

MEMORANDUM

TO: MVP Core Team, Uxbridge, MA

FROM: Julianne Busa, PhD; Rachael Weiter, EIT; Sarah Hayden, MSc
Fuss & O'Neill, Inc.
1550 Main Street, Suite 400
Springfield, MA 01103

DATE: May 12, 2020

RE: Green Infrastructure Assessment
Integrated Water Infrastructure Vulnerability Assessment and Climate Resiliency Plan
MVP Action Grant – Town of Uxbridge

1. Introduction

The Town of Uxbridge was awarded a FY19 EEA Municipal Vulnerability Preparedness (MVP) Program Action Grant to conduct a comprehensive, regional climate change vulnerability assessment and develop an associated management plan that addresses the major types of water infrastructure in the community including transportation systems (culverts and bridges) and dams, as well as water supply resiliency. The project consists of a series of technical assessments focused on each type of water infrastructure and associated climate change vulnerabilities. A key goal of this project is to promote resiliency measures that consider both infrastructure and natural systems solutions. The integrated plan is intended to help local decision-makers think more strategically about ways to utilize natural systems to provide more effective strategies to reduce flooding, while also benefitting water quality and ecological health.

Fuss and O'Neill performed a screening-level assessment of potential green infrastructure retrofit sites throughout the Town of Uxbridge (the Town). The goal of this assessment is to identify opportunities and develop concept designs for site-specific green infrastructure retrofits that achieve dual objectives: increase flood resiliency by reducing runoff volumes and peak flows and improve or protect water quality by reducing pollutant loads to receiving waters.

Green infrastructure refers to systems and practices that reduce surface water runoff through the use of vegetation, soils, and natural processes to manage water and create healthier urban and suburban environments (EPA, 2014). Green infrastructure includes a variety of stormwater management practices such as bioretention, engineered wetland systems, permeable pavement, green roofs, green streets, infiltration planters, tree boxes, and rainwater harvesting. These practices capture, manage, and/or reuse rainfall close to where it falls, thereby reducing stormwater runoff and keeping it out of drainage systems and receiving waters.

In addition to reducing polluted runoff and improving water quality, green infrastructure can improve flow conditions in streams and rivers by infiltrating water into the ground, thereby reducing peak flows during wet weather and sustaining or increasing stream base flow during dry periods, which can be important for aquatic habitat and fisheries. When applied throughout a watershed, green infrastructure can help mitigate flood risk and increase flood resiliency. At a smaller scale, green infrastructure can also reduce erosive velocities and streambank erosion.

Finally, green infrastructure has been shown to provide other social and economic benefits relative to reduced energy consumption, improved air quality, carbon reduction and sequestration, improved property values, recreational opportunities, overall economic vitality, and adaptation to climate change. For these reasons, many communities are exploring the use of and are adopting green infrastructure within their municipal infrastructure programs.

2. Assessment Methods and Findings

The overall green infrastructure assessment consists of three major tasks:

1. Screening-level assessment to quickly identify areas in Town with the greatest feasibility for and potential benefits from green infrastructure retrofits
2. Field inventories of the most promising green infrastructure retrofit opportunities identified from the screening step
3. Green infrastructure concept designs for selected retrofit sites

This technical memorandum documents the methods and findings of the screening-level assessment, as well as field inventories and green infrastructure concept designs for selected retrofit sites.

2.1 Site Screening Evaluation

Sites were selected and analyzed using Geographic Information System (GIS) mapping and associated geospatial data. GIS allows for rapid evaluation of specific land-based attributes that are important for assessing the feasibility of green infrastructure practices. The goal was to identify up to 30 potential sites for field assessment. The site-screening assessment used the following site evaluation criteria¹ and data sources.

- Land Ownership – Publicly-owned (e.g., municipal) sites are most favorable because they avoid the cost of land acquisition and provide direct control over green infrastructure construction, maintenance, and monitoring by the municipality. Other publicly-owned sites such as schools and federal facilities are also potential green infrastructure candidates.

Publicly-owned properties in the watershed were identified and mapped using the “Tax Parcels for Query” dataset from MassGIS from 2019. Parcels owned by either the Town or the Commonwealth were selected.

¹ Other site-specific factors such as land area, impervious area, drainage area, subsurface utilities, subsurface contamination, and storm drainage system capacity are also important considerations for green infrastructure retrofits.

- Subsurface Conditions – Subsurface conditions are key considerations for infiltration-based green infrastructure retrofits. Soil infiltration capacity, depth to groundwater, depth to restrictive layers (bedrock, dense till), soil bulk density, and inundation of soils due to flooding are important soil-based characteristics that can affect the feasibility of infiltration-based green infrastructure retrofits. For the purposes of this screening evaluation, Natural Resources Conservation Service (NRCS) soil classifications and the Soil Survey Geographic Database (SSURGO) were used to assess the feasibility of infiltration practices at a given site.

Hydrologic Soil Groups (HSGs) mapped by the NRCS provide an initial estimate of infiltration rate and storage capacity of soils on a site. Group A soils have the lowest runoff potential (highest infiltration rates) and Group D soils have the highest runoff potential (lowest infiltration rates) when thoroughly wet. Soils with higher infiltration capacities are generally better suited for green infrastructure—soil types A and B were selected from USDA Web Soil Survey data from 2019. HSG mapping provides an initial estimate of infiltration potential; field investigations are necessary to verify soil conditions for final feasibility determinations and design purposes.

- 100-Year Floodplain – Practices installed within the 100-year floodplain are more likely to fail due to inundation during large floods. For this screening-level analysis, sites on property outside of the mapped 100-year floodplain were selected. The FEMA Flood Insurance Rate Map (revised 2011) for the Town of Uxbridge was used to identify the extent of floodplain.
- Impervious Cover – Water quality impacts are known to occur in surface waters within drainage basins that have a high degree of impervious cover; this is due to changes in watershed hydrology and pollutant sources that result from development of the landscape with hard/impervious surfaces. Sites with higher amounts of impervious cover generate more runoff and have greater potential for runoff reduction through the use of green infrastructure retrofits. Areas with a high degree of development and impervious surfaces are generally considered high priority for green infrastructure implementation. Selection criteria included site impervious coverage of over 30% or at least 1 acre of total impervious cover on a given site.

The site screening process was performed by applying each of the screening criteria described above in succession to all parcels within the town, then identifying potential green infrastructure retrofit sites with the most promising characteristics based on the screening criteria.

2.2 Site Screening Results

A total of 23 sites were identified based on the GIS-based screening evaluation. The list of sites was provided to the MVP Core Team for review and comment before proceeding with the field investigation. Following the site screening, four (4) additional sites were identified by Town staff and residents as areas of concern, and an additional four (4) sites were identified in the field, bringing the total number of sites selected for field assessments to 31.

Table 1 lists all sites potentially selected for field assessment. Figure A depicts the spatial distribution of these sites throughout the Town. Aerial photographs of each site assessed in the field are provided in Attachment A.

Table 1. Green Infrastructure Retrofit Sites Selected for Potential Field Investigation.

Site Number	Site Name/Description	Address	Owner
1	Whitin Intermediate School	120 Granite St.	Town of Uxbridge
2	Taft Early Learning Center	16 Granite St.	Town of Uxbridge
3	Uxbridge High School	300 Quaker Hwy.	Town of Uxbridge
4	Uxbridge Youth Fields, Uxbridge Dog Park, and Community Garden	320, 359 Sutton St.	Town of Uxbridge
5	Possible pocket park (on corner near CVS)	327 N. Main St.	Town of Uxbridge
6	D'Alfonso Field	157 Hecla St.	Town of Uxbridge
7	Department of Public Works Facility	147 Hecla St.	Town of Uxbridge
8	Uxbridge Town Library	15 N. Main St.	Town of Uxbridge
9	Uxbridge Housing Authority	31 Calumet Ct.	Town of Uxbridge
10	Uxbridge Town Police Department	275 Douglas St.	Town of Uxbridge
11	Uxbridge Senior Center	36 S. Main St.	Town of Uxbridge
12	Wastewater Treatment Facility	71 River Rd.	Town of Uxbridge
13	Uxbridge Water Division	105 Blackstone St.	Town of Uxbridge
14	Uxbridge Town Hall	21 S. Main St.	Town of Uxbridge
15	Fire Station - 313 N. Main Street	313 N. Main St.	Town of Uxbridge
16	Uxbridge Fire Department - 31 S. Main Street	31 S. Main St.	Town of Uxbridge
17	Uxbridge Fire Station #3 - 222 Aldrich Street	222 Aldrich St.	Town of Uxbridge
18	Water Tower	45 Richardson St.	Town of Uxbridge
19	Pout Pond Recreational Area and Parking Lot	70 West River Rd.	Town of Uxbridge
20	Capron's Dam--State Parcel	24 Mendon St.	Commonwealth of Massachusetts
21	Mass. Highway Maintenance Facility	596 Douglas St.	Commonwealth of Massachusetts
22	Rice City Pond--State Parcel	Hartford Ave. East	Commonwealth of Massachusetts
23	McCloskey Building	62 Capron St.	Town of Uxbridge
24	River Road corridor (west bank of Blackstone River)**	River Road	Town of Uxbridge/Private
25	Park Street**	Park Street	Town of Uxbridge
26	VFW Parking Lot*	VFW Post 1385, 13 Cross Rd.	VFW
27	District Court*	261 S. Main St	MA Court Facilities Bureau
28	Town Common*	S. Main St.	Town of Uxbridge
29	The Castles at Scotland Yard**	Loyalist Ln, Gentry Ln, etc.	Private
30	Commercial Area on Douglas Street**	596 Douglas St.	Private
31	South Main Street Parking Lot*	South Street	Town of Uxbridge

*Identified in the field by Fuss & O'Neill staff

** Identified by Town staff or residents

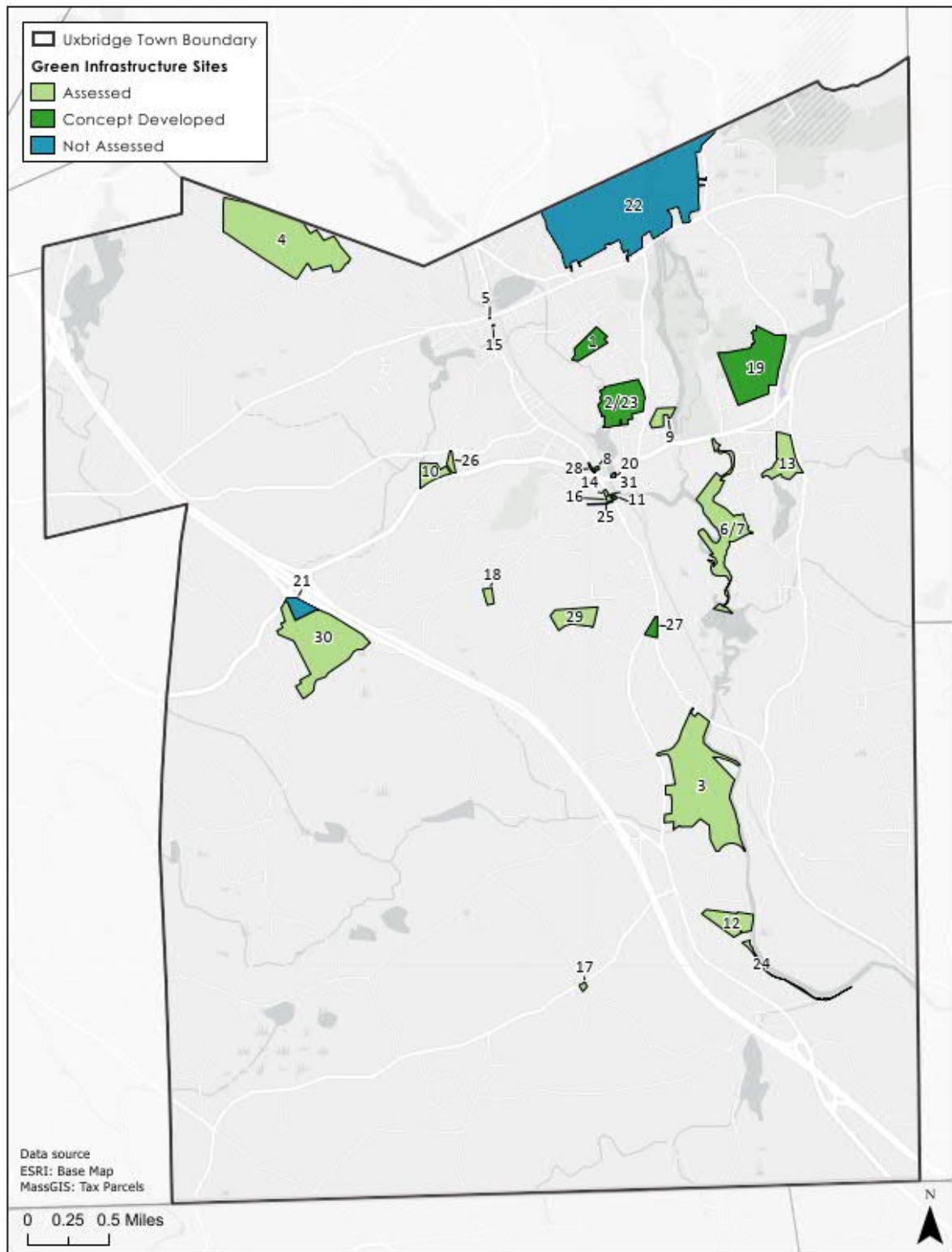


Figure 1. Map of Potential Green Infrastructure Sites in the Town of Uxbridge Based on Initial Screening and Town Input. (See Table 1 for a Key to the Site Numbers.)

2.3 Field Assessments

The sites identified during the site-screening evaluation (Section 2.2) were visited in August and October 2019 to better determine the feasibility of potential green infrastructure retrofits at each site. Fuss & O'Neill staff visually inspected each site and adjacent street areas in order to assess physical site characteristics such as site configuration, drainage patterns, current use, slope, landscaping, subsurface utilities, design complexity, and maintenance access considerations and to identify potential green infrastructure retrofit opportunities (e.g., impervious surfaces connected to the on-site drainage system, available space to accommodate new green infrastructure practices, and drainage features that could be enhanced or improved). Field notes on potential green infrastructure retrofit sites were recorded using inventory forms developed by the Center for Watershed Protection (Attachment B), modified for use in this project, and photographs were taken at each location.

The following types of green infrastructure retrofits were identified as potential retrofit options for one or more sites:

- Bioretention/bioswales, including roadside bioswales or linear bioretention
- Belowground infiltration systems, including infiltrating catch basins (with appropriate pretreatment), dry wells, or linear infiltration systems
- Permeable pavement (sidewalks, on-street and parking lot parking spaces, and low-traffic areas)
- Green roofs
- Rain gardens

Three State-owned parcels (parcel near Caprons Pond Dam, parcel near Rice City Pond, and the Mass. Highway Maintenance Facility) identified during the site screening analysis were not assessed in the field; a sufficient number of Town-owned parcels were identified for assessment and the Town decided to focus primarily on those municipal properties for development of green infrastructure. The District Court, also owned by the State, was identified by Fuss & O'Neill staff in the field, and subsequently evaluated due to its high potential for green infrastructure and the large degree of impervious cover around the site; however, the Town is aware that there may be added difficulty in developing a project on State property. The River Road Corridor and Commercial Area of Douglas Street were visited in the field; however, these sites were determined not to have the potential for green infrastructure (River Road due to its location in the floodplain and limited space for implementation, and the Commercial Area of Douglas Street due to ongoing construction activity) and were not assessed further.

2.4 Field Assessment Results

Green infrastructure retrofit opportunities were identified for most of the sites visited during the field assessments; these potential retrofit opportunities are listed in Attachment C. Ten of these sites were chosen for development of concept designs (see Table 2). These sites were selected because they: (1) have the greatest potential for green infrastructure retrofits and (2) provide the best opportunities to infiltrate (i.e., reduce) or filter runoff. Many of the sites are also in highly visible public locations and therefore provide good opportunities for demonstration projects and public outreach.

Table 2. Sites Selected for Development of Green Infrastructure Design Concepts.

Concept Site Number	Site Name	Green Infrastructure BMP Type
1	Whitin Intermediate School	<ul style="list-style-type: none"> - Bioswale along west side of the school and adjacent to the basketball court - Underground infiltration beneath the basketball court - Green roof on one or more wings of the school - Regrade the terrain along the front side of the school's north wing for positive drainage - Revegetation of slope extending from basketball court to fields
2	Taft Early Learning Center	<ul style="list-style-type: none"> - Bioswale and new sidewalk along north driveway - Parking lot bioretention islands at west edge of main parking lot and large bioretention basin at southeast corner of main parking lot - Native plantings in parking lot islands not converted to bioretention - Pavement removal in unused former recreation area south of the school building - Rain gardens and rain barrels in Horse Garden - Tree plantings in Pre-K playground - Interactive nature playground behind school - Solar canopy over main parking lot
3	Uxbridge Free Public Library	<ul style="list-style-type: none"> - ADA accessible ramp with integrated bioretention providing access to library from parking lot at the rear of the building
4	Senior Center	<ul style="list-style-type: none"> - Rain garden at front of building along South Main Street - Rain barrel at front of building with gutter diversion - Stormwater capture and treatment for parking lot <ul style="list-style-type: none"> - Alternative 1: Bioretention basin at the north end of the parking lot - Alternative 2: Permeable pavement in the parking stalls of the parking lot
	South Main Street Parking Lot	<ul style="list-style-type: none"> - Stormwater capture and treatment for parking lot <ul style="list-style-type: none"> - Alternative 1: Bioretention basin at the north end of the parking lot adjacent to the dumpster pad - Alternative 2: Permeable pavement in the parking stalls of the parking lot - Pavement removal north of the lot within the railroad easement
6	Pout Pond Recreational Area	<ul style="list-style-type: none"> - Reconfiguration of the parking lot to reduce impervious area and install four (4) bioretention basins.
7	McCloskey Building	<ul style="list-style-type: none"> - Conversion of the portion of the parking lot along east edge of parking lot and near gated east exit to bioretention basins - Bioretention basin north of the school and gutter diversion to the bioretention basin - Parking lot islands with native vegetation - Solar canopy over parking lot and/or on building roof - Drywells near south entrance to parking lot
8	Uxbridge Town Common	<ul style="list-style-type: none"> - Underground infiltration on Court Street at the north end of the Town Common - Permeable pavers along the west edge of the Town Common
9	Park Street	<ul style="list-style-type: none"> - Drywells at intersection of Park Street and Pleasant Street - Investigation and replacement of the catch basin on the north side of Park Street between Pleasant Street and South Main Street, and any necessary repairs to the adjacent retaining wall and roadbed
10	Uxbridge District Court	<ul style="list-style-type: none"> - Bioretention basin in the open space north of the parking lot

3. Design Concepts

Green infrastructure retrofit design concepts were prepared for the selected sites. The design concepts reflect opportunities for infiltration and/or water quality treatment at each site. BMPs were sited and sized to capture and infiltrate/treat the 1-inch Water Quality Volume (WQv) wherever possible. Sizing calculations were based on expected future climate change conditions, where required storage volume under future climate change conditions was approximated by increasing the rainfall amount by 20% above current conditions to account for anticipated increases in design rainfall intensities associated with future climate change projections. The recommended 20% increase in design rainfall intensity is consistent with climate change projections for extreme precipitation under a medium to high emissions scenario and a 50- to 100-year planning horizon.²

The retrofit design concepts, including planning-level costs and estimated pollutant removals, are presented on the concept sheets in Attachment D. Each concept sheet includes a general site description, the proposed retrofit concept in plan view, typical details of recommended BMPs, and estimates of pollutant removal, runoff reduction, and cost. Field images with renderings of retrofit opportunities are also included for select concepts. Sizing calculations for the recommended stormwater practices are provided in Attachment E.

Preliminary, planning-level costs were estimated for the site-specific concepts based upon unit costs derived from published sources, Fuss & O'Neill's engineering experience, and the proposed design concepts. A 30% contingency is included to account for the costs of design and permitting. A more detailed breakdown of estimated costs, including operation and maintenance costs and total annualized costs based on the anticipated design life of each practice, is provided in Attachment F.

The green infrastructure retrofit concepts presented in this technical memorandum provide potential on-the-ground projects for future implementation. They also serve as examples of the types of projects that could be implemented at similar sites throughout the watershed. It is important to emphasize that these design concepts are not detailed designs. Individual project proponents (e.g., municipalities, school districts, Commonwealth of Massachusetts) are responsible for evaluating the ultimate feasibility of, as well as design and permitting for, these and similar site-specific concepts.

Attachments: Attachment A: Aerial Photographs of Potential Green Infrastructure Retrofit Sites
Attachment B: Field Sheets
Attachment C: Potential Green Infrastructure Retrofit Opportunities
Attachment D: Retrofit Design Concepts
Attachment E: Sizing Calculations for Proposed Green Infrastructure Practices
Attachment F: Planning Level Cost Estimates

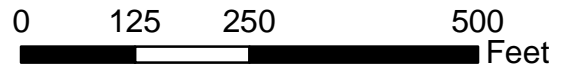
² Projected increases for the northeast generally range from around 5% to 25% for the 2-year to 100-year storm events based on several sources of climate change projections: Boston Water and Sewer Commission climate adaptation planning; U.S. EPA Climate Resilience Evaluation and Awareness Tool; U.S. EPA Storm Water Management Model Climate Adjustment Tool; Downscaled Projections of Extreme Rainfall in New York State developed by the Northeast Regional Climate Center (NRCC) and the New York State Energy Research and Development Authority (NYSERDA); New York City Preliminary Climate Resiliency Design Guidelines

Attachment A

Aerial Photographs of Potential Green Infrastructure Retrofit Sites

Site Name: Whitin Elementary School

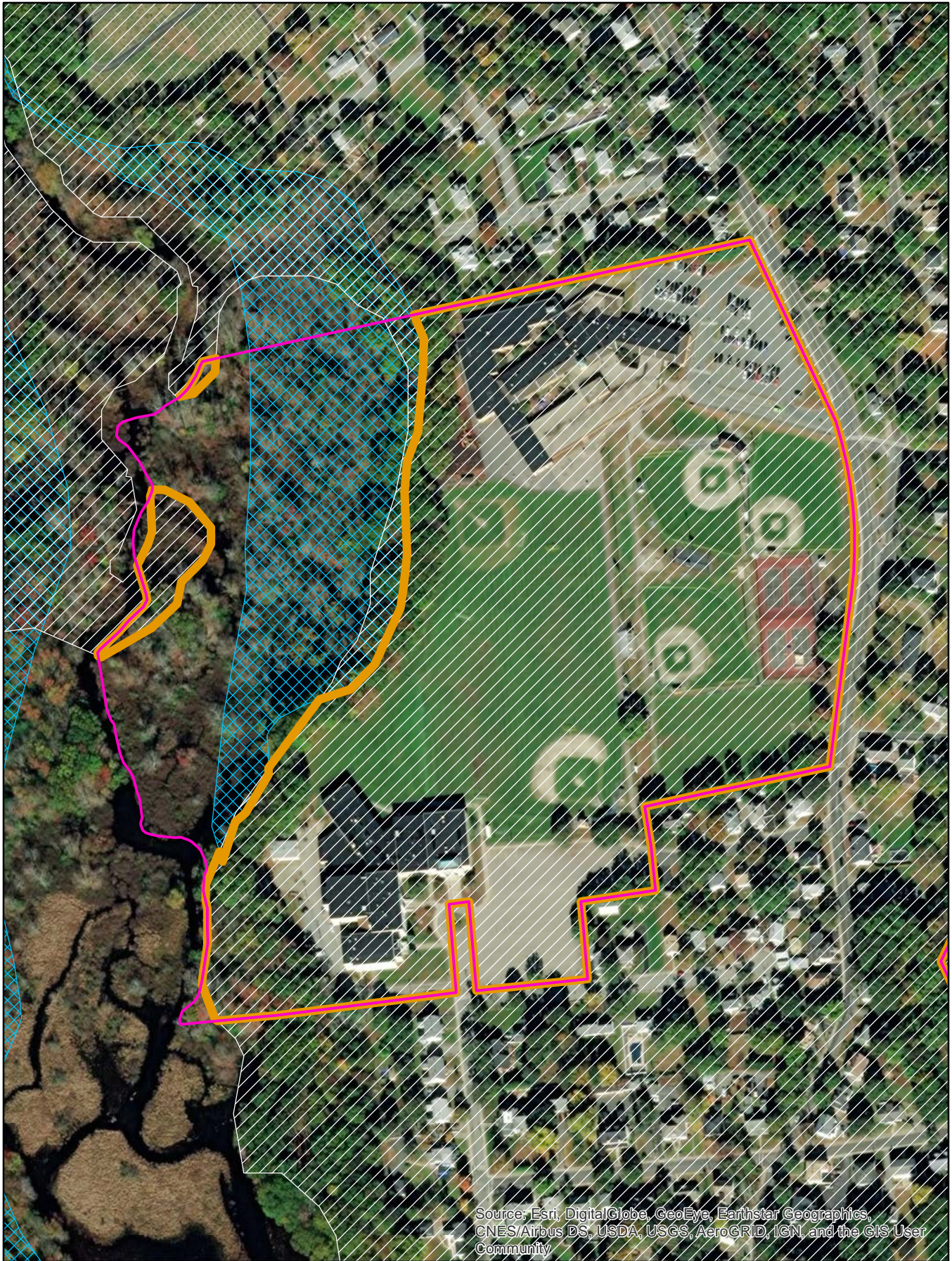
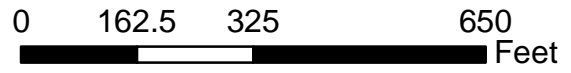
Site Number: 1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Taft Elementary School

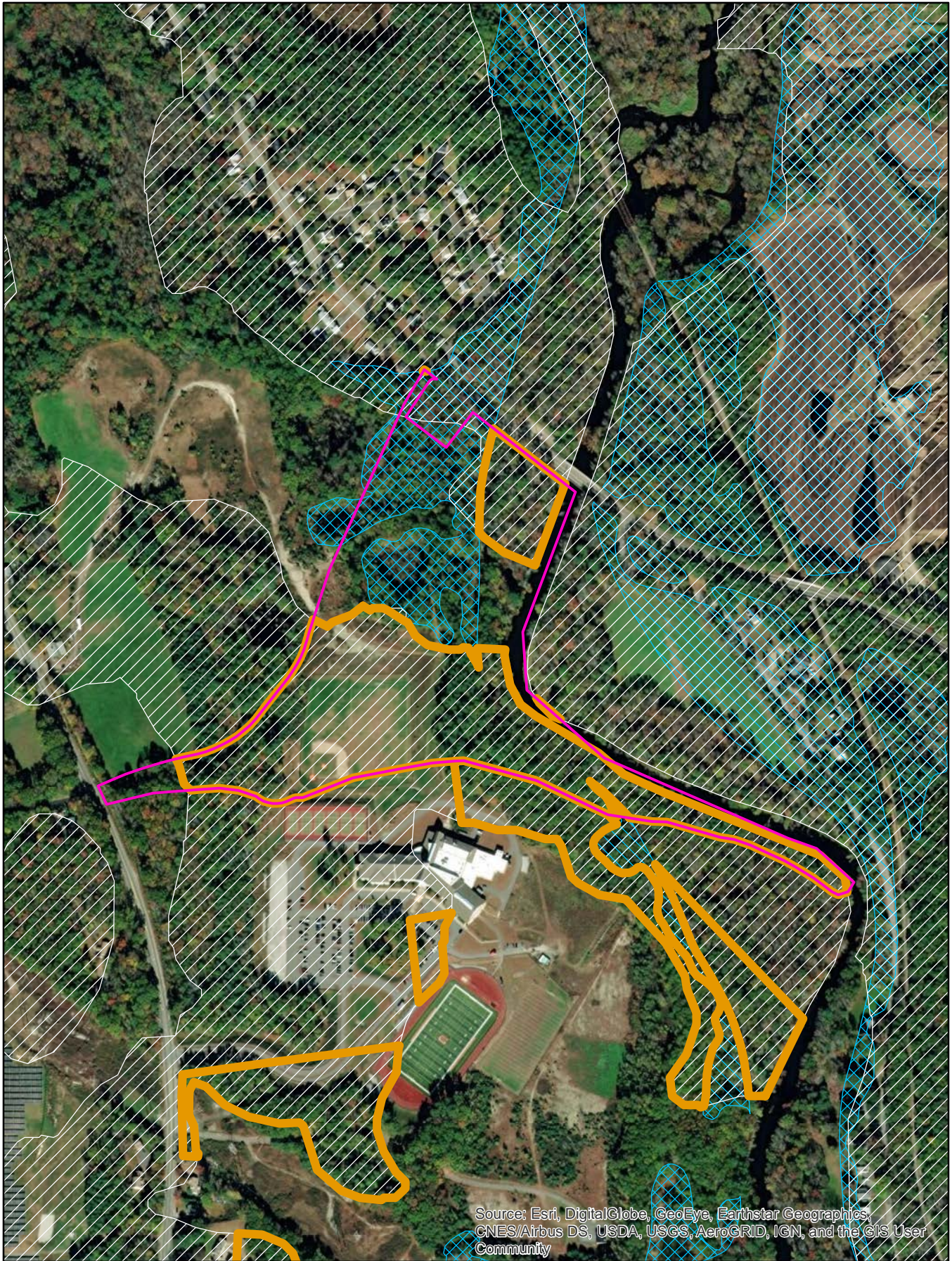
Site Number: 2



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge High School

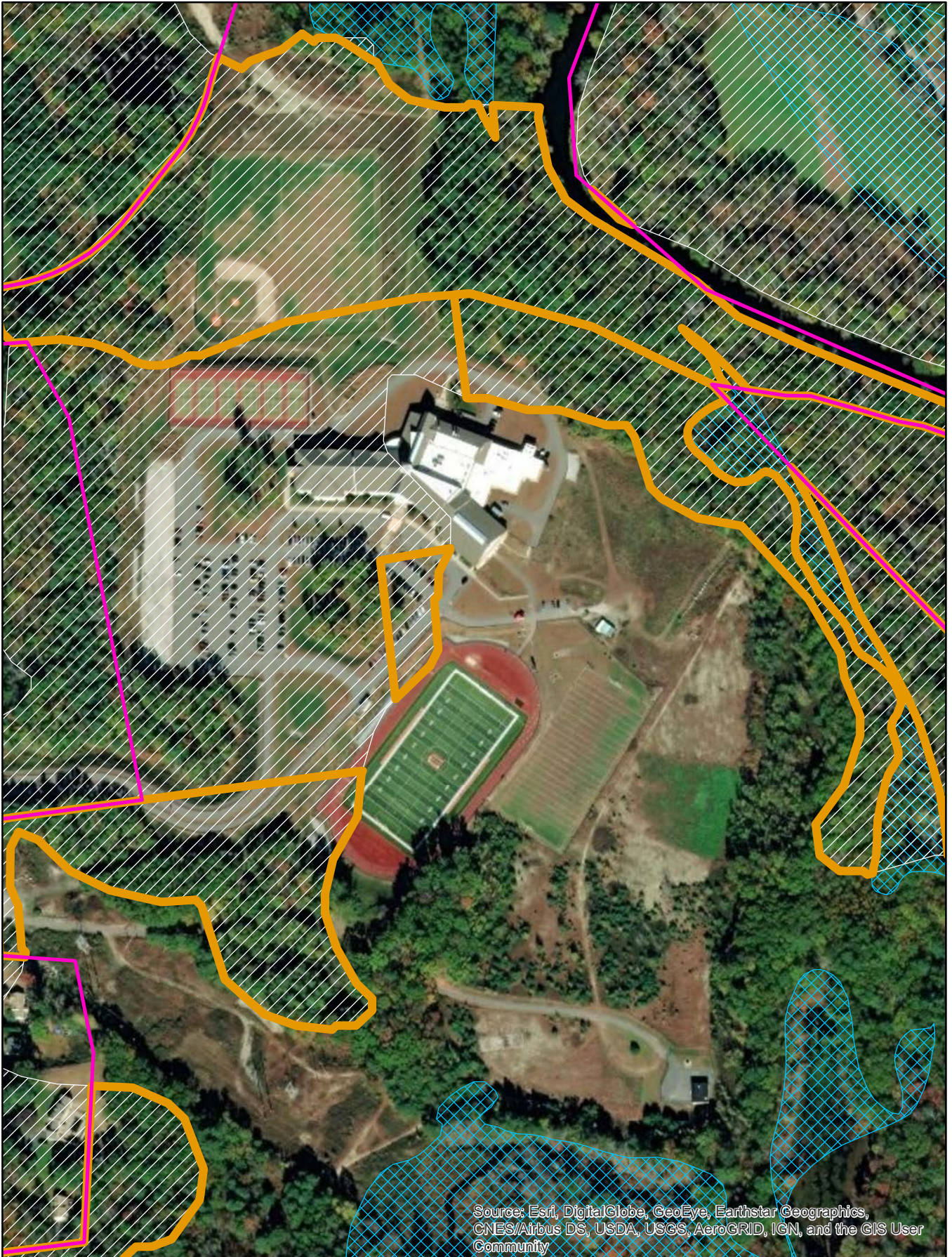
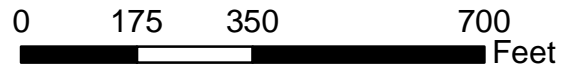
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge High School

