APPENDIX M. PHASE IA ARCHAEOLOGICAL SENSITIVITY ASSESSMENT

PHASE IA ARCHAEOLOGICAL SENSITIVITY ASSESSMENT
NHDOT PLAISTOW COMMUTER RAIL EXTENSION
PLAISTOW, NEW HAMPSHIRE
End-of-field Report
July 15, 2014

By Jacob Tumelaire, Project Archaeologist

Independent Archaeological Consulting, LLC, (IAC) completed a walkover inspection of four Alternatives as part of the Phase IA archaeological sensitivity assessment for the NHDOT Plaistow Commuter Rail Extension Study. Principal Investigator Dr. Kathleen Wheeler designed the inspection strategy to evaluate the archaeological sensitivity for both Pre-Contact and Euroamerican cultural resources within the area of potential effect (APE) for the project. Archaeologists surveyed four possible station locations; three in Plaistow, New Hampshire, and one in Haverhill, Massachusetts (Figure 1; Table 1). The work is authorized under Section 106 of the Historic Preservation Act of 1966 (P.L. 89-665), as amended, and as implemented by regulations of the Advisory Council of Historic Preservation (36 CFR Part 800). This document presents the results of preliminary background research supplemented by data collected during the station site inspections.

Project Location and Environmental Setting

The project area lies within the Merrimack River drainage, which generally bisects New Hampshire along a north-south axis, and was formed during the retreat of glaciers about 14,000 years ago. As glaciers began their transgression, melted water formed long, narrow glacial lakes. The largest of the three formed in the Merrimack Valley was Glacial Lake Merrimack, which extended from Manchester to Nashua. The project area crosses the Little River, which flows into the Merrimack River, and meanders on either side of the rail line

Plaistow is located in the Seaboard Lowland physiographic region. The Seaboard Lowland was submerged and eroded by wave action during the waning stages of the Ice Age before the ice-depressed land rebounded (Van Diver 1987: 18). Bedrock is of the Cambrian-Silurian period, composed of calc-silicate and biotite granofels, phyllonite and local aluminous or carbonaceous phyllite and schist (NHDES 2008). The linear project area contains a number of soil types including Deerfield fine sandy loam with slopes to 8$, Pipestone sand, Greenwood mucky peat, and Windsor loamy sand (0 to 3 percent slopes) with rapid permeability. The latter is level and excessively drained, well suited to cultivation and natural woodland growth (Kelsea and Gove 1994:8).

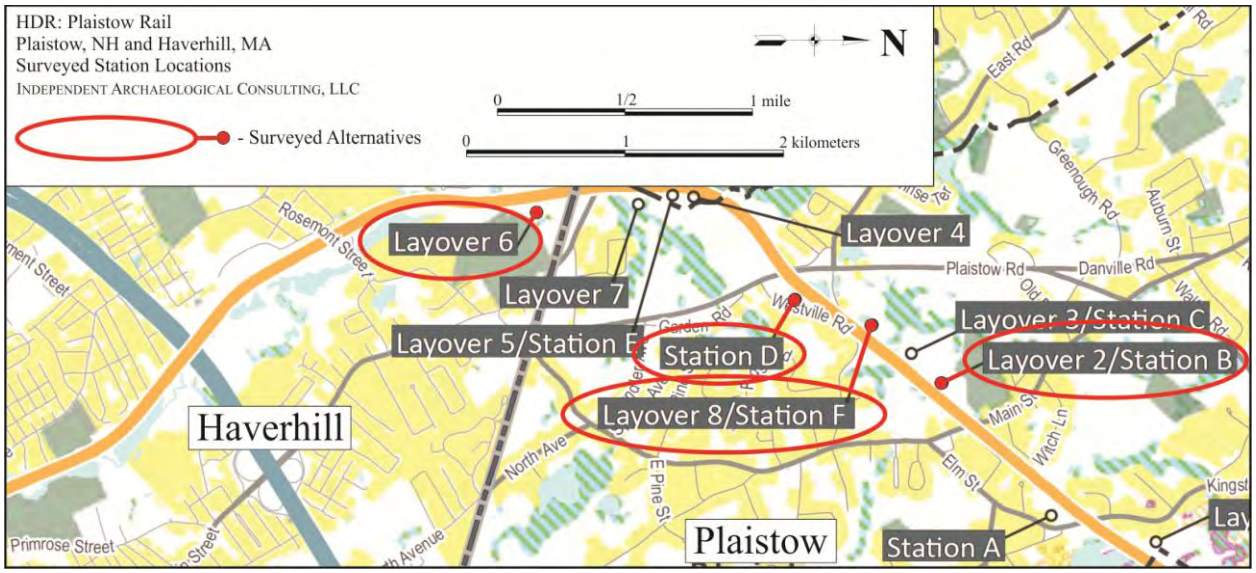

Figure 1. Four potential station or layover locations surveyed by IAC (after HDR plan, 3-10-14).

Table 1. List of surveyed potential station sites and excavated test pits.

Station Name	Original Designation	STPs Excavated
Alternative 1 (Alt-1)	Station D	1
Alternative 2 (Alt-2)	Layover 8/Station F	2
Alternative 3 (Alt-3)	Layover 2/Station B	1
Alternative 1 MA (Alt-1MA)	Layover 6	0
Total		**4**

Potential for Native American Archaeological Sensitivity within the Project Area

The New Hampshire model for Native American settlement has been built from research conducted primarily along the Merrimack River and the Lakes District of Laconia, Belmont, and Tilton.

Archaeologists have defined four primary factors in human decisions about where to camp, hunt, and fish, including

- proximity to water (including easy access down to the water level)
- level terrain
- well-drained soils
- access to resources (plants, animals, and raw materials)

These four criteria are most often met in the alluvial settings along major rivers and their tributaries, such as the Little River, or along the shorelines of lakes and ponds. Multiple major sites have been discovered along the Merrimack River, particularly around Amoskeag Falls in Manchester. Native Americans

utilized the Merrimack River as a primary transportation corridor, with smaller streams, such as Little River, serving as secondary corridors connecting people to plants, animals, lithic resources, and spiritual sites.

