GRAVES' IRONWORKS MAPPING

CONTENTS (27 pages)

- 1. CPC Short Form
- 2. Paragraph Project Description
- 3. Location, Assessor map
- 4. Pleun Bouricius Graves' Ironworks Finding Aid
- 5. Pleun Bouricius diagram of Ironworks site
- 6. LiDAR of site
- 7. Friends of North Leverett Sawmill Survey for Heritage Park/D.Salls
- 8. Detailed Project Budget form
- 9. GeoNAV LiDAR scanning proposal (2pg)
- 10. SWCA Environmental Consultants Mapping Proposal (6pg)
- 11. Timeline (2pg)
- 12. Daniel Graves Sr.'s deed
- 13. 1858 Walling Map of Leverett
- 14. 1871 Beers Atlas Map of Leverett
- 15. Panoramic view of millpond area above the Graves' Ironworks
- 16. Older fieldstone dam
- 17. 200' Stone Berm to enclose mill pond
- 18. Active millrace area of Ironworks site showing large stones thought to be used for trip-hammers.
- 19. Another feature in the site.
- 20. Letters of Support to be solicited.

TOWN OF LEVERETT



COMMUNITY PRESERVATION COMMITTEE

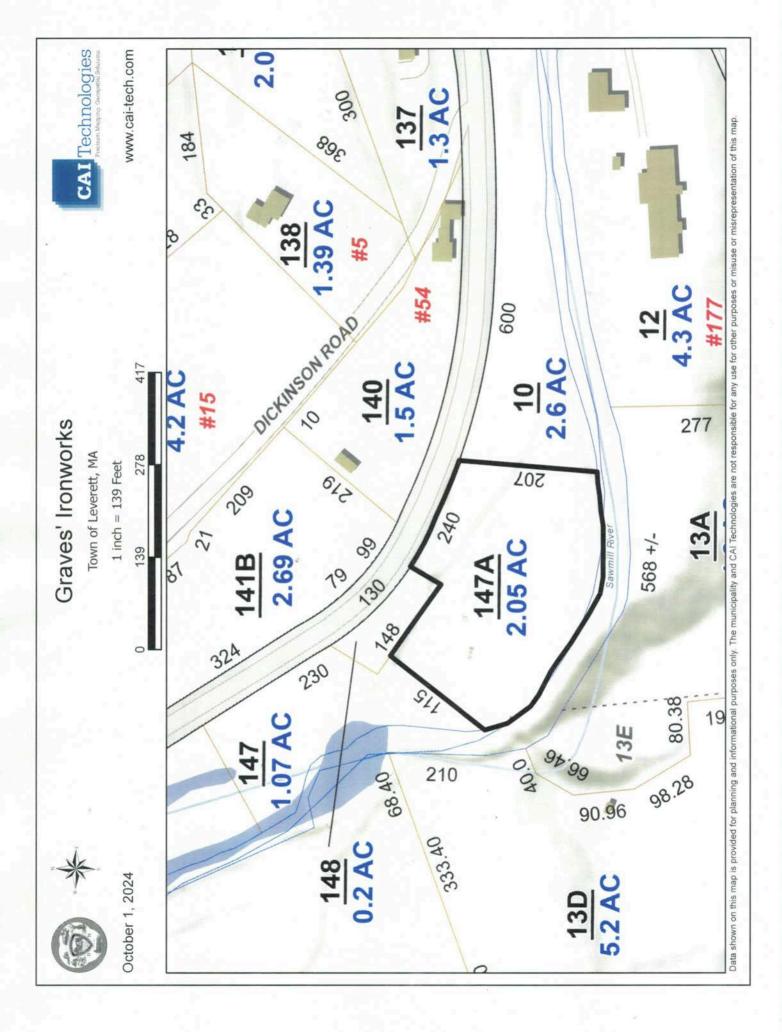
(Short Form)

Project Application for Community Preservation Funding (For \$25,000 and under Only)

Project Name: Graves' Ironworks Archaeological Survey
Project Location? Address: Parcel #: 1-0-147A; Leverett Conservation Land
Applicant/Project Sponsor or Organization: Leverett Historical Commission
Address: Town Hall, 9 Montague Road, Box 300
City: Leverett State MA Zip 01054
CPA Category/Purpose: (Please check all that apply).
Open Space Community Housing X Historic Preservation Recreation
Project Budget: Amount of CPA Funds Requested: \$24,500 Amount from Other Funding Sources: 4,500* Project Budget: \$29,000
Please check which of the following is included with the application: One Paragraph Project Description* Map/Site Plans/ Architectural Plans. Photographs Detailed Project Budget* Timeline/ Project Schedule* Letters of Support
Contact Person/Authorized Representative for this Project: Susan Mareneck Address: c/o Leverett Historical Commission, PO Box 300
City: Leverett State: MA Zip: 01054
Email: <leveretthistoryinfo@gmail.com></leveretthistoryinfo@gmail.com>
Phone: 212-233-4664
Signature of Applicant: 9 Man Date: 1 October 2024

