Public Archaeology Laboratory

August 29, 2016

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Re: Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project, Northampton
Archaeological Sensitivity Assessment (Reconnaissance Survey)
PAL #3219, MHC #RC.46364, CNAE-R-2007-1851

Dear Ms. Simon:

On behalf of the City of Northampton, enclosed please find a copy of the *Technical Memorandum-Proposal, Archaeological Assessment (Reconnaissance)-Intensive (Locational) Survey, Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project, Northampton, Massachusetts*, prepared by PAL. The technical memorandum presents the results of the archaeological assessment (reconnaissance survey) and a proposal with fieldwork methodology for intensive (locational) survey in sensitive areas that may be impacted by the Project. By this letter and the attached permit application, we are requesting to conduct the intensive survey under an amendment to State Archaeologist's Permit number 3667. The project area is located on the Easthampton, Massachusetts topographic quadrangle.

We are prepared to begin these investigations immediately following your approval of the enclosed permit application amendment request. Thank you in advance for your time and attention to this matter.

If you have any questions or concerns, please do not hesitate to contact Suzanne Cherau, Principal Investigator, at your convenience.

Sincerely,

Deborah C. Cox, RPA
President

RECEIVED
AUG 31 2016

Enclosure

cc: Charles Farris, ACOE-NAE (w/encl.)
Victor Mastone, MBUAR (w/encl.)
David Veleta City Engineer (w/encl.)
Matthew Taylor, GZA Environmental Inc. (w/encl.)
David Drake, Northampton Historical Commission (w/encl.)
Alex Hackman, MA DER (w/encl.)
Bettina Washington, THPO, Wampanoag Tribe of Gay Head/Aquinnah (w/o encl.)
Mark Andrews, Wampanoag Tribe of Gay Head/Aquinnah (w/encl.)

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950 CMR: DEPARTMENT OF THE STATE SECRETARY

APPENDIX B
COMMONWEALTH OF MASSACHUSETTS

SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION

PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION

A. General Information

Pursuant to Section 27(c) of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

1. Name(s): Suzanne Cherau

2. Institution: The Public Archaeology Laboratory, Inc.

   Address: 26 Main Street
   Pawtucket, Rhode Island 02860

3. Project Location: Upper Roberts Meadow Dam Removal and Ecosystem Restoration
   see attached proposal

4. Town(s): Northampton

5. Attach a copy of a USGS quadrangle with the project area clearly marked.

   see attached (Figure 1)

6. Property Owner(s): City of Northampton

7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.

8. The proposed field investigation is for a(n):

   a. Reconnaissance Survey
   b. Intensive Survey
   c. Site Examination
   d. Data Recovery

B. Professional Qualifications

1. Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b).

a. Personnel

Principal Investigator(s): Suzanne Cherau

Project Archaeologist(s): Jennifer Banister

Field Crew(s): Cory Atkinson

b. Schedule

Fieldwork: September 2016

Laboratory: September 2016

Report: October – November 2016

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

C. Research Design

1. Attach a narrative description of the proposed Research Design according to the requirements of 950 CMR 70.11.

2. The Applicant agrees to perform the field investigations according to the standards outlined in 950 CMR 70.13.

3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: March 31, 2016

4. The specimens recovered during performance of the proposed field investigation will be curated at:

The Public Archaeology Laboratory, Inc.
26 Main Street
Pawtucket, Rhode Island 02860

SIGNATURE Suzanne J. Cherau
APPLICANT(S)

August 29, 2016
DATE

Public Archaeology Laboratory

Technical Memorandum-Proposal
Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project
Northampton, Massachusetts

Archaeological Assessment (Reconnaissance) Survey-Intensive (Locational) Survey

August 26, 2016

Submitted to:

City of Northampton-Department of Public Works
125 Locust Street
Northampton, Massachusetts 01060

This technical memorandum presents the results of an archaeological assessment (reconnaissance) survey conducted by The Public Archaeology Laboratory, Inc. (PAL) for the Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project (the Project) in Northampton, Massachusetts, under contract with GZA on behalf of the City of Northampton. The goal of the reconnaissance survey was to determine the likelihood for significant pre-contact and post-contact period archaeological resources to be present in areas where ground surface and belowground impacts may occur as part of the Project. Also included is a proposal for intensive (locational) archaeological survey in portions of the Project assigned high sensitivity for potentially significant archaeological resources.

Project Description and Authority

The City of Northampton Department of Public Works (the City) is proposing the breaching of the Upper Roberts Meadow Reservoir Dam and ecological restoration of the upstream and downstream river banks in Northampton, Massachusetts (Figure 1). The dam has been determined individually eligible for listing in the National Register of Historic Places under Criteria A and C at the local level of significance. The City's stated purpose for the Project is to remove a threat to public safety and to comply with a Commonwealth of Massachusetts Office of Dam Safety Order. As an added benefit, the Project will also restore cold water fisheries habitat for brook trout and other cold water aquatic species as well as normal riverine processes.

The Project will be entirely supported with municipal water enterprise funds, but a Corps Section 404 permit is required because of the proposal to discharge dredged and/or fill materials into approximately 0.85 acres of waters of the United States, including jurisdictional wetlands. The Corps is the lead Federal agency for the purpose of the Project's cultural resource review under Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800). The Corps has determined that the Project will have an adverse effect on the Upper Roberts Meadow Reservoir Dam and that the City has documented no prudent and feasible alternative to breaching the dam. The Corps

and the City have been working to develop a Memorandum of Agreement (MOA), which stipulates measures to mitigate for the adverse effect to the historic dam structure (Corps letter to MHC, dated April 1, 2016).

In accordance with Section 106, the Massachusetts Historical Commission (MHC) has been reviewing the Project for impacts to significant historic and archaeological resources. In a series of letters (dated May 5, 2015; May 17, 2016; and June 2, 2016) the MHC indicated that they consider the current draft MOA to be "premature" because an identification effort has not been conducted that is appropriate to the nature of historic properties expected to be affected by the Project (36 CFR 800.4). The MHC requested an archaeological sensitivity assessment and/or intensive (locational) archaeological survey of areas where project impacts to the surface and subsurface of the ground are proposed.

PAL Scope and Personnel

PAL conducted an archaeological assessment of the Project area, the goal of which was to determine the likelihood for significant pre-contact and post-contact period archaeological resources to be present in areas where ground surface and belowground impacts may occur as part of the Project. The assessment encompassed all aspects of the Project, including the dam removal site, upstream and downstream reaches where sediment removal and/or filling will occur, temporary access and construction staging, and permanent pedestrian access and an interpretive area, based on the 90 percent design plans. PAL also evaluated the need for an intensive survey based on the results of the sensitivity assessment.

The assessment (reconnaissance-level) survey was conducted under State Archaeologist's Permit number 3667 issued on July 7, 2016 in accordance with 950 CMR 70 to ensure the qualifications of the archaeological research team and that the research design and methodology meet the MHC's Standards for Field Investigations and Reporting (950 CMR 70.13-70.14) and the Secretary of the Interior's *Standards and Guideline for Archeology and Historic Preservation* (48 Fed. Reg. 190(1983). Suzanne Cherau served as the PAL principal investigator/senior archaeologist, assisted by John Daly, PAL's senior industrial historian. Research and fieldwork were conducted in July and August 2016.

Methodology

PAL's reconnaissance survey consisted of archival research and field walkover of the Project work areas. The methodology was formulated according to the standards and guidelines set forth in *Public Planning and Environmental Review: Archaeology and Historic Preservation, Massachusetts Historical Commission* (MHC 1979).

Research

Research for the post-contact (Euro-American) context and resource potential of the Project area initially included a review and analysis of the 2010 MHC inventory form for the Roberts Meadow Upper Reservoir Dam (MHC #NTH.964) and the 2011 technical report on the National Register eligibility opinion on the dam prepared by the Archaeological Services at the University of Massachusetts-Amherst (Lynch 2011). The 2011 UMass-Amherst report contains the dam history including its context in the town's historical development during the Late Industrial Period (1870–1915), which was used to assist in establishing the post-contact (historical) context of the Project area

and any disturbances caused by the late nineteenth and twentieth century water supply infrastructure including the dam itself.

PAL's research for the post-contact period context of the Project area also included obtaining information specific to the Roberts Meadow area during the periods of documented mill activity on the brook and at the Upper Reservoir Dam site in the eighteenth and nineteenth centuries prior to the late nineteenth century development of the municipal water supply system on Roberts Meadow Brook. The research consisted of a review of town histories and manuscripts, photograph collections, newspaper articles, and historical town maps available online at www.historic-northampton.org (Historic Northampton Museum and Education Center Digital Collections) and at the Forbes Library, Hampshire Room for Local History in Northampton. The available documentary records were used to more fully examine the documented land use history of the dam site's environs including the late eighteenth- and early nineteenth-century bark mill and leather factory and other resources including earlier mill-related dam structures that may be present in the upstream and downstream reaches of Roberts Meadow Brook above and below the current dam site.

The research for the pre-contact (Native American) context and resource potential of the Project area focused on known site locations (MHC inventory) and documented Native American settlement patterns and subsistence systems in the greater Northampton section of the Connecticut River valley. To this end, a review of local geography, geology, ecology, soils, and pre-contact period cultural chronologies was conducted including the results of previous professional archaeological investigations in the area. PAL also reviewed available geotechnical data including bathymetry and soil probes/coring generated as part of the Project. The geotechnical data was used to assist in determining the presence and depths of intact soil strata in project impact areas that could contain intact Native American and Euro-American archaeological deposits beneath accumulated sediments and fill deposits.

Field Survey

The PAL senior archaeologist and senior industrial historian conducted a walkover survey with close ground surface inspection of the proposed Project ground surface and belowground impact areas at locations upstream and downstream of the dam including the dam site. The 90 percent Project design plans were used to guide the walkover survey to ensure that all potential project impact areas in the proposed limit of work were examined. Notes on the physical appearance of the proposed ground disturbance work areas were recorded and digital photographs were taken.

Environmental Setting

The Project area is located along an approximate 1.5-mile stretch of Roberts Meadow Brook from the Upper Roberts Meadow Reservoir northeast to the Middle Roberts Meadow Reservoir about 0.5-mile southwest of the brook's confluence with the Mill River. Roberts Meadow Brook is a perennial coldwater stream that flows from steep and forested headwaters to its confluence with the Mill River in Northampton. The 4.86-acre Upper Reservoir impoundment was created in 1883 when the dam was built at the location of a deep ravine on the brook off Chesterfield Road in the northwest portion of Northampton. The Middle Reservoir was created in 1894 when a dam was constructed immediately above the first reservoir (Lower Roberts Meadow Reservoir) that was built in 1871. Together all three dams and associated reservoirs acted as the only public system that supplied water to the Northampton area and surrounding communities between 1873 and 1905 (Lynch 2011). Roberts Meadow Brook was diverted to the south from its original course in the 1920s to provide a

more direct flow and eliminate three bridges, prevent pollution in the watershed, and limit the erosion of the brook's banks (Held 2003).

