Final Presentation

January 19, 2011

Fuller Brook Park Coordinating Committee
Wellesley Natural Resources Commission

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

Agenda

INTRODUCTION / BACKGROUND

PROCESS

EXISTING CONDITIONS

OPTIONS & ALTERNATIVES

RECOMMENDATIONS

PHASE 3

PHASE 4

Introduction / Background

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 Field

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.

Project Phasing

Phase 1:	Phase 2:	Phase 3:	Phase 4:
Preservation Master Plan	Preliminary Design	Final Design & Permitting	Implementation
Establish Guiding Principles	Develop Alternatives	Final Design	Phase Construction
General Project Approach	10% Design Recommendations	Contract Bid Documents	
		Wetands Permitting	
		Cultural Resource Compliance	

Includes:

- Park Master Plan for Segments 1, 2, 4
- Cultural Landscape Report
- NR Nomination

Did not include:

- Segment 3
- Engineering analysis of stream, erosion, sedimentation issues
- Topographic site survey

Includes:

- **Topographic survey**
- **Concept level evaluation of vegetation, stream issues**
- **Preliminary costs for entire project**
- **Wetlands delineation permit (ANRAD)**

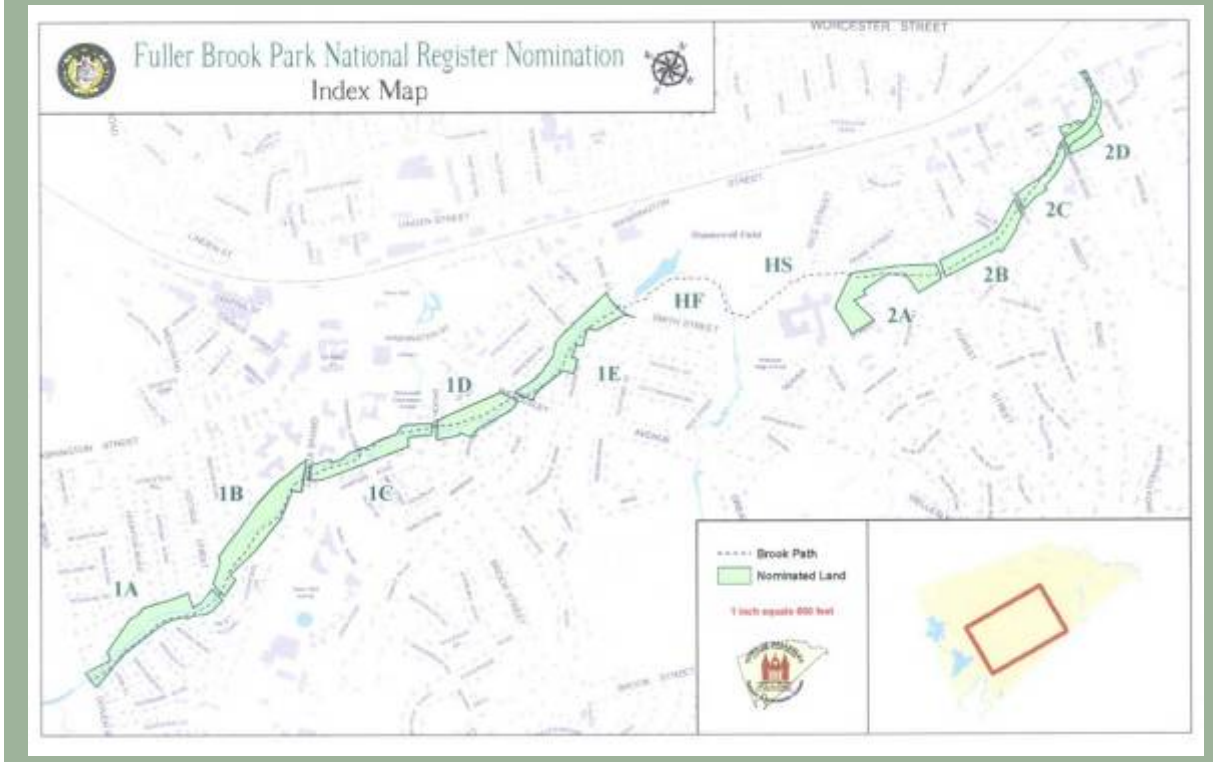
Includes:

- Additional design detail, value engineering
- Final design, additional studies, construction bid documents, final cost estimate
- MEPA ENF, Army Corps permit, 401 Water Quality, Chapter 91, Wellesley NOI
- MHC PNF
- Site Plan Review

Includes:

- Construction of designed recommendations for stream, path, vegetation, structures, furnishings

Park History & Significance



National Register of Historic Places (NR) Nomination

Official list of districts, sites, buildings and objects significant in American history at the local, state or national level.

- **NR Criteria**

  Criterion A: EVENT
  Criterion C: DESIGN

- **Period of significance**

  1899-1959

- **Areas of significance**

  Landscape architecture
  Community planning and development

- **Contributing resources**

  17 contributing structures

- **Architect/Builder**

  John Charles Olmsted
  Warren Manning
  Ernest Bowditch

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

Universal Access

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

Phase 2 Design Process

Sequence

- Work completed September – December 2010
- Collaboration with Fuller Brook Coordinating Committee, NRC, DPW, Town Project Manager
- Consultant design team includes expertise in landscape architecture, historic preservation, natural resources, engineering, vegetation management
- 9 Stakeholder interviews (Town departments, boards)
- 3 sets of public meetings (7 total) + final presentation
- Design criteria
- Options & alternatives
- Recommendations
- Final submittal January 2011

  - Executive Summary

  - Phase 2 Report

  - Phase 2 Preliminary Design Plans

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 Meetings

General Public Comments

- Relationship between path and brook is important
- Universal access standards applicability
- Questions about water quality, public education
- Interest in establishing Friends of Fuller Brook Park

Desired outcomes

- Soft-surface, permeable path with narrower width than indicated in the Master Plan
- Stable shoulder
- Restore historic bridges
- Meadows, other enhancements to the character of the vegetation
- Views of the brook
- Variety of character along the path
- Strategy for long term maintenance

Not desired

- Poison ivy
- Pavement
- Fences
- Changes to path alignment that move it to the other side of the brook.

Existing Conditions

Vegetation

- Significant collection of framework trees contribute significantly to landscape character; many in need of stabilization
- Very large areas of invasive species (Norway Maple, Japanese Knotweed, etc.) throughout the park; obscures views of the brooks in many places and contributes to bank erosion

Stream

- Concrete curbing dislodged and impeding flow, causing banks to be undermined
- Areas of erosion
- Large accumulation of sediment in Caroline Brook

