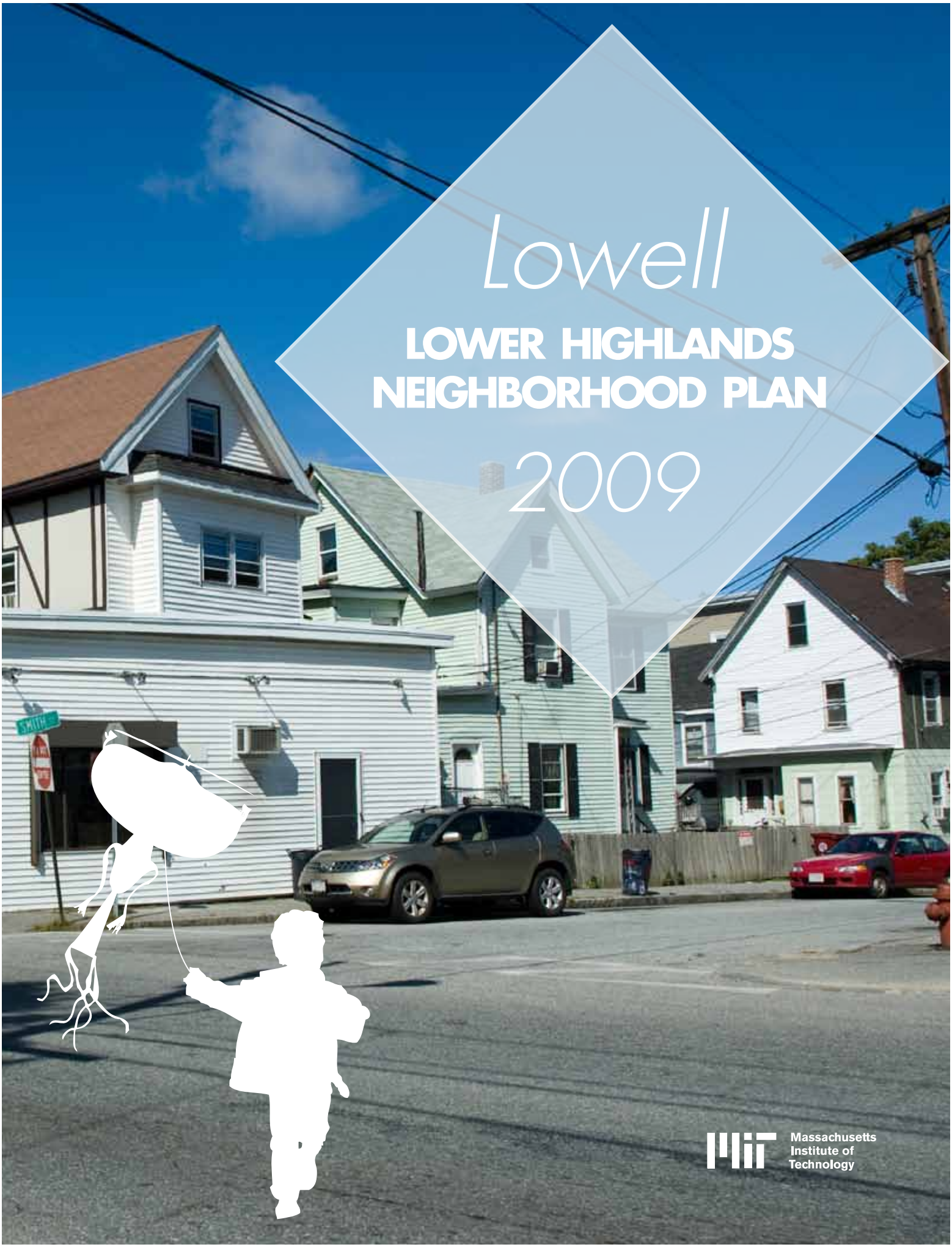


# Lowell

# LOWER HIGHLANDS NEIGHBORHOOD PLAN

## 2009

Massachusetts Institute of Technology

11360 COMMUNITY GROWTH AND LAND USE PLANNING PRACTICUM

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# *Lowell*

# LOWER HIGHLANDS NEIGHBORHOOD PLAN

## *2009*



Massachusetts Institute of Technology


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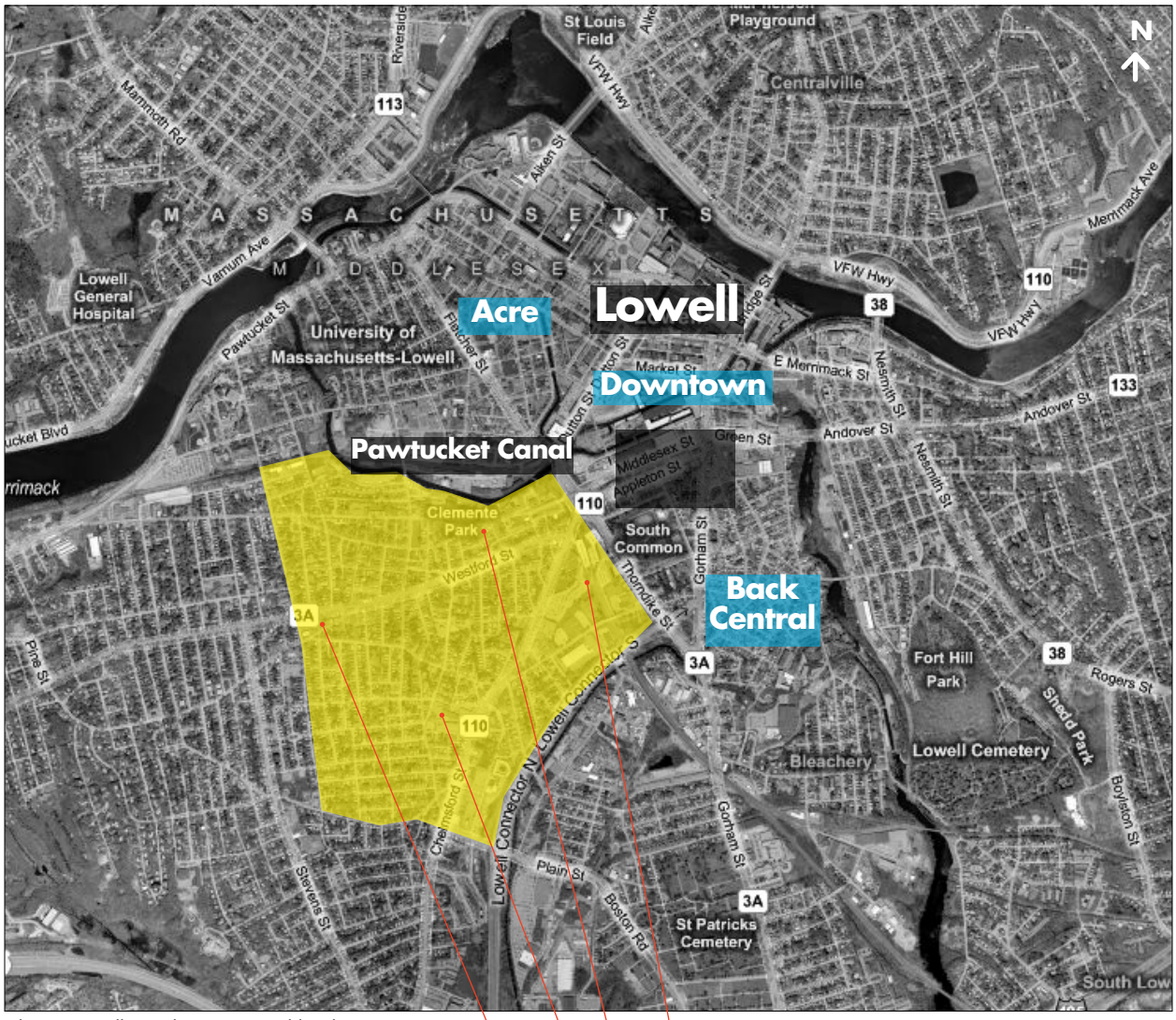
# INTRODUCTION

In the Fall of 2009, a team of graduate students from the Massachusetts Institute of Technology's Department of Urban Studies and Planning partnered with the City of Lowell's Planning Department to create a neighborhood plan for the Lower Highlands.

Under the guidance of **George Proakis**, Lowell's Planning and Permitting Director, and professors **Eran Ben-Joseph** and **Terry Szold** from MIT, this year's engagement of MIT's Community Growth and Land Use Planning Practicum with the Lower Highlands represents four out of five years of neighborhood planning processes in Lowell by MIT students. The goal of the process is to create a neighborhood plan that articulates a vision to guide city initiatives and future development in the neighborhood. Recommendations from previous plans created through the Lowell-MIT partnership have helped to spur and shape discussions about development in Lowell. We hope this document proves to be equally useful to the residents of the Lower Highlands.

Our 13-week planning process consisted of interviews with community members and officials, numerous site visits, and two community meetings for gathering feedback on our ideas. We worked to understand the challenges and opportunities in the neighborhood, and crafted a plan that responds accordingly. Our plan also reflects our own knowledge and recommendations about important urban issues that include environmental sustainability, social equity, economic vitality, and place-making.




Above, in yellow: The Lower Highlands

## Four Catalyst Sites:

- Charles A. Gallagher Transit Terminal
- Pailin Plaza & Clemente Park
- Nottingham Mills & RMV
- Cupples Square

# 1 THE LOWER HIGHLANDS

The Lower Highlands neighborhood is located in western Lowell, MA. The Lower Highlands is situated directly South of the Pawtucket Canal, and West of the Charles A. Gallagher Transit Terminal, which connects Lowell to Boston and other surrounding cities. The neighborhood is 15 minutes walking distance from Downtown Lowell and the Hamilton Canal District. While most of the neighborhood is residential, there are three major commercial hubs: the area at the intersection of Middlesex and Branch Streets, known as Pailin Plaza; the area at the intersection of Westford and Pine Streets, known as Cupples Square; and Chelmsford Street, a major thoroughfare running up the Eastern side of the neighborhood which also acts as a primary gateway to Lowell for visitors driving from the South. The most prominent and well-used park in the neighborhood, known as Clemente Park, is located just north of Pailin Plaza abutting the Pawtucket Canal. There are several public elementary schools located in the neighborhood as well.

Shown from top to bottom:

Across from Gallagher Transit Terminal
School Street
Cupples Square
Westford Street


Above, outlined in yellow: The Lower Highlands
The four catalyst sites are circled in blue.

# 2 NEIGHBORHOOD CONTEXT

The Lower Highlands neighborhood originally served as a residential area with close proximity to the small factories and sawmills near the railway and canal. Traditionally, Lowell was an immigrant gateway that provided employment opportunities to new residents. More recent waves of Cambodian and Latino immigrants, as well as migration from other groups, have made Lowell, and the Lower Highlands in particular, a diverse community.

The Cambodian population began immigrating to the Lower Highlands in the 1980s, and subsequent migration increased the Southeast Asian population. Since their arrival, the community has established restaurants, temples, markets and other cultural attractions, making the neighborhood a destination for Southeast Asians residing outside of Lowell. The success of the Pailin Plaza commercial area, which is dominated by stores and restaurants owned by and catering largely to the Southeast Asian community, shows the significance of the community's impact upon the neighborhood. The Acre neighborhood, located directly to the North of the Lower Highlands across the Pawtucket Canal, is also a major center for the Cambodian-American community.

Housing in the Lower Highlands consists largely of single family as well as two and three story multifamily dwellings, many of which are rental units, particularly in the northeastern part of the neighborhood. Housing is broadly characterized as affordable.

From top to bottom:

Cupples Square
Nottingham Mills
Clemente Park
Charles A. Gallagher Transit Terminal

# 3 PAILIN PLAZA AREA

The Pailin Plaza and Park area is already a functional and thriving neighborhood center. It is an asset to the Cambodian community, providing a central location for shopping and socializing. However, in its current condition, the area is neither synergistic nor universally inclusive. Although the Pailin Plaza area has many assets (including the park, shopping center, canal, and Boys and Girls Club), there are barriers between each use. As a result, Pailin Plaza, the Park, and the Pawtucket Canal are seen as distinctly separate places even though they are in close proximity. Therefore, our proposed interventions seek to remedy this disconnect. By reorienting the uses toward one another, the area will become a more cohesive and accessible destination. We envision making each location within the site more accessible and attractive in order to promote a natural flow of people from the Acre, over the canal, through the park, across the street to Pailin Plaza, and up and down Middlesex and Branch Streets.

We are concerned by the poor condition of the park infrastructure, and the disconnect between it and the Boys and Girls Club. Some very simple interventions could make the park area more comfortable and accessible to a much larger part of the community.

Another challenge for this area is the multitude of autobody shops clustered to the west and northwest of the park. While they are viable businesses, these shops do not make the best use of the space they currently occupy. The area is zoned Traditional Mixed Use, or TMU. The City of Lowell Zoning Code states: "The TMU district is designed to promote a mix of residential and retail uses in secondary areas where neighborhood-scale commercial activity can enhance the character of the surrounding residential area." While automotive uses are allowed by special permit in this zone, we feel that these uses do not support the stated goals of the zoning type, and therefore

## VISION

To upgrade and create better connections between the naturally complementary uses in and around Pailin Plaza, thereby making it a more inclusive, productive, and enjoyable area.

## SITE GOALS

- Celebrate the success of the area by enhancing its strengths and targeting weaknesses for scrutiny.
- Create easier access to and from the Acre and the Hamilton Canal District.
- Support development of the area's unique character.
- Reorient commercial and communal frontage.
- Make the site more inclusive and appealing to everyone within the neighborhood.

Top: Visualization of Pailin Plaza with traffic calming interventions and new landscaping.

Below: Images of Pailin Plaza.

should be changed. There is also an opportunity to repurpose the historic building between the park and canal as a new community center that would activate and open that corner of the park.

Concerns aside, our team was very excited to work in such a colorful and vital part of the Lower Highlands, and we see great potential for the area.

## Pailin Plaza

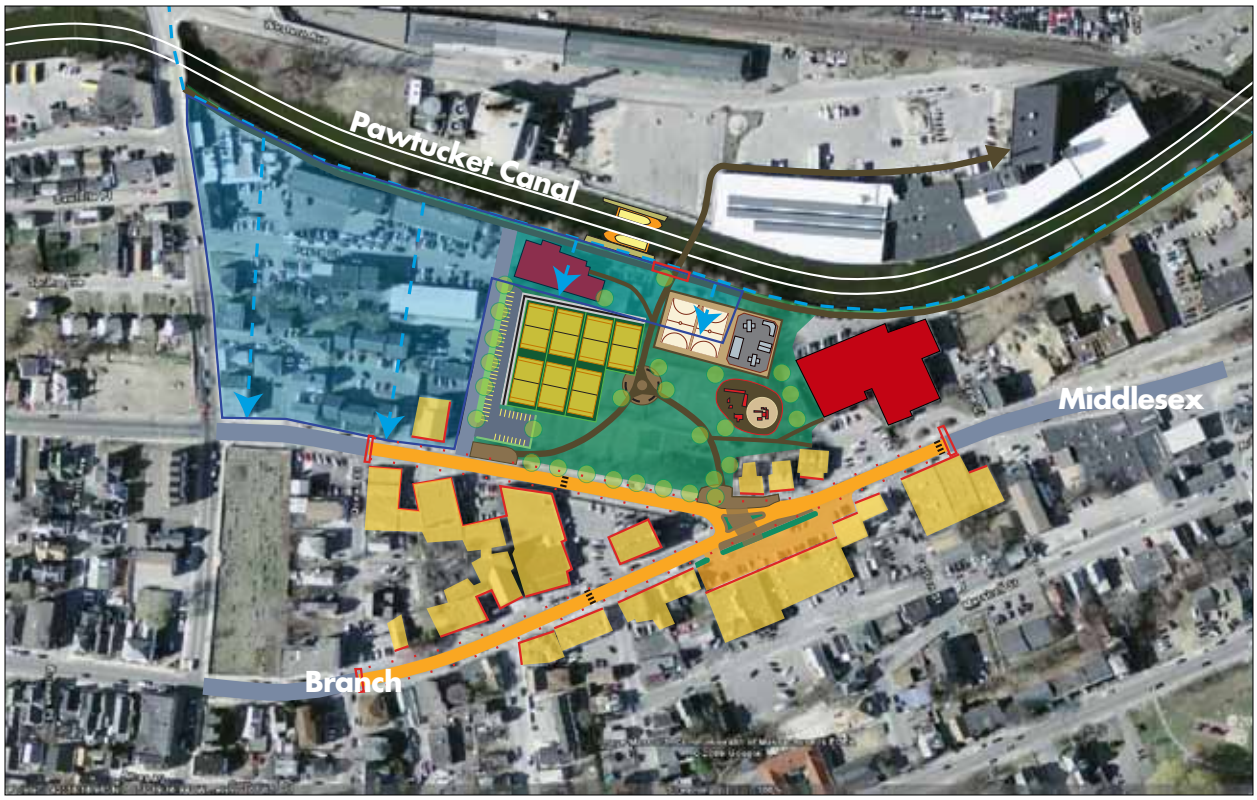
Pailin Plaza is a thriving business center and a draw for the Southeast Asian community from all over Lowell. Our plan builds on its success with improvements to define the plaza entrances and to emphasize its identity as a neighborhood destination.

| PHASING | INTERVENTION |
|---|---|
| 1 | Create a non-restrictive sign ordinance. |
| 2 | Implement streetscape improvements for traffic calming. |
| 3 | Add more and better lighting at the plaza. |
| 4 | Extend Acre Urban Renewal Area |

First, we propose that the Pailin Plaza area adopt a non-restrictive sign ordinance. This would permit the community to organically develop its preferred aesthetic commercial texture by allowing businesses more latitude in choosing preferences for sign color, size, and lighting schemes. A more flexible ordinance would allow for signs that better represent cultural preferences.