In assessing sensitivity for pre-Contact archaeological resources, archaeologists consider the four criteria within a project area based on cartographic analysis and field data collected during the site inspection. The rich wetland environment surrounding Little River a landform that is highly sensitive for ancient cultural resources. A review of site files at the New Hampshire Department of Historic Resources (NHDHR) identified 13 documented pre-contact Native American sites along the Little River drainage in the towns of Plaistow and neighboring Newton and Kingston. Six of these contain material dating to the Middle Archaic Period (8,000 – 6,000 Before Present [B.P]), many of which contain projectile points classified as Neville. Three are multi-component sites ranging from the Middle Archaic to Middle Woodland (2,000 – 1,000 B.P) or Late Woodland (1,000 – 400 B.P.). Several additional sites have been identified as pre-Contact sites, but do not contain enough diagnostic material to assign a time period. Such a proliferation of proximal sites is evidence of the density of Pre-Contact occupation in the vicinity of the project area. Although the measured distance between these known sites and the project corridor varies from 250 m to 2.5 km (0.16 to 1.5 miles), the meandering path of the Little River has undoubtedly varied over the millennia. The potential for additional sites in areas undisturbed by major development along the rail line is high.

Potential for Euroamerican Archaeological Sensitivity within the Project Area

The (Chace) 1857 map of Plaistow shows the Boston & Maine Railroad line through Plaistow from the Atkinson Depot to the Newton town line (Figure 2). Although several areas of potential layovers and stations fall in locations with no development in the mid 1800s, others are in areas where stores or dwellings were (or are possibly still) located. Additional structures or features, including a brickyard, were added and others removed by the time the (Hurd) 1892 map as drafted (Figure 3). Further definition of archaeological potential for Euroamerican site features will be addressed once the layover and station locations are selected.

Walkover Inspection Results

Equipped with plans from HDR dated June 10, 2014, IAC Project Archaeologist Jacob Tumelaire and Senior Archaeological Technician Maya Carter conducted a walkover inspection of the four alternatives on June 25 and 26, 2014. The inspection included the excavation of 35-cm round shovel test pits (STPs) at the three Plaistow locations. The STPs allowed the survey crew to assess the integrity of natural soil strata as an indication of the potential for intact archaeological deposits within each APE. This section of the document offers the results of the station site inspections, separated by location for clarity.

Alternative 1 (Station D)

Alternative 1 (Alt-1) includes roughly 44,400 m² (11 acres) along the eastern edge of the existing rail line east of Plaistow Road (NH Route 125) and north of the Plaistow Road/Westville Road intersection in Plaistow, New Hampshire (Figure 2). Past construction of roads, parking lots, businesses, and condominiums caused significant disturbance to natural landforms across the vast majority of the Field Visit Area (FVA, as identified on HDR 6-10-14), leaving only small sections that retain any semblance of archaeological integrity (Plate 1). The survey crew found no evidence for Euroamerican occupation but identified two areas with potential sensitivity for Native American archaeological resources; a small terrace overlooking a detention pond at the southern end of the FVA and a patch of grassy lawn at the northern end of the station site.

Misters Tumelaire and Carter excavated a single STP atop the pond terrace to assess the integrity of the landform and the potential for intact cultural deposits. The STP produced no artifacts and revealed evidence for significant alteration to the natural topography. A layer of fill between the modern A Horizon and the underlying B Horizon indicates an episode of grading that removed the original ground surface along with an unknown amount of the natural subsoil (B Horizon). The fill deposit likely marks either push from an episode of grading south of the FVA or an attempt to level the truncated landform (Figure 3). The survey crew did not excavate testholes in the northern lawn area due to multiple pipes protruding from the ground surface as evidence for substantial subsurface utilities (Plate 2). Considering the degree of disturbance, IAC assessed the majority of Alt-1 with low archaeological sensitivity (Figure 4). The grassy lawn may retain small segments of undisturbed soil despite the subsurface pipes, but archaeologists cannot safely test the area without an accurate map of the buried utilities.

Alt-1 is unlikely to retain intact archaeological deposits related to Pre-Contact or Euroamerican activity, however, a final assessment remains contingent on a review of modern utility plans.

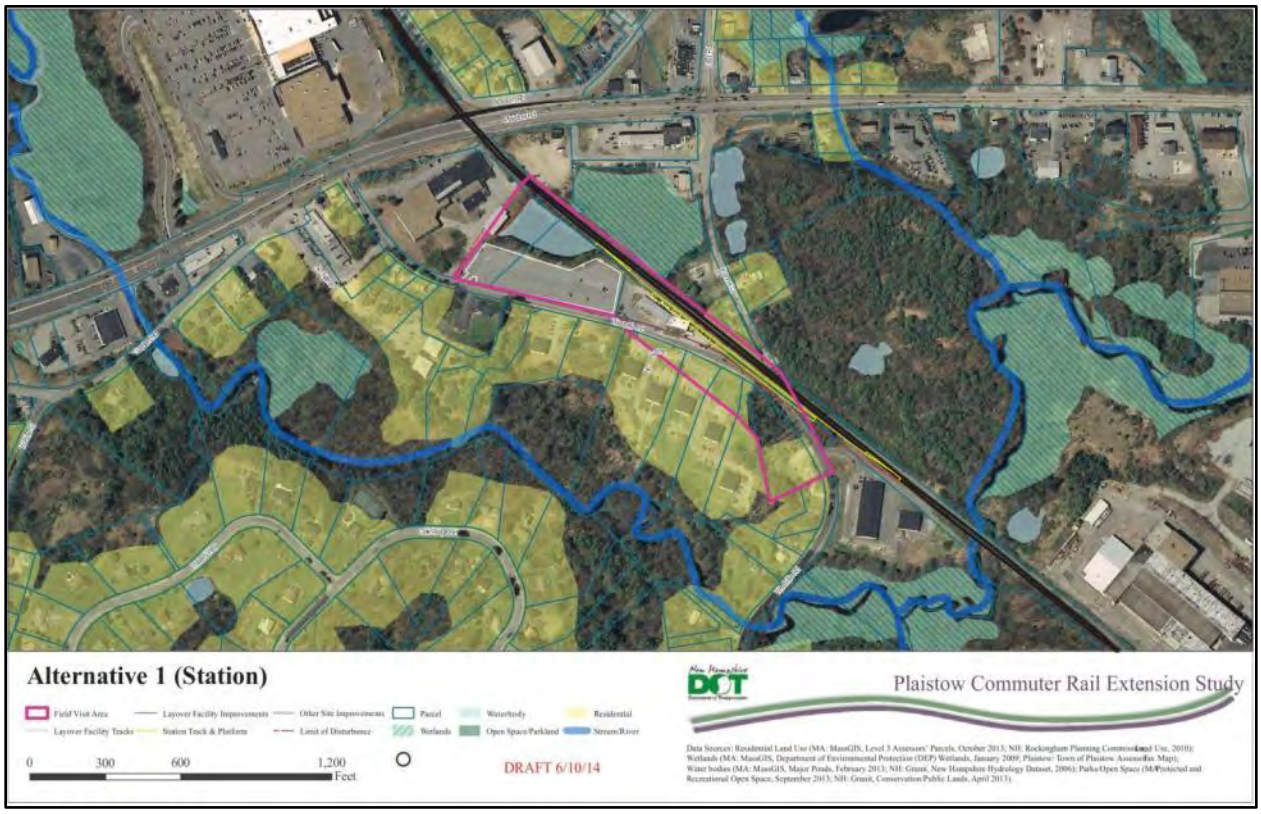

Figure 2. Alternative 1 (Station D) as shown on project plans (after HDR 6-10-14).