GRAVES' IRONWORKS MAPPING

The Graves' Ironworks and other Graves' family enterprises lay buried beneath 20th century debris until the Friends of the North Leverett Sawmill (FONLS) discovered the fascinating shaped landscape downstream from Joseph Slarrow's sawmill through the Historical Commission's series on Leverett's historic industrial heritage. Now that FONLS has created a Heritage Park & Nature Trail along the river, the Ironworks, long-buried, have been resurrected and are now a focal point. This is a positive development from a historical education point of view, however, it has put the site at risk due to unsolicited intervention. Visitors have taken it upon themselves to "help" by "cleaning up" broken glass, scattered bricks, cast iron slag, charcoal and other artifacts of the Ironworks operation which ended before the 20th century began. In order to decipher the site so that we can tell their story and appreciate the entrepreneurial innovation that made North Leverett a thriving village from the early to late 19th century, we need to have an archaeological map of the remains created before significant changes occur. With guidance from a wonderful cast of industrial archaeologists gathered through Patrick Malone of Brown University < https://www.amazon.com/Texture-Industry-Archaeological-Industrialization-America/dp/0195058852> as well as archaeological mapping professionals brought to the project by local experts Eva Gibavic and Mitch Mulholland, we hope to accomplish the creation of an archaeological base map (which will allow us to engage experts to help us investigate the site) asap within the next year.



Graves Ironworks/Levees below Slarrow Mill -- Finding Aid

Written by: Pleun Bouricius Last Update: 9/6/2023

Short description: Graves Ironworks This site bears extensive remains of water management as well as the foundations of two or three successive factories where at least three generations of the Graves family mass-produced metal parts for farm implements between 1850 and the end of the nineteenth century. The ironworks were powered by water diverted from the Sawmill River with a low dam into a mill pond created by a ¼-mile-long dry-stone levee.

Proposed Sign text:

Graves Ironworks. Starting in the 1840's and ending after 1875, at least three generations of the Graves family operated successive blacksmith shops/factories at this site, powered by the Sawmill River, in which they produced farm implements and parts for them.

200-word Description

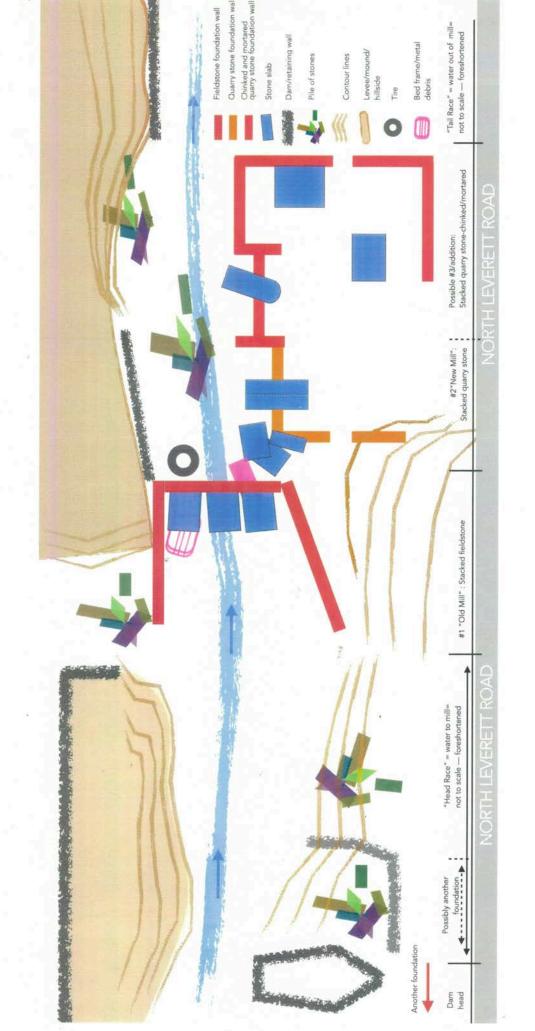
The site spans about a quarter mile from just below the North Leverett or Slarrow Sawmill to the start of channelization for the Leverett Pail Shop at 29 North Leverett Road. Moving downriver, the remains of a low dam indicate where a diversion was made by a levee that runs almost ¼ miles parallel to the river and impounds what was once a small mill pond. The levee is overgrown but on the river side one can see it is of human construction and increases in height from about 3 to about 9 feet as one moves down the river. The millsite itself starts at the end of the levee. Just before the end, a dam may have regulated water running to the site, which could be diverted around it as well.. The site itself is a palimpsest, with foundations of a newer building, then improved at least once again, overlaying an older mill foundation. The newer building contained a water-powered triphammer, used in the fabrication of thousands of scythe-snaths (attachment for the handle) annually. There is still an abundance of charcoal in piles on the site. The site was likely also used part-time as a grist mill around 1871, when the Beers Map was published. Below (downstream from) the building foundation, a channel leads water back to the river almost exactly at the point where the river was split to create the channel to the pail shop.