Second, we propose that Pailin Plaza embrace various streetscape improvements. The purpose of these improvements is to calm traffic and make the area safer for pedestrians. Additionally, traffic calming improvements would help to draw visual attention to the space, which would further add to the special importance of the plaza. Streetscape improvements should include:

- Distinguishing the area with textured paving. Special paving alerts drivers to pay attention in this area, simply because the ground looks




This plan view shows a diagramatic illustration of the land uses in the area with a re-imagined park.
Yellow indicates retail, Red indicates community space, Blue represents the extension of the Acre Urban Renewal Area.
The orange street represents the area where we propose traffic calming measures.

different. The visual cue also alerts people that they are entering a place (rather than just another space).

- Changing the traffic pattern and/or pedestrian island at the "Y." This is a place that needs to be both pedestrian and automotive-friendly. In order to facilitate this symbiosis, we propose changing the intersection. We would do this by lengthening the pedestrian island, narrowing the width of driving lanes through the intersection, and creating distinct crosswalks.
- Adding landscaping to the front of the plaza. Installing a landscape strip in front of the parking lot will help to delineate the area, making automotive movement in the space more predictable for pedestrians. This will allow the area to become more aesthetically pleasing without reducing the number of available parking spaces.

Third, we propose that Pailin Plaza be outfitted with better lighting. This was requested by many members of the community. Lighting would help to make nighttime customers feel safer and encourage visible around-the-clock use of the space. The lights might improve the sightline from the police station across the street to the plaza, thus promoting better policing of the area.

Fourth, we propose an extension of the Acre Urban Renewal Area (AURA) to cover the area between the canal, Middlesex Street, School Street, and the park. The current boundary of the AURA already extends across the canal from the Acre, and the underutilized, high value space in this area would benefit greatly from the extension. The current non-conforming

Clemente Park, and the canal viewed from behind the Boys and Girls Club.

uses, meaning primarily the autobody shops, could be relocated within the neighborhood to a more appropriate site, such as the Registry of Motor Vehicles parcel in the southern part of the Lower Highlands, and then this more attractive area could be repurposed for housing and other community-friendly uses, thereby taking advantage of its placement along the canal and next to the park, and adding to the vitality of the Pailin Plaza area.

## Clemente Park

Clemente Park (also known as Pailin Park) currently serves only a certain demographic within the Cambodian population. We have received feedback regarding park usage, which clearly expressed that a specific part of the Cambodian community prefers the current use and would not want any type of improvements or interventions in the space. However, as planners, we feel it is our duty to create and promote inclusive places, especially when they are municipally-maintained public spaces. As a result, we propose re-imagining the park in order to make it a larger, better-maintained, and more inviting place for the entire community.

There are two ways to realize this vision. The first is to capitalize on existing infrastructure. The second is to reinvent the park from the ground up—very literally, creating a blank space and rebuilding atop it. As a result, we have created two options in our phasing tables. The first table speaks to working with the existing configuration of the park, while the second looks at the process of creating a new park. Note that in the second table, only the first two steps are different than those in the first table. This section will walk through the second table, but please recognize that the first two steps are optional.

### **Option 1**: Working with Existing Structure

| PHASING | INTERVENTION |
|---|---|
| 1 | Invest in better park infrastructure (new nets, playground equipment, landscaped border, etc.) |
| 2 | Create maintenance program. |
| 3 | Obtain lot to expand park to the canal. |
| 4 | Create community center. |
| 5 | Reorient Boys and Girls Club to face the park. |

Plan view of Option 2: Restructuring proposal. Re-imagined site plan for the park. All uses are preserved, but some are re-located.

## **Option 2**: Restructuring

| PHASING | INTERVENTION |
|---|---|
| 1 | Work with community to create a site plan (proposed plan here compiled without community participation) |
| 2 | Relocate uses, beginning with volleyball courts |
| 3 | Invest in better park infrastructure (new nets, playground equipment, landscaped border, etc.) |
| 4 | Create maintenance program |
| 5 | Obtain lot to expand park to the canal |
| 6 | Create community center |
| 7 | Reorient Boys and Girls Club to face the park |

First, we propose that the City of Lowell work with the community to create a park site plan. We have created one in this document by noting the current uses in the park. We have organized those uses to best reflect the space available in the park and to conform to our own ideals

of what a park that an entire community uses would look like. Our site plan may be used in the process, but readers should recognize that it came from MIT students, and not the community.

Second, we propose that uses be shifted to the areas identified in the site plan.

Third, we propose that the City and nearby Lower Highlands businesses invest in better park infrastructure. This includes new volleyball nets, new playground equipment, landscaping around the park border, and a path running through the center of the site and connecting the street to the new bridge. Better park infrastructure will bring more users to the site, thus improving safety and increasing the visibility (and likely the profits) of Pailin Plaza.

A plan view of Option 1: Working with the Existing Structure, featuring improvements in the park while maintaining existing uses.

Fourth, we propose that the City and neighborhood work together to create a better maintenance program for the park. Maintenance models could take the form of adoption by a local business or group. Engaged users will periodically note when something is damaged or in need of repair, and either attempt repair or alert the city's Parks and Recreation department.

Fifth, we propose to work with owners of the autobody shops with lots between the park and the canal to explore options of incorporating their land into the park. This may involve finding equal land in another part of the city for the autobody shop to operate. This part of the plan is crucial to opening the park to the canal—an essential part of our vision for the area.

Sixth, we propose creating a community center in the northwest corner of the park, where the autobody shop currently occupies the old iron foundry building. We think that the building is a beautiful and historic structure that deserves a new life as a community center. We envision it being renovated to accommodate a hall, bathrooms, equipment rental office, and perhaps a concession area or café.

Seventh, we propose reorienting the Boys and Girls Club so that it faces the park. We advocate removing fencing and reorienting programming (if not the building itself) toward the park.

# Canal

The Pawtucket Canal is a hidden asset of the Lower Highlands. The easiest access point to the canal is behind the park, shrouded by vegetation and autobody shops. The canal could be used to improve access to the Lower Highlands from both the Acre and from downtown Lowell.

A crucial partner in opening the canal for better access is the National Park Service (NPS). NPS has had a plan for many years that calls for creating a canal walk along the Pawtucket. Regardless of whether our proposals are used, implementation of this NPS plan should be encouraged and expedited.

| PHASING | INTERVENTION |
|---|---|
| 1 | Obtain lot |
| 2 | Bridge |
| 3 | Path along canal |
| 4 | Taxi Boats |

First, we propose that the Lower Highlands should obtain the lots located between the park and the canal. As discussed in the section about park improvements, we have every reason to believe that the lots can be obtained in an amicable manner, and that the autobody shop currently at the location could be offered matching land elsewhere in the neighborhood. Absorbing this land as part of the park will enable other parts of our plan.

Second, we propose building a bridge across the canal, from the center of the park into the Acre. On the Acre side, the bridge will connect to a path that delivers pedestrians to the Revolving Museum. On the Lower Highlands side, the bridge will connect to a path that meanders through the park and spills onto the street. This will catalyze and facilitate the flow of people back and forth from the Acre to the Lower Highlands, and provide easier access for citizens of the Acre to Pailin Plaza.

Third, we propose lobbying the National Park Service to begin work on the canal walk.

Fourth, we propose the creation of a seasonal water taxi that takes passengers from the Lower Highlands to the burgeoning Hamilton Canal District. This will allow the Lower Highlands to capitalize on downtown development by bringing more people into the park and the plaza, which creates more business for existing merchants.

Above: One view of the canal from behind the Boys and Girls Club, followed by a series of visualizations for the future of the canal: existing conditions along the canal as viewed from the School Street Bridge, the canal with the NPS canal walk, and lastly, featuring public art and landscaping.

# IMPLEMENTATION

Though none of the proposals located herein are dramatic, most will need financial or political sponsors.

| SITE | PARTNER, SPONSOR, OR FUNDING SOURCE |
|---|---|
| **PAILIN PLAZA** | Lowell Planning Department |
| | Lowell Community Development Block Grant (CDBG) |
| | Partnership with nearby businesses |
| **CLEMENTE PARK** | Lowell Parks and Recreation |
| | Acre Plan Extension |
| | Partnership with nearby businesses |
| | Boys and Girls Club |
| **CANAL** | National Park Service |
| | MBTA |
| | The Revolving Museum |

## Pailin Plaza

SIGN ORDINANCE: Altering the sign ordinance requires the help of a member of the Lowell Planning Department. Fortunately, there are no associated funding issues.

STREETSCAPE IMPROVEMENTS: Traffic-calming streetscape improvements will have to pass through a process before being considered for installation. The process schedule can be found at the Policy for Traffic Alterations page of the City of Lowell's Planning Department website (http://www.lowellma.gov/depts/dpd/services/planning). Funding will come from the city of Lowell and/or its block grant program, and possibly interested merchants and/or developers.

LIGHTING THE PLAZA: Funding for lighting changes will have to come from the City of Lowell (Community Development Block Grant). Funding could also come from interested merchants at Pailin Plaza.

## Clemente Park

PARK INFRASTRUCTURE AND COMMUNITY CENTER: Changing or updating the infrastructure, as well as creating a community center, will be a large project. The community would need to partner with the Lowell Department of Parks and Recreation, nearby businesses, and the Boys and Girls Club. Funding would need to come from the City of Lowell and partnering businesses.

OBTAINING THE LOT: Negotiating with the autobody shop owner(s) will require help from the Planning Department and the City of Lowell. Additionally, by working with the city to extend the Acre's revitalization district boundary, we will be able to control for more appropriate uses in the future of this area.

## Canal

PATH: The canal walk was initially conceived by the National Park Service, and the neighborhood should partner with the NPS in order to catalyze the project.

BRIDGE: The pedestrian bridge over the canal (and accompanying path) will be constructed in partnership with the National Park Service, Lowell Department of Parks and Recreation, the Revolving Museum, and nearby businesses in Pailin Plaza and the Acre. Funding would come from the City of Lowell and nearby businesses.

FERRIES: In 2007 Massachusetts had a funding program for public ferries, under the title MassDOT's Executive Office of Transportation's Multimodal Grant. The Commonwealth should be contacted to ascertain whether this grant is still available if the community decides to pursue this concept.


LAUNDRY STATION

# 4 CUPPLES SQUARE

Cupples Square sits at the intersection of Westford and Pine Streets in the western half of the Lower Highlands. Cupples Square is an important gateway to the Lower Highlands for visitors driving in from the East via Westford Street or from the North via School Street. The Square is also a key business and commercial center within the Lower Highlands neighborhood.

The physical form and commercial mixture at Cupples Square has developed organically over time. The composition of the businesses has changed over the 20th century, as successive waves of immigrant groups, such as Swedish, Irish, Greeks, French-Canadian and, most recently, Southeast Asian newcomers established small, service-type stores to serve the neighborhood. It is this history of diversity in ownership and a focus on the community in Cupples Square that we aim to capture. The storefronts along Westford Street are eclectic and varied in both style and purpose. Westford Street is lined with a variety of convenience shops such as a supermarket, restaurant, and video-rental business. At the heart of the intersection at Pine Street and Westford Street lies the only flat-iron building in Lowell. This building has architectural and aesthetic significance and is a unique landmark within the neighborhood.

Additionally, there is a great deal of parking in the areas immediately surrounding the Square as well as along Westford Street. Much of this parking is frequently left vacant. Cupples Square certainly has the capacity to accommodate more retail activity.

Currently, pedestrian interaction with the streetscape is undervalued, and there is a notable lack of clear points for pedestrian crossing across Westford Street. Cars speed through the square without concern for pedestrian movement. Perhaps this is a symptom of the square's lack of visible identity markers. Upon approaching the site, there is no indication

## VISION

Encourage Cupples Square to flourish as a neighborhood commercial hub that celebrates the unique identity of the neighborhood.

## SITE GOALS

- Improve the flow of traffic
- Improve pedestrian amenities
- Provide resources to help businesses flourish
- Create a distinct "main street" feel

that a traveler has reached Cupples Square. There is no preparation for the entry into this unique neighborhood space.

## Interventions

Our proposed interventions focus primarily on one block of Westford Street—the block between Loring and Coral Streets. By concentrating on a small area, we hope to make our plan easier to finance and implement. By catalyzing improvements on this block, we hope to spur growth and development in the entire square.

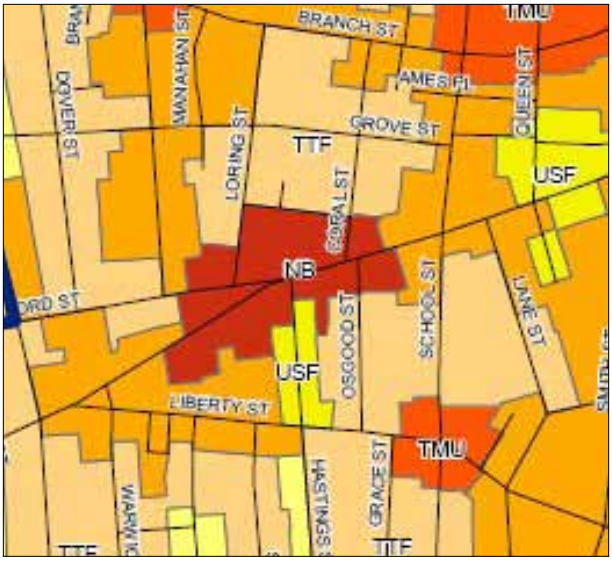
Our interventions fall into four categories: creating a zoning overlay district, upgrading the streetscape, installing traffic calming interventions, and promoting small business support programs.

### 1. Create a zoning overlay district.

Our first proposed intervention is to create a zoning overlay district for Cupples Square. A zoning overlay is a tool that allows planners to pay special attention to a district by adding more detail to the current zoning. We believe Cupples Square is worthy of this attention because it is an important neighborhood business center in the Lower Highlands that has potential to develop into a more thriving retail and community space.

Cupples Square is currently zoned as a Neighborhood Business District. In order to prevent future growth from completely altering the Square, the uses allowed in the area must be more specifically tailored. The current zoning would allow for a car-wash or drive-through to be built, which we believe would damage the character of Cupples Square.

We recommend that the zoning overlay district should oblige new development to adhere to specific design guidelines, outlined in the following section.





Top: Existing Neighborhood Business Zoning Map
Middle: Schematic map of uses and opportunities.
Bottom: Boundary for overlay zoning district.

## 2. Design Guidelines for business facades along Westford and Pine

Creating design guidelines for the business corridor will help to establish a consistent, distinct, and welcoming integration of building and streetscape. Any properties that fall within the overlay zoning district will be required to adhere to the design guidelines when a major renovation or new development takes place. The proposed guidelines are:

### GENERAL GUIDELINES

a. All development should create favorable impressions of the community by improved architectural, design, signage, and landscaping standards, including gateway enhancements, streetscape, and wayfinding.

b. Development should balance the need for automobile passage with strong design for pedestrian and safety connectivity. Greater sidewalk definition should be encouraged by clear boundaries between street edges, sidewalks, and surface parking lots. This can be enhanced with colored paints, physical objects or distinct materials.

c. If a particular building has historic or unique aesthetic elements, future renovations or changes should be designed to showcase the original style, form, and materials.

d. Building facades should be articulated to reduce large scale and uniform impersonal appearance. Boxy, flat-roofed structures should be disallowed on all new construction.

e. Exterior building materials should be compatible with materials and colors used in adjacent buildings. This excludes use of plywood, corrugated metal and T-11 siding. Brick and Stucco are recommended.

f. Blank building walls of more than 10 feet in length should be aesthetically improved by using signage, art, and lighting.

Above: Visualization of streetscape improvements and storefronts.

### STOREFRONT GUIDELINES

a. Street-facing storefronts should be of a transparent nature and appeal to pedestrians. They should be at least 70% transparent, and between 3 and 7 feet from the sidewalk. This includes using large windows or glass-front displays. If a particular business does not lend itself to an entirely transparent storefront, appealing displays with color and texture should be utilized on the storefront.

b. Individual storefronts should be clearly defined using objects such as pillars, separations in glass storefronts, or distinct changes in wall material color.

c. Commercial properties should be visually distinct from one another by placement of distinctive signage as well as small-scale storefront landscaping treatments. Depending on the quality of sidewalk in front of the property, landscaping may be incorporated into the current streetscape, or potted plants may be used instead.

d. All signage should have a large and clear font-type.

e. Signage should cover no more than 15% of a storefront window.

f. The use of awnings that are complementary to the overall architectural design of the building is encouraged.

g. Awnings or canopies do not need to be identical to adjacent awnings and canopies but should be of a similar scale to provide a cohesive aesthetic.

h. Main entrances should be prominent and easily accessible. Entrances should be street-facing.

i. Recessed doorways are desirable. They provide space for creative design for each business and more easily allow for the use of awnings.

j. The use of traditional building materials in storefront facades is encouraged, particular brick and stone materials. The cohesion with design and the durability of materials chosen will be factors in the consideration of storefront façade design.

## 3. Incentives

To promote the merging of lots and green development within the zoning overlay district, the city may offer the following incentives:

a. MERGE LOTS: Many of the small businesses within Cupples Square sit in very small lots (< 6,000 square feet). Our idea is to create a city incentive program for business owners to merge their lots. When a lot in Cupples Square is up for sale, the abutting business should get priority and discounted access to the lot if it purchases it and merges the properties. The idea is that larger lots can support more varied business uses, attracting businesses that are desirable for the area and that provide more jobs.

Above: Visualization of distinctive signage for Cupples Square.

b. PROMOTE GREEN DEVELOPMENT: Parking flexibility, density/floor area ratio bonuses and expedited permitting should be provided by the Planning Board to businesses that adopt green building upgrades such as solar paneling, pervious pavement surfaces, energy efficient appliances, and LEED certification.

Additionally, the design guidelines must strictly specify that there shall be no architectural changes to historic architecture in the square. 'Historic architecture' will refer to the flat-iron building at the intersection of Westford and Pine Streets. It is the only flat-iron building in Lowell. Our vision is that, design elements that complement the shape of the building will be added to distinguish it as a signature landmark of Cupples Square.


Visualization of phasing of storefront facade improvements as design guidelines are implemented.

## 4. Upgrading the streetscape.

The neighborhood should focus on incremental changes to public amenities such as sidewalks. This approach will create structural and aesthetic cohesion in the Square. We propose the following changes, as visualized in renderings A and B:

1. Larger sidewalk pavements with a distinct design, such as brick detailing. The additional sidewalk will be carved out of existing parking spaces. The new space could be used for trees as well as benches. This serves as both a pedestrian amenity and a tool for traffic calming.

