Phase 2 Preliminary Design, Public Meeting #2

October 27, 28 & November 7, 2010

Fuller Brook Park Coordinating Committee
Wellesley Natural Resources Commission

Pressley Associates Landscape Architects
AECOM
Tree Specialists, Inc.
LEC Environmental Consultants

Agenda

PART 1

Introduction

- Special Considerations
- Design Criteria
- Feedback from Public Meeting #1

Vegetation Treatment Options

Stream Bank and Course Options

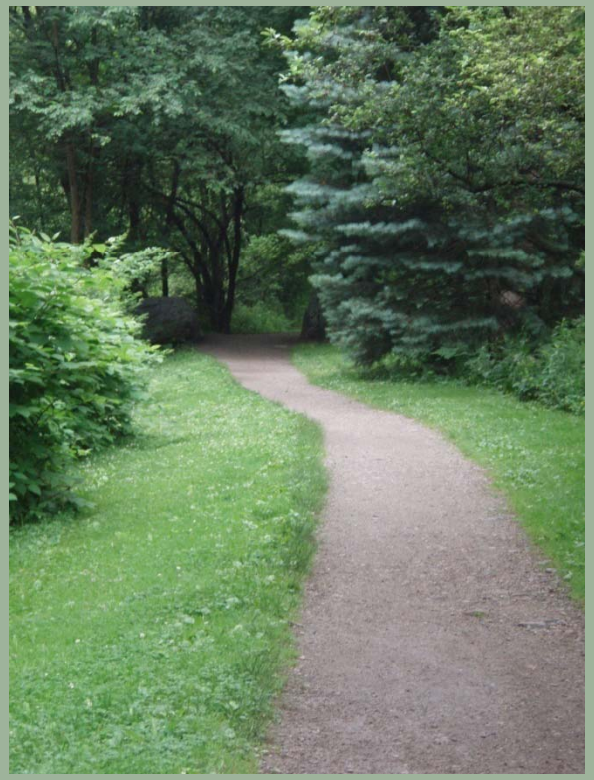
Park Boundary Options

Discussion of Vegetation, Stream and Boundary Options

PART 2

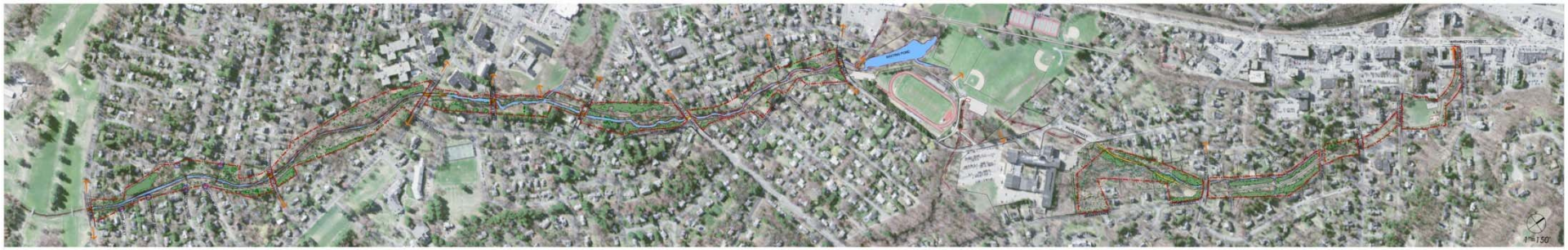
Path Options

Discussion of Path Options



Introduction

Segment 1: Dover Road to Grove Street	Segment 2: Grove Street to State Street	Segment 3: Hunnewell Fields	Segment 4: Paine Street to Maugus Avenue



Fuller Brook Segment | **Missing Link** Hunnewell Athletic Fields | **Caroline Brook Segment**

Dover Road · Cottage Street · Grove Street · Cameron Street · Brook Street · Wellesley Avenue · State Street · Paine Street · Forest Street · Caroline Street · Abbott Road · Seward Road · Maugus Avenue