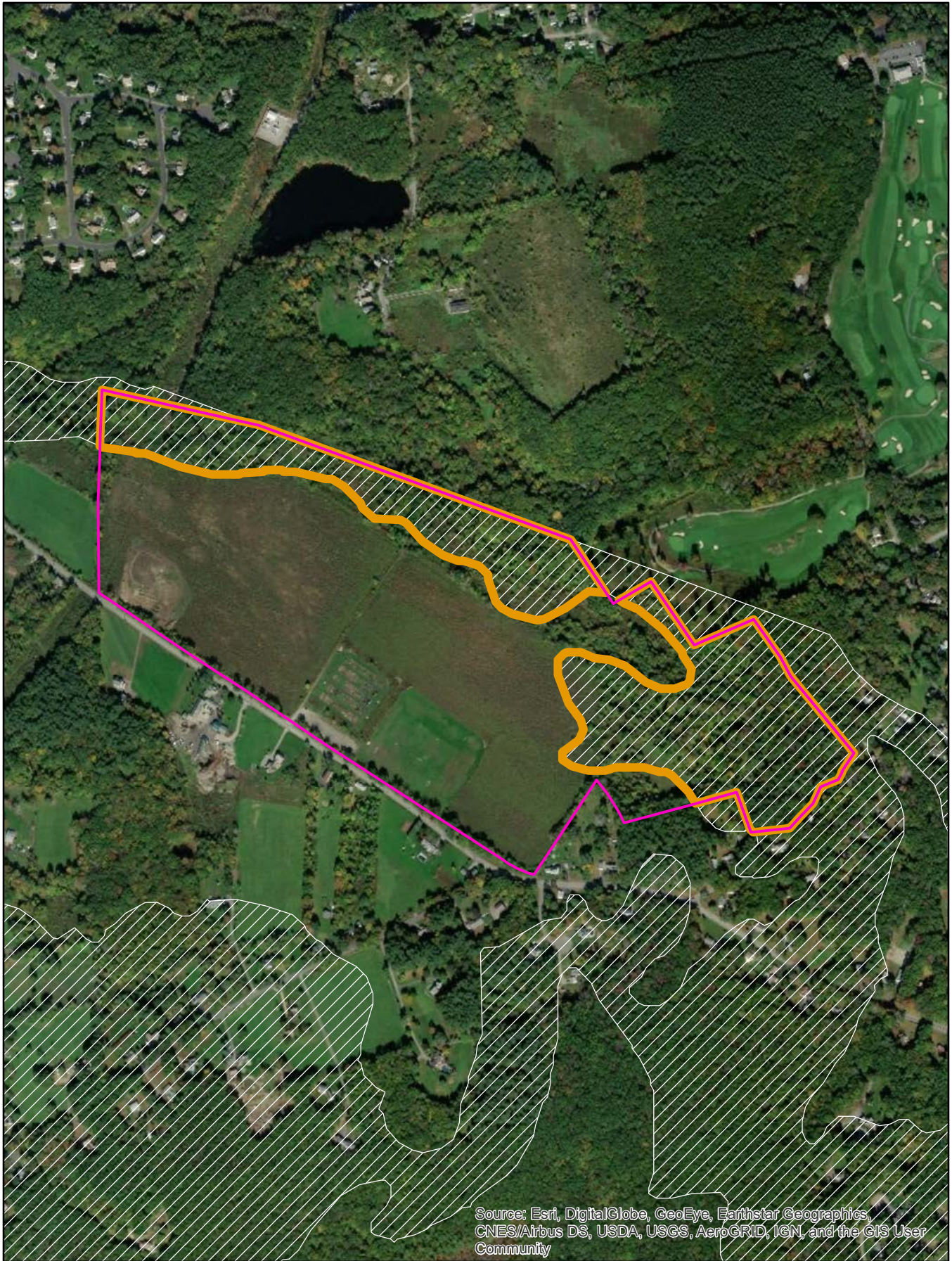
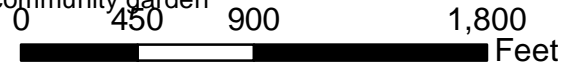
Site Number: 3



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Youth Fields, Uxbridge Dog Park, and community garden

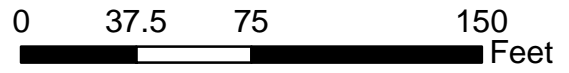
Site Number: 4



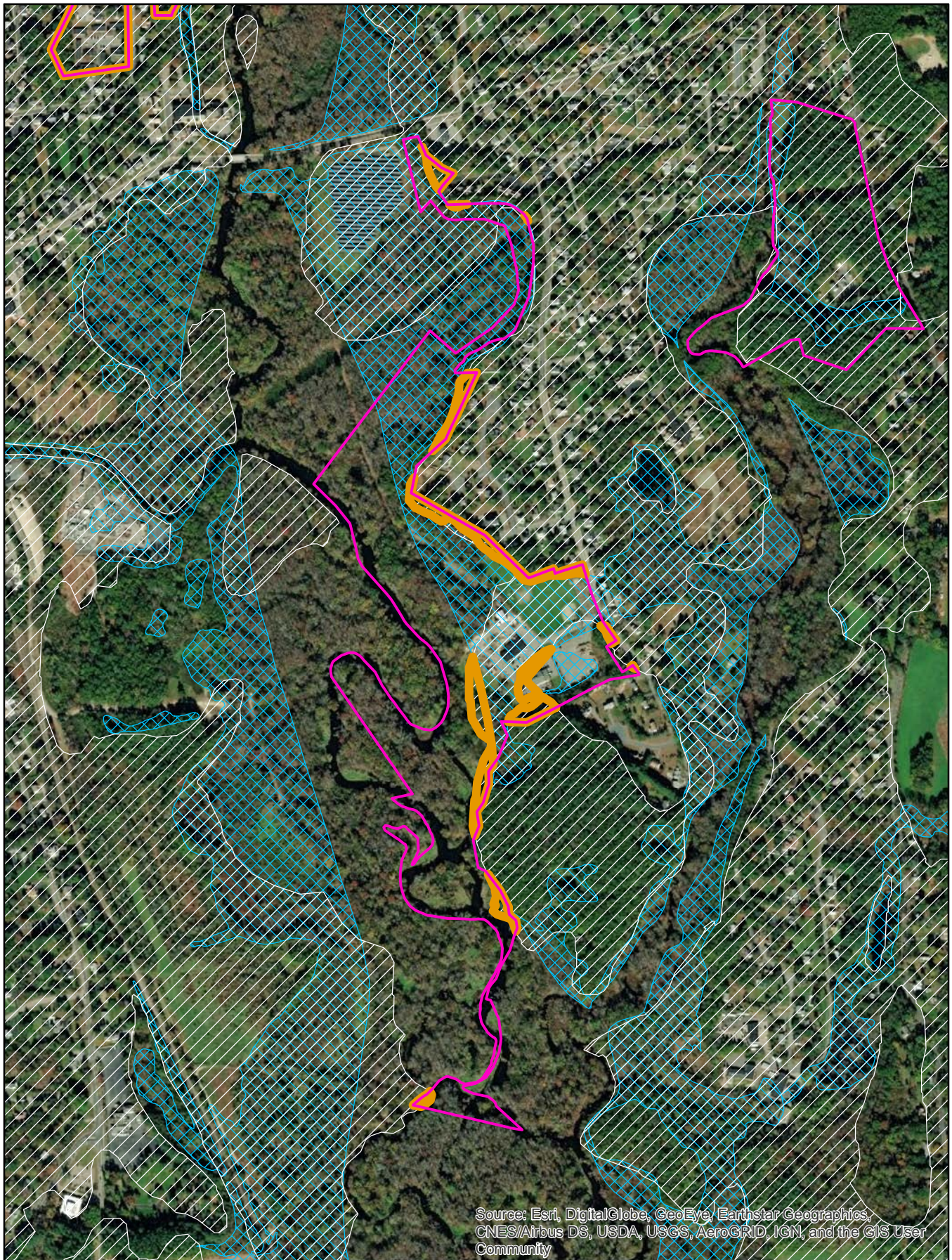
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Possible Pocket Park

Site Number: 5



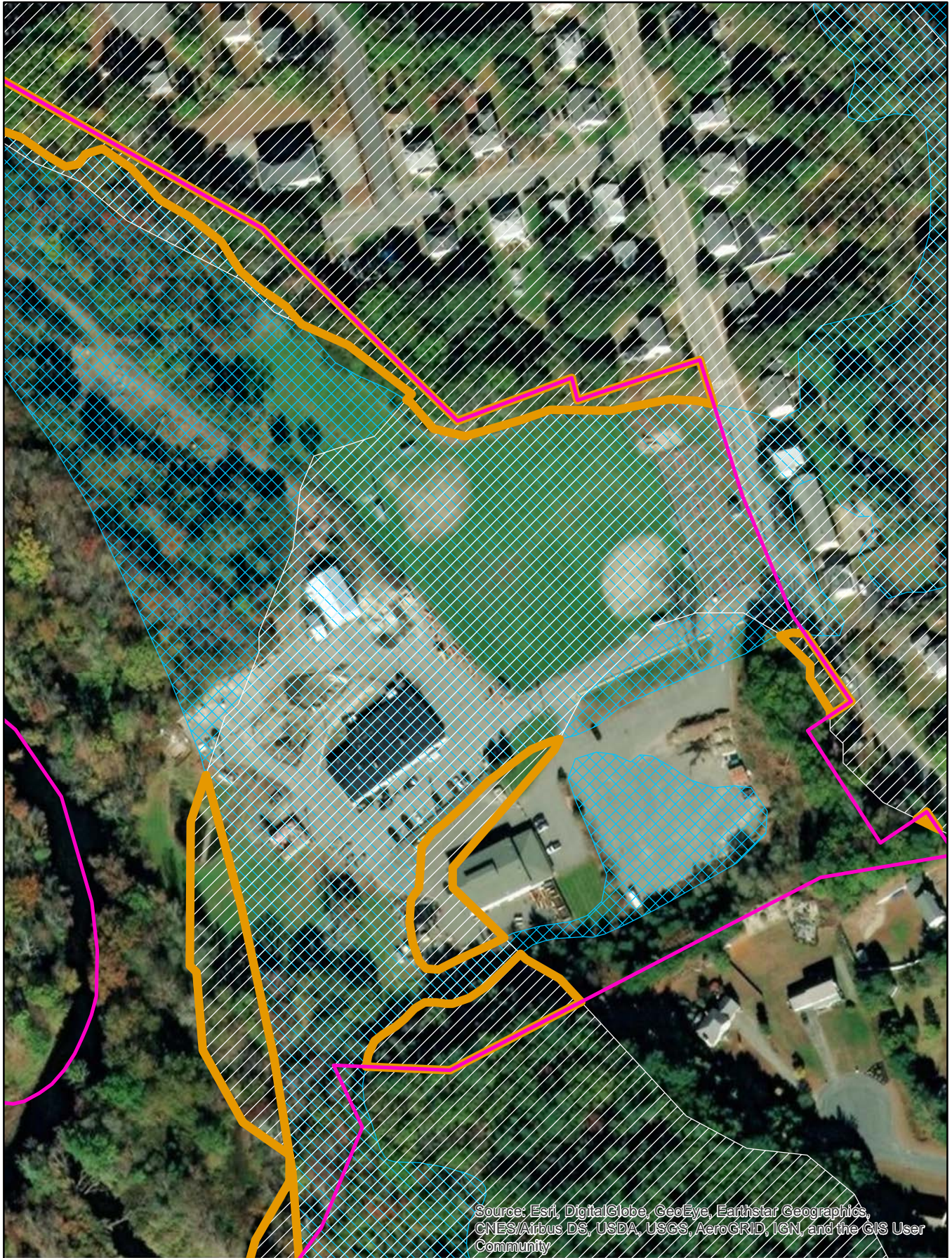
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Dalfonso Park/Public Works Facility

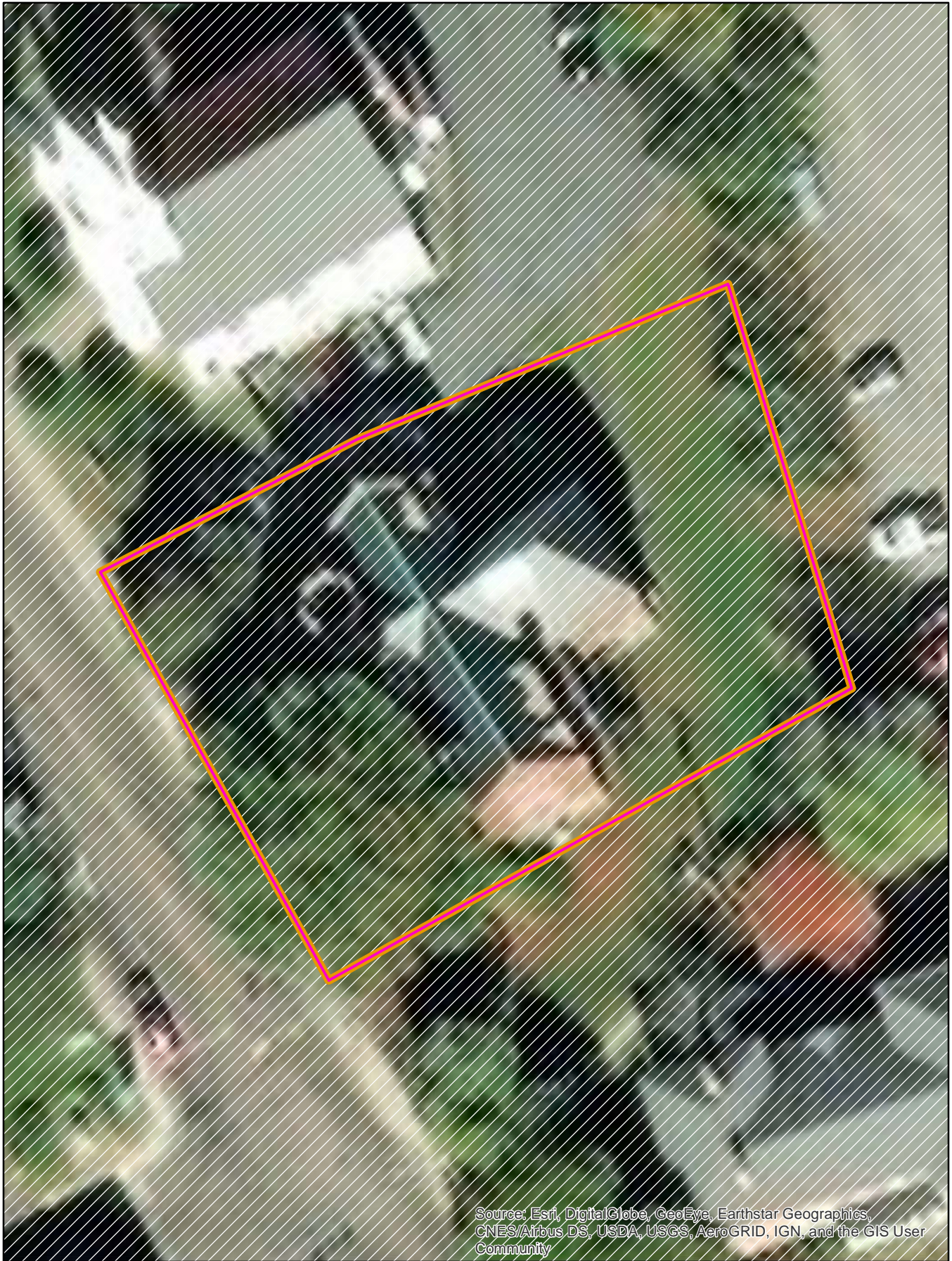
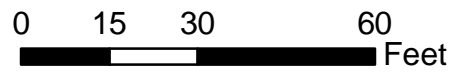
Site Number: 6/7



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Town Library

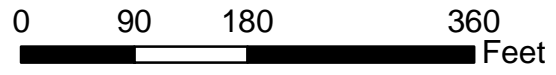
Site Number: 8



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Housing Authority

Site Number: 9

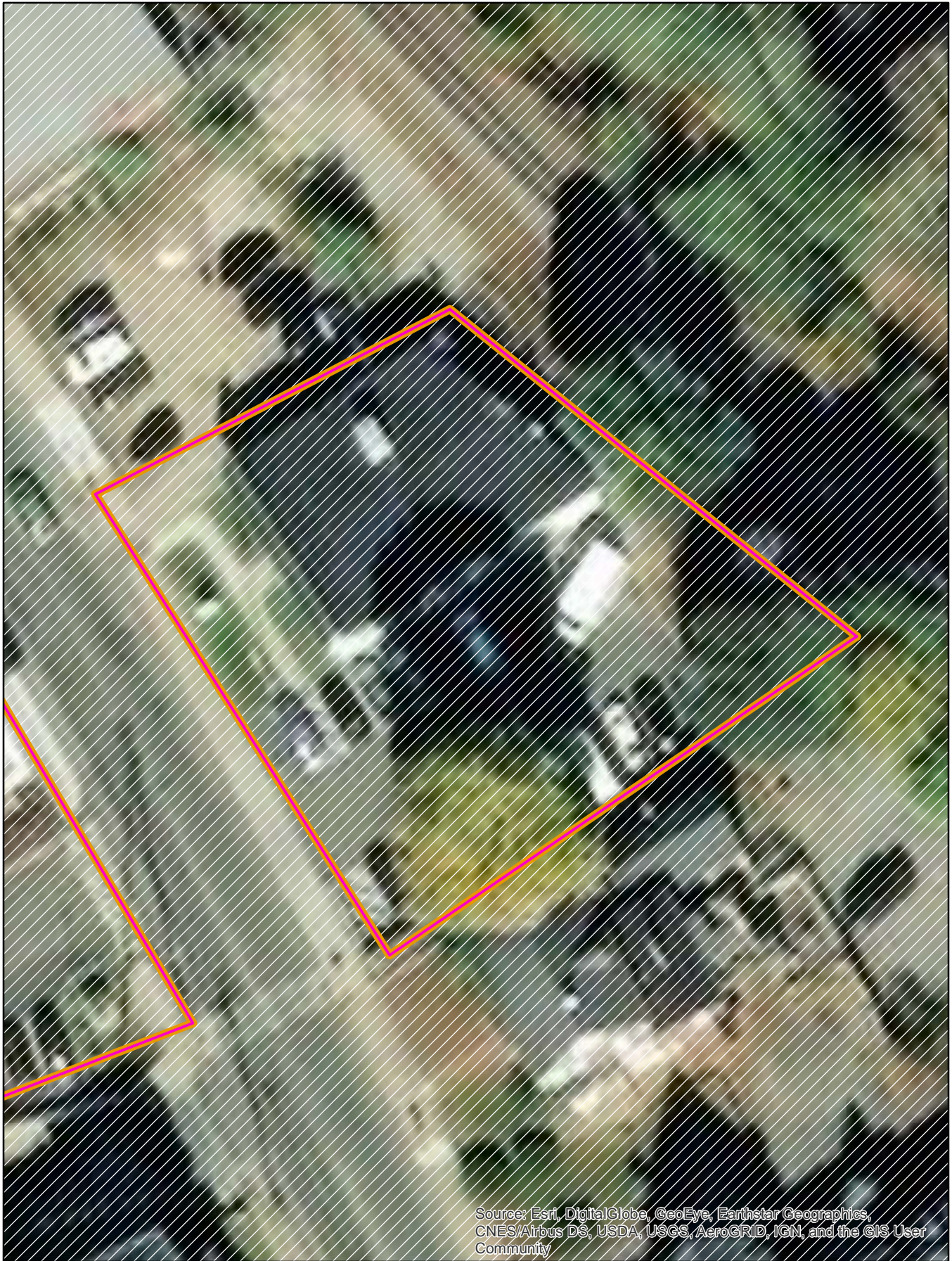
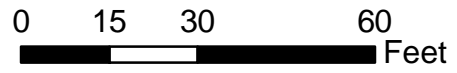


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Site Name: Uxbridge Senior Center

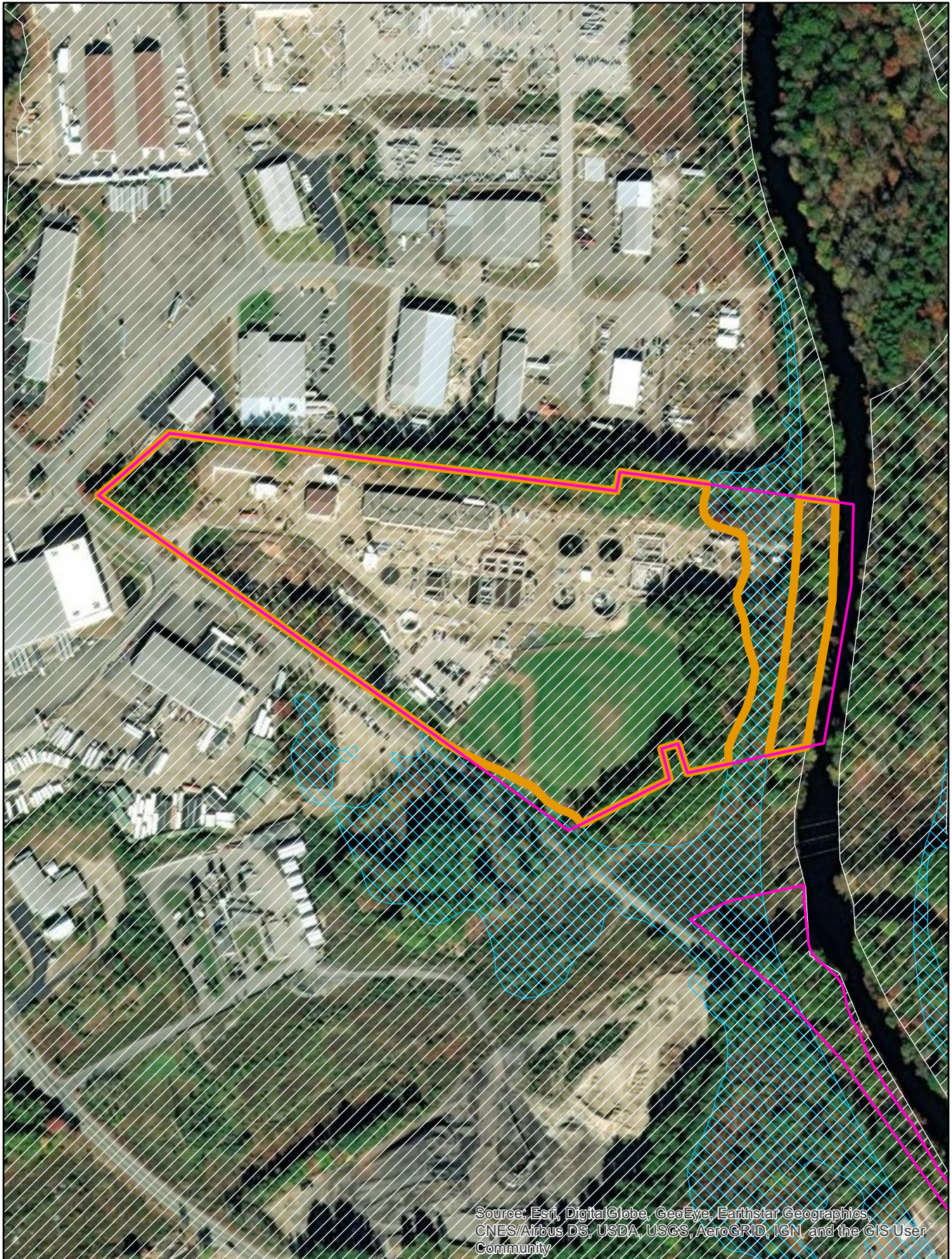
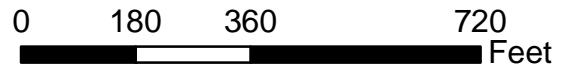
Site Number: 11



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Wastewater treatment facility

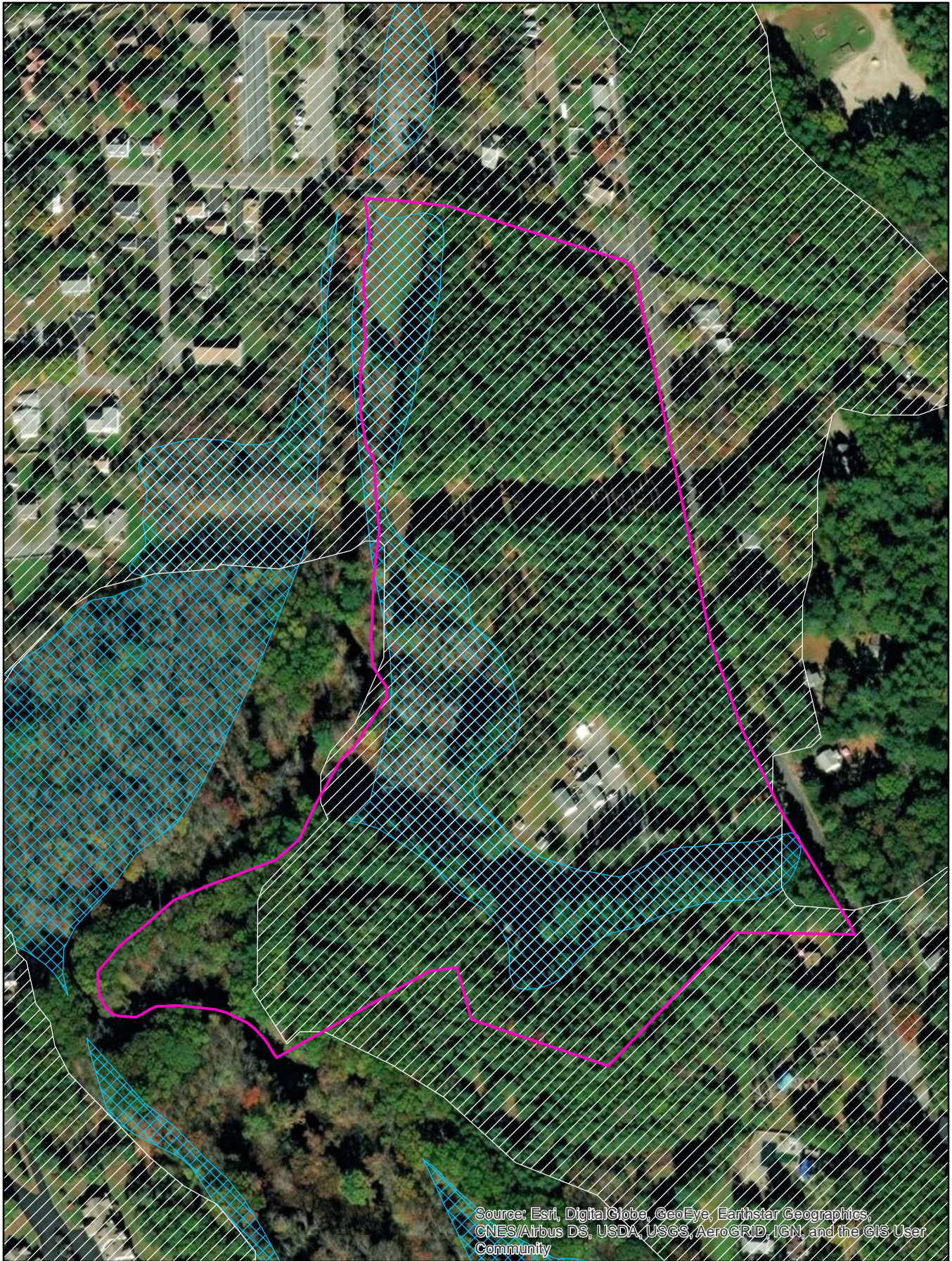
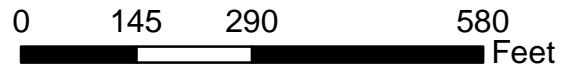
Site Number: 12



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Public Works Buildings

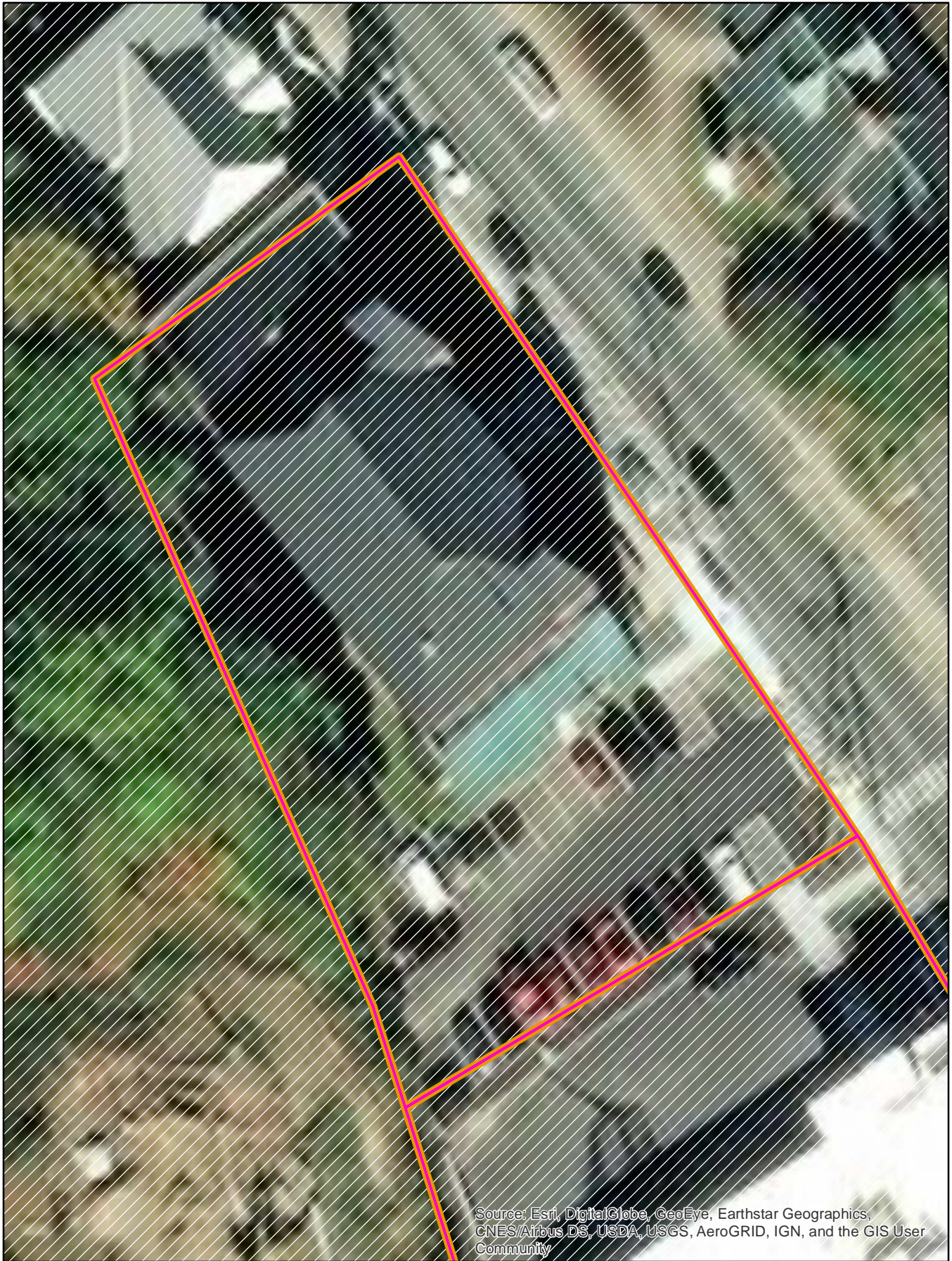
Site Number: 13



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Town Hall & Fire Station - 21 S. Main Street

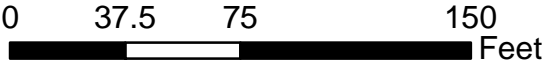
Site Number: 14



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Fire Station - 313 N. Main St.

