

# PLEASANT VALLEY ELEMENTARY SCHOOL

## Wetland Impact Assessment

Prepared for:

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SLR #141.13057.00104.0080

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This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.



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## ACRONYMS

CTDEEP	Connecticut Department of Energy & Environmental Protection
DPI	Design Professionals Inc.
NDDB	Natural Diversity Database
S&E	Sediment & Erosion
SF	square feet
SLR	SLR International Corporation
WQV	Water Quality Volume

## 1. INTRODUCTION

SLR International Corporation (SLR) has prepared the following Wetland Impact Assessment report for the proposed Pleasant Valley Elementary School. This report is a supplement to the soil report prepared by SLR on January 6, 2021, which was submitted under a separate cover. The purpose of this report is to describe the existing conditions of inland wetlands and to provide analysis of potential impacts on identified wetland resources that may result from the proposed redevelopment of the school campus.

Redevelopment of the Pleasant Valley Elementary School campus is proposed at 591 Ellington Road in South Windsor, Connecticut, and contains additional parcels of 623 and 647 Ellington Road. The entire project area is 24.9 acres. This proposed project consists of construction of a new school building, parking lots, access roads, future recreational fields occupying 7.7 acres and a stormwater basin and wetland mitigation area.

The proposed activities will directly alter inland wetlands, which will be permanently filled. The direct impact has been critically reviewed and cannot be avoided. Wetland mitigation will be comprised of a suite of compensation strategies that will include wetland creation, a wetland buffer, and an outdoor classroom. Through these strategies, the proposed project will not result in a net loss of wetland functionality and value in the watershed.

SLR identified two wetlands and determined the functional capacity of each wetland community on the property. Following the functional assessment, SLR evaluated the proposed project within the context of existing wetland function to document impacts and determine appropriate compensatory mitigation.

The area of wetland impacts is greater than the wetland mitigation proposed. However, the mitigation plan comprises a broad scope of strategies to include wetland creation and a new outdoor classroom for the adjacent elementary school to use.

In summary and as described in this report, though direct wetland impacts are necessary, these impacts are not anticipated to result in a significant reduction in wetland functionality in the watershed. The project proposes to replace the principal wetland functions and values that will be lost by the filling of the wetlands on the site through compensatory mitigation measures including wetland creation, wetland buffer plantings, and an outdoor classroom.

## 2. GENERAL SITE DESCRIPTION

The approximately 24.9-acre property is comprised of 591, 623, and 647 Ellington Road. The western property line of each of the parcels contains frontage on Ellington Road. The site is located in a moderately settled, primarily residential area of South Windsor, Connecticut. Saint Francis of Assisi Church abuts 647 Ellington Road to the north. Murielle Drive abuts 591 Ellington Road to the south.

Land use on the project property includes the elementary school and a single-family residence. The existing school building is located in the southwest portion of the property and is accessed from Ellington Road to the west. The developed school grounds comprise approximately 10 acres of this 24.9-acre property and consist of the school building, parking lot, playground, athletic fields, and manicured lawn. The majority of the landscape surrounding the school grounds is topographically flat with the area generally draining from east to west. A single-family residence with a large barn is located along the northwestern portion of the site. The buildings are surrounded by maintained lawn areas and forested uplands. The eastern and northeastern portion of the property is classified as a mixed broad-leaved deciduous upland forest.

A small isolated palustrine persistent emergent wetland is located between the school building and a dirt road connecting the school to the upgradient athletic fields. Based on our field assessment, this wetland appears to be a man-made wetland system created when the school was built. Evaluating wetland systems from an ecological community perspective allows for a discernment of basic wetland function provided by each community. An isolated man-made palustrine broad-leaved deciduous forested wetland is located east of the single-family residence/upland forest area north of the existing school. This man-made wetland system was likely created as result of former agricultural and/or land grading activities. These isolated man-made wetlands comprise 0.32 acres or 1.3 percent of the total project area.

The property is located in the Podunk River subregional watershed. The project is located approximately 750 linear feet away from Frontier Land Pond, which then drains into the Podunk River approximately 1,500 linear feet from the project property. The Podunk River is a tributary to the Connecticut River. The National Wetland Inventory mapping does not indicate any streams or wetlands on this site.