The 4.86-acre Upper Reservoir is located within a glacial till area with steep to moderately steep topography that forms the narrow river valley. The west side of the reservoir at the inlet of the brook is characterized by 5 to 20 ft tall exposed vertical bedrock walls on either side of the brook and there are numerous boulders and exposed bedrock that frame both sides of the reservoir between the brook inlet and the dam. Peak hillside elevations range from 600 to 800 feet above mean sea level (ft amsl). The reservoir is a long and linear run-of-the river impoundment, roughly 1,600 feet (ft) long and up to 200 ft wide with a typical width of between approximately 100–150 ft. In 2008 the maximum existing reservoir depth was 18 ft with the deepest portions immediately upstream of the dam, and rapidly diminishing depths to less than 6 ft in the central and 2–3 ft in the western portions of the impoundment (GZA 2015).

Accumulated soft sediments in the impoundment reach depths of 15 ft closest to the upstream side of the dam, 10–12 ft in the center of the pond, and 1.5–3 ft at the west side closest to the brook inlet. The sediments have filled in the natural steep gradient narrow stream corridor that is currently within the reservoir water body. The current shallowness of the reservoir basin is associated with the sediment in-filling, which has occurred over the past 100+ years. At the west end of the reservoir is a large deltaic island that has been formed through the deposition of sediments from the inflowing brook. The large alluvial landform, or so-called sediment island, contains areas of emergent wetland vegetation above mean high water and dominant upland vegetation in the central areas (GZA 2013).

Roberts Meadow Brook flows over the dam spillway from the impoundment and continues east/northeast via a combination of natural and manmade channel to the Middle Reservoir approximately 5,900 ft downstream. The transition from natural to manmade brook channel is roughly at the Kennedy Road bridge crossing. Upstream of the bridge the brook is a naturally formed stream bed; downstream of Kennedy Road the brook has been relocated into an incised and armored manmade trapezoidal channel. The northerly bank of the brook channel is a raised berm below Kennedy Road and intermittently to the Middle Reservoir inlet, presumably from the placement of soils excavated for the creation of the artificial brook channel in the 1920s. Flow over the Middle Reservoir dam spillway continues northeast to the Lower Roberts Meadow Reservoir and eventually reaches the Mill River in the village of Leeds (GZA 2013, 2015).

Between the Upper Roberts Meadow Reservoir dam and the Kennedy Road bridge the brook follows closely to the north side of Chesterfield Road in a relatively level area at approximately 425 ft amsl. The segment of brook in the manmade channel turns in a northeast direction about 1,550 ft downstream of the Kennedy Road bridge and follows along Reservoir Road to the Middle Reservoir inlet at elevation approximately 402 ft amsl. The impoundment and natural and manmade sections of the brook drainage are surrounded by predominantly second growth and later forest lands except where the artificial brook channel passes alongside agricultural fields between Kennedy Road and Middle Reservoir. A small triangular open gravel surface area used for road maintenance staging and laydown, and proposed for construction staging as part of the current Project, is present at the intersection of Kennedy, Sylvester, and Chesterfield roads, and another oblong open area, also proposed for construction staging, is present at the opposite side of the road intersection near the Kennedy Road bridge. Soils mapped around the Upper Reservoir and along the brook to the Kennedy-Sylvester Road intersection are primarily well drained Charlton sandy loams and excessively drained Hinckley loamy sands, while the manmade brook channel and adjacent lands to the east between

Kennedy Road and Middle Reservoir consist primarily of poorly drained Limerick silt loam interspersed with areas of excessively drained Hinckley loamy sand (USDA-NRCS 2016).

Cultural Context

Pre-Contact/Contact Land Use and Settlement Patterns

Avocational collections from the first half of the twentieth century and more recent cultural resource management (CRM) surveys conducted in the Northampton area indicate that Native Americans occupied the middle section of the Connecticut River Valley in Massachusetts throughout the pre-contact period (ca. 12,500 to 450 years before present [B.P.]) from the earliest PaleoIndian Period through the Late Woodland Period. Site types include the locations of seasonal villages, hunting and gathering camps, and specialized resource procurement areas. These documented site locations share similar topographic and environmental characteristics that include being near streams or stream confluences and well drained sandy soils with slopes of less than ten percent. These characteristics are consistent with portions of the Project area's environmental setting described above.

The PaleoIndian Period (12,500–10,000 B.P.), the earliest phase of human occupation in New England, followed the retreat of the Wisconsin glaciation. Archaeologists have hypothesized that PaleoIndian populations were highly mobile, with an adaptive technology geared toward the intensive exploitation of a limited number of game species. Evidence to support this theory is derived from a scattered number of PaleoIndian sites, most of which reflect campsites occupied for only a short time. Known PaleoIndian sites in the middle Connecticut River valley in Massachusetts are rare. These sites are typically recognized by the presence of fluted projectile points, exotic lithic materials, or assemblages including gravers, scrapers and channel flakes.

Most of the information about settlement patterns for the PaleoIndian Period comes from isolated find spots of diagnostic projectile points (fluted points) in the towns of Greenfield, Gill, Montague, Agawam and Chicopee (Curran and Dincauze 1977; Dincauze et al. 1976; Jordan 1969; MHC site files). Find spots of fluted projectile points occur on elevated kame deltas or other settings within the floor of glacial Lake Hitchcock, which drained approximately 13,000 years ago. A site in Hadley, located on a low rise in the Connecticut River's alluvial floodplain, yielded a typical PaleoIndian tool assemblage that included fluted projectile points. Curran and Dincauze (1977) have suggested that after the drainage of Lake Hitchcock, the valley floor supported plant and animal communities that were more diverse than those found in surrounding upland areas. This resource diversity made the areas attractive to PaleoIndian hunter-gatherers.

As mixed deciduous-coniferous forests replaced the postglacial boreal forests, human adaptive strategies altered to the developing forest type. These changes occurred gradually over a few thousand years as climatic fluctuations changed the resources available for human exploitation. By about 8500 B.P., **Early Archaic Period (10,000–8000 B.P.)** hunter-gatherers occupied territories smaller than those exploited by PaleoIndian groups. A more broad-based subsistence pattern developed during this period in response to the evident changes in valuable resources. A general warming trend corresponded with the mass extinction of certain classes and species of mammals, including mammoths, tapirs, horses, peccaries, and most camels, as well as their ecologically dependent carnivores and scavengers (Butzer 1971). Bifurcate base projectile points, and the rare Kirk and Palmer type points, are considered diagnostic of the Early Archaic Period. Assemblages may also include ground-stone tools, drills, anvil stones, choppers, and scrapers (Snow 1980). In the middle Connecticut River Valley, identified Early Archaic find spots occur near Hadley and possibly in

Sunderland. Discrete sites or components of this time period have not been identified and patterns of settlement and resource use remain vague. Early Archaic sites may be located with respect to environmental settings, such as glacial Lake Hitchcock, which have changed or are difficult to identify in the current modern landscape (Dincauze and Mulholland 1977; MHC 1984).

The archaeology of human activity in New England during the **Middle Archaic Period (8000–5000 B.P.)** reflects the development of an increasingly complex, localized land use strategy with an expanded resource base and diversified site selection. The seasonal pursuit of anadromous fish species and waterfowl may have developed during this period (Dincauze 1978), perhaps as a response to the development of socioeconomic territories defined by major river drainage basins (Dincauze and Mulholland 1977). Sites from this period are discovered in an increasingly wide range of environmental settings, especially near the edges of bogs, swamps, lakes, and ponds. Site size and function depend on the environments in which they are discovered. Included are large base camps, which appear to have been used repeatedly over a number of generations, usually located near riverine wetlands. Other task-specific sites and temporary camps have been located in other microenvironmental zones. The diagnostic lithic technology from this period includes Neville and Stark projectile points, commonly made from non-local, Boston-basin felsites, as well as locally available shales, argillites, quartz, and quartzites.

Middle Archaic sites and components are more numerous than those of the preceding temporal period, but appear to be less frequent in the mid-Connecticut Valley than in other large river drainages in eastern and southeastern Massachusetts. Seasonal fishing at fall line stations on the Connecticut River and probably some other major tributaries may have been an important part of the annual resource cycle for Middle Archaic groups. Evidence of Middle Archaic occupations have been found in Hadley, Northampton, and in Hatfield (MHC site files).

Increased site frequency and the expansion of natural resource exploitation continued into the **Late Archaic Period (5000–3000 B.P.),** with recorded site density reaching a peak by approximately 4500 B.P. (Mulholland and Stillson 1988). Late Archaic tool complexes reflect wide stylistic and functional variations. One hypothesis explaining this phenomenon relies on population growth as a causative factor in the increased diversification of resources exploited: growing human populations stressed local and regional food resources, creating the need to intensify the exploitation of new and/or less desirable foodstuffs. This would have forced an adjustment in subsistence technologies. The Late Archaic includes the Laurentian, Small Stemmed, and Susquehanna traditions. Sites occupied by Late Archaic hunter-gatherer groups of the three major cultural traditions are widely dispersed in various environmental zones ranging from river floodplain and terraces to upland tributary streams. Several examples of multicomponent sites containing evidence of multiple occupations during the Late Archaic have been investigated in the middle Connecticut River valley communities of Hadley and South Hadley, Hatfield, Holyoke, Northampton, and Sunderland (MHC site files).

The **Transitional Archaic Period (3600–2500 B.P.)** is characterized by a number of cultural innovations, including the introduction of steatite vessels and early forms of pottery. This period is most commonly associated with the Susquehanna Tradition as well as the continuation of the Small Stemmed Tradition and the development of Orient Complex materials. Non-mortuary sites associated with the Susquehanna include special lithic procurement sites, small camp sites, staging areas for foraging, and rockshelters. The Susquehanna Tradition is best known for its elaborate burial culture, which is well-documented in eastern and southern Massachusetts (Dincauze 1968, 1972, 1975; Leveillee 1995). Analysis of artifact collections from the middle Connecticut River Valley, now in

the Springfield Science Museum, indicates that Susquehanna Tradition and Orient complex components existed on a number of local sites known to avocational archaeologists (Pretola 1990). Diagnostic projectile points (Snook Kill/Atlantic, Wayland Notched, Susquehanna Broad, Orient Fishtail) are made of a variety of non-local lithic materials such as New York cherts, felsite or rhyolite from eastern Massachusetts, and argillite (from New Jersey), showing that groups in this area shared the preference for specific types of stone that is typical of the Susquehanna Tradition and Orient complex throughout southern New England.

The archaeological data in the middle and lower Connecticut River Valley suggest a technological, and perhaps a broad cultural, continuum from the Late and Transitional Archaic periods into the **Early Woodland Period (3000–2000 B.P.)** (Juli and McBride 1984). Grit-tempered and cord-marked ceramics, referred to as Vinette I type, replace steatite vessels. Overlap of artifacts from the two periods, however, is well documented. Late and Transitional Archaic points have been found in association with Vinette I ceramics (Juli and McBride 1984; McBride 1984). Technological variations in styles of projectile points include Mated, Lagoon, and Rossville types. Early Woodland settlement patterns in the mid-Connecticut River Valley during this period are not well-known because of the lack of professionally investigated components on sites in the valley and neighboring physiographic zones.

