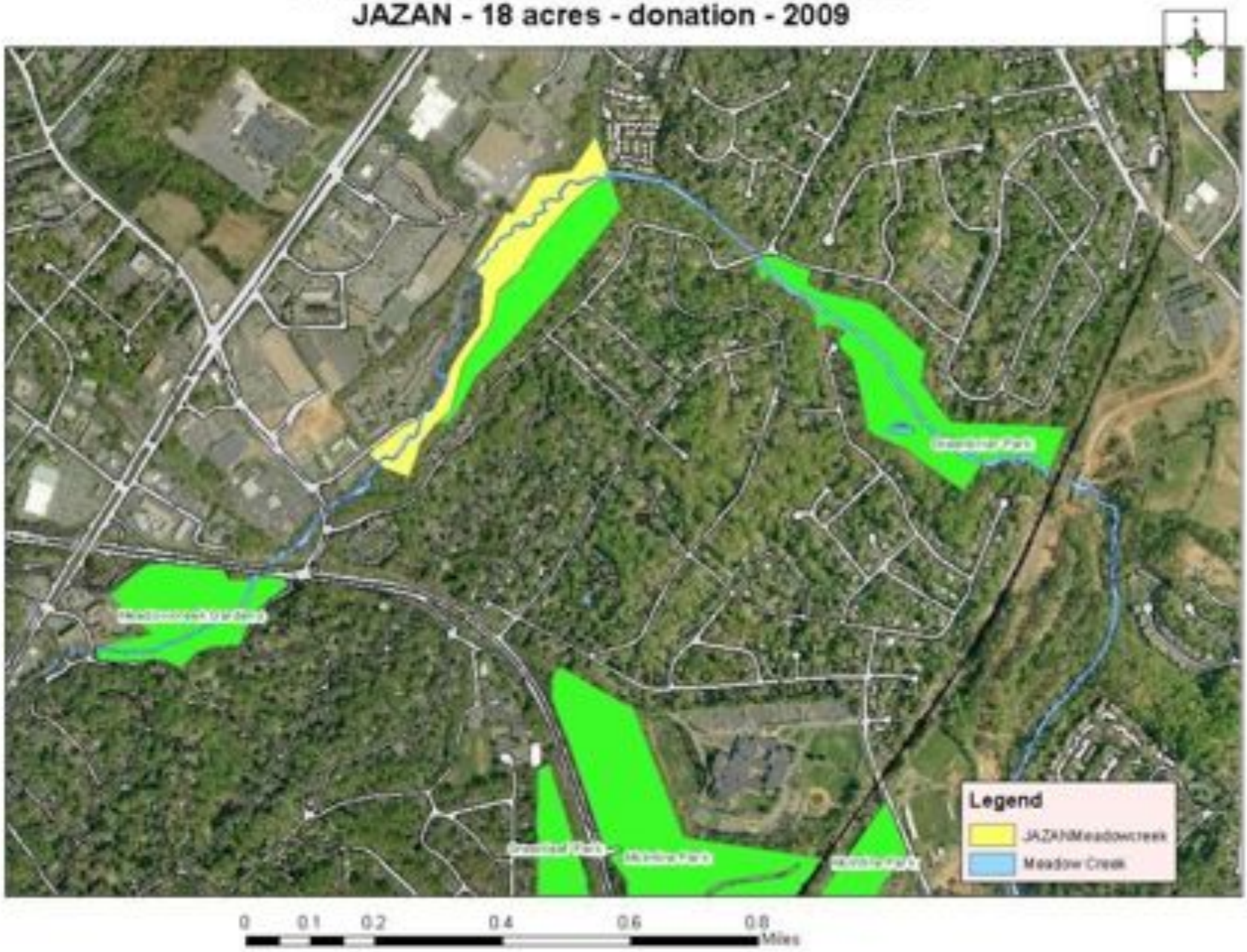
- ~100 acres of new parkland since 2008
- Mostly along Meadow Creek
  - (now 80% public linear park)
- Donations account for majority of land
- Purchase of other lands currently underway
  - Moore's Creek primary focus

Parkland Acquisitions - Meadowcreek West
BEFORE 2001

Parkland Acquisitions - Meadowcreek West
HAAS Associates - 13 acres - donation - 2001