Plate 1. The southern end of the Alt-1 FVA, view northwest to northeast. Note the extensive alterations to the natural landscape, including the large Park and Ride lot in the background.

Figure 3. East wall of T1-1 in Alt-1 showing a developing A Horizon atop a fill layer and truncated B Horizon.

Plate 2. Pipes protruding from the grassy lawn at the northern end of Alt-1, view southwest.

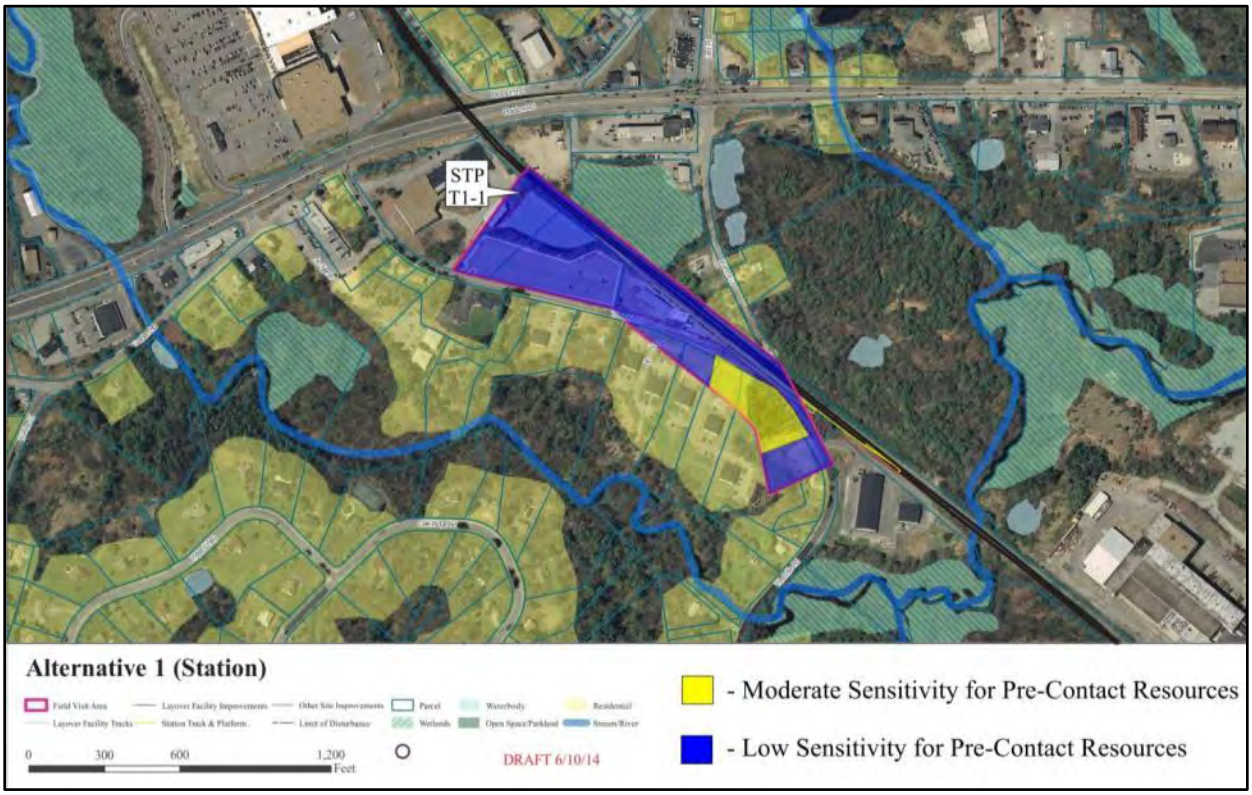

Figure 4. Alt-1 archaeological sensitivity for Pre-Contact resources (entire area assessed with low sensitivity for Euroamerican resources).

Alternative 2 Joanne Drive (Layover 8/Station F)

The Alternative 2 (Alt-2) FVA encompasses about 134,300 m² (33 acres) bounded to the west by Plaistow Road, to the east by the existing rail line, to the south by Joanne Drive, and to the north by the Little River (Figure 5). The construction of extant buildings off Plaistow Road and Joanne Drive has likely compromised the integrity of potential archaeological deposits along the roadways but the majority of the FVA appears undisturbed. The survey crew documented an old road bed cutting roughly north across the landscape and terminating at the edge of the wetlands surrounding the Little River. Several pieces of cut granite at the terminus of the road show the cylindrical grooves indicative of nineteenth-century stone drills but no other evidence of an associated structure. Historic maps of the area show no structures at or near this location and the stones may mark a former retaining wall along the roadway.

Level, well-drained terraces overlook the banks of the Little River across the breadth of the FVA (Plate 3). Such landforms are highly sensitive for Pre-Contact archaeological resources based on current predictive models of ancient Native American settlement. Mr. Tumelaire and Mr. Carter excavated two STPs at widely-spaced points along the riverside terraces to assess the integrity of the natural soil strata. Both testholes exposed a natural profile of sand-rich A, B, and C Horizons (Figure 6). The undisturbed layers of sandy soil indicate high sensitivity for Pre-Contact cultural deposits across the entire length of the Little River within the FVA. Three small ponds lay within the field visit area, one near the center of the parcel and two more along the southern edge. Landforms surrounding the ponds also earn an assessment of high archaeological sensitivity for Native American resources. Surrounded on three sides by the Little River or its tributaries, the wooded, gently undulating landscape of the remainder of the FVA suggests moderate Pre-Contact archaeological sensitivity (Figure 7).

Considering the significant potential for Pre-Contact archaeological deposits across the majority of the FVA, IAC recommends a Phase IB intensive archaeological investigation of all sections of Alt-2 assessed with moderate to high archaeological sensitivity prior to any ground disturbing activities.