Briefly during the latter part of the Early Woodland Period, elements of the Adena Cult, indigenous to the Ohio River valley, briefly influenced indigenous cultures in the Northeast (Ritchie 1969). Adena Cult ideas probably diffused through trade and secondary contact via New York, and the Champlain Valley, to New England and the mid-Atlantic region. In New England, complex Adena mortuary ritual is highly visible in Vermont, and to a lesser extent in the mid-Connecticut River Valley in Massachusetts and southeastern New England. Several Adena-like burials were encountered at the Holyoke Depot Hill Site, a large Early Woodland cemetery in Holyoke (Young 1969). This site, destroyed in 1869 during construction grading, is supposed to have been located a short distance east of Holyoke Depot (Willoughby 1935; Young 1969). Items associated with the Adena Cult include distinctive blocked-end smoking tubes and obtuse-angled pipes for tobacco; ornaments such as beads and pendants made from cold-hammered Great Lakes copper, bone, stone, and shell; and ground-stone effigies, such as birdstones (Ritchie 1969).

The archaeological evidence for **Middle Woodland Period (2000–1000 B.P.)** occupations in the mid-Connecticut River Valley is generally more common than that for the preceding period. Higher levels of sedentism and a significant rise in population led to increasingly complex social patterns, technological diversification, and regional trade. A marked proliferation of ceramic styles and the emergence of Greene, Fox Creek, Jack's Reef Pentagonal, and Corner-Notched projectile points also characterized the period. People of the Middle Woodland Period in southern New England obtained exotic lithic materials, including Pennsylvania jasper and New York State cherts. While hunting and gathering were still integral parts of Native American subsistence patterns throughout the Woodland Period, horticulture was probably established in the region by 1,000 years ago.

By the **Late Woodland Period (1000–450 B.P.)**, Native American groups were oriented toward major river drainage systems and coastal areas, although it is likely that coastal resources were an important part of human subsistence throughout much of the pre-Contact period (Mulholland 1988). Material culture diagnostic of Late Woodland occupation includes fine, thin ceramic wares and Levanna projectile points. Grit or shell-tempered ceramic wares with incised line decoration are commonly discovered in this region. Late Woodland Period data has been collected from a wide range of locations in the mid-Connecticut River Valley. The distribution of diagnostic Levanna points

at sites in this area suggests that Late Woodland settlement and resource use involved a fairly wide range of environmental settings and was not restricted to riverine floodplain or terrace locations.

The **Contact Period (450–300 B.P.)** was characterized by sporadic, direct and indirect contacts between European and Native Americans that had a limited impact on the indigenous population of the mid–Connecticut River Valley. Only a small number of European items were incorporated into traditional Native American material culture. The limited nature of contact in the valley is supported by the Native population's escaping "the worst of the devastating epidemics that swept through much of New England during the second decade of the seventeenth-century" (MHC 1984:46). After excavating the Long Hill Site in Springfield, Massachusetts, Harry Andrew Wright (1897) commented on the paucity of European trade items, particularly in the context of Native American burials. Long Hill, a palisaded village, was occupied until the end of King Philip's War (1675-1676).

The Connecticut River Valley was a main north/south transportation corridor used by Native Americans and later, European settlers (MHC 1982). An important network of trails connected core areas including Northampton in the valley to each other and core areas elsewhere in central New England. These main trails and their tributaries affected settlement and development during the pre- and post-contact periods. The primary trail paralleling the west side of the Connecticut River can be traced from Suffield, Connecticut through Northampton and adjacent towns in Massachusetts to Vernon, Vermont, crossing the Westfield River at Mittineague Falls on its way to Hadley Falls and points north (MHC 1984). The primary east-west route followed the Mill River valley in Northampton, with a secondary western trail that branched over Saw Hill Mountain as Spring-Chesterfield road and Roberts Meadow. There is one reported Contact Period site on Shepherd's Island in the Connecticut River within the Northampton boundaries. Northampton was the important native settlement center of the Nonotucks, who are believed to have had loose political ties with the Pocumtucks, the dominant native group in the western portion of the state in the seventeenth century (MHC 1982).

Post-Contact Land Use and Settlement Patterns

Northampton, the county seat of Hampshire County since 1794, was settled in 1654 during the **Plantation Period (1620–1675)** and established as a town one year later. Northampton is situated along the western banks of the Connecticut River. Purchased from the Nonotuck Indians by John Pynchon on behalf of a group from Connecticut and Dorchester, the town at that time encompassed land that today makes up the towns of Northampton, Easthampton, Westhampton, and parts of Hatfield and Montgomery (Wikander et al. 1954). Native relations with the original inhabitants at this time were peaceful and harmonious. The Indians were allowed to build their own fortification not far from the main village in 1664 (Lockwood et al. 1926).

The main English settlement was located in the area of Market, King, Pleasant, and Hawley Streets, and was at distance of about one mile from the Connecticut River. The irregular street plan of the original settlement has been sometimes attributed to its having been "laid out by cows, the inhabitants building wherever they made a path" (Lockwood et al. 1926:376). The first meeting-house was erected in 1655 and doubled as a school after 1660. Agriculture was the chief occupation among the local pioneers, who cultivated wheat, rye, and corn crops. The first mill was built in 1658 on the north bank of Mill River, west of the village (Lockwood et al. 1926). The eastern lowlands, where the floodplain made for fertile lands, were divided among the early settlers and used for cultivation.

The first ferry between Northampton and Hadley, known as Goodman's Ferry, was said to have been established in 1661, although not authorized by the Hampshire County Court until 1664 (Lockwood et al. 1926). Documents indicate that a home lot below the south highway into Hadley Meadow was reserved for a ferry landing earlier in 1661. Joseph Kellogg is reported to have built on the lot, and was appointed ferryman in 1675, with the added bonus of having license to entertain travelers. Kellogg bequeathed the ferry to his son John, who eventually passed it to his son James. The ferry remained in the Kellogg family until 1758, when it passed to Stephen Goodman, James Kellogg's son-in-law (Judd 1976). The ferry, along with the "Upper Ferry" between Hadley and Hatfield, played a significant role during King Philip's War (1676-1677). Joseph Kellogg's ferry transported hundreds of colonial troops across the river on their way to face French and Indian forces to the north.

The Northampton settlement incurred moderate damage during King Philip's War including the burning of houses both inside and outside the palisade walls. Fields and crops were also damaged negatively affecting the local economy. At the beginning of the **Colonial Period (1675–1775)** fear of future Native American attacks led to the construction of a new palisade encircling the meetinghouse and the town center by the 1680s. Development outside of the town center continued to be sluggish as English settlers were disinclined to build outside the protection of the palisade with the recent memory of the war looming in their minds. It was not until the early eighteenth century that some settlement began to the north and west of the city (MHC 1982).

By the 1690s, the downward turn of the economy during King Philip's war had rebounded in Northampton with local highway improvements and expanding livestock markets. Cattle, pork, and sheep were exported to Boston and Cambridge. Local industries such as a turpentine works, brickyards, a malt house, and a fulling mill were encouraged by growing transportation networks including bridges and ferries that connected Northampton to towns on the other side of the Connecticut River (MHC 1982). Northampton emerged as a political and economic center of Hampshire County by the end of the seventeenth century. By the time the American Revolution began, Northampton was home to over 1,700 residents inhabiting almost 200 houses (MHC 1982; Wilkie and Tager 1991).

In the decades immediately following the Revolutionary War, known as the **Federal Period (1775–1830)**, many Hampshire County farmers faced a debt crisis that resulted in the frustrated farmers holding Shay's Rebellion, an event in which an armed mob kept the Massachusetts Court of Common Pleas from holding sessions. In contrast, the Embargo and the War of 1812 caused a positive effect on the local economy by encouraging textile production. Leeds emerged as the industrial center of town with the construction of cotton and woolen mills that produced broadcloth and satinet among other textiles. The Shepherd Factory, the most prominent mill in town, patented the power loom in 1816 and was the first to import Saxony sheep. It employed 120 men and women in the village of Shepherd's Hollow. The town center of Northampton also contained industrial complexes including a large tannery and duck factory (MHC 1982).

In the northwest part of the town, known as Roberts Meadow, William Edwards established a tannery, which for a short time made Northampton an important center of the industry. In 1794, for example, Edwards' tannery was the first to ship Hampshire County leather to Boston. With others he established auxiliary tanneries in nearby Chester and Cummington, and in 1809 all three businesses were incorporated as the Hampshire Leather Manufactory with Boston merchants as the chief shareholders. In the years 1809 and 1810 Edwards sent to market leather valued at $175,397, a large sum for the period. Edwards left for New York State in 1817, but the tanning industry continued in the town for several more decades (Hannay 1935; MHC 1982).

Court Square remained the civic focus of Northampton into the early nineteenth century. Commercial businesses were established along Main and Bridge Streets, while residential expansion occurred along Hawley Street and west along Elm Street to Round Hill. The fourth meetinghouse of the First Church was constructed in 1810, the Town Hall was erected in 1823, and the County Courthouse was located adjacent to the First Parish Church on Main Street. By 1831, at least nine schools and Baptist, Unitarian, and Episcopal churches had been established (Hales 1831). By 1830 Northampton's population had risen to 3,613 residents, more than double the number (1,730) in 1776 (MHC 1982).

During the **Early Industrial Period (1830–1870)** settlement in the town continued to spread north and south of the main village, and the villages of Leeds, Florence, and Pine Grove were established. By1850 the town's population had increased to 5,728 residents (Lockwood et al. 1926). Profitable industries in the town during this period included the silk industry. Samuel Whitmarsh pioneered the silk industry in Northampton in the 1830s, and by 1837 two silk factories produced $40,000 worth of silk. Also in 1837, three woolen mills produced 70,000 yards of cloth valued at $230,000 (Lockwood et al. 1926).

The commercial potential of the town's industries was enhanced in 1845 when Northampton was linked to the east-west Boston & Albany railway line and to the north-south New York, New Hampshire, and Hartford system (Allen 1855). The railroad helped Northampton develop one of the Connecticut River Valley's strongest and fastest-growing economies. In 1855 there were 74 industrial plants on the Mill River in Northampton and Williamsburg, representing 25 percent of all factories in the three-county Connecticut River Valley, employing 10 percent of the labor, and representing 10 percent of the product value (Tercentenary History Committee 1954; MHC 1982). The silk industry continued to have the most impact on Northampton's economy during this period. The Northampton Silk Company was organized in 1836 by Samuel Whitmarsh with investors from New York and Connecticut, and was followed by the Nonotuck Silk Company in the village of Leeds (Tercentenary History Committee 1954; MHC 1982). The silk industry also led to the establishment of the Florence Sewing Machine Co., founded in 1861 by Hill and Hinckley to build machines to sew the silk twist into fabric (MHC 1982).

Civic and institutional developments during this period included the State Hospital for the Insane (1854) and the Clarke Institute for Deaf Mutes (1867). The Town Hall building (1849), Boys and Girls High Schools (1835 and 1836), a Fire Department (1854), Gas Company (1853), Library (1869), and Catholic Church (Saint Mary's 1844) were also established during this period (MHC 1982).

Northampton was incorporated as a city in 1883, and by that time, notable changes in the town's infrastructure had taken place. In the first decades of the **Late Industrial Period (1870–1915)** a public water works commission was established in 1870 and first reservoir (Northampton Reservoir, also known as the Lower Roberts Meadow Reservoir) was built on Roberts Meadow Brook in 1871. Located northwest of Leeds, the reservoir had a capacity of 10,000,000 gallons and provided water for the town's villages with about 14 miles of pipes and 200 users (Knab 1902). An additional 13 miles of pipe were added to the water works system within the following decade to accommodate the growing number of families, which by 1884 had increased to 1,647 users, and a second reservoir (known as the Upper Roberts Meadow Reservoir) with a capacity of 16,500,000 gallons was constructed one mile above the first one (Gay 1888). The demand for a larger supply of water grew steadily after the city's incorporation, and in 1894 an additional storage reservoir (known as the Roberts Meadow Middle Reservoir) was built to hold more than 90,000,000 gallons (Knab 1902).