2. Planted street trees and landscaping on the sidewalks and surrounding area for aesthetic appeal and reduction of the heat island effect.

3. Banners with a Cupples Square logo should be hung from the streetlamps to alert travelers that they are in Cupples Square. Distinctive street lights should also be considered.

## 5. Installing traffic calming interventions.

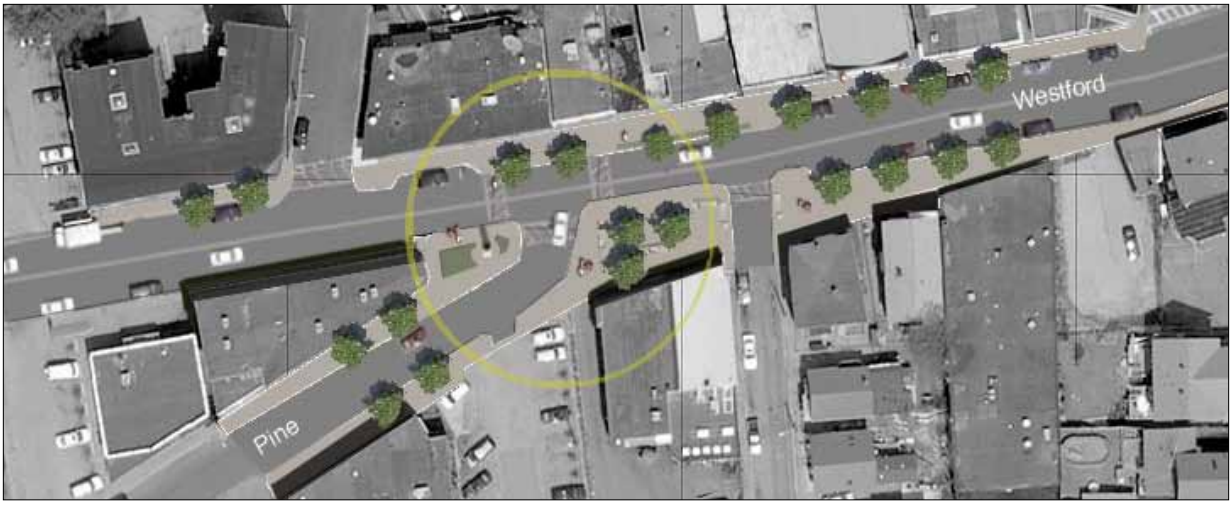
The area surrounding and containing Cupples Square is a high traffic, high accident area. Westford Street (3A) is a state road, which may make Lowell eligible for funds to mitigate traffic in the area. The high traffic count west of School Street, 12,000 cars in 48 hours, justifies improvements for drivers in this area. The Westford Street and Wilder St. intersection and Westford Street and School Street intersection are both high accident areas as well. The complaints about difficulty crossing Westford Street and the fast-moving automotive traffic indicate a need for improved pedestrian amenities.

We propose creation of a right angle between Westford and Pine Streets so that cars on Pine merging with Westford will be able to see the oncoming traffic clearly and make the turn at an appropriate time. Cars traveling on Westford Street will be assured that they will not be suddenly met with a merging vehicle from Pine Street To further enforce this, a clear stop sign and pedestrian crosswalk should also be included at this merging point. The stop sign will be directed towards vehicles coming down Pine Street to indicate a clear right of way for cars on Westford Street. Pine Street will remain a two-way street.

As a result of creating this right-angle intersection, a triangular plaza will be carved out of the existing merge. This new plaza creates a space for a number of potential amenities, which may include green space, a statue that commemorates Lowell's history, benches or public works of art.

In addition to the plaza, we recommend other pedestrian amenities. There should be a brightly colored pedestrian crosswalk as well as a lighted indicator for crossing Westford near the intersection with Pine.

Below: traffic mitigation strategy for the intersection of Westford and Pine Streets.



## 6. Promoting small business support programs.

In order to create real and lasting change in Cupples Square, the Lower Highlands must support the local businesses that populate the site. We propose the creation of a Main Streets program, possibly as a sub-program within the existing Cupples Square Business Association, to coordinate the revitalization and development efforts of the businesses as this site plan is implemented. The Main Streets organization would consist of a committee or board of individuals representing different stakeholders in the area. The organization would provide guidance to businesses on how to implement the proposed design guidelines, how to capitalize on the streetscape improvements, as well as how to take advantage of existing and new resources for small business development. The City of Lowell has an existing Best Retail Practices program which provides training and pools of funding for small-scale business improvements. The new Main Streets program could work to tap into these resources or further strengthen and expand them.

Additionally, the Main Streets organization would coordinate a Green Loans fund. The Green Loans program would award loans to business owners in order to implement energy efficiency measures such as Energy Star rated appliances, installation of high performance insulation or use of pervious paving materials. The business owner can then pay off the loan in increments as energy and water savings are realized.

Cupples Square

# Phasing

We propose to 'bucket' our interventions into two phases, considering the budget and time lag for changes. The first phase is easier to implement and finance and can begin to shape changes in the area right away.

## Phase I

| INTERVENTION CATEGORY | INTERVENTION DESCRIPTION |
|---|---|
| Small Business Grant Program and Zoning | Create overlay district, Small business grant program, Lot Next Door program* |
| Physical Improvements | Create and publicize best practice guidelines for storefronts, Lighted pedestrian walking indicators, Lamp posts, Cupples Square landmark signage, Low maintenance green landscaping on parts of sidewalk |
| Traffic Calming Initiatives | Install pedestrian crosswalks, Carve out plaza and create right angle to Westford Street, Install stop signs |

(*see: http://www.npnnola.com/issues/view/16/the-lot-next-door-program)

In order to implement the Phase I interventions, we need to tap into multiple pools of funding:

TRAFFIC CALMING INITIATIVE: Since Westford Street is a state road, there may be an opportunity to procure state funds for traffic calming improvements. The road's high accident rate and significant traffic flow may be sufficient to impress that such interventions be fulfilled in a timely manner.

PHYSICAL IMPROVEMENTS, PROGRAM, AND ZONING: The neighborhood should work with the City of Lowell, in particular the Planning Department, in order to create the proposed zoning overlay and engage participants in a small business grant program. Additionally, the City should apply and tailor a Best Retail Practices program to the Lower Highlands.

Cupples Square

## Phase II

| INTERVENTION CATEGORY | INTERVENTION DESCRIPTION |
|---|---|
| Program and Zoning | Comprehensive Main Streets grant program, Comprehensive small business greening loan program, Implementation of guidelines |
| Physical Improvement | Widening sidewalk, Benches, More intensive landscaping in carved out sidewalk, Street trees, Improvements on flat-iron building, Erection of statue or artwork in plaza |

Phase II will require more substantial and creative financing:

PROGRAM AND ZONING: The Cupples Square Business Association can partner with the Economic Development division within the City of Lowell to create a Main Streets organization and receive initial funding for staffing or operations. The City of Lowell may also provide seed money to launch the Green Loans program within the Lower Highlands, which may be used as a pilot program for future energy efficiency efforts in other parts of the city.

PHYSICAL IMPROVEMENTS: The Cupples Square Business Association should be a key player in finding funding for the streetscape improvements, since the businesses in the Square will benefit from aesthetic improvements.

# 5 NOTTINGHAM MILLS & THE RMV SITE

In the southern part of the neighborhood, along Chelmsford Street, lie two unique but underutilized community assets: a superblock site of historic mill buildings (the "Nottingham Mills"), and a large lot on Manufacturers Street that is home to the recently vacated Registry of Motor Vehicles (RMV) building. In the following section, we discuss these two sites which, together, could hold enormous potential for redevelopment and community economic growth. We lay out multiple options for the city to pursue towards achieving a revitalization of this area, to the benefit of all the Lower Highlands.

## Nottingham Mills

The Nottingham Mills site is a roughly 6-acre site at the southern gateway to the Lower Highlands neighborhood. At present, it is a severely underutilized and neglected community asset, characterized by low-rise mill buildings and paved parking lots. It is located between a major gateway into Lowell (Chelmsford Street) and the residential blocks of the Lower Highlands neighborhood. The new Abraham Lincoln Elementary School faces the site across Chelmsford Street.

The site has good access in and out of the city; it is less than half a mile from an entrance/exit to the Lowell Connector and less than a mile from the Gallagher Terminal MBTA commuter rail station.

The portion of the site fronting Chelmsford Street is zoned as a Neighborhood Business district (parcels 1, 2 and 3). The northern building parcel 1) is a revitalized, two-story mill building fully occupied by government and office tenants (historic buildings outlined in red). A gas station (parcel 3) occupies the southern parcel with an access road in between.

### VISION: NOTTINGHAM

- Promote preservation of historic buildings
- Integrate natural systems into the site's design
- Encourage development of a contemporary mill yard that serves residents and attracts visitors

### RECOMMENDATIONS

Re-zone light industrial portion of site to accommodate a mix of uses, including housing

OR

Convert vacant mill buildings into a small business complex

AND

Use redevelopment as an opportunity to integrate natural systems into the site's design

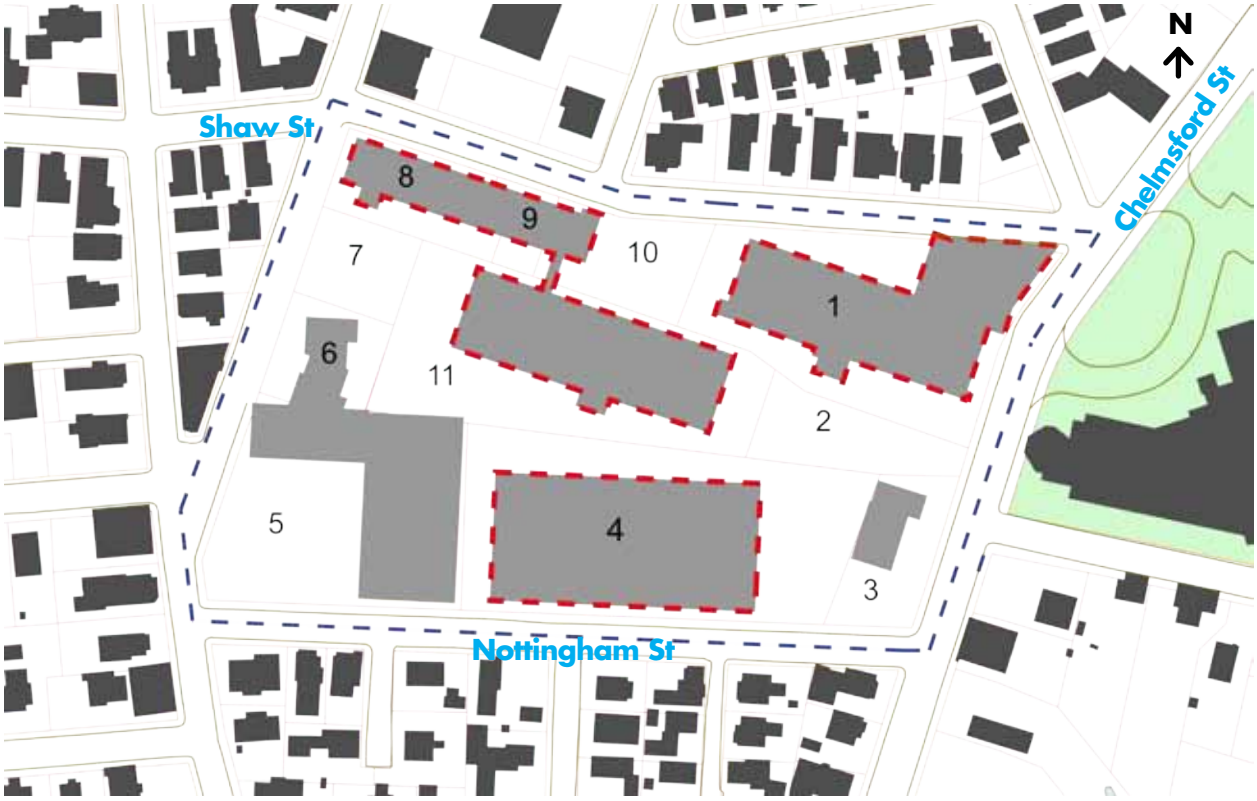
The zoning on this portion of the site is appropriate, because of its visibility from Chelmsford Street, a busy retail corridor.

A majority of the site (4.3 acres) is zoned Light Industrial (parcels 4 – 11). Three of the four buildings are two-story mill structures dating back to the end of the 19th century. The southern-most mill sits completely vacant (parcel 4), while the other two mill buildings (parcels 8 – 11) are partially occupied by a combination of auto shops, light industry, a vocational school, and an indoor recreational facility. The landlord has struggled to fully lease the space. The fourth building (parcel 5) is one-story, dates back to 1945, and is completely vacant besides an auto shop located in a 1972 extension of the building (parcel 6). In total, 106,000 gross square feet (54%) of building space is unused.

In spite of the Lowell Zoning Ordinance's lack of rigid physical restrictions in the light industrial zone, this site has failed to fully attract those uses that are allowed by-right: auto shops, offices, and light industry, including manufacturing or processing plants, self-storage facilities, and wholesale businesses. Qualitative data suggest that businesses are looking for space that has already been refurbished and customized to their needs. Additionally, the use restrictions at the site limit the flexibility of landlords to redevelop for a mix of purposes. Housing, art live/work space, health facilities, and cultural facilities like libraries and museums are prohibited uses at this site.

To spur a reinvention of the Nottingham Mills site, we recommend two possible options. Option one is to retain the light industrial character of the site, but to convert the supply of space into a more attractive venue for small businesses. Option two is to expand the allowable uses at the site to create greater options for developers and to serve a broader range of community needs.

Site plan for the combined Nottingham Mills and RMV sites.




The Nottingham Mills site are bounded by the blue dashed line. The buildings marked with red dashed lines are historic mills. See Table 1 below for additional information on each numbered parcel.

Table 1. Ownership, size, and value of parcels on the Nottingham Mills site.

| Parcel Number | Owner | Owner's Residence | Parcel Size | Gross Building Square Feet | Built Date | Current Use | Land Value | Structure Value |
|---|---|---|---|---|---|---|---|---|
| 1 | Gervais Lincoln-Mercury | Lowell | 51,491 | 40,621 | 1900 | Office | $265,300 | $595,000 |
| 2 | Gervais Lincoln-Mercury | Lowell | | | | Access Road | | |
| 3 | Bob Stevens & Son Inc. | Lowell | 11,285 | 2,863 | 1935 | Gas/service station | $189,800 | $150,000 |
| 4 | Pat Pepicelli | Gloucester | 59,196 | 86,730 | 1880 | Vacant | $256,100 | $38,300 |
| 5 | Nottingham Street Realty Corp. | Lowell | 41,073 | 21,304 | 1946 | Vacant | $159,300 | $219,100 |
| 6 | TRS Smith Street Realty Trust | Lowell | 9,625 | 3,141 | 1972 | Autobody shop | $99,300 | $132,000 |
| 7 | Smith & Shaw Street LLC | Gloucester | 7,500 | N/A | N/A | Undeveloped | $55,500 | N/A |
| 8 | Pat Pepicelli | Gloucester | 12,093 | 16,158 | 1890 | Mixed industrial / commercial/vacant | $89,500 | $256,000 |
| 9 | Richard and Ronald Vieira | Lowell | 4,235 | 4,928 | 1890 | Autobody shop | $101,400 | $105,400 |
| 10 | Pat Pepicelli | Gloucester | 11,115 | 6,296 | 1890 | Mixed industrial / commercial/vacant | $135,400 | $74,300 |
| 11 | Pat Pepicelli | Gloucester | 42,601 | 56,439 | 1890 | Mixed industrial / commercial/vacant | $159,900 | $1,011,400 |

# IMPLEMENTATION

## **Option 1**: Small Business Complex

The first option is to preserve current zoning and create a stable, small business anchor at the site by revitalizing 21 Nottingham Street as a Small Business Complex (SBC).

An SBC creates a supportive environment for local businesses by supplying space that's the right size, price, and location for a variety of small enterprises. By doing so it creates and retains jobs in the neighborhood.

This SBC would create a variety of "white box" spaces (ready-to-use) for commercial and light industrial enterprises of varying kinds. Light industrial businesses, such as food producers and craftspersons, would likely rent from the ground floor to utilize loading facilities. Second floor tenants could include offices of small start-ups and non-profits. This mix of business types also allows the landlord to cover costs, as office space typically rents for 50-100% more than light industrial space.

Right: View of the Mills from Nottingham Street
Below: Visualization of revitalized mill context.

A successful SBC could potentially expand over time. For example, the Brewery Small Business Complex, owned by the Jamaica Plain Neighborhood Development Corporation (Boston, MA), is a 150,000 square foot space that has been slowly developed over 25 years.

Identifying the right kind of landlord is key for making an SBC a success. Ideally, a Lowell non-profit, or a for-profit landlord committed to seeing small businesses succeed, would take on this kind of project. The landlord could partner with the Lowell Small Business Assistance Center to serve businesses throughout the site and possibly across the Lower Highlands. At complexes like the Brewery, small fees for business assistance have been incorporated into the annual rent prices.

Below are estimated costs, development subsidies, and operating revenues for creating an SBC in the 21 Nottingham Street Buildings at the Nottingham Mills Site.

Based on a survey of industry experts, we recommend a mix of light industrial and office space at the SBC. We estimate the former use to command rents of $5/sf and the latter use to command rents of $10/sf. To finance the site, we recommend taking advantage of Historic Preservation Tax Credits at the state and federal levels, New Markets Tax Credits, and MassDevelopment's Real Estate loans.

Additionally, and as a possible alternative to MassDevelopment's lending products, we strongly encourage a partnership with the Life Initiative. The Life Initiative, based in Boston, is focused on making investments throughout the state of Massachusetts, which benefit low and moderate-income communities and households. Community benefits include increased job opportunities for low and moderate-income residents and enhanced community services such as health care and childcare centers and stronger local economies. The Life Initiative has no standard loan product; they work with borrowers and sponsors to develop an investment structure that is tailored to the needs of the project.