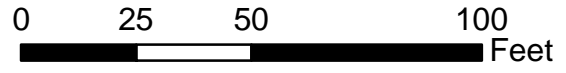
Site Number: 15



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Fire Department - 31 S. Main Street

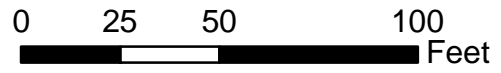
Site Number: 16



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: UFD STA 3 - 222 Aldrich Street

Site Number: 17



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Water Tower

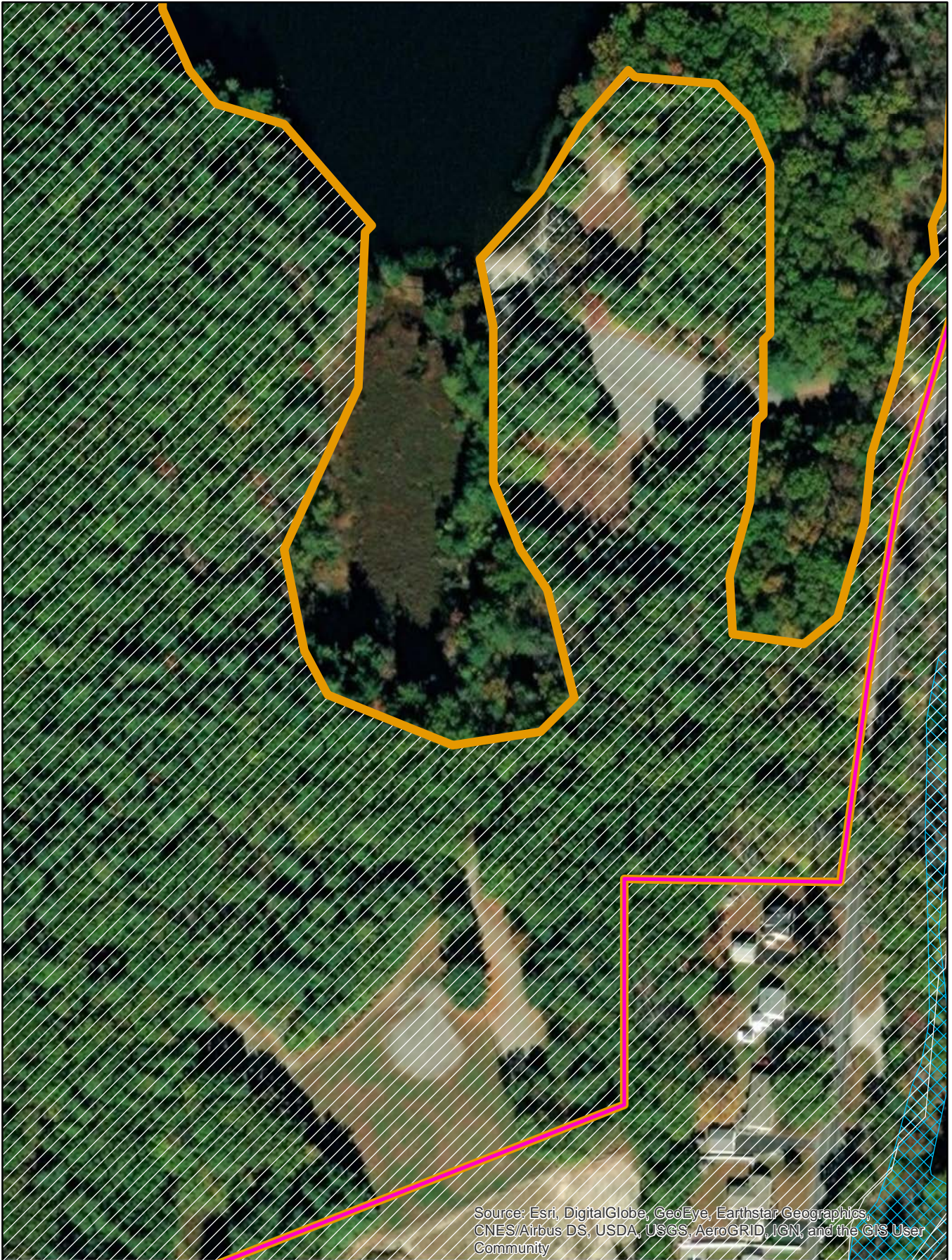
Site Number: 18



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Pout Pond

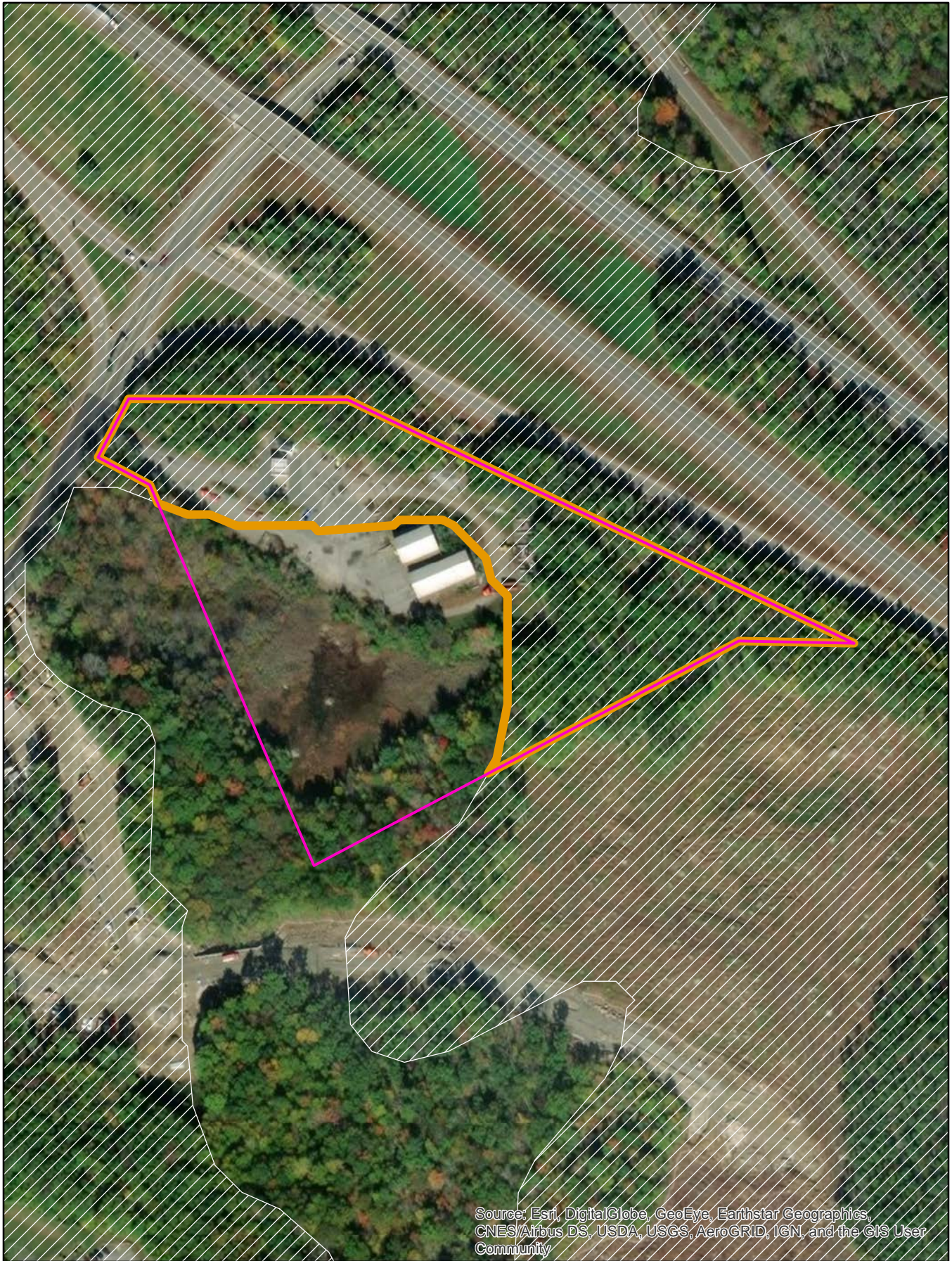
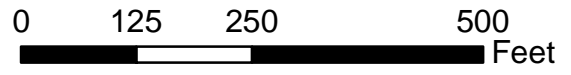
Site Number: 19



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Mass. Highway Maintenance Facility

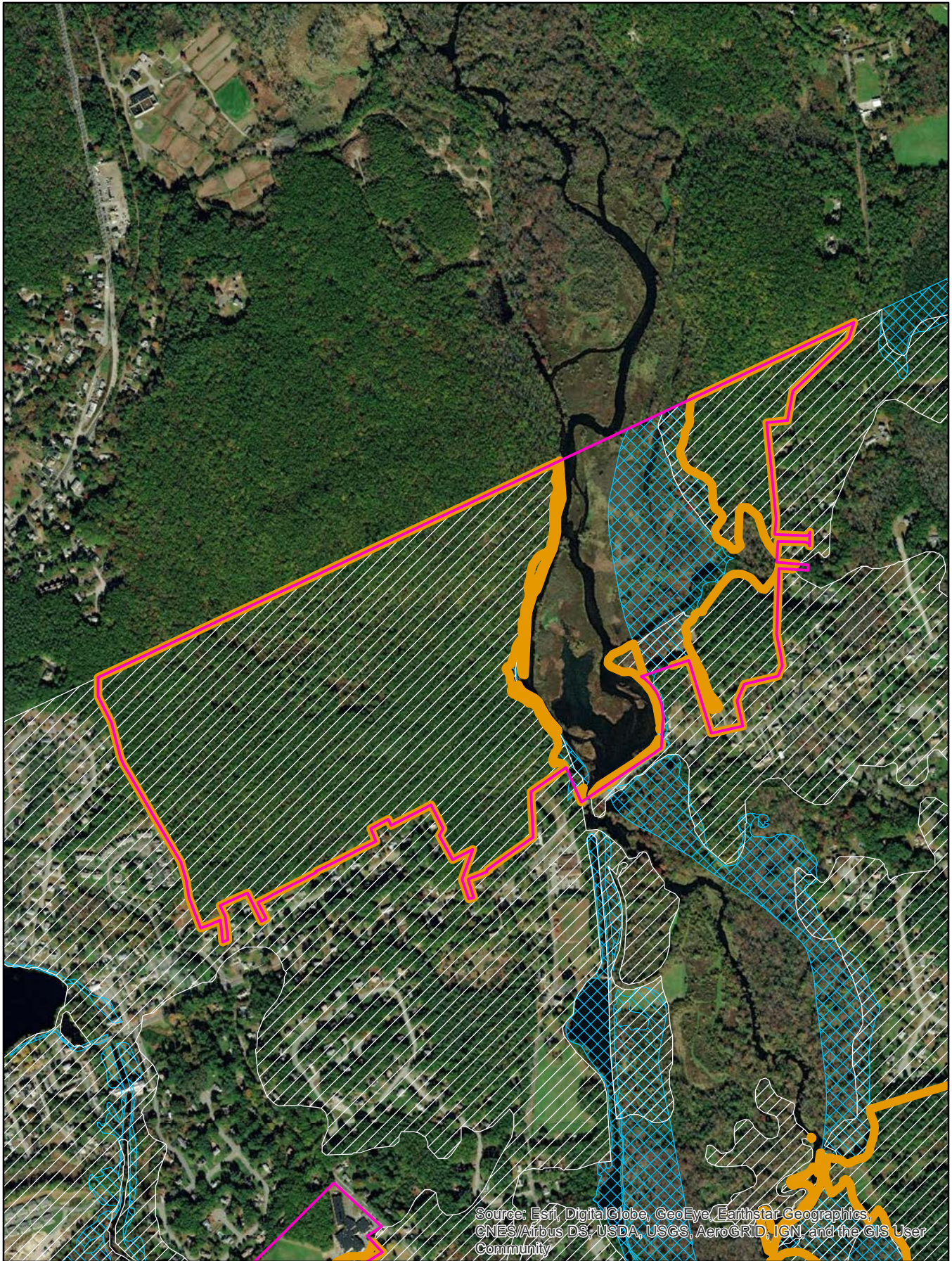
Site Number: 21



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: State-owned parcel near Rice City Pond

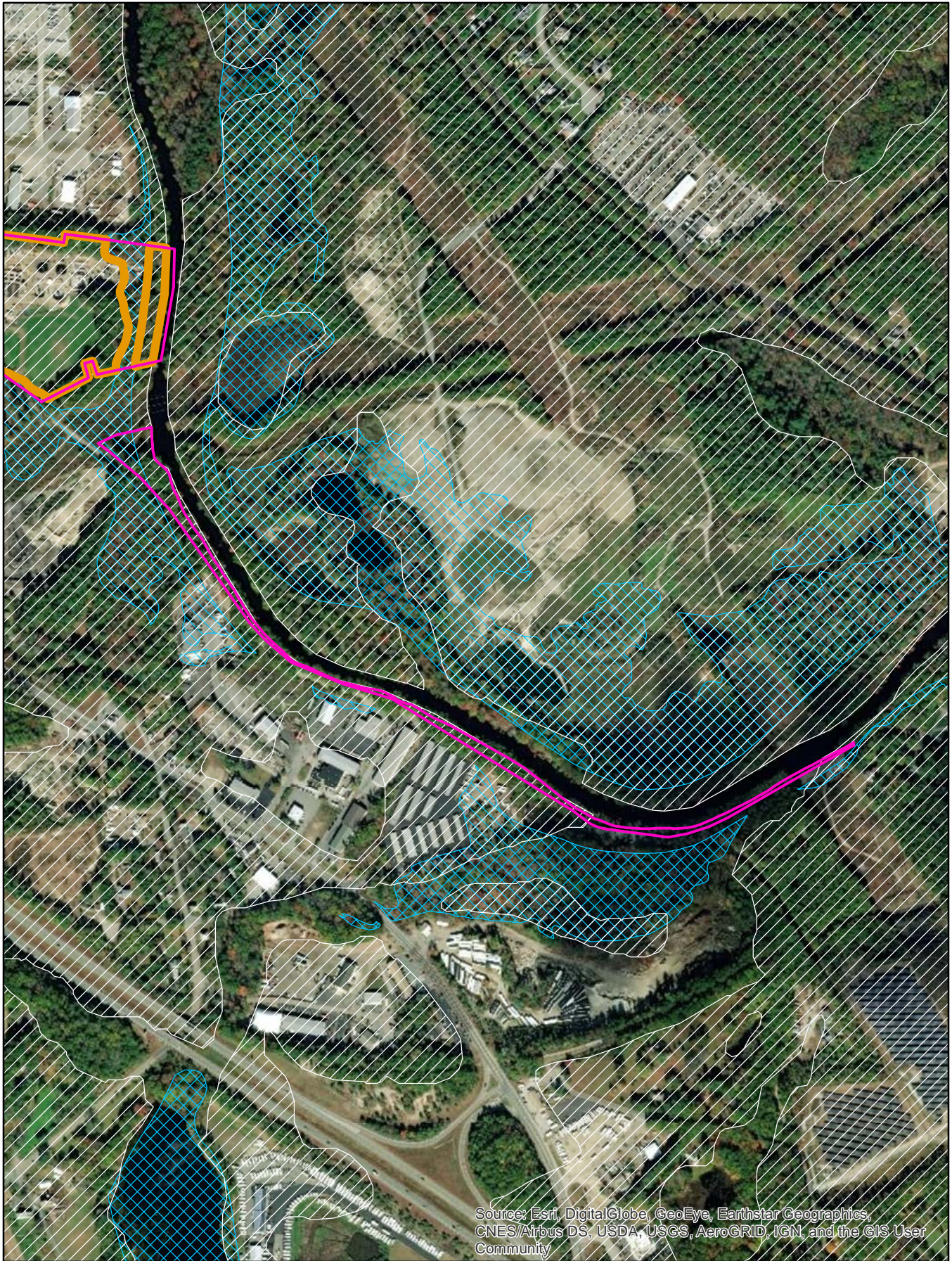
Site Number: 22



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: River Road Corridor near Blackstone River

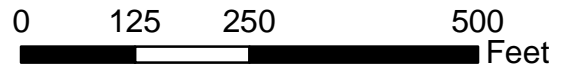
Site Number: 23



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Whitin Elementary School

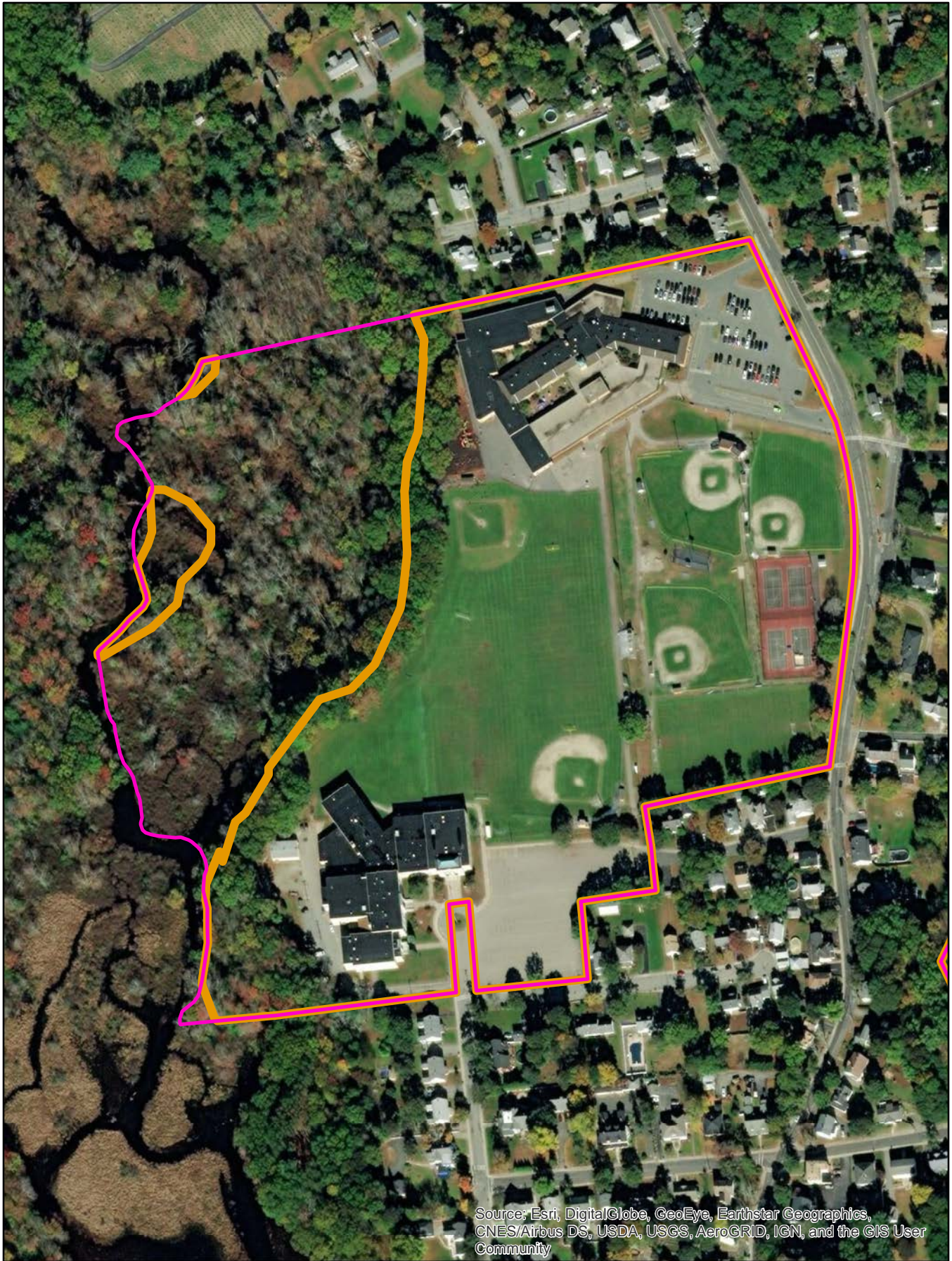
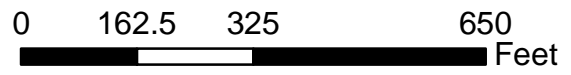
Site Number: 1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Taft Elementary School

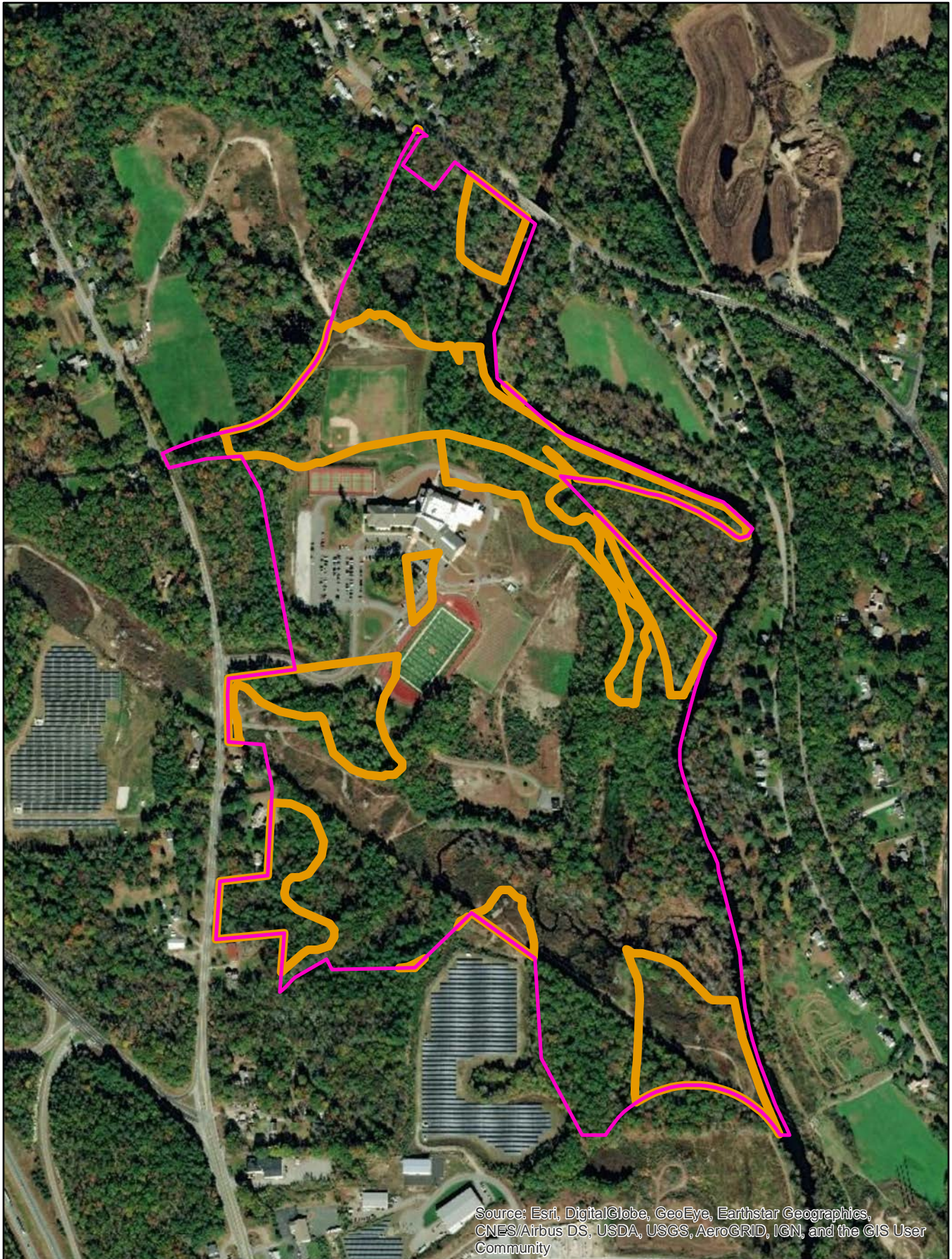
Site Number: 2



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge High School

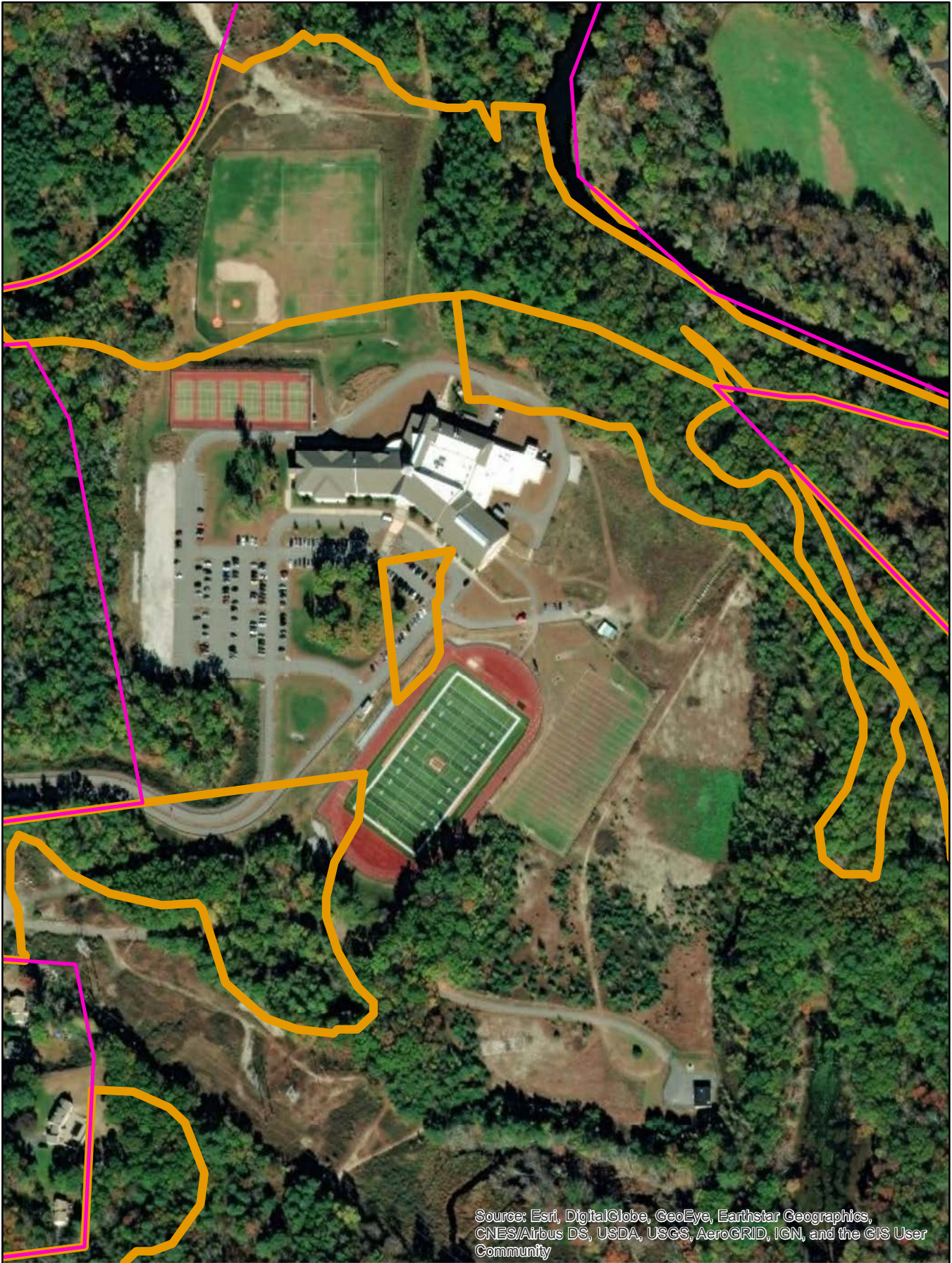
Site Number: 3



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

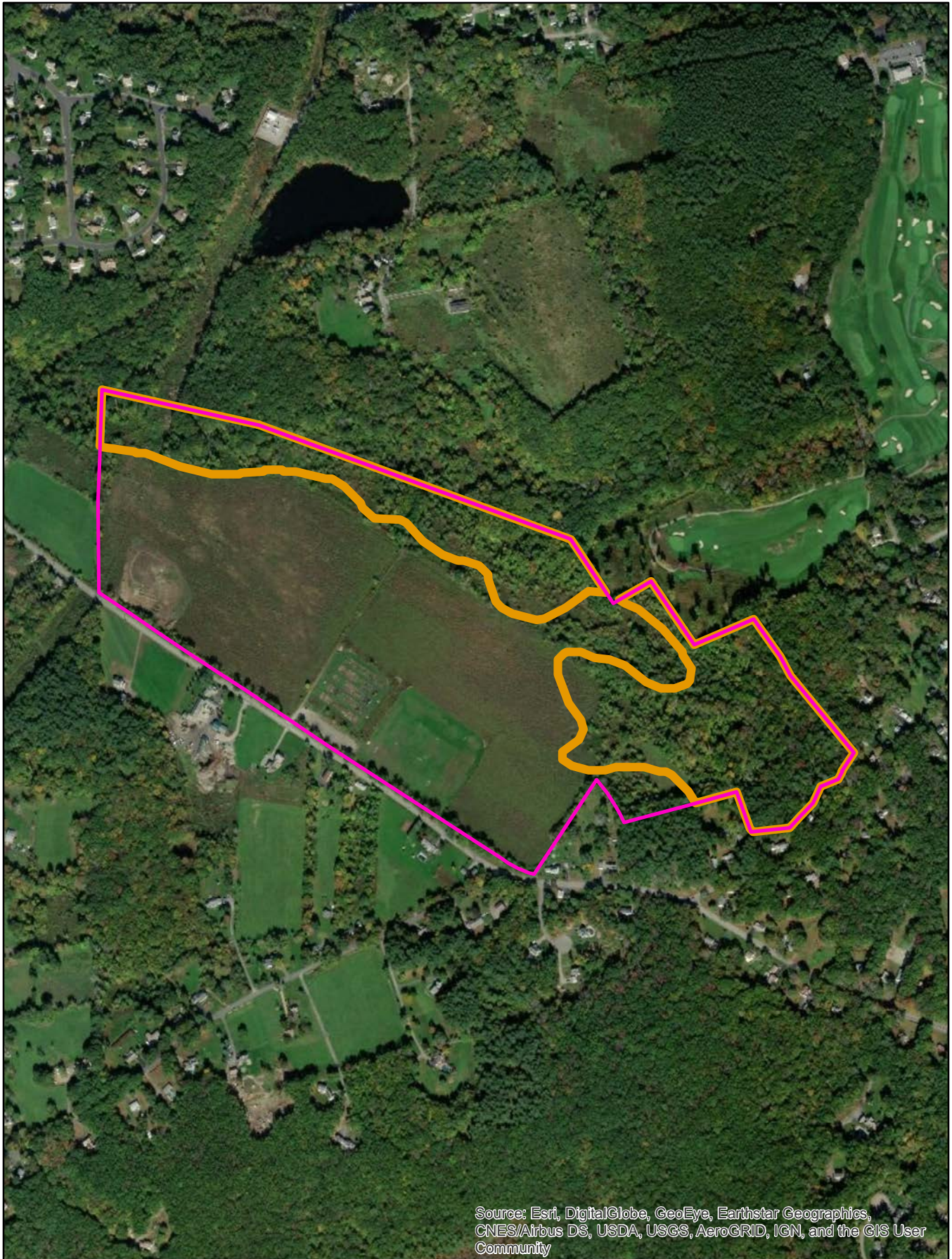
Site Name: Uxbridge High School

Site Number: 3



Site Name: Youth Fields, Dog Park, community garden

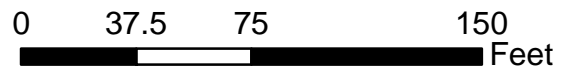
Site Number: 4



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Possible pocket park

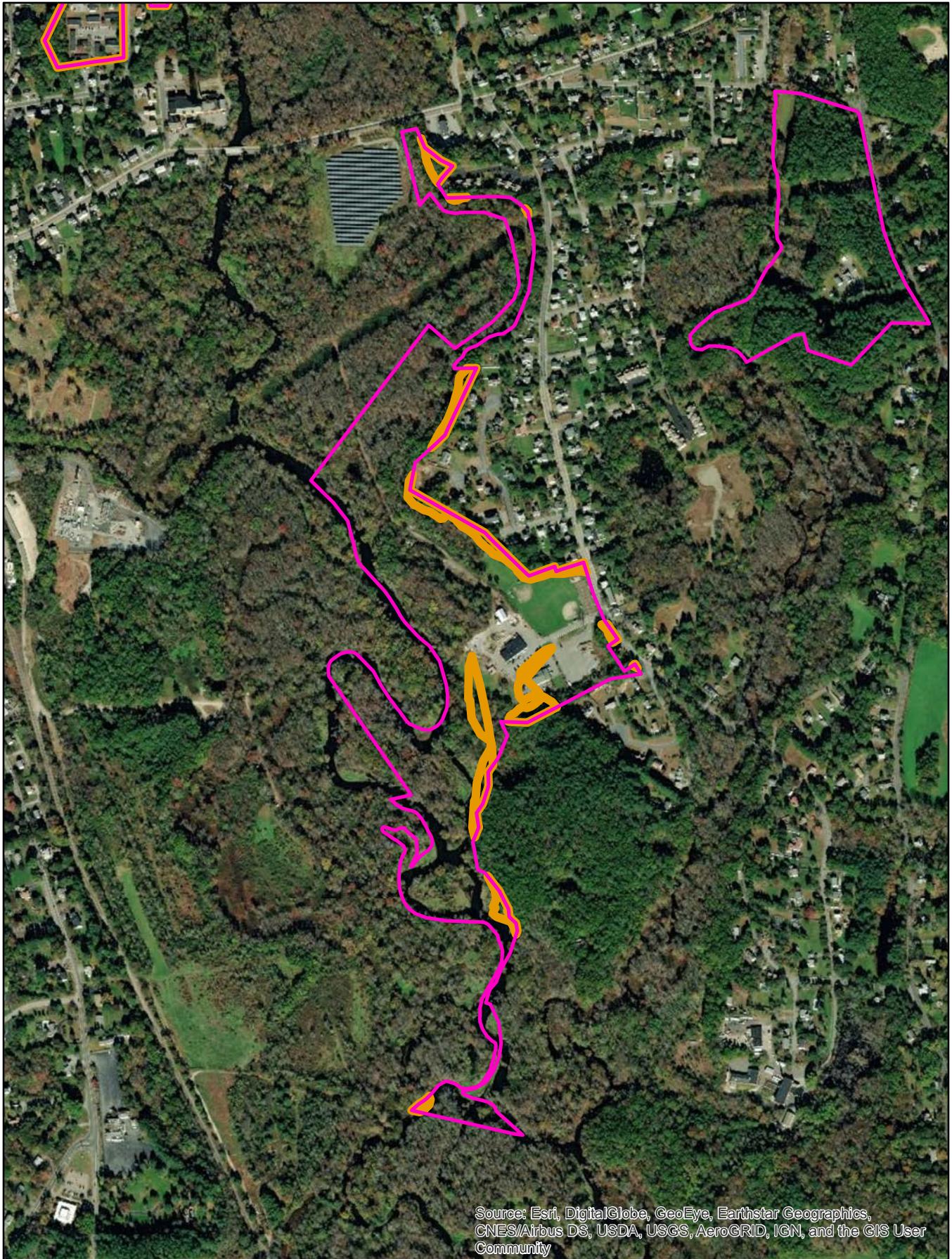
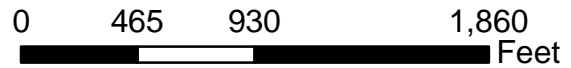
Site Number: 5



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Dalfonso Park/Public Works Facility

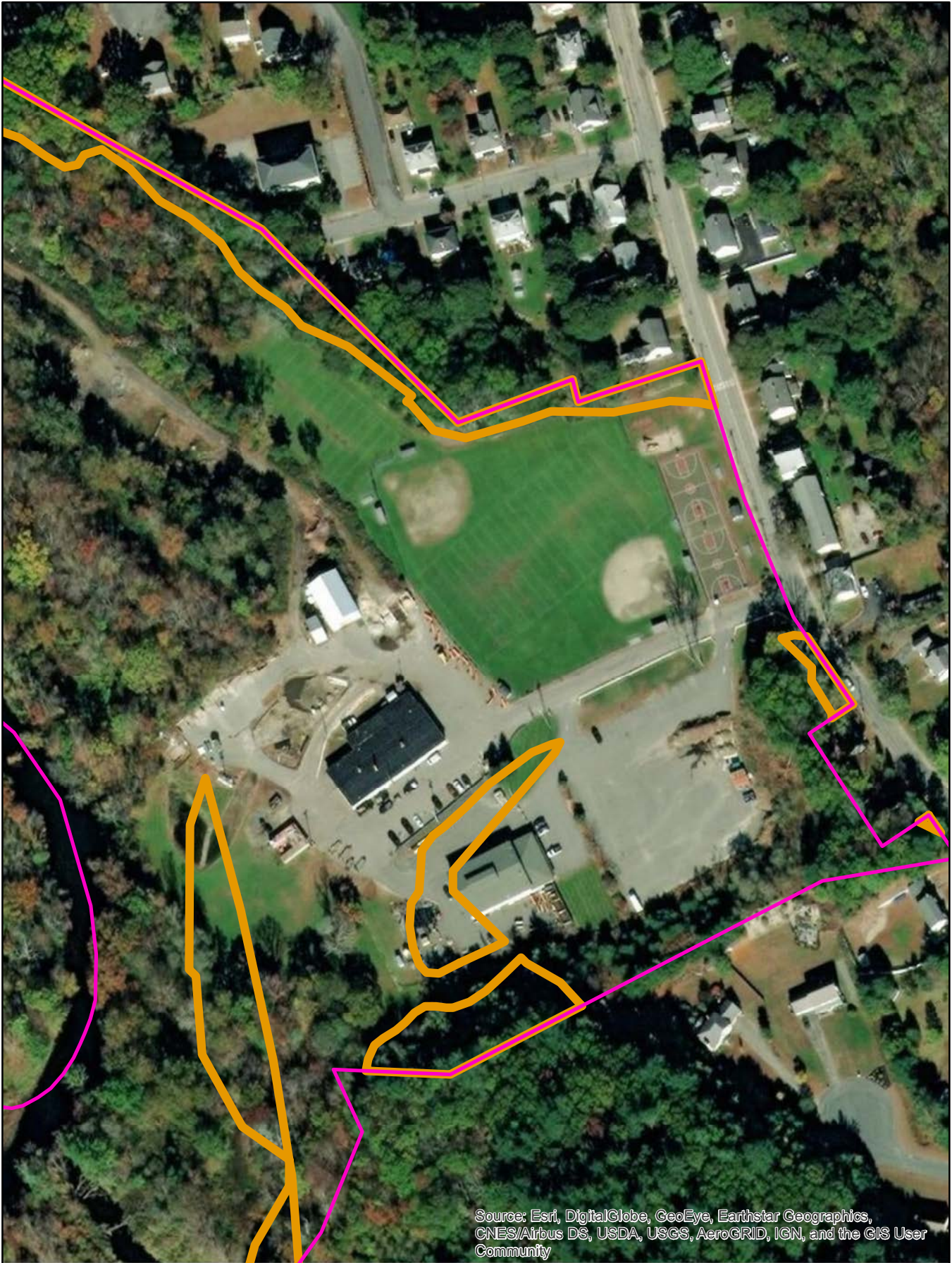
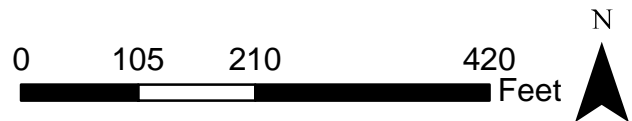
Site Number: 6/7



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Dalfonso Park/Public Works Facility