### Historical Aerial Review

Historical aerial maps were reviewed to evaluate the extent of wetland and/or watercourse modifications within the properties (i.e., project site). The 1934 Fairchild aeriels show that the properties were used for agriculture, likely tobacco farming based on the number of barns on the properties. More importantly, there is no clear evidence of wetlands or watercourses on the properties. Keys that typically indicate wetlands and watercourses within the 1934 aeriels would include observed channels, dark-colored areas within fields, and undeveloped forested areas. By the early 1960s, the school had been constructed within the southwestern portion of the site, with the northern portion of the project site continuing as agriculture. Several of the barns had been removed by the early 1960s. By 1968, the agriculture operations on the northern portion of the project site appear to have subsided, with shrubs and trees showing up within the former agricultural fields. Similarly, the early 1930s and 1960s aerial maps do not show any evidence of wetlands within the project site. The 1990 aerial shows the continued transition of the northern portion of the site from scrub shrub cover type into an early successional forest, and the athletic

fields east of the school are now present. Later aerial imagery shows the isolated emergent wetland east of the school, and the forested wetland is difficult to identify on the aerials. The historical aerial mapping review confirms our field observations that both wetlands are man-made and are relatively young in age from a formation and functionality perspective.

### 3. WETLAND DELINEATION

On August 7, 2020, SLR (formerly Milone & MacBroom, Inc.) registered soil scientists delineated wetlands on the subject properties. Details regarding the wetland delineation were formalized into a soil report dated January 6, 2021, (See Appendix A for full report). Wetlands on the property consist of a palustrine broad-leaved deciduous forested wetland and a mixed palustrine persistent emergent marsh/meadow. Wetlands comprise approximately 1.3 percent of the total land area.

#### 3.1 WETLAND DESCRIPTION

##### Wetland A

A forested wetland, approximately 7,680 square feet, is located north of the existing school building within the upland forest. The wetland is supported hydrologically by stormwater runoff from adjacent uplands, and it has no hydrologic connection to any other wetlands on or near the project property. This wetland consists of red maple (*Acer rubrum*), American elm (*Ulmus americana*), and pin oak (*Quercus palustris*). The understory is relatively sparse and moderately dense in other areas and consists of winterberry (*Illex verticillata*), American elderberry (*Sambucus canadensis*), multiflora rose (*Rosa multiflora*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmundastrum cinnamomeum*), soft rush (*Juncus effusus*), poison ivy (*Toxicodendron radicans*), jewelweed (*Impatiens capensis*), and various carex species. A small man-made earthen berm is located along the northern limits of the wetland and may cause seasonal ponding.













##### Wetland B

An emergent wetland, approximately 6,410 square feet, is located northeast of the existing school building. This wetland appears to be man-made and likely established during site grading with construction of the school. It is hydrologically supported by groundwater breakout along the eastern slope and stormwater surface runoff from surrounding forested, lawn, and paved areas. Wetland B is hydrologically isolated from other wetlands on or near the project property. The meadow portion of the wetland is vegetated with common boneset (*Eupatorium perfoliatum*), blue vervain (*Verbena hastata*), common tearthumb (*Persicaria sagittata*), soft rush (*Juncus effusus*), and common fox sedge (*Carex vulpinoidea*). The emergent marsh wetland vegetation consists of broad-leaved cattail (*Typha angustifolia*), sensitive fern (*Onoclea sensibilis*), jewelweed (*Impatiens capensis*), purple loosestrife (*Lythrum salicaria*), silky dogwood (*Swida racemosa*), and American elderberry. The periphery of the wetland is scattered with trees including red maple, pin oak, and willow (*Salix* sp).

#### 3.2 WETLAND FUNCTIONAL ASSESSMENT

A functional evaluation of onsite wetlands based on SLR field observations is summarized below (Tables 3-1 and 3-2). The first column lists the functions and values generally ascribed to wetlands while the second column summarizes the rationale used to determine whether these functions and values are being performed within the subject wetland. As revealed in the following two tables, each wetland community displays potential to contribute to basic wetland functions. However, factors such as landscape position, hydrology, vegetation, and land use factor into the capacity for each community to provide these basic functions.