In order to make an SBC work, a strong capital investment through public-private partnership is required. This business model can be used by the Lower Highlands and the City to approach potential investor/owners in the SBC.

Nottingham Mills

## 21 NOTTINGHAM STREET - SMALL BUSINESS COMPLEX DEVELOPMENT BUDGET

| | | |
|---|---|---|
| **Rent (per sq-ft)** | $8.00 | Average of light industrial and office space rents |
| **Sq-Ft (net rentable)** | 58,000 | |

| **Assumptions** | | | **Financing Calculation** | | |
|---|---|---|---|---|---|
| | per sq-ft | project | | project | |
| Total Development Cost (TDC)/sq-ft | $150 | $8,695,650 | NMTC* Equity | $1,956,521 | 25% TDC, 10% of allocation for syndication fees |
| Construction Cost/sf | | $110.00 | Perm Debt | $4,551,460 | MassDevelopment real estate loan max |
| Square Footage | | 58,000 | | | |
| | | | Other | $1,057,920 | State Historic Tax Credit |
| Perm Debt Term (yrs) | | 30 | Other | $1,137,264 | Fed Historic,Tax Credit |
| Perm Debt Rate (yr) | | 5.25% | | | |
| Operating Cost (yr) | $1.50 | $87,000 | | | |
| Rent (yr) | | $464,000 | **Total Sources** | $8,703,166 | |
| Debt Coverage Ratio | | 1.25 | **TDC** | $8,695,650 | |
| Net Operating Income (project/yr) | | $377,000 | | | |
| Debt Service (yr) | | $301,600 | **Surplus/(Gap)** | $7,516 | |

| **TDC Calculation** | | | |
|---|---|---|---|
| Acquisition | | $- | Estimated to be $500,000 or $9/sf. Recommend city acquisition to subsidize development cost. |
| Parking | | $232,000 | $4,000 per for 58 above-ground parking spaces |
| Construction | $110 | $6,380,000 | Costs reflect mix of light industrial and office space |
| Soft Costs | $19 | $1,116,500 | |
| Fee/Overhead | | $772,850 | |
| Reserves | $3 | $194,300 | |
| TDC | $150 | $8,695,650 | |

**NOTES**: *New Markets Tax Credits

Numbers Derived from Discussions with Industry Experts

## **Option 2**:
Mixed Use with Residential

Another option is to create a zoning overlay district called the Nottingham Mills Overlay District (NMOD) over the light industrial portion of the site.

Overlay zoning is a regulatory tool used to create a special zoning district, placed over an existing base or primary zone(s). The overlay district defines special provisions that may be more or less restrictive than those in the existing zone(s). Each overlay district is characterized by the purpose, boundaries, and rules and incentives established to guide future development. The City of Lowell's Zoning Ordinance provides for overlay zoning districts in Section 9.

Top: Current view of the Mill Site from the interior of the block.
Bottom: Visualization of the redeveloped site, showing a green landscaping swale defining the site.

In creating the NMOD we suggest the following languange for a zoning ordinance amendment:

PURPOSE: The purpose of the NMOD is to guide the future development of the site towards a broader mix of uses, including residential and a variety of commercial spaces. It also creates incentives for developers by increasing the site's by-right uses and allowable building height in exchange for meeting certain requirements.

PERMITTED USES: The following uses are permitted as-of-right for projects within the NMOD.

RESIDENTIAL PROJECTS: Residential projects within the NMOD can include multi-family residential projects only. Additionally, all residential projects must meet the following requirements:

Fifteen percent of all units must be affordable. This is a slight decrease from the 20% requirement for affordable units in the downtown Smart Growth Overlay District. According to industry experts, market rents in the Nottingham Mills area are lower than downtown, justifying a less onerous requirement for affordability on developers.

All ground floor space in residential projects must be commercial. Permitted commercial uses include:

- Business or professional office
- Art / Craft studio
- Other health care facility
- Licensed child care facility
- Library or museum open to the public or connected with a permitted educational use and not conducted as a gainful business.
- Community center operated by an educational, non-profit, public, or religious institution or organization not conducted as a gainful business.

NON-RESIDENTIAL PROJECTS:

Non-residential projects must comply with underlying Light Industrial zoning requirements, and shall not be subject to the requirements or bonuses established by the NMOD.

## PARKING AND DIMENSIONAL REQUIREMENTS:

**Height**: 3 stories (above ground) or 45 feet

**Open space**: All new projects are required to handle drainage onsite through open space design

**Parking**: Residential projects within the NMOD must provide at least one parking space per unit. Non-residential projects shall be required to provide one parking space per 1000 square feet of non-residential use.

## DESIGN GUIDELINES:

The following principles of design will be used to consider project applications within the NMOD during the Plan Approval process.

**Promote enhancement of the established visual character of the built form of the site:**

- Preserve restored, historic buildings
- For dilapidated buildings, restore existing historic walls if structurally sound, minus additions
- New development or renovations should avoid the removal, obscuring or disruption of existing structures of historic value
- For parcels along the edge of the site, require buildings to meet the sidewalk along at least one edge
- Building entries should be located along existing streets

**Promote a new experience of place, building on natural and man-made site elements, and improve circulation through and to the site for cars and pedestrians:**

- Draw on the site's proximity to the Gallagher Terminal and the Lowell Connector
- Improve drainage onsite through low-impact open space design
- To maintain visual continuity, the entire lot width should be fully occupied by a building wall, fence, gate, shrubs or other landscape elements or as a pedestrian connection
- Development should balance the need for automobile access and parking with strong design for pedestrian and bicycle safety and connectivity
- Where appropriate, pedestrian routes should be developed through sites and buildings to supplement the public right-of-way
- Require active first floor uses to meet pedestrian paths

## SAMPLE AFFORDABLE HOUSING DEVELOPMENT BUDGET AT NOTTINGHAM MILLS SITE

(based on 21 Nottingham Street's speciications)

| **Units** | 36 |
|---|---|

| **Assumptions** | | | **Financing Calculation** | | |
|---|---|---|---|---|---|
| | per unit | project | | project | |
| Total Development Cost (TDC)/unit | $263,686 | $9,492,692 | Tax Credit Equity | $4,665,600 | Eligible basis cap = $200,000 |
| Construction Cost/sf | | $165 | Subsidies | $1,615,000 | |
| Square Footage | | 58,000 | NW Equity | $288,000 | |
| State HOME max | | $750,000 | Perm Debt | $650,925 | $18,081/unit |
| State Housing Fund | | $600,000 | Other | $1,097,040 | State Historic Tax Credit |
| City CDBG | | $50,000 | Other | $1,179,318 | Fed Historic Tax Credit |
| City HOME | | $215,000 | | | |
| Neighborworks/unit | $8,000 | $288,000 | | | |
| Perm Debt Term (yrs) | | 30 | **Total Sources** | $9,495,883 | |
| Perm Debt Rate (yr) | | 6.50% | | | |
| Operating Cost (yr) | | $306,000 | **TDC** | $9,492,692 | |
| Rent (yr) | | $392,400 | | | |
| Debt Coverage Ratio | | 1.75 | **Surplus/ (Gap)** | $3,191 | |
| Net Operating Income (project/yr) | | $86,400 | | | |
| Debt Service (yr) | | $49,371 | **Rent Break Down by Aptartment Size** | | |
| | | | | count | rent |
| | | | 2BR | 24 | $875 |
| **TDC Calculation** | | | 3BR | 12 | $975 |
| Acquisition | $13,889 | $500,000- | | | |
| Parking | | $504,000 | $14,000 per for 36 space garage in half basement | | |
| Construction | $176,458 | $6,352,500 | | | |
| Soft Costs | $30,880 | $1,111,688 | | | |
| Fee/Overhead | | $846,819 | | | |
| Reserves | $4,936 | $177,686 | | | |
| TDC | $263,686 | $9,492,692 | | | |

**NOTES**: Numbers Derived from Discussions with Industry Experts

The facing page illustrates estimated costs, development subsidies, and operating revenues for one residential building under the proposed NMOD.

**PLAN APPROVAL PROCESS:** All projects should be subject to a Plan Approval to ensure consistency with the purpose and intent of the NMOD. The City of Lowell should designate a Plan Approval Authority (PAA), possibly the Lowell Historic Board, to review projects and issue decisions. The Lowell Historic Board would be appropriate, because of the number of historic buildings at the Nottingham Mills site, and because of its experience acting in such a capacity for other overlay districts in Lowell's Zoning Code Ordinance.

## ADDITIONAL FINANCING AT NOTTINGHAM MILLS:

If the political opportunity presents itself, Lowell's Division of Planning and Development should consider proposing that the 6-acre Nottingham Mills super-block become a Priority Development Site (PDS). The provision for a PDS was created through Massachusetts state legislation. It encourages local governments to institute expedited permitting processes at key economic development sites in exchange for financial and technical resources from the state. PDSs are specifically meant to encourage development on sites that are zoned for industrial or commercial use, contain large, underutilized buildings for redevelopment, are located next to existing development, and are close to transit facilities. Several parcels or projects may be included within a single PDS. Lowell has used this designation once to create the Hamilton Canal Priority Development District.

If the Nottingham Mills site became a PDS, it could retain design and use principles similar to the proposed NMOD while gaining access to important benefits, such as:

- Priority consideration for community development action grants, and public works economic development grants
- Priority consideration for other state resources such as quasi-public financing and training programs
- Brownfields remediation assistance
- $150,000 in technical assistance money from the state
- Enhanced marketing by the Massachusetts office of business development, and the Massachusetts alliance for economic development; and
- Technical assistance provided by the regional planning council

## PHASING OPTION 1:

| PHASING | INTERVENTION |
|---|---|
| 1 | Lowell Division of Planning and Development (DPD) to organize Cupples Square Business Association, Cambodian Mutual Assistance Association, and other area businesses to provide input on Lower Highlands small business needs |
| 2 | Neighborhood organizations, in partnership with Lowell DPD, to pitch SBC business model to potential non-profit and for-profit owners |
| 3 | Identified organization to secure public and private financing for site, begin redevelopment and marketing of rental space |

## PHASING OPTION 2:

| PHASING | INTERVENTION |
|---|---|
| 1 | Lowell DPD to organize neighborhood residents to gain input on use and design principles of Nottingham Mills Site |
| 2 | Lowell DPD to prepare Nottingham Mills Overlay District proposal for approval by planning board and city council<br>Lowell DPD and Plan Approval Authority to administer Nottingham Mills Overlay District and review project applications |

# The RMV Site

The former Registry of Motor Vehicle (RMV) site is located at 450 Chelmsford Street, although the property does not actually have Chelmsford Street frontage. It sits on Manufacturers Street, directly behind the Wendy's restaurant and northeast of other neighborhood fast food and commercial properties in the Eastgate Shopping Center along Chelmsford. The RMV has recently moved from this site in the Lower Highlands to a new downtown location, leaving in its wake a vacant building on a 62,000 square foot parcel and a large parking lot (about 75,000 square feet).

This severely underutilized space could be a major catalyst site for neighborhood economic development. The site has a number of assets, including its accessibility and partial visibility from the Lowell Connector, its relative proximity to the Gallagher commuter terminal, the relatively large and flat size of the lot, and the fact that it sits entirely within the only Regional Retail (RR) zone within Lowell's urban core. It is also close to Target (which sits just east of the Lowell Connector) and the Nottingham Mill site. Target, of course, is already a retail destination for residents, and the Nottingham Mill site may one day become a destination (especially if the neighborhood follows the advice outlined earlier in this report). If, over time, the RMV site can be reconfigured with neighboring parcels that enjoy direct frontage onto Chelmsford, the overall site could have significant redevelopment potential.

Despite its potential as an asset for the Lower Highlands, the site faces some significant challenges. Foremost is its lack of Chelmsford Street frontage, diminishing the chances that a typical retail use could thrive without simultaneous reorganization of uses on adjacent parcels. Second is the lack of physical coherence and generally underutilized composition of the larger block. The twenty-one parcels on the block

### VISION: RMV SITE

To put the recently vacated RMV site back to productive use in the short term while laying the groundwork for shaping longer term redevelopment of the larger area including adjacent commercial and retail properties.

### SITE GOALS

- Amend zoning code to allow ecologically and visually compatible commercial and automotive uses that do not require significant Chelmsford St. frontage
- Advocate city purchase of (currently privately held) RMV lot in order to retain part for community garden, athletic field, or other community-oriented use
- Lay the groundwork for larger community-oriented redevelopment of the site and surrounding parcels in future
- Inspire the community to develop design guidelines to create an appropriate and more unified urban form for Southern Chelmsford Street since it acts as a major gateway to the Lower Highlands

demarcated by Chelmsford, Manufacturers, Plain, and Short Streets that fall within the Regional Retail zone are owned by twelve different, private owners. There is no publicly owned land. Without securing a major developer who could acquire multiple properties, the possibilities for physical reorganization and a more intensified site use is limited. The general lack of unifying architectural or design features of the entire zone is also notable, making the retail district seem disjointed from both surrounding traditional residential neighborhoods and the historic Nottingham Mills.

# RECOMMENDATIONS

1. **Amend zoning code to allow ecologically and visually compatible commercial and automotive uses that do not require significant Chelmsford St. frontage.**

Given the site's limited appeal to most retail uses (due to the current lot configuration and surrounding uses), we believe the site is ideal for businesses such as autobody shops. Autobody shops, or other automotive establishments, require large flat spaces but not prominent street frontage, both of which are conditions met by the site. Thus, as a first step, the City should amend the zoning ordinance to allow these sorts of uses to locate there.


The Nottingham Mills Site sits between Chelmsford and Powell, just south of Shaw Street. The RMV location is south of the Mills, just off of the Lowell Connector.

Opening this site to autobody shops is a strategic step that corresponds with our vision and recommendation at the Pailin Plaza and Park site. As described earlier in this report, we envision encouraging the autobody shops currently located along the Pawtucket Canal in the Northern part of the neighborhood to relocate to the RMV site. Again, such a move would open canal frontage for recreational uses while allowing the autobody tenants to continue to operate within the Lower Highlands and maintain their customer bases.

Given the site's proximity to Traditional Multi Use and Traditional Neighborhood Multi-Family zones, as well as a variety of retail establishments within the same Regional Retail zone, we also recognize the importance of ensuring environmental compatibility of the types of automotive uses that would locate there. The visual impact of such uses, particularly as seen from the Lowell Connector (one of the main gateways into the city), is also a concern that must be addressed. Therefore, the zoning amendment would also specify environmental quality criteria for permitted autobody and automotive uses on the site, as well as design guidelines to ensure aesthetic coherence with the surrounding area and a visual screening of uses from the Lowell Connector (such as with evergreen trees or other foliage).

## SPECIFIC ZONING REVISIONS

If the city is interested in implementing this recommendation, it needs to revise its Zoning Ordinance. Currently, within Regional Retail (RR) zones, several automotive uses are permitted by Special Permit, while others are prohibited. We recommend amending the RR classification for the RMV site and environs to a new zone called RR-M (Regional Retail – Manufacturers Street). This new zone would allow autobody shops and most other automotive uses as by-right. We recommend maintaining the prohibition on "lots for stowing towed vehicles"—one of the categories under Automotive Uses in the Zoning Ordinance—as we believe this use is not appropriate for the RMV lot.

Changes to Zoning Ordinance, Article XIII, "Table of Accessory Uses":

| AUTOMOTIVE USES | RR ZONE | NEW RR-M ZONE |
|---|---|---|
| Automotive Sales, indoor | Y | Y |
| Automotive Sales, outdoor | SP | SP |
| Automotive service station | SP | Y |
| Automotive repair garage | SP | Y |
| Autobody or paint shops | N | Y |
| Car washing establishment | SP | Y |
| Lot for stowing towed vehicles | N | N |

## SITE PLAN REVIEW REQUIREMENTS

To ensure high environmental and aesthetic quality at the site, criteria are applied to any proposed automotive activities. Additionally, activities should be subject to Site Plan Review by the Planning Board. Section 11.4.2 of the Zoning Ordinance, "Applicability", should be revised to include all by-right automotive uses allowed within the RR-M site.

The specific criteria for evaluation would then be laid out under the site plan review section of the Zoning Bylaw "Approval Criteria" section. Aesthetic criteria would include provisions for screening of uses from neighboring lots and from the Lowell Connector with trees, opaque fencing for autobody storage lots, etc. Environmental criteria would include provisions for minimizing the use of chemicals for cleaning and painting activities, and ensuring heightened attention to wastewater disposal, among other possible criteria.

2. **Advocate for the city purchase of the privately held RMV lot in order to retain a part for a community garden, athletic field, or other community-oriented use.**

We recommend that the city acquire the RMV lot for the purposes of facilitating its subdivision, so that a portion of the lot can be converted to public green space, such as a community garden or athletic field, and the remainder into parcels for eco-friendly autobody shops or other uses consistent with the RR-M zone. The Southern part of the Lower Highlands has little public open space, with the exception of the baseball field at Lincoln Elementary School on Chelmsford just north of the Regional Retail zone. During our community meetings, residents expressed interest in the idea of dedicating some of the RMV space for recreational use or garden plots. As outlined at the end of this report, there is significant demand across Lowell for gardening space in particular. A non-profit program such as Keep Lowell Beautiful's Community Greenhouse could allocate and manage the use of this space.

Since the RMV is in a particularly low-lying area of the neighborhood, dedicating part of this site as an athletic field or community garden would have the added benefit of mitigating the impact of localized stormwater flooding. Encouraging landscape measures at the site to increase natural, permeable ground cover can prevent possible flooding of surrounding lots from stormwater runoff.

3. **Lay the groundwork for larger community-oriented redevelopment of the site and surrounding parcels.**

The RMV lot sits at a site that has significant potential to undergo an important community-oriented redevelopment in the future. However, two issues restrict its potential.