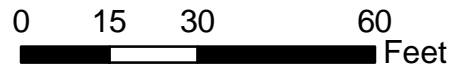
Site Number: 6/7



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Town Library

Site Number: 8



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Housing Authority

Site Number: 9



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Town Police Department

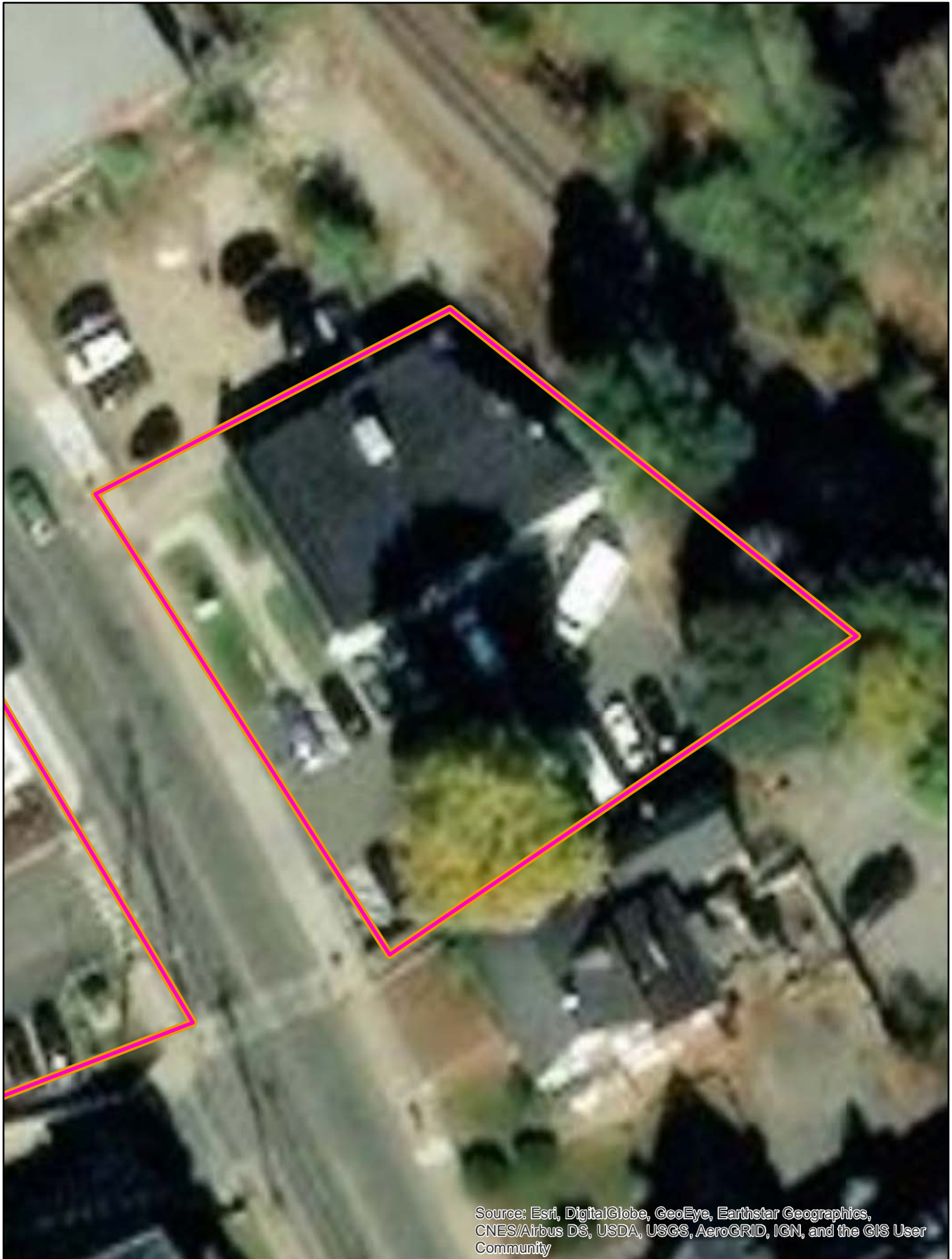
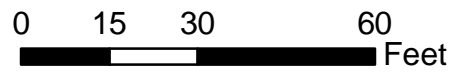
Site Number: 10



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Senior Center

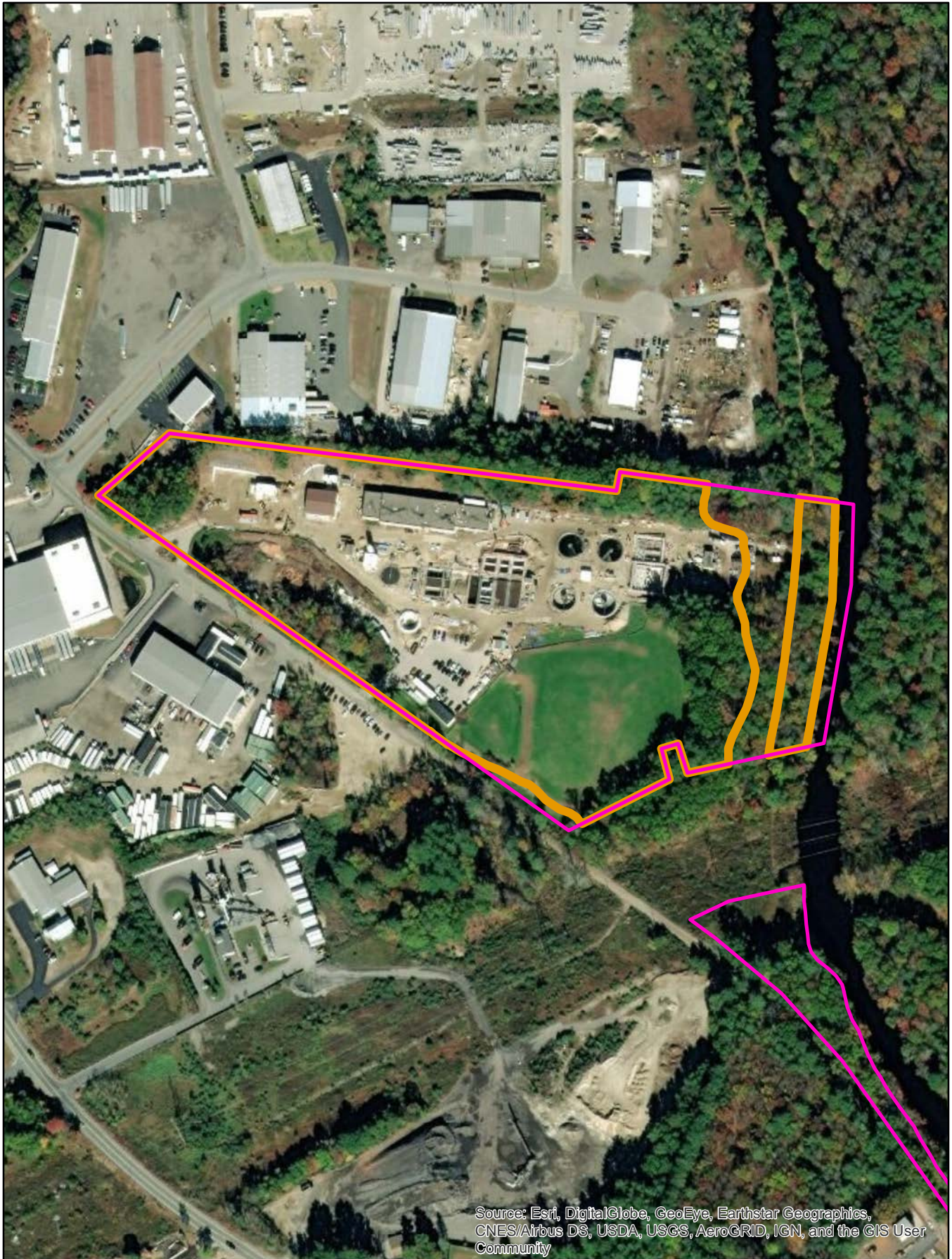
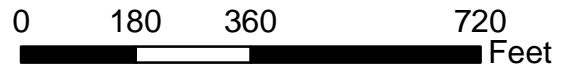
Site Number: 11



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Wastewater treatment facility

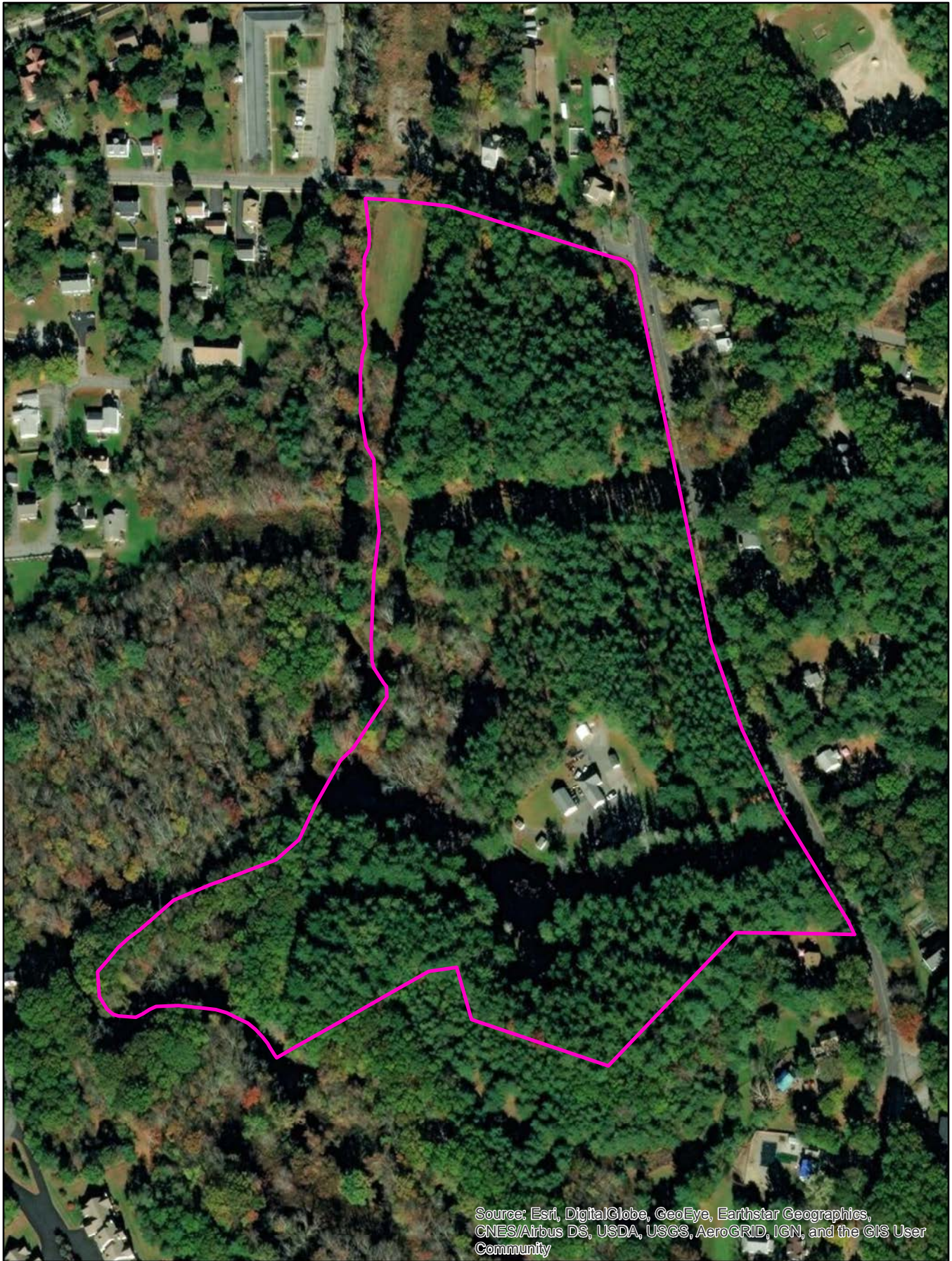
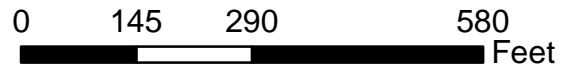
Site Number: 12



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Public Works Buildings

Site Number: 13



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Town Hall & Fire - 21 S. Main Street

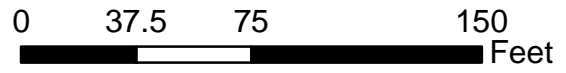
Site Number: 14



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Fire Station - 313 N. Main St.

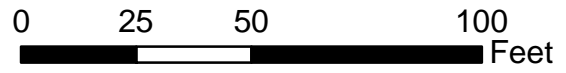
Site Number: 15



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Fire Department - 31 S. Main Street

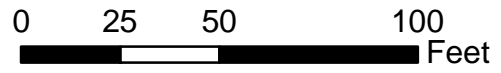
Site Number: 16



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: UFD STA 3 - 222 Aldrich Street

Site Number: 17



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Water Tower

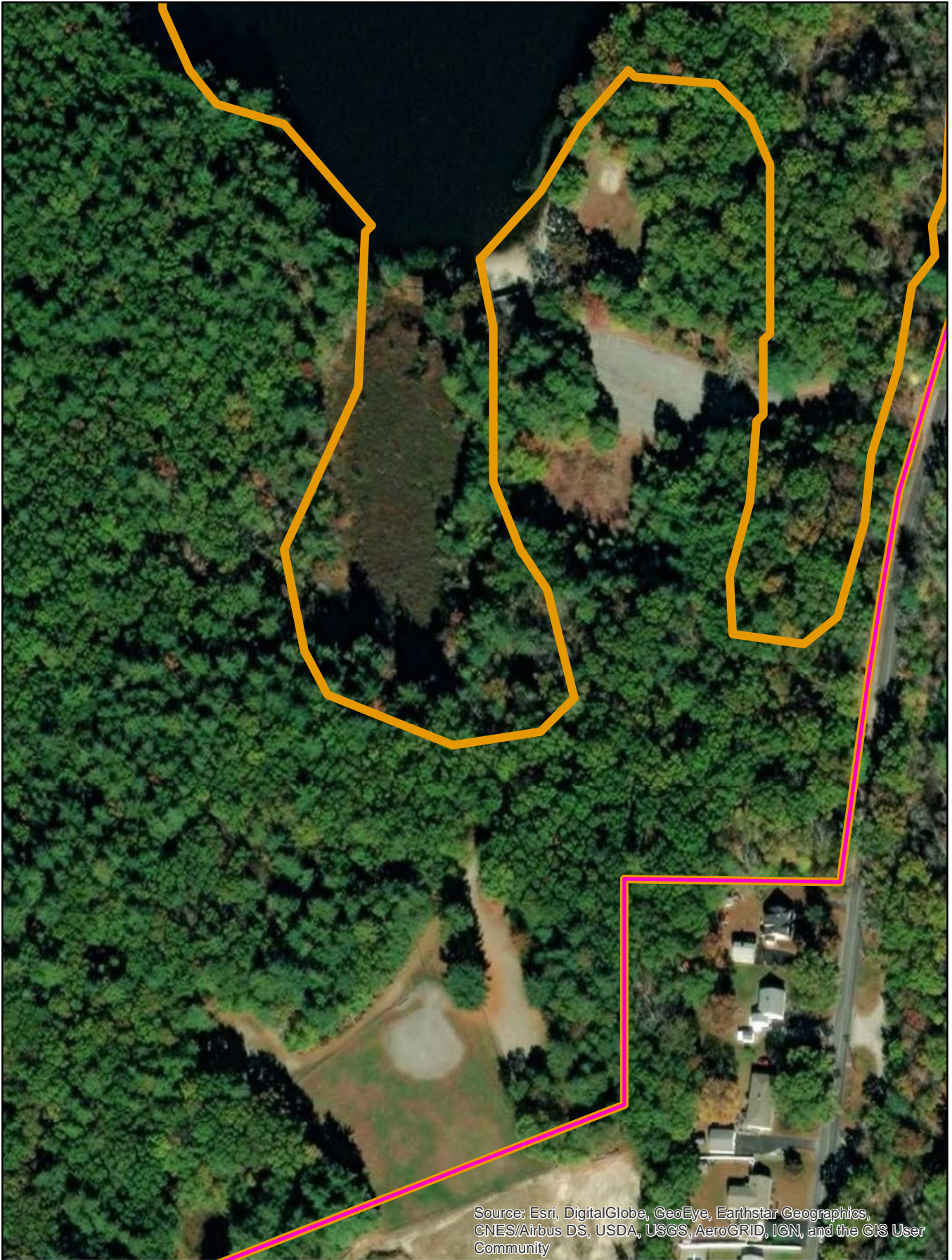
Site Number: 18



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Pout Pond

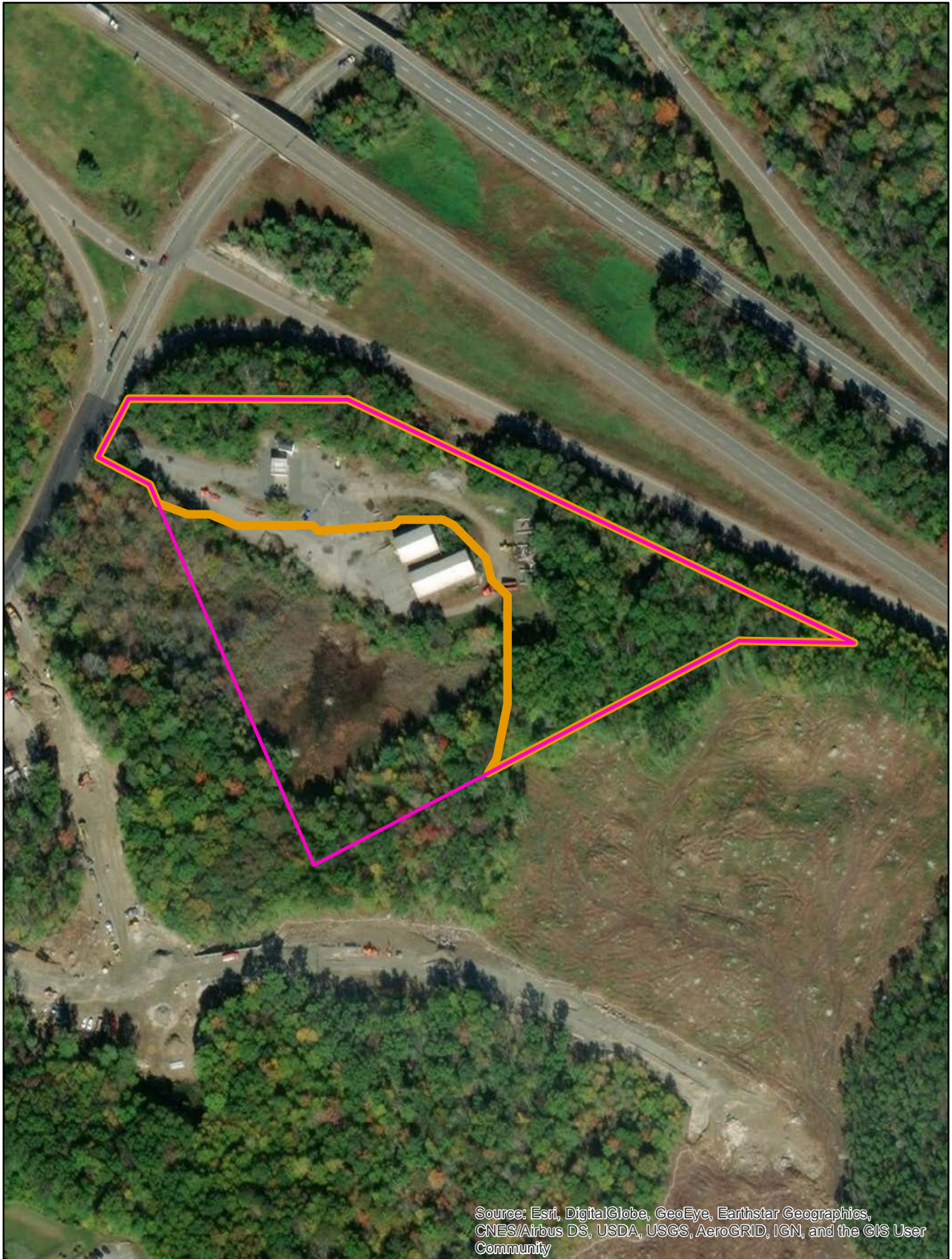
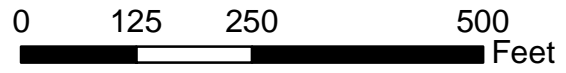
Site Number: 19



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Mass. Highway Maintenance Facility

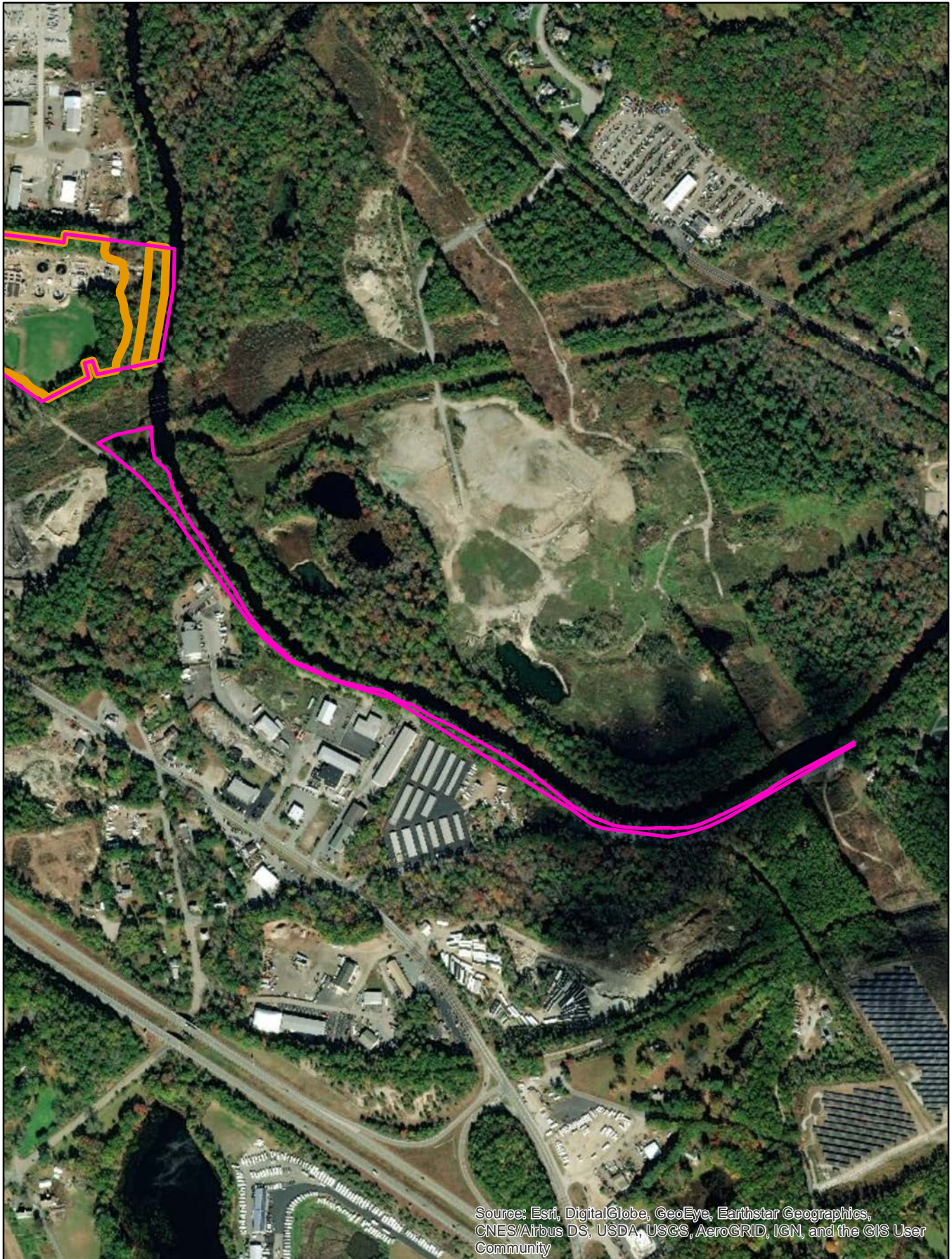
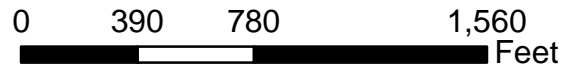
Site Number: 21



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: River Road Corridor near Blackstone River

Site Number: 23



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Attachment B

Field Sheets

8:30 - 9:30 AM

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>1-Whitin</u>	
DATE: <u>8/16/19</u>		ASSESSED BY: <u>JBL/ST</u>		CAMERA ID: <u>4</u>	
GPS ID:		LMK ID:		LONG:	
SITE DESCRIPTION					
Name: <u>Whitin Intermediary School</u>					
Address: <u>120 Granite St., Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond			<input type="checkbox"/> Hotspot Operation		
<input type="checkbox"/> Below Outfall			<input type="checkbox"/> Small Parking Lot		
<input type="checkbox"/> In Road ROW			<input type="checkbox"/> Individual Street		
<input type="checkbox"/> Other: <u>multiple locations - see notes</u>			<input type="checkbox"/> Underground		
<input type="checkbox"/> Above Roadway Culvert			<input checked="" type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> In Conveyance System			<input type="checkbox"/> Small Impervious Area		
<input checked="" type="checkbox"/> Near Large Parking Lot			<input type="checkbox"/> Landscape / Hardscape		
			<input type="checkbox"/> Other: <u>various locations - see notes</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
Impervious Area ≈ _____			<input checked="" type="checkbox"/> Institutional - <u>school owned</u>		
Notes: <u>MA</u>			<input type="checkbox"/> SFH (< 1 ac lots)		
			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input checked="" type="checkbox"/> Undeveloped <u>forested</u>		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>- moisture in building</u>					
<u>- drainage issues near back of school near basketball court + along pathway at side of building - runs down basketball court side of hill</u>					
Existing Head Available and Points Where Measured:					
<u>MA</u>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input checked="" type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other: <u>Drainage</u>																												
Retrofit Volume Computations - Target Storage: <p style="text-align: center; font-size: 2em;">N/A</p>	Retrofit Volume Computations - Available Storage: <p style="text-align: center; font-size: 2em;">N/A</p>																											
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input checked="" type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input checked="" type="checkbox"/> Swale <input checked="" type="checkbox"/> Other: <u>green roof</u>																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <p>- Swale along back of building along sidewalk into bioretention basin where temporary dumpster is next to basketball court w/ overflow to existing catch basin</p> <p>- potential underground infil/porous pavement basketball court</p> <p>- different vegetation along slope down from basketball court</p> <p>- potential green roof →</p>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints <u>TBD</u> Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table border="0" style="width: 100%;"> <tr> <td style="width: 10%;">Yes</td> <td style="width: 10%;">Possible</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other: _____</td> </tr> </table>	Yes	Possible		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water																										
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES

- underground roof drainage
 - path along side of school - cutback, erosion
 - issues with roof flooding → rooftop garden?
 - moisture indoors is an issue

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

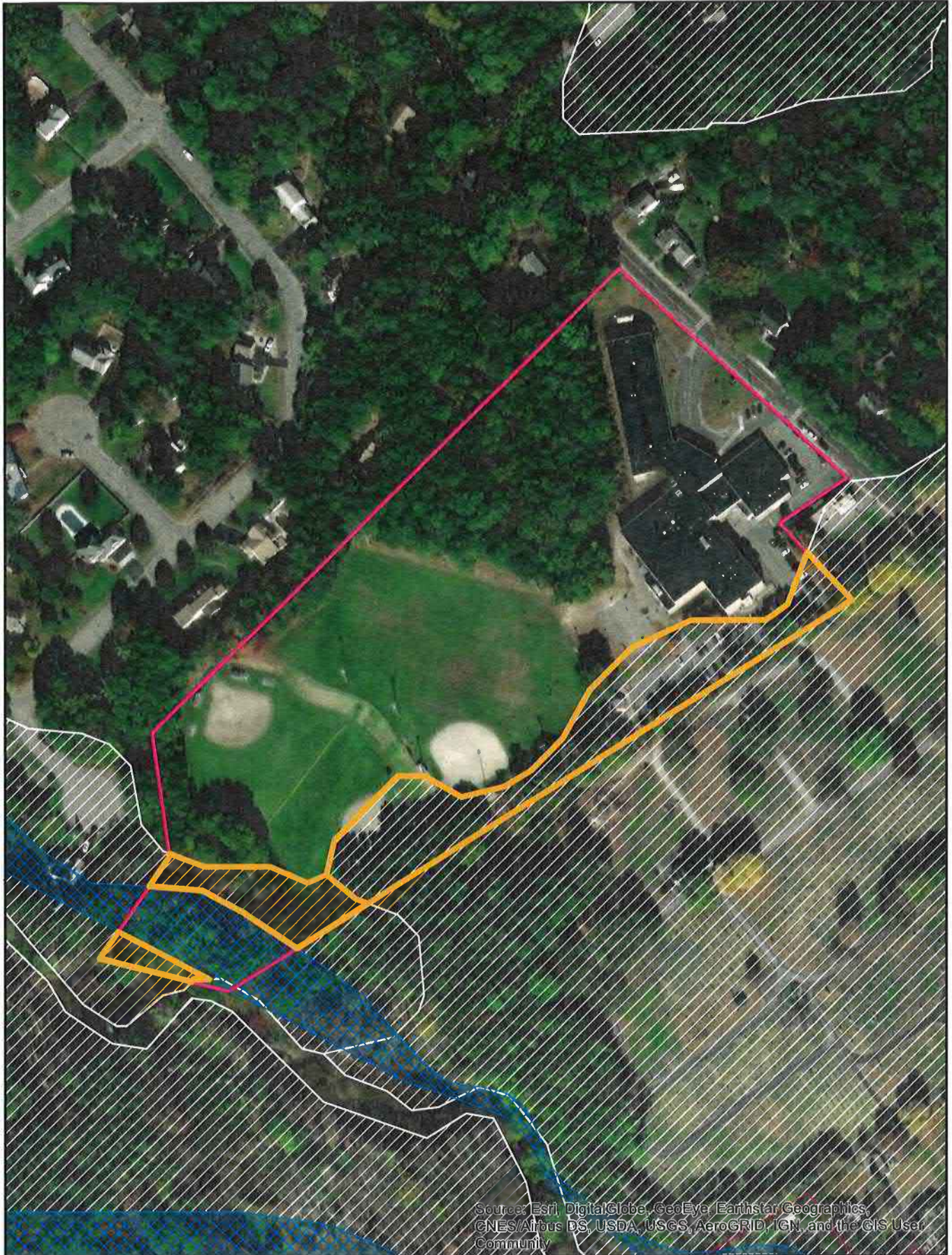
- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
 IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
 IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Whitin Elementary School
Whitin Elementary School
Site Number: 1

0 125 250 500 Feet



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Whitin Elementary School
Whitin Elementary School
Site Number: 1

way to dress up front of schools
short wall

0 125 250 500 Feet



moisture issues in school



Potential bluestone!
e.g.

floodings
region

could use it
205 more
spaces

drainage - raised by rain

green roof
- new roof needed.
- better insulation
needed

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Roof drainage all under H₂O



9:35-10:30

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>2</u>	
DATE: <u>8/16/19</u>	ASSESSED BY: <u>JB/SH</u>	CAMERA ID: <u>4</u>		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	

SITE DESCRIPTION

Name: Taft Early Education center
 Address: 116 Granite St., Uxbridge, MA

Ownership: Public Private Unknown
 If Public, Government Jurisdiction: Local State DOT Other: _____

Corresponding USSR/USA Field Sheet? Yes No If yes, Unique Site ID: _____

Proposed Retrofit Location:

Storage		On-Site	
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape
<input checked="" type="checkbox"/> Other: <u>multiple locations - see notes</u>		<input type="checkbox"/> Underground	<input checked="" type="checkbox"/> Other: <u>multiple locations, see notes</u>

DRAINAGE AREA TO PROPOSED RETROFIT

Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____	Drainage Area Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Townhouses <input type="checkbox"/> Multi-Family <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional - <u>school owned</u> <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____
Notes: <u>MA</u>	

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: Yes No Possible
 If Yes, Describe:

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
2 CB in first play area

Existing Head Available and Points Where Measured:
MA

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Drainage

Retrofit Volume Computations - Target Storage:

MA

Retrofit Volume Computations - Available Storage:

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: rain garden / pollinator garden

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

→ Horse garden - rain garden, pollinator garden (2 catch basins)
 → Pre-courtyard - potential tree plantings (2 catch basins)
 → playground behind building
 porous surface for pavement
 extend an integrated native playground (to where mulch currently is)
 → parking lot - sidewalk installation from street w/ bioretention on sides (crosswalk b/w islands)
 → parking lot - convert islands to bioretention (plantings OK)
 (4 islands)
 (larger island)

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Access:

- No Constraints
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown courtyards - possible - Scott will get more info.