Table 3-1 Wetland Functions and Values Assessment – Wetland A

	Functions and Values	Comments
	Groundwater Recharge/Discharge	Limited – The small size of this wetland limits contribution to this function. No obvious seeps were present.
	Flood Flow Alteration (Storage & Desynchronization)	No – The landscape position outside of mapped floodplains and limited size of the wetland limit contribution to this function.
	Fish & Shellfish Habitat	No – Perennial open waters and/or streams are not present within this wetland, and it does not provide viable fish and shellfish habitat.
	Sediment/Toxicant Retention	Yes – but limited because of small size and contributing watershed. Wetland does not provide any meaningful contribution to this function within its regional watershed.
	Nutrient Removal/Retention/Transformation	Yes – but limited because of small size and contributing watershed. Wetland does not provide any meaningful contribution to this function within its regional watershed.
	Production Export (Nutrient)	No – The small size of this wetland limits trophic-level interaction. In addition, the wetland is not connected to a watercourse that would transport allochthonous materials to downstream habitats.
	Sediment/Shoreline/Watercourse Bank Stabilization	No – The landscape position (no open water or watercourse systems) does not allow for contribution to bank stability.
	Wildlife Habitat	Yes – but limited structural complexity and vegetative diversity, small size, and disturbed nature of this wetland prevent significant opportunities for wildlife habitat utilization. No vernal pools and/or other wetland-dependent wildlife habitat was found.
	Recreation (Consumptive & Non-Consumptive)	No – These wetlands currently do not provide recreational opportunities.
	Educational Scientific Value	No – These wetlands currently do not provide educational opportunities. This wetland is located away from the existing school and is not publicly accessible.
	Uniqueness/Heritage	No – This wetland does not present unique attributes.
	Visual Quality/Aesthetics	No – The wetland does not contain inherent visual quality or aesthetic value.
ES	Endangered Species	No – This wetland is not mapped within the Connecticut Department of Energy & Environmental Protection (CTDEEP) Natural Diversity Database (NDDB) polygon dated December 2020.

As presented earlier in this report, Wetland A was historically an agricultural field and began transitioning into a scrub shrub then forested habitat sometime between 1970 and 1990. Because of the historical anthropogenic disturbance, landscape, and the wetland's limited size, the functions and values

provided by Wetland A are limited within its regional watershed. The principal functions include nutrient retention and limited wildlife habitat.

Table 3-2 Wetland Functions and Values Assessment – Wetland B

	Functions and Values	Comments
	Groundwater Recharge/Discharge	Yes – Evidence of seasonal groundwater seeps is present along the eastern slope of the wetland.
	Flood Flow Alteration (Storage & Desynchronization)	No – The landscape position outside of mapped floodplains and limited size of the wetland limit contribution to this function.
	Fish & Shellfish Habitat	No – Perennial open waters and/or streams are not present within this wetland, and it does not provide viable fish and shellfish habitat.
	Sediment/Toxicant Retention	Yes – Wetland is small but provides some contribution to this function as evidenced by stormwater runoff that enters from the athletic fields to the east.
	Nutrient Removal/Retention/Transformation	Yes – Wetland is small, but the morphology and landscape position of this wetland do allow for limited contribution of nutrient transformation.
	Production Export (Nutrient)	No – The small size of this wetland limits trophic-level interaction within this wetland. In addition, the wetland is not connected to a watercourse that would transport allochthonous materials to downstream habitats.
	Sediment/Shoreline/Watercourse Bank Stabilization	No – The landscape position (no open water or watercourse systems) does not allow for contribution to bank stability.
	Wildlife Habitat	Yes – but limited because the small size and disturbed nature of this wetland prevent significant opportunities for wildlife habitat utilization. No vernal pool or wetland-dependent wildlife habitat is present within this wetland.
	Recreation (Consumptive & Non-Consumptive)	No – These wetlands currently do not provide recreational opportunities.
	Educational Scientific Value	No – These wetlands currently do not provide educational opportunities. Chain link fence prevents access to wetland.
	Uniqueness/Heritage	No – This wetland area does not present unique attributes.
	Visual Quality/Aesthetics	No – The wetlands do not contain inherent visual quality or aesthetic value.
<b>ES</b>	Endangered Species	No – This wetland is not mapped within the CTDEEP NDDB polygon dated December 2020.