Structures

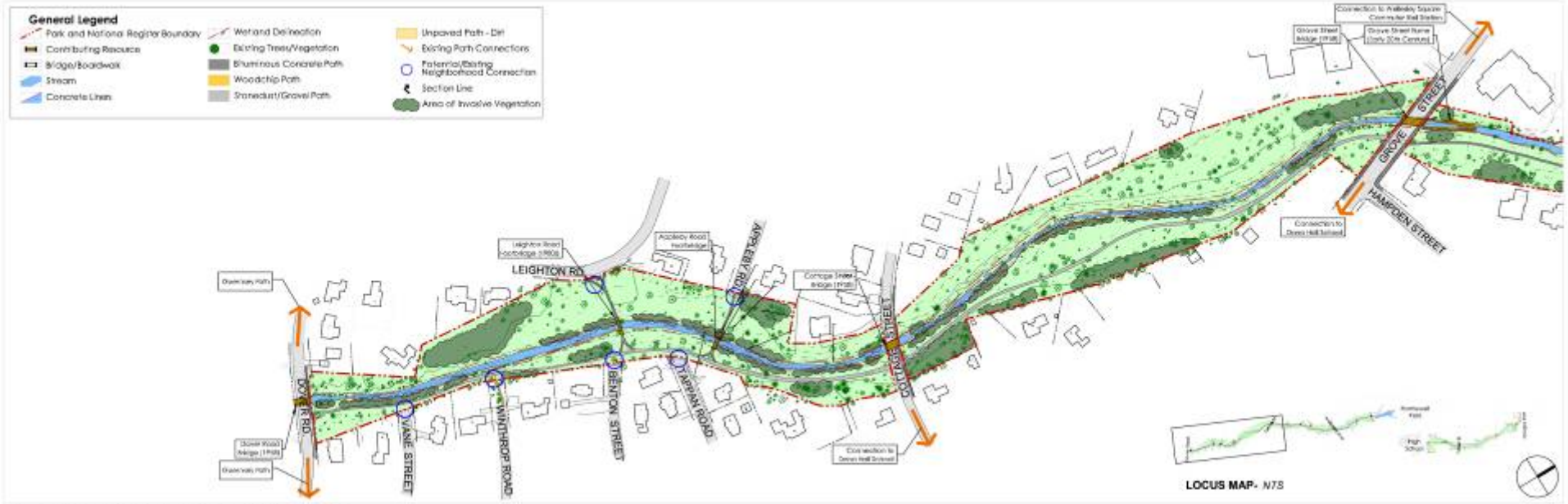
- Most in fair to good condition; evidence of bank erosion at abutments, vegetative threats

Path

- Very variable in width (12” to 12’) and surface (gravel, dirt, bituminous, wood chips, boardwalk)
- Most meets universal access for slope but not surface
- Compacted shoulders are common in high traffic areas
- Areas subject to seasonal inundation

Existing Conditions

Segment 1
Dover Road to Grove Street



Segment 1 - Dover Road to Grove Street

Landscape Character
Path
Stream
Vegetation
Structures

Existing Conditions

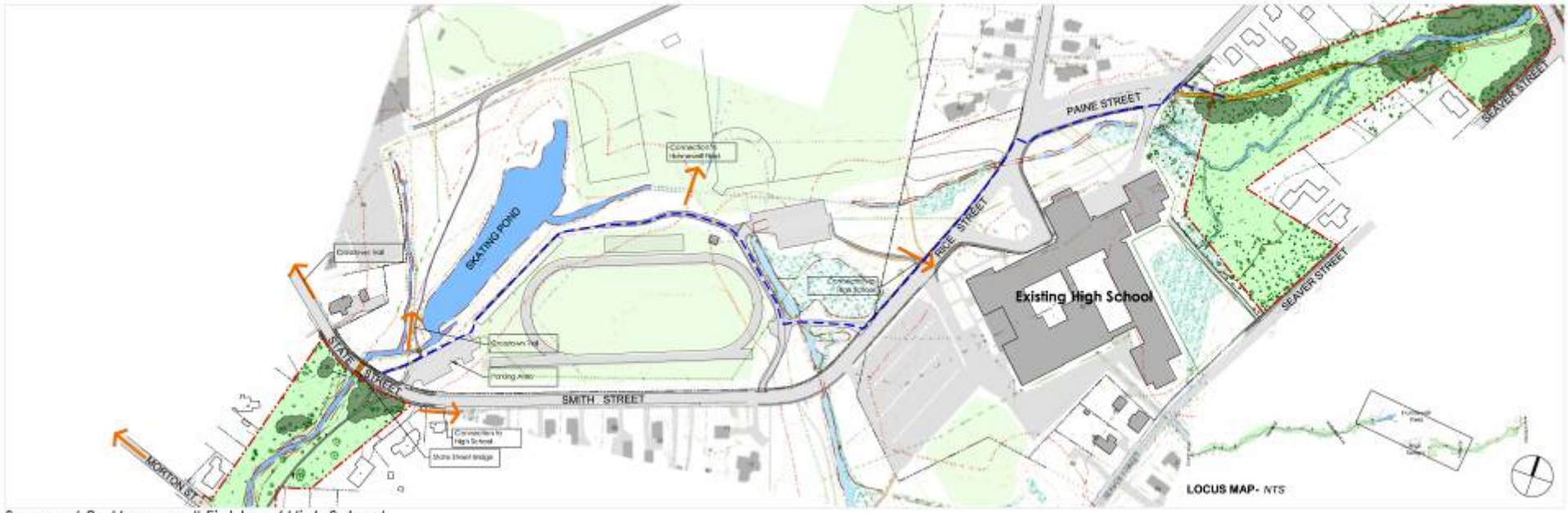
Segment 2
Grove Street to State Street

Segment 2 - Grove Street to State Street

Landscape Character
Path
Stream
Vegetation
Structures

Existing Conditions

Segment 3
Hunnewell Field area



Segment 3 - Hunnewell Field and High School

Landscape Character
Path
Stream
Vegetation
Structures

Existing Conditions

Segment 4
Paine Street to Maugus Avenue

Segment 4 - Paine Street to Maugus Avenue

Landscape Character
Path
Stream
Vegetation
Structures

Options & Alternatives

Options

- Different strategies/levels of effort to solve condition issues
- Most Option 3 items deferred due to cost
- Evaluated site-wide:
  - Vegetation
  - Stream
  - Structures
  - Park Boundary

Design Alternatives

- Addressed a variety of solutions for width, surface treatment, alignment, universal access
- 3 alternatives for the path in each segment
  - Segment 1
  - Segment 2
  - Segment 3
  - Segment 4