First, the current lot configuration restricts the area's development potential. The area currently contains several large lots, many without Chelmsford Street frontage, and none significantly large enough to catalyze a large scale development project (unless several parcels were acquired by a single developer). Therefore, we suggest creating incentives for investors to acquire multiple lots within the "RR" zone section of the area bounded by Chelmsford Street, the Lowell Connector, Plain Street and Short Street. Such incentives could take the form of a density or floor area ratio (FAR) bonus beyond what is otherwise allowed in the zone. To ensure community-oriented redevelopment, the density or FAR bonus provisions would also need to specify requirements for provision of public amenities at the site. Given the long-term nature of this scale of redevelopment and the fact that the needs of the surrounding neighborhood are likely to change once the Nottingham Mills redevelopment (a higher priority investment) takes place, additional community input should be sought at a future point about what specific community-oriented amenities would be most appropriate to stipulate.

4. **Inspire the community to develop design guidelines to create an appropriate and more unified urban form for Southern Chelmsford Street because it acts as a major gateway to the Lower Highlands.**

The lack of requirements pertaining to urban form for businesses with frontage along Chelmsford with the the continuity of neighboring residential areas and undermines Chelmsford's role as a major gateway to Lowell. We therefore suggest, as part of a long term redevelopment strategy for the Southern Chelmsford Corridor, the development of design guidelines specifying urban form criteria such as smaller setbacks, more uniform architectural styles, etc.

# 6 GALLAGHER TERMINAL

The Charles A. Gallagher Transit Terminal is an intermodal transportation hub situated in Lowell's Lower Highlands neighborhood. It serves a unique role in the neighborhood – it is perhaps the only major facility in the Lower Highlands that draws a significant amount of traffic to and from other parts of Lowell, as well as the rest of the region. As a commuter rail station connecting Lowell to Boston and intermediate cities, the Gallagher Terminal is an important waypoint that welcomes visitors to the city. In our plan, we investigate ways to enhance the transit traveler experience at and around the Terminal, taking into account mode choices afforded by adjacent facilities.

The Gallagher Terminal serves as a terminus for the Lowell commuter rail line of the Massachusetts Bay Transportation Authority (MBTA). With nearly hourly service in both directions on weekdays, Lowell enjoys excellent connectivity to Boston. In fact, Lowell ranked 5th busiest for weekday inbound train boardings across the entire MBTA commuter rail system in April 2006. On average, during yearly audits between 2001 and 2006, it was found that roughly 1,500 inbound train embarkations occur each weekday at the Lowell station, alone. The same audits revealed that an average of roughly 5,500 passengers travel in each direction along the Lowell line on weekdays. Furthermore, Lowell Regional Transit Authority (LRTA) local and regional bus connections can be made at the adjacent Robert B. Kennedy Bus Transfer Center.

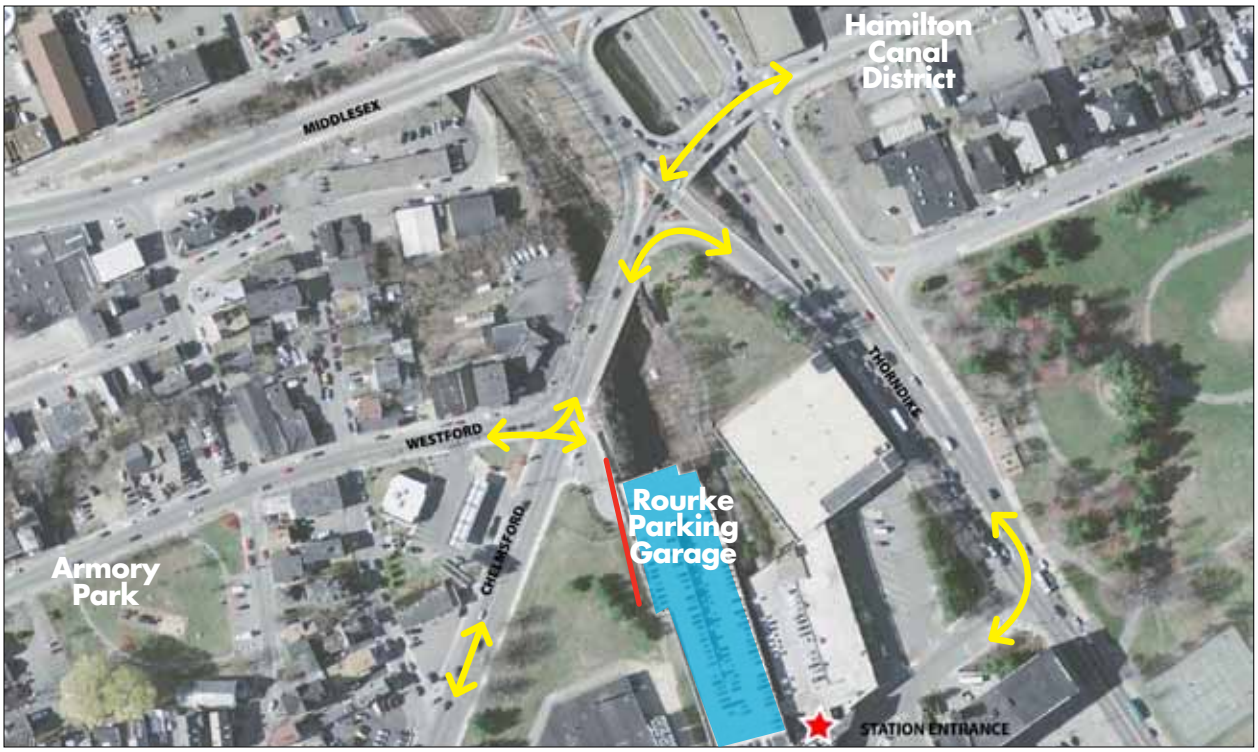
The Gallagher Terminal is well connected and within walking distance to several area attractions and business districts. Armory Park, a recreational space that has undergone improvements in the recent past,

## VISION

Improve pedestrian access and appeal around Gallagher Terminal, and the interface between the Terminal and the Lower Highlands neighborhood.

## GOALS

- Redefine the pedestrian access path to the Terminal from Chelmsford Street
- Introduce a comprehensive wayfinding and signage strategy for commuters using and accessing the Terminal
- Increase safety, usability and appeal for pedestrians using Terminal spaces
- Revitalize outdoor park space on Terminal/Garage property adjacent to Lord Overpass




Above: An aerial view of the Gallagher Terminal, the Rourke Parking Garage, and the intersection of Westford at Chelmsford. Yellow arrows (→) indicate the main travel patterns in the area, navigating to the Terminal and through the neighborhood. The red line (—) marks the back entrance to the Rourke Parking Garage, which represents a significant barrier for local residents' access to the Terminal.

is located just a few blocks from the Terminal on Westford Street. Cupples Square, situated further along Westford Street from the Terminal, offers eateries and small businesses to the pedestrian and motorist alike. To the northwest, Pailin Plaza and Clemente Park serve as culturally-important destinations for the Lower Highlands' Southeast Asian community. And finally, the Hamilton Canal District – for which a separate planning effort is underway – faces the front entrance of the Terminal, across Thorndike Street.

For all of the connectivity the Gallagher Terminal enjoys, most passengers arriving by train are blind to it. Wayfinding is challenged by a lack of clear signage and a paucity of posted information about routes to area destinations. If any signage exists, it does not highlight the Lower Highlands, an asset that lies invisibly behind the station. Additionally, routing pedestrians around the Lord Overpass to get between the Terminal and the Lower Highlands neighborhood is less than ideal, and serves as not only a physical access barrier, but also a psychological one. Given the choice, most individuals elect to drive to and from the station, at present.

In short, the Gallagher Terminal is a key site of interest for our study. It serves to tie together neighboring land uses as a notable landmark for the neighborhood. We will explore various strategies to strengthen the Terminal's position in the Lower Highlands, and beyond.

## Rourke Parking Garage

There is ample parking at Gallagher Terminal, as the on-site Raymond Rourke Parking Garage, operated by the LRTA, provides 695 spaces. Parking costs only $5.00 per day. The Garage is situated in such a way as to provide vehicular access from both Thorndike and Chelmsford Streets, and to maximize available parking by utilizing air rights over the railroad tracks. This facility is commonly used by pedestrians to cross between Chelmsford Street and the train platform, as a shortcut to navigating the Lord Overpass to walk around the entire development. Ambient conditions inside the Garage are bleak: natural light is minimal by day (especially at lower levels), and vehicles are parked in a perpendicular fashion along the walls. Presently, pedestrians wishing to utilize this shortcut must walk through the vehicular entry gate and share their path with automobiles.

For cost and perceived safety reasons, the Chelmsford Street entrance is closed and completely barricaded outside of rush hours. This means that a parking attendant is not required for most of the day at that entrance; however, the chain-link fence that seals the entrance effectively blocks all pedestrian movement during off-peak times. A pedestrian crosswalk presently links the Garage's Chelmsford Street vehicle ramp with the opposite sidewalk, but the pedestrian crossing signal and interface are out of service. Furthermore, the crosswalk's painted lines on the asphalt are faded, and lighting is inadequate before dawn and after dusk. In general, the environment at the intersection of Chelmsford and Westford Street is rather hostile to pedestrians, and is not conducive to a commuting style that promotes increased or appealing transit use. Enhancements will be required to attract new and continued use of the Terminal by pedestrians in the vicinity.

## Enhancing the Pedestrian Appeal of Gallagher Terminal

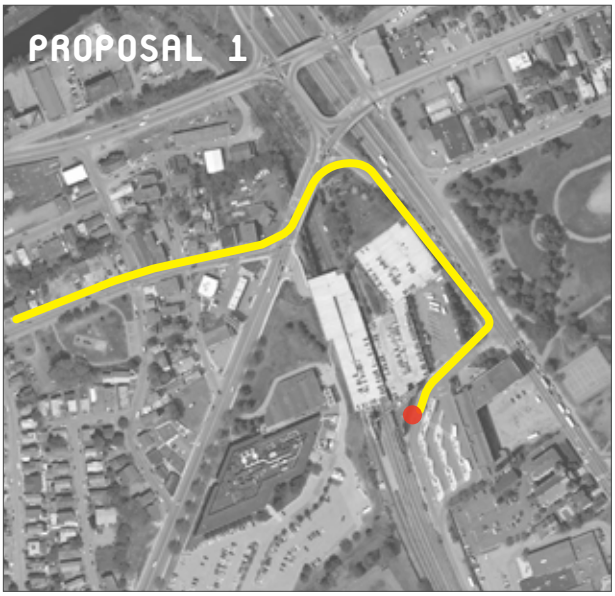
We propose four plans for improving pedestrian access around Gallagher Terminal and the interface between the Terminal and the Lower Highlands neighborhood. One option involves streetscape improvements that can be implemented with minimal effort; the three remaining options detail more ways to augment the physical path pedestrians take between the train station and the Lower Highlands.

The "fork" intersection of Westford and Chelmsford Streets presents a unique opportunity for access to Gallagher Terminal from the Lower Highlands. These streets are two of the neighborhood's major arteries, connecting commercial, light industrial and residential uses to the site. Presently, there are lighted crossing signals (inoperative) and a disused crosswalk between the Rourke Parking Garage and the opposite side of the street, just north of the "fork." The crossing directs pedestrians up the vehicular ramp to the Garage, implying that those on foot must mix with cars entering or exiting through this gate. There is no dedicated pedestrian right-of-way at this location.

## **PROPOSAL 1**:
Streetscape Improvements

If the current access path is ultimately maintained, we propose an incremental set of improvements to the current pedestrian situation at this intersection. The existing crosswalk would be renewed with bright, painted street markings, improved lighting, and a new landscaping plan. The walking surface of the crosswalk would be brightly colored or textured for enhanced visibility. Street trees and flowers lining portions of Chelmsford Street and the crosswalk would make this a more pleasant walking environment, and new painted lines on the roadway surface would help to create a culture of safety and emphasize the presence of pedestrians to motorists passing by. Presently, painted lines on the road surface are faded and difficult to see.

Furthermore, pedestrians wishing to access the train station from the Lower Highlands, or vice versa, must walk around the whole Terminal property (via the Lord Overpass) outside of rush hour. As this is not ideal, we propose revising the operating hours of the Rourke Garage's Chelmsford Street gate to remain open during all transit schedules. This could be accomplished in the spirit of the present policy by locking the vehicular gate, but leaving the existing pedestrian access open. Potential security or surveillance measures should be studied to assuage the concerns of parkers who desire pedestrian supervision.

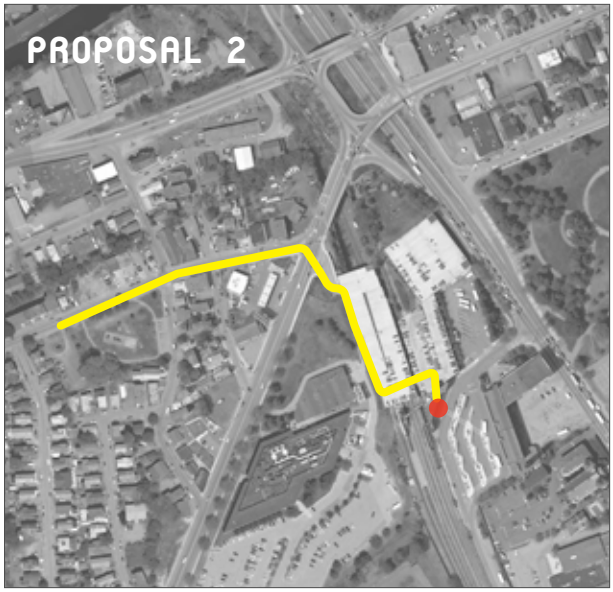



Visualization of the intersection of Chelmsford Street and Westford Street with improved streetscape improvements to improve pedestrian access.

## **PROPOSAL 2**:
### Safer Pedestrian Route Through Parking Garage

As a slightly more ambitious step to enhance the existing pedestrian access on Chelmsford Street, a safer walking route could be configured within the garage itself. Currently, pedestrians must walk along the vehicular path, between rows of parked cars inside the garage. This puts pedestrians at risk for accidents with motorists as they mix in the interior garage spaces. The current garage structure has window-like cutouts along the walls to allow natural light to enter, so we propose reconfiguring the interior parking layout to route pedestrians along the wall facing Thorndike Street. This would potentially involve the loss of some parking spaces, but would make for an inexpensive way to enhance the pedestrian environment, from the perspectives of both aesthetics and safety. Pedestrians would enjoy natural light along their daytime walk, and also a dedicated path that would be less prone to vehicular intrusion.

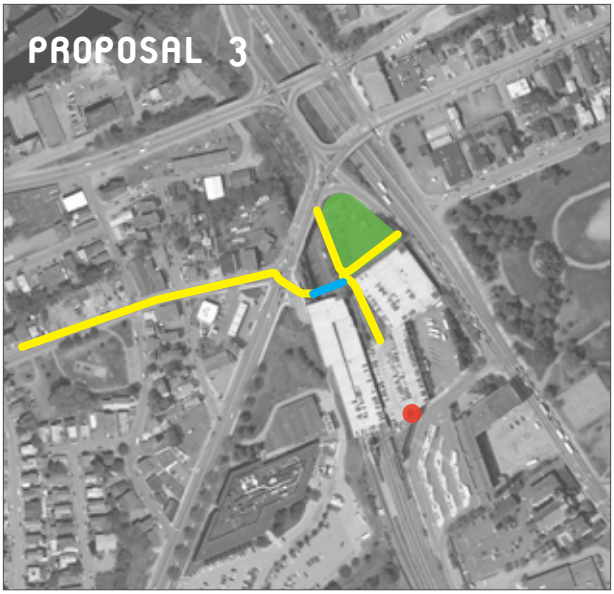
While this would not improve the present access situation into and out of the vehicular gate area on Chelmsford Street, it would be an easy, incremental way to enhance the livability of the spaces within the garage. Pedestrians use these spaces as a "shortcut" between the Lower Highlands and Gallagher Terminal, so this proposal acknowledges that and allows for an inexpensive improvement.






Rourke Parking Garage entrance off of Chelmsford Street, and the sign posted at the garage entrance.

## **PROPOSAL 3**: Construct Outdoor Walkway for Partial Garage Bypass




The key to a comprehensive renovation of pedestrian access to the Terminal from the Lower Highlands is to acknowledge that first, walking all the way around the Lord Overpass is unreasonable and laborious at any time of day, and second, that the current route through the garage is not ideal. To overcome this situation, we propose the construction of an outdoor pedestrian path that allows a bypass of the vehicular ramp and gate for the "shortcut" to the Terminal.

A hybrid approach that would make the most use of existing facilities is the least costly approach to mitigate pedestrian-Garage contact. Together with streetscape improvements previously identified in Proposal One, a dedicated pedestrian surface could be placed on the ramp from Chelmsford Street, connecting to a foot "bridge" constructed along the

Plan of Gallagher pedestrian pathway and park improvements.

View of re-imagined park space from Thorndike Street.

exterior perimeter of the north wall of the Garage. This bridge would carry pedestrians over the tracks and to the existing service road that runs from the Lord Overpass to the section of the Garage closer to Thorndike Street. Pedestrians could then walk along the service road (with potential improvements applied to this surface) into that part of the Garage, and continue to the Terminal entrance. While this would not entirely remove pedestrian contact with the Garage and vehicles parked within, it represents a significant improvement to the current situation. Pedestrians would primarily navigate the shortcut to and from the Terminal outdoors, obviating the need for the vehicular gate on Chelmsford Street to remain open during extended hours.

In addition, the existing park space between the Terminal and the Lord Overpass would allow pedestrians on the bridge or service road to continue to Thorndike Street. The park in its current form could use substantial improvement and additional landscaping to become more livable in this proposed scheme. Pervious paving materials would add to the environmental sustainability of the development. We also recommend the establishment of a public art program to enhance the exterior walls of the Garage in a mural format. This program could engage artists and youth in the Lower Highlands, and empower them by giving them the opportunity to make visible chnges to the pedestrian spaces they may use. There is also potential to program this space

View of park space, looking towards Lord Overpass.

for public gathering events such as open-air film or music festivals, small fairs, or similar activities which may tie into larger events taking place in downtown Lowell. Throughout the year the City of Lowell hosts a number of cultural festivals, one of the most prominent being the Southeast Asian Water Festival, an event that holds important meaning to many residents of the Lower Highlands. Capitalizing on this relationship would be strategic.