Wetland B was created from the excavation of an existing slope during the construction of the school and associated amenities back in the early 1960s. The excavation resulted in the interception of groundwater and some overland stormwater runoff. Over time, the excavated area provided conditions suitable to support hydrophytic vegetation and eventually wetland soil formation. However, this wetland is man-made and small, with no hydrologic connection to other wetland systems. As such, it

provides limited principal functions and values, which include groundwater discharge, nutrient retention, and limited wildlife habitat.

## 4. PROPOSED PROJECT

The proposed project involves the creation of a new state-of-the-art school building and associated access, parking, future recreational fields, and stormwater management within the total 24.9-acre project area. Approximately 7.7 acres (31 percent) of the project area will be impervious surface. The project proposes to fill isolated man-made inland wetlands and mitigate these impacts through the creation of a wetland mitigation area, wetland buffer area, and an outdoor classroom. Proposed activities are depicted on site plans prepared by Design Professionals, Inc. (DPI) entitled *Pleasant Valley Elementary School – Site Plan Modification*, dated March 16, 2021, (not included in this assessment).

The proposed project occupies portions of 591, 623, and 647 Ellington Road, which contain approximately 14,090 square feet (SF) of inland wetlands. Both Wetland A (7,680 SF) and Wetland B (6,410 SF) will be filled to accommodate the new school on this site. The project team understands that the town requires a 1:1 mitigation ratio for those activities that result in the loss of a wetland and its associated functions and values. The project team assessed multiple school layout alternatives and found that the locations of the two wetlands being somewhat centrally located within the project site could not be preserved without filling and/or loss of their functions and values. The proposed school layout represents the most feasible and prudent alternative to achieve design objectives. As previously stated, variations to the proposed school layout were considered, but due to the position of the wetlands on the property, no alternative resulted in avoidance or minimization of direct wetland impacts.

Wetland disturbance will be mitigated through wetland creation, a wetland buffer, and an educational outdoor classroom. The mitigation wetland will be constructed adjacent to the stormwater basin proposed along the northwestern portion of the project site. This wetland mitigation area consists of two parts – the wetland creation area, which is approximately 8,146 SF, and the wetland buffer area, which is approximately 3,049 SF. Combined, these areas provide approximately 11,195 SF of wetland mitigation. This created mitigation does not meet the 1:1 mitigation ratio; however, the project team is proposing an outdoor classroom as additional mitigation to serve an important function for the students attending the new school.

The wetland creation area will consist of an emergent wetland/scrub shrub wetland system. The mitigation wetland will be supported hydrologically by clean roof leader stormwater runoff from the school building, overland sheet flow stormwater runoff from adjacent uplands, and seasonal groundwater breakout. The wetland will be graded to have a hummocky topography with small shrub cluster islands present. A super-enriched topsoil will be spread within the mitigation area and along the side slopes. Wildlife boulder clusters and woody debris will be placed within the wetland to increase wildlife refuge, sunning, and perching areas. A diverse assemblage of native woody shrubs and herbaceous plantings is proposed. Pollinator plants have been incorporated into the planting plan to help with maintaining healthy populations of insects including butterflies and bees. The wetland buffer area, which will serve as a transitional zone between the dry upland and created wetland, will be planted with native plantings that are adapted to both wet and dry conditions. Over time, the shrubs within and around the wetland will provide cover and nesting habitat for a variety of passerine birds. Bluebird boxes will be placed around the mitigation area to provide additional nesting opportunities for bluebirds and other box nesting species.