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
- How many? _____
Approx. DBH _____

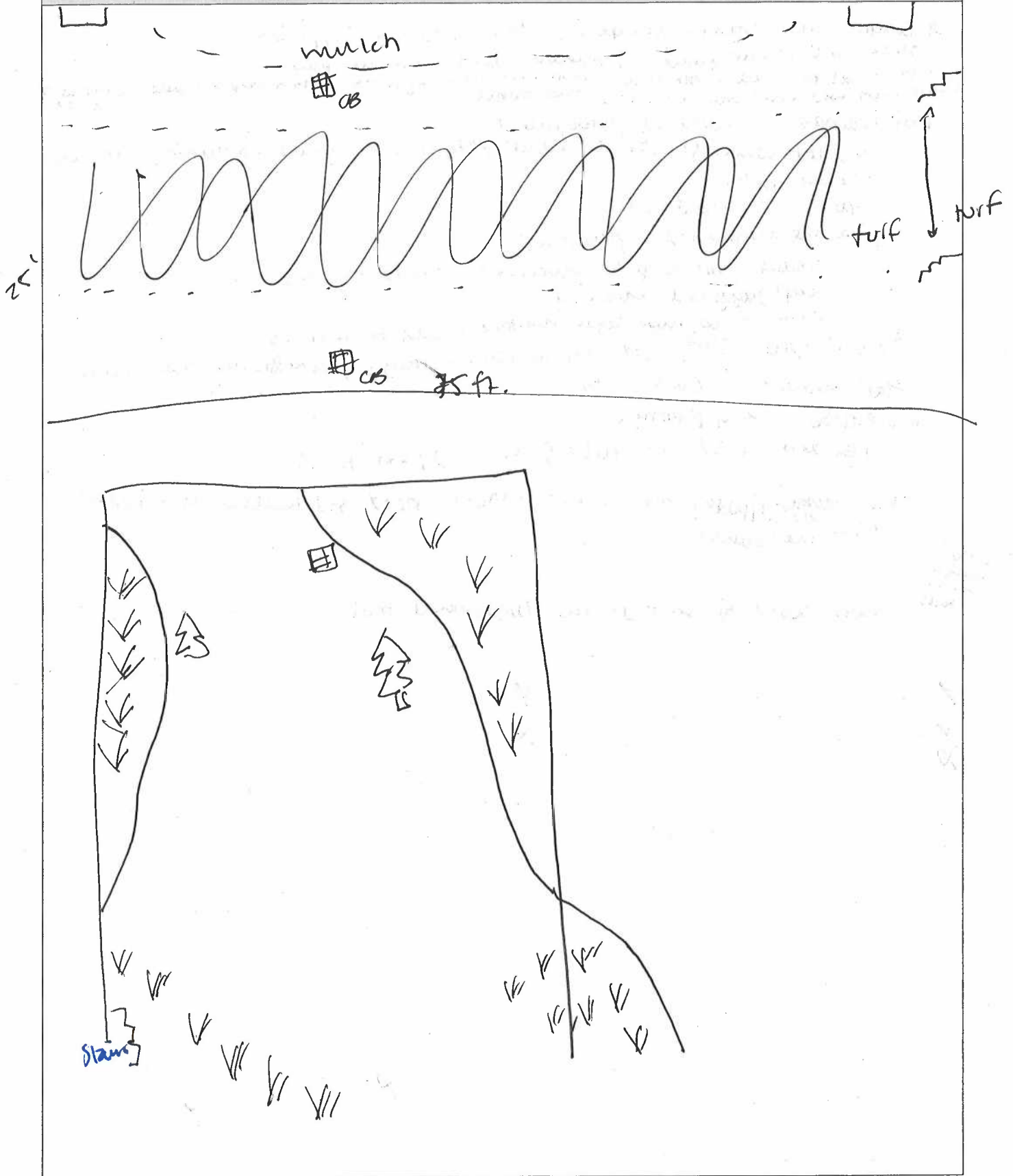
Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

N/A

SKETCH



DESIGN OR DELIVERY NOTES

- interactive rain garden - principal of Taft EIC - very supportive
 - horse garden - rain garden a pollinator garden - want all space
 - pre-n get most use - don't do too much - don't want big trees - getting ramp for shade - want 15 ft away
 haven't been used & used well - want low maintenance
 roof drainage 3rd courtyard - playground
 - want walking / interactive nature playground - whole community would use (town fields)
 - porous playground surface
 - existing pavement near playground
 - mulch comes up to pavement - accidents - fencing!
 keep playground contained
 rubber pieces now illegal - resistant to add to it currently
 3 parcel split - Taft, fields, McCluskey - emergency center (shelter) town center
 Taft headed for town shelter
 bio-retention - ok w/ plantings
 4 curb islands in parking lot - 3 next to CB
 - bio-retention / path from school to street - need sidewalk - crosswalks
 basin
 btw the islands
 cavity storage dep. on soils
 SWH - want to use it as an educational tool

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input type="checkbox"/> Other: | |

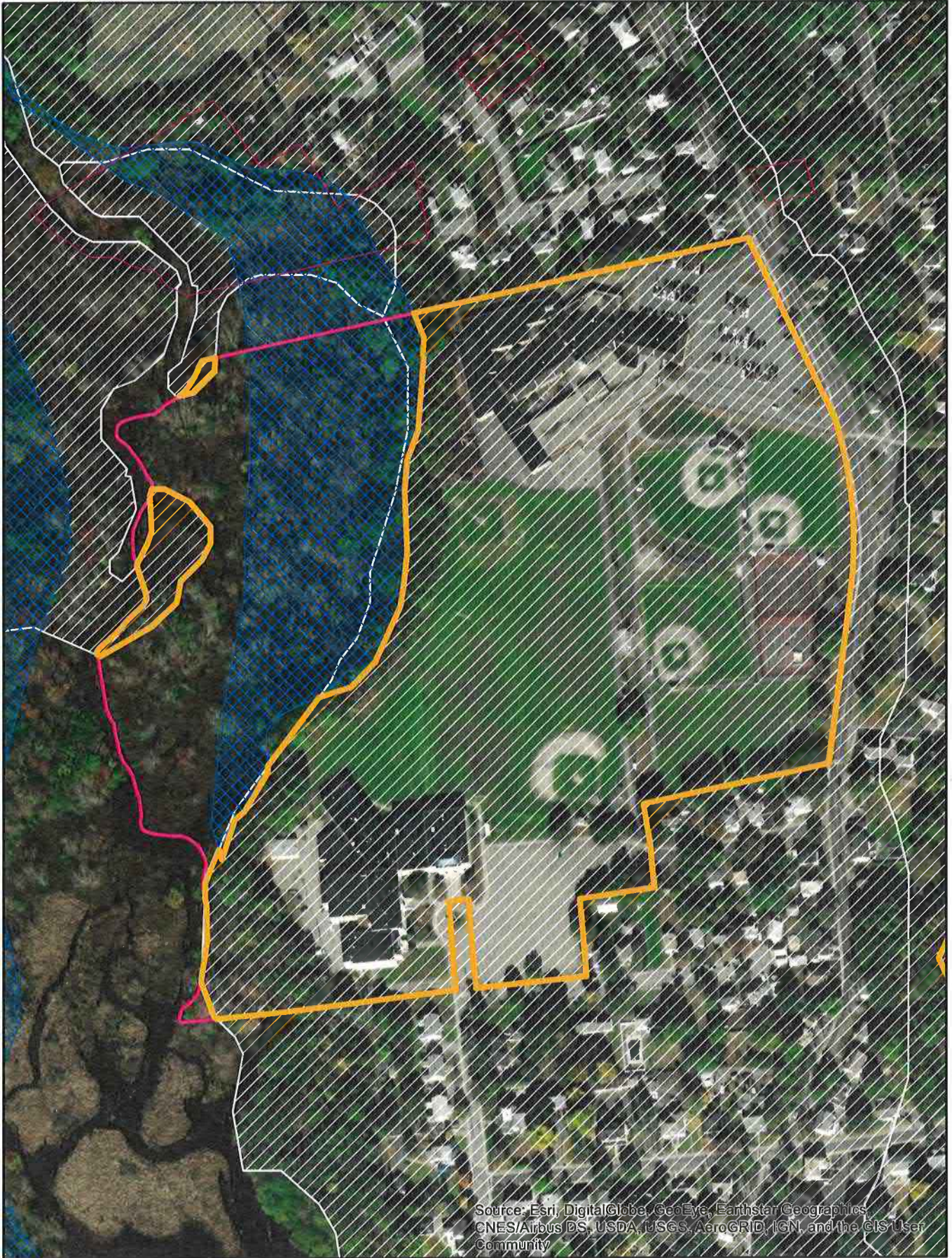
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
 IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
 IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Taft Elementary School

Site Number: 2

0 162.5 325 650 Feet



Site Name: Taft Elementary School

Site Number: 2

0 162.5 325 650 Feet

N

walking interactive nature playground → mulched area



solar canopy + broekt. islands - low maint. planting
low maintenance
curriculum
open ends
islands
high

sandybag

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

McCloskey - senior center 2 E.O.C. etc. 3 likeley plan

away to power etc? brook canopy

10:45-12:15

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>3</u>	
DATE: <u>8/10/19</u>	ASSESSED BY: <u>JBST</u>	CAMERA ID:		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Oxbridge High School</u>					
Address: <u>300 Quaker Hwy, Oxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: <u>near baseball field</u>		<input type="checkbox"/> Underground	<input checked="" type="checkbox"/> Other: <u>existing swale + GI</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> Institutional <u>school</u>	
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial	
Notes: <u>MA</u>			<input type="checkbox"/> SFH (> 1 ac lots)	<input type="checkbox"/> Transport-Related	
			<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park	
			<input type="checkbox"/> Multi-Family	<input checked="" type="checkbox"/> Undeveloped	
			<input type="checkbox"/> Commercial	<input type="checkbox"/> Other: _____	
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
<u>- BR - not effectively capturing water near fields (adj. from tennis court)</u>					
<u>- part of a swale/check dams)</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>- Field Flooding, 1 CB near BB field (not connected to anything?)</u>					
Existing Head Available and Points Where Measured:					
<u>MA</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control *fields*
 Demonstration / Education Repair Other: *drainage*

Retrofit Volume Computations - Target Storage:

MA

Retrofit Volume Computations - Available Storage:

MA

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

→ Raise the walkway to BB field w/ swale on side - if water were better directed to swale, might help w/ field flooding

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: *Turtle habitat & Blackstone protected area*

Access:

- No Constraints
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input type="checkbox"/>	Sewer
<input type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable *TBH*
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

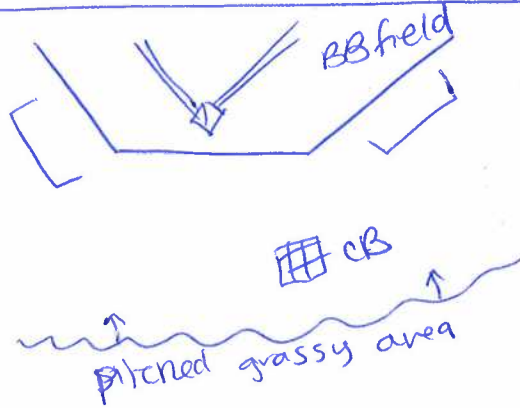
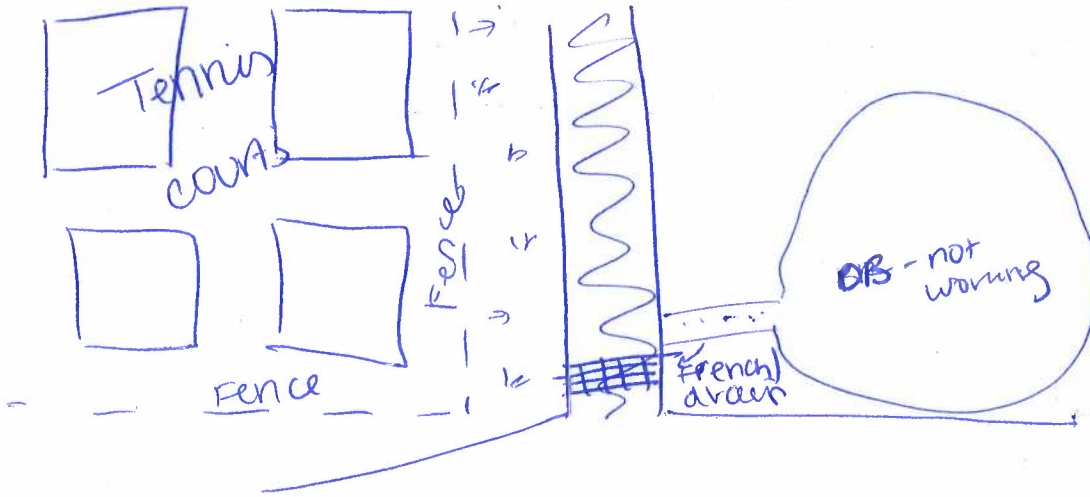
Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

MA

SKETCH



Swale? near swale - could raise this berm to have a walk way & properly functioning swale

DESIGN OR DELIVERY NOTES

- Issues w/ water collecting in baseball field (built 1 ft. lower than planned)
 - ↳ near 3rd base - flooding
- Flow an issue on path next to tennis courts down to fields - DB not working properly
- Rock piles - check dams to work w/ swales?
- Berms on tennis court
- Turtle habitat behind fields
- Swale - direct water - check dams not working properly on side w/ swale

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE

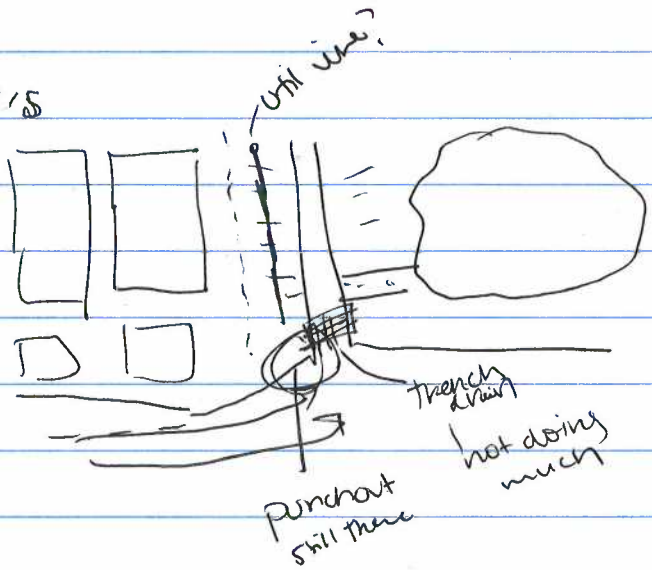
IF YES, TYPE(S): _____

- 20th or 29th -

Scott
8:30-10:30

Atbridge HS 10:45-12:15

W12 built
berms on tennis court
Dry Ret. basin
Utilities in green space
rocks?



wetness in baseball field
field lower than supposed to be 1 ft.
3rd base flooding
water coming from embankments
for the habitat built

Call
Tina
& Dune

rocks - Swale - direct water - rocks - check dams -
utility conflict. slows

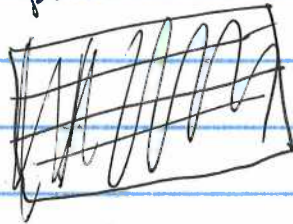
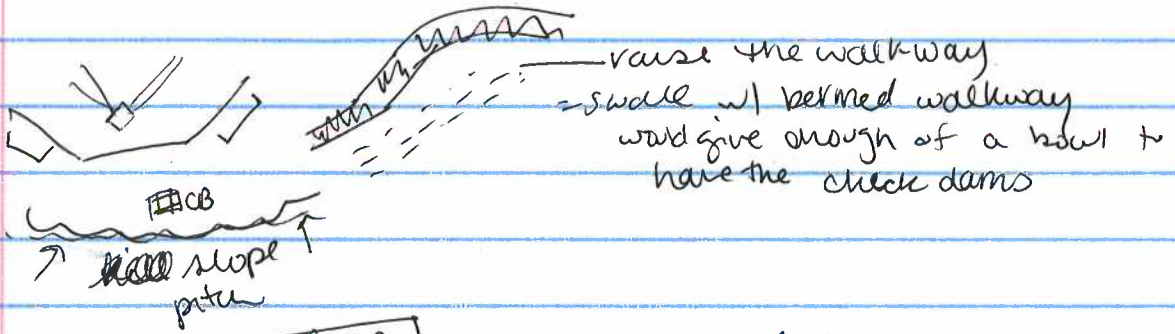
Verbena pulp - native plantings or weeds?

if swales worked properly
berm/berm



Scott
8:30-10:30

30 ppl field near tennis



inlet → (B or silt screen)

encourage drainage to field across from tennis courts
 make that a detention basin?

(Clean-outs)

water better directed to the drainage swale

U+M ~~at~~ existing basins
 as builds to DPW

1w - no - Planning board

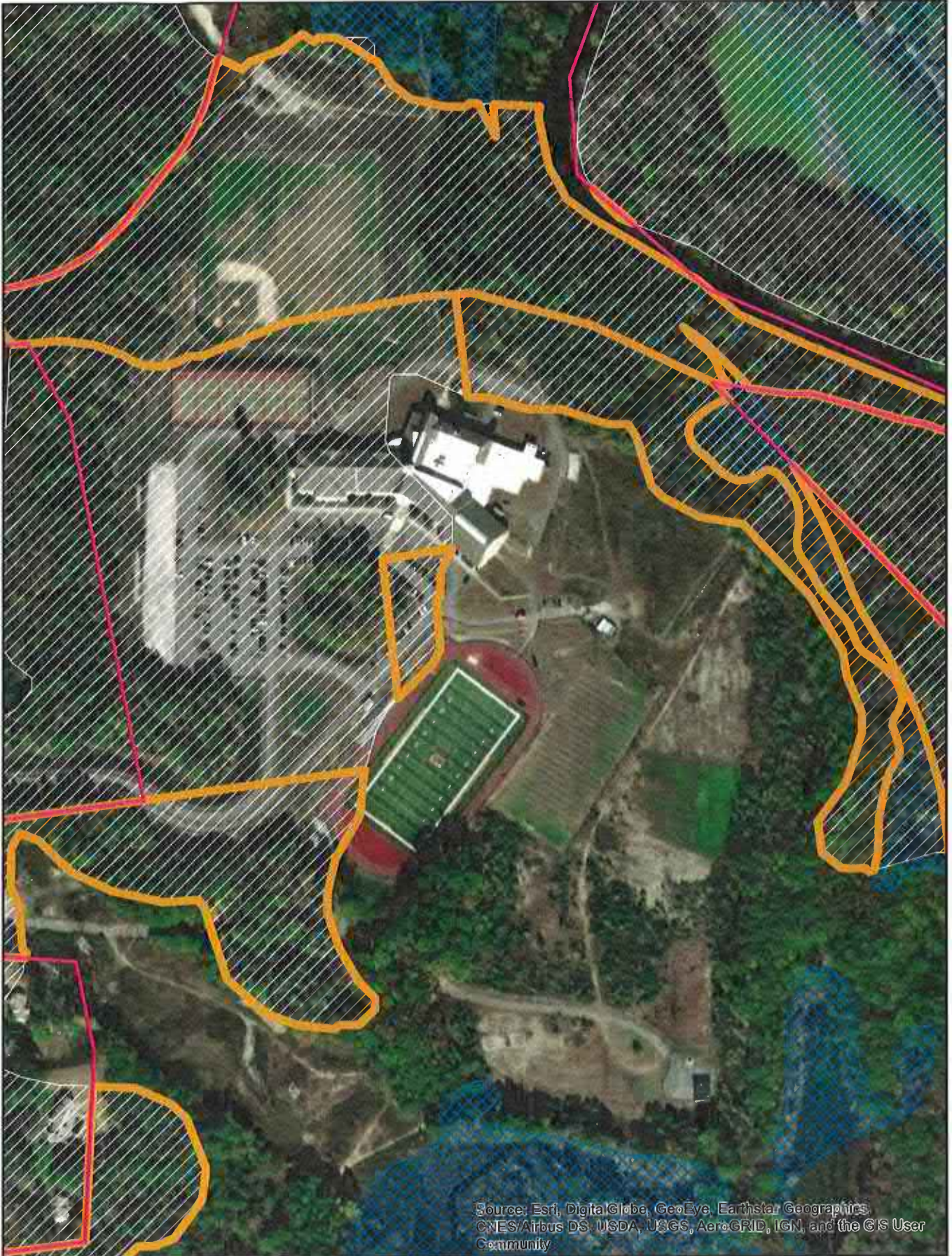
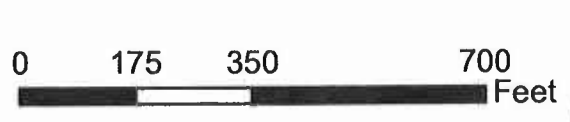
Stormwater system

drainage
 curbs

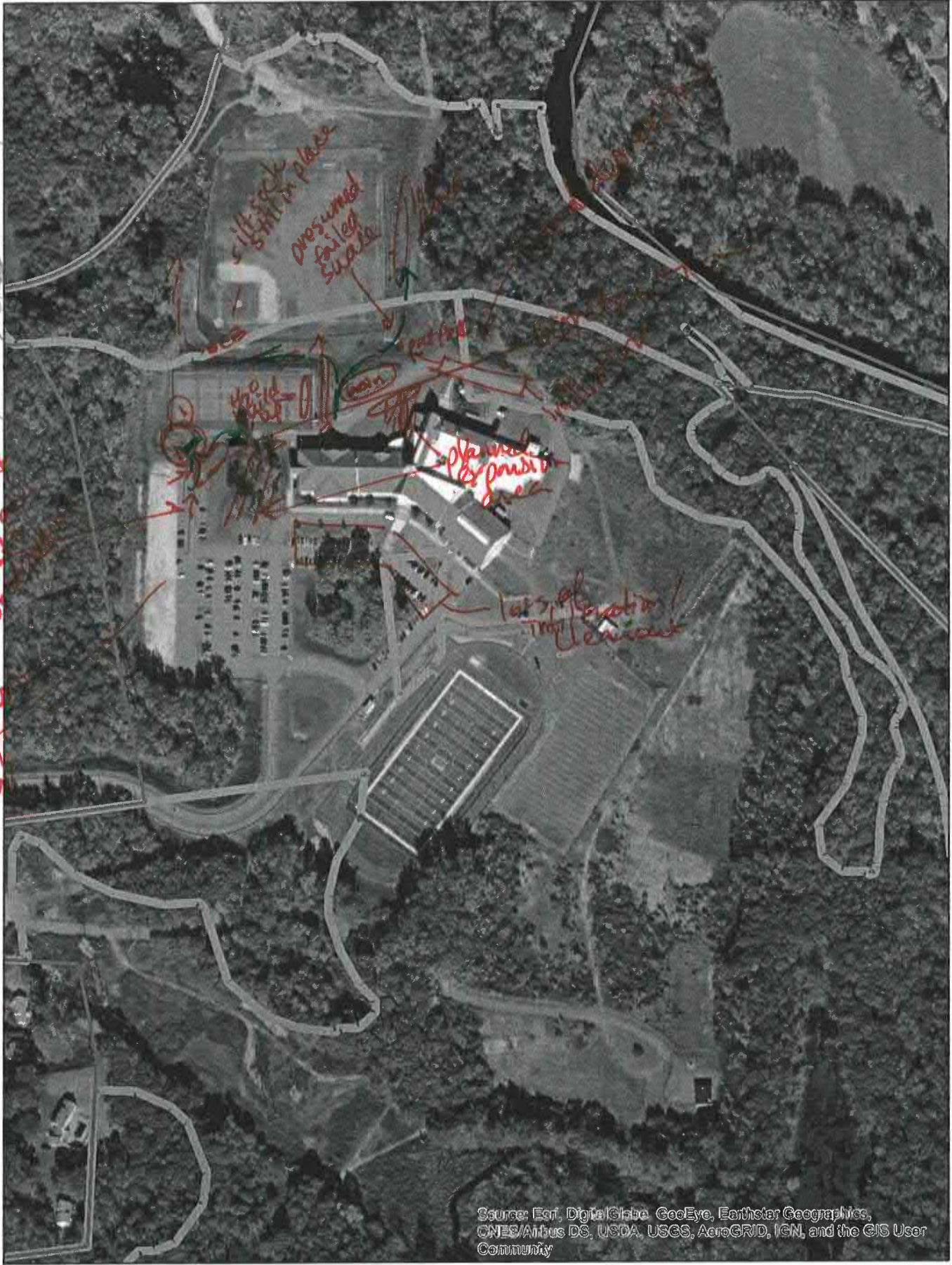
5/3/2014

Site Name: Uxbridge High School

Site Number: 3



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



water runs down drive down road

direct flow

planned & possible area

silt settle still in place
assumed failed swale

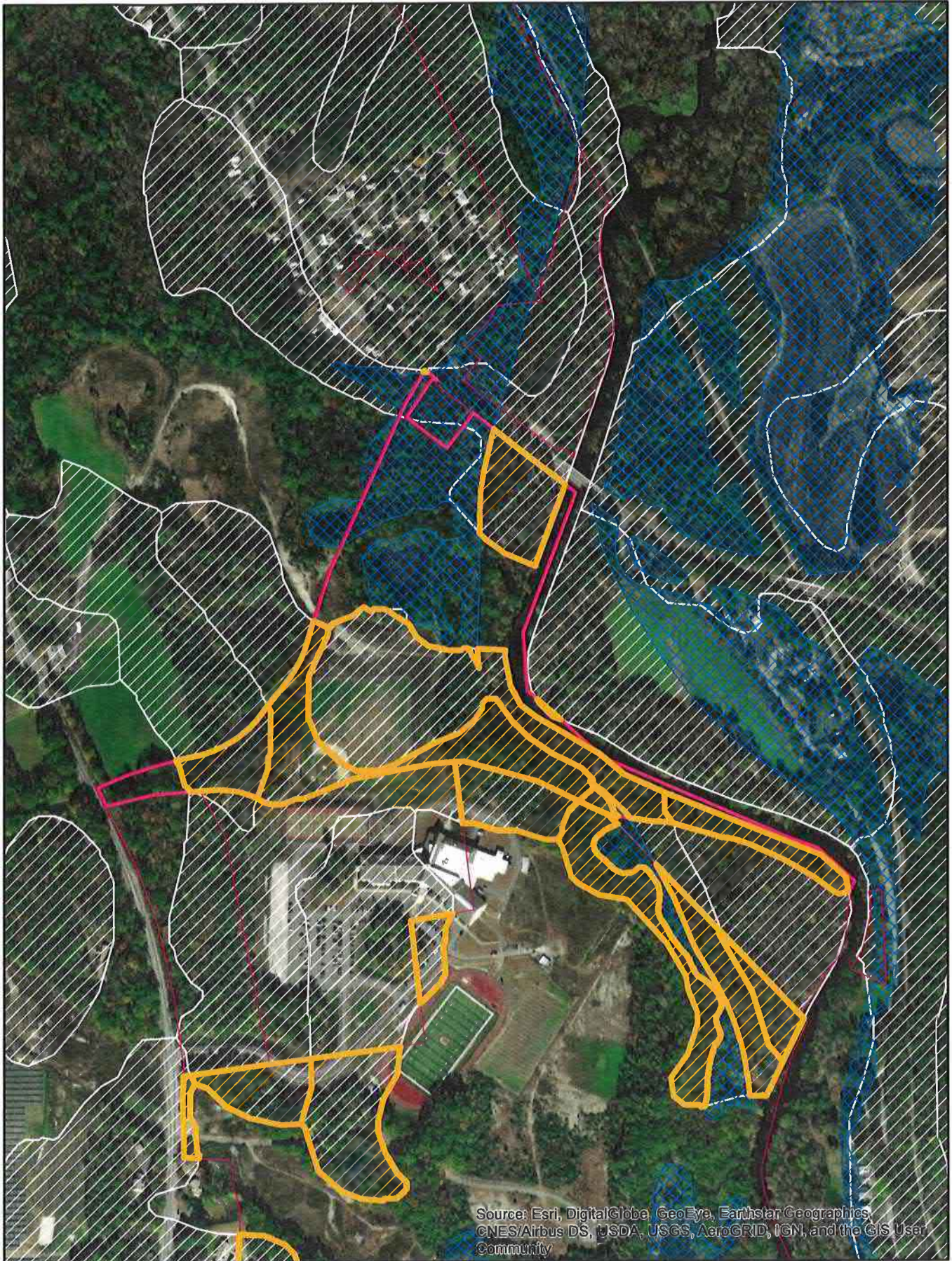
planned & possible area

lots of vegetation / trees

build swales + check to work, curb cuts to better use to better basis

Site Name: Uxbridge High School

Site Number: 3



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge High School

Site Number: 3

0 380 760 1,520 Feet

N 1 of 2



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



12:10 - 12:25

Holly
1hr

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>4</u>	
DATE: <u>8/29/19</u>		ASSESSED BY: <u>JBSH</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
GPS ID:		LMK ID:		LONG:	
SITE DESCRIPTION					
Name: <u>Youth Fields/Dog Park/Community Garden</u>					
Address:					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID:					
Proposed Retrofit Location:					
Storage <u>N/A</u>			On-Site <u>N/A</u>		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other:		<input type="checkbox"/> Underground	<input type="checkbox"/> Other: <u>N/A</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____%			<input type="checkbox"/> Residential		
Impervious Area ≈ _____			<input type="checkbox"/> Institutional		
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (< 1 ac lots)		
			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other:		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>2 CBS down road</u>					
<u>- PL for dog park - 1 CB</u>					
Existing Head Available and Points Where Measured:					
<u>N/A</u>					

PROPOSED RETROFIT

Purpose of Retrofit:
 Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: N/A

<p>Retrofit Volume Computations - Target Storage:</p> <p style="font-size: 2em;">N/A</p>	<p>Retrofit Volume Computations - Available Storage:</p> <p style="font-size: 2em;">N/A</p>
---	--

Proposed Treatment Option:
 Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Not likely - not good candidate

SITE CONSTRAINTS

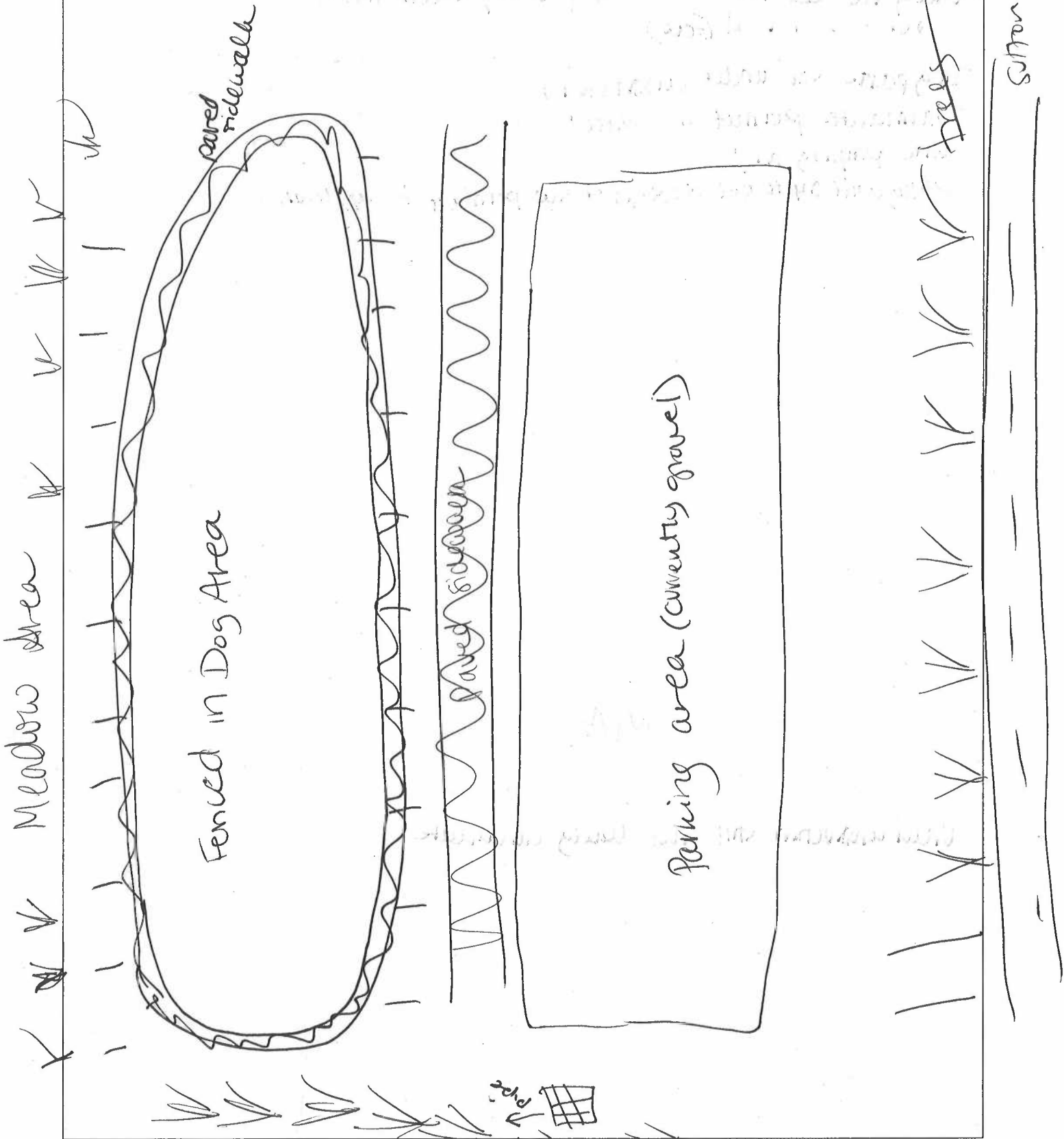
<p>Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input checked="" type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:</p>	<p>Access: <input type="checkbox"/> No Constraints N/A Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____</p>
--	--

<p>Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown Yes Possible <input type="checkbox"/> Sewer <input type="checkbox"/> Water <input type="checkbox"/> Gas <input type="checkbox"/> Cable <input type="checkbox"/> Electric <input type="checkbox"/> Electric to Streetlights <input type="checkbox"/> Overhead Wires <input type="checkbox"/> Other: _____</p> <p style="font-size: 1.5em; color: blue; transform: rotate(-15deg);">Still under construction</p>	<p>Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____</p> <p style="font-size: 2em; color: blue;">N/A</p>
---	--

Soils:
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

N/A

SKETCH



DESIGN OR DELIVERY NOTES

- likely no G1 for community garden / Youth Fields
 @ CBS down road (few)

Dog park still under construction

- Stormwater permit in place

- who paying for?