After 1905 a new larger reservoir system was constructed in nearby Whately and Williamsburg and was used as the Northampton water supply. The Roberts Meadow water works system was relegated to backup use, which continued until 1951 when the City constructed two ground water wells (Lynch 2011; Held 2003).

Additional railroad lines and inter-urban connections helped to carry more freight and passengers and to reinforce the town's position as the mid-valley economic center, and horse-drawn trolleys yielded to electric streetcars in 1892. Industries such as silk production and cutlery manufacture continued to add to the growing economy of nineteenth century Northampton until the Mill River flooded in 1874 destroying many industrial and residential structures in Williamsburg, Haydenville, Leeds, and Florence. These industries would revive in a few years, and be added to the growing agricultural businesses of dairy farming and the successful tobacco and potato markets primarily cultivated by immigrants from Austria and Poland (Gay 1888; MHC 1982).

Inroads in education included the founding of Smith College, by Sophia Smith of Hatfield. The college was incorporated and chartered in 1871. It opened in 1875 and quickly became one of the country's most prestigious colleges for women. It is largely because of this school of higher learning that Northampton became the cultural and artistic center of the central Connecticut Valley in the next century.

At the onset of the **Modern Period (1915–present)** new development was minimal, but the population of Northampton continued to grow unabated. In 1910 there were 19,431 persons living in the town; by 1920, an additional 2,000 inhabitants called Northampton home (Lockwood et al. 1926). Much of this growth can be ascribed to the many small factories that sprang up during the first quarter of this century. These businesses produced baskets, paper, bottles, cups, boxes, silk products, bricks, various types of brushes, cutlery (three companies), sash, doors and blinds, elevators, hydrants, and wood pulp. The Williams Basket Factory was one of the largest in the world (Lockwood et al. 1926).

As with many communities during the Great Depression, Northampton's local industries suffered. Small industries that did not survive World War II were those that specialized in the manufacturing of brooms, cigars, and lead pencils. Those industries that survived World War II included Prophylactic Brush, Florence Furniture, and Northampton Cutlery (Lowenthal 1954). In 1939 amidst the coming and going of the various industries, the Calvin Coolidge Bridge was constructed between Bridge Street in Northampton and Russell Street in Hadley.

Throughout the twentieth century, civic and commercial centers have been maintained along Main Street and have spilled over onto King and Pleasant Streets. Strip development on Route 5 north and Route 10 south only further expands these commercial centers. Monumental civic buildings such as the library, courthouse, railroad station, concert hall, and additional buildings at Smith College have been constructed. Residential development on Elm, South, Prospect, and Locust Streets as well as a Veteran's Hospital and the county sanitarium around Florence Center has also been established (MHC 1982). Known today as the cultural hub of western Massachusetts, the city that subsisted in its early years on the fertility of its floodplains and industrial development along the Mill River would be characterized by more intense industrial development and infrastructural changes that have had lasting effects on its modern landscape.

Site History

The Project area is located along Roberts Meadow Brook in the historic district or neighborhood of Roberts Meadow, originally part of the town's "Long Division" and settled in the 1700s in the northwest part of Northampton west of the village center of Leeds at the confluence of Roberts Meadow Brook and the Mill River (Hoxie 1917; Kneeland 1894; Committee on Historical Localities 1904). The Roberts Meadow neighborhood was centered at the intersection of Chesterfield-Kennedy-Sylvester Roads and at its height in the mid-nineteenth century contained a school, two taverns (Edwards Inn and later Moody Inn), a tobacco barn, a bark mill and tannery, a sawmill, a carriage shop, a blacksmith shop, a fulling mill, a flock of 300 merino sheep, and dozens of homes (Figure 2). The village was erased by the creation of the Upper Reservoir in the 1880s and only a handful of families remain in the area. The rest of Roberts Meadow is now watershed land owned by the City of Northampton (Pelissier 2010a).

The first owner of land in Roberts Meadow, known as Lot 34 of the Long Division, was Nathaniel Edwards, son of Alexander Edwards (deceased 1690), in 1700. Nathaniel Edwards was a farmer who cut hay and grain and was succeeded by his son Nathaniel Jr. in 1731 who "built a saw mill near the present city reservoir" in Roberts Meadow. Nathaniel Jr. also built two one-story houses "below the saw mill dam, immediately on the stream" and was succeeded by his son Ebeneazer, who was succeeded by his son Nathaniel 3rd, who built the first tavern in Roberts Meadow in 1771 where he lived until his death in 1832 (Hoxie 1917). The tavern was located on Chesterfield Road, which became part of the Third Massachusetts Turnpike, originally incorporated in 1797 to extend from the east side of Roberts Hill in Northampton west to the eastern border of Pittsfield, Massachusetts. One year later the turnpike was authorized to continue across Pittsfield and through the town of Hancock to the New York State line. It became part of the larger network of turnpikes that connected Boston, Massachusetts to Albany, New York beginning in the late 1700s. The total length of the Third Massachusetts Turnpike segment was roughly 32 miles and tolls were charged until it was made free in September 1829 (Wood 1919).

The tavern of Nathaniel Edwards the 3rd (known locally as the Edwards Inn or Tavern) contained a turnpike toll gate that was not "entirely removed" until 1840 (Pelissier 2010a). The inn appears at this location on the 1794 map of Northampton (Denison 1794). In 1825 General Lafayette visited Northampton and reportedly came from Pittsfield over the meadows on the turnpike and was met by local dignitaries at the Edwards Tavern in Robert's Meadow. In 1833 Henry Clay also visited Northampton and stopped at the Edwards Tavern on his way to Pittsfield via the turnpike route (Friends of the Upper Roberts Meadow Dam and Reservoir 2015; Committee on Historical Localities 1904; Pelissier 2010a).

The first recorded dam on Roberts Meadow Brook was reportedly built for a sawmill operated by the Edwards family in the 1700s. The sawmill was located at or near the present Upper Roberts Meadow Dam as early as 1796 when William Edwards purchased the "old saw mill yard", which belonged to a different branch of his family, for £10 and there erected a "bark mill and shed on the south side of the brook (Hoxie 1917:45). In 1917 D.E. Hoxie, in his manuscript recounting 70 years of local landmarks in Northampton, described saw mill foundation timbers seen by himself in 1854 and "were still in a sound condition" at that time (Hoxie 1917). The bark mill "ground bark for the leather factory located here as well as for other factories [Col. William Edwards] owned in this town. He also made leather in Chester and in Cummington" (Hoxie 1917:45). According to Hoxie (1917: 31) the saw mill was built by Nathaniel Edwards Jr. around 1731 and was owned together with his brother Timothy Edwards, who later sold his rights to the mill and moved to Westhampton to run another saw mill (Hoxie 1917:45).

Colonel William Edwards was born in Elizabethtown, New Jersey in 1770 and was a grandson of Reverend Jonathan Edwards (1703–1758), renowned theologian and third minister of the Northampton Congregational Church (Bishop 1861; Kneeland 1894). William Edwards learned the tanning trade from his uncles, who operated tanneries in Elizabethtown during and after the Revolutionary War (Bishop 1861). In 1790 at twenty years of age he moved to Northampton and purchased the "old saw mill yard" in Robert's Meadow that was built and operated by another branch of the Edwards family. He reportedly shipped his first tanned leather to Boston in 1794 (Bishop 1861), which means that he was likely using the old sawmill for his tanning business before building his bark mill and tannery. On June 10, 1795 William Edwards placed an advertisement in the local *Hampshire Gazette* in which he made notice of his intent to build a mill "for the purpose of grinding bark by water, near Mr. Nathaniel Edward's" and that he was looking to purchase "any quantity of Oak, Hemlock, and Birch Bark" for his mill beginning "from and after the first of July next" (Hampshire Gazette 1795). The 1794 town map does not indicate the presence of a mill at this location, but the labeled "Edwards Inn" is depicted on the south side of Chesterfield Road, and another structure (illegible label) on the north side of the road along the brook (Denison 1794).

Edwards is attributed with being one of the first manufacturers in the region to use water rather than horse power for a bark mill, and based on accounts of his operations, it appears that his mill not only chopped and ground and prepared bark for use in tanning animal hides, but also had machinery to beam or work green hides and skins and make them ready for soaking in the bark-liquor (vegetable tannin), and to scour and take off the bloom from tanned leather for the currier's use. According to mechanical and manufacturing practices of the period, the best bark mills had machinery to cover the wide range of curing to tanning operations to produce leather, which could be sold to merchants for saddles, boots, shoes, furniture, etc. (Nicholson 1825).

Other innovations or improvements attributed to Edwards' bark mill and tannery in Roberts Meadow included the placement of tanks beneath the soaking vats to carry off the spent bark-liquor to a "junk" and "leeches above ground in tiers, one above another, raising the liquor by a suction pump" (Hannay 1935:28). Prior to this time, the vats or leeches were usually oblong boxes without a cover or outlet sunk into the ground near a stream. In 1812 Edwards received patents for processes he developed to improve the leather tanning process including the copper heater, the hide-mill, and the beating or rolling mill, which all saved in manual labor and made the manufacture of leather a much more profitable industry (Hannay 1935). His improvements were reported to be "among the earliest and most important of the mechanical benefits conferred upon the Leather-manufacture" in the late eighteenth and early nineteenth centuries (Bishop 1861:454).

Edwards reportedly began his tanning business with a stock of fifty hides, and his new bark mill and tannery operations had so improved productivity that with the assistance of outside investors and acting as agent he was able to establish auxiliary tanneries in the nearby towns of Chester and Cummington (Bishop 1864). In 1809 the three tanneries (including Roberts Meadow in Northampton) were incorporated as The Hampshire Leather Manufactory with a capital of $100,000, the participants and chief owners of which were Boston merchants. The company had a capacity for "16,000 full grown hides, and employed three bark mills (with stones), three hide mills, and three rolling machines, all carried by water, and copper cylinders for applying heat in the extraction of the tannin" (Bishop 1864:145). Edwards continued to act as agent and in a letter dated November 29, 1809 to the postmaster of Northampton, he wrote: "We have 672 vats, three bark mills which grind our bark by water – the same number of hide mills which go by water for softening foreign hides – also three rolling machines which also go by water. One-third of the hides tanned in the U.S. are

imported hides. They come from Spanish colonies almost wholly" (Hannay 1935:28). In 1809 and 1810 Edwards' company shipped $175,397 worth of leather to U.S. markets (Hannay 1935).