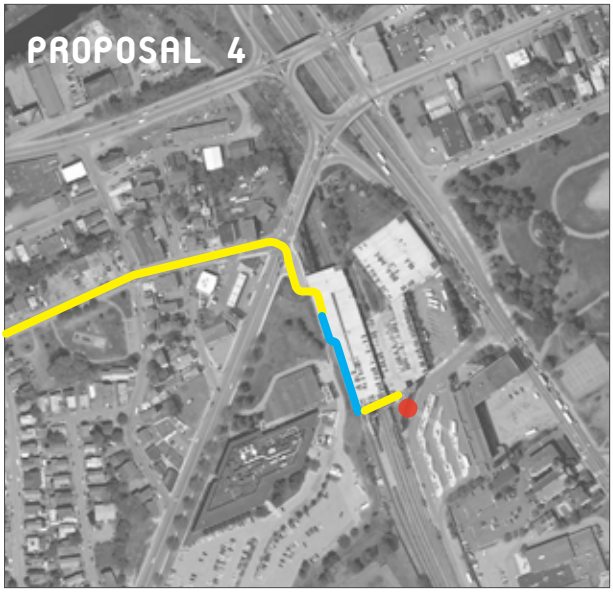
Given the topography of this park area, there is also a visual connection to the spaces across Thorndike Street which comprise the ongoing Hamilton Canal development. This could be leveraged by the strategic orientation of new furniture or activity space at this site. The existing streetcar "relic" stationed on the park site should be refurbished or relocated as part of an overall park revitalization. Furthermore, revising the steep grade of the "knoll" that lies between the Lord Overpass and the Terminal may be necessary to provide a more suitable pedestrian environment. The physical activity required to scale such a path along the knoll may be too much for some individuals, especially those with limited mobility. The existing positioning of guardrails and other access barriers will also need to be rethought to accommodate these uses.

Top: Visualization of the enhanced Chelmsford Street entrance to the Rourke Parking Garage

Middle: Pedestrian pathway from Lord Overpass into Rourke Parking Garage

Bottom: the existing park space.

## **PROPOSAL 4**: Construct Outdoor Walkway for Full Garage Bypass




Our most ambitious (yet perhaps most effective and promising) proposal for pedestrian access between the Lower Highlands and Gallagher Terminal involves the construction of an elevated exterior pathway. The goal in such an extensive construction is to completely eliminate all pedestrian pass-through in the Rourke Parking Garage. This pathway would still involve the access ramp from Chelmsford Street to the Terminal and Garage property, but would receive pedestrians before they would risk contact with vehicles entering or exiting. The path would be built along the exterior westward wall of the Garage, and provide a direct route to the Terminal entrance along the south edge of the property.

While this scheme would not directly involve enhanced access to Thorndike Street or to the park space near the Lord Overpass, it would accomplish a more complete rerouting of pedestrian traffic. This

Below: Before and after visualization of the new exterior Gallagher pedestrian pathway, featuring solar photovoltaics.

would both mitigate safety issues inside the Garage as well as provide improved, 24-hour pedestrian access to the Terminal from the rear.

A potential enhancement to the environmental sustainability of the development would be to form a dual-purpose exterior wall or enclosure of the elevated path. On one hand, it would provide shelter for pedestrians; on the other, it would allow for the attachment of exterior-facing photovoltaic panels to harness solar energy for the Terminal and Garage.

## Wayfinding

An improved wayfinding strategy is a key component to tie our proposals for the Gallagher Terminal together. Presently, it can be quite difficult for users to not only navigate the Terminal property itself, but also to move between the Terminal and the surrounding area and attractions. The average transit user arriving by train or bus would not be aware of the assets of the Lower Highlands that lie within walking distance. Even if users did venture behind the station, they would not easily find sites such as Cupples Square or Pailin Plaza unaided by maps or signs.

We therefore propose a signage master plan that would include standardized symbols for the Terminal, Pailin Plaza/Pailin Park, Cupples Square and the Nottingham Street Mills sites. Ideally, these icons would be used throughout the Lower Highlands to direct pedestrians, bicyclists or motorists to area attractions in a cohesive, consistent manner. In addition to these symbols, an effective signage plan would capitalize on existing efforts at City Hall to create signage directing visitors downtown. (These signs can be found at such areas as the School Street bridge, adjacent to the Western Avenue Studios area.) At Gallagher Terminal, signs should be sited at the main vehicle and pedestrian entrances of the station, as well as on approach paths to the Terminal facility. Standalone map kiosks with "you are here" indicators, as seen in many other cities, would be effective if placed in high-traffic pedestrian zones.



Top: Gallagher Terminal.

Bottom: Example of potential wayfinding system for the Lower Highlands.

# IMPLEMENTATION

## Projected Timeline

1-2 YEARS: Streetscape improvements, parking garage route (proposals 1 & 2)

1-5 YEARS: Service road ped access, revitalized park, access into back of garage (proposal 3)

2-10 YEARS: Build elevated bridge pathway, get PVs for south facing side (proposal 4)

| SITE / PROPOSAL | PARTNER, SPONSOR, OR FUNDING SOURCE |
|---|---|
| Streetscape improvements | Lowell Planning Department<br>Keep Lowell Beautiful<br>Lower Highlands Neighborhood Association<br>Hamilton Canal Management company, Trinity Financial |
| Greenspace/park improvements | Lowell Parks and Recreation<br>LRTA<br>MBTA<br>Trinity Financial |
| Pedestrian route through garage | LRTA |
| Pedestrian bridge over railtracks | LRTA<br>MBTA<br>Lowell Planning Department |
| Exterior beautification / Public Art / Programming of activities for park area | Cultural Organization of Lowell (COOL)<br>119 Gallery<br>Revolving Museum<br>Western Avenue Studios<br>Lowell Cultural Council<br>Lowell Summer Music Series<br>Lowell Festival Foundation |

We expect that a strategy to partner with key organizations and stakeholders in the Gallagher Terminal project will be crucial to implementing our proposals.

The City of Lowell will be a key ally in assisting with streetscape improvements, such as lane markings, lighting, sidewalk repairs, street trees, and landscaping around the Terminal site. Once these physical improvements have been implemented, other organizations such as the Lower Highlands Neighborhood Association and Keep Lowell Beautiful should be solicited for assistance in the maintenance and upkeep of the facilities. Once funding is assured, these improvements can be implemented relatively quickly, and will have the most immediate impact on the experience of pedestrians throughout the entire city who use the Gallagher Terminal.

The LRTA, owner and operator of the Rourke Parking Garage facility and adjacent access areas, will be an important partner in the endeavor to create a more user-friendly terminal. The LRTA is strongly encouraged to work better to include all potential users, both motorists and pedestrians. By improving the pedestrian experience in the environment surrounding the Gallagher Terminal, the LRTA can potentially increase the number of users of its facilities. The LRTA should be engaged in a series of dialogues to determine the best plan for implementing some or all of our incremental proposals for pedestrian access.

The MBTA is also a potential partner and funder of the major projects identified in this section, as they operate the rail service to and from the Terminal. The MBTA could provide logistical assistance to promote the Lower Highlands (among other neighborhoods) as a destination within Lowell for disembarking passengers. It would be in the best interest of the MBTA to ensure adequate and legible wayfinding and signage from Gallagher Terminal to different Lowell neighborhoods. This would ensure that visitors to Lowell feel at ease in the city, and are then more likely to make repeat visits. Once visitors recognize that MBTA via the Gallagher Terminal is easy to use, the MBTA will reap the financial benefits. Neighborhoods included in the wayfinding system also have much to gain. The high-profile Hamilton Canal District, for example, might be interested in increased tourism. It would behoove Trinity Financial (the Master developer of the District) to partner with the Gallagher Terminal and MBTA to help in the creation of a wayfinding system.

Given the strong cultural diversity and heritage of Lowell, we encourage the revitalization of the park and open space area between Lord Overpass and the LRTA parking garage for use as a public art display area, a gathering space for live performances, and an open recreational area. A few of the potential partners to assist in the programming of this space are the Cultural Organization of Lowell (COOL), the 119 Gallery, the Revolving Museum, UMass-Lowell, and Lowell Cultural Council. Lowell Cultural Council, in particular, offers grants for public art works that benefit the Lowell community.

# 7 GREEN NEIGHBORHOOD INTERVENTIONS

## STORMWATER AND THE LOWER HIGHLANDS

Stormwater runoff is an issue in all urban environments as a result of the amount of impervious surface associated with human development. In areas without paved surfaces, rain water is absorbed directly by the ground. In urban environments, stormwater is forced to flow over pavement, accumulating pollutants until it comes to rest in a low-lying area, or spills into the sewer system. Additionally, sometimes sewer systems do not have the capacity to handle all of the water created by a single storm event. This leads to more serious problems.

The City of Lowell has a combined sewer system, which means that the sewage pipes hold a mixture of both household wastes and stormwater. When the sewer system does not have the capacity to handle all of the water created by a storm event, the system is overwhelmed, and stormwatre combined with sewage could overflows onto streets, basements and water bodies. These overflow events, called Combined Sewer Overflows (CSOs), release untreated sewage and pollution into the environment, which is dangerous for public health and aquatic ecosystems. This is an issue of particular interest to Lowell, since the city occupies an important place in the Lower Merrimack River Watershed.

The Lowell Regional Wastewater Utility (LRWU) is currently separating the combined sewers in the city in order to reduce the events of CSO. Yet, while separating the sewer system is an excellent first step to reduce problems relating to pollutants in rivers and lakes, it does not entirely remedy the problem of stormwater runoff accumulating on properties and causing significant damage. Nor does it address the

inability of rainwater to be absorbed directly by the earth, thus recharging underground systems. And it still does not prevent stormwater from picking up pollutants as it rushes across paved surfaces. According to the EPA's National Urban Runoff Program, the first half hour of urban stormwater runoff has twice the toxicity of raw sewage!

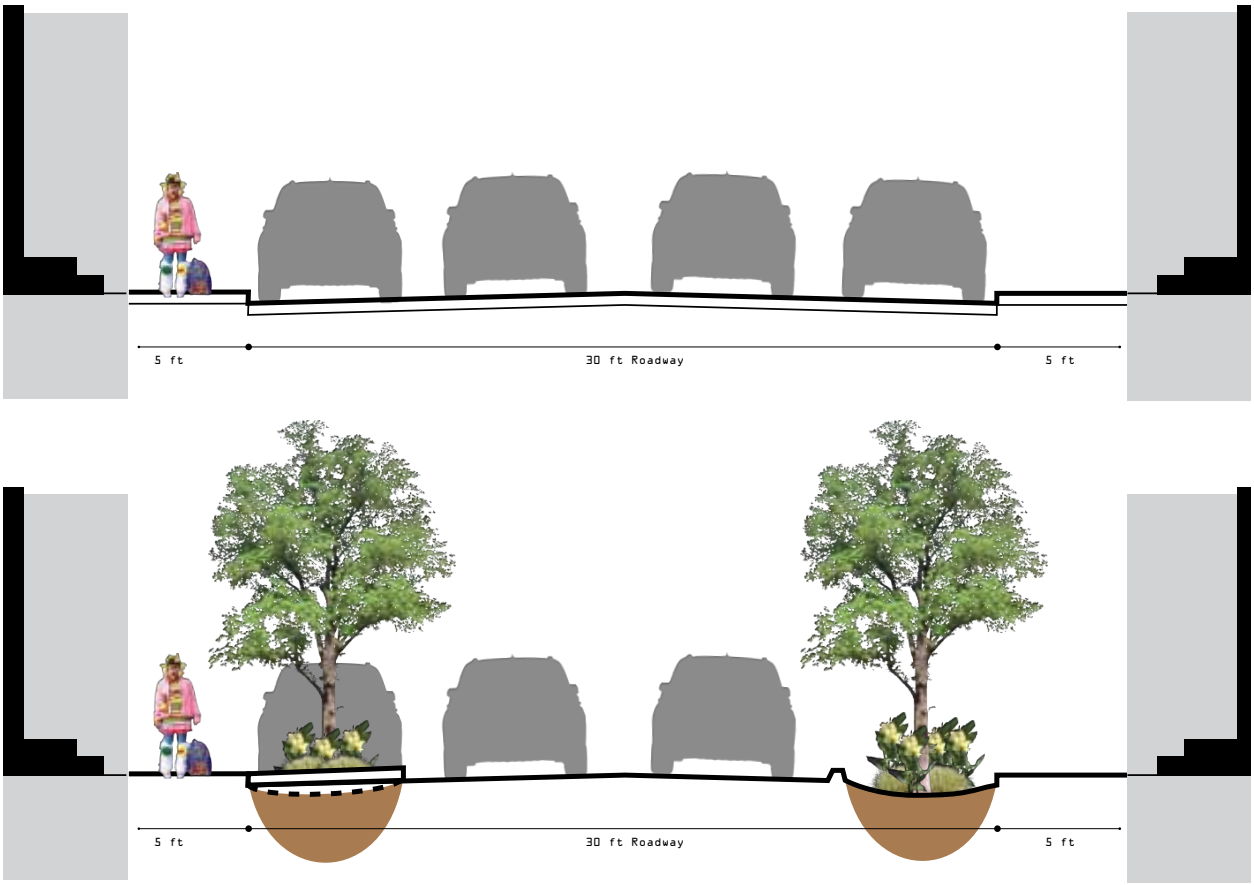
In the Lower Highlands, the problems with stormwater runoff are exacerbated as a result of the practice of significant paving of permeable spaces around households. While we understand the motivations behind yard paving from a resident's perspective – such as simplifying yard maintenance and providing additional parking space -- the practice is likely further aggravating the stormwater runoff problem.

We believe that the Lower Highlands has an opportunity to address some of the problems caused by stormwater runoff by adopting a few 'green' ideas. Some of these interventions may help to mitigate the damage done by paved lawns, improve the ecological health of the area, and create pleasing aesthetic changes in the streetscape.

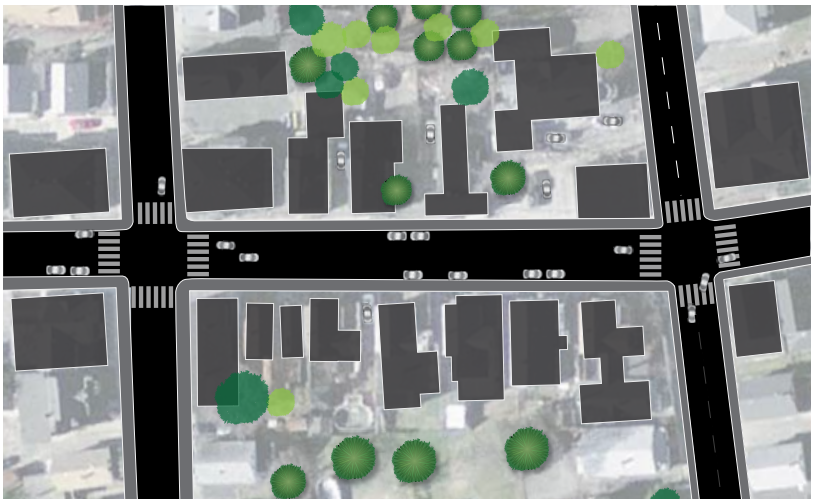
## Green Streets

The Lower Highlands would benefit immensely from installing green street infrastructure within the neighborhood. A "green street" uses natural systems to reduce the load on sewer treatment systems by:

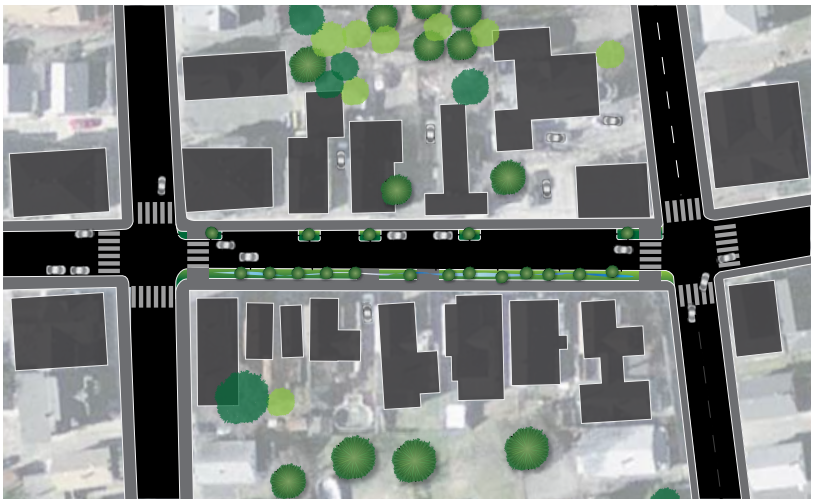
- Allowing rain water to infiltrate the ground naturally,
- Slowing and reducing the flow of stormwater to the sewer,
- Filtering pollutants out of stormwater and runoff, and
- Providing people in the city with more green space.



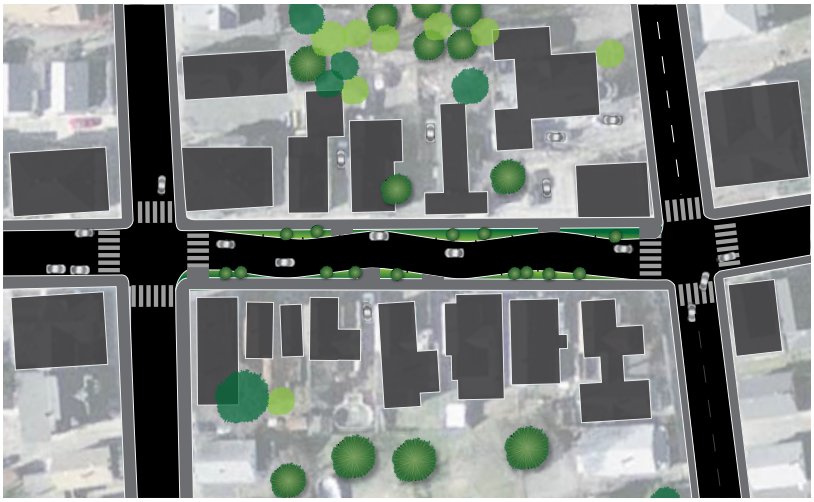
This is a model of a hypothetical street in the Lower Highlands. The roadway is two-way, with parking on both sides, and is narrower than current regulations would allow to be built. The structures on either side generally have small setbacks.