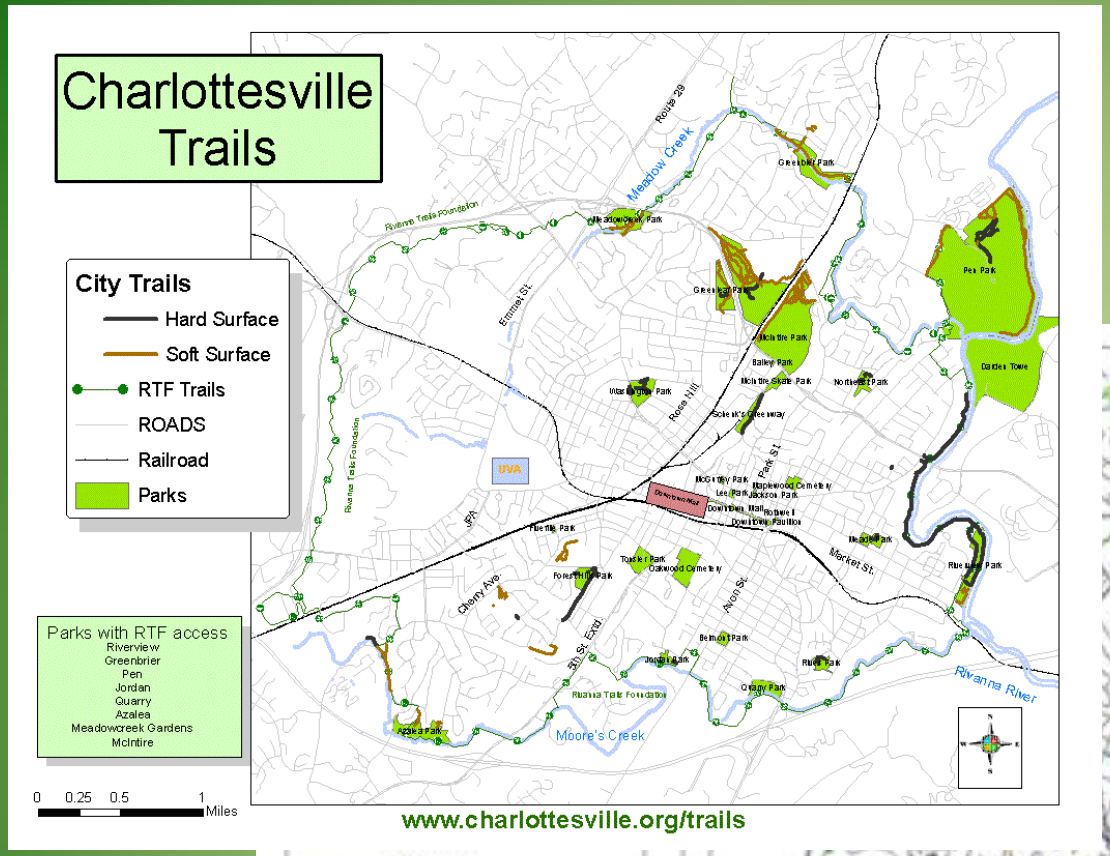
Parkland Acquisitions - Meadowcreek West
JAZAN - 18 acres - donation - 2009



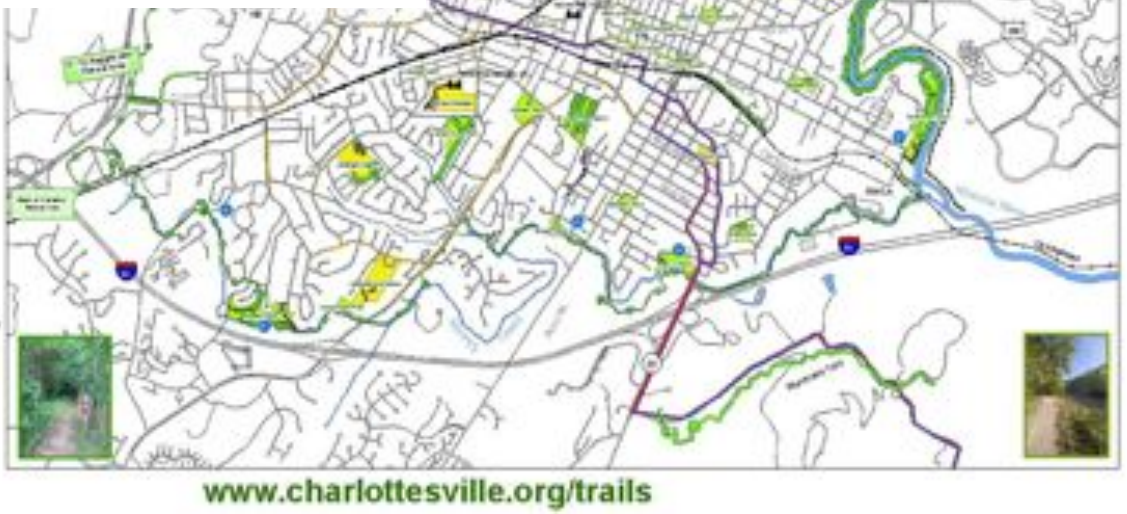
Parkland Acquisitions - Meadowcreek West
REGION 10 - 3.3 acres - $20,000 - 2011

Parkland Acquisitions - Meadowcreek West
CANON - 4.5 acres - To be completed within next month

Parkland Acquisitions - Meadowcreek West


Charlottesville Trails
City Trails
Hard Surface
Soft Surface
RTF Trails
ROADS
Railroad
Parks
Parks with RTF access
Riverview
Greenbrier
Pen
Jordan
Quarry
Azalea
Meadowcreek Gardens
McIntire
0 0.25 0.5 1 Miles
Meadow Creek
Rivanna Trails Foundation
Emmet St.
Route 29
Rose Hill
UVA
Park St.
Market St.
Cherry Ave
5th St. Extd
Avon St.
Rivanna River
Moore's Creek
www.charlottesville.org/trails