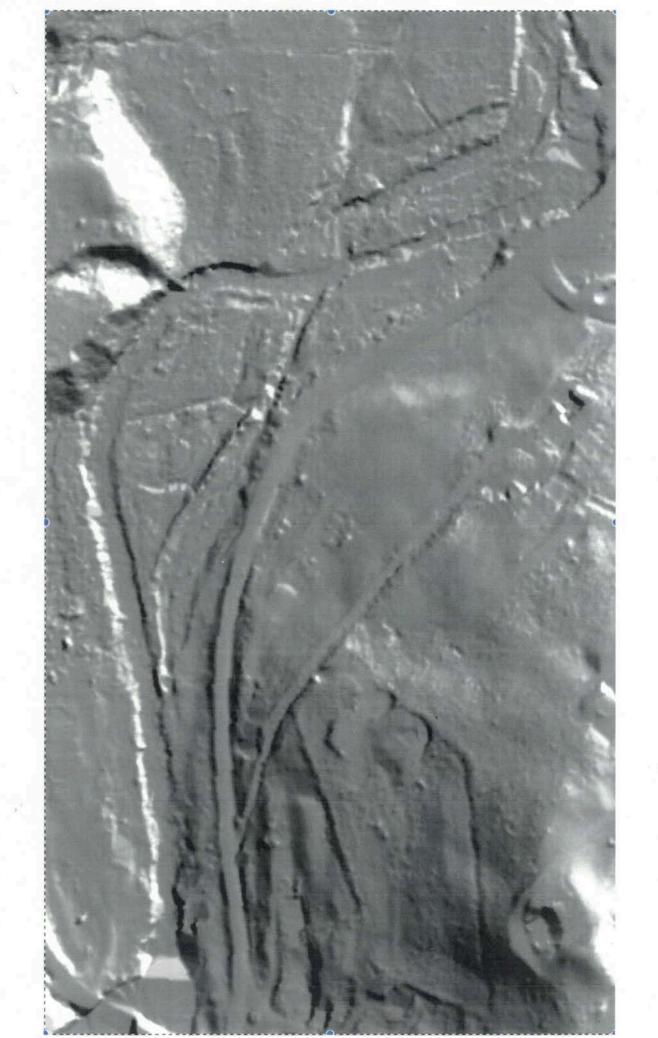
Documentation ends with the Leverett tax records missing after 1875. WHAT ABOUT DEED RESEARCH?

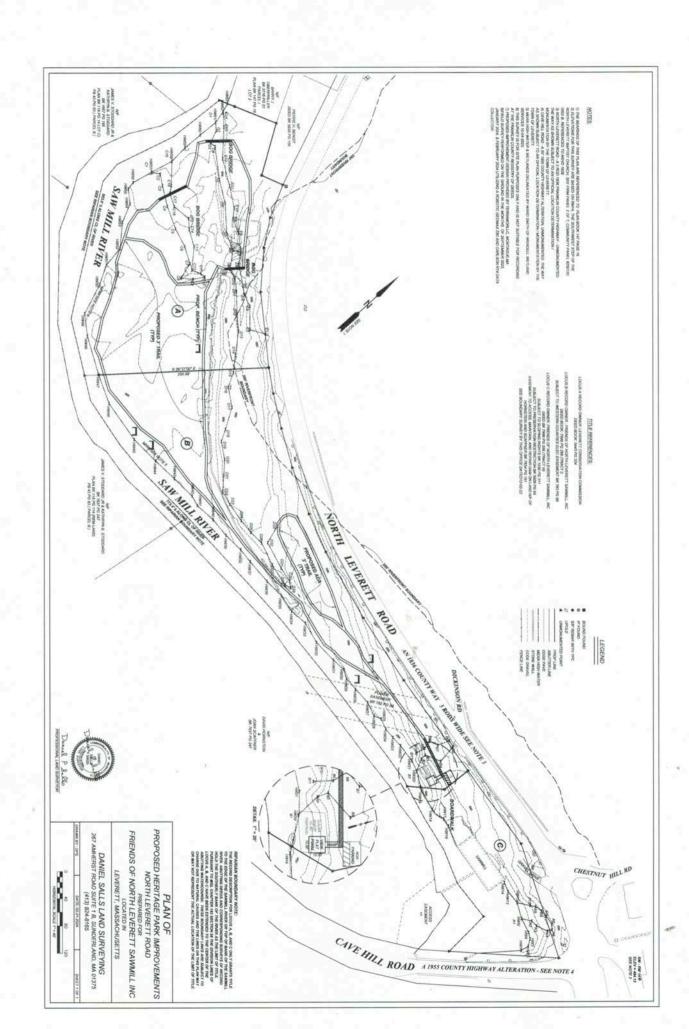
Owned by: The Friends of the North Leverett Sawmill (https://leverettsawmill.org/) own the millsite as well as the land just downriver from the North Leverett Sawmill, and the Leverett Conservation Commission (https://leverett.ma.us/g/40/Conservation-Commission) owns a 2-acre plot between the two parcels owned by the Friends, that encompasses most of the levy. The channel leading back to the river may be owned by abutter Barry Oberpriller. (find phone number)

Description of historical information and primary sources available related to this site:

The Leverett Historical Society's collections (https://leveretthistorical.org/) include photographs
and articles of and about the Graves Ironworks, as well as scythes and scythe-snaths that were
created there.