Project Area

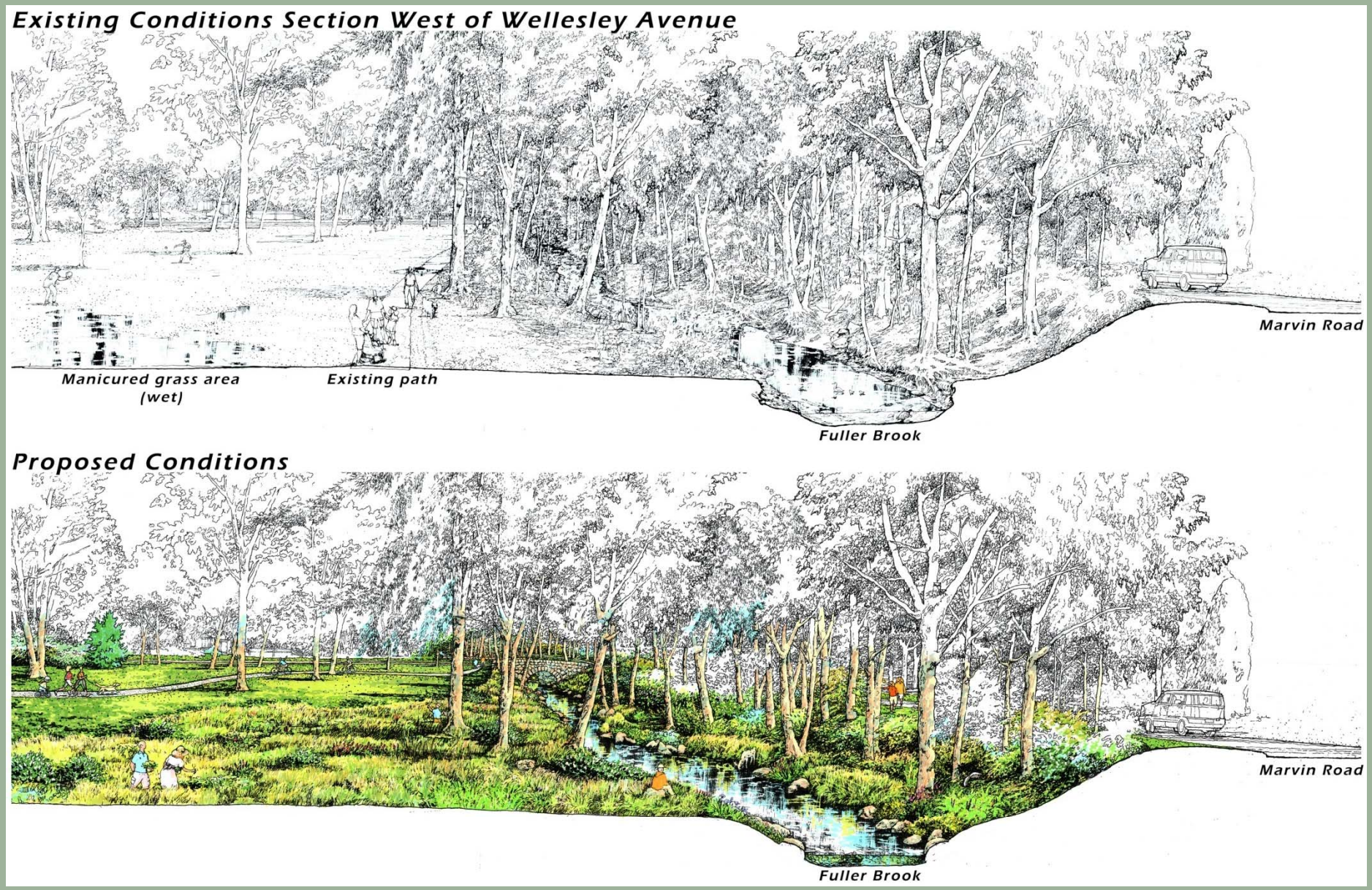
Project Goals

- The Fuller Brook Park Preservation Project will preserve and restore a vital natural, cultural, and recreational resource and significant open space that provides a vital ecological and floodplain function for the town of Wellesley.

Meeting Goals

- Present options that can be used to improve the condition and use of Fuller Brook Park
- Hear public input on these options

Project Goals – Integrated Approach, Naturalistic Character



Special Considerations

Natural Resources

- Wetlands Protection Act
- Wellesley Wetlands Protection Bylaw
- Wellesley Integrated Pest Management Policy

Cultural Resources

- Secretary of the Interior's Standards for the Treatment of Historic Properties
- Massachusetts Historical Commission review

Stormwater and Drainage

- DPW Stormwater Master Plan Update

  Concerns about flooding or existing infrastructure should be directed to the DPW at (781) 235 7600

Universal Access

- USFS Recreational Trail Accessibility Standards
- Americans with Disabilities Act (ADA)

Fuller Brook Park Preservation Project Design Criteria

USE

- Encourage passive recreation including universal access
- Connect the Fuller Brook and Caroline Brook paths
- Reduce health/safety risks and threats to park features
- Community input

LANDSCAPE CHARACTER

- Enhance naturalistic character
- Convey a single park resource

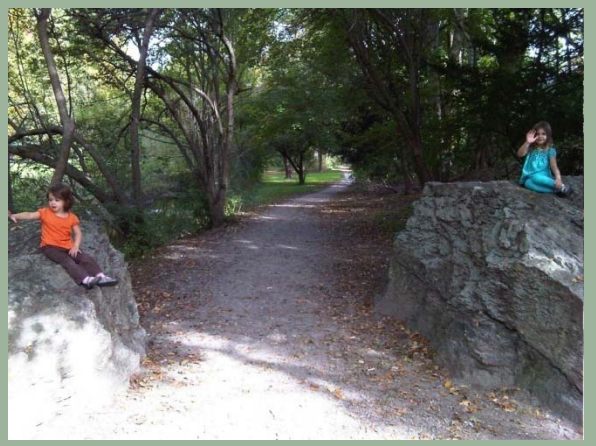
RESOURCE PRESERVATION

- Preserve cultural landscape and historic resources
- Preserve natural resources

FUNCTION

- Improve storm water capacity and drainage
- Design for sustainability and maintainability
- Provide for phased implementation
- Ensure cost benefit

The complete text of the design criteria and management goals are available on the Fuller Brook Park Website.



Feedback from Public Meeting #1

General Comments

- Contact with nature
- Health benefit
- Natural character
- Concern about flooding
- Concern about safety at road crossings
- Boundaries are unclear
- Need maintenance budget
- Vegetation obstructs views
- Shade trees need maintenance
- Invasive vegetation is choking the brook
- Is universal access required?
- Keep Dover Road to Grove Street segment soft surface path
- Bituminous paving is usable in all seasons
- Path should not be too wide
- Do not encourage high-speed use

Options

“Gentlest means possible to achieve the most sustainable solution”

Park-wide Options and Approaches:

Vegetation

- Invasive species
- Trees

Stream

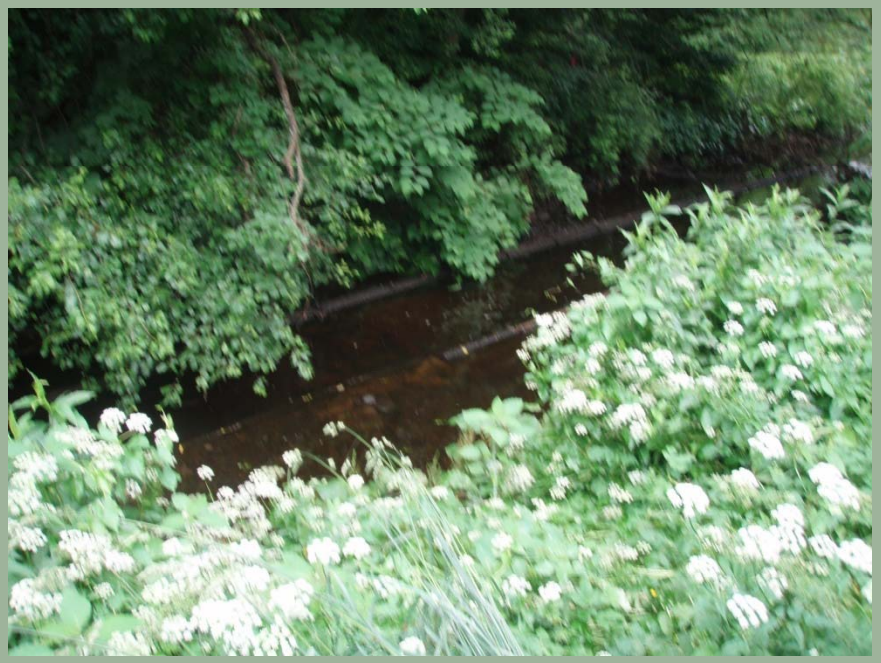
- Dredging and in-stream curbing
- Stream bank
- Structures: historic bridges and culverts

Park Boundary

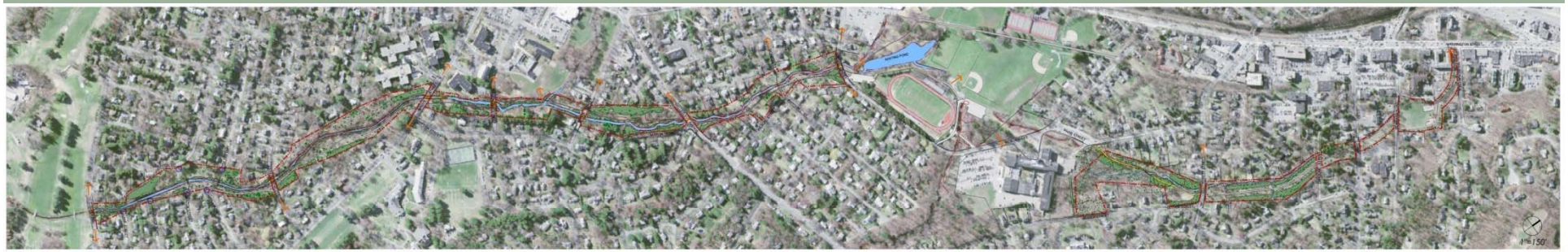
- Edge delineation

Segment-Specific Options for Path:

- Universal Access
- Width
- Surface Materials
- Alignment



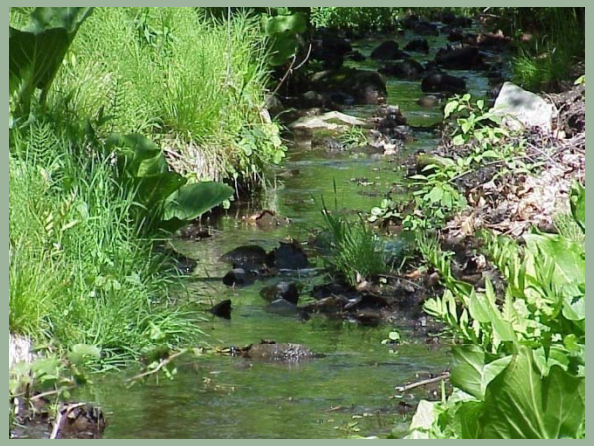
Ecological Systems



Fuller Brook Park is an Ecological System

Integrated Approach

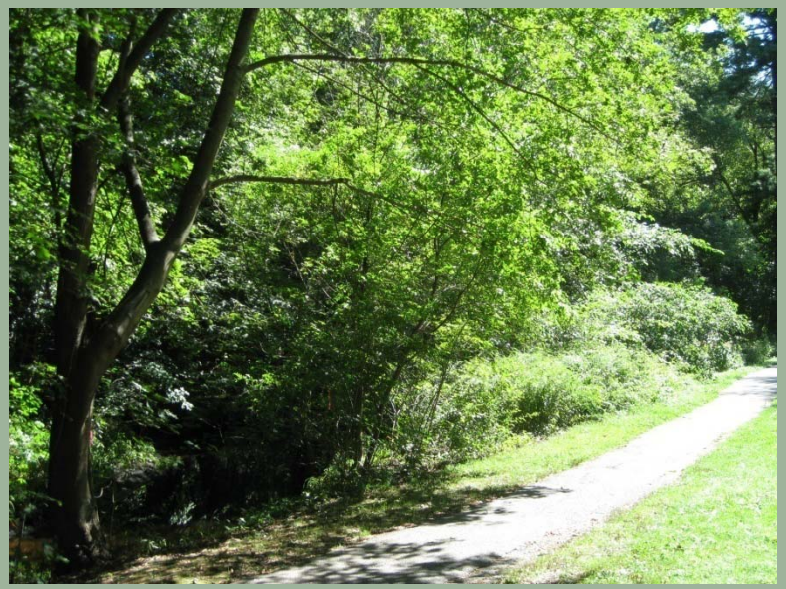
- Park-wide issues are inter-related
- Ecological approach to developing options
- Target solutions that satisfy/address multiple issues



Ecological Systems

Ecological Consequences of Invasive Species

- Invasive plants displace native species that provide food, shelter, and native settings for wildlife
- Invasive plants limit biodiversity
- Invasive plants/communities rapidly spread both locally and regionally
- Resulting landscape becomes devoid of character, healthy understory, and native wildlife



Vegetation – Invasive Species

Norway Maples, Bittersweet, Knotweed, and 10 other invasive species.

