

## CHAPTER EIGHT

### CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the conclusions and recommendations of the historic and archaeological resources identification surveys, assessments, and consultations undertaken for the Green Line Extension project. It includes the historic architectural and archaeological resources reconnaissance survey that was conducted for the baseline and six proposed build alternatives (Adams et al. 2008), as well as the historic and archaeological resources assessment of Maintenance Facility Option L (Adams et al. 2010a) and the historic resources intensive survey of the Proposed Action (Adams et al. 2010b). The summary also incorporates refinements made during the Section 106 consultation process on identification of historic properties. Addenda to this updated report are discussed at the end of this chapter.

#### **All Alternatives – Reconnaissance Survey**

The Green Line Extension project build alternatives subject to reconnaissance survey consisted of: Alternative 1, Extension to Medford Hillside and Union Square (via commuter rail ROW); Alternative 2, Extension to Mystic Valley Parkway/Route 16 and Union Square (via commuter rail ROW); Alternative 3, Extension to Medford Hillside (via commuter rail ROW) and Union Square (via McGrath Highway and Somerville Avenue); Alternative 4, Extension to Mystic Valley Parkway/Route 16 (via commuter rail ROW) and Union Square (via McGrath Highway and Somerville Avenue); Alternative 5, Extension to Mystic Valley Parkway/Route 16 (via commuter rail ROW); Alternative 6, Extension to Union Square (via commuter rail ROW). A total of eight stations are proposed in different combinations within these alternatives at Lechmere, Washington Street, Lowell Street, Gilman Square, Ball Square, College Ave, Mystic Valley Parkway/Route 16, and Union Square (two options).

#### **Historic Resources**

Overall, among the baseline and six alternatives, the historic architectural survey identified 15 areas/districts including 2 railroad corridor landscapes, and 425 individual resources, within the Green Line Extension Project APE. Of the areas/districts, three are National Register-listed districts, two are multiple property submissions listed in the National Register, one is a local historic district listed in the State Register only, and four are recommended as eligible historic districts (see Table 6-1, Appendix B). Of the individual properties, four are individually listed in the National Register, six were previously determined eligible by the MHC including one property also listed as a contributing resource to a National Register-listed district, 15 are recommended eligible for the National Register, and a total of two individual local historic districts are listed in the State Register (see Table 6-2, Appendix B). One of the State Register listed properties is also recommended eligible for National Register listing. A total of 13 areas/districts and 53 individual resources were previously recorded in the MHC Inventory. The two railroad corridor landscapes – the Lowell Line and the Fitchburg Line – are recommended as not eligible for listing in the National Register as historic districts, nor were any potentially eligible individual rail-related resources identified within the corridors (see Tables 6-3 and 6-4, Appendix B). All individual resources recommended as National Register eligible had been previously surveyed with six exceptions.

### *Summary by Alternative*

A summary of the historic resources reconnaissance survey results for each of the six build alternatives is presented in Table 8-1 for historic districts and areas, and Table 8-2 for individual historic resources. All the resources identified are within the APE for Alternative 4. In addition, many of the same resources appear in the APEs for Alternatives 1, 2, 3, 4, and 5 that use sections of the commuter rail ROW either to Medford Hillside or Mystic Valley Parkway/Route 16 and extend to Union Square via commuter rail ROW or McGrath Highway and Somerville Avenue. Alternative 6, which is confined to the extension to Union Square, has the least number of identified resources. As previously noted, the architectural survey did not collect specific information for the Baseline Alternative as it consists of increased bus and rail service along existing routes with no new infrastructure and is therefore not expected to result in any new impacts to historic resources. Chapter 6 of this report contains a detailed breakdown of the resources identified within the APEs of the six build alternatives.