Wood chips

Stabilized soft surface

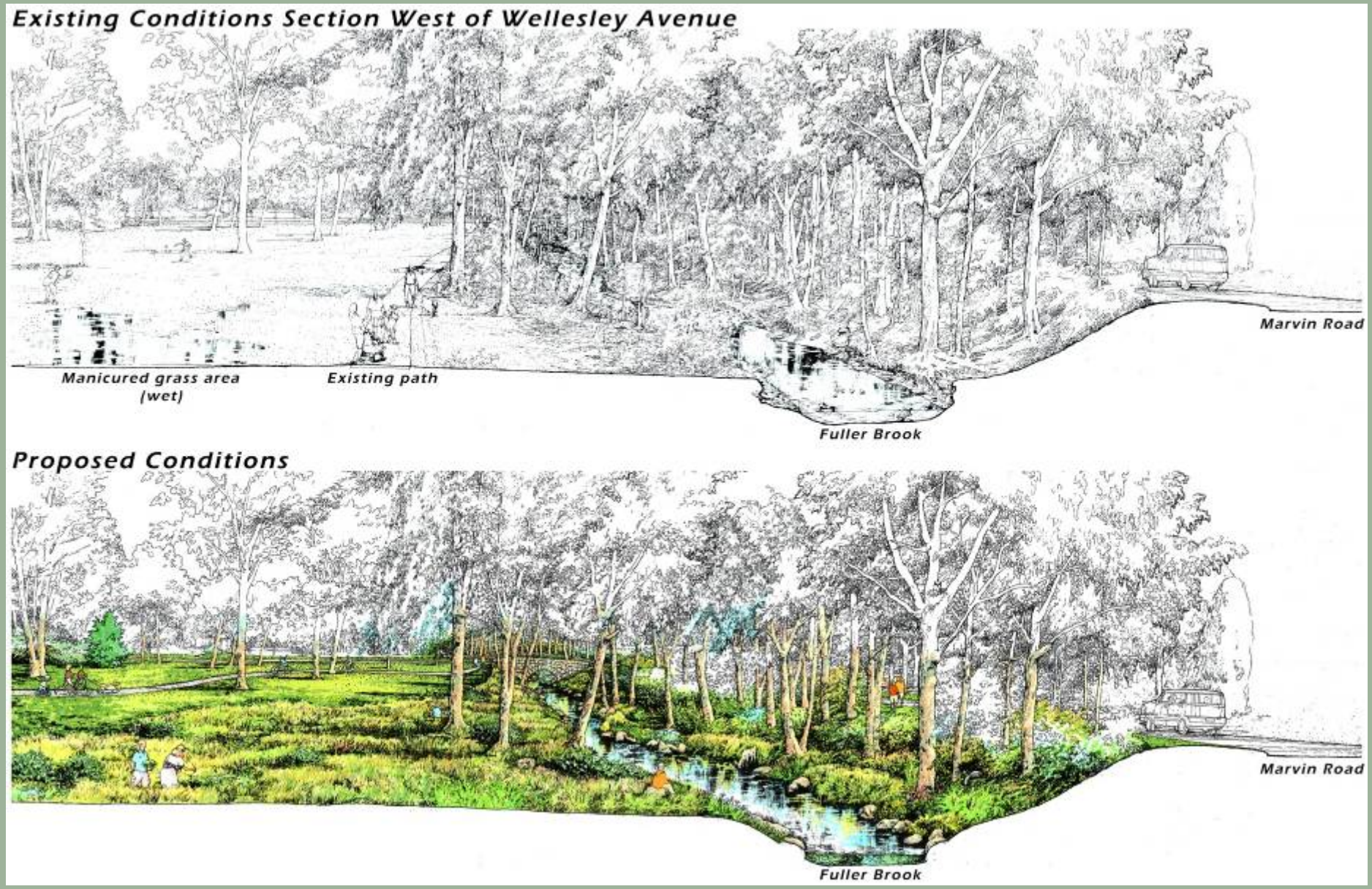
Bituminous concrete

Gravel, crushed stone

Compacted stone dust

Boardwalk

Recommendations: Integrated Approach, Naturalistic Character



Recommendations

Fuller Brook Park is an Ecological System

Integrated Approach

- Ecological approach to developing options and recommendations
- Park-wide issues are inter-related
- Naturalistic character is consistent with the historic design intent
- Target solutions that satisfy/address multiple issues
- Long-term maintenance will be needed to sustain improved conditions

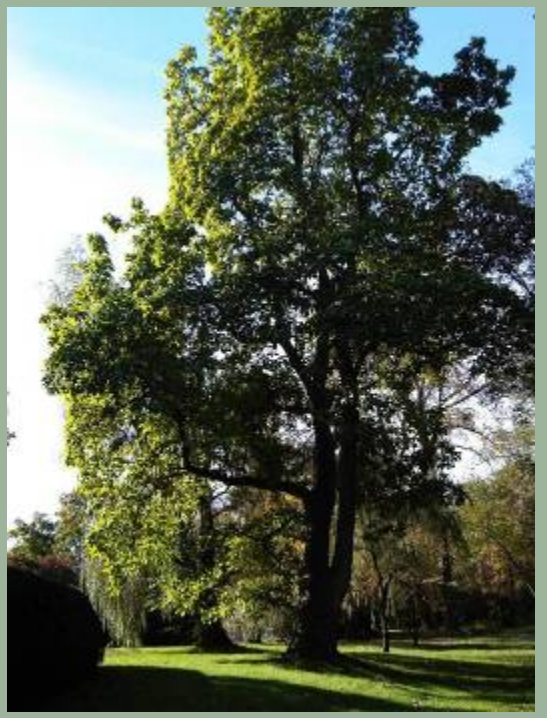
Vegetation Recommendations: Trees

Goals:

- Manage tree-related risk for visitors, abutters, and important park features
- Maintain and perpetuate a healthy tree collection integral to the character of Fuller Brook Park

Current Issues:

- High-risk trees
- Trees posing threats to resources (e.g. historic structures)
- Tree stabilization needs for significant specimens



Vegetation Recommendations: Trees

Recommended Tree Work

Priority 1

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

Priority 2

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

Recommended Tree Removal

Priority 1

- High risk trees = defect + high value target + high level of occupancy
- Includes trees that are damaging important infrastructure – bridges, drainage, etc.

Priority 2

- Medium risk trees = defects + high value target + medium level of occupancy

Vegetation Recommendations: Invasive Species Management

Norway Maple saplings, 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 (managed not total eradication)

Current Issues:

- Unmanaged invasive growth on stream bank 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

Vegetation Recommendations: Invasive Species Management

Invasive Species Recommendations: Mowing, cutting, selective treatment to reduce threat

Priority 1:

- Areas of invasive growth compromising the stream bank
- Areas where invasives are rapidly colonizing to the exclusion of native understory growth along the water course

Priority 2:

- Invasives outcompeting naturalized areas long the park's perimeter to the exclusion of native understory growth
- Areas where invasives are encroaching into open lawn areas

To be determined in Phase 3:

- Treatment of invasives encroaching on or eliminating important views

Vegetation Recommendations: Planting

Goal:

- Maintain and enhance the scenic and naturalistic character of Fuller Brook Park
- Protect, preserve, and enhance natural resources including aquatic wetland and upland habitats
- Enhance floodplain capacity
- Mitigate clearing of invasives, particularly along park boundary
- Provide enhancements that support Town maintenance efforts

Current Issues:

- Significant concentrations of invasive vegetation will be managed through mowing, cutting
- Areas where topography and/or poor drainage result in an accumulation of water
- Some existing vegetation results in barren understory, hastening erosion along streambank and bridges

Norway Maple saplings, Segment 4

Wet meadow planting

Vegetation Recommendations: Planting

Recommendations:

- Introduce buffer planting – trees, shrubs, herbaceous plans – where needed
- Introduce shrub planting in key areas, particularly bridge abutments
- Infill areas where selective Norway Maples and other invasive trees are removed, particularly along park boundary
- Re-vegetate the stream bank
- Establish wet meadows in seasonally flooded areas
- Repair lawn areas where needed
- Introduce meadows
- Use a palette of native & sustainable trees, shrubs and herbaceous plants
- Detailed planting, plant selection to be developed in Phase 3

Vegetation Recommendations: Infill Planting

BEFORE view showing eroded path and invasive Norway Maple saplings

AFTER view showing naturalistic infill planting using native species

Stream Recommendations

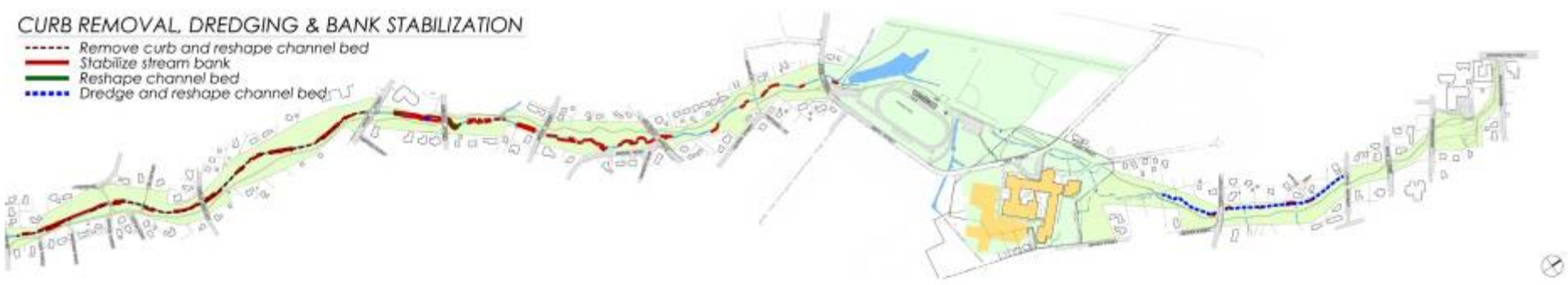
Goal:

- Enhance floodplain function of Fuller Brook and Caroline Brook
- Enhance the naturalistic character of the park
- Repair deteriorated conditions
- Improve the sustainability of the water course

Current Issues:

- Existing curbing in Segment 1 is largely deteriorated, no longer serves its intended purpose and may be impeding water flow
- Concrete material detracts from natural park character and stream habitat
- Areas throughout the park with significant bank erosion
- Significant sediment deposition in Caroline Brook, Segment 4

Stream Recommendations



Recommendations:

- Remove all concrete curbing from Segment 1, re-shape channel bed
- Stabilize stream banks with a combination of naturalistic boulder toe and fiber coir toe
- Re-vegetate banks with live stakes and/or naturalistic plantings
- Dredge sections of Fuller Brook and all daylighted areas of Caroline Brook, re-shape channel bed

Follow-up Work Needed:

- Studies to assess water flow, inundation, velocity, etc.
- Determine source of sedimentation in Segment 4

Example: Live Stakes

Example: Coir Logs

Example: Constructed bench for enhanced floodplain with natural boulder toe

Stream Recommendations: Bank Stabilization

BEFORE view showing deteriorated curb, undermined bank

AFTER view showing removal of curb, naturalized stream channel, combination of boulder and coir log toe, bank stabilization using live stakes + planting

Structures Recommendations

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

Recommendations:

- Repair historic structures (Cameron Street Bridge, Brook Street Bridge, Wellesley Avenue Bridge, State Street Bridge, Forest Street Bridge)
- Remove vegetative threats
- Stabilize stream bank to prevent erosion around structures
- Grove Street Flume to remain

Historic bridge with vegetative threats

Grove Street Flume

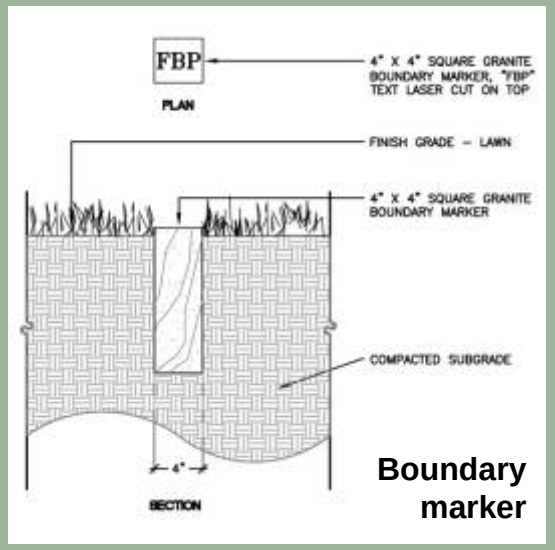
Park Boundary Recommendations

Current Issue:

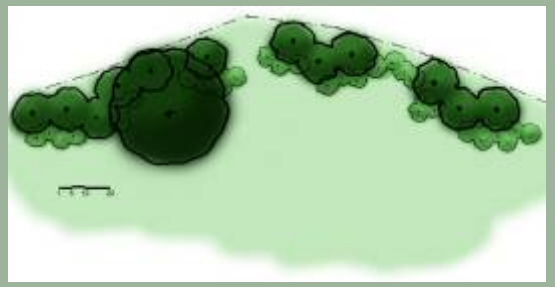
- Boundary is irregular, unmarked
- Path is close to park boundary
- Ambiguity about the boundary has resulted some inadvertent encroachment and means that park visitors cannot tell where the edge of the park is, so that much of the park land is unused.

Recommendations:

- Delineate park with park boundary markers
- Use informal, naturalistic planting where suitable to further delineate park boundary



Boundary marker



Path Recommendations

Considerations

- Connections
- Width
- Surface Material
- Alignment

Path Recommendations: Potential Connections

Strengthen connections to adjacent or nearby open space and destinations:

Guernsey Path

Dana Hall School

Wellesley Square/ Commuter Rail

Hunnewell School

Library

Town Hall

Simons Park

Washington Street

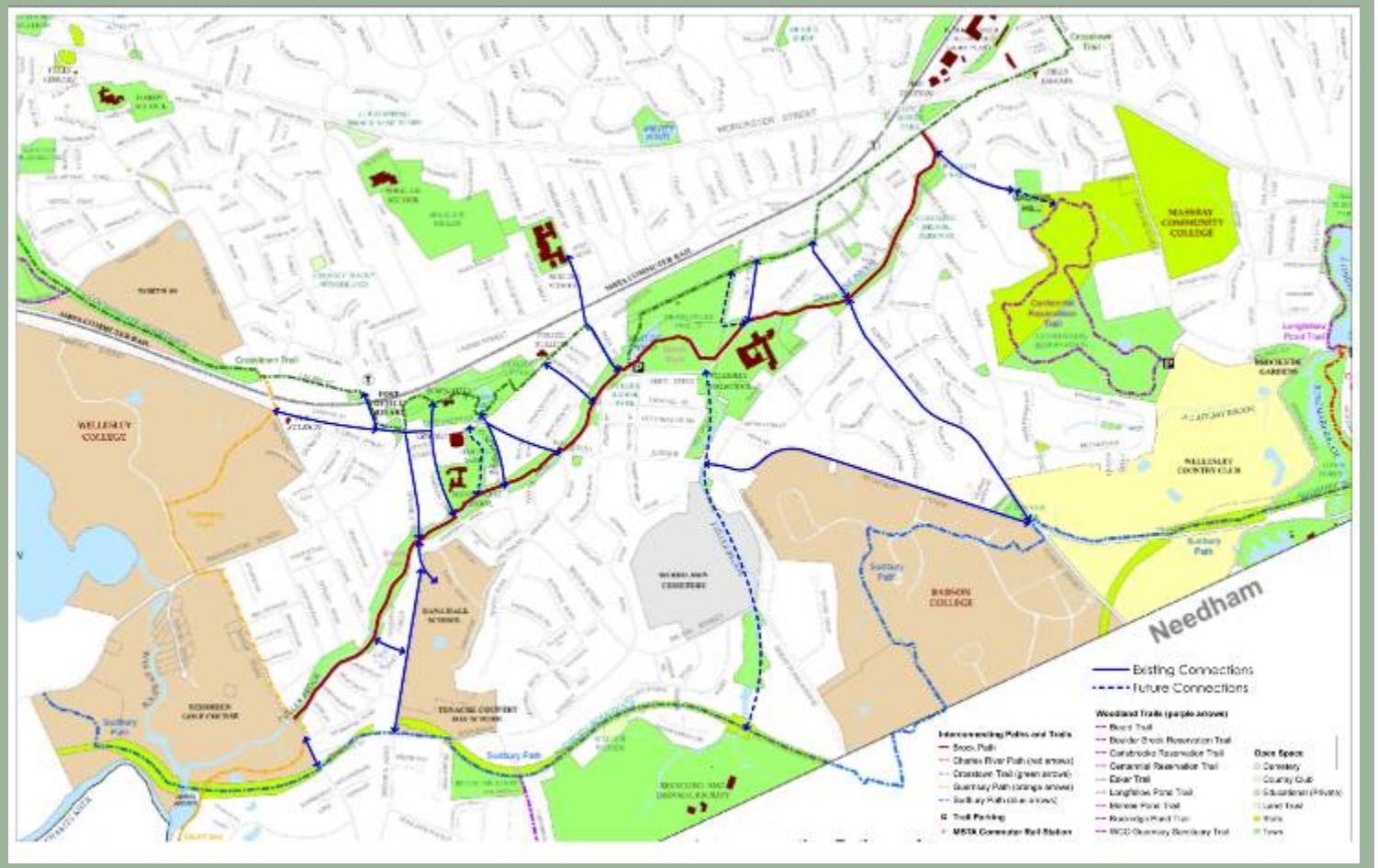
High School

Seaver Street

Crosstown Path

Hunnewell Field

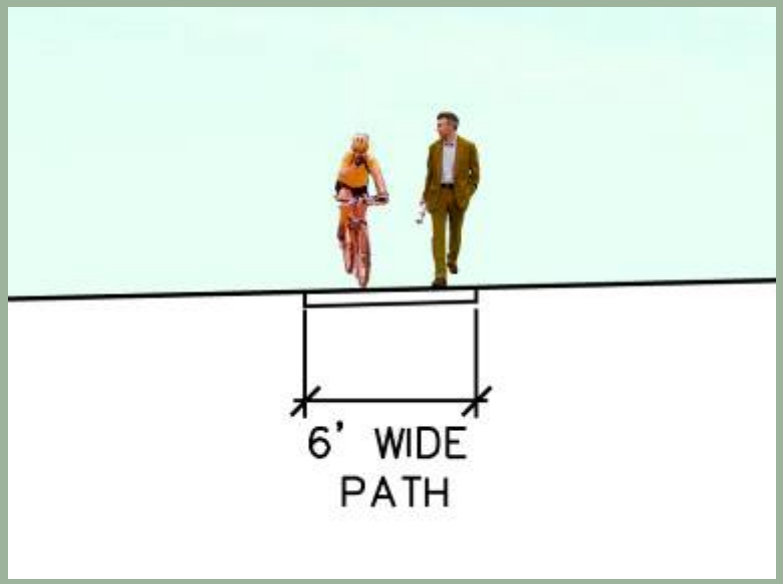
Centennial Reservation



Path Recommendations

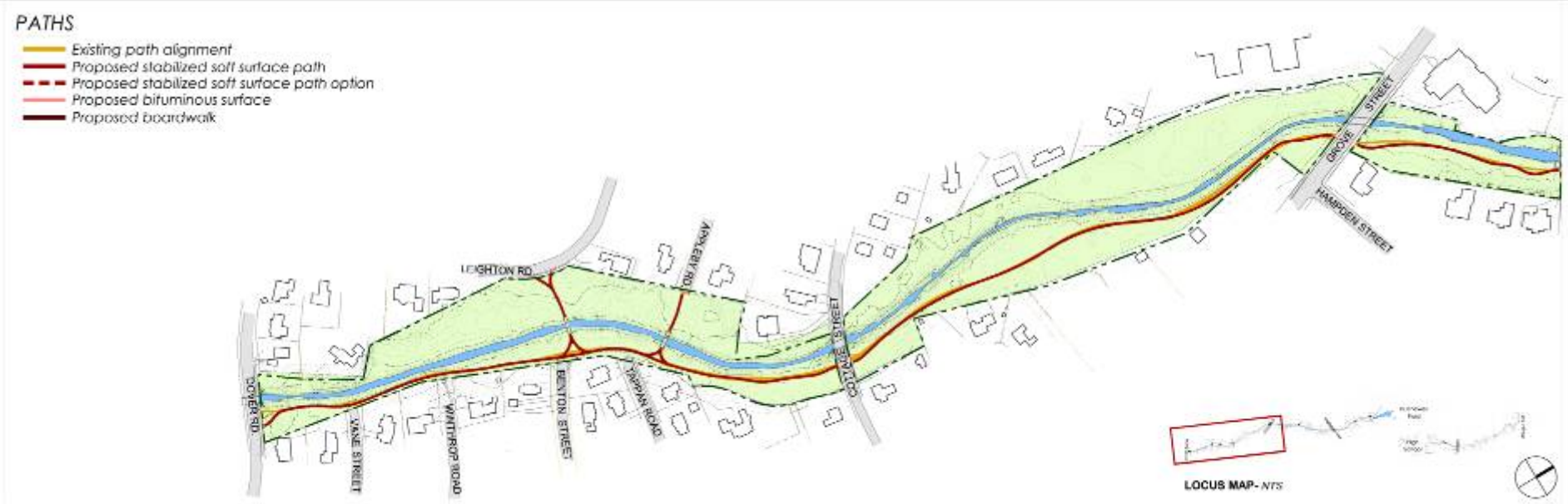
Overall Design

- Retain the general alignment and character of the path
- Narrower path width (6')
- Minor alignment and grade adjustments to achieve 5% maximum slope
- Permeable stabilized soft surface throughout, except in areas subject to continued flooding that may require bituminous concrete or other treatment
- Bituminous concrete aprons at street connections
- Structural soil + grass along shoulders
- Re-located path only in areas where flooding and site conditions precludes a viable alternative
- Recommend installing a demonstration section in spring 2011



Example: Stabilized stone dust path, Charles River Reservation

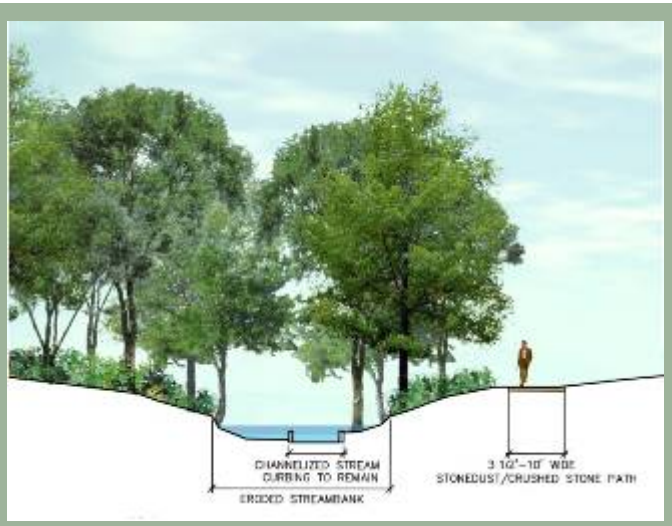
Path Recommendations: Segment 1



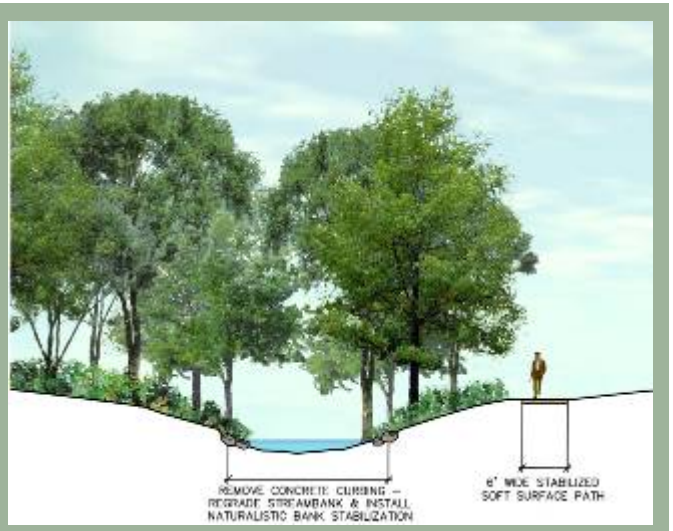
Segment 1 - Dover Road to Grove Street

Recommendations:

- 6' wide stabilized soft surface path with grass shoulders
- Small alignment and grade adjustments to achieve 5% slope