In 1817 William Edwards left Northampton to manage the newly organized New York Tannery in the Catskill Mountains region, which had a capacity of 5,000 hides and was reportedly the first tannery entirely under one covered building in the United States (Bishop 1864; Hannay 1935). Benjamin Hoxie of Greenfield, Massachusetts took over the Northampton tannery operations with his brother-in-law Horace Wright, having "learned the tanner's business of Nathaniel Edwards" (Friends of the Upper Roberts Meadow Dam and Reservoir 2015). Two descriptions of the Edwards Tannery during Hoxie's tenure at the site in the early nineteenth century are as follows:

> There were two buildings of two stories each that were built about 1800 or a little earlier [by Col. Wm. Edwards] on the north side of the brook and one built later, each having its branch of the industry to accommodate and all were necessary to the business and its successful operation. The bark mill proper was provided with two wheels and one stone for grinding bark both for this plant and for other similar plants. Bark was ground and freighted away at a price per 100 bushel. Both oak and hemlock were used and of course kept separate. The stone used for grinding is now to be seen at the foot of the present dam owned by the city" (D.E. Hoxie 1917[1]).
>
> and
>
> Below the dam on the north of the brook was a 'beam house' of two stories with two water wheels, north and east of which was a tan and curry house of two stories, and still north and east, after 1835, another two-story building for finishing and storing leather. Some 75 or 80 vats were south and east of these buildings with two or three leaches. These last above ground, the vats below. A leach has a tank some 12 feet square and 8 feet high, and was filled with ground bark and water, which water was pumped by power from the brook. This pump was operated from the beam house wheel by a rod running on supports from the second floor, these supports being of such height as made it easy for a boy to straddle and ride, as it were, 'horseback' in and out as the crank revolved and the rod going with it. On the south side of the brook was a two-story bark mill and possibly other buildings…A shed 100 feet long near the road stored the bark" (Hannay 1935[2]).

It is not known when the bark mill and tannery ceased operations in Roberts Meadow, but the mill is shown on the 1831 (Hales) town map and labeled a "Leather Factory" (see Figure 2); it is not shown on the 1860 (Walling) town map (Figure 3). According to one local history, the leather tanning business in Northampton ranked second in the town in 1831, but "declined thereafter in relative importance" (Tercentenary History Committee 1954).

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[1] According to the Friends of the Upper Roberts Meadow Dam and Reservoir, D.E. Hoxie was the son of Benjamin B. Hoxie who took over the Robert's Meadow bark mill and tannery site in 1817 when Col. William Edwards left for New York.

[2] From a personal description given to the author by D.E. Hoxie, also a descendant of the Edwards family.

The 1831 town map also depicts Moody's Tavern on the south side of Chesterfield Road at the intersection with Kennedy Road and an unnamed dwelling on the north side of the road opposite the tavern. The tavern that appears on this map replaced the earlier inn built in 1771 and kept by Nathaniel Edwards on the same site until it burned in 1815. At that time the later structure was erected and was kept by Leander Moody until about 1840 when the turnpike toll gate was entirely removed and it was used as a private home until it burned in 1924 (Friends of the Upper Roberts Meadow Dam and Reservoir 2015; Pelletier 2010a). In 1860 (Walling) the former inn belonged to Mrs. L. Moody; in 1873 (Beers), 1884 (Walker), and 1895 (Miller) to E.A. Sylvester. A ca. 1886–1902 photograph depicts it as a large two-story wood-frame structure with two brick end chimneys (Figure 4). It was reportedly vacant when it was lost in an arson fire right before it was planned for demolition (Friends of the Upper Roberts Meadow Dam and Reservoir 2015).

Other dwellings in the project vicinity depicted on nineteenth century town maps included the unnamed 1831 (Hales) dwelling on the north side of the road adjacent to the brook, which was owned/occupied by B.B. Hoxie in 1860 (Walling), B. Hoxie in 1873 (Beers), D.E. Hoxie in 1884 (Walker), and Edw. Hoxie in 1895 (Miller). The Upper Roberts Meadow Dam (1883) was initially called Hoxie's Dam after the Hoxie family and D.E. Hoxie was "compelled to sell his land to the City's water department when they determined that runoff from his farm was polluting the reservoir water (Friends of the Upper Roberts Meadow Dam and Reservoir 2015). According to D.E. Hoxie (1917: 50-51), the one-story dwelling was built before 1754 and occupied by members of the Edwards family and beginning in 1835 by members of the Hoxie family, starting with Benjamin B. Hoxie and his wife Hannah B. (Edwards) Hoxie. The old house was replaced by a new one in 1871 and occupied by David E. Hoxie before it was torn down in 1901 following its sale to the City (Hoxie 1917: 51). Hoxie (1917: 51) also mentions another one-story dwelling located about 25 rods (400 ft) west of the Edwards-Hoxie dwelling; it was occupied by Timothy Edwards, brother of Nathaniel Edwards the 3rd, before he moved to Westhampton, and later by several other families. Hoxie notes that this house was also a "flannel mill after an addition to the rear had been erected. Power from the brook running under the house by a race way was used" (Hoxie 1917: 51).

The 1831 (Hales) map depicts another dwelling on the east side of Kennedy Road and on the east side of the brook where it originally crossed Chesterfield Road to the south (see Figure 2). The dwelling was owned/occupied by E. Allen in 1860 (Walling) and 1873 (Beers), and by J. Hemmingway in 1884 (Walker) and 1895 (Miller). Another structure appears between Kennedy Road and the brook on the north side of Chesterfield Road in 1884 (Walker) and it is labeled "Hall" in 1895 (Miller).

The Roberts Meadow school house was known as the Allen Elementary School for the district beginning in 1839 (Hoxie 1917). It was located on the south side of Chesterfield Road directly across the street from the Upper Roberts Meadow Dam Reservoir. The school house appears on the nineteenth century town maps (Beers 1873; Hales 1831; Miller 1895; Walling 1860; Walker 1884) and the 1895 USGS map, but is not on the 1939 USGS map of the area. The school house site is currently the driveway of 830 Chesterfield Road and brick remains were found when the current owners built their home at this address (Friends of the Upper Roberts Meadow Dam and Reservoir 2015).

There is mention of another early dam for a fulling (woolen) mill of unknown date having been located about "40 rods" below the present reservoir dam and the bark mill on Roberts Meadow Brook. The fulling mill was owned and operated by Chilson, Wild, L. Knapp, and others, and later by Eli Goodale (Pelissier 2010a, 2010b), and may have been the same "flannel mill" mentioned by D.E.

Hoxie in his 1917 manuscript as being associated with the original Timothy Edwards house opposite the Edwards Inn on the turnpike. According to Hoxie (1917), "the water wheel was under the rear of the house later owned by Horace Wright; the dam was about five or six feet high and a part of it was in place as recently as 1856." No fulling mill or house belonging to Horace Wright are depicted on the nineteenth century town maps, but the locational information provided by Hoxie (1917) would place it about 600 ft downstream of the present Upper Reservoir dam and within 200 ft of the west side of Kennedy Road.

As part of the City's water supply system, the Upper Roberts Meadow Dam and Reservoir were constructed in 1883 at the site of the eighteenth and nineteenth century "old saw mill yard" and later bark mill and tannery. The dam and reservoir functioned until 1905 when they were relegated to backup use until the whole Roberts Meadow reservoir system was put out of service in the 1950s (Lynch 2011). When originally constructed and for nearly three decades afterwards water from the upper and middle reservoirs was released as necessary and flowed down the original course of Robert's Meadow brook to the lower reservoir to be distributed. The brook naturally meandered on both sides of Chesterfield Road below the Upper Reservoir dam, but in the early 1920s the City diverted the brook into a more direct course on the north side of Chesterfield Road in order to eliminate three bridge crossings, prevent pollution, and limit the erosion of the brook's banks (Held 2003; Lynch 2011) (Figure 5). The diversion channel began at the intersection of Chesterfield and Kennedy Roads, and continued on the north side of Chesterfield Road in a northeasterly direction and then turned at a nearly right angle where Chesterfield and Reservoir roads intersect to continue on the westerly side of what was then called the Leeds Highway (present Reservoir Road). The straight channel was constructed to be 1.6 miles long with riprap on both sides. The 1895 and 1939 (USGS) topographic maps of the Northampton area depict the before and after course of the original and rechanneled brook between the Upper and Middle reservoirs. The original brook course on the south side of Chesterfield Road appears to have been absorbed into Roberts Meadow wetlands between Sylvester and Reservoir roads, but was left open in its original course on the east side of Reservoir Road north to its junction with the Lower Reservoir where it is still visible today.

Reconnaissance Survey Results

A review of MHC site files indicates that there are no recorded pre-contact period sites within the Project area; however, there are five pre-contact sites within a two-mile radius on elevated, level terrain overlooking the Mill River and its associated stream drainages. Four of these sites (19-HS-36, 19-HS-37, 19-HS-242, and 19-HS-355) are of unknown temporal/cultural affiliation, but the fourth site 19-HS-318 yielded a Small Stemmed variety projectile point indicative of Late Archaic-Early Woodland period occupation (MHC site files; Elam and Cherau 2013).
The pre-contact archaeological sensitivity of the Project area is based primarily on its location along Roberts Meadow Brook, a tributary of the Mill River, which in turn is a major tributary of the Connecticut River. The natural landscape of the brook drainage consists of areas of well-drained sandy soils that would have supported a diverse floral and faunal community, and would also have attracted human populations. Native American sites are identified in similar upland environmental settings in the Northampton area, and the presence of a number of these in the general project vicinity indicates that small resource collection, hunting or camping sites would be expected in the presently forested lands along Chesterfield Road. However, the research conducted for the reconnaissance survey has documented that the natural landscape of the brook drainage between the Upper and Middle reservoirs has been compromised to a large extent by the late eighteenth and early-to-mid-nineteenth century industrial activities, and later nineteenth and twentieth century water works construction for the reservoir, dam, and manmade brook channel.

Low sensitivity for intact, significant pre-contact and contact period Native American resources is expected for all the Project work areas, and no sensitivity for either pre- or post-contact resources is assigned to the manmade channel section of the brook where natural sediment filling will occur between Kennedy Road and the upstream (inlet) side of the Middle Reservoir along the west side of Reservoir Road (Figure 6). The manmade channel section of the Project area is presently overgrown with remnant stone riprap along both sides and earth berming on the north side presumably from the original 1920s excavation of the channel (Figure 7). The brook channel between Kennedy Road and the Middle Reservoir inlet along the graded and flat linear Reservoir Road is lined by pine trees planted as part of a CCC project in the 1930s (Figure 8). The sediment that will move downstream from the Upper Reservoir impoundment when the dam is breached is anticipated to expand the existing artificial delta at the Middle Reservoir and result in the formation of new emergent marsh areas (GZA 2015).

The Upper Reservoir (impoundment) where permanent dewatering and natural sediment mobilization are expected once the dam is breached is also assigned low sensitivity because this section of the brook was predominantly a naturally deep ravine as evidenced by the steep topography on both sides, which rises to over 600 ft at the top of a broad hill and exposed bedrock cliffs on the north side of the brook (Figures 9 and 10). There are no documented post-contact period structures upstream of the dam including legacy dams related to the saw mill, bark mill and tannery, and reported fulling mill, all expected to have been at or downstream of the present Upper Reservoir dam structure. No visible remains of structures were observed upstream of the dam during the reconnaissance survey walkover. Based on experience with other dam removal projects in Massachusetts, the City's engineers anticipate that Roberts Meadow Brook upstream of the dam is likely to be re-established in the historic streambed ravine that existed prior to the creation of the dam(s). The loose alluvial sediments (comprised of interbedded sands and organic matter (i.e., leaf litter), which range from 1–3 ft at the west end and 6–12 ft in the central sections of the reservoir (including the so-called sediment island) to about 15 ft thick just upstream of the existing dam, are expected to move quickly because of the naturally steep terrain comprised of bedrock below the accumulated sediments (GZA 2015).