**Table 8-1. Summary of Historic District Resources within All Alternatives for the Green Line Extension Project Area of Potential Effect.**

<b>Alternative</b>	<b>All Areas and Districts</b>	<b>NRDIS</b>	<b>NRMPS/MRA</b>	<b>LHD – District</b>	<b>RNRE - District</b>
1	11	1	1	1	4
2	14	3	2	1	4
3	11	1	1	1	4
4	15	3	2	1	4
5	14	3	2	1	4
6	4	1	0	0	0
All	15	3	2	1	4

#### **National Register Status Key**

LHD	Local Historic District
RNRE	Property Recommended Eligible for National Register Listing
NRDIS	National Register Listed Historic District
NRMPS/MRA	Property Listed as part of a National Register Multiple Property Submission/Multiple Resource Area

### *Reconnaissance Survey Recommendations*

The reconnaissance survey identified a total of 9 historic areas/districts, and 25 individual historic resources that are listed in, previously determined eligible for, or recommended eligible for listing in the National Register (see Table 6-6). Four areas that were recommended as historic districts all have existing MHC Inventory forms. Fifteen individual properties were recommended as eligible for the National Register. Six of these individual properties that did not have existing MHC Inventory forms or numbers (see Table 6-7) were recommended for intensive survey and completion of MHC Inventory forms.

The assessment of potential impacts to historic resources from the Green Line Extension project at the reconnaissance survey phase considered impacts that may be permanent or temporary during construction activities. Many of the permanent impacts are expected to be confined to the rail ROW, and would not directly affect significant historic resources. Project work elements consist of track realignment in existing rail

**Table 8-2. Summary of Individual Historic Resources within All Alternatives for the Green Line Extension Project Area of Potential Effect.**

Alternative	All Individual Resources	NRIND	LHD – Individual *	NRDOE Individual	RNRE - Individual	Included in MHC Inventory Individual
1	296	4	6	4	15	
2	387	4	6	6	15	
3	331	4	6	4	15	
4	425	4	6	6	15	
5	377	4	6	6	15	
6	30	0	0	2	4	
All	425	4	6	6	15	53

**National Register Status Key**

- NRIND Individually Listed National Register Property
- LHD Local Historic District
- NRDOE National Register Determination of Eligibility by MHC
- RNRE Property Recommended Eligible for National Register Listing
- NRMPS/MRA Property Listed as part of a National Register Multiple Property Submission/Multiple Resource Area

\* Four of the six LHDs are also listed in the National Register, one is recommended National Register eligible, and one is listed in the State Register only. Refer to Table 6-2 for the list of properties.

ROWs, bridge replacements, station access elements (e.g., sidewalks, bus lanes, drop-off areas, ramps, signage), and a layover/maintenance facility. Several elements are common to all of the Medford Branch alternatives (Alternatives 1, 2, 3, 4, and 5). Project elements that would have the potential to impact historic resources in all alternatives include relocating the existing Lechmere Station, which is recommended as National Register-eligible, to the north side of the O'Brien Highway and the construction of a support facility at Yard 8 in Somerville. Takings, new construction, and site and road work at the proposed stations may affect historic resources in the surrounding area. Potential impacts for the Proposed Action are the same, with maintenance facility Option L instead of Yard 8.

The reconnaissance survey recommended that the FTA and MassDOT seek the comments of the MHC, the CHC, the SHPC, and the Medford HC regarding the historic resources identification, the recommendations regarding potentially eligible National Register eligible historic resources, the need for further intensive survey and evaluation, as well as potential project impacts. Following a determination of eligibility and a finding of effect by the FTA and MassDOT, consultation with the MHC and other consulting and interested parties would take place as project planning proceeds in order to consider alternatives and measures that would avoid, minimize, or mitigate any adverse effects of the project on significant historic properties that are listed or determined by FTA and MHC to be eligible for listing in the National Register. This consultation process is ongoing.