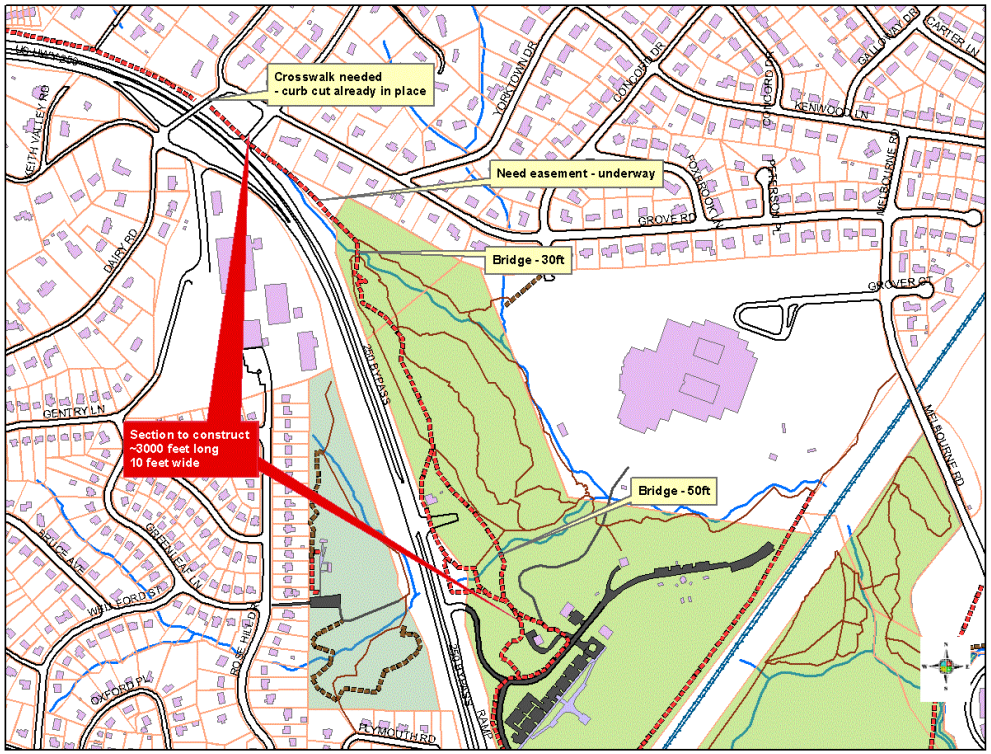

Streets
Railroad
Waterways
Parks
Schools
Recreation Center
Library
Parks with RTF* access
*RTF is a non-profit organization that operates a network of footpaths around the City
0 0.25 0.5 1 Miles


www.charlottesville.org/trails

Trail Network Development

- Nature trails added by volunteers
- Paved Trails into and around parks
- New multi use trails
  - 250 bypass
  - Coal Tower/Meade Avenue
  - McIntire Road Extended/McPkwy

250 Bypass Bicycle Commuter Trail

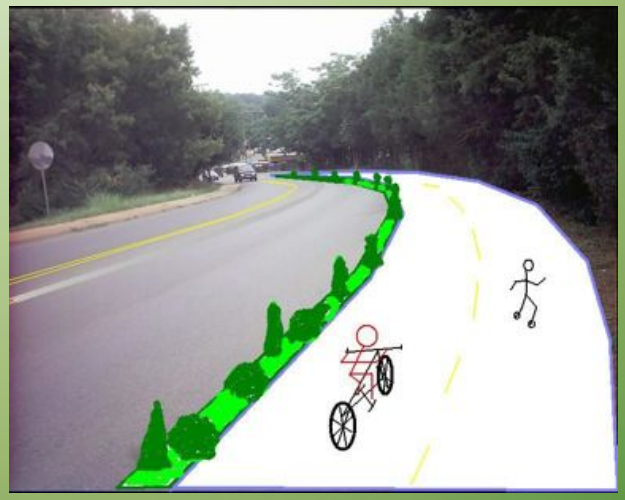


Meade Avenue/Coal Tower Trail

Coal Tower

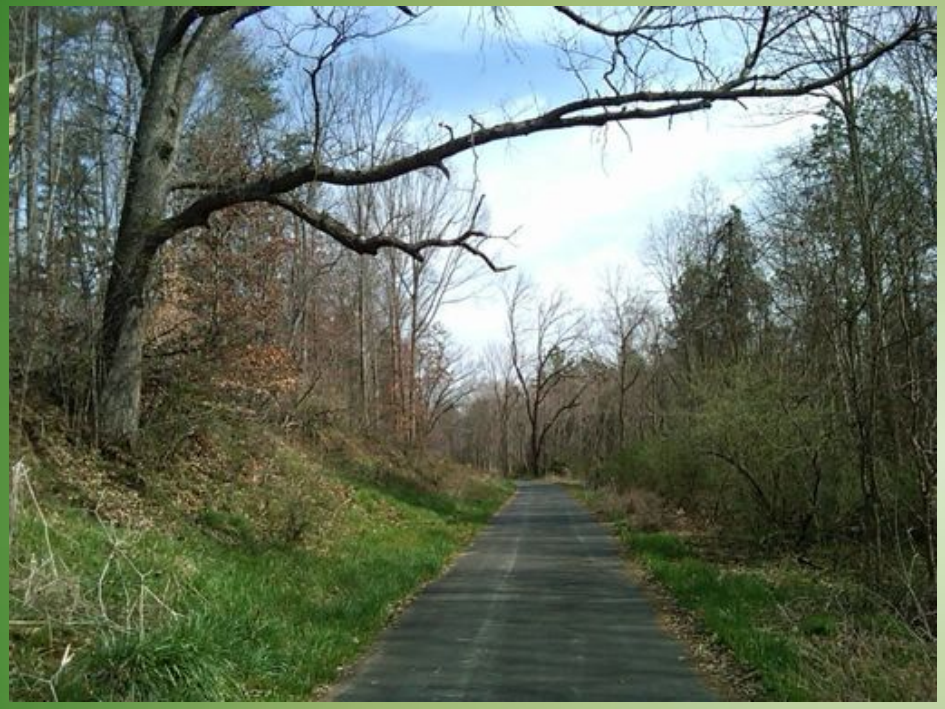
Overall Plan

Meade (current)