- Holly will try to get design & SW permits if applicable

Urbledge has no OS plan -

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: NA | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Under construction still - not likely candidate

SITE CANDIDATE FOR FURTHER INVESTIGATION:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IF YES, TYPE(S): _____			

Site Name: Uxbridge Youth Fields, Uxbridge Dog Park, and community garden

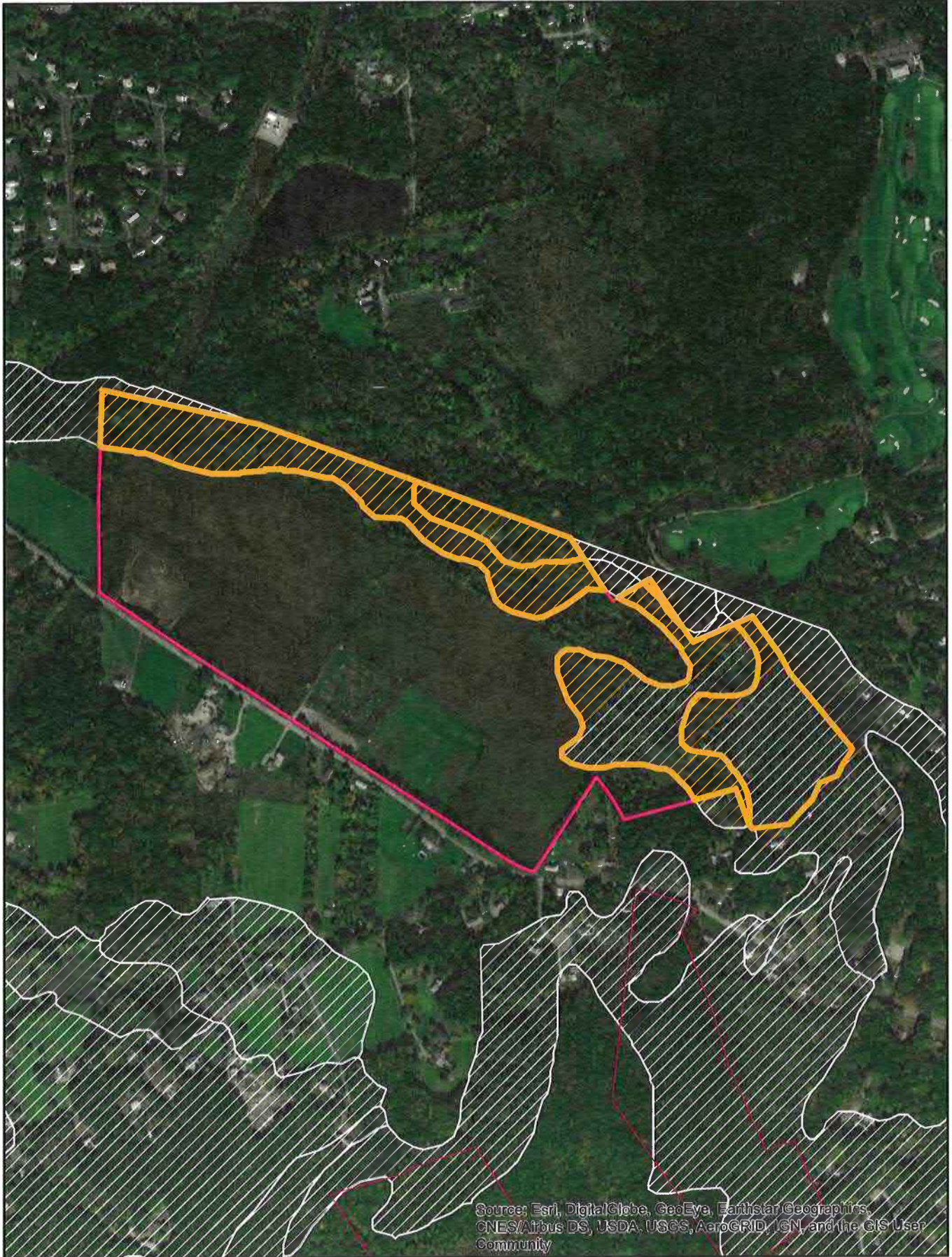
0 450 900

1,800

Feet

N

Site Number: 4



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Youth Fields, Uxbridge Dog Park, and community garden

Site Number: 4

0 450 900 1,800 Feet

N



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

9:25-9:50 - mixed w/ DPW

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>6</u>	
DATE: <u>8/20</u>		ASSESSED BY: <u>JBSH</u>		CAMERA ID:	
PICTURES:		GPS ID:		LMK ID:	
LAT:		LONG:			
SITE DESCRIPTION					
Name: <u>D'Alfonso field</u>					
Address: <u>157 Hecla St. Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert			<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System			<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot			<input type="checkbox"/> Individual Street <input checked="" type="checkbox"/> Landscape / Hardscape <i>-near fence abutting field</i>		
<input checked="" type="checkbox"/> Other: <u>abutting field</u>			<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional <i>draw</i>		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
Notes: <u>N/A</u>			<input checked="" type="checkbox"/> Transport-Related <i>-road</i>		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: <u>No drainage system</u>					
Existing Head Available and Points Where Measured: <u>N/A</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: drainage

Retrofit Volume Computations - Target Storage:

N/A

Retrofit Volume Computations - Available Storage:

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- pavement elim (linear bioretention along field) → D'Alfonso
 - solar installation
 - improved maint. of existing swale → ~~D'Alfonso~~ DPW

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Access:

- No Constraints TBD - confirm
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown
 Yes Possible *line on other side of road*
 Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

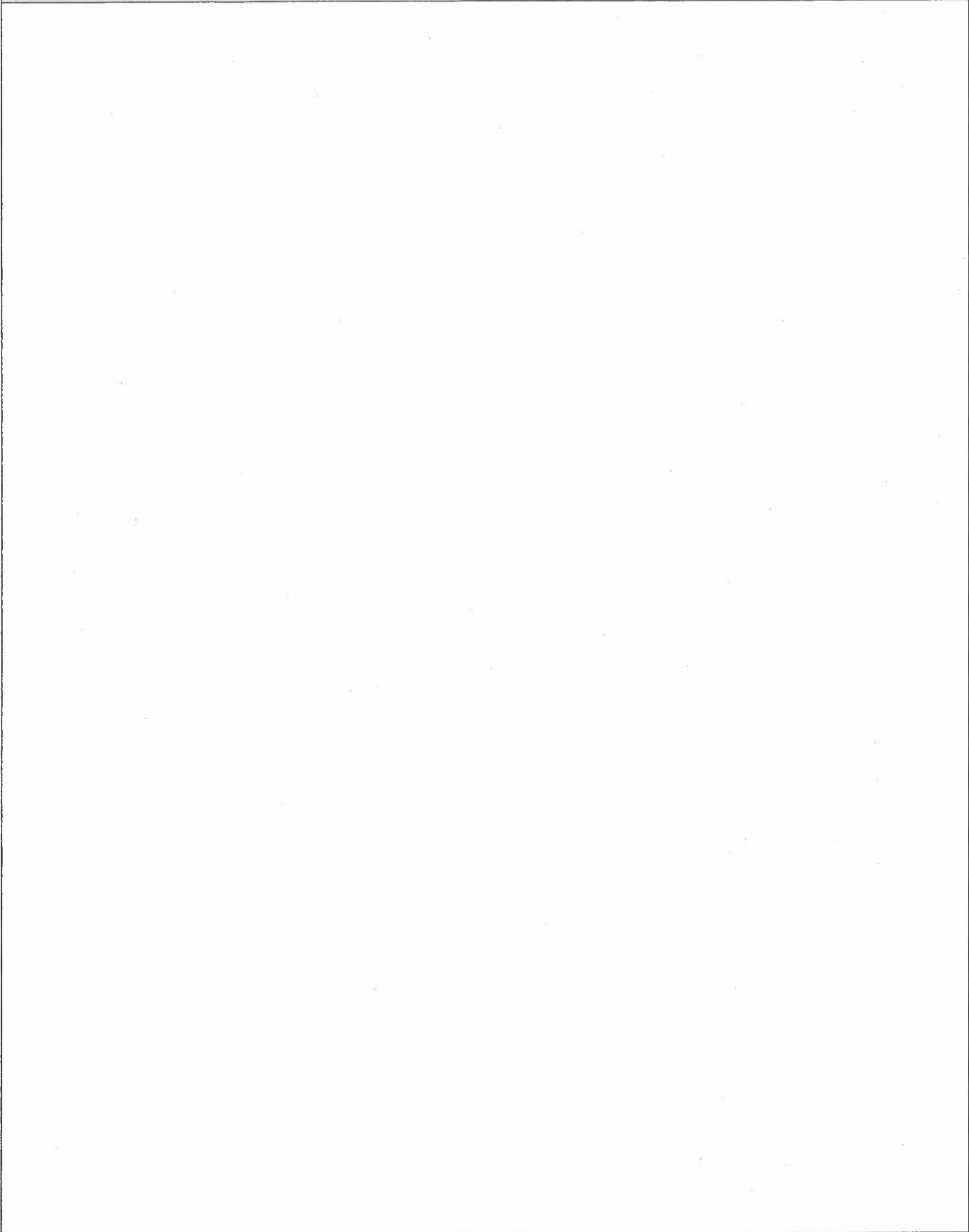
- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No
- N/A

SKETCH



DESIGN OR DELIVERY NOTES

- Potential practice along the fence -
- Use football
- behind field - extra space? not really used for anything - Paul hasn't seen people use it much - spectators space?
- potential as a spot for solar?
- Ridge outside of fence near pee-wee football - material?

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

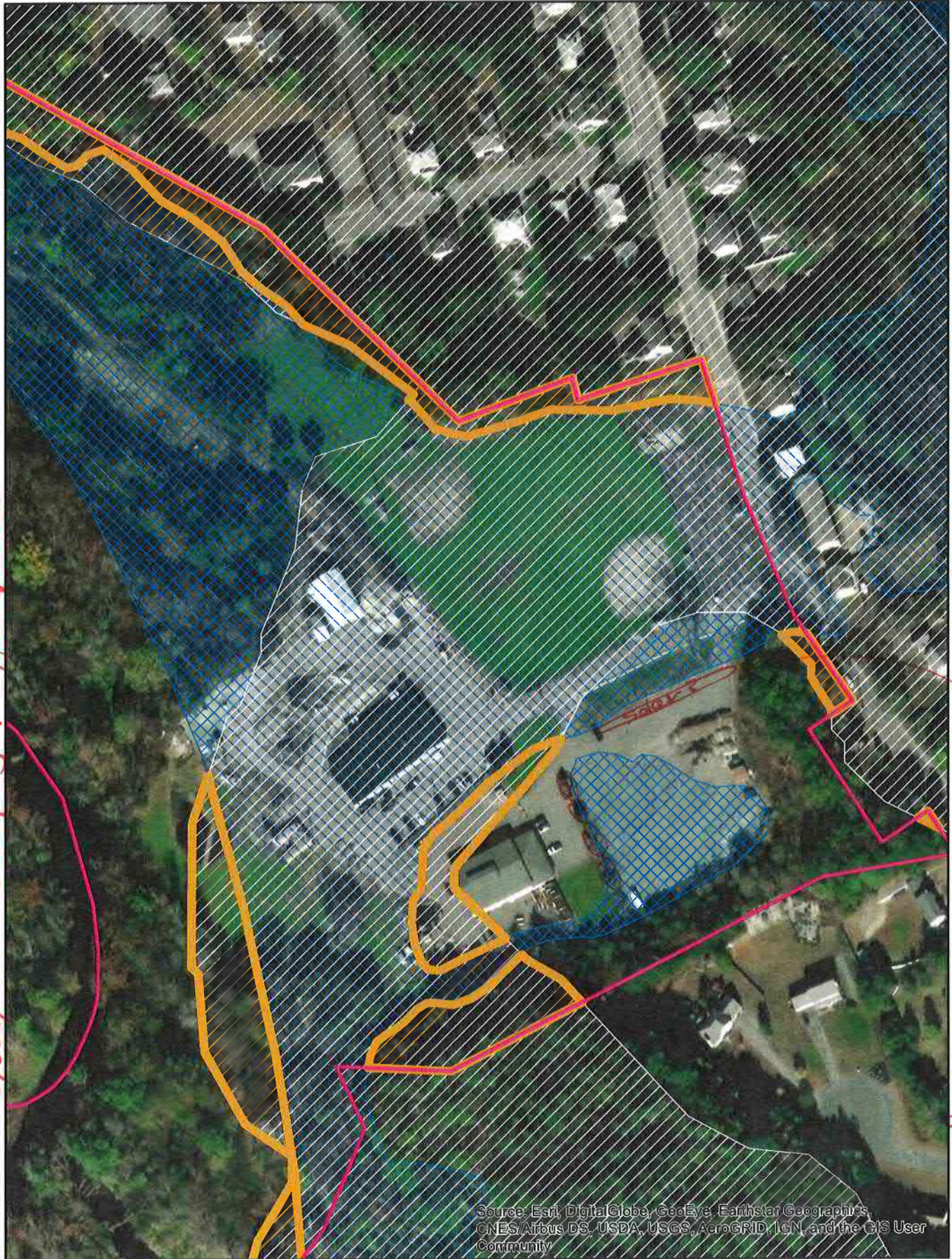
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

- SITE CANDIDATE FOR FURTHER INVESTIGATION:** YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Dalfonso Park/Public Works Facility

Site Number: 6/7

0 105 210 420 Feet



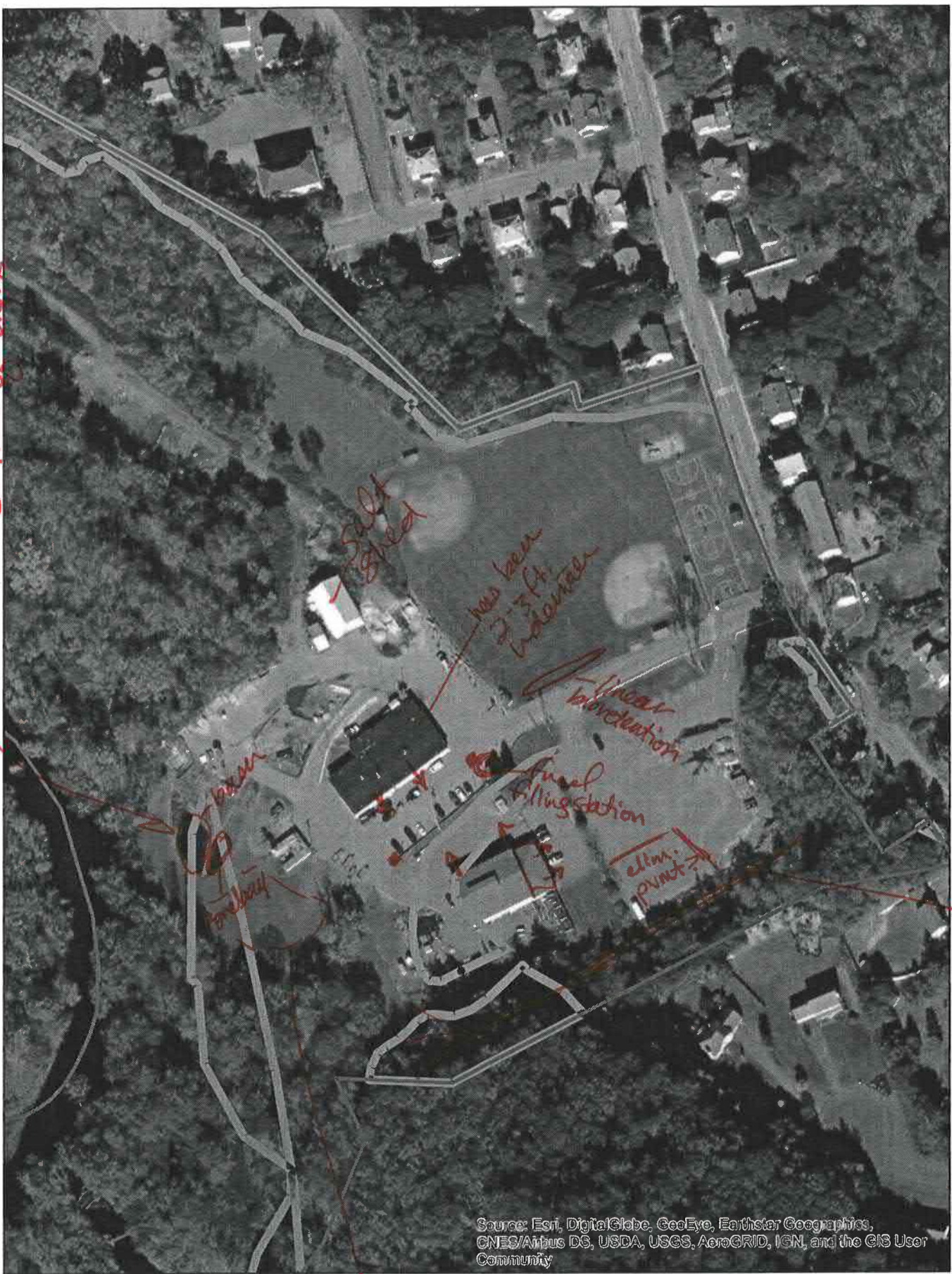
ANPP - legacy shoot sweepings in floodplain

*Possibility for
water? No generator*

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



both full, but dewatering for pump station construction @ time of visit



unmaintained swale

vacant grassy space

900-925

WATERSHED: <u>Blackstone River</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>7</u>	
DATE: <u>8/26/19</u>	ASSESSED BY: <u>JBSH</u>	CAMERA ID:		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Public works Facility</u>					
Address: <u>147 Hecla St., Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input checked="" type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: _____		<input type="checkbox"/> Underground	<input checked="" type="checkbox"/> Other: <u>Existing swale -</u>	<u>near Park lot</u>	
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> Institutional <u>opw</u>	
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial	
Notes: <u>MA</u>			<input type="checkbox"/> SFH (> 1 ac lots)	<input type="checkbox"/> Transport-Related	
			<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park	
			<input type="checkbox"/> Multi-Family	<input checked="" type="checkbox"/> Undeveloped	
			<input type="checkbox"/> Commercial	<input type="checkbox"/> Other: _____	
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
<u>1 swaleside parking lot of offices</u>					
<u>1 DB behind garage (surrounding area has flooded) - standing water when visited site</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>- Roof downspouts - come out onto street</u>					
<u>- 1 CB b/w garage + offices</u>					
<u>- 1 CB near fueling station (flows in from road?)</u>					
Existing Head Available and Points Where Measured:					
<u>MA</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Drainage

Retrofit Volume Computations - Target Storage:

M/A

Retrofit Volume Computations - Available Storage:

M/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: pavement elim.

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

pavement elimination parking lot (linear BR along field) - D'Alfonso
 installation of solar (batteries) backup to facility - could have that
 improved mount. of existing swale integrate it to swale

 green space not in flood plain closer to offices?

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park D'Alfonso
 Undeveloped Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No
If Yes, Describe:

Access:

- No Constraints
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

M/A

SKETCH

swales swales

office

garage
old mill building

DESIGN OR DELIVERY NOTES

early 2000s

- office - garage - salt shed (hood plain) regular street sweepings
- parking lot - built 2000s - why so big? - 2 piles parking lot SS & CB cleanings storage (newer map put it in the flood plain)
- Are swales on side of PL - has it been mowed that Paul's seen - red building
- Also parking lot for
- unknown - resistance to decreasing paved area - part in flood plain might be the most appropriate to get rid of
- pavement on side of building (near garage doors) drains on - no problems
- 05 08 10 - flooded, couldn't get vehicles in/out of garage (have no generator)
- potential site near entrance of garage gates for solar to offset lack of generator
- letter of map change to take it out of the flood plain
- Ridge next to pee-wee football field - material
- PL - which way flow/pitched? so much of it in PL hard to do much w/ it

Flood Zone considerations

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE

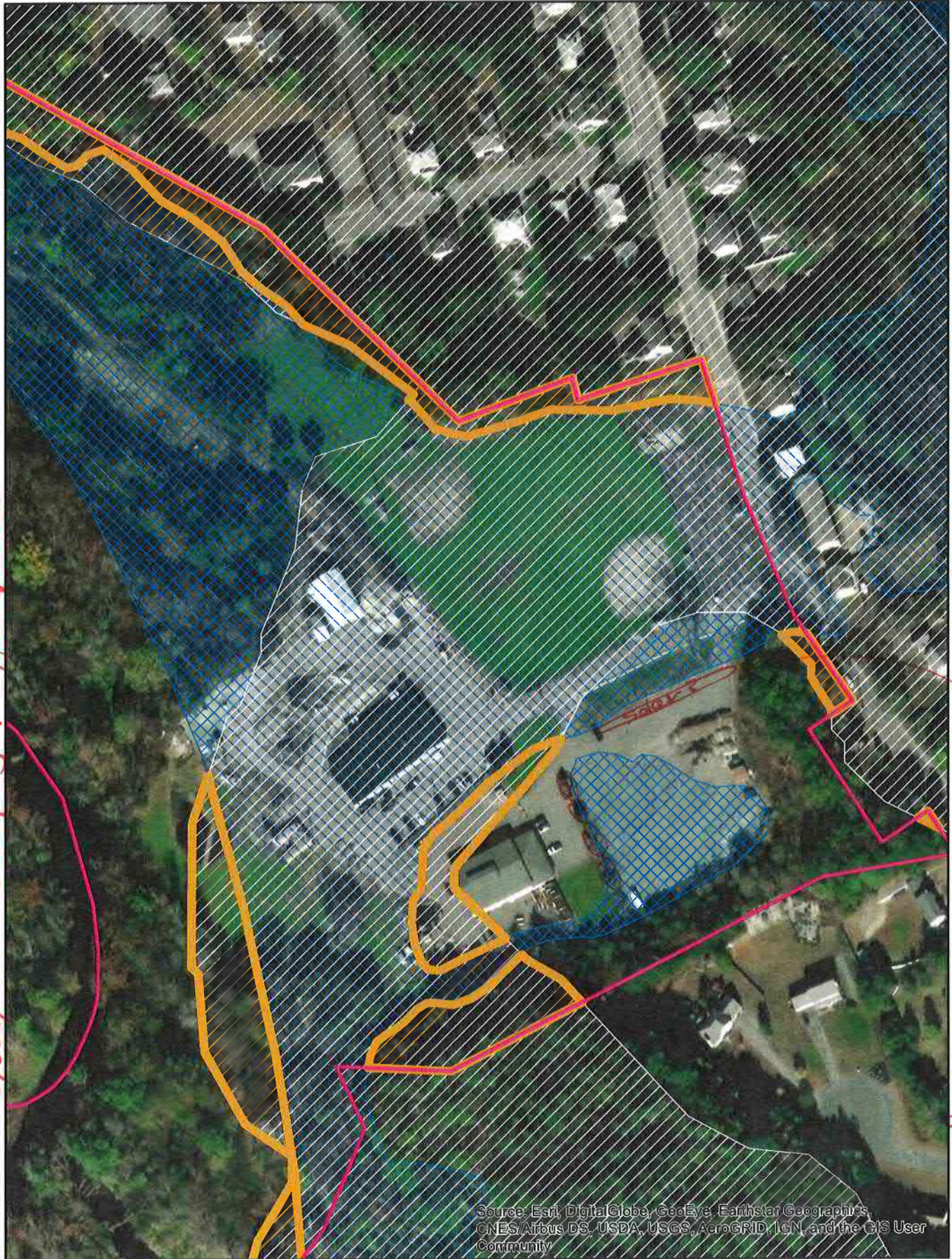
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE

IF YES, TYPE(S): _____

Site Name: Dalfonso Park/Public Works Facility

Site Number: 6/7

0 105 210 420 Feet



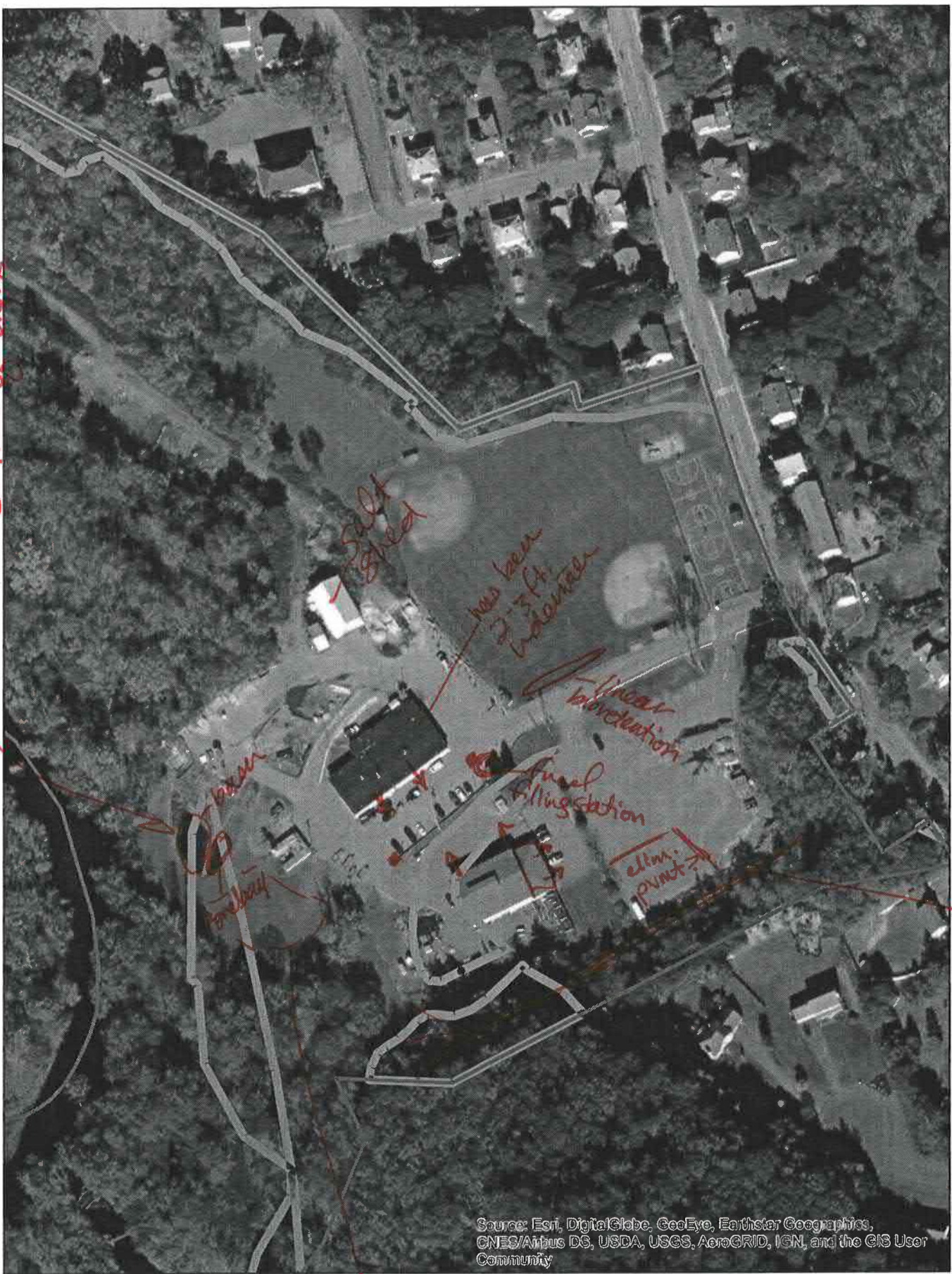
ANOP - legacy shoot sweepings in floodplain

*Possibility for
water? No generator*

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



both full, but dewatering for pump station construction @ time of visit



unmaintained swale

vacant grassy space

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>8</u>	
DATE: <u>8/16/19</u>	ASSESSED BY: <u>JB SH</u>	CAMERA ID:		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Public Library</u>					
Address: <u>15 N. Main St., Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input checked="" type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input checked="" type="checkbox"/> Landscape / Hardscape/		
<input type="checkbox"/> Other: _____	<u>green space behind building</u>	<input type="checkbox"/> Underground	<input checked="" type="checkbox"/> Other: <u>ADA ramp w/ BR</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> Institutional <u>church / library /</u>	
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial	<u>parking lot for businesses</u>
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (> 1 ac lots)	<input type="checkbox"/> Transport-Related	
			<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park	
			<input type="checkbox"/> Multi-Family	<input type="checkbox"/> Undeveloped	
			<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Other: _____	
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: <u>one roof drain, see photos</u>					
Existing Head Available and Points Where Measured: <u>N/A</u>					



PROPOSED RETROFIT

Purpose of Retrofit:
 Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: drainage

Retrofit Volume Computations - Target Storage:

 MA

Retrofit Volume Computations - Available Storage:

 MA

Proposed Treatment Option:
 Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:
 connection between parking lot + building (ADA compliant ramp)
 [primary entrance] ADA access, who uses parking behind?
 bioretention (in back?) or rain/perennial garden? → is the lawn used for anything? drainage issues in back - esp near parking lot who owns church/stairs? parking lot?

SITE CONSTRAINTS

Adjacent Land Use:
 Residential Commercial ^{road} Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____
Possible Conflicts Due to Adjacent Land Use? Yes No
If Yes, Describe: parking lot / church ownership

Access:
 No Constraints TBD
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:
 None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:
 Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____
Other factors: _____

Soils:
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No
 MA

SKETCH

1. The site is located in the rear yard of the property.
2. The site is approximately 10 feet wide and 15 feet long.
3. The site is currently used for storage of materials.
4. The site is bordered by a concrete foundation on the north and east sides.
5. The site is bordered by a brick wall on the south side.
6. The site is bordered by a wooden fence on the west side.
7. The site is currently used for storage of materials.
8. The site is currently used for storage of materials.
9. The site is currently used for storage of materials.
10. The site is currently used for storage of materials.



DESIGN OR DELIVERY NOTES

- Drainage area to pull in if can
- sewer/gas in road
- large trees (2) in front
- 3 drains adjacent @ church
- parking lot behind - main access point + integrate w/ s/w system
- make it ADA friendly entrance -
- ground gutter - brick trip gutter
- one roof gutter

Notes from Larry:

- Lib. parking: Use the church
- staff park behind lot (town rents it from cove for school dept (Lib) - private lot)
- Town considering buying cove
- can currently get to downstairs thru backdoor - would want dirt path to get to building to have ramp in future
- church - currently trying to sell! - town owns bell tower
- lawn behind: sometimes programs outside - call Deb - pretty minimal - mostly for kids

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

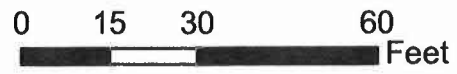
- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

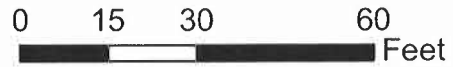
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Uxbridge Town Library

Site Number: 8





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

11:50 - 12:32



WATERSHED: <u>Blackstone</u>	SUBWATERSHED:	UNIQUE SITE ID: <u>9</u>
DATE: <u>10/15</u>	ASSESSED BY: <u>JBSH</u>	CAMERA ID:
GPS ID:	LMK ID:	LAT:
		LONG:

SITE DESCRIPTION

Name: Uxbridge Housing Authority
 Address: 31 Colburn Court

Ownership: Public Private Unknown
 If Public, Government Jurisdiction: Local State DOT Other: confirm ownership - town of MA?

Corresponding USSR/USA Field Sheet? Yes No If yes, Unique Site ID: _____

Proposed Retrofit Location:

Storage	On-Site
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Hotspot Operation
<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Small Parking Lot
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> Individual Street
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Underground
<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Individual Rooftop
<input checked="" type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Small Impervious Area
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Landscape / Hardscape
	<input checked="" type="checkbox"/> Other: <u>green space</u>

DRAINAGE AREA TO PROPOSED RETROFIT

Drainage Area ≈ _____	Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Townhouses <input type="checkbox"/> Multi-Family <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____
Imperviousness ≈ _____ %	
Impervious Area ≈ _____	
Notes: <u>N/A</u>	

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: Yes No Possible
 If Yes, Describe:
- Swale deteriorating property - leads to 2 CBS
paved swale - evidence of moss
heavy accumulation of pine needles near CBS & on swale

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:

2 CBS on road - 1 to swale, 1 across street
1 drainage swale side of property
culvert near #8 - foot pipe? grading/clogging issues?

PROPOSED RETROFIT																														
Purpose of Retrofit: <input type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other: <u>drainage</u>																														
MA	M/A																													
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input checked="" type="checkbox"/> Other: <u>pavement reduction / comm. garden</u>																														
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: 1 [- Pavement reduction 2 [- potential community garden next to lot - increase maintenance of swale (existing) - clean out pine needles - encourage vegetation 3 [increase maint / upgrade area near existing culvert																														
SITE CONSTRAINTS																														
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints <u>TBD</u> Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																													
Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table style="width: 100%;"> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other: _____</td> </tr> </table>	Yes	Possible		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: <table style="width: 100%;"> <tr> <td style="width: 50%;"> Dam Safety Permits Necessary Impacts to Wetlands Impacts to a Stream Floodplain Fill Impacts to Forests Impacts to Specimen Trees How many? _____ Approx. DBH _____ </td> <td style="width: 50%;"> <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable </td> </tr> </table> Other factors: _____	Dam Safety Permits Necessary Impacts to Wetlands Impacts to a Stream Floodplain Fill Impacts to Forests Impacts to Specimen Trees How many? _____ Approx. DBH _____	<input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable
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<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																												
Dam Safety Permits Necessary Impacts to Wetlands Impacts to a Stream Floodplain Fill Impacts to Forests Impacts to Specimen Trees How many? _____ Approx. DBH _____	<input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable																													
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																														

SKETCH

[Faint, illegible handwritten notes and sketches are present in this section.]

DESIGN OR DELIVERY NOTES

- Sweep PL after construction
 - dumpsters uncovered (x2)
 #8 - ice - flooding on outside - need ditch
 ditch dug in back - eroded - not deep enough
 - under sidewalk culvert gets clogged - water stops midway
 PL - water runs to #8 - clothes line - most
 ices up (round)
 lot fills up sometimes - move caks there so can plow
 #8 never sees much water in
 2 main spots - swale -
 - big PL - #8 - goes into cellar

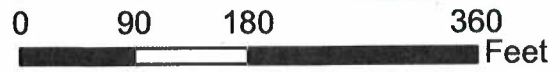
FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|--|--|
| <input checked="" type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

property ownership? Town/state?