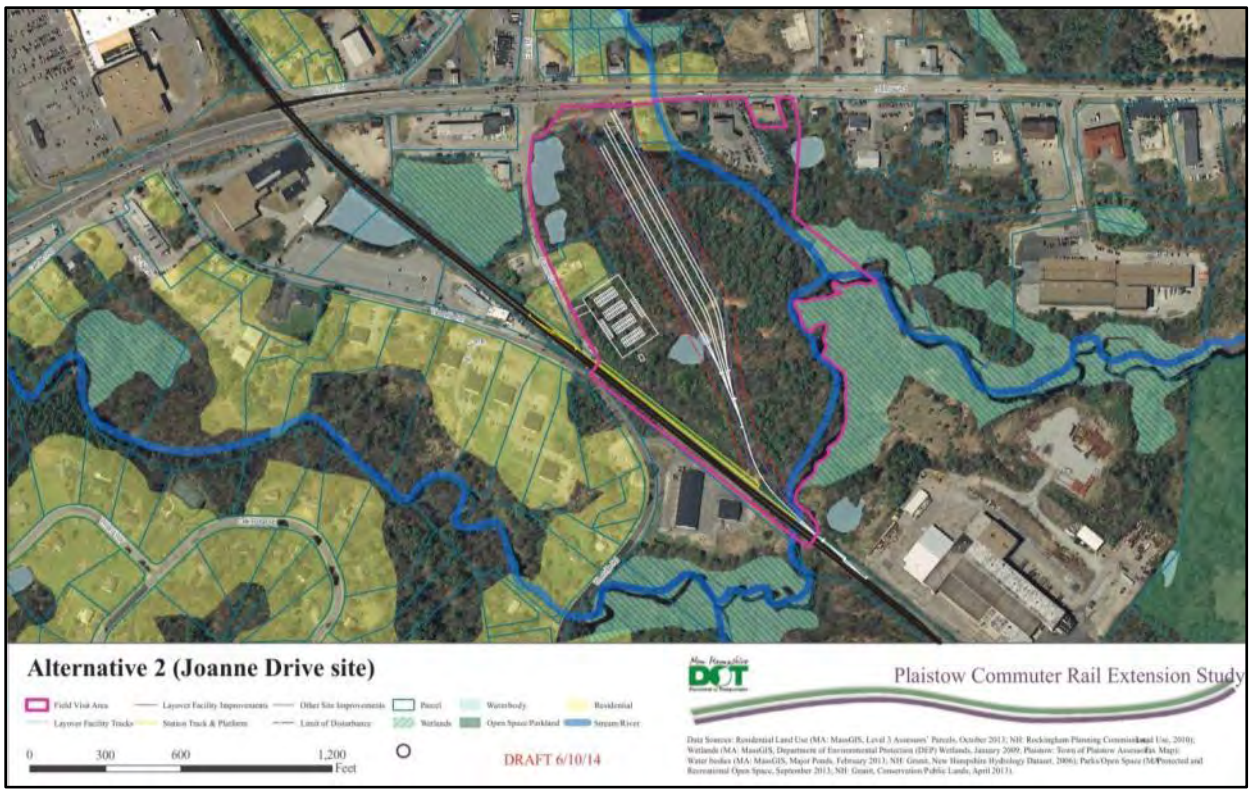

Figure 5. Alternative 2 Joanne Drive (Layover 8/Station F) as shown on project plans.

Plate 3. Sloping face of a riverside terrace at Alt-2, view northwest.

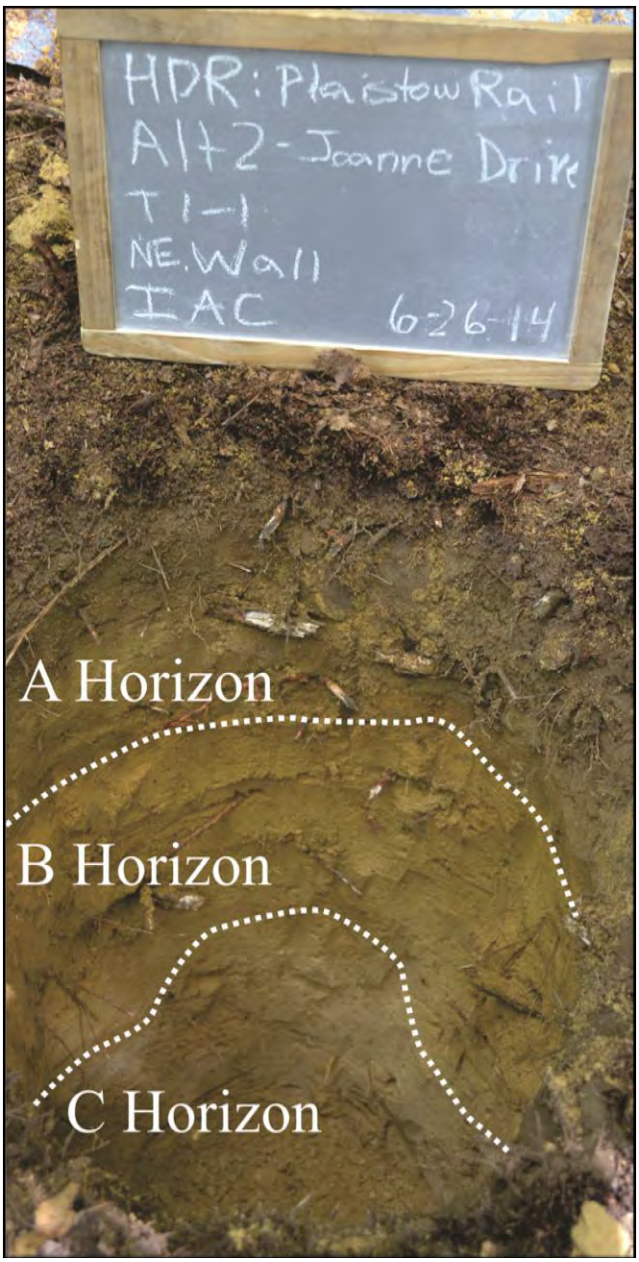

Figure 6. Alt-2 T1-1 northeast wall profile showing undisturbed natural strata.