The construction of the wetland mitigation area will be supervised by a professional wetland scientist to ensure compliance with the design plans. In addition, the wetland mitigation area will be monitored for a 3-year period following construction. The monitoring will include an assessment of the overall health of the wetland, vegetation list, photo documentation, wildlife observations, and required remedial measures. This information will be summarized in an annual report that will be provided to the town for review. If non-native invasive plant species are found after construction, a plan to remove the targeted invasive species will be prepared and submitted to the town for implementation.

The goal of a sound wetland mitigation plan is to meet or exceed the functions and values lost from filling and/or impacting a wetland. The wetland mitigation as proposed will replace the following principal functions and values lost by the filling of Wetland A and Wetland B. The mitigation area will provide the functions and values of nutrient retention, sediment/toxicant retention, wildlife habitat, groundwater discharge, and educational opportunities. The mitigation area will provide a greater biodiversity of native plant species than currently found within either Wetland A or Wetland B. Overall, the wetland mitigation will replace the functions and values lost during construction of the new school. The mitigation area is smaller than the wetland area to be filled, and to increase the mitigation package, the team is creating an outdoor classroom that will provide opportunities for students to interact and learn about nature. The outdoor classroom will be located south of the school near a large white oak tree. An educational program will be developed by the school, which will include the wetland creation/buffer area and the upland forests that are located on site. Educational curriculum may include tree and shrub identification, wildlife identification and associated habitats, and wetland functions and values. The outdoor classroom will consist of a stone dust floor with natural cut stump seats. A weather-resistant white board will be installed. The classroom space will be approximately 2,134 SF; however, the created wetlands and forested uplands on site will ultimately serve as the primary educational space for the educators and students.

The proposed project will directly impact and fill all existing isolated man-made wetlands on site. A comprehensive wetland mitigation plan has been prepared to support this school project. To protect the sites bordering the new school, the town stormwater drainage systems within Ellington Road, and wetlands and watercourses that are located within the regional watershed, a robust sedimentation and erosion control plan has been developed. It addresses potential short-term stormwater management impacts during construction, and a new stormwater management basin is proposed to minimize any long-term impacts associated with water quality within the watershed.

#### 4.1 SEDIMENT AND EROSION CONTROL MEASURES

In the short term, wetlands and uplands can be indirectly impacted from sediment-laden stormwater from the proposed construction activities. A Sediment and Erosion (S&E) Control Plan has been developed to mitigate the short-term impacts of the development during construction. The S&E Control Plan includes descriptive specifications concerning land grading, and erosion checks. Details have been provided for erosion controls with corresponding labels on the S&E Control Plan. All of the S&E controls provided are in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*.

The construction site will be bordered by geotextile sediment filter fence and fortified with staked hay bales upgradient of the catchment areas. The site will be accessed from the previously authorized access

road west of the proposed project. Temporary soil stockpile areas will be bordered by sediment filter fencing. The S&E controls will be inspected daily and modified as necessary throughout the construction process.

## 4.2 WATER QUALITY PROTECTION

In the long term, wetlands and watercourses can be adversely impacted in an indirect manner by stormwater runoff that flows from impervious and landscaped surfaces. To protect downstream wetlands and watercourses, the project includes a stormwater management system that is designed in accordance with state and town standards. The primary component of the stormwater management plan is the construction of a stormwater management basin adjacent to Ellington Road, which has been sized following recommendations set forth in the CTDEEP 2004 *Stormwater Quality Manual*.

The manual recommends methods for sizing stormwater treatment measures with Water Quality Volume (WQV) computations. The WQV addresses the initial stormwater runoff commonly referred to as the "first flush" runoff. The WQV provides adequate volume to store the initial 1 inch of runoff, which tends to contain the highest concentrations of potential pollutants. Storm events of 1 inch or less generally drive the hydrology in this region. With the proposed stormwater basin, water quality renovation will be accomplished through detention. The basin will be seeded and vegetated to further encourage water-quality renovation. Given the depth of groundwater at this portion of the site, the basin is anticipated to have a saturated basin bottom.