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

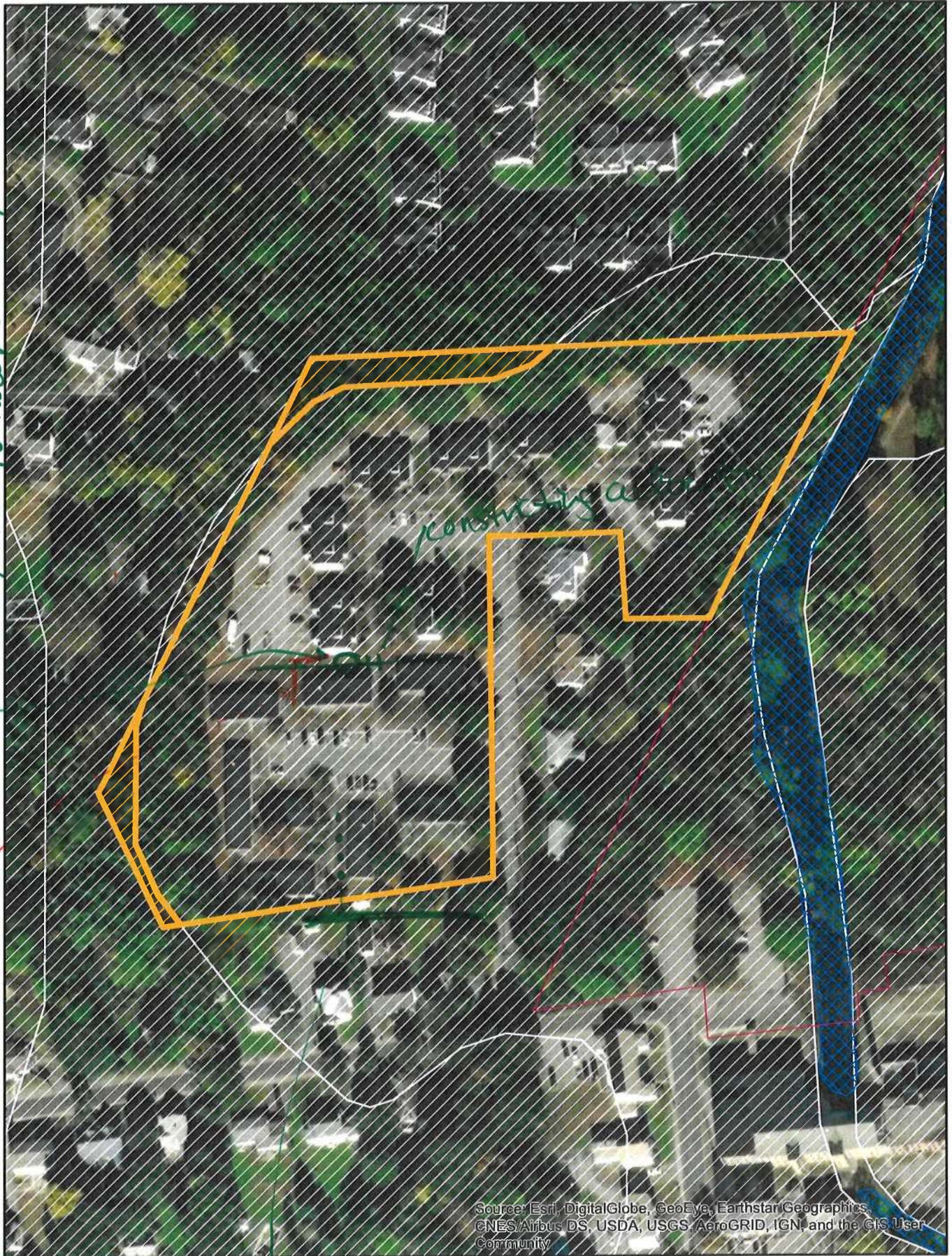


collected material
has messed up
slope / flow to now partially buried culvert

moat / skating
rink
@ #8

consisting of

paved
swale



Site Name: Uxbridge Housing Authority

Site Number: 9



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2:20 - 3:05

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>10</u>	
DATE: <u>8/20/19</u>		ASSESSED BY: <u>JB St</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Usbridge Police Department</u>					
Address: <u>275 Douglas St.</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond			<input type="checkbox"/> Hotspot Operation		
<input type="checkbox"/> Below Outfall			<input type="checkbox"/> Small Parking Lot		
<input type="checkbox"/> In Road ROW			<input type="checkbox"/> Individual Street		
<input checked="" type="checkbox"/> Other: <u>existing swale</u>			<input type="checkbox"/> Underground		
<input type="checkbox"/> Above Roadway Culvert			<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> In Conveyance System			<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> Near Large Parking Lot			<input type="checkbox"/> Landscape / Hardscape		
			<input type="checkbox"/> Other: <u>roadside</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)		
Notes: <u>MA</u>			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Institutional		
			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input checked="" type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe: <u>DB - never seen full - seems like when PL drains to</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>1 CB near entrance connected to manhole</u>					
<u>1 water line</u>					
<u>1 add'l manhole</u>					
<u>Roof drains buried - tied into basin in front</u>					
<u>in back draining to asphalt</u>					
Existing Head Available and Points Where Measured:					
<u>MA</u>					



PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Discharge

Retrofit Volume Computations - Target Storage:

MA

Retrofit Volume Computations - Available Storage:

MA

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

Could extend existing swale to capture runoff from roadway
 - grass edge along road is raised, sed. acc / sand on edge of grass/road
 → have white corner
 - clean up edges where debris/leaves/r/rap are pushed off to edges

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial ^{vfw} Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Access:

- No Constraints (B1)
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown
 Yes Possible
 Sewer ^{- in road}
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires ^{- along mainst}
 Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

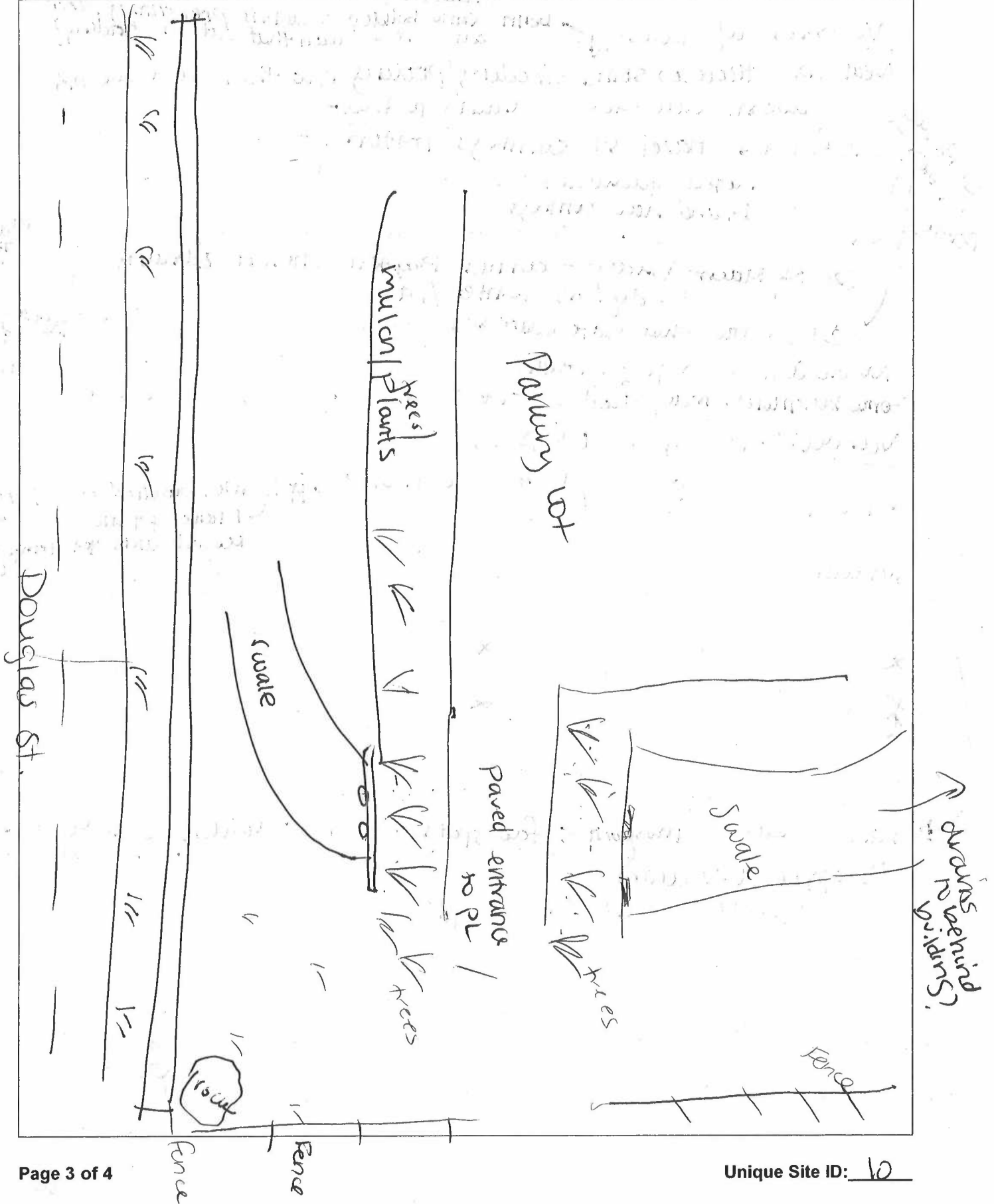
Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

MA

SKETCH



basin ~~can~~ could be dropped

DESIGN OR DELIVERY NOTES

No issues w/ flooding ✓ berm - some buildup of debris preventing flow out of road - clean that out - fix flooding? road crowned

Near CB - there is some flooding/pooling b/w the road & the PB - doesn't work like it drains to there

Lt. Burke notes
Devel

① 122 Hazel St. curbs bottom - raised sidewalks - back-up if there are leaves brand new curbs much better ~~and~~ sometimes floods

② N Main bridge - corner Baptist church - drains - will flood - def. in winter/fall - once leaves get down

③ 1 on the way that state addresses - still have accidents - 146 Aldrich St. Rt 98

Aldrich Town maintained

Graker Hwy

No one drives in parks really some basements may flood - Steve T will be better able to answer

New devels putting in det. ponds

- Backstone St - just redid - b/c of devel. or? - Mendon St - state just repaired

By 10 mo. blocked off 1 - 1.5 yr ago
1 lane of 7 mo
closed until got temp traffic light

gas line right behind final pavement

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- Confirm property ownership
- Confirm drainage area
- Confirm drainage area impervious cover
- Confirm volume computations
- Complete concept sketch
- Other: _____
- Obtain existing stormwater practice as-builts
- Obtain site as-builts
- Obtain detailed topography
- Obtain utility mapping
- Confirm storm drain invert elevations
- Confirm soil types

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

standing water - mosquito - few spots - 16 near Mendon - Rock Meadow Rd. river flooding?
Dumpster area clean
Potential wetlands behind buildings?

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
 IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
 IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Uxbridge Town Police Department

Site Number: 10



N



146A @ Aldrich

N. main just after bridge
 past corner Baptist Church.
 later in the year/winter
 bottom of Hayzel/122 @ Cumby's
 raised sidewalk →



1/5000 contour - 11 feet for
 1/25000 contour - 11 feet for
 1/12500 contour - 11 feet for
 1/6250 contour - 11 feet for
 1/3125 contour - 11 feet for
 1/1562 contour - 11 feet for
 1/781 contour - 11 feet for
 1/390 contour - 11 feet for
 1/195 contour - 11 feet for
 1/97 contour - 11 feet for
 1/48 contour - 11 feet for
 1/24 contour - 11 feet for
 1/12 contour - 11 feet for
 1/6 contour - 11 feet for
 1/3 contour - 11 feet for
 1/1 contour - 11 feet for

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics,
 CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User
 Community

1/25000
 1/12500
 1/6250
 1/3125
 1/1562
 1/781
 1/390
 1/195
 1/97
 1/48
 1/24
 1/12
 1/6
 1/3
 1/1



clean up leaves & debris

Salisbury

up to house pond

detent. Vasan. Working well

1 pond is in the middle of the site

1/4 in parking lot - less plants? veg. islands?



10:05 - 11:00

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>11</u>	
DATE: <u>8/26/19</u>	ASSESSED BY: <u>JBSH</u>	CAMERA ID:		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Senior Center</u>					
Address: <u>36 S. Main Street</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input checked="" type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: _____		<input type="checkbox"/> Underground	<input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential	<input type="checkbox"/> Institutional	
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial	
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (> 1 ac lots)	<input type="checkbox"/> Transport-Related	
			<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park	
			<input type="checkbox"/> Multi-Family	<input checked="" type="checkbox"/> Undeveloped	
			<input type="checkbox"/> Commercial	<input type="checkbox"/> Other: _____	
			EXISTING STORMWATER MANAGEMENT		
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe: <u>DB - behind side of building</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>1 CB near entrance to PL</u> <u>1 culvert through PL</u>					
Existing Head Available and Points Where Measured:					
<u>N/A</u>					

PROPOSED RETROFIT

Purpose of Retrofit:
 Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Drainage

Retrofit Volume Computations - Target Storage:

 MA

Retrofit Volume Computations - Available Storage:

 N/A

Proposed Treatment Option:
 Extended Detention Wet Pond Created Wetland Bioretention *-potential*
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:
 - (is infiltration system?) Prob- culvert & expensive
 - pitch part of lot to green area near dumpster (need overflow structure)
 - pavement removal from easement area)
 - BR to front where sign is? would be difficult b/c of getting flow
 how to get water into it / there were benches
 in front → don't want to pitch area around b/c don't
 want seniors to trip.

SITE CONSTRAINTS

Adjacent Land Use:
 Residential Commercial *RR easement* Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____
Possible Conflicts Due to Adjacent Land Use? Yes No
If Yes, Describe:

Access:
 No Constraints
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership *RR*
 Other: _____

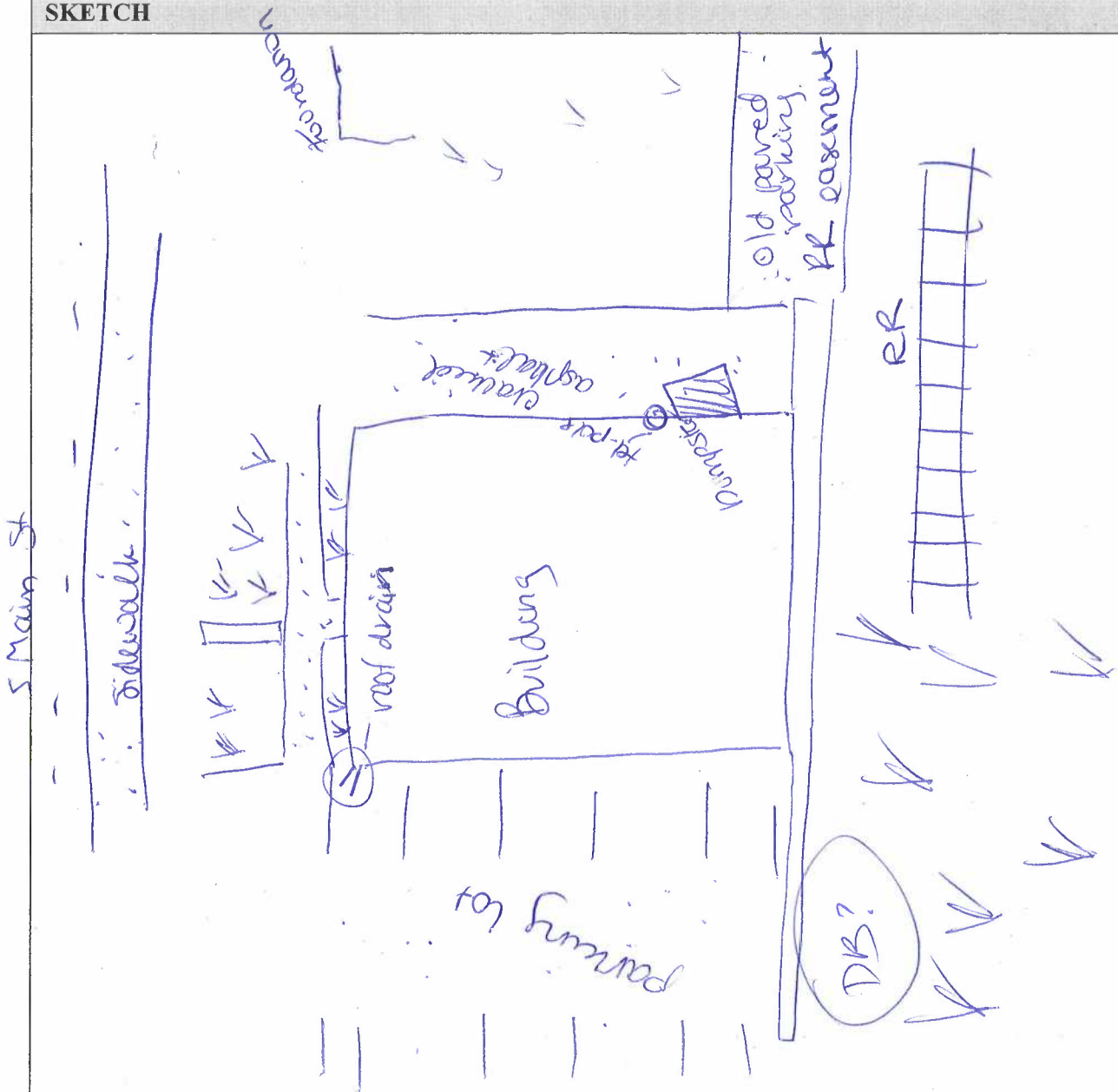
Conflicts with Existing Utilities:
 None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:
 Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____
Other factors: _____

Soils:
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No
 N/A

SKETCH



Notes (cont.)

- charging station will move
- talk of SC moving to McCloskey or Town Hall
Don't know what they would do w/ current building
(they just redid roof recently, work on building)

DESIGN OR DELIVERY NOTES

- Railroad easement goes through part of PL - 1 CB planned ^{back behind building} - existing ^{where?}

- Have plans for proposed PL was an existing building where PL is now - only see parts of foundation/ ^{steps}

- paved area near easement - was ^{once} part of PL - cant do anything w/o getting lease from RR (too many fees)

'they'^{RR} probably leave it -

PL draining down to low point

No room for islands in PL

- veg. areas? Next to dumpster? will be a green area, but cant really get drainage to it

- unless \$ there, probably wouldnt incorporate

- probably next year build - dont have \$ this fall (150k to 75k budget cut)

- not equipped for porous pavement

- could put on list - pavement removal for RR easement

Rock St. private property - water bypassing drain? - sed acc. on side of st. near FS

(underground infiltration on side w/o utilities?)

flooding near green house across st next to FS - utilities all on side w/ FS?

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: <u>Follow up with railroad?</u> | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

\$ - dont have funds to include \$I in PL construction, but can put on list for future projects

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE

IF YES, TYPE(S): _____

Site Name: Uxbridge Senior Center

Site Number: 11



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Senior Center

Site Number: 11



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

9:40-10:19

Retrofit Reconnaissance Investigation



WATERSHED: <u>Blackstone</u>	SUBWATERSHED:	UNIQUE SITE ID: <u>12</u>
DATE: <u>10/15/19</u>	ASSESSED BY: <u>JB 64</u>	CAMERA ID:
GPS ID:	LMK ID:	PICTURES:
		LAT:
		LONG:

SITE DESCRIPTION

Name: Wastewater Treatment Facility
 Address: 71 River Road, Uxbridge, MA

Ownership: Public Private Unknown
 If Public, Government Jurisdiction: Local State DOT Other: _____

Corresponding USSR/USA Field Sheet? Yes No If yes, Unique Site ID: _____

Proposed Retrofit Location:

Storage
 Existing Pond Above Roadway Culvert
 Below Outfall In Conveyance System
 In Road ROW Near Large Parking Lot
 Other: MA

On-Site
 Hotspot Operation Individual Rooftop
 Small Parking Lot Small Impervious Area
 Individual Street Landscape / Hardscape
 Underground Other: NIA

DRAINAGE AREA TO PROPOSED RETROFIT

Drainage Area ≈ _____
 Imperviousness ≈ _____ NIA%
 Impervious Area ≈ _____

Notes: MA

Drainage Area Land Use:
 Residential Institutional WWTF
 SFH (< 1 ac lots) Industrial
 SFH (> 1 ac lots) Transport-Related
 Townhouses Park
 Multi-Family Undeveloped
 Commercial Other: _____

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: Yes No Possible
 If Yes, Describe: under construction

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:

- Swale into BR basin - driveway (future) w/ riprap
- All infra to CB - oil/grit sep for 3 CBs - there overflows to 6th leeching basins/pits
- Forebay det area - 4 ft deep sump drain
- 2 basins for rain water + rain garden
- Down - CB to leech pits
- grass / sidewalk - basins - sand infil'

/ All infiltrate unless there's a big flood

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Drainage

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: N/A

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

N/A

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional N/A
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Access:

- No Constraints N/A
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None N/A
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input type="checkbox"/>	Sewer
<input type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable N/A
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No N/A
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

DESIGN OR DELIVERY NOTES

currently under construction
 Dec. 31 - 2019 supposed to be completed
 Design based on 100 year flood? - NO 10 yr?
 well ~~under~~_{on} Hecla - digging up now
 main pumps 4x size
 outflow by 1/4 - infiltration

 energy disipation
 capecode berm
 Cwelch@Uxbridge-ma.gov
 Cell: 774-280-4896

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: <u>N/A</u> | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

N/A

SITE CANDIDATE FOR FURTHER INVESTIGATION:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE

IF YES, TYPE(S): _____

~ 8:55 - 9:15

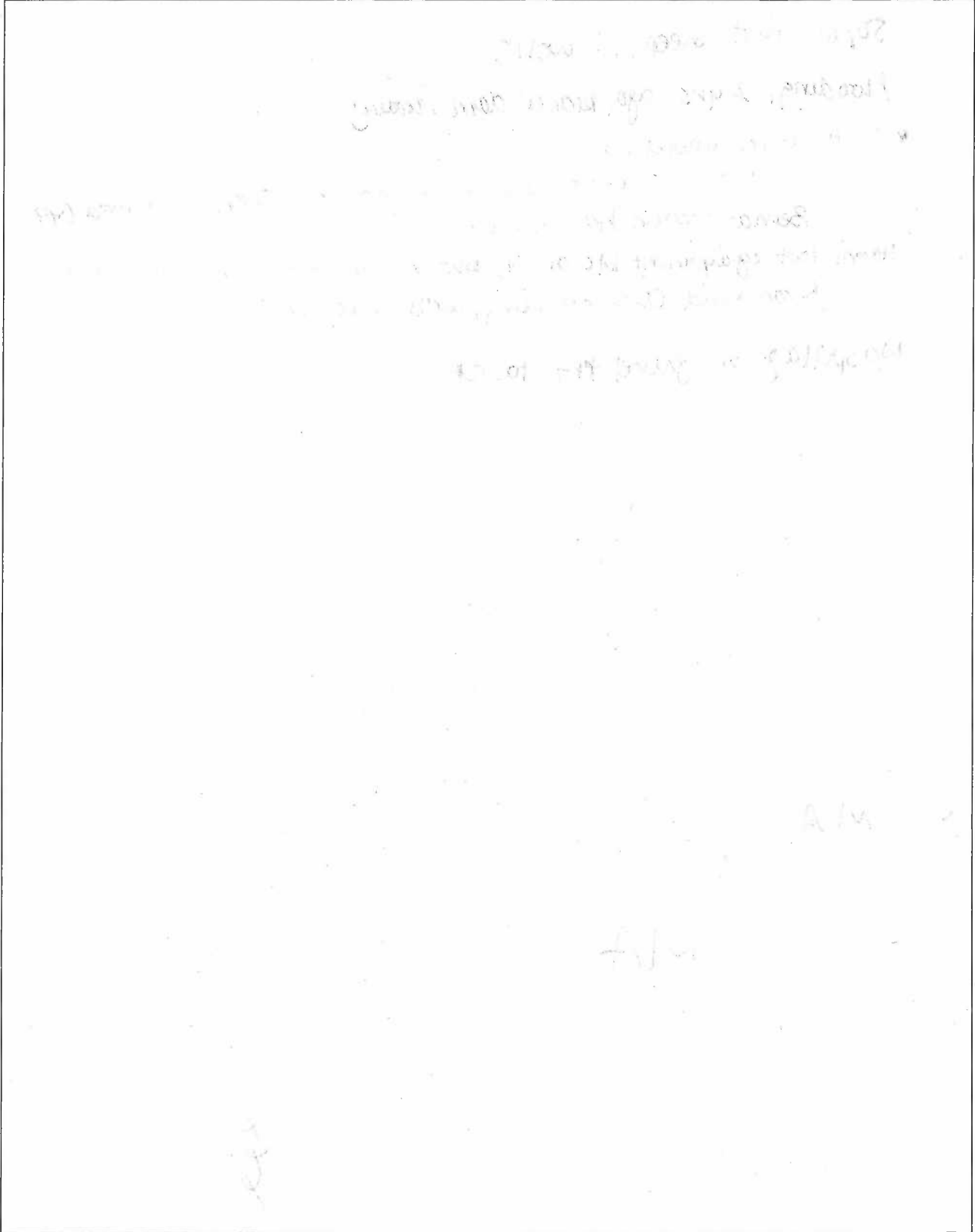
Retrofit Reconnaissance Investigation

RRI

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>13</u>	
DATE: <u>10/15/19</u>		ASSESSED BY: <u>JB/SA</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Water Division</u>					
Address: <u>105 Blackstone, Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond			<input type="checkbox"/> Hotspot Operation		
<input type="checkbox"/> Below Outfall			<input type="checkbox"/> Small Parking Lot		
<input type="checkbox"/> In Road ROW			<input type="checkbox"/> Individual Street		
<input type="checkbox"/> Other: <u>N/A</u>			<input type="checkbox"/> Underground		
<input type="checkbox"/> Above Roadway Culvert			<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> In Conveyance System			<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> Near Large Parking Lot			<input type="checkbox"/> Landscape / Hardscape		
			<input type="checkbox"/> Other: <u>NA</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential		
Impervious Area ≈ _____			<input checked="" type="checkbox"/> Institutional <u>DAW</u>		
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (< 1 ac lots)		
			<input type="checkbox"/> SFH (> 1 ac lots)		
			<input type="checkbox"/> Townhouses		
			<input type="checkbox"/> Multi-Family		
			<input type="checkbox"/> Commercial		
			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe: <u>N/A</u>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>CBs - one drains directly to woods (directly across from shed)</u>					
<u>↳ some scouring/sediment deposition</u>					
<u>one drains to stream next to (CR in driveway) but CB dry (mushrooms)</u>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input type="checkbox"/> Other: <u>N/A</u>																												
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other: <u>N/A</u>																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <div style="text-align: center; font-size: 2em;">N/A</div>																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints <u>N/A</u> Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input type="checkbox"/> Unknown <table style="width: 100%;"> <tr> <th style="text-align: left;">Yes</th> <th style="text-align: left;">Possible</th> <th></th> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other: _____</td> </tr> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input type="checkbox"/> Not Probable How many? _____ Approx. DBH <u>N/A</u> Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES

50/60 foot deep, 3 wells
 Flooding, 2 yrs ago, heavier dam flooding
 well fields in wooded areas
 ↳ flood a little near river, haven't seen Rosenwood (sp?)
 Bernat station has flooded
 Haven't lost equipment b/c of it, but basement gets full of water
 ↳ ran + did DEP sampling, wells were ok
 No spillage of gravel knt to CB

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |

Other: MA

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

MA

SITE CANDIDATE FOR FURTHER INVESTIGATION:

- YES NO MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):

- YES NO MAYBE

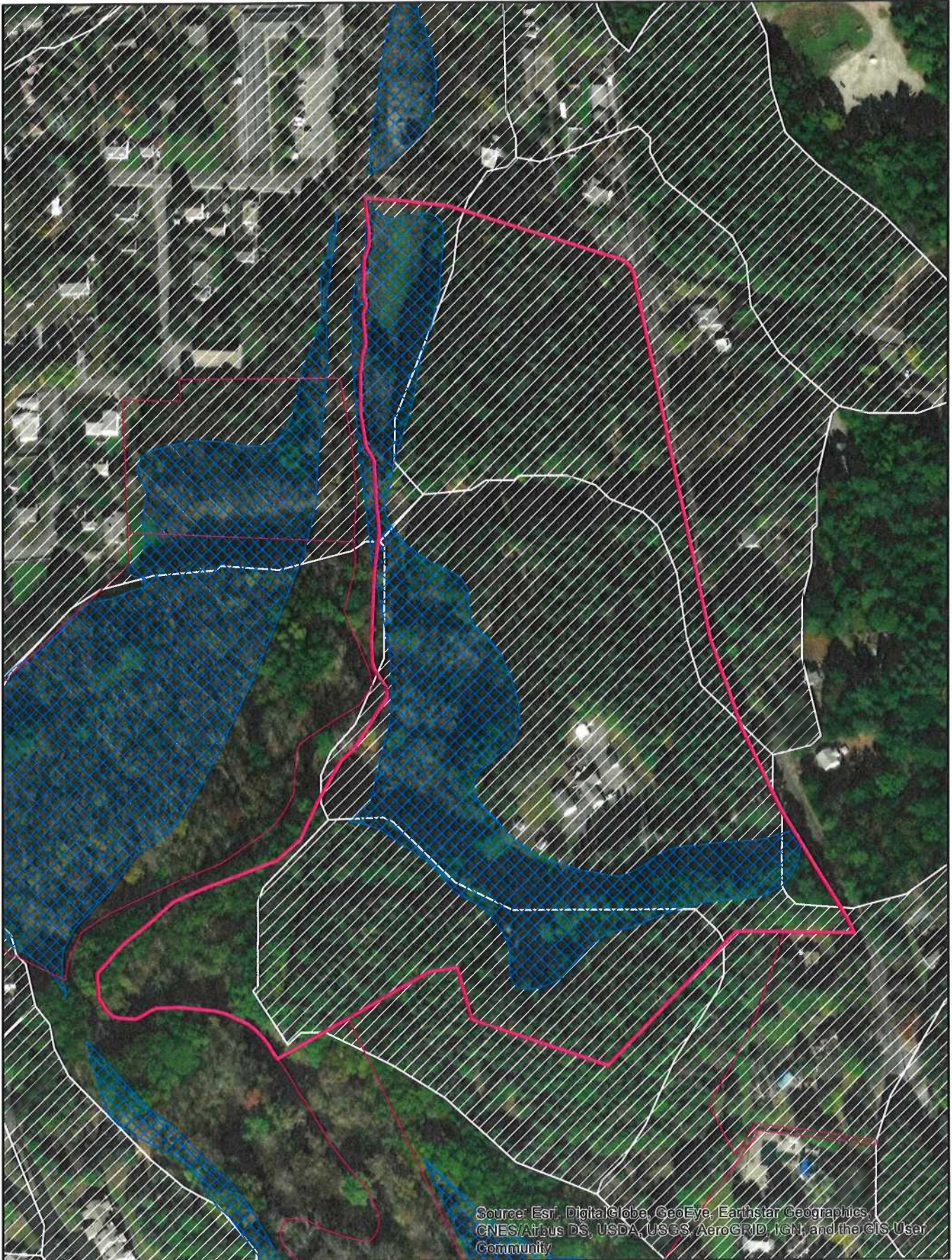
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):

- YES NO MAYBE

IF YES, TYPE(S): _____

Site Name: Uxbridge Public Works Buildings
Uxbridge Public Works Buildings
Site Number: 13

0 145 290 580 Feet



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Uxbridge Public Works Buildings
Uxbridge Public Works Buildings
Site Number: 13



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics,
CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User
Community

3:15 - 4:00

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>14</u>	
DATE: <u>8/20/19</u>	ASSESSED BY: <u>JBST</u>	CAMERA ID:		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	

SITE DESCRIPTION

Name: Town Hall
 Address: 21 S. Main Street, Uxbridge, MA

Ownership: Public Private Unknown
 If Public, Government Jurisdiction: Local State DOT Other: _____

Corresponding USSR/USA Field Sheet? Yes No If yes, Unique Site ID: _____

Proposed Retrofit Location:

Storage

- Existing Pond
- Above Roadway Culvert
- Below Outfall
- In Conveyance System
- In Road ROW
- Near Large Parking Lot
- Other: catch basin?

On-Site

- Hotspot Operation
- Small Parking Lot
- Individual Street
- Underground
- Individual Rooftop
- Small Impervious Area
- Landscape / Hardscape
- Other: _____

DRAINAGE AREA TO PROPOSED RETROFIT

Drainage Area ≈ _____
 Imperviousness ≈ _____ %
 Impervious Area ≈ _____

Drainage Area Land Use:

- Residential
 - SFH (< 1 ac lots)
 - SFH (> 1 ac lots)
 - Townhouses
 - Multi-Family
- Commercial
- Institutional fire dept.
- Industrial
- Transport-Related road
- Park
- Undeveloped
- Other: _____

Notes: N/A

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: Yes No Possible
 If Yes, Describe:

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:

2 CB in front of building (15 min parking area)
Roof leader coming off addition - goes into ground & one in front - gutter feeds to ground
ground gutter for rest of roof
drip line - put stone/under there naturally?
1 CB bottom of stairs | 1 CB front of parking lot

Existing Head Available and Points Where Measured:

not much directed drainage

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Drainage / flood control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

MA

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other:

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- potentially install porous pavement
 - small BR area in 15 min parking - overflow to existing CB
 curb off that area - BR to overflow to raised CB
 - Flooding
 - Replace that CB w/ an infiltrating CB - allows water to seep out first - then goes to reg part of CB - not as an educational tool but would be effective

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other:

Access:

- No Constraints
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other:

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other:

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

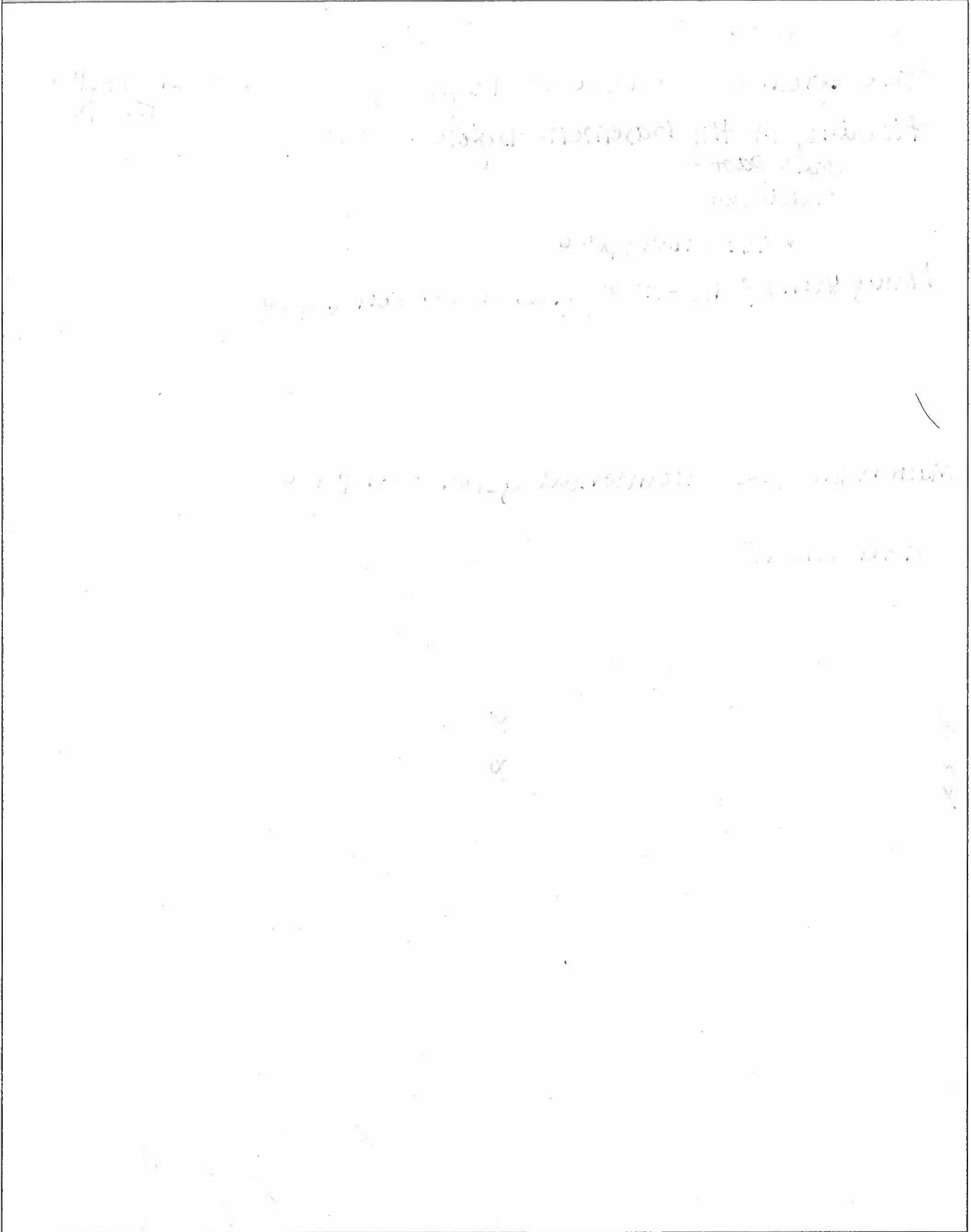
Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

MA

SKETCH



DESIGN OR DELIVERY NOTES

Built 1878
 Have generator in back of building - powers Town Hall + Fire Dept too
 - Flooding in the basement before - hasn't
 - years past -
 backside
 ↳ no crawl space
 Heavy storm? No - mostly groundwater coming up

 main building roof - no internal gutter - drip roof

 French drain?

 How tight is parking in the area? 15 min. spot.

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Uxbridge Town Hall & Fire/Ambulance - 21 S. Main Street



N



Site Number: 14



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

130:140

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>15</u>	
DATE: <u>8/20/19</u>	ASSESSED BY: <u>JBSH</u>	CAMERA ID:		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>Fire station - 313 N. Main (Abandoned)</u>					
Address: <u>313 N. Main St</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: <u>N/A</u>		<input type="checkbox"/> Underground	<input type="checkbox"/> Other: <u>N/A</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use: <u>Site at high point</u>		
Imperviousness ≈ _____ %			<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Institutional	
Impervious Area ≈ _____			<input checked="" type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial	
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (> 1 ac lots)	<input checked="" type="checkbox"/> Transport-Related <u>-road</u>	
			<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park	
			<input type="checkbox"/> Multi-Family	<input type="checkbox"/> Undeveloped	
			<input type="checkbox"/> Commercial	<input type="checkbox"/> Other: _____	
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<u>Roof - gutter but no downspout</u>					
Existing Head Available and Points Where Measured:					
<u>N/A</u>					



PROPOSED RETROFIT

Purpose of Retrofit:
 Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: N/A

Retrofit Volume Computations - Target Storage:

MA

Retrofit Volume Computations - Available Storage:

N/A

Proposed Treatment Option:
 Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: N/A

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:
Not likely candidate for G2

SITE CONSTRAINTS

Adjacent Land Use:
 Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____
Possible Conflicts Due to Adjacent Land Use? Yes No
If Yes, Describe:

Access:
 No Constraints
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:
 None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input type="checkbox"/>	Sewer
<input type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:
 Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____
Other factors: Historical site?