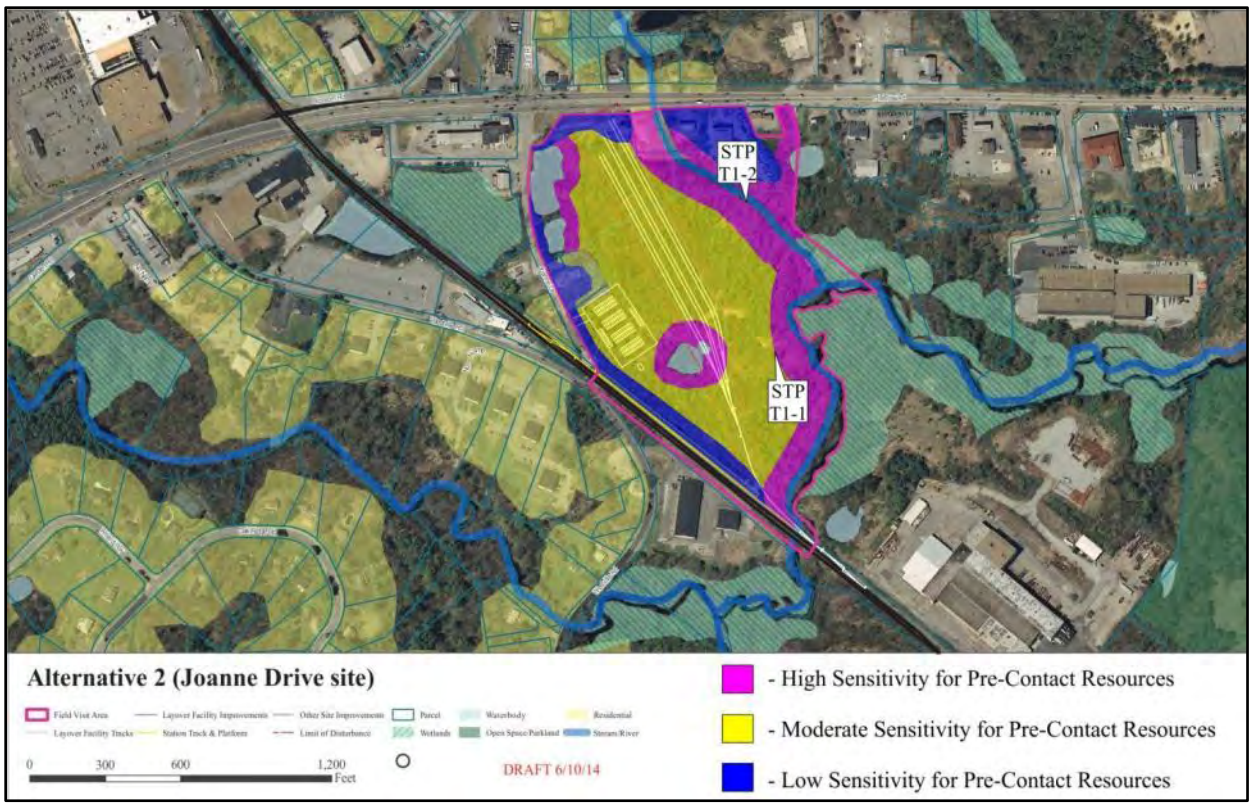

Figure 7. Alt-2 archaeological sensitivity for Pre-Contact resources (entire area assessed with low sensitivity for Euroamerican resources).

Alternative 3 Testa Property (Layover 2/Station B)

Alternative 3 (Alt-3) includes roughly 180,300 m² (44.6 acres) stretching southwest off Main Street in Plaistow. The Little River and surrounding wetlands define the western and southern borders of the FVA. An existing rail line forms the eastern boundary and an arbitrary line describes the northern edge of the project area (Figure 8). An active industrial complex covers the vast majority of the FVA. Multiple structures, roads, graded staging areas, and equipment storage yards stretch across the landscape. Construction of the facility has likely obliterated the archaeological integrity of landforms within the bounds of the chain link fence that encircles the property, earning the complex footprint an assessment of low sensitivity for both Pre- and Post-Contact archaeological resources. An 1892 (Hurd) map of Plaistow shows several historic structures along Main Street at the northeastern corner of the FVA, yet archaeologists found no evidence of Euroamerican structures in this area during the walkover inspection. The modern landscape is cleared and possibly graded, with several short sections of concrete walls that likely mark the locations of demolished but relatively recent structures (Plate 4). Despite the absence of cellarholes or other surficial evidence, intact material deposits related to Euroamerican occupation of the parcel may remain beneath the grassy fields. IAC designates this section of the FVA as moderately sensitive for Post-Contact archaeological resources. Current utility maps or more detailed plans of proposed project impacts would be helpful to refine the assessment based on known and planned subsurface disturbances. Based on environmental conditions and map review, archaeologists assess the rest of the FVA with low sensitivity for Euroamerican archaeological resources (Figure 9).

Few areas beyond the complex fence retain any potential for ancient Native American cultural deposits. The survey crew walked to the perimeter of the FVA when possible, however, wide wetlands to the west

and south prevented archaeologists from reaching the Little River. The large fill prism beneath the extant complex slopes directly into a low, wet, and uninhabitable landscape across the vast majority of the FVA. Archaeologists identified four areas of moderate sensitivity for Pre-Contact cultural resources to the north, west, and south of the industrial compound (Figure 9). Mr. Tumelaire and Mr. Carter excavated a single STP in the northernmost area of moderate sensitivity. The testhole confirmed the initial assessment, revealing disturbed upper strata but intact natural subsoils with some potential for ancient artifacts or features (Figure 10). The survey crew did not test the other moderately sensitive sections of the FVA after observing evidence for significant subsurface utilities along the perimeter of the complex. Plastic and metal pipes protrude from the ground surface at various points across the other three sensitive areas, suggesting the potential for substantial disturbances (Plate 5). Once again, current utility plans or detailed project impact plans will provide the means to refine the sensitivity assessment for Native American archaeological resources.

IAC recommends a Phase IB intensive archaeological investigation of the FVA in areas designated as moderately sensitive for Pre-Contact or Euroamerican cultural deposits. Additional information about utility layout and proposed project impacts will greatly aid to facilitate and refine the Phase IB investigation.