Leverett CPA Grant Request Budget Sheet

ORGANIZATION NAME: Leverett Historical Commission
PROJECT NAME: Graves' Ironworks Archaeologica

Graves' Ironworks Archaeological Survey and Mapping

1-Oct-24

DATE:

INCOME				EXPENSES	
Source of Income	Please Specify if the funds are Secured, Anticipated, or In-Kind	Amount	Grant Amount Requested from CPA	Detailed Expenses	Amount
Grant amount requested from Lev CPA			\$24,500	GeoNAV Phase I - LiDAR scanning: Field, Office work	\$ 10,900.00
Income from other sources				SWCA - No. Leverett Sawmill River Archaeological Mapp	g \$ 13,625.00
90 hrsVolunteer labor Historical Commission, local experts In-Kind	In-Kind	\$ 3,000.00			9
GPS locations for LiDAR scanning	In-Kind	\$ 1,250.00		(GeoNAV Phase II - Process photogrammetry to create	\$ 675.00
Photogrammetry concurrent with LiDAR scan	in-Kind	\$ 250.00		Archaeological Site Signage	\$ 30.00
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Amount requested from Leverett CPA Fund			#########		
Total Income from Other Sources			\$ 4,500.00		
Total Project Income			\$29,000.00	\$29,000.00 Total Project Expenses	\$ 25,230.00



https://www.thegeonavgroup.com

Thomas J. Elmore, Founder

3D LiDAR Scanning & Mapping

615 Mather Street, Suffield, CT 06078

Tel. 860-370-2002

Email elmore@thegeonavgroup.com

Website: www.thegeonavgroup.com

Graves' Ironworks Mapping Project - North Leverett Massachusetts. 2024

I propose a two-phase project with LiDAR scanning of the 4+/- acre site being phase I and photogrammetry being phase II, as follows:

Phase I: LiDAR scanning

Coordinate with client and Eva Gibavic

Field work: set out cones and boxes for Eva to take GPS points, assume project area can be scanned in a single day with each area being scanned twice

Office work: post-process the LiDAR scanned data, georeference the scanned data to Eva's GPS points, classify the ground, stone walls, pond area, road, stream and vegetation, export the treeless LiDAR data and send to Eva, participate in one Zoom meeting with the client and others at their selection, and provide screenshots of the LiDAR data to the client for their use (plan views, cross-sectional views and oblique/bird's-eye view). Finally, provide a digital copy of the LiDAR as requested

Fee: Phase I: The GeoNAV Group, LLC - \$ 10,900

Eva's donated time and equipment - \$1,250

Phase II: Photogrammetry (to be done during the same time/trip as the LiDAR scanning)

Coordination with client and Eva Gibavic

Fieldwork: take overlapping photographs of the megalithic stones in the ironworks project area and/or use Eva's photographs

Office work: post-process the photographs to create a 3D digital model, convert to a point cloud and export file and then georeference data into the LiDAR scanned data to create a single project with both sets of data. If possible, create a printed 3D model of the ironworks and give to the client (no cost).

Fee: Phase II: The GeoNAV Group, LLC - \$675

Eva's donated time - \$250

Total: \$13,075

Donated time: \$1,500

Funds requested: \$11,575

Please review the scope and let me know if I need to change, add or eliminate anything.

Thanks.

Tom



Amherst Office 15 Research Drive Amherst, Massachusetts 01002 Tel 413.256.0202 Fax 413.256.1092

September 26, 2024

Susan Mareneck
Leverett Historical Commission
Leverett Massachusetts
By email to: susan.mareneck@gmail.com

RE: North Leverett Sawmill River Archaeological Mapping

Dear Susan Mareneck:

SWCA Environmental Consultants (SWCA) is pleased to provide you with this scope and cost estimate to provide cultural resources services for mapping of mill related features along the Sawmill River in North Leverett.

As we discussed, the aim will be to provide the town of Leverett with a comprehensive site map of cultural resources associated with the Joseph Slarrow Sawmill, stone dam, and millpond, west to and including the Graves Ironworks site, and as far west as the area just east of the Graves and Sons Pail Shop dam. This is an area of approximately 500 linear meters along the north side of the Sawmill River.

The SWCA team in Amherst has extensive experience identifying and mapping historic and industrial sites across Massachusetts and New England. We would be pleased to work on this project with Leverett.

If you have any questions or require additional information, please do not hesitate to contact me directly.

Sincerely,

Christopher Donta, Ph.D.

Senior Cultural Resources Team Lead

Christopher.donta@swca.com

Christoph Donto

413.992.7593



SACA

PROJECT UNDERSTANDING

We understand that the town of Leverett is developing a recreational trail in North Leverett, running from the area around the intersection of North Leverett Road and Cave Hill Road, to the west along the south side of North Leverett Road and north of the Sawmill River. It is important in developing access through this area to understand what cultural resources may be impacted by the construction of trail elements and other use areas. The first step in this effort needs to be the identification and mapping of cultural resource features in the area, most of which are associated with eighteenth and nineteenth century mills.

As we have discussed, we recommend starting the mapping effort by collecting high resolution LiDAR, which will provide by far the most accurate, to scale mapping of the area, including elevation contours. We understand that you have someone who is willing to provide LiDAR at a very reasonable price. Our effort would be to use the LiDAR mapping as a starting point, to develop a site map with details about each of the identified features present in the area. See Figure 1 for an example of what the area looks like based on publicly available low resolution LiDAR.

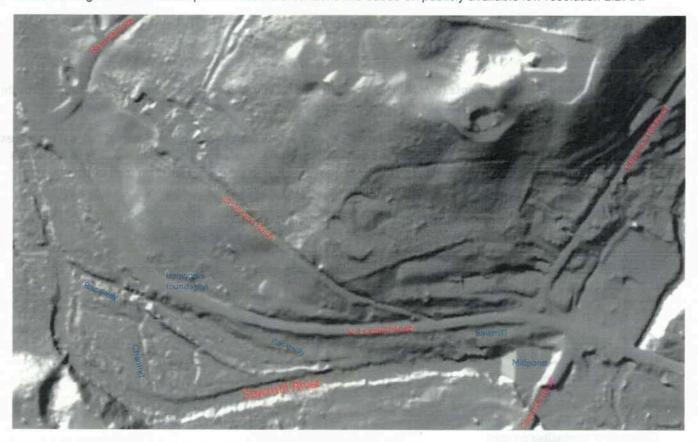


Figure 1. LiDAR based map of North Leverett Sawmill River area, low resolution.