Two ways to include green street technologies into such a street include small, intermittent planters (top), and one long vegetated swale with driveway crossings.



A comprehensive greening of this block could involve vegetated infiltration areas combined with chicanes.



| GREEN STREET TREATMENT | WHAT IS IT? | BENEFITS | DRAWBACKS |
|---|---|---|---|
| TREES | A woody perennial plant having a single main stem generally with few or no branches on its lower stem. | Trees can catch a lot of rainwater on their leaves, particularly if they have large canopies. Trees can often be planted in existing yards. Trees also increase habitat and provide shade in the summer. | Trees with large canopies need a lot of space and time to grow in order to effectively slow large amounts of storm water. |
| CONTAINED PLANTERS | A planter placed on an impervious surface. Rainwater is captured, stored, used by plants, and filtered as it drains from the planter's base. | Catches and detains rain, improves aesthetics of neighborhood. Available in infinite styles. | Does not capture all runoff. |
| VEGETATED SWALES | Gently sloping earthen depressions that are densely planted. Water flows through them and is slowed and absorbed into the ground. Unabsorbed water flows to another swale or approved drainage site. | Costs less than a standard drainage system, and is more aesthetically pleasing. Provides water filtration benefits and increases habitat. | Some maintenance required. |
| VEGETATED INFILTRATION BASINS | These are much the same as swales, but they have no outlet. Instead, water pools in a planted earthen depression and is held until is it absorbed. | Low cost and attractive, removes all water within it from sewer treatment, filters water, and increases habitat. | Needs some space, and some maintenance is required. |
| FLOW-THROUGH PLANTERS | Impervious bottomed planters that accept, absorb, and slow runoff as it goes through them. Excess water drains out. | Small size, attractive, can be used next to buildings without risking water damage. Increases habitat. | No groundwater recharge. |
| INFILTRATION PLANTERS | These planters are like Infiltration Basins, but they are more compact and more urban in style. | Compact, attractive, deflects water from sewer system, filters water, increases habitat. | Soil must drain well. |
| PERMEABLE PAVEMENT | This can come in several different forms. Please see page 68 for more information.. | Provides a hard surface that still allows some drainage through it. | Not completely permeable, reduces habitat area. |

There are several ways to make a street "green," including planting trees, using pervious pavements, installing contained planters, and incorporating planters, basins, and swales into street and sidewalk design that accept runoff from the impermeable surfaces.

Green streets are a new idea in many parts of the country, but they already have a proven track record of performance and their popularity is growing. They dramatically reduce or eliminate water flows entering sewer systems both during a normal rain and during storm events, thereby reducing the load on sewer systems. This is particularly applicable to Lowell, where much of the sewer system is combined rain and sewer water, and green street facilities may obviate the need to separate the sewer in some areas, thereby saving the significant expense of digging up streets to replace sewer lines.

## OTHER CITIES USING GREEN STREETS

A wealth of knowledge and design work has been produced by several cities around the country, including New York City; Seattle, WA; and Portland, OR. Philadelphia is also currently planning a variety of initiatives to utilize many of these technologies throughout the city. Much of this information is available on their websites, and technical details and best practices are complied by the International Stormwater Best Management Practices Database (http://www.bmpdatabase.org/).

## IMPLEMENTATION OF GREEN INFRASTRUCTURE IN THE LOWER HIGHLANDS

We recommend capitalizing on the enthusiasm of the LRWU to set green infrastructure goals for future development and CSO mitigation projects in Lowell. Presently, the City is formulating a Long-Term Control Plan to address CSO impacts, which currently discharge a total of 352 million gallons per year of untreated combined sewer overflow to neighboring waters . The LRWU has expressed great interest in adopting green infrastructure projects throughout the city. It wants to raise awareness about green landscape alternatives to the traditional, hard infrastructure drainage option. Green alternatives may require large initial investments, but they are less expensive than costs associated with separating sewers.

While the "demonstration" and awareness-raising value of green streets makes them a worthwhile intervention just about anywhere where residents express interest, in the Lower Highlands there are some areas in particular where we recommend the City prioritize energy in implementing these initiatives. Ideal candidate streets are those located within areas that are being considered next for sewer separation, in order to take advantage of funding synchrony. Based on conversations with the LRWU, we suggest the following possible site locations:

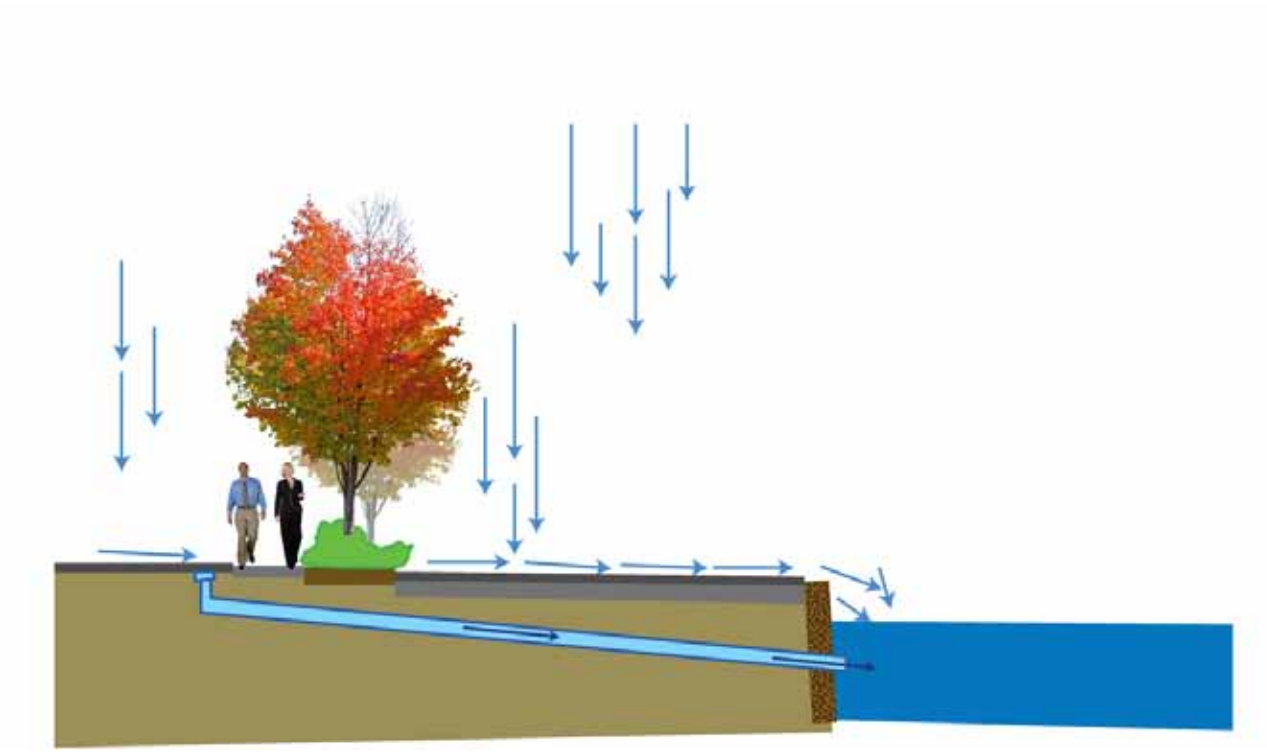
- The area west of School Street and north of Westford Street. This area is currently under consideration as the next area for sewer separation civil works by the LRWU. Basement flooding is reportedly common. Some recent small upgrades to pipe infrastructure by LRWU have reduced flooding issues, although there is concern that additional, larger scale upgrades may still be needed to meet federal CSO regulations. This is a perfect candidate area for green street interventions because their incremental value in reducing stormwater runoff and CSOs would likely be sufficient to circumvent the need for much more expensive, time

consuming and disruptive civil works to replace the entire combined sewer system. LRWU is highly interested in exploring this further, and would welcome recommendations from the neighborhood on specific streets for trial green interventions.

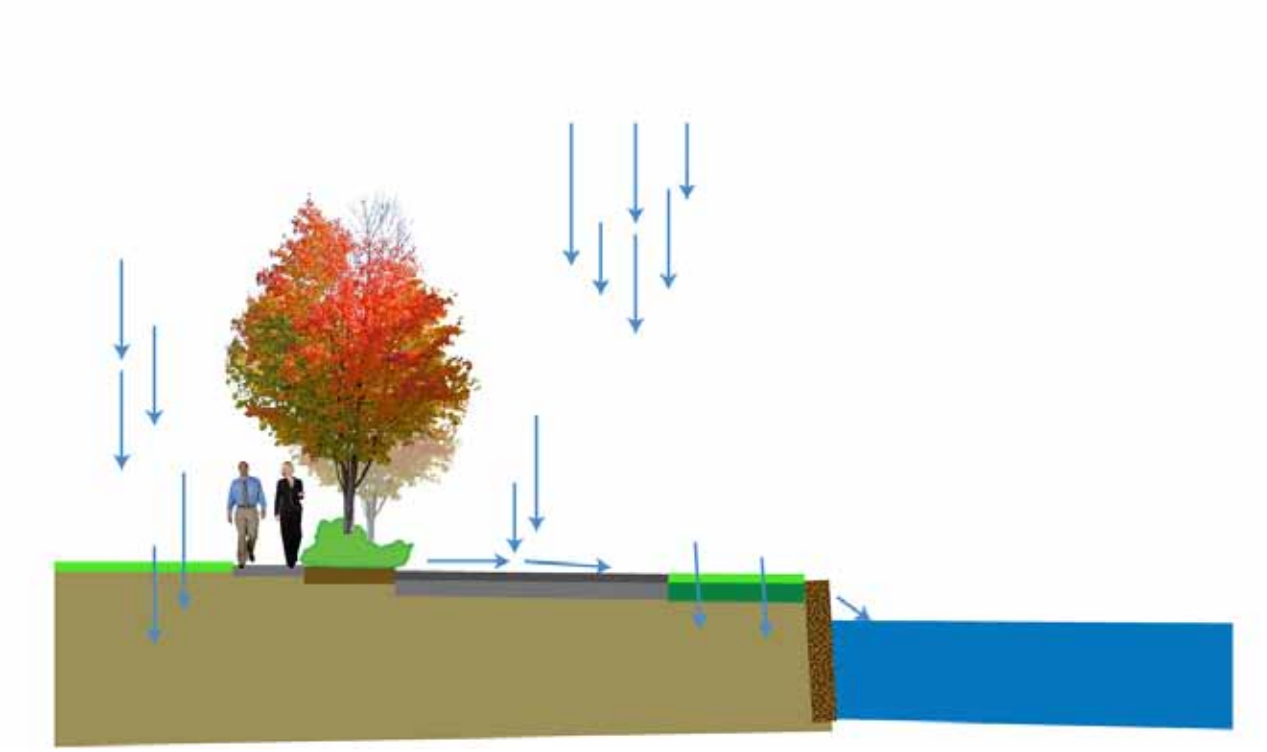
- Streets, in the southern part of the Lower Highlands, recently underwent sewer separation civil works but may be good candidates for street greening to replace former street trees that have been lost. LRWU also suggested Princeton Street as a possible candidate green street.
- Three public schools in the Lower Highlands were suggested by LRWU as prime candidates for green landscaping interventions, which could also serve educational purposes. Daley School (built in the 1960s) and Bailey School (built in the 1990s), both on Campbell Drive at Fleming, are situated at the edge of a hill where significant erosion problems have been noted. Swales or other green technologies would be worthwhile to mitigate this problem. At Washington School (which currently has flows leading onto Wilder Street), a green roof would also be beneficial.
- Public parks throughout the neighborhood are also prime candidates for green drainage innovations, where the educational features of natural storm water management could be merged with environmental benefits.

Aside from funding through the LRWU, there may be funding for these initiatives from the national level. The United States Environmental Protection Agency (EPA) has recently created new green stormwater infrastructure guidance and policy documents, including the April 2007 "Green Stormwater Infrastructure Statement of Intent" and two memos called "Using Green Stormwater Infrastructure to Protect Water Quality in Stormwater, CSO, Nonpoint Source and other Water Programs" and "Use of Green Stormwater Infrastructure in Permits and Enforcement". This signals the EPA's strong interest in and support of cities' use of green stormwater infrastructure approaches over traditional underground pipe infrastructure.

This national and local interest in green infrastructure indicates a trend for the future. If it chooses to invest in these elements of our plan, the Lower Highlands has the opportunity to host cutting-edge green design, which would bring the neighborhood national recognition and local pride. And the Lower Highlands would reap all of the benefits of green infrastructure.



Conventional engineered drainage systems (above) channel rainwater off impermeable surfaces into the sewer, while natural drainage systems (below) collect, treat, and absorb rain water.



# Gardening in the Lower Highlands

As part of our compendium of green initiatives that blend well with the character of the Lower Highlands, we propose that the community work to create more public and private gardens. Both small- and large-scale gardening has important ecological and social benefits, which includes elevating a sense of place, identity, and ownership in the neighborhood, and providing health and ecological benefits. Gardening affords the opportunity to influence one's environment and be creative and expressive in a constructive and ecologically friendly way. The ability to take part in shaping one's surroundings leads to an increased sense of belonging to and caring about a place, which in turn has been shown to lead to reduced stress and increased personal happiness.

The ecological benefits of gardening include water treatment, storage, and absorption, increased natural habitat for small creatures like birds and butterflies, air cleaning, a small amount of $CO_2$ sequestration, decreased $CO_2$ from prevented food miles traveled, decreased pesticide and fertilizer use compared to conventional agriculture, and a reduction of the urban heat island effect.

### THERE ARE A VARIETY OF POSSIBLE OWNERSHIP AND RESPONSIBILITY SCENARIOS FOR GARDENS IN THE LOWER HIGHLANDS:

1. Privately owned gardens: To encourage more private gardening in Lower Highlands, Lowell could partner with existing community gardening groups such as the Lowell Community Gardens Greenhouse to expand the reaches of their efforts within the neighborhood, or could undertake public campaigns offering incentives such as free soil quality testing, supplies, and other forms of support to encourage private residents to garden.

2. Community gardens: privately or publicly owned, these are generally run as a cooperative with some collective space along with individual plots for each member. One of the difficulties is finding space to establish a community garden – owners of existing privately-owned vacant lots where gardens might be established may be reluctant because of legitimate concerns about owner liability. We advise that the City of Lowell work with the Lowell Community Gardens Greenhouse to establish best practices for allowing public users to garden private land, and compose and provide an indemnity waiver for use by these parties. Lowell could also consider allowing residents to garden in public open spaces in the Lower Highlands. For example, if the green streets concepts are implemented, the accompanying vegetation could be publicly maintained.

3. Commercial farms or greenhouses: while such operations may be on private land, they could be worked by employees from the neighborhood. One possible location for a commercial farm or greenhouse is the RMV location on Manufacturers Street off Chelmsford.

The RMV site off Chelmsford would be a great place for a commercial greenhouse.

# Reducing impervious pavement on private lots

Looking to improve the ecological impact of public spaces (like streets and sidewalks) will undoubtedly help to mitigate drainage issues in the Lower Highlands. However, paving on public right-of-ways is only part of the equation. To holistically address the issue of stormwater runoff in the Lower Highlands, we must also consider impervious coverage in private spaces, like residential and commercial lots. As mentioned before, many residents of the Lower Highlands pave over their front yards, for personal aesthetic or parking purposes. Commercial properties often pave front and back lots as well, usually to conform to parking regulations. The degree of paving in such areas contributes to stormwater runoff problems, and frequently results in localized flooding.

## ALTERNATIVE PAVING OPTIONS

At first glance, there seems to be an unsolvable problem: residents and commercial properties want paved surfaces, but paved surfaces create serious stormwater runoff repercussions. Fortunately, there is compromise to be found in pervious pavements. Pervious pavements provide the benefits of normal pavement (easy to walk over, ability to park cars), but they allow water to percolate down into the ground. Pervious pavement technologies are well established, time-tested, and are recognized under the LEED Green Building certification scheme. Their benefits are clear: they can be more durable, more environmentally friendly, more aesthetically pleasing, and cheaper in the long term than traditional pavement. Multiple methods exist to make paved surfaces pervious, so a wide range of cultural preferences can be met with these materials. For example, porous concrete or asphalt contain little or no sand to allow for high void content, which provides for direct water absorption. Patio-like concrete block modular pavers, another type of pervious pavement, funnel water between blocks into a basement layer of washed sand and gravel for gradual water absorption.

A comparison of permeable pavement options

The following table compares several permeable paving materials with traditional pavement.

Pervious concrete can be mixed and applied using standard paving equipment. In fact, pervious concrete contractors certified by the National Ready-Mixed Concrete Association already exist in the Lowell vicinity, making it an affordable option for residents and businesses in the Lower Highlands. Many resources exist for residents interested in converting to or installing such surfaces.

## Permability Index

| Type of Cover | Image of Material | Cost | Permeability (%) of area | Winter Durability | Lifecycle Environmental Benefit |
|---|---|---|---|---|---|
| Traditional Asphalt | | $ | 0% | medium | lowest |
| Pervious Concrete | | $$ | 25-50% | low | medium |
| Pervious Asphalt | | $ | 25-50% | low | medium |
| Pervious Interlocking Pavers | | $$ | up to 25% | high | high |
| Structural Grass Pavers | | $$ | 97% | low if plowed | highest |

# IMPLEMENTATION

Several zoning and policy tools exist to reduce the amount of impervious pavement on private lots in the Lower Highlands. We suggest taking two specific steps: first, revising the off-street parking section of the zoning code, and second, creating incentives for current residents/businesses to utilize Low Impact Design.

## STEP 1: REVISE OFFSTREET PARKING SECTION OF ZONING CODE

We propose making several revisions to the section in the zoning code which outlines the requirements for the provision of offstreet parking.