## 5. CONCLUSION

SLR evaluated the proposed school, which is a total of approximately 7.7 acres comprising a new school building, associated access, parking, future active recreation fields, and stormwater management. Though 14,090 SF of isolated man-made wetlands will be filled on this site, this loss of wetlands is unavoidable and has been compensated for through a sound wetland mitigation plan. Mitigation is proposed through a suite of strategies including wetland creation, a wetland buffer, and an outdoor classroom. As presented within this impact assessment, the wetlands that will be filled are isolated man-made wetlands that have likely existed for the past 60 years. Given these wetlands' young age and small size, their ability to provide a diverse and wide array of principal functions and values is limited. That being said, their loss cannot be justified without proper mitigation, and as such, the project team has developed a comprehensive mitigation plan to replace the principal functions and values that would otherwise be lost by construction of the new school.

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## **APPENDIX A**

### **HISTORIC AERIALS**

**Applicant Name:**

**Site Location:**

591 Ellington Road, South Windsor, CT

**Project No.**

141.13057.00104

**Photo No.**

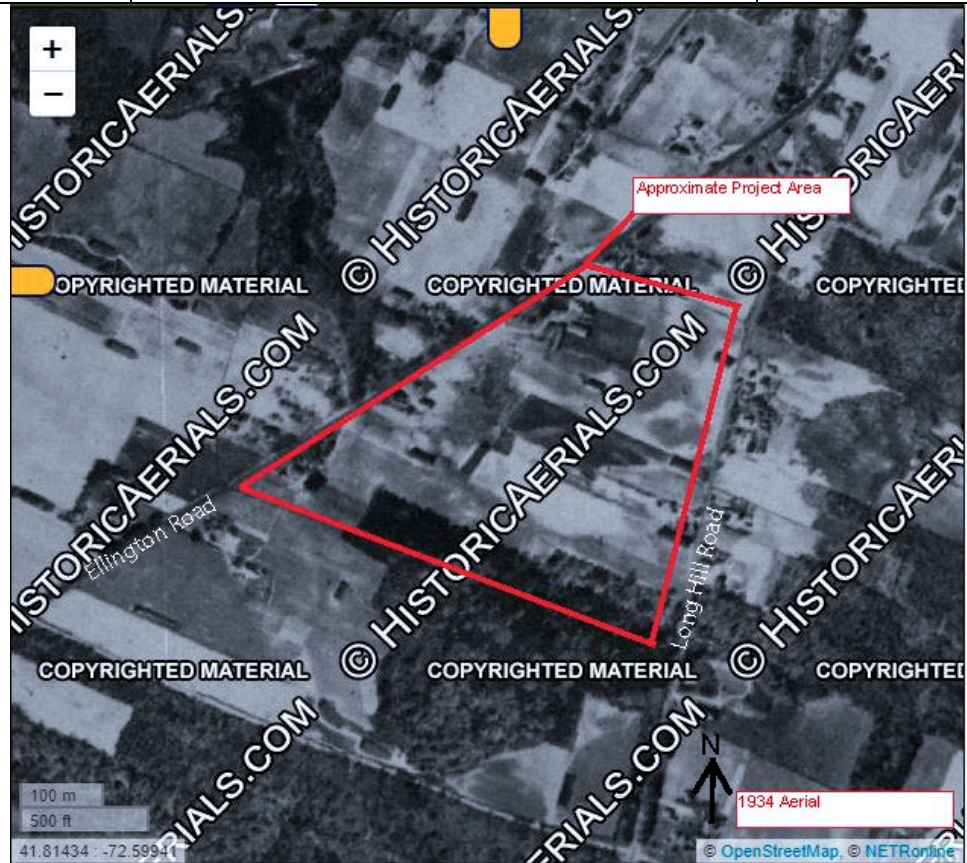
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**Direction Photo Taken:**