QUALIFICATIONS

Founded in 1981, SWCA Environmental Consultants (SWCA) is a 100 percent employee-owned interdisciplinary environmental consulting firm with three offices in New England, and more than 1,600 employees across 43 offices in North America. We have more than 40 years of experience working for federal agencies, cities, counties, Tribes, and other agencies, providing the background to understand the full range of permitting considerations for any project.

The cultural resources staff at SWCA has extensive experience working across Massachusetts. The cultural resources team lead, Dr. Christopher Donta, has been with SWCA for over five years and has more than 30 years of experience conducting archaeological surveys across New England. He worked in the Anthropology Department at UMass for 20 years and is a Shutesbury resident. The Amherst, Massachusetts, office of SWCA currently includes 12 full time cultural resources staff, including 10 full-time archaeologists, one architectural historian, and one geographic information system (GIS) staff. This includes six Secretary of Interior qualified archaeologists. This also includes several archaeologists specializing in Historic Archaeology with substantial mill related site experience.

RELEVANT PROJECT EXPERIENCE

EMILY DICKINSON HOMESTEAD, AMHERST, MASSACHUSETTS

Client: Emily Dickinson Museum

Services Provided: Archaeological Site Examination and Archaeological Monitoring

Description: SWCA completed an archaeological site examination survey and construction monitoring at the Emily Dickinson Museum in Amherst, Massachusetts, under Massachusetts State Archaeologist's Permit 4142. Work for this project included review and synthesis of previous archaeological surveys, and subsurface testing with a goal of identifying structural remains that might be impacted by proposed new utility lines related to an upgrade of the Homestead HVAC system. SWCA successfully identified the footprint of a former barn that was part of the nineteenth-century landscape during Emily Dickinson's life on the property. The project results have been presented at professional archaeological meetings in Montreal and Oakland.

HAMPSHIRE & HAMPDEN CANAL DOCUMENTATION PROJECT, MASSACHUSETTS

Client: Pioneer Valley Planning Commission (PVPC)

Services Provided: Reconnaissance Survey and Digital Mapping of the Historic Hampshire & Hampden Canal Route

Description: Historical background research, and an archaeological reconnaissance survey of the ca. 1830s era former 30-mile-long canal route were conducted to generate tax assessor parcel-level mapping and assist in the preparation of a National Register nomination. Prior to this study, little information about the canal had been incorporated into state site files or other historical records. SWCA used LiDAR and other historical maps, completed the reconnaissance survey, generated digital mapping of the canal, produced archaeological site forms, and wrote an archaeological report. SWCA worked with PVPC, the Massachusetts Historical Commission (MHC), and six town historical commissions throughout the project.

SCOPE OF WORK

The following identifies the general tasks anticipated to be necessary during the course of this project. If additional tasks not listed below are determined to be necessary for the success of the project, SWCA will provide a schedule and cost estimate for these services to Leverett as a scope change.

TASK I: BACKGROUND RESEARCH

SWCA will work with town historians and knowledgeable people to assemble useful information that will shed light on the features present in the North Leverett mill area. This will include historic maps, aerial photographs, historic photographs, drawings, and documents that detail the types and locations of activities along the Sawmill River in North Leverett.



TASK II: LIDAR MAP SETUP

Our GIS staff will work with the LiDAR consultant to obtain the imagery collected and prepare it for use as a background for our fieldwork. This will likely be a very limited task as the LiDAR imagery should be in final processed form as a georectified layer when delivered. SWCA uses the latest ArcGIS full suite of software and can provide access to an ArcGIS project website to show the mapping as it is developed.

TASK III: FIELDWORK

SWCA will conduct a field walkover of the trail area along the Sawmill River to document the features present. The walkover and identification of cultural features will be completed by a professional Historic Archaeologist. We will reach out to town personnel to see if there are any interested parties that would like to be present during any of the fieldwork effort. We will use the LiDAR imagery as a background and collect specific data points with GPS to locate and map features. This means that as we move around in the field, our real time position will be shown on the LiDAR background, and we can move to and investigate features and elements shown on the LiDAR map. SWCA uses iPads running ArcGIS FieldMaps with a Juniper Systems Geode antenna for the highest precision mapping possible.

Our field tasks will include:

- Completing a field walk of the entire area between the Slarrow Sawmill and the Pail Shop Dam (east side of the river), north of the river
- Identifying, labeling, mapping and photography of individual features, including the outlines of buildings, dams, and raceways
- Filling out MHC historic archaeological site forms for each feature that has not yet been documented. Only the Graves Ironworks (LEV.HA.9) and Foundation AS9 (LEV.HA.10) have archaeological site forms in this area.
 We can include an update to the Graves Ironworks site form.

We will provide draft copies of the site forms for town and stakeholder review, comment, and additions.