Goal:

- Preserve the integrity of the cultural landscape and historic resources
- Protect, preserve, and enhance natural resources including aquatic wetland and upland habitats
- Provide improvements that are sustainable and maintainable

Current Issues:

- Unmanaged invasive growth on streambank creates dense shade and root competition, eliminating herbaceous layer and leaving bare soil conditions prone to run-off and erosion
- Vines are growing into mature trees and girdling trunks and branches
- Outcompetes with native plants
- Reduces resources available for wildlife
- Obstructs views and sense of space within park corridor

Invasive Species Management Options

Three Levels of Priority:

“Must Do”

Includes areas where invasive plant growth is:

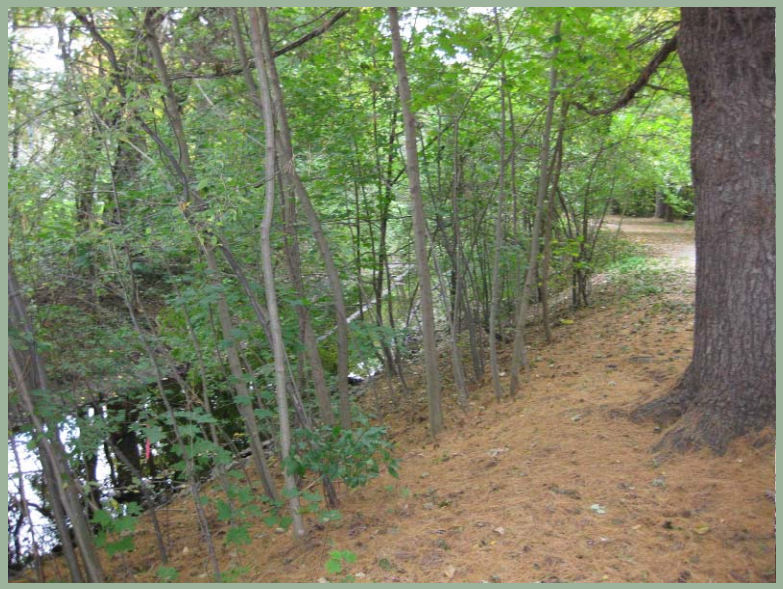
- Compromising the streambank
- Rapidly colonizing large areas to the exclusion of native understory growth along the water course

“Should Do”

- Outcompeting naturalized areas long the park’s perimeter to the exclusion of native understory growth
- Encroaching into open lawn areas

“Could Do”

- Encroaching on or eliminating important views



Vegetation: Wet Lawn Areas

Goal:

- Enhance floodplain capacity
- Maintain and enhance the scenic and naturalistic character of Fuller Brook Park
- Protect, preserve, and enhance natural resources including aquatic wetland and upland habitats
- Provide enhancements that support and improve the Town's maintenance effort

Current Issues:

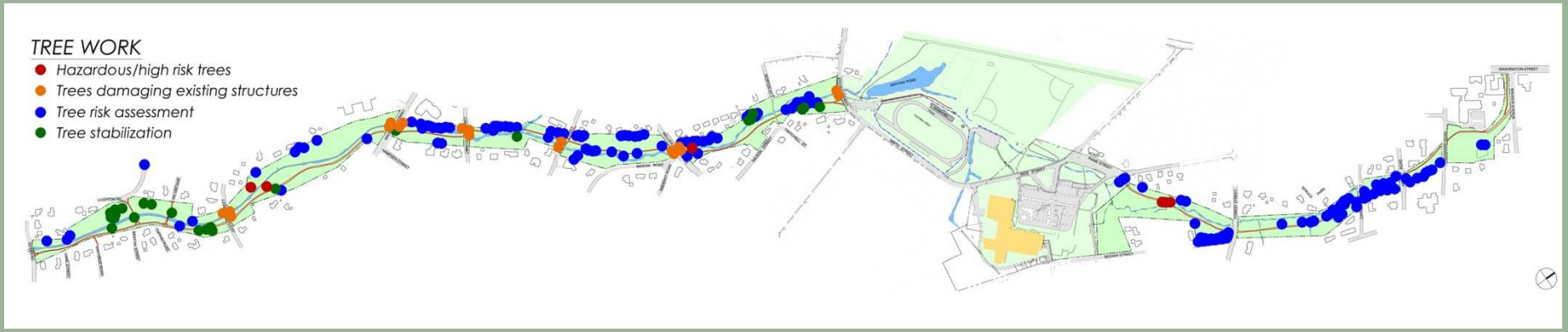
- Areas where topography and/or poor drainage result in an accumulation of water that is counter to the above goals

Approach:

- Wet lawn areas and seasonally flooded areas can be transformed into wet meadow habitats.