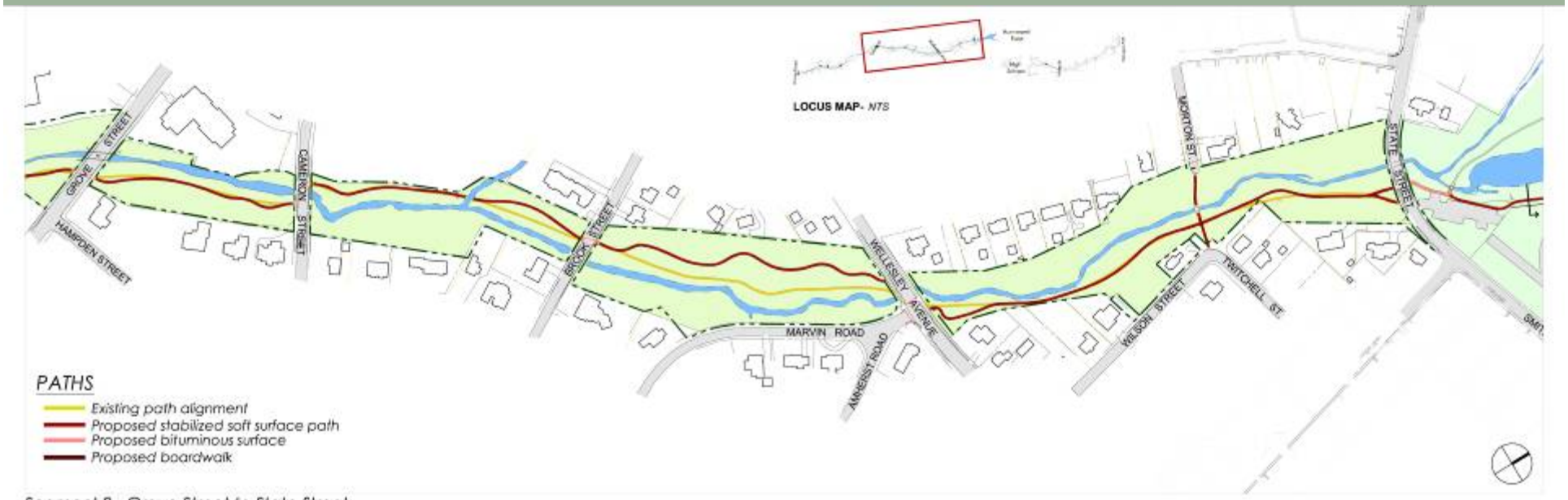


Existing



Proposed

Path Recommendations: Segment 2



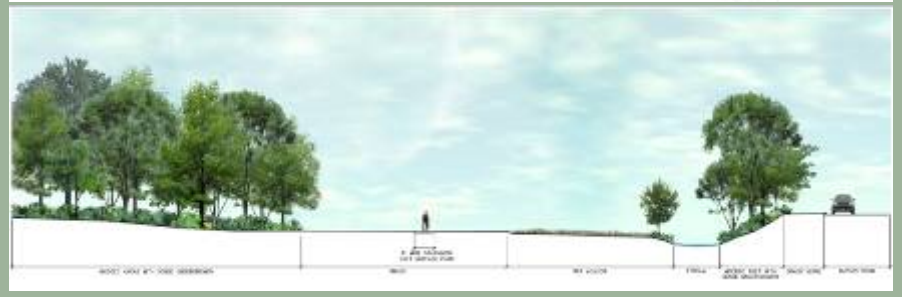
Segment 2 - Grove Street to State Street

Recommendations:

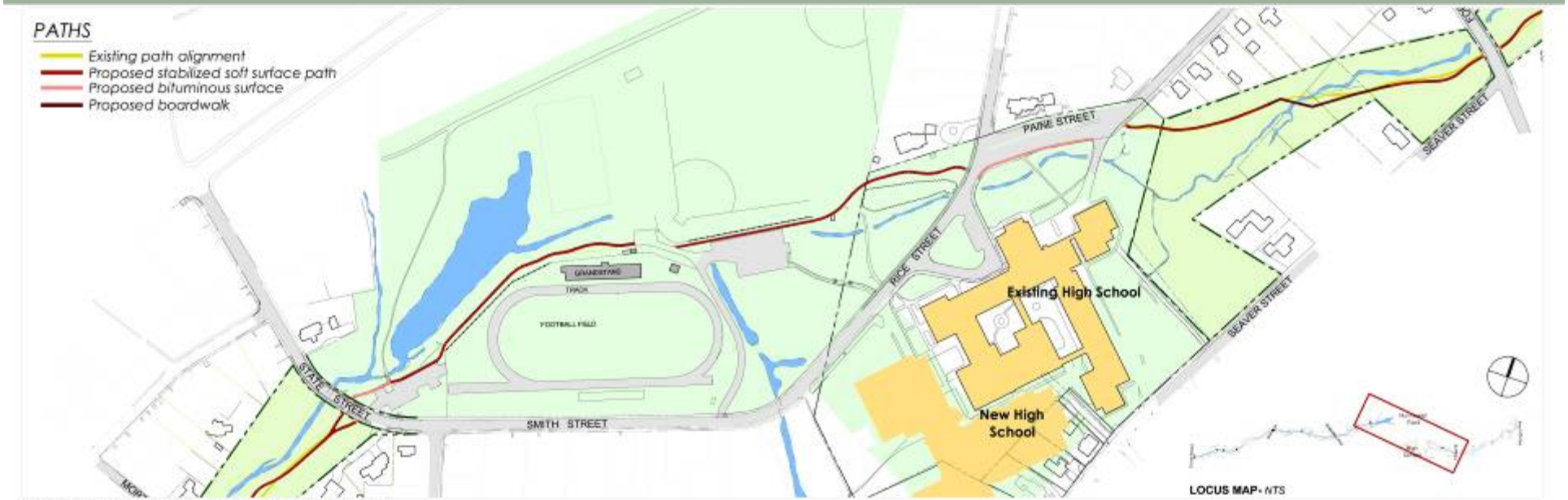
- 6’ wide stabilized soft surface path with grass shoulders
- Grass shoulders with structural soil
- Small alignment and grade adjustments to achieve 5% slope
- Re-alignment southwest of Wellesley Avenue and Brook Street due to seasonal flooding

Existing

Proposed



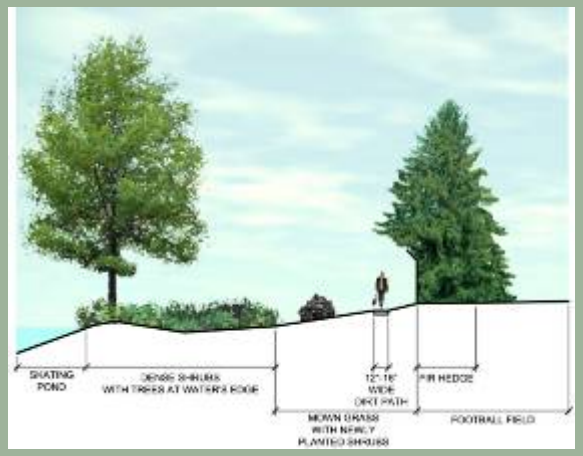
Path Recommendations: Segment 3



Segment 3 - Hunnewell Field and High School

Recommendations:

- 6’ stabilized soft surface path through field area
- Remove small section of bituminous at State Street parking lot
- Re-locate fence inside fir hedge; replace with new fence screen; new planting to replace fir hedge
- Recommend consolidating gravel paving for field service access, relocating storage sheds
- Connect to sidewalk along Paine Street at existing crosswalk



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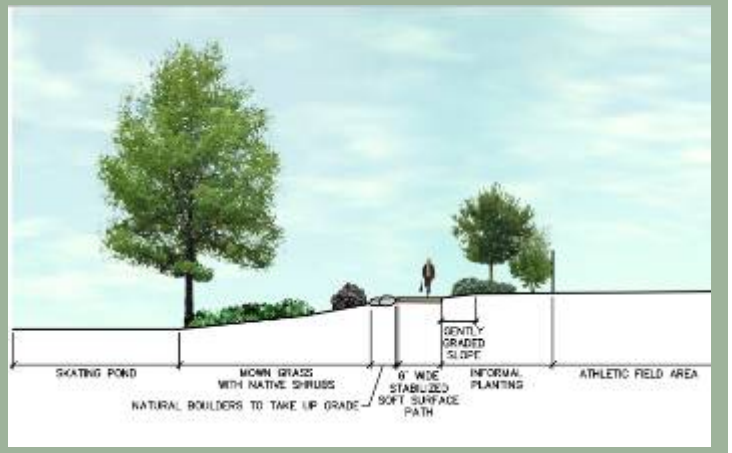


Proposed

Path Recommendations: Segment 4

Segment 4 - Paine Street to Maugus Avenue

Recommendations:

- 6’ wide stabilized soft surface path
- Grass shoulder with structural soil where appropriate
- New 6’ wide boardwalk to replace existing bridge over Caroline Brook
- Small alignment and grading changes to achieve 5% grade
- Path pulled away from property line between Abbott Road and Seaward Road
- Additional evaluation needed regarding flooding between Paine Street and boardwalk

Existing

Proposed

Maintenance Considerations

Issues:

- All public landscapes require maintenance
- Immediate threats should be a priority (hazardous trees, invasives along stream)
- Some of the necessary work is the result of deferred maintenance (e.g. invasive species)
- Stabilized soft-surface path is plowable with rubber baffle, raised blade; requires some annual care

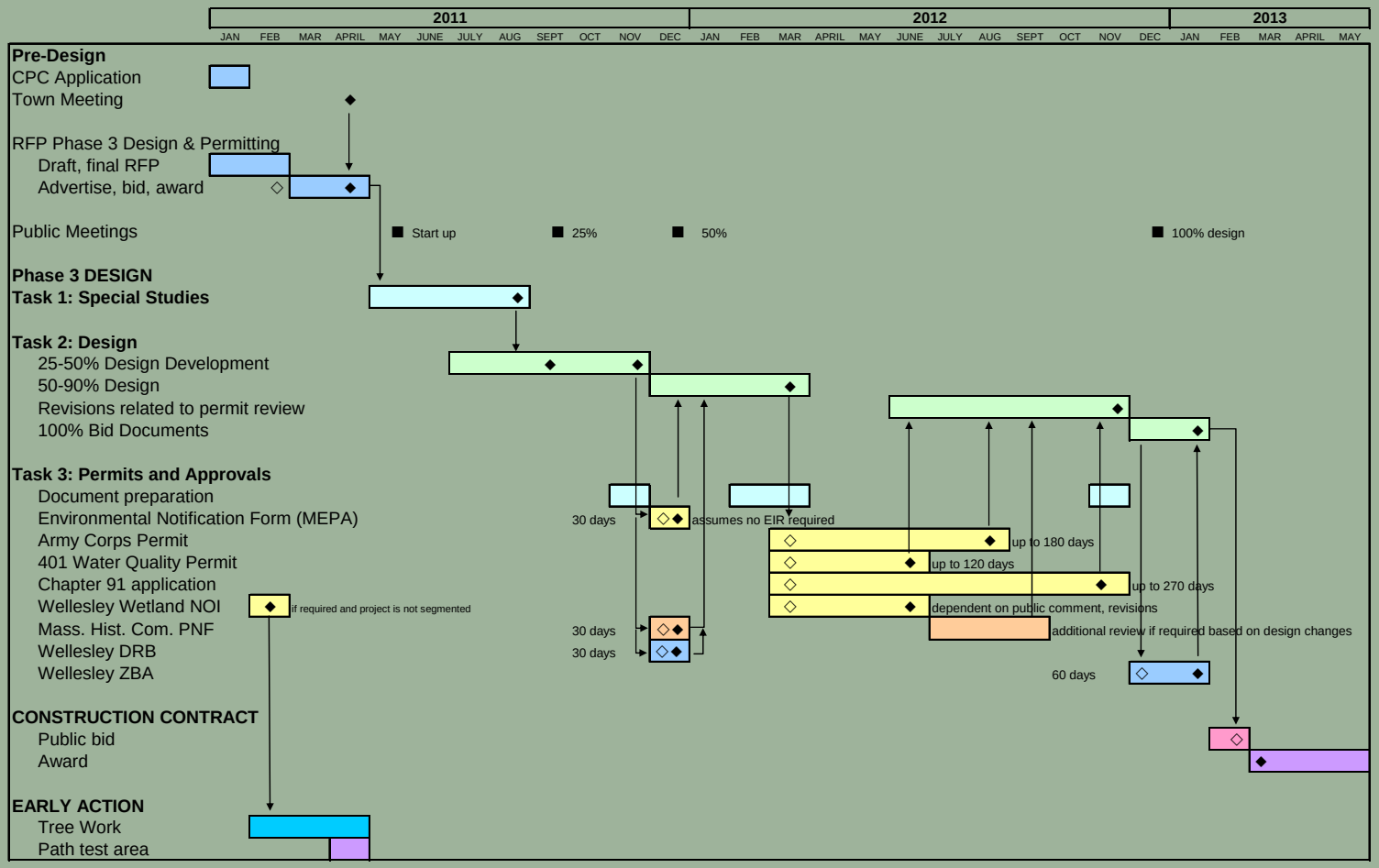
Recommendations:

- Develop management/maintenance plan, with yearly workplan that is approved by NRC and DPW including applicable wetland permits
- Acquire any specialized equipment
- Develop a bi-yearly program to address invasives that is species and site-specific
- Fund a tree replacement program with clear guidelines
- Establish a Friends of Fuller Brook Park and organize volunteer days

Next Steps: Phase 3

Fuller Brook Park Preservation Project

Phase 3: Final Design and Permitting Flow Chart



KEY

- Town planning and approvals
- Consultant studies/document preparation
- Consultant design
- Wetland permits
- MHC review
- Construction bid
- Construction contract
- Physical work - DPW

Note: This is an ambitious schedule, assuming that the project does not exceed MEPA thresholds and that an EIR is not required. Additional public process will alter schedule.

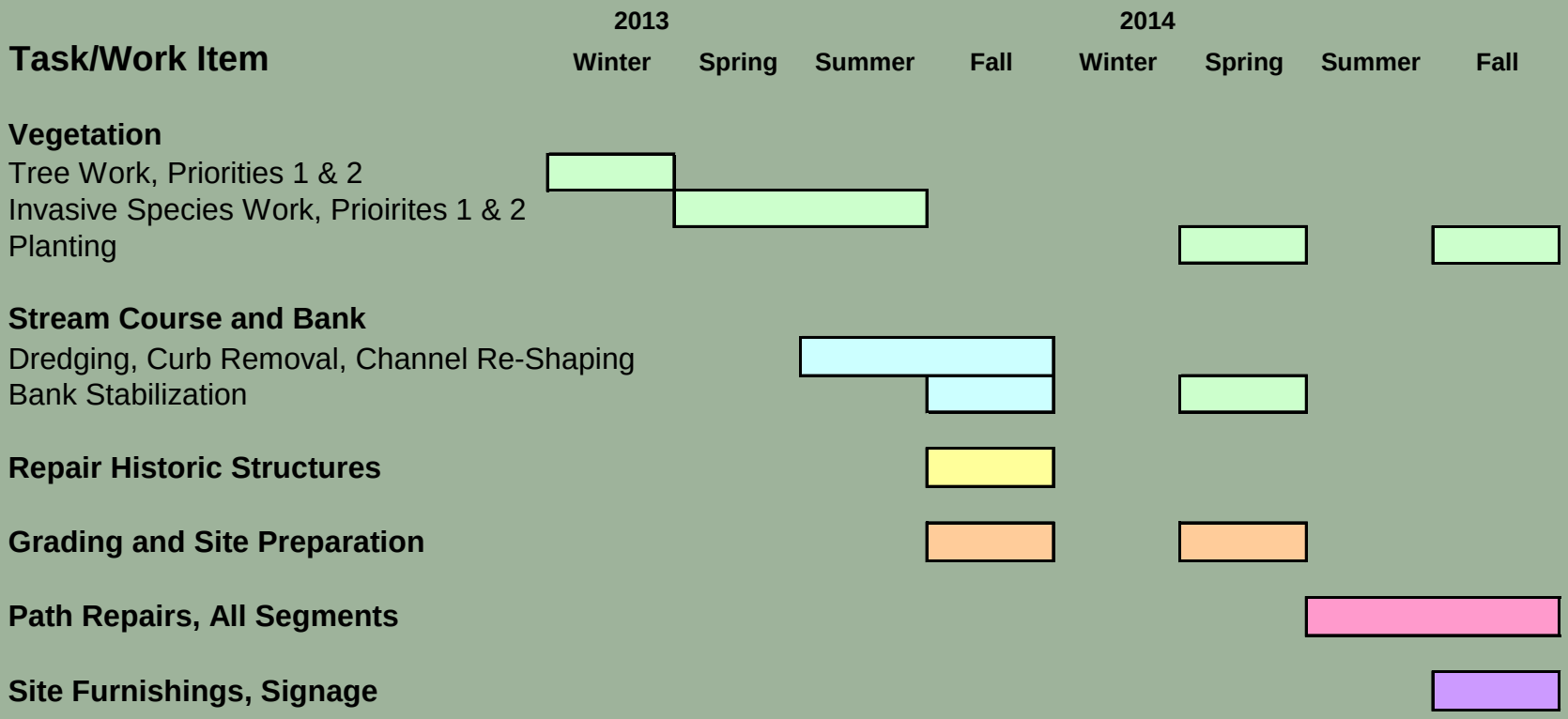
- ◇ Initiation of action
- ◆ Completion of action or deliverable
- ■ Public meeting