### **Archaeological Resources**

The reconnaissance survey identified a total of six sensitive areas where potentially significant archaeological resources may be located within proposed project impact areas (Table 8-3). These sensitive areas include: 1) historic Middlesex Canal (SMV-HA-1) stone bridge crossing, canal prism, and tow path within and adjacent to the Lowell Line ROW in Medford; 2) mid- to late-nineteenth-century worker housing on Joy Street in Somerville; 3) late-nineteenth/early-twentieth-century North meat-packing plant factory complex off Somerville Avenue in Somerville; 4) early/mid-nineteenth-century Clark Bennett residence, outbuildings, and yard areas on Prospect Street in Somerville and potential for pre-contact/contact period Native American resources in yard areas; 5) late-nineteenth-century dwelling (possible worker housing) on the subdivided Clark Bennett estate property on Prospect Street in Somerville and 6) deeply buried pre-contact Native American resources in Yard 8 support (maintenance) facility, Somerville. No other areas of archaeological sensitivity were identified for the Green Line Project APE because of the presence of extensive fill and/or previously disturbed belowground soil contexts.

### ***Summary by Alternative***

Alternative 1 contains one archaeologically sensitive area identified for landtaking, Area 5C, needed for the proposed Washington Street Station (parking and access). This sensitive area is documented as having the potential to contain significant belowground remains associated with mid- to late-nineteenth-century worker housing that characterized the Joy Street section of Somerville during the late industrial period. The Yard 8 support (maintenance) facility is sensitive for deeply buried pre-contact period resources below railroad and modern fill deposits.

Alternative 2 contains five archaeologically sensitive areas. Three of these are related to a buried-over section of the historic Middlesex Canal (SMV-HA-1) crossing under the Lowell Line ROW via a stone arch bridge. The rail line ROW, proposed Mystic Valley Parkway/Route 16 Station, and Areas 18, 18A, and 18C (needed for station parking and access) contain sensitive areas where significant canal-related remains (including the

bridge structure, canal prism, and tow path) may be present within and beneath mid- to late-nineteenth and twentieth-century railroad and commercial/industrial period fill deposits. The buried-over sections of the Middlesex Canal in Medford, Somerville, Cambridge, and Boston have recently been listed in the State and National Registers of Historic Places. The fourth sensitive area is associated with Area 5C, discussed above for Alternative 1. The fifth sensitive area is associated with the Yard 8 support (maintenance) facility, also described above for Alternative 1.

Alternative 3 contains five archaeologically sensitive areas. One of these is associated with Area 5C discussed above. Another sensitive area is associated with landtaking Area 52, needed for the Somerville Avenue loop option. It consists of the portion of the documented late-nineteenth/early-twentieth-century North meat-packing plant factory complex that was situated on the north side of the Fitchburg Line ROW. This complex played an important role in the socioeconomic development of Somerville during the late industrial to early modern period. Belowground remains associated with the cooper shop and box factory, smokehouse, and sled and wagon sheds may be present in intact portions of the various lots that comprise this landtaking area. The remaining two sensitive areas are associated with landtaking Areas 59 and 60 needed for parking and access for the proposed Union Station-Prospect Street option. Area 59 contains the documented house site of Clark Bennett, a prominent Somerville resident in the early/mid-nineteenth century. He is credited with a number of significant civic improvements in the town during the early industrial period. Intact portions of the area could contain remains of the house, outbuildings, and yard areas as well as Native American resources in proximity to the former stream drainage. Area 60 is also associated with Clark Bennett, and was subdivided from his original house estate. It became the site of a late-nineteenth-century dwelling built by either Clark or his heirs as a rental property for local factory workers, specifically those affiliated with the Union Glass Works. This lot could contain remains of the dwelling structure and associated outbuildings. The fifth sensitive area is associated with the Yard 8 support (maintenance) facility, described above for Alternative 1.

Alternative 4 contains all six archaeologically sensitive areas, as discussed above.