Fuller Brook Park west of Wellesley Avenue

Vegetation – Trees

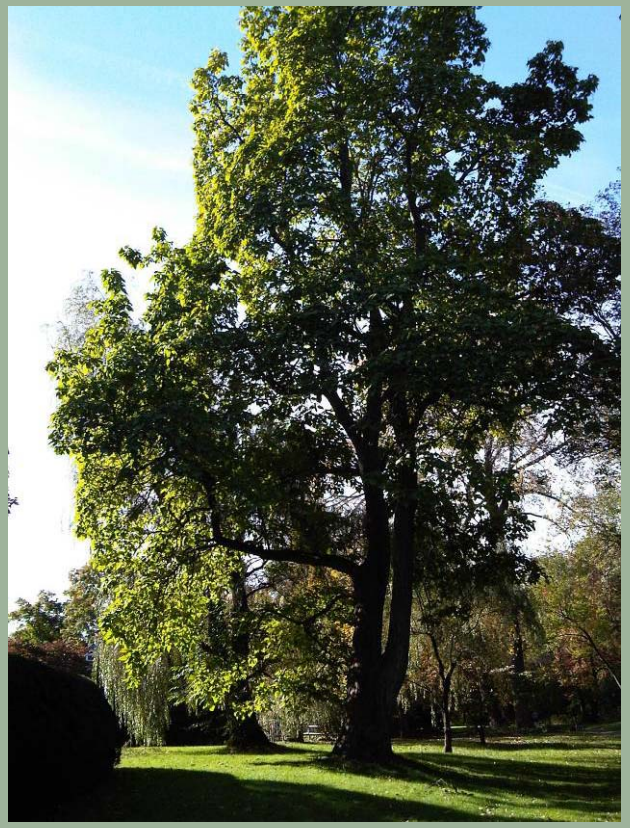


Goal:

- Manage tree-related risk for visitors, abutters, and important park features
- Maintain and perpetuate a healthy tree collection

Current Issues:

- High-risk trees
- Trees posing threats to resources
- Potential high-risk trees in perimeter areas
- Tree stabilization needs for significant specimens



Tree Management Options

Three Levels of Priority:

"Must Do"

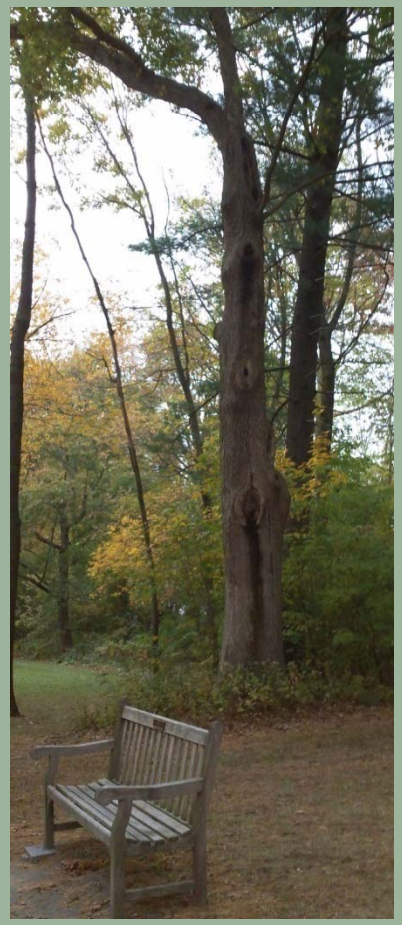
- High risk trees = defect + high value target + high level of occupancy
- Includes trees that are damaging important infrastructure – bridges, drainage, etc.
- Continue an active risk reduction program through monitoring, treatment, and documentation

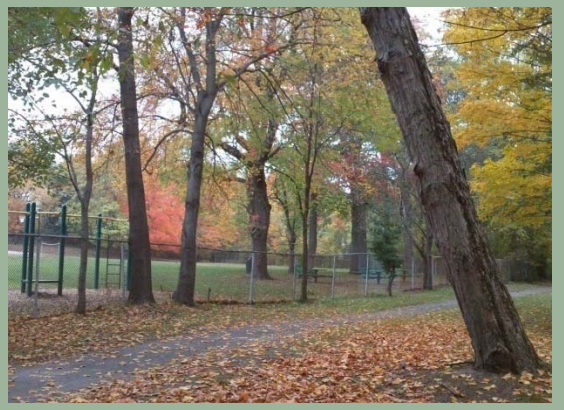
"Should Do"

- Medium risk trees = defects + high value target + medium level of occupancy
- Stabilization work on significant specimens within the main park corridor.
- Conduct an ongoing planting program to perpetuate and improve the quality of the overstory

"Could Do"

- Stabilization work on low risk trees in low use perimeter areas





Vegetation – Tree Management Analysis

SAMPLE Tree Management Analysis

Approach	Description	Unit cost	Maintenance Considerations	Applicable Segment
Removal of hazardous trees	Includes sizable trees with obvious, severe structural defects in close proximity to people or property.	6-12" DBH = $100. 12-24" = $500. 24-36" = $1,200. 36"+ = $1,400.	Ensure that tree removal activities don't impact desirable vegetation, features, or abutters properties.	1, 2, 3, 4
Removal of trees posing threats to resources	Includes trees growing in close proximity and pose threats to park's infrastructure.	6-12" DBH = $100. 12-24" = $500. 24-36" = $1,200. 36"+ = $1,400.	Ensure that tree removal activities don't impact desirable vegetation, features, or abutters properties.	1, 2, 3, 4
Stabilize trees with potential risk factors (pruning)	Sizable trees with minor defects or structural issues that can be addressed through pruning practices.	$2,000 – 2,600 per day cert.arborist, bucket truck, dump trk/chipper	Preventative care through pruning practices can reduce future costs.	1, 2, 3, 4
Stabilize trees with potential risk factors (cabling/bracing)	Sizable trees with structural defects that can be stabilized using cabling or bracing methods.	Cables $180/per Bolts $120/per	Bracing installations should be inspected every (5) years	1, 4
Crown raise, crown thin, or crown reduce trees	Trees with dense, low, or heavy branching, that through pruning practices can improve cultural conditions for desirable understory vegetation.	$2,000 – 2,600 per day – cert.arborist, bucket truck, dump truck/chipper	Routine pruning allows a layered planting concept to successfully establish by minimizing competition factors.	1, 2, 3, 4