Meade (proposed)

McIntire Road Extd / McParkway



Urban Forest Management

Importance of Trees

Shade for play areas

Sanctuary

Importance of Trees

Economy

Shade for walking and biking

Importance of Trees

Heritage Tourism

Stormwater Management

Importance of Trees

Energy savings

Wildlife

Public Tree Management

Parks, Schools, Cemeteries, Streets, Public buildings

Safety – Ensuring trees do not harm users of public spaces

New plantings – specimens in parks and multiple small trees near streams

Responding to citizen requests

Waste Management – limbs, debris, mulching

Planning – new parks and trails and/or renovations (Forest Hills, Schenk's)

Hurricane and storm response

2007 Comprehensive Plan

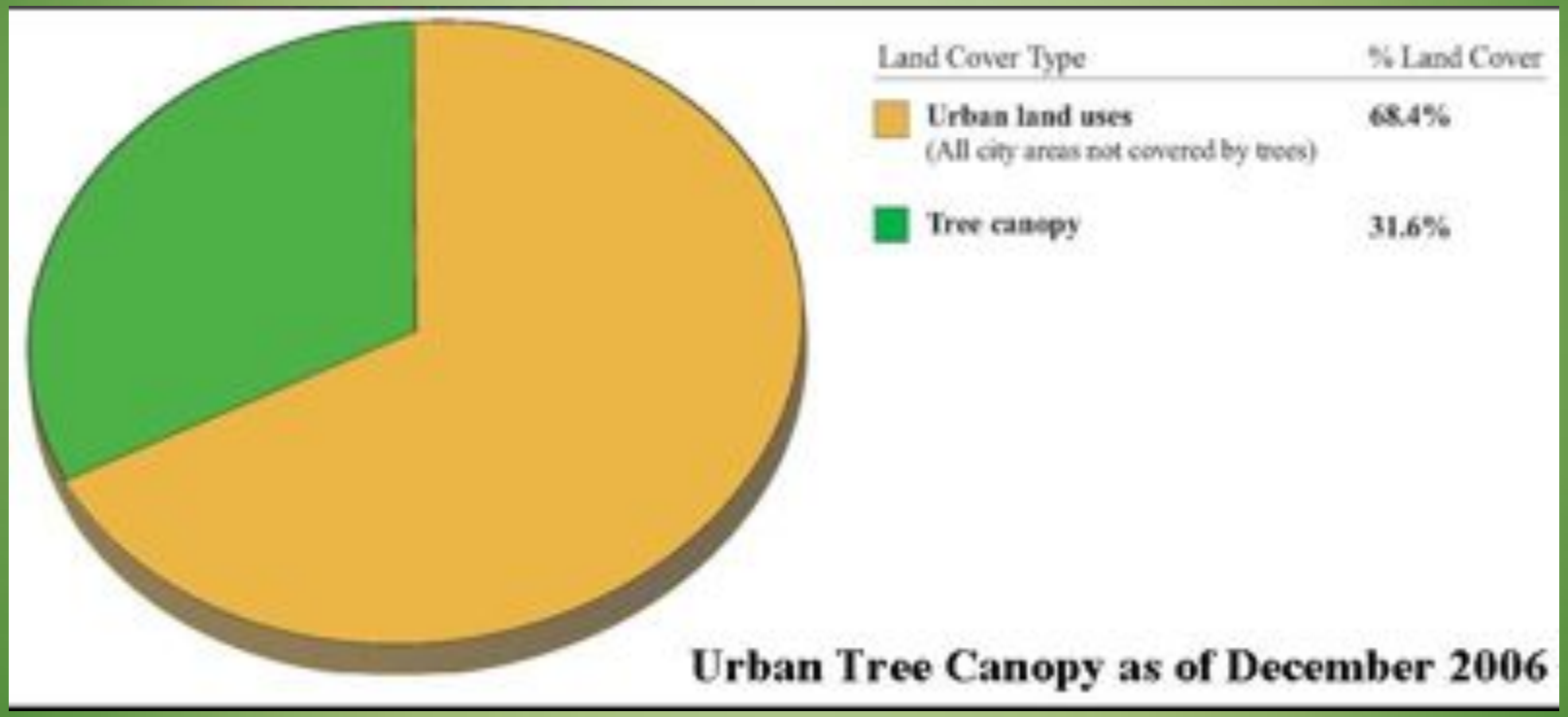
- ***Establish and maintain a 40% minimum urban tree canopy level in Charlottesville.***
- *Plan, develop and implement an Urban Forest Management Plan, which will serve as the City's comprehensive, long-range strategy for protecting, managing and expanding Charlottesville's urban tree canopy on public lands including streets, parks, schools and other city-owned properties as well as private lands.*

What is Tree Canopy?