Alternative 5 contains three of the above-described archaeologically sensitive areas; the historic Middlesex canal crossing associated with the Lowell Line ROW, Mystic Valley Parkway/Route 16 Station; and Areas 18, 18A, and 18B; and the worker housing on Joy Street associated with Area 5C; and the Yard 8 support facility.

Alternative 6 does not contain any archaeologically sensitive areas.

### ***Recommendations***

No further work is recommended for no/low sensitivity areas of the project alternatives. Avoidance of the archaeologically sensitive areas is recommended. If avoidance through project redesign is not possible, then subsurface testing as part of an intensive (locational) archaeological survey may be warranted in consultation with the FTA, MASSDOT, and MHC. The intensive survey would be designed to locate and identify any potentially significant archaeological resources that may be impacted by the project. The intensive survey would be conducted under state archaeological permit issued by the MHC/State Archaeologist following a research design and testing strategy developed specifically for each sensitive area according to the type of expected archaeological resource(s). For example, in paved areas and areas where fill deposits are expected at depths greater than 2–3 feet (limit of hand excavation), machine-assisted excavations would be used to determine the presence and integrity of any belowground remains. Additional research regarding the locations and extent of active (and inactive) underground utility easements may also be needed. Should any significant

archaeological resources be identified during the intensive survey testing, then measures to avoid, minimize, or mitigate any adverse effects of the project on the National Register eligible resource(s) will need to be determined by the FTA and MassDOT, in consultation with the MHC and other consulting and interested parties.

## **Maintenance Facility Option L**

### **Historic Resources Summary and Recommendations**

Five buildings and one railroad bridge are located in the maintenance facility Option LAPE. The buildings are not historic structures, and the bridge, while it is more than 50 years of age, is also not eligible for listing in the National Register. There are no aboveground historic properties within the project APE for the Option L maintenance facility, and no further work was recommended (Adams et al. 2010a).

### **Archaeological Resources Summary and Recommendations**

While it is not expected that any potentially significant archaeological resources are present, which overlaps Yard 8, in the railroad and modern fill soils within the maintenance facility Option L project area, the presence of deeply buried archaeologically sensitive strata containing Native American resources below the fill is considered possible. Further research including information about project construction depth disturbances related to the proposed maintenance facility and a review of project soil borings for this work area would be needed to determine whether subsurface testing in deeply buried sensitive strata that may be impacted by the project is needed as part of an intensive (locational) archaeological survey.

### **Proposed Action**

The Green Line Extension project Proposed Action is an extension from Lechmere Station via the MBTA Lowell Line commuter rail ROW with a spur to Union Square via the MBTA Fitchburg Line. It is similar to Alternative 1; however, the Proposed Action differs from Alternative 1 in that it terminates at College Avenue in Medford, includes seven stations, and utilizes maintenance facility Option L in Cambridge. The seven stations included in the Proposed Action are Lechmere, Washington Street, Gilman Square, Lowell Street, Ball Square, College Avenue, and Union Square.

### **Historic Resources Summary and Recommendations**

The surveys and consultation identified a total of 8 areas/districts, including 2 railroad corridor landscapes, and 276 individual historic resources within the APE of the Proposed Action (see Appendix A and Table 6-8 (Appendix B)). There are no National Register listed or eligible historic properties within the project APE for maintenance facility Option L, and no further work is recommended. The intensive survey of six individual historic resources within the Proposed Action resulted in five individual historic properties being recommended as National Register eligible and one property recommended as not eligible (see Figure 1-5, Table 6-7 and Appendix F).

During the Section 106 consultation process, the compilation of National Register-listed, determined eligible, and recommended eligible historic properties was refined. One National Register-listed property, Central Library in Somerville, was added to the reconnaissance survey and counted as included in the APE. One property, William Lockhart Coffin Factory Office in Cambridge, was added to the list of National Register

properties previously determined eligible by the MHC. Two properties, Buddy’s Truck Stop/Sawin’s Diner in Somerville and Somerville Automobile Company in Medford and Somerville, were added to the list of properties recommended eligible for listing in the National Register. One property, A & P Warehouse in Somerville, that had been recommended as National Register eligible in the reconnaissance survey was subsequently determined by the MHC in 2010 to be ineligible due to loss of integrity and was removed from the list of eligible properties.