This table is available on the Fuller Brook Park Website

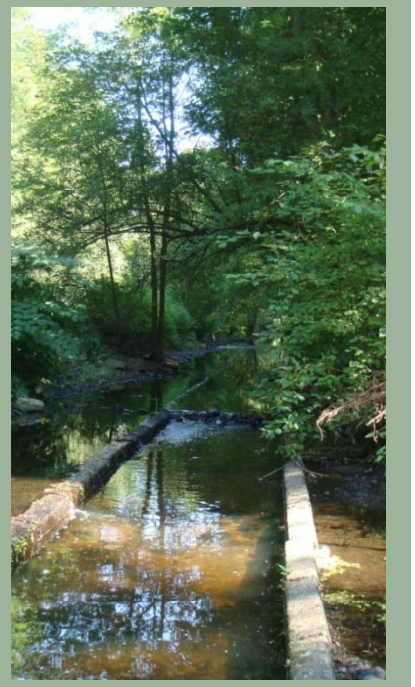
Stream: Curbs

Current Issues:

- Existing curbing is largely deteriorated and no longer serves intended purpose
- Concrete material detracts from natural park character and stream habitat
- In-channel curbing may be impeding flow

Approaches:

- Removal of all curbing through Fuller Brook
- Stabilization of banks and design of more natural channel structure



Stream: Sedimentation & Dredging

Current Issues:

- Significant amounts of sediment have accumulated in Caroline Brook and near some Fuller Brook outfalls
- Sediment accumulation can impede channel conveyance
- Accumulation detracts from development of natural stream habitat

Approaches:

- Dredging to remove significant accumulations
- Identification of potential upstream/upbasin sediment sources (i.e., sand application to private properties, bank erosion)

Stream: Bank Stabilization

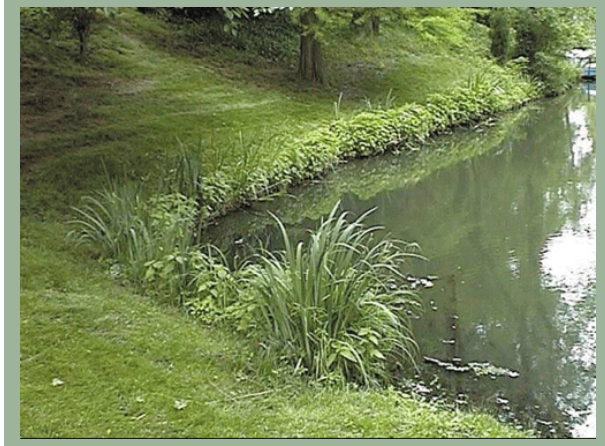
Current Issues:

- Banks are commonly undercut or eroding, commonly under large trees
- Lack of stabilizing vegetation
- Channel forced by existing curbing

Approaches:

- Combine techniques to restore stable bank structure and natural character
- Adjust channel shape to adequately pass flow without bank damage

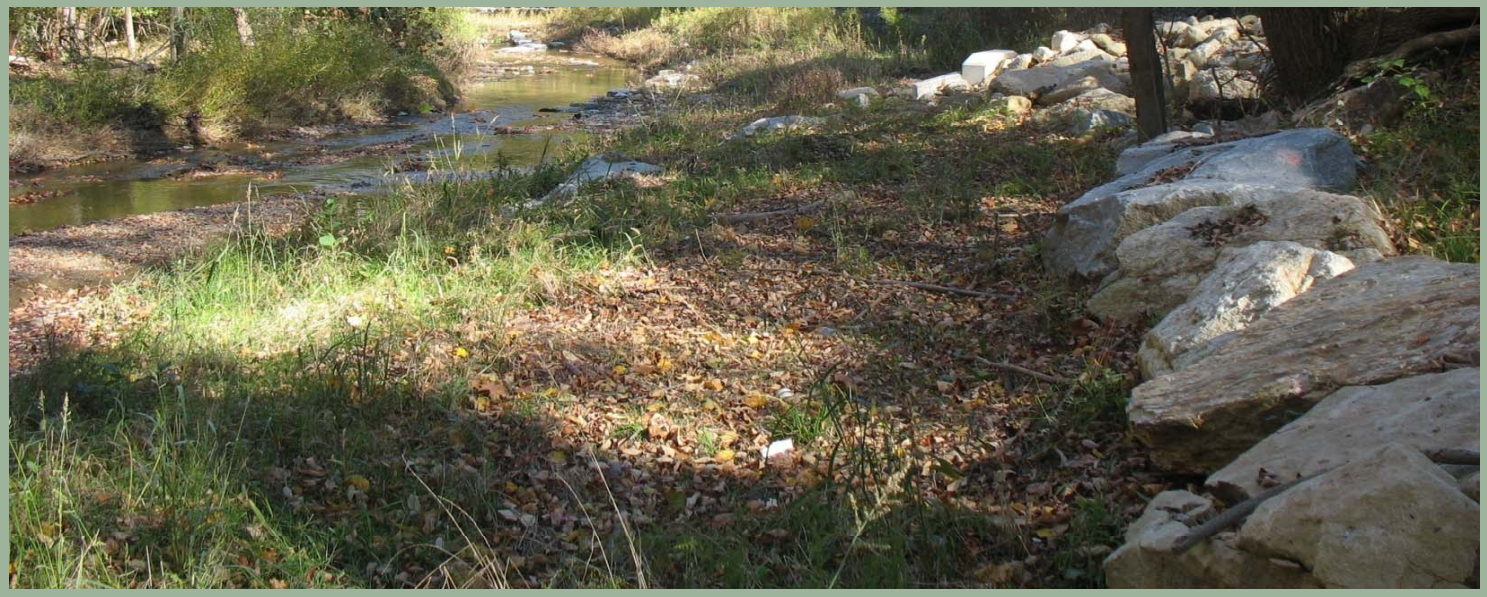
Stream: Bank Stabilization Approaches



Coir Logs for bank toe protection (© 2009 Price & Company, Coir Log Supplier)