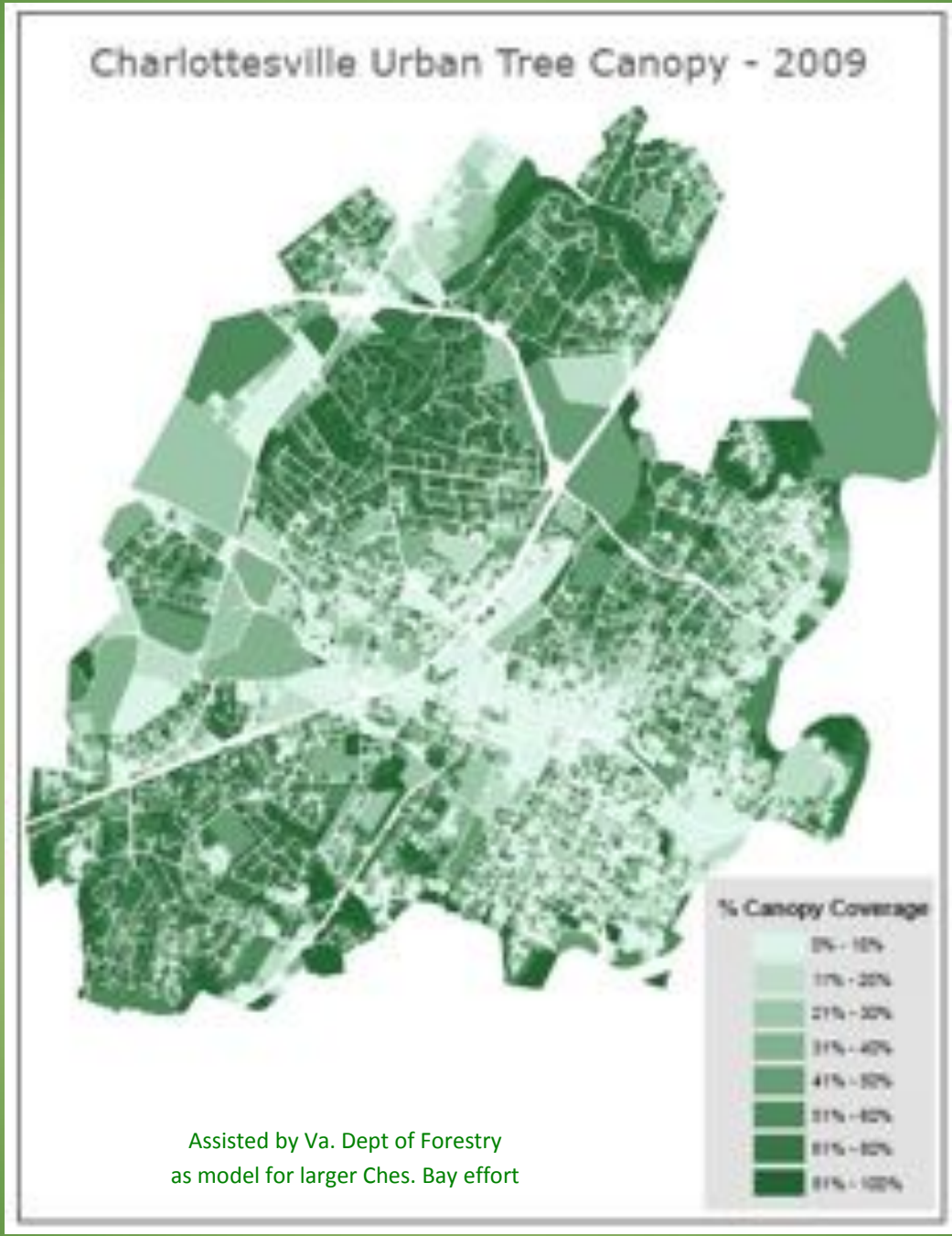
- Urban Tree canopy is defined as the layer of tree leaves, branches, and stems of trees in the urban area that cover the ground when viewed from above.
- Measure using satellite imagery and land coverage models
- Distinguishes shrubs and grass from tree canopy

2006 UVA Tree Canopy Study

2006 UVA Tree Canopy Study



The Arbor Day Foundation recommends **40%** average tree canopy for urban areas



Charlottesville has an average tree canopy coverage of ~**47%**

Charlottesville has more tree canopy than buildings, roads, and parking lots combined

Urban Forest Assessment

- Location, species, condition, size
- Every tree on public property
- Individual trees counted where feasible
- Plot samples in wooded areas.
- Often called a “tree inventory”
- Snapshot of overall diversity and condition