TASK IV: GIS MAP DEVELOPMENT

The SWCA GIS staff will process the field data and develop site maps, which will detail the locations of archaeological features across the area, including elevation contours. The site maps will be provided in two formats: with the LiDAR background and contours (see Figure 2 for an example), as well as a traditional site map with feature callouts (as in Figure 3). The site maps will be provided to the town and stakeholders for review, clarifications and annotations.

DELIVERABLES:

- Site maps for review, comment, and additions
- Draft copies of archaeological site forms for review and comment for inclusion in the MHC inventory

ASSUMPTIONS:

- We assume we will be provided with a basemap based on LiDAR data to use as a starting point
- Any meetings, beyond the initial site visit, are assumed to be virtual
- No more than six archaeological site forms will need to be produced
- All work products will be provided electronically



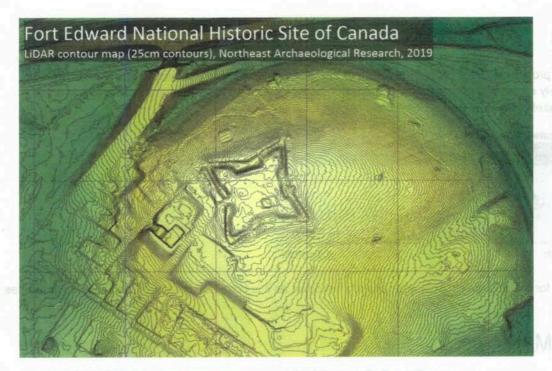


Figure 2. Example LiDAR contour map of Fort Edward National Historic Site, Nova Scotia.

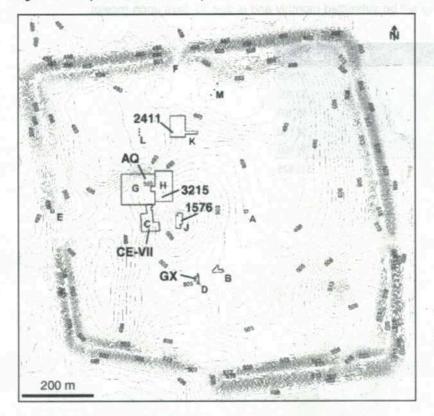


Figure 3. Example archaeological site map of Tell Mishrifeh in Syria.



SCHEDULE

SWCA's part of the project can begin with the delivery of the LiDAR basemap. The project length is expected to require approximately six weeks, or one and a half months, from project start to submittal of draft maps and site forms, excluding stakeholder input and additions.

Table 1. SWCA's Estimated Timeline

TASK	EXPECTED DATE	SCHEDULE
Background Research	November?	1 week
LiDAR Map Setup	November?	1 week
Fieldwork	December?	2 weeks
GIS Map Development	December?	2 weeks
Overall Length of Project:		1.5 months

The calendar dates for the above schedule are currently unknown as it is based on receipt of the LiDAR basemap as a starting point.

COST SUMMARY

The estimated project costs are laid out in Table 2. Costs will be billed as a not to exceed price of \$13,625. This cost is 100% labor with no expenses. Invoicing will be submitted monthly and is due 30 days upon receipt.

Table 2. SWCA's Estimated Cost

TASK	ESTIMATED COST
Project Management/Admin	\$1,825
Background Research	\$2,000
LiDAR Map Setup	\$1,100
Fieldwork	\$4,700
GIS Map Development	\$4,000
Total Estimated Project Cost:	\$13.625

TIMELINE

GRAVES' IRONWORKS ARCHAEOLOGICAL SURVEY/ MAPPING

Mapping an archaeological site includes:

*All of this will happen when funding is secured and when there is minimal leaf cover, so earliest date would be spring 2025; possibly fall 2025.

1. Research - some investigation has been compiled by Pleun Bouricius, Eva Gibavic and the Leverett Historical Commission to produce the program "A Sense of Where You Are, Finding and Interpreting Mill Foundations in the Landscape - The Graves' Blacksmith Shop", April 2022. It included a virtual presentation and an in-person visit. < https://www.youtube.com/watch?v=WTA9nbgxx Q&t=7s>

SWCA Environmental Consultants propose to familiarize themselves with LHC research and do additional investigation. <u>Time frame proposed: 1 Week</u>

2. LiDAR scanning in the field is proposed to take 1 day. Then there will be processing the scanned data, georeferencing, classifying the features of the landscape, then exporting the treeless LiDAR date for the creation of plan views, cross-sectional views, oblique bird's-eye views, etc.

GeoNAV did not estimate the timeframe for this work. It would no doubt depend on when we were ready to move forward and what their workload was at that time. Photogrammetry of the megalithic stones in the Ironwork project area., done by Eva Gibavic, will be done concurrently with the LiDAR scanning

- 3. SWCA then proposes to work with the LiDAR consultant (GeoNAV/Tom Elmore) to prepare the imagery for use as a background for their fieldwork using ArcGIS.

 Time frame proposed: 1 Week
- 4. SWCA then proposes to do Fieldwork to locate and map cultural features. Steps include:
 - Walk of the entire area
 - Identifying, labelling, mapping and photography of individual features, including the outlines of buildings, dams, raceways, etc.