Live Stakes and Fascines

Grading with Grass Vegetation and Cobble Rip Rap



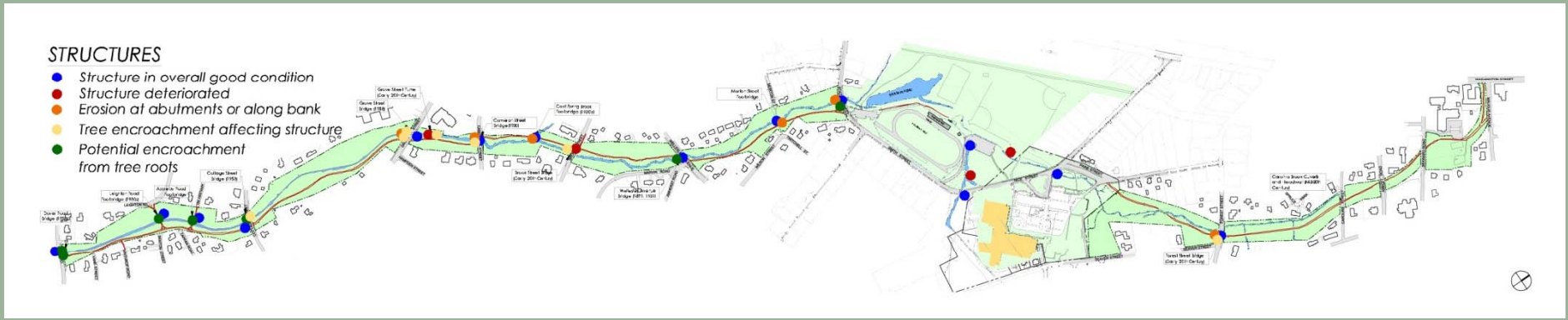
Vegetated In-stream Bench with Boulder Protection

Stream: Bank Stabilization Analysis

SAMPLE Bank Stabilization Analysis. The complete table is available on the Fuller Brook Park Website

Approach	Installation Cost (Unit)	Character/Aesthetic	Durability, Maintenance Requirements	Segment Applicability	Design Criteria
Riprap and Gabions	**$100-120/lf**	**Rigid, hard engineered**	**Highly durable; low maintenance**	**1, 2, 3**	Least natural; cost effective; highly durable; provides little riparian, bank, or stream habitat.
Live Stakes; Live Fascines; Brush Layers; Brush Mattresses	**$2-5/stake; $8-29/lf; $12-40/lf; $46/sq ft**	**Natural, soft engineered**	**Moderate durability; moderate maintenance**	**2, 3, 4**	Very natural; most applicable on gentler slopes; requires periodic maintenance; moderately durable; provides riparian and bank habitat.
Natural Fiber Bank Material	**$15/lf**	**Natural, soft engineered**	**Moderate durability; moderate maintenance**	**1, 2, 3, 4**	Very natural; most applicable at toe of bank; used in conjunction with other stabilization measures such as boulders or stakes; moderately durable; provides bank and stream habitat.
Root Wads and Natural Boulders	**$180-1600/wad; $200/lf**	**Woody, natural, soft engineered**	**Moderate durability; moderate maintenance**	**1, 2, 3, 4**	Very natural; high cost; most applicable at toe of bank and in areas of high erosion; moderately durable; provides bank and stream habitat.
Re-grading	**~$10/cy (excavation only)**	**Natural, soft engineered**	**Moderate durability; moderate maintenance**	**3, 4**	Natural; cost effective; most applicable on very gentle slopes not at risk of erosion; sustainability questionable; provides riparian habitat; would be used in conjunction with revegetation methods.
Dredging	**~$20/cy (excavation only)**	**Engineered**	**Moderate maintenance**	**4**	Can restore a more “natural” channel where there are significant deposits of sediment; functionality could be limited by structures
Full/Partial Curb Removal	**$10/lf**	**Natural**	**Moderate to high durability; low maintenance**	**1**	Most expensive short-term alternative; allows most natural design of stream bed and banks; removes need for potential removal in future
Stream Bed Restoration	**$50/lf**	**Natural**	**Moderate durability; moderate maintenance**	**1, 2, 3, 4**	Restores a “natural” channel after dredging or curb removal; adds habitat variability in other areas; increases oxygenation; decreases water temperature; includes variation of stream width and depth, placement of instream structures, such as boulders and logs

Stream: Structures

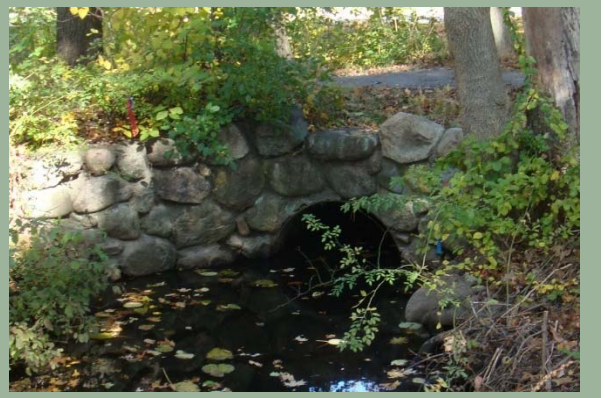


Current Issues:

- Path and road runoff has eroded soil around abutments
- Woody vegetation is encroaching upon abutments and wingwalls
- Some structural deterioration evident, but nothing that impedes flow

Approaches:

- Assess removal of threatening large woody vegetation
- Improve drainage and grading to prevent erosion around structures



Park Boundary

Current Issue:

- Park visitors cannot tell where the edge of the park so much of the park land remains unusable.