First, we propose revising the statement of purpose of offstreet parking requirements. This statement should more explicitly acknowledge the environmental tradeoffs in the provision of parking spaces. The ordinance currently states "that all structures and land uses be provided eventually with sufficient off-street parking space to meet the needs of persons making use of such structures and land uses." (Section 6.1.1, "Intent of Parking Requirements"). The rationale behind this purpose is to allow both residents and visitors to the city to use and maintain private cars for their personal transportation needs, and to park them in designated spots that are safely out of the way of activity on the streets. While we do not dispute this as a critical objective, we believe a revised statement would invite residents and investors to think differently about the provision of parking and encourage "green" decisions about parking and paving. The environmental rationale for the specified quality standards for offstreet parking, as stated in Section 6.1.7 – "...to avoid ... excessive water flow onto public ways or adjoining property," should be relocated to the opening "intent" section. Additionally, it should be expanded upon to communicate the necessity of minimizing the conflict between providing parking and ensuring environmental integrity and adequate natural drainage. Other

**BOX 1: PROPOSED NEW TEXT FOR ZONING ORDINANCE SECTION 6.1.1, INTENT OF PARKING REQUIREMENTS**

"It is the intention of this Section that all structures and land uses be provided eventually with sufficient off-street parking space to meet the needs of persons making use of such structures and land uses, where alternative and public transit options are not sufficient to allow ease of access and movement for those persons. The intention is also to ensure that the type of parking surface utilized to fulfill the requirements of this Section does not lead to excessive water flow onto public ways or adjoining or low-lying properties."

**BOX 2: PROPOSED NEW TEXT FOR ZONING ORDINANCE SECTION 6.1.7, "STANDARDS":**

Paragraph 1. "Required off-street parking facilities ... shall be graded, surfaced with tar, asphalt, concrete, or other nondusting paving pervious paving. Types of acceptable paving could be porous concrete / asphalt or block modular pavers, but must allow runoff absorption at a rate of at least 0.3 inches/hr, so as to reduce erosion while also allowing for ground-water recharge and absorption of water runoff. Parking surfaces must be drained and suitably maintained to the satisfaction of the Building Commissioner and the City Engineer to the extent necessary to avoid the nuisances of dust, erosion or excessive water flow onto public ways or adjoining or lower-lying property properties."
Paragraph 2. "All off-street parking facilities and other impervious surfaces must conform to all applicable provisions of the Massachusetts Department of Environmental Protection Stormwater Management Policy Handbook: Volume I & Stormwater Technical Handbook Volume II, and all other applicable stormwater regulations..."

language should be added to balance private car use with the use of public and/or alternative transport options.

Second, in line with the newly stated objective to consider public and/or alternative transport options in determining offstreet parking requirements, the zoning code should shrink the required minimum parking allotments for businesses and residences within close proximity of major transit hubs. For the Lower Highlands, this would include Gallagher Terminal. Currently there is no such provision.

Third, language that is directly inconsistent with the objective of minimizing water flow onto public ways or adjoining property should be removed. In Section 6.1.7, the zoning ordinance states that required off-street parking facilities "shall be graded, surfaced with tar, asphalt, concrete, or other nondusting paving..." and refers explicitly in paragraph 2 to offstreet parking facilities as "impervious surfaces." In other words, pervious or porous pavement is neither contemplated nor, it seems, allowed. By employing language that mandates impervious pavement – and a significant amount of it – on private residential and commercial lots, the ordinance seems to encourage rather than avoid high water flows "onto public ways and adjoining properties." The most obvious necessary change is to remove the direct association between off-street parking and impervious surfaces.

Fourth, the ordinance should require pervious/porous pavement be used for all offstreet parking in any new development in Lowell, as well as mandate incremental replacement of existing pavement with pervious surfacing as part of issuance of any permit for expansion or change of use of existing properties. This would be addressed through added language to Section 6.1.3, "Special Regulations", as shown in Box 3.

Fifth, specific reference should be made to Low Impact Design specifications in the environmental review guidelines for both driveway permit and special permit processes. Section 11.3.2a of the zoning ordinance, "Criteria for Special Permits in the Table of Uses", specifies environmental criteria to be

**BOX 3: PROPOSED NEW TEXT FOR SECTION 6.1.3, "SPECIAL REGULATIONS":**

Add to the bottom of paragraph 2:

"Any additional required parking due to changes of use or expansion of an existing structure must conform to the standards for pervious paving outlined in section 6.1.7. If the required additional parking caused by the changes of use or expansion of an existing structure exceeds 30% of the total required parking for the new use or expanded structure, all parking spaces must be re-surfaced to conform with the aforementioned pervious paving standards."

**BOX 4: EXAMPLE STORMWATER UTILITY**

Chicopee, MA implemented a successful stormwater utility management program in 1998. The city passed an ordinance aimed at assessing and then taxing the amount of stormwater generated by each property tied into the sewer system. The funds obtained from that were used to invest in best management practices and remediation measures to treat stormwater. As reported by the EPA, Chicopee conducted extensive research before instituting the stormwater ordinance, and residents said that they would be willing to pay a new fee for stormwater management if they were sure that the money would be used to address the problems directly affecting them. The ordinance was designed to address such concerns, and now the city collects between $400,000 - $550,000 a year to use on additional green infrastructure projects and to leverage state loan funding for sewer separation projects. In Lowell, the LRWU could collect fees based on the amounts of impervious pavement per property above a certain percentage impervious. This money could go into a pool that is used in greenscape development throughout the city.

applied to proposed developments subject to special review. Several additions could be made to these environmental criteria:

- The city could require new development to follow the new Sustainable Sites Initiative Guidelines and Performance Benchmarks for sustainable land design, construction, and maintenance practices. The guidelines are available here: http://www.sustainablesites.org/. These guidelines, developed by the Sustainable Design and Development Professional Practice Network of the American Society of Landscape Architects (ASLA) as a response to the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building

View of a Lower Highlands home with a paved yard (above) and with a visualization of a green yard with pervious pavers (below).

Rating System, outline a point system for current state-of-the-art landscape development.

- For driveway permits (overseen by the City Engineer and required for any development in any zone involving construction or expansion of driveways), similar language should be stipulated.
- The city could set maximum runoff requirements for new developments, thus effectively requiring Low Impact Design approaches to site design. Many other cities require that new development not contribute any additional runoff into the sewers. Lowell could make this requirement apply to smaller lots, or tie development of individual properties to specific Low Impact Design measures (such as green roofs, swales, etc).

## STEP 2: CREATE INCENTIVES FOR CURRENT RESIDENTS/BUSINESSES TO UTILIZE LOW IMPACT DESIGN

In addition to requiring pervious pavement for new developments and expansions or changes of use to existing properties, various programs can be implemented by the City to encourage residents and businesses to embrace pervious surfacing or other low impact design features. Traditionally, government funding for stormwater infrastructure is limited, so incentives for installation will serve as important alternative funding strategies for publicly sponsored green infrastructure (such as green streets). The National Resource Defense Council (NRDC) reports that local governments have begun to look to these alternative methods to fund programs. This includes charging inspection and permit fees, taxing new development at an increased rate, forming regional stormwater management districts, and creating stormwater utilities. A few of these options are outlined below.

### STORMWATER UTILITY SYSTEM

The City could create a stormwater utility to collect fees from residents for the purpose of managing stormwater. Stormwater utilities are used in over 400 municipalities and counties in the U.S., driven in large part by National Pollutant Discharge Elimination System (NPDES) requirements that push communities to reexamine funding alternatives for stormwater programs. The stormwater utility approach is regarded as an equitable and effective approach to stormwater financing, providing a stable, dedicated funding source for future infrastructure needs. The system is equitable because it is based on actual runoff impacts instead of property values. The key challenge in establishing a stormwater utility is building public support for the idea, which requires education about the stormwater problem for both the public and decision makers.

### DOWNSPOUT DISCONNECTION PROGRAM

The City of Lowell could consider a Downspout Disconnection Program, similar to those established in Philadelphia, PA and Portland, OR. In those programs, residents are encouraged to prevent their rain gutter downspouts from flowing directly to the sewers, and instead redirect rainwater to a rain barrel or allow it to flow directly into the landscape. These programs are effective to treat stormwater problems at a localized, distributed scale, and have a strong public educational component. Philadelphia and Portland have successfully experimented with this type of program, providing rain barrels and a subsidy of approximately $50 to participating households.

### INCREASE AWARENESS – PUBLIC EDUCATION ABOUT STORMWATER

Community support is essential for effective stormwater management. Public education programs build community support, which lead to political support. Signage on storm drains and other awareness campaigns can help the public to understand why stormwater is important, and what measures individuals and households can take to reduce runoff.

# 8 IMPLEMENTATION SUMMARY

The matrix below is a summary list of the recommendations made in this plan. This matrix is meant to be a starting place for community members, organizations and city agencies in considering how to begin implementing specific strategies. Below, we suggest organizations that should take the lead, potential partner organizations, the estimated level of investment required for implementation, and a broad timeframe for achieving results. With this matrix, neighborhood members can discuss their implementation priorities for the immediate future and over the next many years.

| AREA | SPECIFIC RECOMMENDED ACTION | LEAD ORGANIZATION |
|---|---|---|
| **PAILIN PLAZA/PARK SITE** | | |
| Pailin Plaza | Create a non-restrictive sign ordinance | Lowell Divison of Planning and Development (DPD) |
| | Implement streetscape improvements for traffic calming | Lowell DPD, Lowell Department of Public Works (LDPW) |
| | Add more and better lighting at the plaza | Lowell DPD |
| Clemente (Pailin) Park | Work with community to create a site plan | Lowell DPD |
| | Create maintenance program | Nearby businesses |
| | Invest in better park infrastructure | Lowell Parks and Recreation Department |
| | Obtain lot to expand park to the canal | Acre Plan Extension |
| | Reorient Boys and Girls Club to face the park | Boys and Girls Club |
| | Create community center | Lowell Parks and Recreation Department |
| Pawtucket Canal | Construct a bridge over the canal | Lowell DPD |
| | Work with NPS to create a path along canal | National Park Service |
| | Establish a ferry boat taxi service along the canal between the park and the Hamilton Canal District | Massachusetts Department of Transportation |
| **CUPPLES SQUARE** | | |
| | Develop design guidelines for business facades along Westford Street and Pine Street | Lowell DPD |
| | Create zoning overlay district to incorporate design guidelines, lot merging, historic preservation of flatiron building, and promotion of green development | Lowell DPD |
| | Implement streetscape improvements, including wider sidewalks, street trees, and signage | Cupples Square Business Association, Lowell Department of Public Works |
| | Create Cupples Square Mainstreets Program | Cupples Square Business Association, Lowell Office of Economic Development |
| | Create Green Business Loan Program | Cupples Square Business Association, Lowell Office of Economic Development |
| | Create traffic calming measures at intersection of Westford and Pine Streets, including converting intersection into right-angle stop | Lowell Department of Public Works |

| POTENTIAL PARTNERS | INVESTMENT LEVEL (LOW, MED, HIGH) | TIME FRAME |
|---|---|---|
| | | |
| | Low | 1 year |
| Massachusetts Department of Transportation | High | 5 years |
| Lowell Community Development Block Grant (CDBG) program, nearby businesses | Medium | 5 years |
| | Low | 1 year |
| Lowell Parks and Recreation Department | Low | 1 year |
| Partnership with nearby businesses | High | 1–5 years |
| Lowell DPD | Medium | 1–5 years |
| | Low | 1–5 years |
| Boys and Girls Club | High | 5–10 years |
| National Park Service (NPS), Lowell Parks and Recreation Department, Revolving Museum, and nearby businesses in Pailin Plaza and the Acre | High | 5–10 years |
| Revolving Museum | Medium | 5–10 years |
| Hamilton Canal District (business association) | High | 15 years |
| | | |
| Cupples Square Business Association | Low | 1–2 years |
| Cupples Square Business Association, Lowell Historic Board | Low | 1–2 years |
| Lowell DPD | Med | 1–3 years |
| Regional Main Streets Coordinating Program | Low | 2–3 years |
| | Med | 3–4 years |
| Massachusetts Department of Transportation | High | 3–6 years |

| AREA | SPECIFIC RECOMMENDED ACTION | LEAD ORGANIZATION |
|---|---|---|
| **NOTTINGHAM MILLS SITE** | | |
| | Establish Nottingham Mills Site as a Priority Development District | Lowell DPD |
| (Option 1) | Initiate acquisition and financing of 21 Nottingham Street for redevelopment into a small business complex and assistance center | Lowell DPD, Lower Highlands Neighborhood Group, Cambodian Mutual Assistance Association |
| (Option 2) | Create Nottingham Mills Overlay District to guide future development of site for housing and commercial/cultural use, historic preservation, and increased open space and onsite drainage | Lowell DPD, Lower Highlands Neighborhood Group, Cambodian Mutual Assistance Association |
| RMV and Southern Chelmsford | Amend Zoning Code allow for eco-friendly autobody shops at RMV site | Lowell DPD |
| | Purchase RMV lot for subdivision into smaller parcels for recreational and autobody use | Lowell DPD |
| | Create long-term incentives for merging lots along Southern Chelmsford for future community-oriented redevelopment of area | Lowell DPD |
| | Create design guidelines along Southern Chelmsford corridor to bring cohesive identity to this neighborhood gateway | Lowell DPD |
| **GALLAGHER TERMINAL** | | |
| | Streetscape improvements | Lowell DPD |
| | Pedestrian route through garage | LRTA |
| | Exterior beautification / Public Art / Programming of activities for park area | Cultural Organization of Lowell (COOL) |
| | Greenspace/park improvements | Lowell Parks and Recreation Department |
| | Pedestrian bridge over railroad tracks | LRTA |
| **GREEN INITIATIVES** | | |
| | Implement Stormwater Signs and Awareness Campign | Lowell Regional Wastewater Utility |
| | Identify sites for increasing quantity and type of neighborhood gardens | Lowell Community Gardens Greenhouse, Lowell Parks and Recreation Department |
| | Revise Offstreet Parking Requirements in Zoning Code to decrease minimum parking requirements, promote pervious pavement, and incorporate Low Impact Design specifications | Lowell DPD |
| | Choose and implement pilot “green street” intervention | Lowell Regional Wastewater Utility |
| | Create Downspout Disconnection Program | Lowell Regional Wastewater Utility |
| | Create Stormwater Utility System | Lowell Regional Wastewater Utility |

| POTENTIAL PARTNERS | INVESTMENT LEVEL (LOW, MED, HIGH) | TIME FRAME |
|---|---|---|
| | | |
| Massachusetts Executive Office of Housing and Economic Development | Low | 2–5 years |
| Life Initiative, Lowell Development Finance Corporation, MassDevelopment, Coalition for a Better Acre, Lowell Small Business Assistance Center | High | 5–15 years |
| Revolving Musuem, Coalition for a Better Acre, Abraham Lincoln Elementary School | Low | 5–15 years |
| | Low | 1 year |
| | Med | 1–3 years |
| Lower Highlands Neighborhood Group, Other Neighborhood Organizations | Low | 5–15 years |
| Lower Highlands Neighborhood Group, Other Neighborhood Organizations | Low | 5 years |
| | | |
| Keep Lowell Beautiful, Lower Highlands Neighborhood Group, Trinity Financial | Medium | 1–2 years |
| | Low | 1–2 years |
| 119 Gallery, Revolving Museum, Western Avenue Studios, Lowell Cultural Council, Lowell Summer Music Series, Lowell Festival Foundation | Low | 1–2 years |
| Lowell Regional Transit Authority, MBTA, and Trinity Financial | Medium | 1–5 years |
| Lowell DPD | High | 2–10 years |
| | | |
| U.S. Environmental Protection Agency | Med | 1 year |
| Lower Highlands Neighborhood Group | Med | 1–3 years |
| | Low | 2 years |
| Lowell DPD | High | 2–3 years |
| U.S. Environmental Protection Agency | High | 3–4 years |
| U.S. Environmental Protection Agency | High | 5–7 years |

# 9 CONCLUSION

We hope these recommendations will provide a useful path to guide discussions on the future of the Lower Highlands. Our intention is to illustrate a range of possibilities for how the Lower Highlands might transform into a more livable and supportive neighborhood for both residents and visitors alike.

It has been our great pleasure to undertake a planning process in such an interesting and unique neighborhood as the Lower Highlands. Indeed, one of the greatest challenges our team confronted in our process was wrestling with whether the Lower Highlands needed our help at all. In the end, by carefully considering the balance of the neighborhood's many assets and challenges together, we identified areas of need where we could usefully contribute our ideas.

Our strategy identified four catalyst areas for improvement: The Pailin Plaza/Clemente Park area, The Gallagher Terminal, The Nottingham Mills and RMV site, and Cupples Square. We hope that the enhancement of these sites will generate an organic momentum of improvement that will carry through the entire neighborhood. We also outline several neighborhood-wide recommendations for improving the environmental quality and streetscape of the Lower Highlands.

Top two images:
First community meeting
October 28, 2009

Bottom two images:
Second community meeting
December 1, 2009

# 10 ACKNOWLEDGEMENTS

Communicating with and learning from the various community members, business owners and public officials in the Lower Highlands has been critical to the success of our project. We would like to extend a sincere thank you to those who shared their time and energy with us over the past 12 weeks. We hope that the proposed neighborhood plan serves to enrich the Lower Highlands community that we have grown so close to. A special thank you to:

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Cambodian Mutual Assistance Association
Iglesia Cristiana Ebenezer Asamblea de Dios
Pailin City Market and Restaurant
Revolving Museum
119 Gallery
Lower Highlands Neighborhood Association
Cultural Organization of Lowell (COOL)
Honorary Consulate General of Cambodia
UMass Lowell Community Relations Office
Coalition for a Better Acre
Community Gardens Greenhouse
Keep Lowell Beautiful
Lowell Development Finance Corporation
Lowell Department of Parks and Recreation
Lowell Wastewater Utility
Lowell Planning Department
Lowell Police Department
Business owners and employees throughout neighborhood
Diverse Lower Highlands residents and business patrons

And lastly, thank you to professors Eran Ben-Joseph and Terry Szold for allowing us the opportunity to continue MIT's valuable planning relationship with the City of Lowell.

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Massachusetts
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