The proposed construction staging area on the southeast side of the Sylvester and Chesterfield Road intersection is assigned low sensitivity (Figure 11). This area is presently open and graded with a compact dirt and gravel surface (Figure 12). It has been used by the State and City's Departments of Public Works for road maintenance and construction staging for a number of years, and most recently for the reconstruction of the Kennedy Road bridge in 2013.

The proposed construction staging area on the northwest side of the Kennedy and Chesterfield Road intersection is also assigned low sensitivity (see Figure 11). This area is presently open and graded, with a partially overgrown compact dirt and gravel surface (Figure 13). It has also been used for various road maintenance and construction projects over the years, most recently including the reconstruction of the Kennedy Road bridge in 2013. However, the far west side of the proposed construction staging is within 10–15 ft of at least three side-by-side open cellar holes and stone foundation remains adjacent to the river's edge that may be associated with the eighteenth and nineteenth century Edwards-Hoxie family dwelling. The house was torn down by the City in 1901 and may have been part of the "cellar holes at Sylvester Place" filled in by the City's Water Department in 1924 as part of the diversion project for Roberts Meadow Brook (City Water Department Records cited in Pelissier 2010b). The other documented structures on the east side of Kennedy Road and north side of Chesterfield Road (i.e., Hall and another dwelling) near the brook were also likely removed and filled in as part of the Roberts Meadow Brook diversion in 1924. The

brook channel is lined with stone riprap on both sides of the bridge, some of which may have been taken from the foundations of the documented nineteenth-century structures at the road and bridge intersection.

The proposed temporary construction access road from Kennedy Road to the upstream south side of the dam and to the upstream north side of the dam including the temporary turnaround area and proposed public (interpretive) viewing area are assigned low sensitivity (see Figure 11). The proposed access road on the north side of the brook follows in an existing logging road bed that alternates between a filled sand and gravel berm through wetlands and a cut along the base of a steep slope to the north (Figure 14). A large borrow pit with exposed bedrock outcrops is present in the slope on the north side of the logging road and about 300 ft west of Kennedy Road. At the dam there is a large cut and borrowed area adjacent to the northern dam abutment and masonry wingwall, most likely created when the existing Upper Reservoir dam was built in 1883. On the south side of the dam abutment and wingwall, the proposed access follows within and adjacent to the artificial dam berm off Chesterfield Road to the location of the former Upper Reservoir dam gate house that sat at the west end of the masonry dam spillway (Figure 15). The south wingwall of the dam is built into a massive bedrock outcrop in a steep slope to the edge of the reservoir pool. No foundation remains of the gate house are present in the earth berm, and based on construction plans of the Upper Reservoir dam, the gatehouse was situated within the masonry portion of the existing spillway (Lynch 2011).

The proposed temporary construction access road that leads to the downstream side of the dam in the brook bed and associated proposed temporary turnaround is assigned high sensitivity for post-contact resources as is the surrounding level terrace areas to the east and in the brook channel (see Figure 11). This area contains at least two side-by-side rectilinear stone foundation walls, each consisting of one to two courses of drylaid rough and split fieldstones (Figure 16). The stone walls run parallel and perpendicular to the brook channel and encompass an area that measures roughly 40 ft wide by 90 ft long. The walls could correspond to one or more of the documented bark mill and tannery building foundations on the north side of the brook that were present in the early 1800s. If the stone walls are the remains of mill buildings, then it is also possible that the broad, flat terrace to the north and east is the location of the described "75 to 80 vats" for the tannery operations, and other associated belowground infrastructure. At least one of the two documented wheel pits also may be present in the brook channel adjacent to the shoreline and the stone walls. Stone wall remains comprised of multiple courses of drylaid cut and rough fieldstones are present on both sides of the brook channel in this same area; they could be related to other documented bark mill and tannery buildings (see Figure 11; Figures 17 and 18).

Reconnaissance Survey Recommendations

No further investigations are recommended for portions of the Project area assigned no and low sensitivity for intact, significant pre-contact and post-contact archaeological resources. These areas consist of: the proposed upstream access and staging areas on both sides of the dam, both proposed construction staging areas off Chesterfield Road, and the manmade brook channel from the Kennedy Road bridge to the Middle Reservoir inlet. However, because of the close proximity (within 10 ft) of the proposed construction staging area on the north side of Chesterfield Road to visible cellar hole/stone foundations likely associated with the eighteenth and nineteenth-century Edwards-Hoxie family dwelling, PAL recommends that the proponent consider placing an approximate 20 ft-wide additional buffer with high visibility construction fencing at the west side of the proposed staging area (see Figure 11). No work should be allowed within this buffer zone or inside of the tree line that borders the staging area and the river bank.

The portions of the Project area assigned high sensitivity where project impacts are proposed for primary and backup temporary construction access and turnaround to the downstream and in-river side of the dam (excluding in-river and delineated wetlands) are recommended for intensive (locational) archaeological survey (see Figure 11).[3] The intensive survey would be designed to locate and identify belowground artifacts and structures associated with the suspected eighteenth and nineteenth-century bark mill and tannery foundation remains. Although not considered highly likely because of the documented industrial land uses, the intensive survey will also be designed to collect data about any ancient Native American sites that may have been present in this section of the brook drainage. Information relating to the horizontal and vertical extent of mill-related and other cultural deposits and their physical integrity will be used to assist the Corps and the City in ways to avoid, minimize, or mitigate impacts to significant archaeological resources in project ground disturbance areas.

Proposed Intensive Survey Methodology

PAL's intensive survey methodology is formulated according to the standards and guidelines set forth in *Public Planning and Environmental Review: Archaeology and Historic Preservation, Massachusetts Historical Commission* (MHC 1979). The intensive survey will consist of research, field investigations, laboratory processing and analysis of recovered cultural materials, and report preparation.

Research

Additional research for the intensive survey will consist of a review of land evidence, probate, and population and manufacturing census records for the documented bark mill and tannery site at Upper Reservoir dam. The deed, probate, and census records will provide a more detailed chronology of the site's ownership, contents, and period of use as well as biographical and business information that will assist in determining the potential significance of the site in accordance with the National Register of Historic Places (NRHP) criteria of eligibility for historic and archaeological sites, including Criterion A, associations with events that have made significant contributions to the broad patterns of history at a local, state, regional, or national level; and Criterion B, associations with the lives of persons significant in our past. Persons and events can be significant at the local, state, regional, and/or national levels. Research into eighteenth and early nineteenth century bark mill and tannery construction and manufacturing processes will also be conducted to assist in the analysis and interpretation of expected and identified structural remains and artifacts. This information will assist in determining the potential significance of the site in relation to NRHP Criterion C, sites that embody the distinctive characteristics of a type, period, or method of construction; and Criterion D, sites that have yielded, or may be likely to yield, information important to history.

Fieldwork

Assuming that the proponent can avoid identified sensitive areas on the north and south side of the brook channel between the dam and Kennedy Road where no project impacts are currently proposed, and can provide the recommended buffer zone at the Chesterfield and Kennedy road construction staging area, PAL only proposes intensive survey subsurface testing on the north side of the brook in the assigned high sensitivity area below the dam. Since the impacts in this area are limited to the

[3] Archaeologically sensitive in-river areas will likely be recommended for construction monitoring and recordation as part of mitigation measures, following the intensive survey investigations.

proposed primary temporary downstream access road and turnaround with construction mat protection for wetland crossings, PAL will only conduct intensive survey testing in the non-wetland and non-river areas within and adjacent to the proposed temporary downstream access and turnaround work areas. PAL will also conduct testing in the sensitive non-wetland areas associated with a potential (backup) downstream access route to the east (see Figure 11).

The proposed temporary downstream access routes (primary and backup) contain visible stone walls associated with the suspected mill foundation remains of the documented bark mill and tannery site. Adjacent areas to the north and northeast could contain other documented mill buildings and tannery features. Subsurface testing will be in the form of 50-x-50-centimeter (cm) test pits placed at 2.5, 5, and 10-meter (m) intervals along judgmental transects and as judgmental test pits (JTPs). The closer interval (2.5- and 5-m) testing will be used within and adjacent to the visible stone walls (suspected mill foundations) and the 10-m intervals will be used further away from the visible remains to allow for maximum coverage within the proposed non-wetland, non-river temporary access impact areas downstream of the dam. The JTPs will be used to further investigate isolated or suspected cultural features and may be placed contiguous to transect test pit(s).

PAL estimates that approximately 15–20 50-x-50-cm test pits will be needed to adequately investigate the archaeologically sensitive non-wetland, non-river portions of the temporary access impact areas downstream of the dam (less than half an acre in size).

The test pits will be hand-excavated in 10-cm increments and will extend vertically to the limit of structural surfaces, standing water, and/or natural C-horizon subsoil strata. All hand-excavated soils will be screened through ¼-inch hardware mesh. Any cultural material (including a representative sample of industrial by-products (e.g., coal and slag) and architectural debris (e.g., brick, window glass, metal hardware) remaining in the screen will be bagged and tagged by test unit and level. Soil stratigraphy will be recorded for each of the test pits and plans and profiles will be measured and drawn. Cultural material and samples will be bagged and labeled with provenience information. Digital photographs will be taken of the testing locations and all identified structural remains. The testing will be mapped onto current existing conditions topographic plans and will be supplemented with Total Station mapping of the visible mill building remains and any associated belowground components. Detailed measured plans and profiles of identified structural remains and cultural features will be also prepared as needed.

No site-specific health and safety plan is anticipated for the archaeological field investigations. Sediment analysis for the dam removal project included testing for heavy metals including Chromium VI, which the US EPA Region 5, Water Division, identifies as the potential sediment contaminant associated with leather/tanning industries. All heavy metal values were below the detection limits set by the Massachusetts Contingency Plan (MCP) and no Chromium VI was detected in any of the samples within the Upper Reservoir impoundment, and upstream and downstream reaches of the dam in Roberts Meadow Brook (GZA 2015). The lack of heavy metals including Chromium VI most often associated with leather/tanning industries is not surprising since the documented 1790–1830s bark mill and tannery used vegetable- (bark) based tannin in its turn-of-the-nineteenth century operations before the use of chrome-tanning was invented in 1858 and other chemicals were introduced into the leather tanning processes in the late 1800s.

Laboratory Processing and Analyses

All recovered cultural materials will be brought to PAL's laboratory facility in Pawtucket, RI for processing and analyses. These activities will include: cleaning, identification, and cataloging of any recovered cultural materials; the preliminary analysis of spatial distributions of cultural materials; and artifact photography of diagnostic or representative artifact types. Artifacts will be cataloged by unique artifact grouping in PAL's relational database system. Recorded fields include an artifact's material, function, manufacturing techniques, and date ranges.

Following laboratory processing and cataloging activities, all cultural materials will be stored in acid-free Hollinger boxes with box content lists and labels printed on acid-free paper. These boxes will be curated at PAL in accordance with the Secretary of the Interior's standards 36 CFR79 *Curation of Federally-Owned and Administered Archeological Collections* and the MHC's *State Archaeologist's Permit Regulations* (950 CMR 70). All survey materials including the artifact collection will be temporarily curated at the PAL facility until such time as the MHC/SHPO in consultation with City of Northampton/Northampton Historical Commission designates a permanent repository.