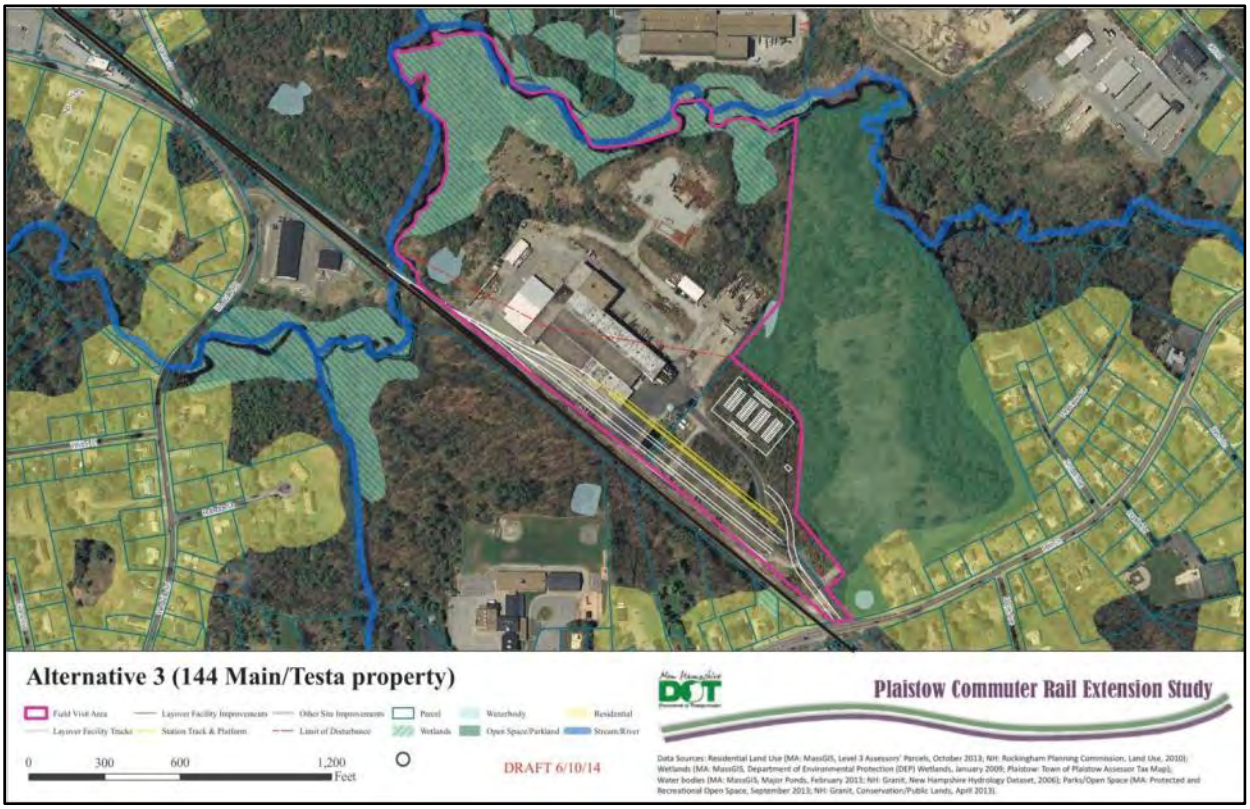

Figure 8. Alternative 3 Testa Property (Layover 2/Station B) as shown on project plans.

Plate 4. Concrete foundation wall visible in the grassy fields at the northeastern corner of the FVA, view southwest.

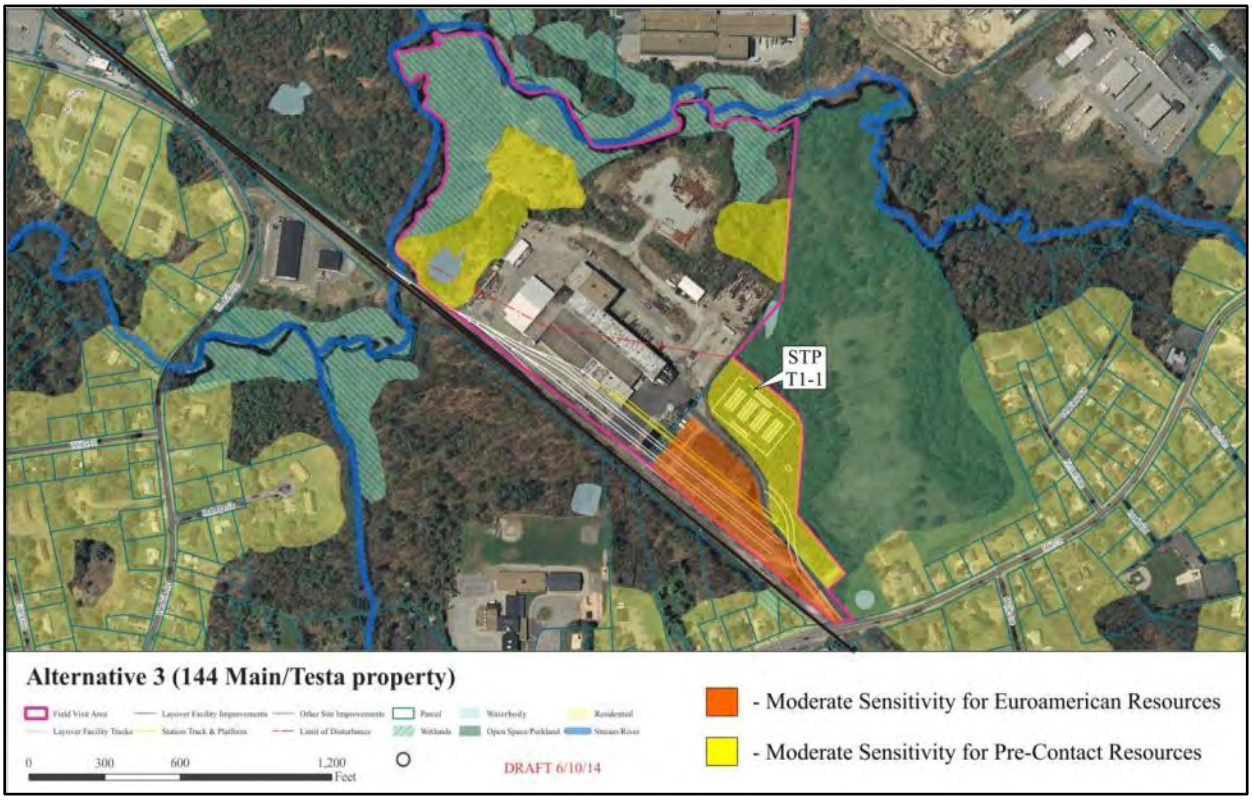

Figure 9. Alt-3 archaeological sensitivity (rest of area assessed with low sensitivity for Pre-Contact and Euroamerican resources).