Urban Forest Assessment

Charlottesville's public trees

are worth an estimated $34 million

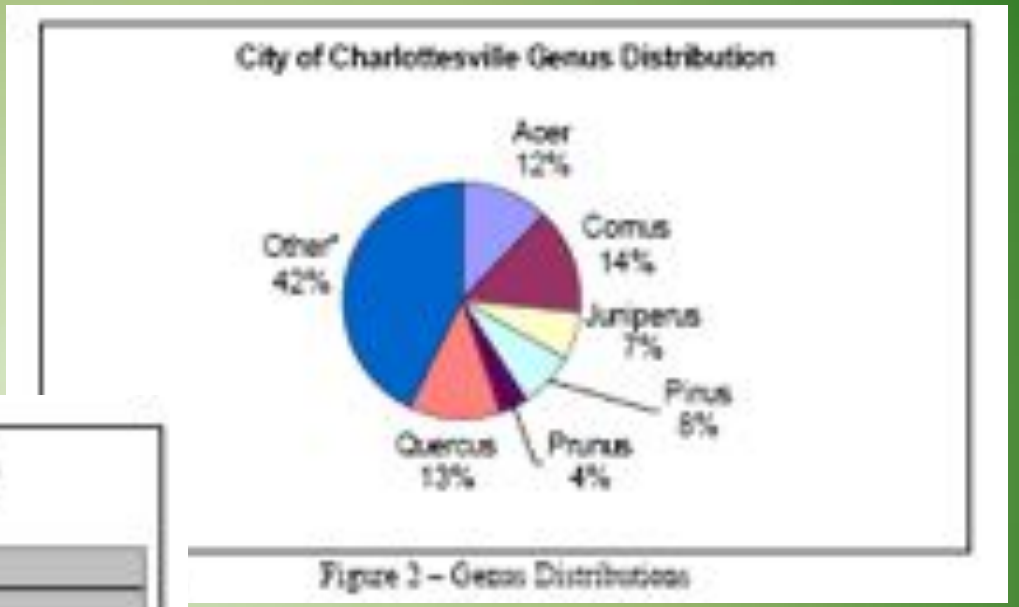


Figure 2 – Genus Distribution

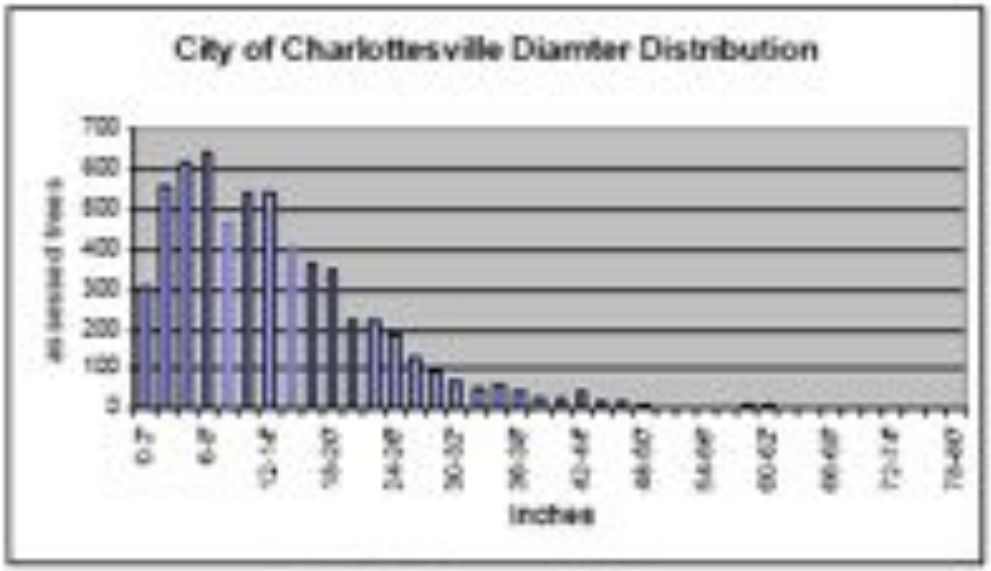


Figure 1 – Diameter Distribution

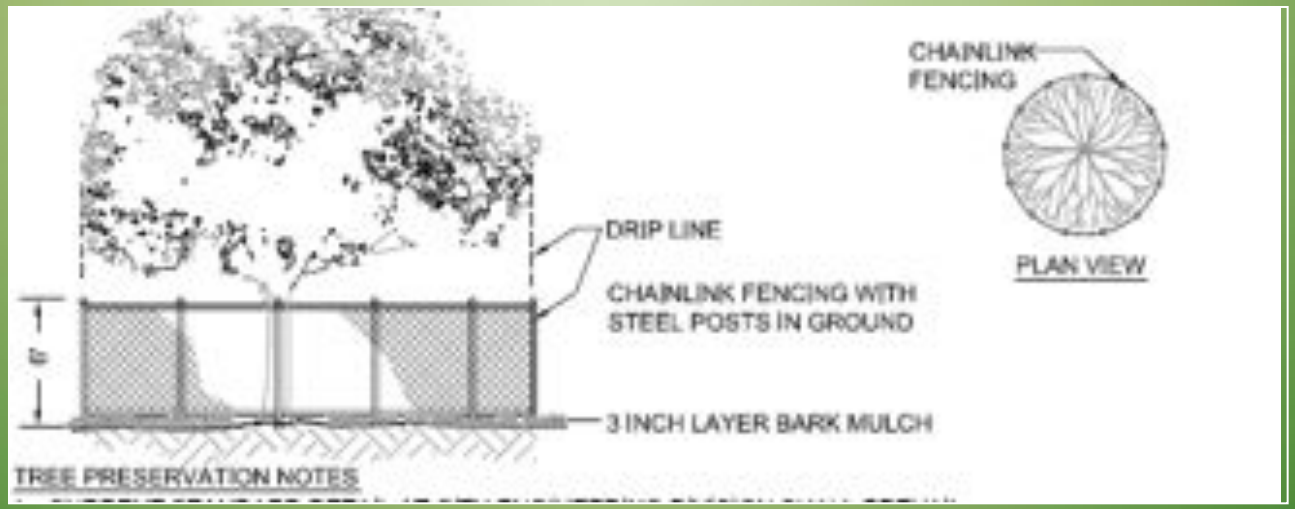
City efforts to increase canopy

Urban Forest Management Plan themes

- Preservation and Protection
- Enhancement and Restoration
- Expansion
- Monitoring
- Education, Outreach, Partnerships
- Sustainability and B.M.P.s