 Filling out MHC historic archaeological site forms for each feature that has not yet been documented. Two aspects of the site are on file with the MA State Registry already.

o Time frame proposed: 2 Weeks

5. GIS Map Development -

SWCA proposes to process the field data and develop site maps, which will detail archaeological features across the area, including elevation contours. The site maps will be provided in two formats: with the LiDAR background and contours, as well as a traditional site map with feature call-outs.

o Time frame proposed: 2 Weeks

Once funding is secured and the physical conditions are met (leaf less trees if possible and clearing of leaves from site features in preparation for the LiDAR scanning and photogrammetry, the time frame is about 2 - 3months. *

It is likely that the work will be done in fall 2025.

*Once mapping is complete we will invite industrial history archaeologists and historians to study the maps and hopefully agree to visit and help us decipher the manner in which the Ironworks operated and what the site tells us about the shape the forge took and the industry that operated on the banks of the Sawmill River for much of the 19th century.

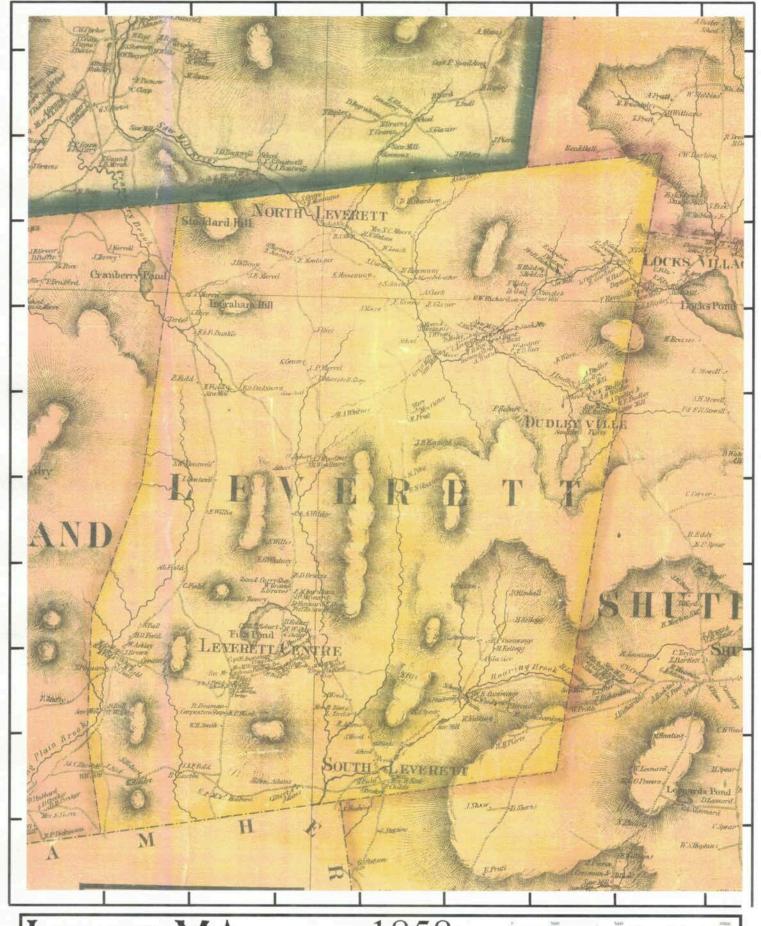
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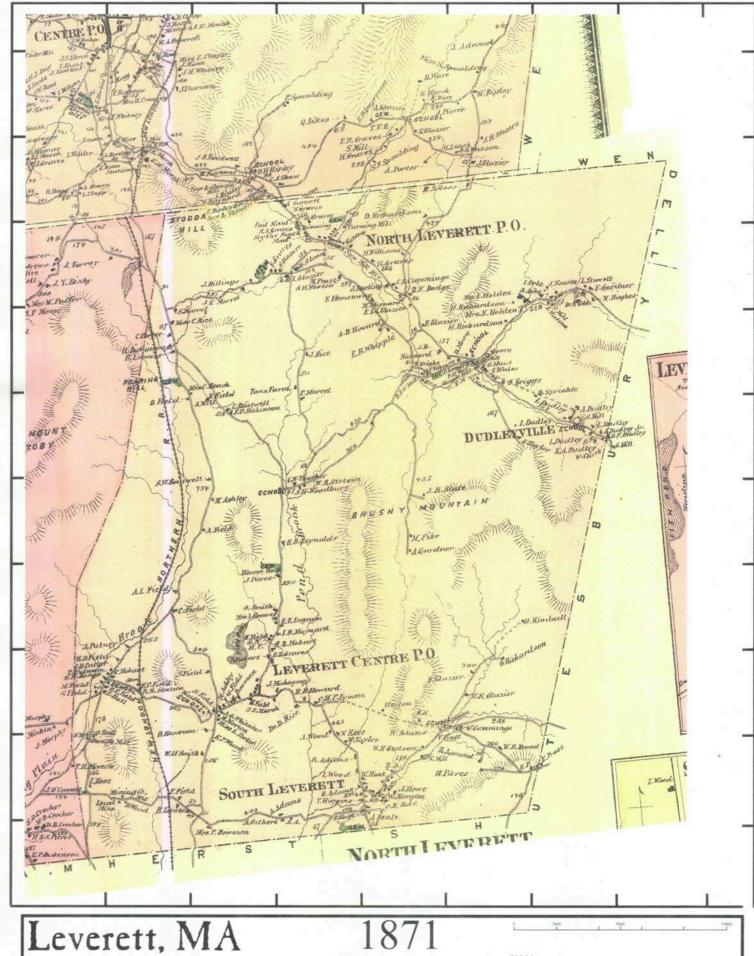
Leverett, MA
Walling Map