Next Steps: Phase 3

PHASE 3 Design and Permitting, Projected Costs		
MEPA ENF	12,000	Excludes EIR; if an EIR is required, it will be scoped by MEPA
DEP Chapter 91	13,000	
Army Corps of Engineers	10,500	
401 Water Quality	9,000	
Mass. Historical Commission PNF	15,000	Required if state funding/permits are needed
Wellesley WPC NOI	15,000	
Wellesley DRB	2,000	
Wellesley ZBA	5,000	
Sub-total	**$ 81,500**	All costs exclude design changes necessitated by review process
Additional Studies		
Hydraulic Analysis	50,000	
Soil/Sediment Survey	50,000	Includes entire brook (segments 1, 2, 4)
Sediment Investigation	10,000	Segment 4 source
TOTAL	**$ 110,000**	
DESIGN FEE		
Alt. A	**443,535**	Based on 8% of projected construction cost
Alt. B	**471,684**	($150,000 engineering, $50,000 tree/invasive species plans & specs, 8% landscape architecture, 9 meetings)
Subtotal	**635,035**	Permits, studies, design fee Alternative A
10% contingency	63,504	
Project Manager	70,000	
TOTAL	**768,539**	

Fuller Brook Park Preservation Project

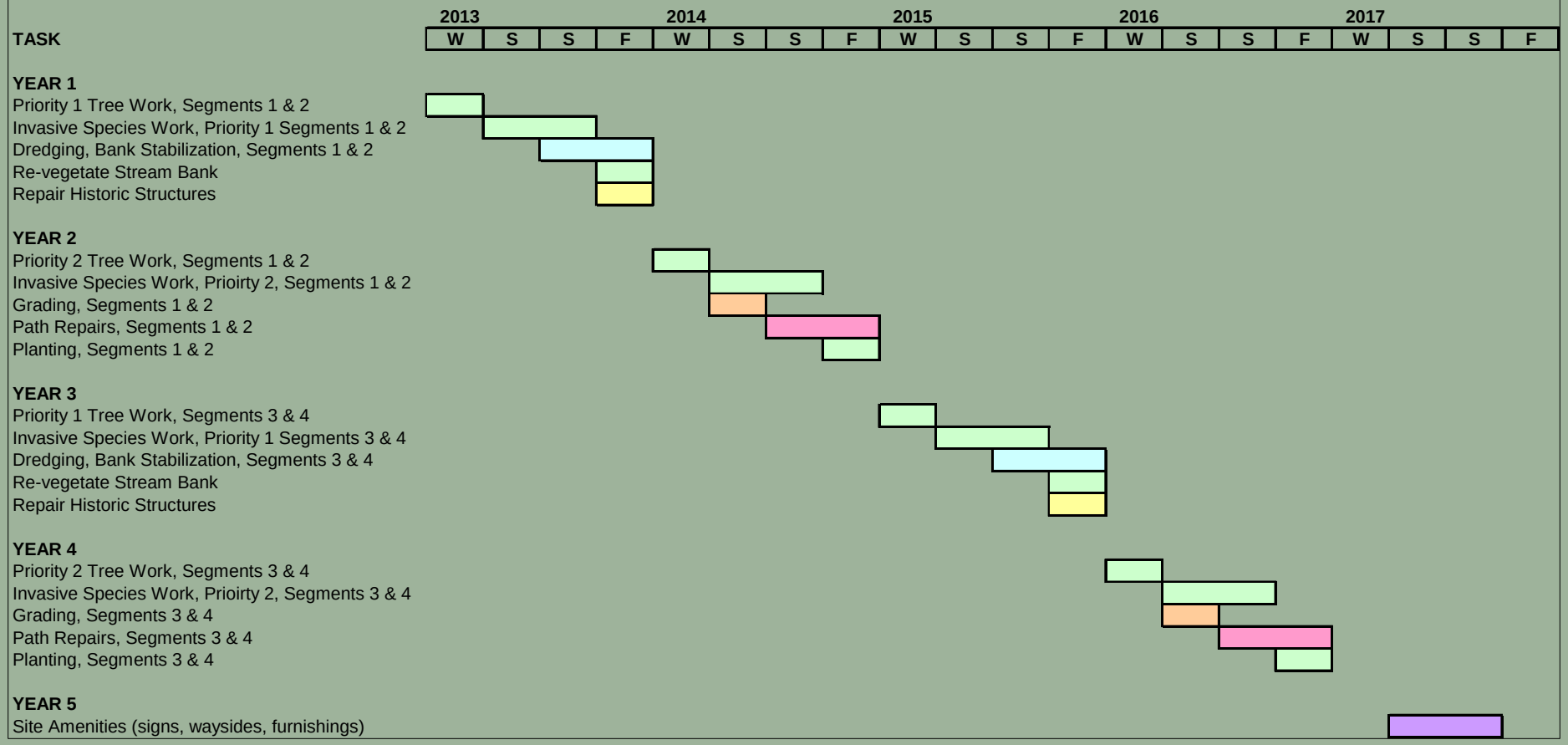
Hypothetical 2-Year Construction Project



Next Steps: Phase 4

Fuller Brook Preservation Project

Hypothetical 5-Year Construction Project



Construction Phasing Strategies:

1.) Type of Work (e.g. Stream, Vegetation, Path, Structures)

2.) Location of Work (e.g. Segment)

Next Steps: Phase 4

Sample Cost Differences Between Phase 1 Master Plan and Phase 2 Preliminary Design

General differences

1. Survey
2. Engineering
3. Segment 3
4. Greater specificity in cost estimate
5. Phase 2 costs derived from individual disciplines

Specific differences

1. Path:

- 8,700 lf vs. 15,300 lf
- 550 lf boardwalk vs. 310 lf boardwalk
- 8’ wide bituminous vs. 6’ wide stabilized soft surface with turf shoulders

2. Stream

- Curb removal: lump sum vs. linear sq. ft. + construction costs
- Sediment 4 removal: Phase 1 estimated 1/3 quantity
- Bank stabilization: 3,275 lf using coir logs only vs. 9,900 lf using a combination of coir logs, natural boulders, live stakes

3. Vegetation

- Tree removals: Phase 1 - 52; Phase 2 - 90 Priority 1 & 2
- Tree stabilization: lump sum vs. detailed assessment of each identified tree
- Planting costs excluding Segment 3 are virtually the same

Fuller Brook Park Preservation Project
Estimated Phase 4 Costs

Segment 1	
Vegetation	422,158
Stream	1,370,750
Path	151,100
Total	**1,944,008**

Segment 2	
Vegetation	374,023
Stream	380,650
Path	181,100
Structures	65,700
Total	**1,001,473**

Segment 3	
Vegetation	152,104
Stream	99,300
Path	257,300
Other	29,950
Total	**538,654**

Segment 4	
Vegetation	315,750
Stream	272,750
Path	378,465
Structures	15,461
Total	**982,426**

Sub-total all segments	**4,466,561**
Park-wide costs	
Tree pruning along path	31,600
Boundary markers	61,000
Wayfinding, signage	24,000
Benches, amenities	37,000
Total	**153,600**
Sub-total construction	**4,620,161**
With 20% contingency	**5,544,193**

Thank You.