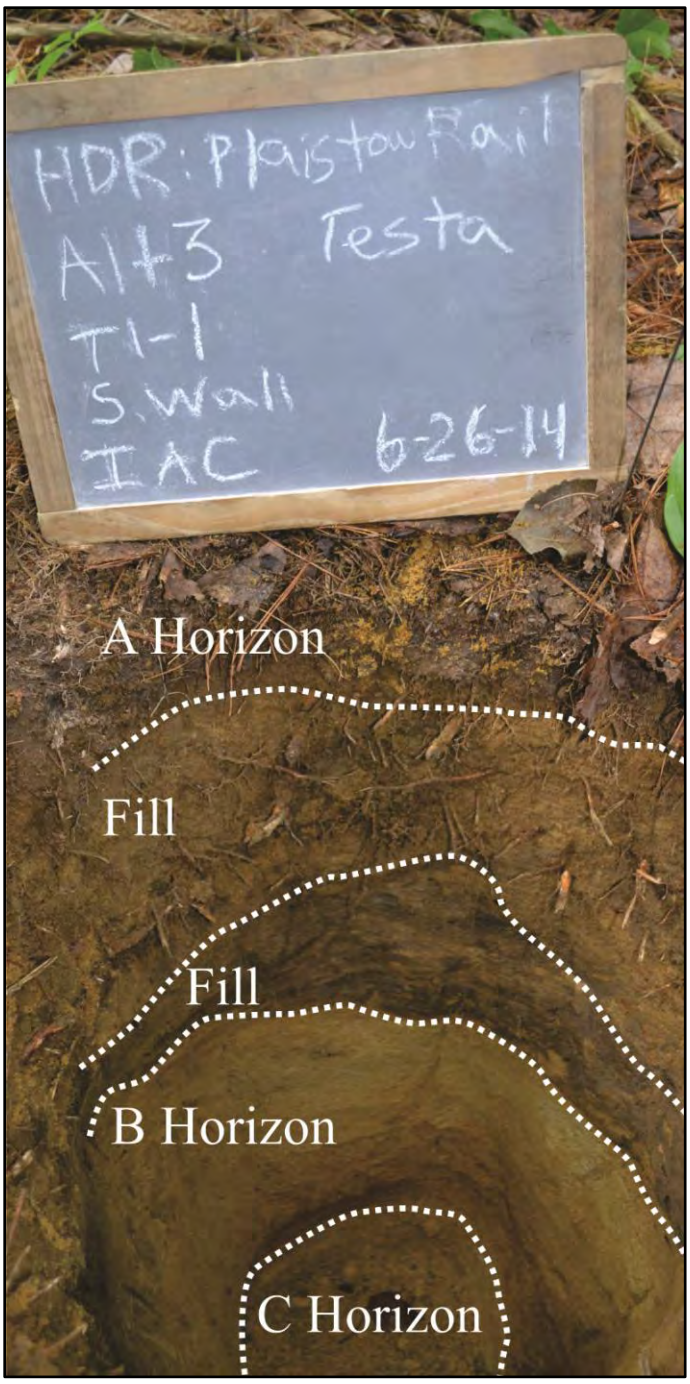

Figure 10. Alt-3 T1-1 south wall profile showing disturbed upper strata but intact subsoils.

Plate 5. An example of metal pipes protruding from the ground surface on the terrace south of the industrial complex, view west-northwest.

Alternative 1 Massachusetts (Layover 6)

The Alternative 1 Massachusetts (Alt-1MA) FVA describes an area of approximately 117,900 m² (29 acres) along the eastern edge of an existing rail line east of Hilldale Avenue and south of Atkinson Depot Road in Haverhill, Massachusetts. The Little River delineates the eastern border of the field visit area, opposite the rail bed that forms the western boundary. Arbitrary lines define the northern and southern edges of the project area (Figure 11). Historic maps of Haverhill in 1872 (Beers) show no Euroamerican structures within the FVA and archaeologists found no evidence of Post-Contact occupation. Based on the lack of visible features and the distance from a major roadway, IAC assessed Alt-1MA with low sensitivity for Euroamerican archaeological resources.

The survey crew traversed the north-south length of the Alt-1MA project area, frequently cutting east-west through the dense woods and brush to inspect landforms along the Little River. Level terraces overlook the river across the length of the FVA, offering excellent locations for ancient Native Americans to procure or process riverine resources (Plate 6). Such a setting is highly sensitive for Pre-Contact archaeological deposits according to current predictive settlement models. IAC assigned high sensitivity to the entire length of the FVA along the Little River and its smaller tributaries. Gently sloping landforms extend east from the rail bed to the river's edge and earn an assessment of moderate sensitivity for Native American cultural resources (Figure 12).

IAC recommends a Phase IB intensive archaeological investigation of all sections of Alt-1MA assessed with moderate to high sensitivity for Pre-Contact cultural deposits.