Technical Report

Upon completion of the research, fieldwork, and laboratory tasks, PAL will prepare a technical report that combines the results of the archaeological reconnaissance and intensive survey findings. The report will follow the guidelines established by the National Park Service in the *Recovery of Scientific, Prehistoric, Historic, and Archeological Data* (36 CFR Part 66 Appendix A) and the MHC. The technical report will include a discussion of the survey methodologies and archival resources consulted; the environmental and cultural contexts including the site history; an assessment of effects to significant archaeological resources; and recommendations for site avoidance, or minimizing/mitigating impacts for unavoidable adverse effects to significant resources, sufficient for concurrence by the Corps, and review and comment by the MHC and other potential consulting parties. The report will follow the guidelines established by the National Park Service in the *Recovery of Scientific, Prehistoric, Historic, and Archeological Data* (36 CFR Part 66 Appendix A) and the MHC. A draft copy of the report will be submitted to the City of Northampton for review and comment prior to submission to the Corps and the MHC.

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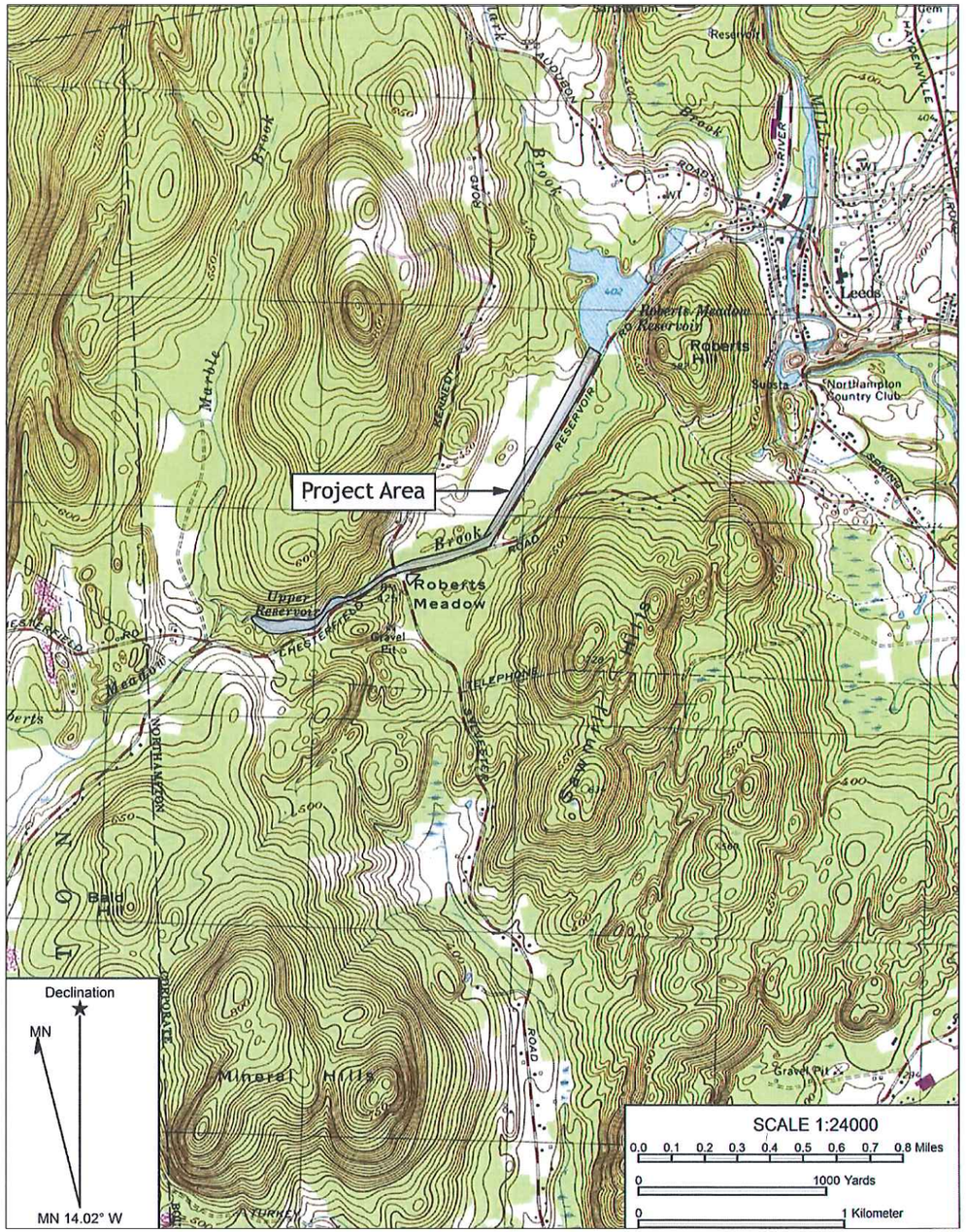

Figure 1. Location of the Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project on the Easthampton, MA USGS.

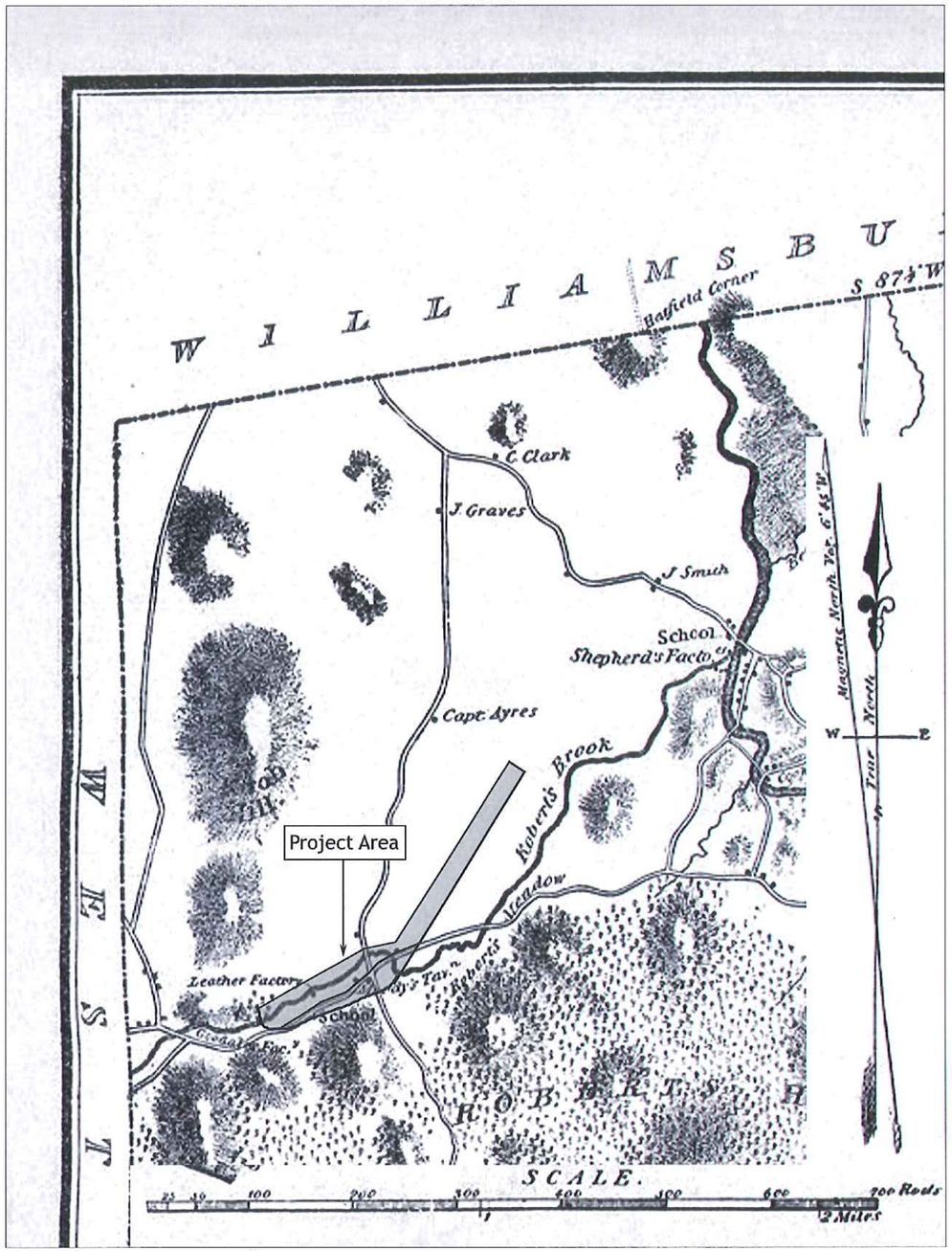

Figure 2. 1831 map of Northampton with the approximate location of the Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project area (source: Hales 1831).

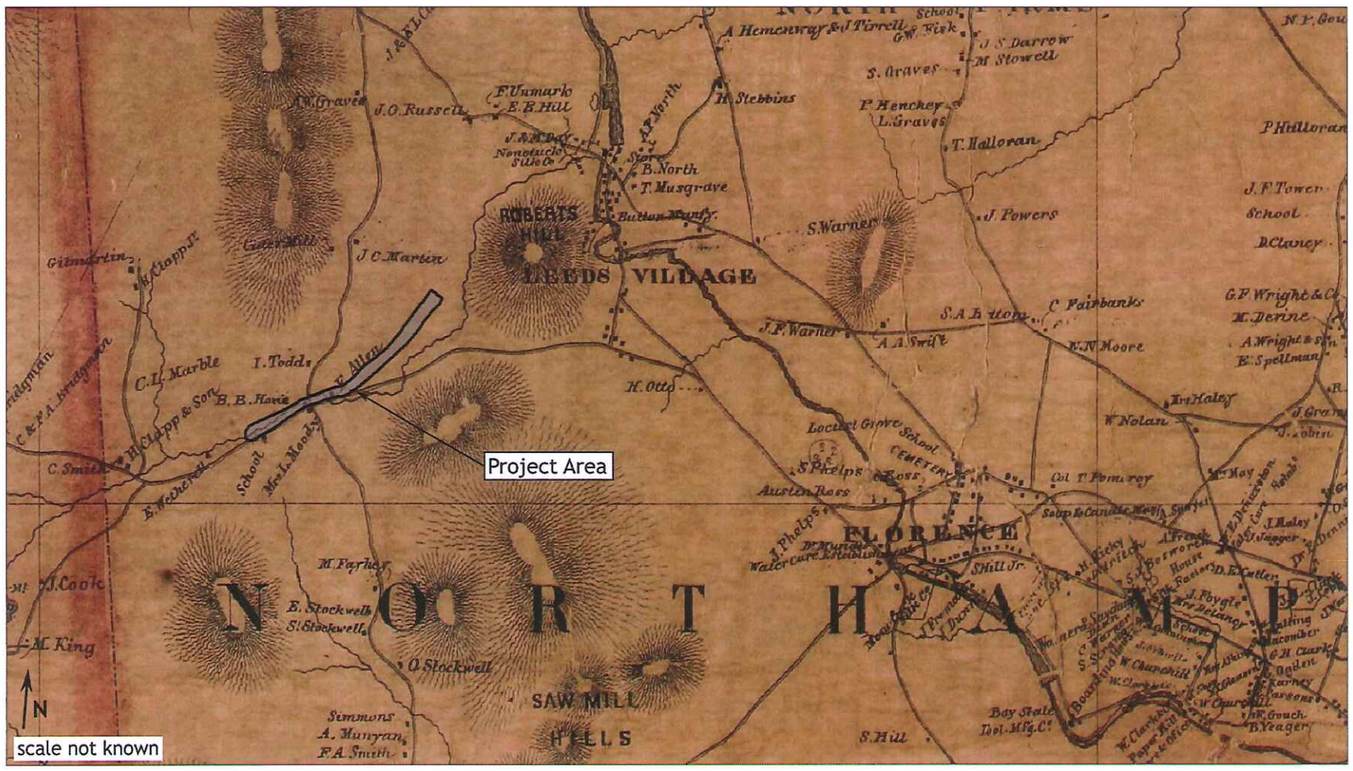

Figure 3. 1860 map of Northampton with the approximate location of the Upper Roberts Meadow Reservoir Dam Breach and Stream Restoration Project area (source: Walling 1860).