These surveys and deliberations have resulted in the identification of 6 historic districts and 23 individual historic properties within the Green Line Extension Proposed Action APE that are listed in, previously determined eligible for, or recommended as eligible for the National Register. Table 8-4 summarizes these results in each category and provides a breakdown by city. The six historic district properties consist of one National Register-listed historic district, one National Register-listed Multiple Property Submission, and four areas recommended as eligible National Register historic districts. One additional district is designated solely as a State Register property. The 23 individual properties are four properties listed in the National Register, four properties previously determined eligible for the National Register, and 15 recommended eligible for National Register listing. One additional property is listed in the State Register only. See Table 6-9 and Appendix G.

It is recommended that, having consulted with the MHC and other consulting and interested parties on the identification of resources and project effects, FTA and MassDOT continue to consider alternatives and measures that would avoid, minimize, or mitigate any adverse effects of the project on significant historic properties that are listed or determined by FTA and MHC to be eligible for listing in the National Register.

**Archaeological Resources Summary and Recommendations**

The Proposed Action contains two areas of identified moderate archaeological sensitivity in Somerville: maintenance facility Option L at Yard 8 and the Washington Street Station. All other project work elements for the Proposed Action are assigned no or low sensitivity and no further work is recommended (Table 8-5). Additional information about project construction methods and design along with geotechnical data (e.g., soil borings) for the archaeologically sensitive project work areas will be used to refine the sensitivity assessment,

**Table 8-4. Summary of District and Individual National Register Historic Properties within the Green Line Extension Project Proposed Action Area of Potential Effect.**

City	NRDOE District	NRDIS Listed	NRMPS/MRA	RNRE District	NRDOE IND	NRIND Listed	RNRE Individual	State Register Only
Cambridge		1			2		3	
Somerville			1	4	2	4	8	1 District 1 Indiv.
Medford							4	
<b>TOTAL</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>15</b>	<b>2</b>

**National Register Status Key**

- NRIND Individually Listed National Register Property
- NRDOE National Register Determination of Eligibility by MHC
- NRDIS National Register Listed Historic District
- RNRE Property Recommended Eligible for National Register Listing
- NRMPS/MRA Property Listed as part of a National Register Multiple Property Submission/Multiple Resource Area

**Table 8-5. Archaeological Sensitivity Assessment for Proposed Action, Green Line Extension Project Area of Potential Effect.**

Project Element	City	Sensitivity	Recommendation
Lowell Line ROW to Medford Hillside		Low	No further work
Fitchburg Line ROW	Cambridge/Somerville	Low	No further work
Relocated Lechmere Station	Cambridge	No/Low (previously surveyed for NorthPoint Development Project)	No further work
Option L Support (Maintenance) Facility	Somerville	Low in railroad and upper fill deposits / Moderate in pre-colonial period shoreline and tidal flats of Miller’s River (20+ ft below ground surface)	No further work unless impacts are proposed below the upper fill soil horizons; then further research (e.g., new soil borings review) and possibly subsurface testing may be warranted
Washington Street Station	Somerville	Low	No further work
Gilman Square Station	Somerville	Low	No further work
Lowell Street Station	Somerville	Low	No further work
Ball Square Station	Medford	Low	No further work
College Station	Medford	Low	No further work
Union Square Station – Fitchburg ROW option	Somerville	Low	No further work
Old Red Bridge replacement	Somerville	Low	No further work
College Street Bridge replacement	Medford	Low	No further work
Areas 1, 2, and 3	Cambridge	No/Low (previously surveyed for NorthPoint Development Project)	No further work
Areas 4, 5A, 5B, 6, and 7	Cambridge-Somerville line	Low	No further work
Area 5C (Washington Street Station)	Somerville	Moderate (mid-late 19 <sup>th</sup> c. Joy Street worker housing)	Avoidance or subsurface testing as part of an intensive survey

and determine the need for and scope of an intensive (locational) archaeological survey. If archaeologically sensitive areas cannot be avoided, an intensive survey would be conducted to locate and identify any significant archaeological resources that may be present.