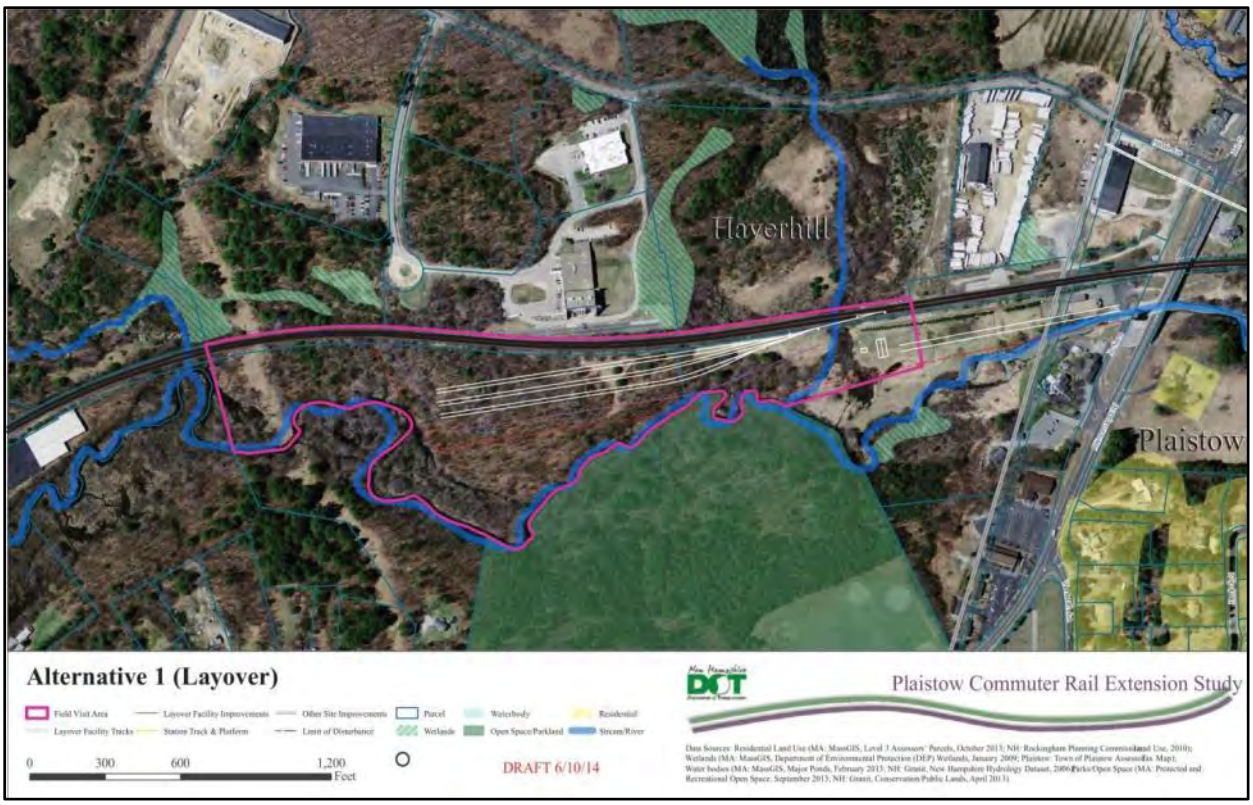

Figure 11. Alternative 1 Massachusetts (Layover 6) as shown on project plans.


Plate 6. View of the Little River from a shoreline terrace in Alt-1MA, view east.

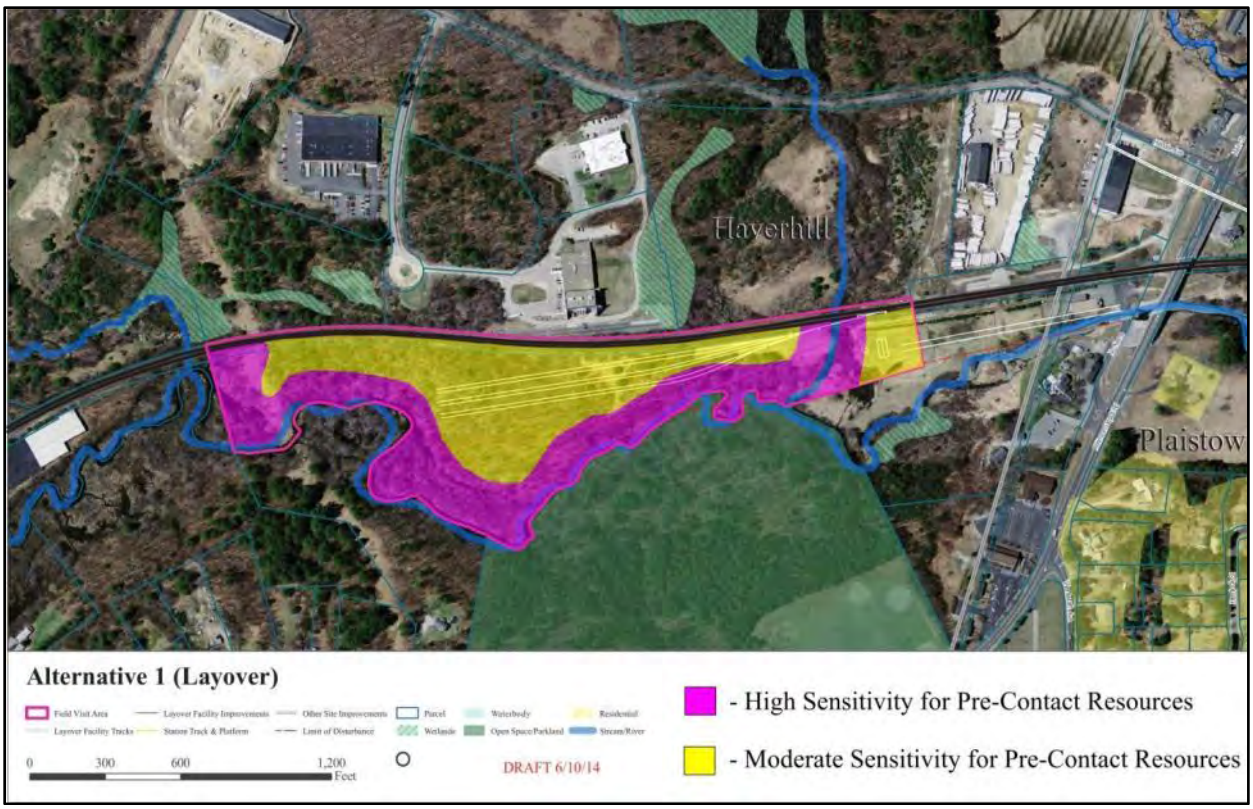

Figure 12. Alt-1MA archaeological sensitivity for Pre-Contact resources (entire area assessed with low sensitivity for Euroamerican resources).

Summary and Conclusions

IAC completed an inspection of four potential station locations as part of the NHDOT Plaistow Commuter Rail Extension Study. A combination of historic map review and walkover survey identified one small segment of Alt-3 as moderately sensitive for Euroamerican cultural resources, with all other alternatives assessed with low Post-Contact archaeological sensitivity. In contrast, all four alternatives encompass landforms with a significant potential for ancient Native American archaeological deposits. Two possible station sites – Alt-1MA and Alt-2 – include large areas of moderate to high sensitivity for Pre-Contact archaeological resources while Alt-1 and Alt-3 also retain small sections of moderate Pre-Contact archaeological sensitivity (Table 2). The assessment is based on the current project plans. Additional information such as utility schematics and more detailed project impact descriptions would help to refine these conclusions.

IAC recommends a Phase IB intensive archaeological investigation of all portions of the four possible alternatives assessed with moderate to high sensitivity for Pre- or Post-Contact cultural resources if any of these are chosen for development. Phase IB testing provides a means to establish the presence or absence of intact archaeological deposits that could be adversely affected by the Plaistow Commuter Rail Extension.

Table 2. Archaeological sensitivity range for the four station locations.

Station Name	Original Designation	Pre-Contact Sensitivity	Euroamerican Sensitivity
Alternative 1 (Alt-1)	Station D	Low-Moderate	Low
Alternative 2 (Alt-2)	Layover 8/Station F	Moderate-High	Low
Alternative 3 (Alt-3)	Layover 2/Station B	Low-Moderate	Low-Moderate
Alternative 1 MA (Alt-1MA)	Layover 6	Moderate-High	Low

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