Figure 4. Ca. 1886–1902 photograph of Moody's Tavern in Roberts Meadow, Northampton, Massachusetts (Howes Brothers, courtesy of Historic Northampton Online Digital Catalog).

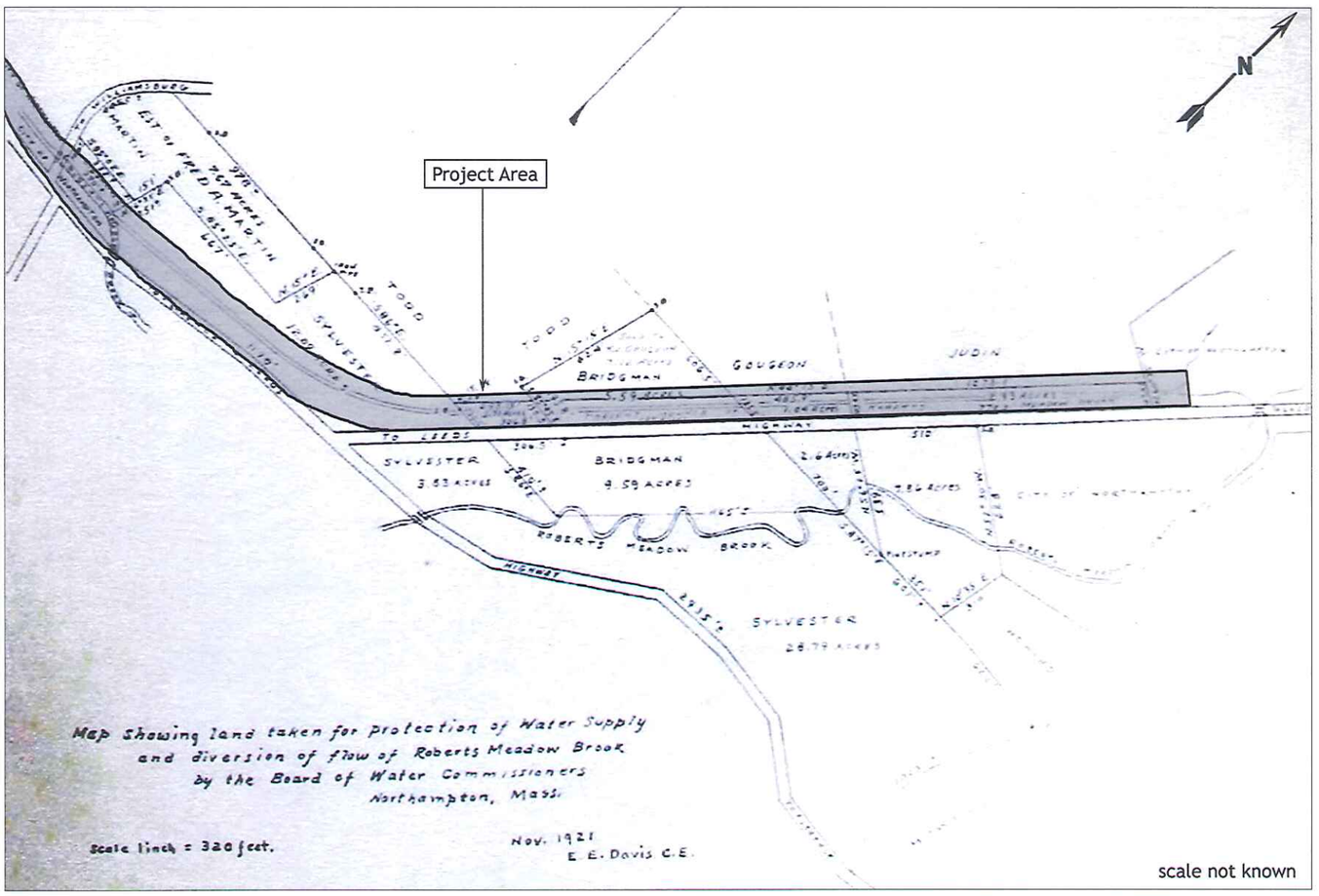

Figure 5. 1921 plan of the diversion of flow of Roberts Meadow Brook, Northampton, Mass. (source: Northampton DPW 1921).

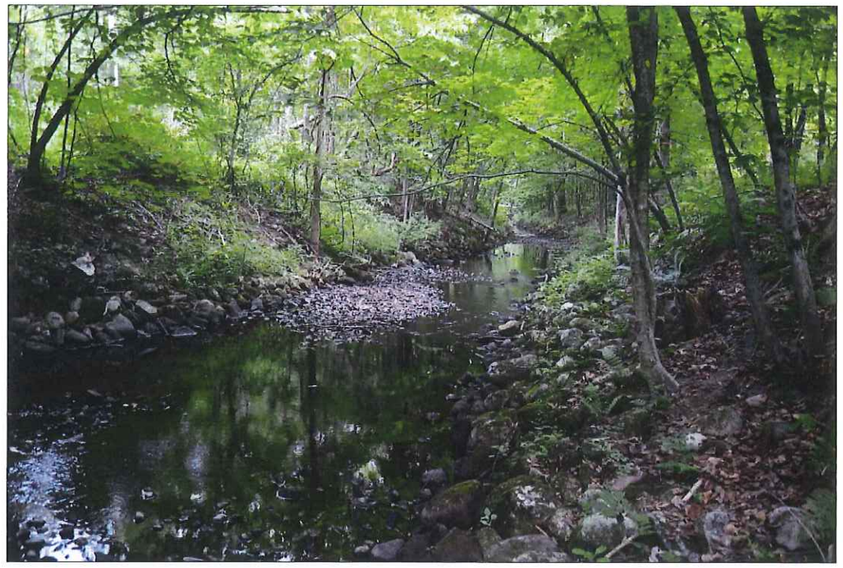

Figure 7. 2016 photograph of the manmade channel section of Roberts Meadow Brook northeast of the Kennedy Road bridge, view looking northeast.

Figure 8. 2016 photograph of the pine tree lined manmade Roberts Meadow Brook channel and Reservoir Road, view looking northeast.
Note: brook channel on left in photograph

Figure 10. 2016 photograph of the Upper Roberts Meadow Reservoir, view looking upstream (south and west) from the dam.

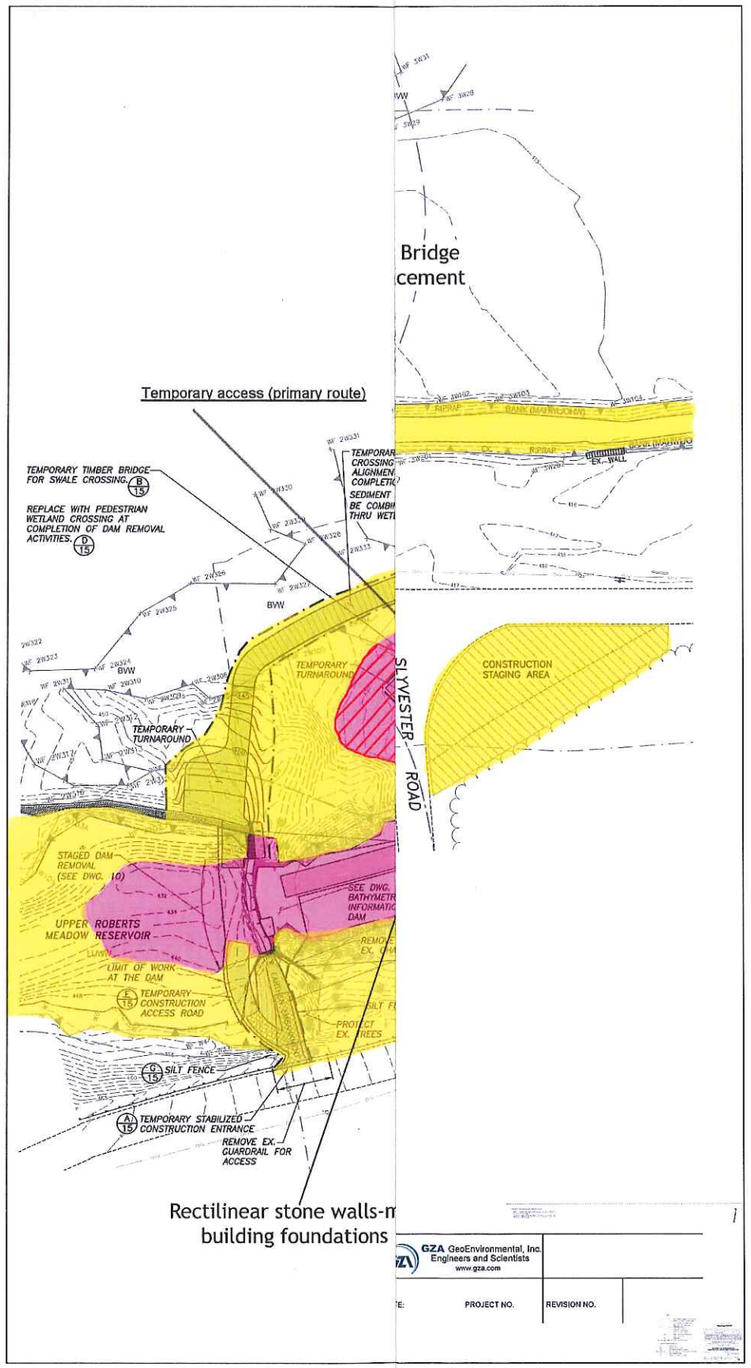

Figure 11. Archaeological sensitivity m

Figure 12. 2016 photograph of the proposed construction staging area at Chesterfield and Sylvester roads, view looking northeast.

Figure 13. 2016 photograph of the proposed construction staging area at Chesterfield and Kennedy roads, view looking west.

Figure 14. 2016 photograph of the proposed temporary access road (existing logging road) off Kennedy Road, view looking west.

Figure 15. 2016 photograph of the proposed temporary access road (dam earth berm) off Chesterfield Road, view looking south.

Figure 16. 2016 photograph of recti-linear stone foundation walls in the downstream reach below the dam (river left-north), view looking west.

Figure 17. 2016 photograph of stone wall near the edge of the brook in the downstream reach below the dam (river left-north), view looking northeast.

Figure 18. 2016 photograph of stone wall at the edge of the brook in the downstream reach below the dam (river right-south), view looking southeast.