**Report Addenda: Additional Documentation and Assessment**

**Historic Resources**

*Retaining Walls of Boston & Lowell Railroad, Cambridge and Somerville*

During the Section 106 consultation meetings on the identification of historic properties in October 2010, the Cambridge Historical Commission and the Somerville Historic Preservation Commission concurred that the former Boston & Lowell Railroad corridor (MBTA Lowell Commuter Rail Line) is not National Register-eligible as an historic district, and that the Retaining Walls of the Boston & Lowell Railroad in Cambridge and Somerville are local cultural landscape features that are deserving of recognition, but do not rise to the level of individual National Register eligibility (Adams et al. 2008, see Table 6-3 and Figure 6-1). However, they requested that the walls be documented in an MHC Inventory Form. In January 2011, PAL completed an

MHC Structure “F” Form to record the location and characteristics of the Boston & Lowell Railroad Retaining Walls in Cambridge and Somerville. A copy of the Form is included in Appendix I.

### *Two Properties, Medford*

In April 2011, the City of Medford requested more information on two historic resources, 70-88 University Place on Newbern Avenue and 91 Burget Avenue, that are located within the APE for the Proposed Action and had been evaluated as not being potentially National Register eligible (Adams et al. 2008, see Map Nos. 292 and 322 in Table 6-2 and Appendix A-7 and A-9). PAL undertook additional fieldwork and research in May 2011 that reiterated the original recommendations. A copy of the Technical Memorandum is included in Appendix I.

### **Archaeological Resources**

In December 2010, PAL conducted additional archaeological assessment for two of the proposed stations in the Proposed Action because of changes in their concept designs. The remaining station concept designs (Lechmere, Gilman Square, Lowell Street, Ball Square, Union Square) did not contain any changes outside of the original project design locations in railroad ROW and land acquisition areas (Adams et al. 2008). No additional archaeological sensitivity assessment of these five stations was needed.

### *College Avenue Station, Medford and Washington Street Station, Somerville*

The revised design for College Avenue Station included work areas for a proposed sidewalk outside of the existing railroad right-of-way (ROW) and proposed land acquisition areas. The proposed work area within the former rail spur track bed is assigned a low archaeological sensitivity for pre-contact and post-contact resources. No further archaeological investigations are recommended for the revised College Avenue Station concept design. Based on the review of the soil borings in previously determined archaeologically sensitive areas, the proposed Washington Street (formerly Brickbottom) Station construction, including spread footings for the emergency egress ramp and retaining walls east of the station footprint will not impact potentially sensitive strata below the railroad fill. The station itself will be constructed within previously disturbed soils associated with the southern abutment of the Washington Street Bridge and in railroad fill. The archaeologically sensitive area (Area 5C) at 24 and 30 Joy Street is no longer part of the project. No further archaeological investigations are recommended for the proposed Washington Street Station. A copy of the Report Addendum is included in Appendix J.

### *Maintenance Facility Option L, Somerville*

In April 2011, PAL conducted additional archaeological assessment of Maintenance Facility Option L in Somerville. Based on the soil boring data reviewed, the Maintenance Facility Option L is re-assessed as having no archaeological sensitivity for pre-contact period shoreline resources including shell middens, fish weirs, and seasonal encampments. No further review of engineering designs or archaeological work for the Option L Maintenance Facility is recommended. A copy of the Report Addendum is included in Appendix J.