**Description:**



**Photo No.**

2

**Date:**

1962

**Direction Photo Taken:**

**Description:**



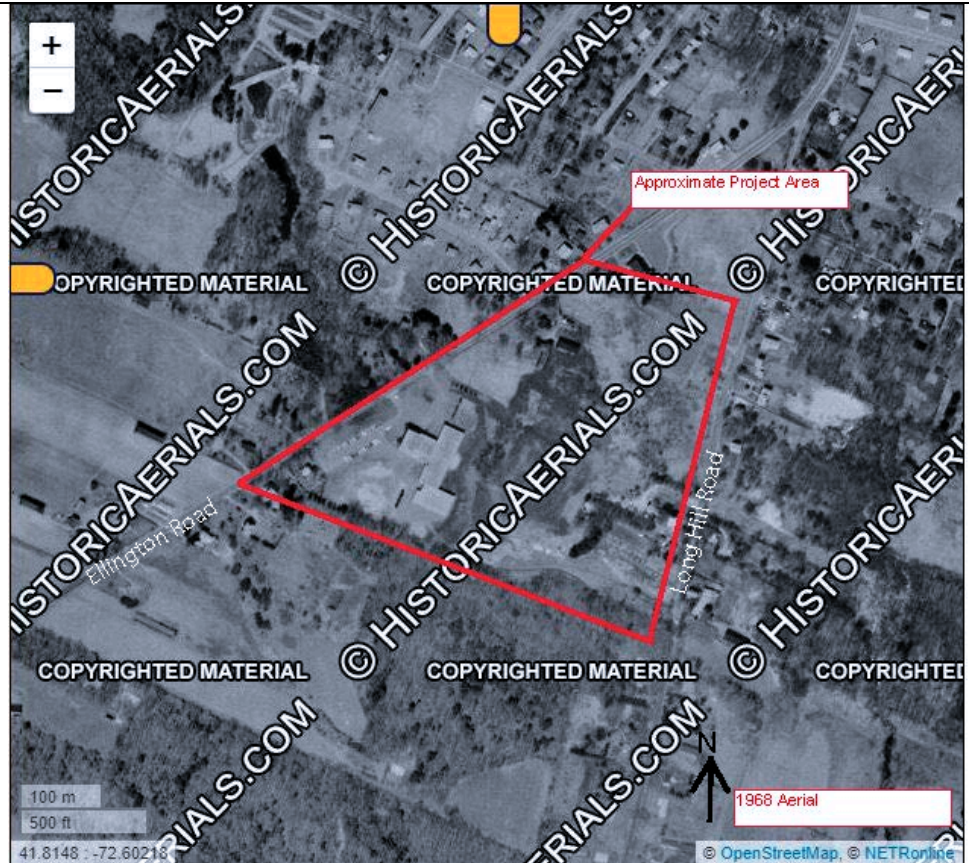
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Description:		


Photo No. 4	Date: 1990	
Direction Photo Taken:		
Description:		