Specific Efforts

- Land acquisition – Forest Hills Park, Meadowcreek
- Forest fund
- New BMP manual for construction sites
- Enabling legislation for tree protection
- Planning to minimize tree loss



Tree City USA

Schenks Greenway - 2007

$2 per capita spending on trees

Tree Care ordinance

Tree Board or Commission

Celebrate Arbor Day

Riverview Park - 2009

Challenges in urban areas

- Buildings, sidewalks, utilities
- Vandalism and other damage (cars/mowers)
- Pollution and stress
- Wildlife and disease
- Water sources
- Initial construction vs. long term
- Public and private spaces
- Liability and Safety

Historic Air photo review

- Charlottesville's urban forest and canopy appears to have mostly evolved as farm and pasture lands became residential. Many trees are "volunteers" in areas that were simply taken out of farm use.
- A review of air photos shows this change over time and spatially as different areas of the City developed at different times.

1937 – Mostly un-forested fields

1957 – Trees infill with change in land use

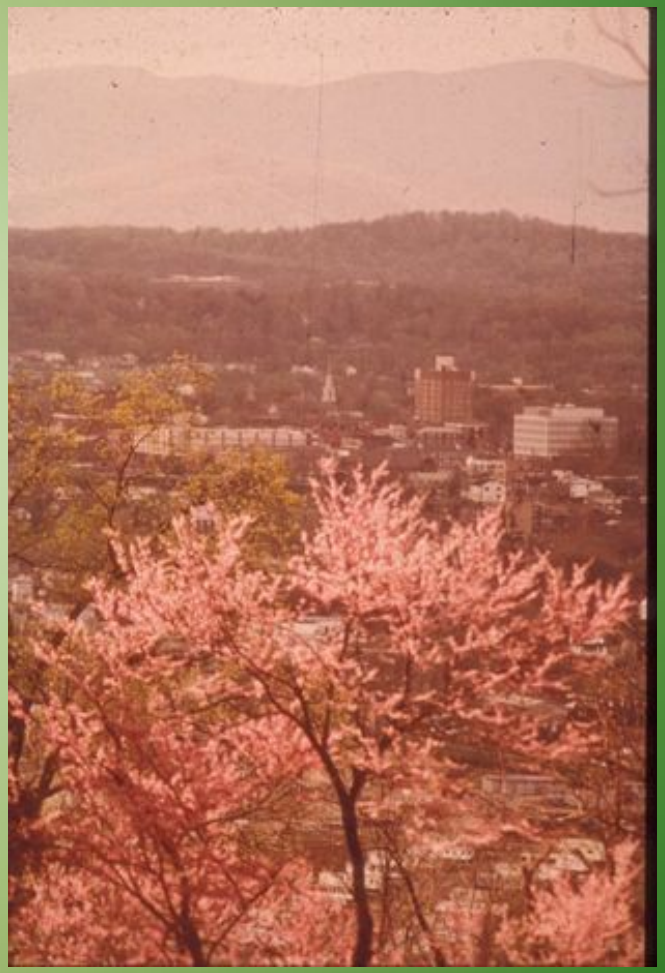
1966 – Tree canopy thickens and expands

1974 – Continued growth in residential areas but newly cut lands in commercial areas

2007 – Trees finally turn green

How can citizens help?

- Fund for forest
- Volunteers
- Tree Stewards
- Plant on your property
- Encourage neighbors/friends
- Thank leaders for effort



Invasives Management

- Volunteers
- Americorps
- Focus on high priority areas
- Contain, then destroy
- Focus of trees to protect canopy

Invasive Plant Management

Before vine cutting

After vine cutting

Meadow Creek Stream Restoration

- Project is managed by The Nature Conservancy and City Dept. of Public Works in coordination with the Parks Department.

- Kristel Riddervold is most knowledgeable City staff person for this project

Charlottesville Streams

- Over 35 miles of stream network
- Varying conditions of health and stability
- Varying land uses and impacts

Moores Creek

Meadow Creek

UVA Projects

(upstream improvements of Meadow Creek)