Approaches:

"Must do":

- Delineate park with park boundary markers

"Could do" (options/need are dependent on site-specific conditions):

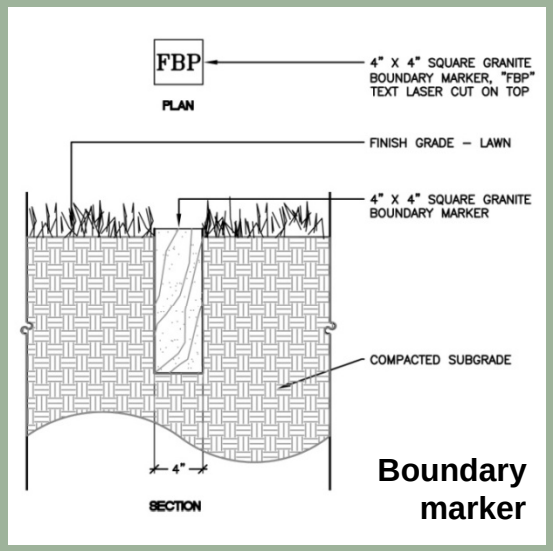
- Option #1: Buffer planting (native shrubs, perennials, ground cover with open views)

  Applicable segment: 1, 2, 3, 4

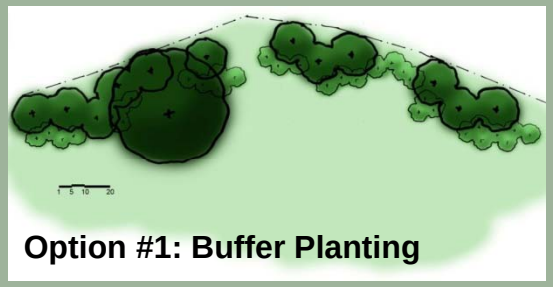
- Option #2: Split-rail fence (visually permeable)

  Applicable segment: 1, 2, 4

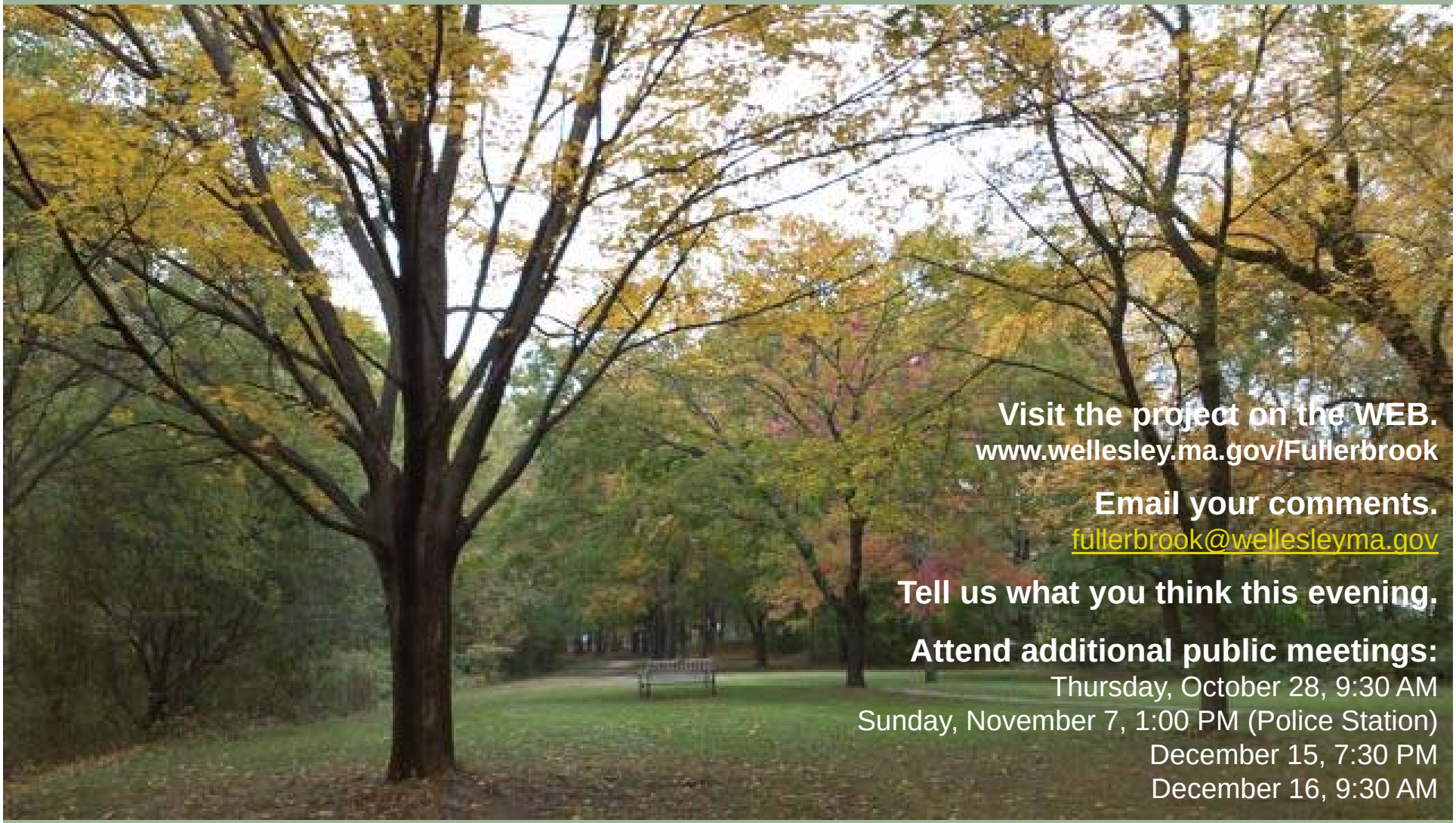
Current conditions



Boundary marker



Option #1: Buffer Planting

Option #2: Split Rail Fence

Feedback: Questions and Comments