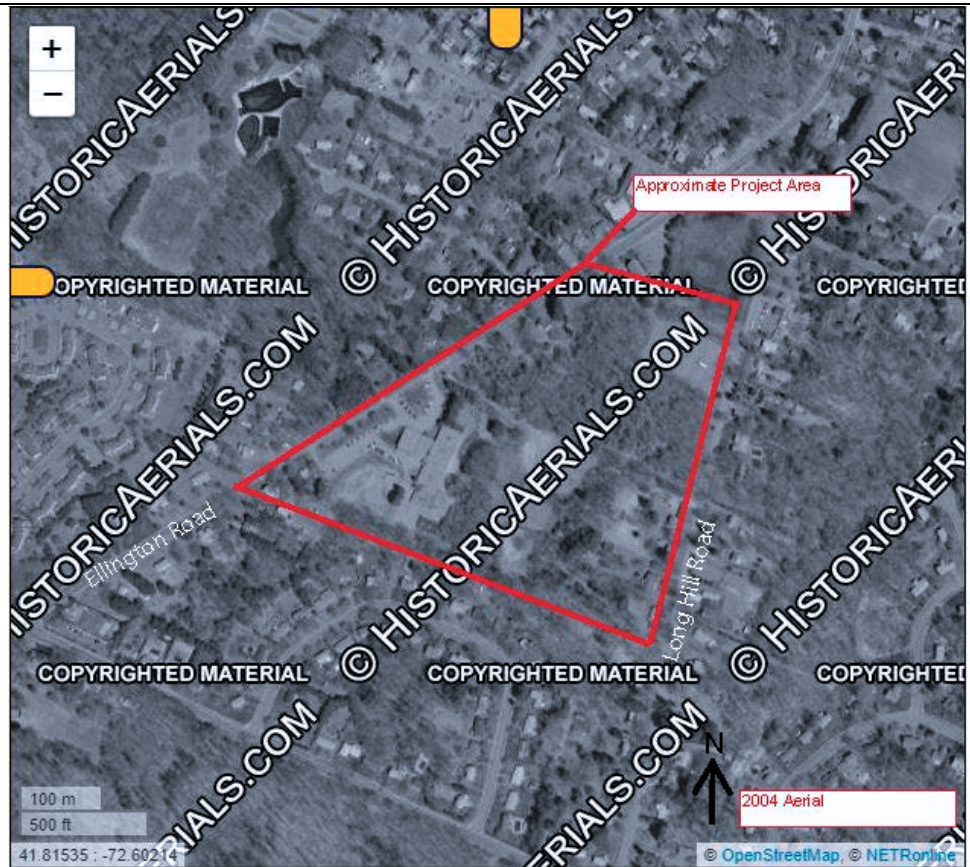
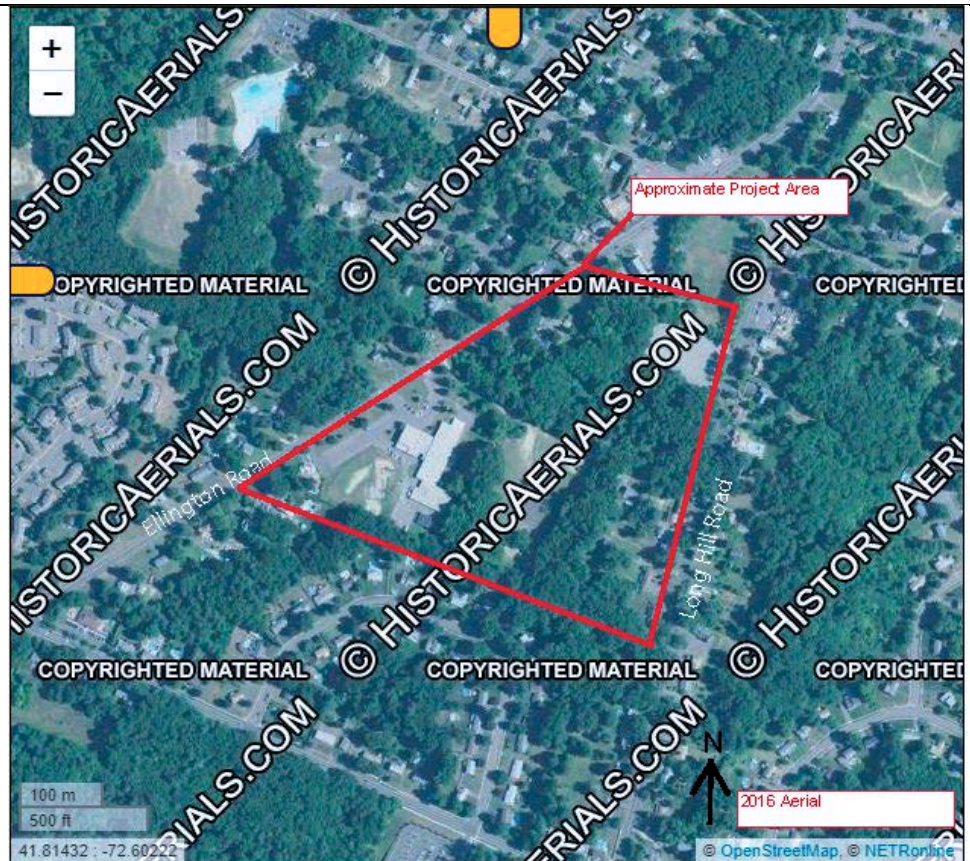
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Description:		

Photo No. 6	Date: 2016	
Direction Photo Taken:		
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