Stream Restoration at The Dell

Innovative Stormwater Management at John Paul Jones Arena

Stream Restoration at Ivy Road Parking Garage

Azalea Park

Before

After - 2003

During

After - 2009

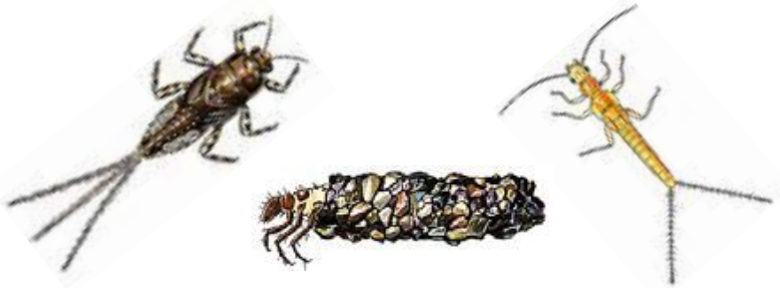
Meadowcreek Golf Course


Meadow Creek Stream Restoration Project
US 29
Seminole Square Shopping Center
Greenbrier Elementary School
Greenbrier Dr
Greenbrier Park
Hydraulic Rd
Conservation Area
Existing Meadow Creek
Proposed Meadow Creek
Wetland
Existing Trail
City Boundary
N

Aquatic Life

Unhealthy Community

Healthy Community



Project History and Goals

Project Goals and Benefits

- Decrease sedimentation
- Enhance/establish forested riparian buffers
- Improve in-stream habitat
- Protection of infrastructure
- Permanent land protection
- Education

Decrease Sedimentation

- Reshape banks
- Add/reshape meander bends
- Reconnect stream to floodplain

Enhance/Establish Forested Riparian Buffer

- Plant trees
  - enhance filtration
  - stabilize streambanks
  - provide shading
  - enhance wildlife habitat
  - serve as a food source
- Invasive species control

Improve In-stream Habitat

- Add habitat features to stream channel

Protection of Infrastructure

Permanent Protection and Education

- Establish permanent conservation easements
- Permanent trail system

- Contribute to overall conservation efforts in the Rivanna watershed
- Demonstration project
- Engage students and volunteers

Kingstowne Project – Phase I

Meadow Creek Stream Restoration: Approach and Design

Benefits of Restoring Urban Streams

- Improvements to water quality
- Reduction in land lost to stream bank erosion
- Creation or enhancement of aquatic and terrestrial habit
- Improved effectiveness of riparian buffers in groundwate nutrient removal
- Increase in baseflow
- Greatly improved aesthetics
- Removal of safety hazards
- Educational opportunities
- Community Involvement
- Protect Infrastructure (roads, crossings, pipes)
- Reduce sedimentation of reservoirs
- Alleviate flooding Issues
- Assist in meeting state and federal water quality standard

Physical Impacts of Urbanization on Streams:

- Sediment transport modified
- Channel enlargement
- Channel incision
- Fish blockages
- Loss of headwater streams through piping

Results of physical alterations to the channel dimension, pattern, and/or profile = **channel evolution**

Most effective means of improving habitat and water quality = incorporate effective stormwater management practices within the watershed

- At a minimum, within the restored corridor
- Provide for stable tie-ins at storm sewer outfalls and utility crossings
- Riparian vegetation: organic matter provided to channel = food source

Critical goals:

Slow the water down (shave off the peak of the hydrograph)

Improve the quality if the water entering the stream

Allow for more infiltration in the watershed to improve baseflow conditions

Drawbacks of Traditional Practices

- Does not account for improvements to aquatic habitat
- Does not address flooding issues
- Can create or exacerbate erosion downstream
- Often temporary due to lack of consideration for high Near Bank Stress
- Expensive
- Maintenance
- Unsightly (aka ugly)
- Often does not address source of instability
- Ineffective – not an appropriate measure for the issue

Use of Innovative Practices to Achieve Multiple Goals

- Natural Channel Design – restore and/or stabilize impacte streams through the design of a stable channel utilizing of fluvial geomorphological principles…including:
  - reference reach data
  - understanding of the sediment transport regime
  - incorporation of in-stream structures where applicabl
  - riparian buffer establishment
- GOAL=Long-term stability and a natural functioning stream and buffer that has improved aquatic habitat
  - No maintenance required
  - Able to transport the water and sediment supplied by the watershed
  - Provide a sink for contaminants such as nutrients and sediment
  - Work with site constraints

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Issues/Considerations for Working in Urban Areas

- Working with adjacent property owners/concerned citizens on topics such as:
  - Access
  - Preparation for what construction entails
  - Tree removal

Often – gaining understanding, support and confidence from residents can be a significant challenge to the project

Stakeholder and public meetings can provide a forum for information sharing

Being upfront and deliberate with project goals – why are we doing this? And providing adequate information on design and methodology helps


1974

Coordination with RWSA Interceptor Project

- Determine viability of utilizing same access locations and staging areas
- Coordinate planting efforts
- Maintain appropriate distance off of the sewer line with stream channel

Anticipated Issues for Project Consideration & Coordination

- RWSA Interceptor Upgrade Project
- Children and school access
- Daily travel routines and traffic disruptions
- Noise and work hours
- Temporary trail and park closures and detours
- Management and enhancement of vegetation

Project Schedule

• Spring-Fall 2011	Complete Final Design
• Fall 2011	Neighborhood Meeting
• Winter 2011/12	Obtain permits
• Winter 2011/12 – Fall 2012	Project Construction
• Winter 2012/13	Planting (in first dormant season following construction)
• 2013 – 2023	Long term monitoring

River Access

New staircase at Riverview Park – Eagle Scout project

When stormwater, trees, and trails combine next to the River…

Thank you!

- www.charlottesville.org/parks
- www.charlottesville.org/trees
- www.charlottesville.org/trails
- www.charlottesville.org/meadowcreek