1858

Map of Franklin County, MA. H.F. Walling

Old Maps PO Box 54 West Chesterfield, NH 03466

413-772-2801



everett, MA Beers Atlas

Atlas of Franklin County, MA; F.W. Beers

Old Maps PO Box 54 West Chesterfield, NH 03466

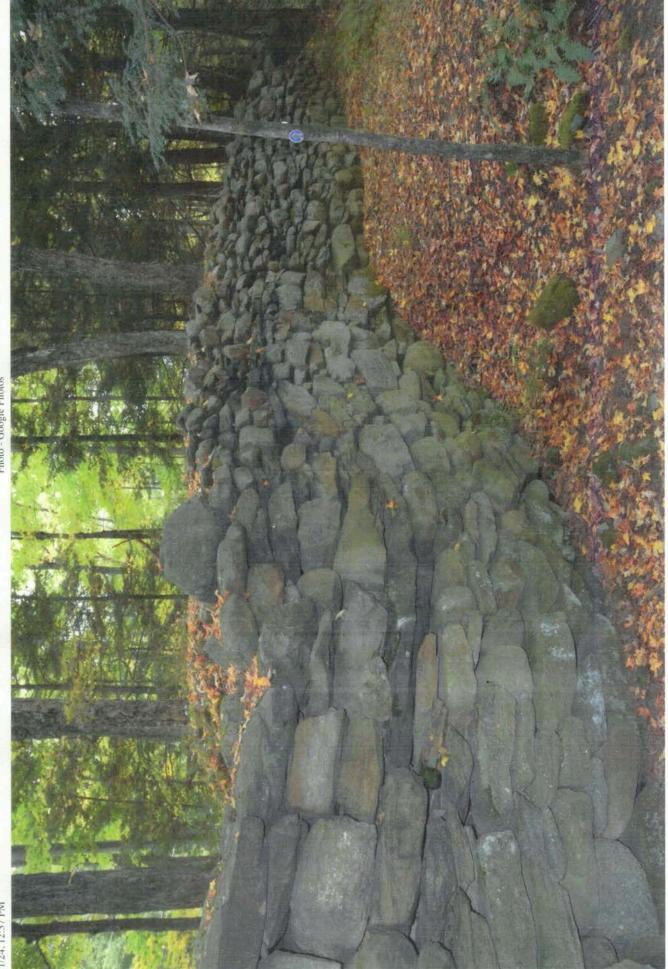
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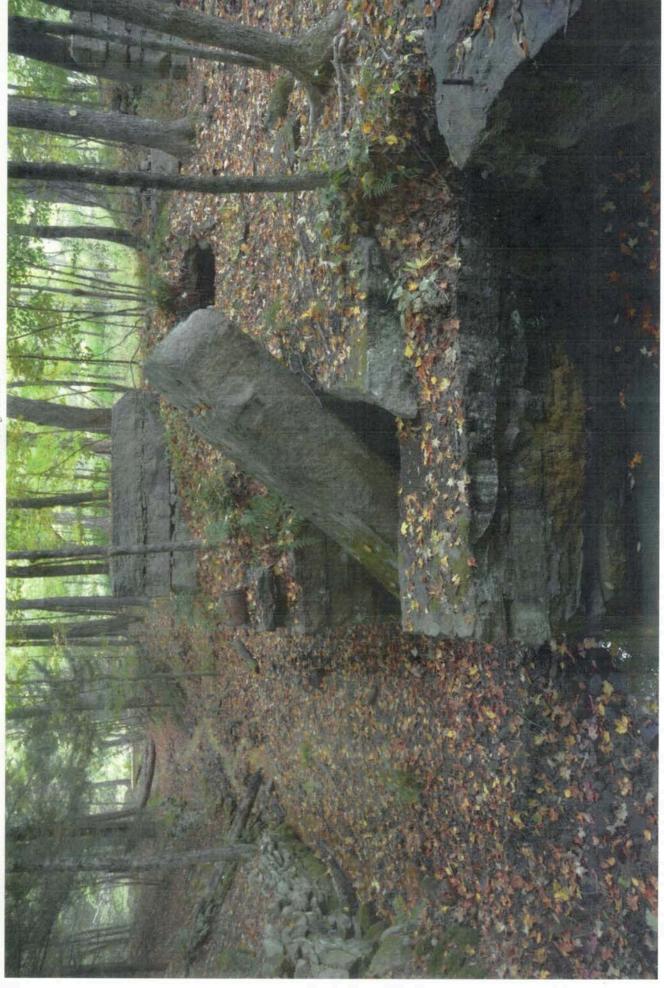




10/1/24, 12:36 PM



10/1/24, 12:37 PM





10/1/24, 12:39 PM

The Historical Commission is requesting letters of support from -

Leverett Selectboard

Leverett Conservation Commission

Friends of the North Leverett Sawmill

North Leverett Baptist Church

Leverett Historical Society

Industrial History New England < https://industrialhistorynewengland.org/museums-and-sites

Various individuals who have expressed an interest in the significance of the site: Dr. Patrick M. Malone, Brown University, Emeritus Matthew Kierstead, Milestone Heritage Consulting < https://milestoneheritage.com/>