Soils:
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No
MA

SKETCH

N/A

DESIGN OR DELIVERY NOTES

- Could be a pocket park, not sure how many walk through this part of town
 - Not much runoff that GI would capture - small lot/roof & located at high point
 - Why building still standing? Possible historic site)

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: <u>N/A</u> | <input type="checkbox"/> Confirm soil types |

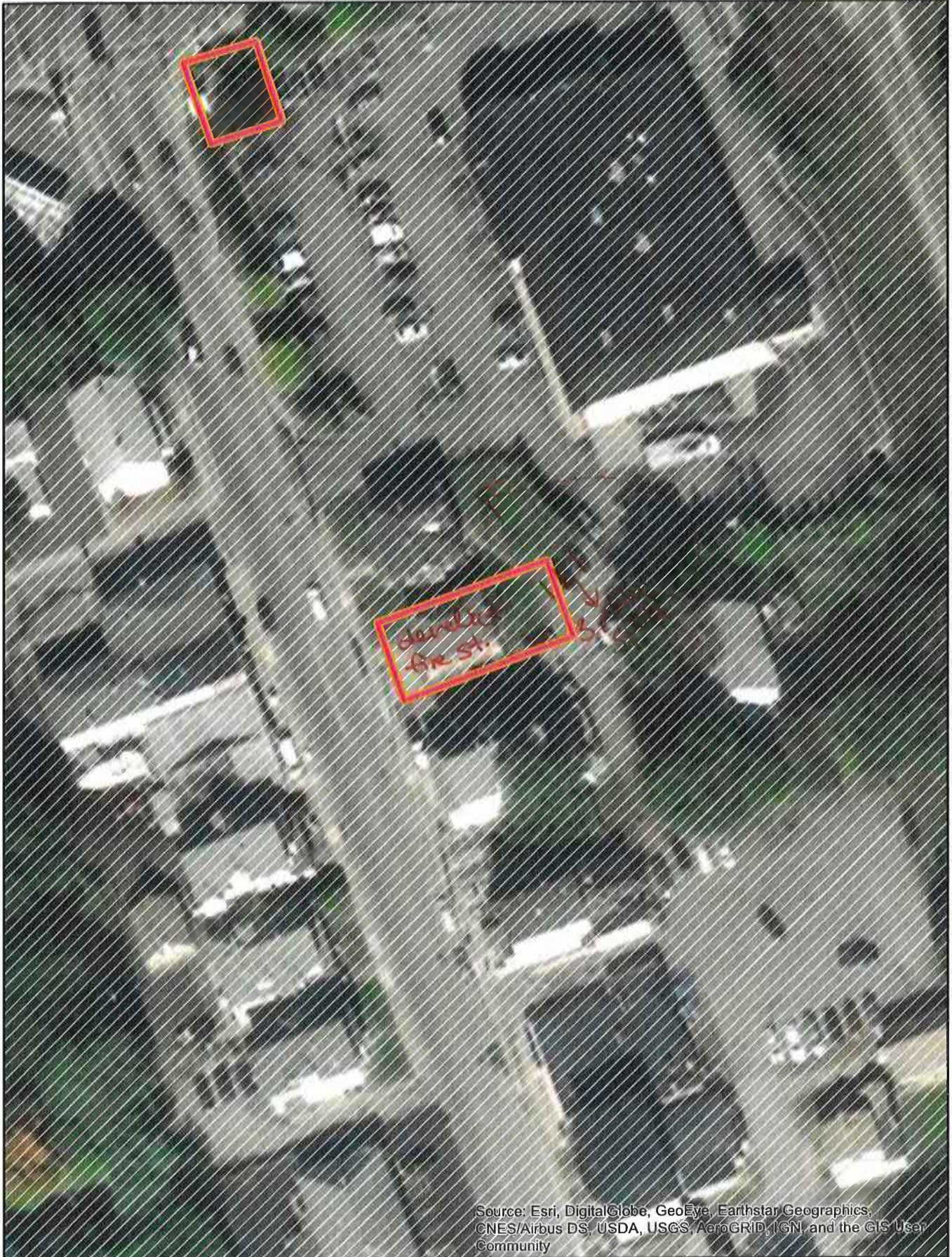
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

N/A

SITE CANDIDATE FOR FURTHER INVESTIGATION:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IF YES, TYPE(S): _____			

Site Name: Fire Station - 313 N. Main St.

Site Number: 15

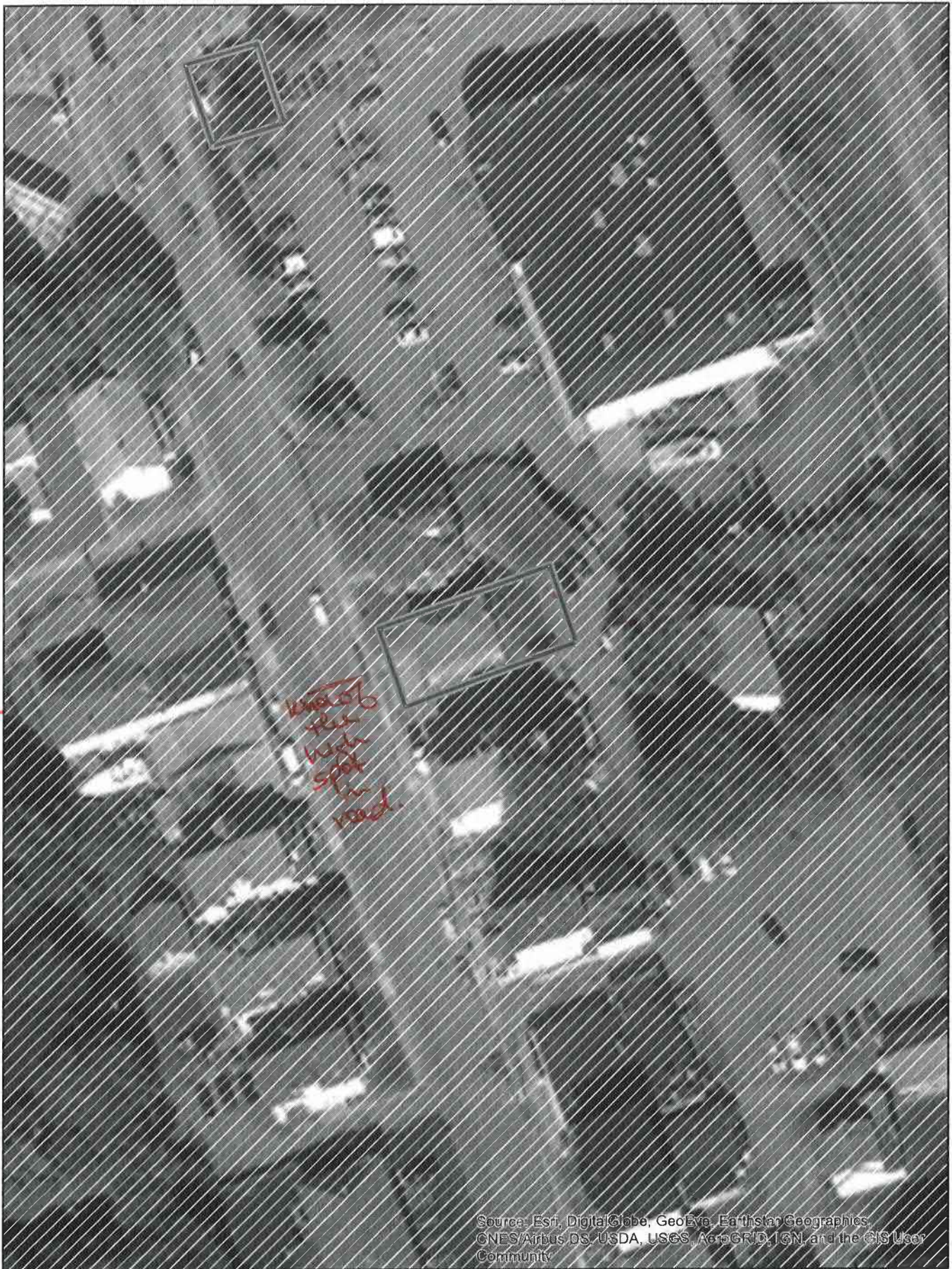


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Fire Station - 313 N. Main St.

Site Number: 15

0 37.5 75 150 Feet



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

10:45 - 11:00

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>160</u>	
DATE: <u>9/20/19</u>		ASSESSED BY: <u>JB SH</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
GPS ID:		LMK ID:		LONG:	
SITE DESCRIPTION					
Name: <u>Fire Department / Park Street</u>					
Address: <u>31 S. Main St.</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert			<input type="checkbox"/> Hotspot Operation <input checked="" type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System			<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot			<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: _____			<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential <input type="checkbox"/> Institutional		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (> 1 ac lots) <input checked="" type="checkbox"/> Transport-Related ^{road}		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance: <u>Issues w/ water coming in from structure on Park St.</u>					
Existing Head Available and Points Where Measured: <u>N/A</u>					

PROPOSED RETROFIT

Purpose of Retrofit:
 Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Drainage

<p>Retrofit Volume Computations - Target Storage:</p> <p style="text-align: center; font-size: 2em;">NA</p>	<p>Retrofit Volume Computations - Available Storage:</p> <p style="text-align: center; font-size: 2em;">NA</p>
--	---

Proposed Treatment Option:
 Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: Green roof

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- Potential green roof
 - see Park St. concept to fix wall leaks

SITE CONSTRAINTS

<p>Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional ^{- Town Hall} <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Describe:</p>	<p>Access: <input type="checkbox"/> No Constraints 7AV Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____</p>
--	--

<p>Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table border="0"> <tr> <th style="text-align: left;">Yes</th> <th style="text-align: left;">Possible</th> <th></th> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Sewer</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Water</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other: _____</td> </tr> </table> </p>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	<p>Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____</p>
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										

Soils:
 Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

NA

SKETCH

[Faint handwritten notes, possibly describing site conditions or survey data]

DESIGN OR DELIVERY NOTES

- wall leaking from Park St. → Steve T. said strong water flow during storms
 - multiple holes in wall where water coming through / sed. acc.
 ↓
 Steve: has videos of flow during rainstorms (don't have to be very heavy rain)

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Uxbridge Fire Department - 31 S. Main Street

Site Number: 16



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2:00-2:15

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>17</u>	
DATE: <u>8/26/19</u>		ASSESSED BY: <u>JB5H</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>Fire station - 222 Aldrich</u>					
Address: <u>222 Aldrich St, Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input checked="" type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input type="checkbox"/> Other: _____					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential <input checked="" type="checkbox"/> Institutional - <u>FD</u>		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (> 1 ac lots) <input checked="" type="checkbox"/> Transport-Related <u>road</u>		
			<input type="checkbox"/> Townhouses <input type="checkbox"/> Park		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<p><u>outfall to gutters beside building</u> → 1 CB on lot - accepting flow from road</p> <p>Downspouts on side of building draining directly next to building</p> <p>1 manhole side of building - sanitary or SW?</p> <p>1 CB behind building in PL</p> <p>Linear grate drain in front of garage/bottom of driveway</p>					
Existing Head Available and Points Where Measured:					
<u>N/A</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: *discharge*

Retrofit Volume Computations - Target Storage:

N/A

Retrofit Volume Computations - Available Storage:

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other:

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

① - pull rain runoff from flag pole side of building - triangle for BR
 ② - BR in the front - get in flow from road/possible swale depending on leech field/suction area
 -OR do further up along driveway, let overflow go to back (forested) area & draw in roof leaders - could reslope some - figure out where grate is draining / the not big enough

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other:

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe: *sensitive area!*

Access:

- No Constraints
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other:

7 B/D

Conflicts with Existing Utilities:

- None
 Unknown
 Yes Possible
 Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other:

not in front area

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

N/A

SKETCH

downspout



DESIGN OR DELIVERY NOTES

check to see if area/gully next to FS is a wetland/sensitive area
 ↳ where the 2 outfalls currently are
 - Leech field
 - Larry knows of no plans for property

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

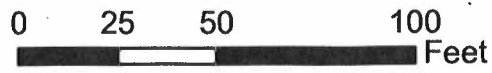
- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

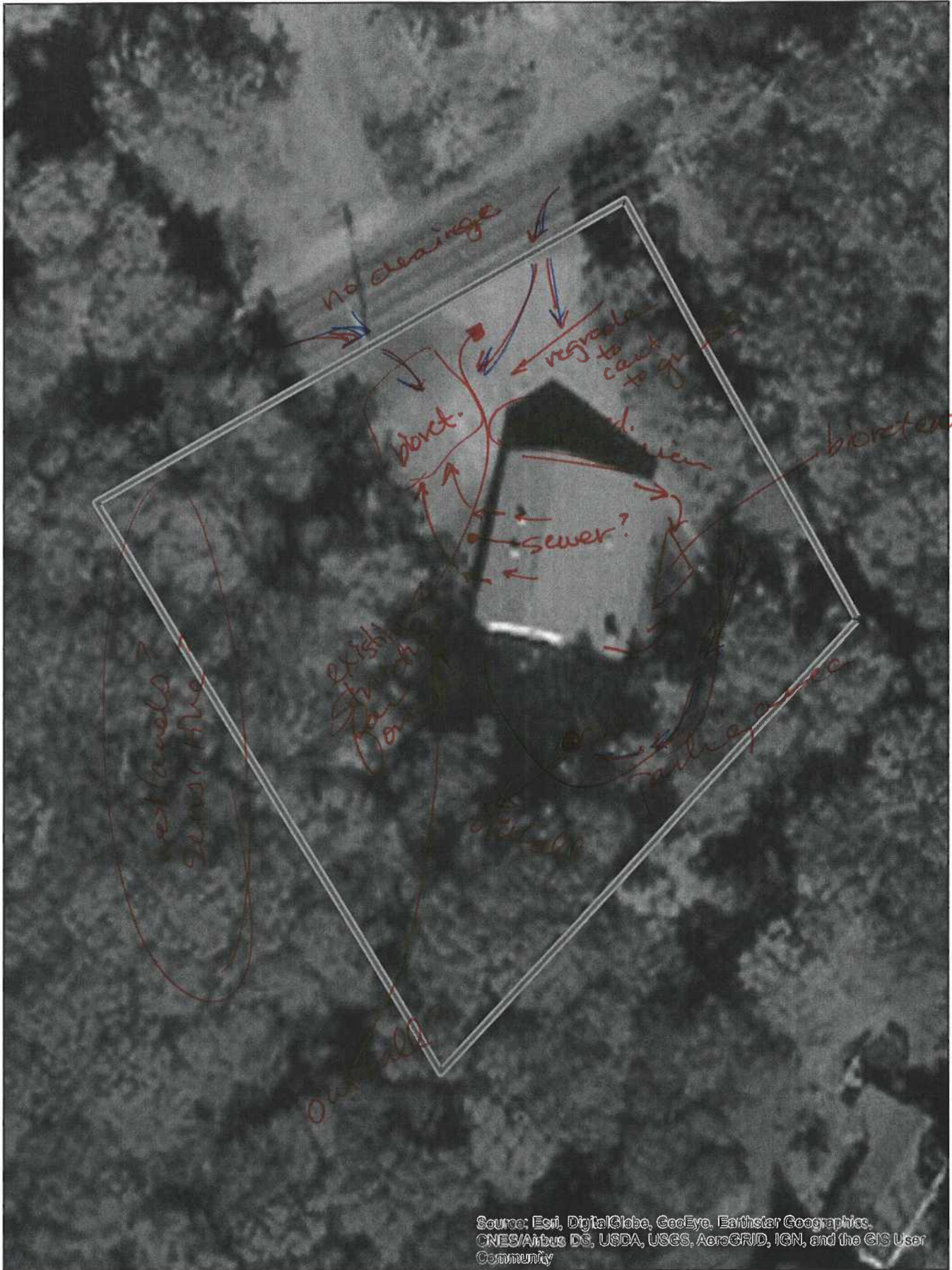
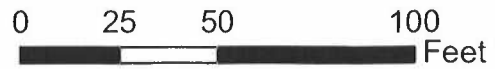
SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: UFD STA 3 - 222 Aldrich Street

Site Number: 17



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





Jim + 1 staff water Division

11:10-11:05

WATERSHED: <u>Blackstone</u>	SUBWATERSHED:	UNIQUE SITE ID: <u>18</u>
DATE: <u>8/26/19</u>	ASSESSED BY: <u>JB SH</u>	CAMERA ID:
GPS ID:	LMK ID:	LAT:
		LONG:

SITE DESCRIPTION

Name: water towers
 Address: 45 Richardson Vxbridge, MA

Ownership: Public Private Unknown
 If Public, Government Jurisdiction: Local State DOT Other: _____

Corresponding USSR/USA Field Sheet? Yes No If yes, Unique Site ID: _____

Proposed Retrofit Location:

Storage	On-Site
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Hotspot Operation
<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Individual Rooftop
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> Small Parking Lot
<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Impervious Area
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Individual Street
<input type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Landscape / Hardscape
<input checked="" type="checkbox"/> Other: <u>NIA</u>	<input type="checkbox"/> Underground
	<input checked="" type="checkbox"/> Other: <u>NIA</u>

DRAINAGE AREA TO PROPOSED RETROFIT

Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ _____	Drainage Area Land Use:
Notes: <u>MA</u>	<input type="checkbox"/> Residential <input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Townhouses <input type="checkbox"/> Multi-Family <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input checked="" type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: Yes No Possible
 If Yes, Describe:

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
- Country drainage - sheet flow - plenty of room to drain to surrounding areas

Existing Head Available and Points Where Measured:
NIA

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: N/A

Retrofit Volume Computations - Target Storage:

N/A

Retrofit Volume Computations - Available Storage:

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

N/A

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional N/A
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Access:

- No Constraints N/A
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown

Yes	Possible	
<input type="checkbox"/>	<input type="checkbox"/>	Sewer <u>N/A</u>
<input type="checkbox"/>	<input type="checkbox"/>	Water
<input type="checkbox"/>	<input type="checkbox"/>	Gas
<input type="checkbox"/>	<input type="checkbox"/>	Cable
<input type="checkbox"/>	<input type="checkbox"/>	Electric
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights
<input type="checkbox"/>	<input type="checkbox"/>	Overhead Wires
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____ N/A

Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No N/A

SKETCH

N/A

all samples are for lead - 10/1/01

1/1/01

DESIGN OR DELIVERY NOTES

Large paved area - landing zone
High elev
close to center of town
country drainage
sheet flow - plenty of room to infiltrate to surr. area
no real poll. sources

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- Confirm property ownership
 - Confirm drainage area
 - Confirm drainage area impervious cover
 - Confirm volume computations
 - Complete concept sketch
 - Obtain existing stormwater practice as-builts
 - Obtain site as-builts
 - Obtain detailed topography
 - Obtain utility mapping
 - Confirm storm drain invert elevations
 - Confirm soil types
- Other: MA - not good candidate

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

MA

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
 IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
 IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Site Name: Water Tower

Site Number: 18

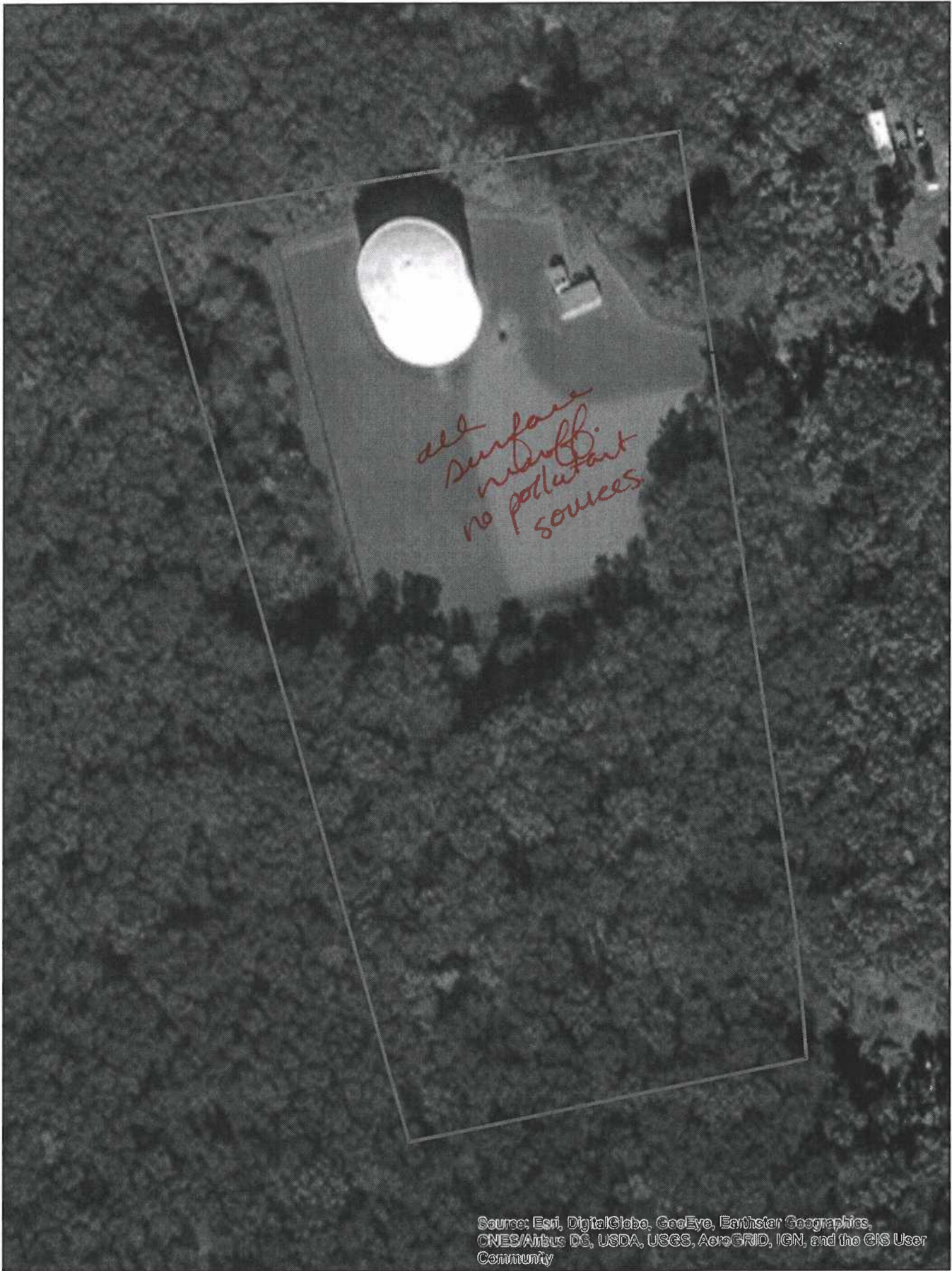


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Water Tower

Site Number: 18

0 45 90 180 Feet



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

11:20 - 11:50

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID: 19	
DATE: 8/20/19		ASSESSED BY: JBSH		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
LONG:					
SITE DESCRIPTION					
Name: <u>Pout Pond Recreational Area</u>					
Address: <u>70 W River Road, Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other:					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert					
<input type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System					
<input type="checkbox"/> In Road ROW <input checked="" type="checkbox"/> Near Large Parking Lot					
<input type="checkbox"/> Other: _____					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop					
<input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area					
<input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape					
<input type="checkbox"/> Underground <input checked="" type="checkbox"/> Other: <u>Parking lot (large)</u>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential <input type="checkbox"/> Institutional		
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial		
Notes: <u>MA</u>			<input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related		
			<input type="checkbox"/> Townhouses <input checked="" type="checkbox"/> Park / parking lot		
			<input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped		
			<input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
- NO CB in PL - flow goes down parking lot and into grassy/sand area towards beach/water					
- sed acc: near bottom of PL					
Existing Head Available and Points Where Measured:					
MA					



PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Discharge

Retrofit Volume Computations - Target Storage:

N/A

Retrofit Volume Computations - Available Storage:

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention
 Filtering Practice Infiltration Swale Other: pavement removal

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- Get rid of pavement - half near wetland? - Plant BR or let it regrow
 Back away from pond
 - turn middle of PL to veg. space
 - could cutoff the side of PL facing wetlands
 - Filter/BR area near side of snack shack
 - watch next season - see how busy it gets
 - potential swale near end of PL/grassy area + pavement removal (need to keep Handicap spaces)

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional
 Industrial Transport-Related Park
 Undeveloped Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Access:

- No Constraints TBD
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Conflicts with Existing Utilities:

- None
 Unknown
- | Yes | Possible | |
|-------------------------------------|-------------------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Water |
| <input type="checkbox"/> | <input type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

- | | | |
|------------------------------|-----------------------------------|--|
| Dam Safety Permits Necessary | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Wetlands | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to a Stream | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Floodplain Fill | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Forests | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
| Impacts to Specimen Trees | <input type="checkbox"/> Probable | <input checked="" type="checkbox"/> Not Probable |
- How many? _____
Approx. DBH _____

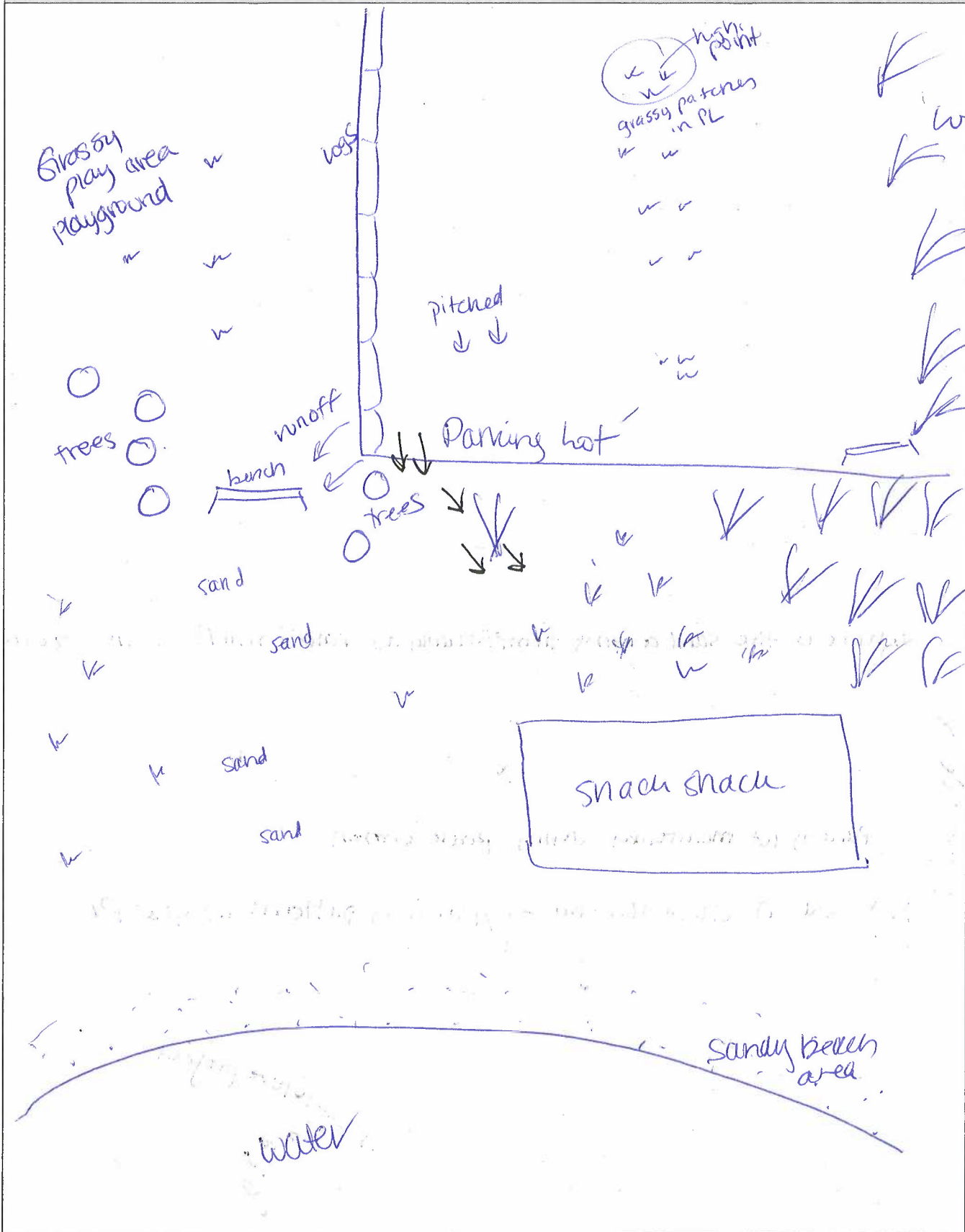
Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

N/A

SKETCH



DESIGN OR DELIVERY NOTES

- PL has filled up in summer - people park along edges, not in fill
- could be used more efficiently to accommodate same # of cars
- peak capacity ~ 30 cars in the lot
- no current plans to redo PL
- \$2000/yr budget - would need alternate funding source for paving/redone lot
- septic attached to shack - not sure where catch field is
 - don't get it pumped out every year
 - near where trees are?
 - Keep practice further away
- runoff currently flows down to beach area
- Bill - people mostly do park around edges
 - take out middle? sides?
- Park in middle - busy busy days - weekends where very hot *- park anywhere*
- overflow from West Hill Dam
- long time since paved
- more lines - more efficient
- watch in next season
- where is the sand coming from? probably not runoff from PL - seems too deep

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| | <input type="checkbox"/> Confirm soil types |
| <input checked="" type="checkbox"/> Other: <u>Parking lot monitoring during peak season</u> | |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Next season - check the traffic/parking patterns in the PL

future project

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE

IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE

IF YES, TYPE(S): _____

Site Name: Parking Lot Serving Recreational Area at Pout Pond

0

100

200

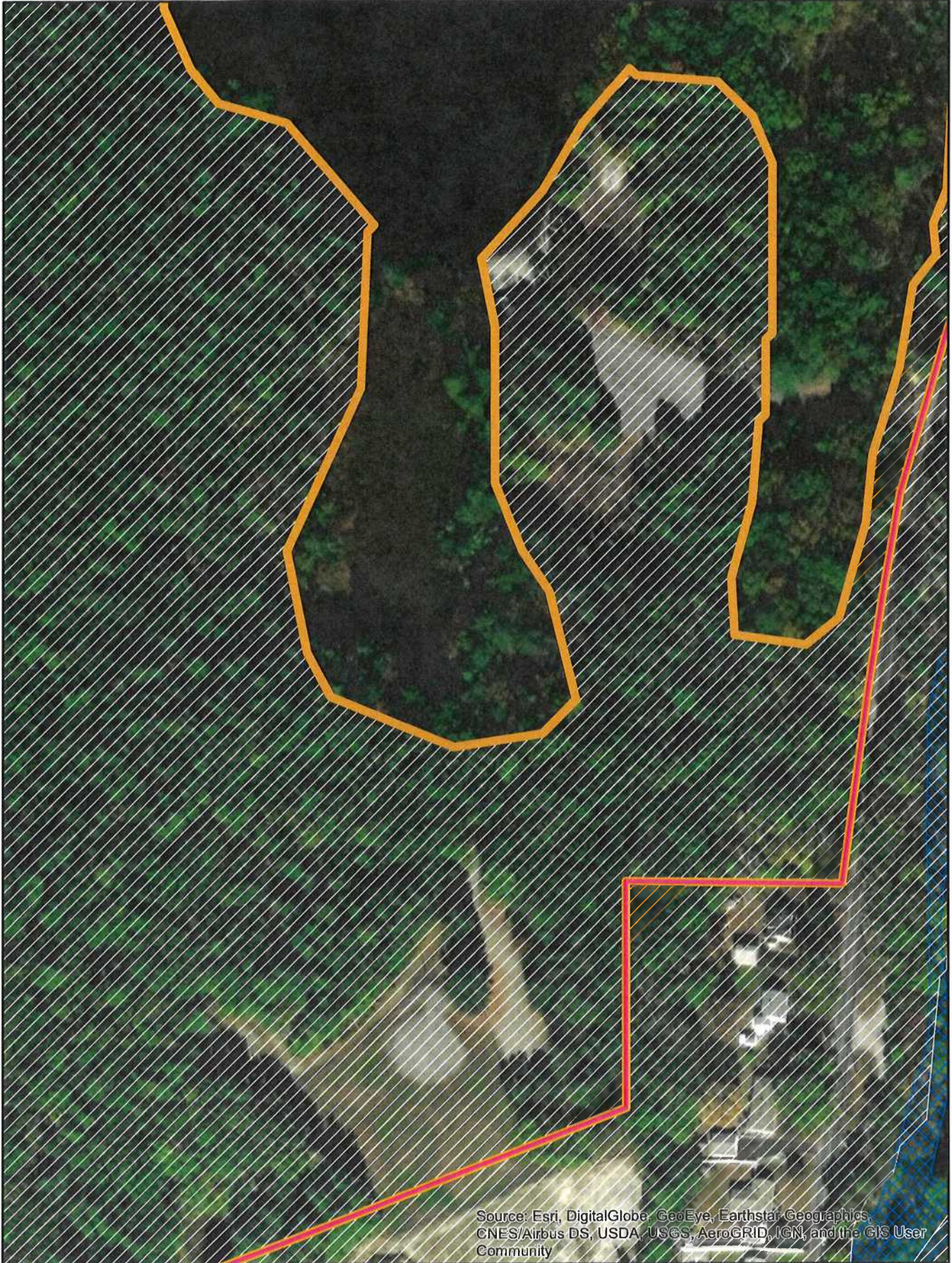
400

Feet

N



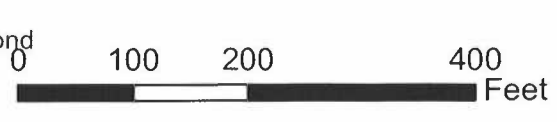
Site Number: 19



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Parking Lot Serving Recreational Area at Pout Pond

Site Number: 19



2 of 2



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

140-215

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>23</u>	
DATE: <u>8/16/19</u>	ASSESSED BY: <u>JBSH</u>	CAMERA ID:		PICTURES:	
GPS ID:	LMK ID:	LAT:		LONG:	
SITE DESCRIPTION					
Name: <u>McCloskey Building (vacant)</u>					
Address: <u>62 Capron St. Uxbridge, MA</u>					
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input checked="" type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: _____		<input type="checkbox"/> Underground	<input checked="" type="checkbox"/> Other: <u>Parking lot (large)</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input checked="" type="checkbox"/> Residential	<input checked="" type="checkbox"/> Institutional	
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial	
Notes: <u>MA</u>			<input type="checkbox"/> SFH (> 1 ac lots)	<input type="checkbox"/> Transport-Related	
			<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park	
			<input type="checkbox"/> Multi-Family	<input type="checkbox"/> Undeveloped	
			<input type="checkbox"/> Commercial	<input type="checkbox"/> Other: _____	
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<p>- 3 CBS in PL</p> <p>- Roof drainage (near fields) - pipes draining in close proximity to building</p> <p>- Roof drainage - small portion draining to staircase/windows (entering classrooms)</p> <p>- Parking lot near gated exit - sediment acc.</p>					
Existing Head Available and Points Where Measured:					
<u>N/A</u>					

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality
- Demonstration / Education
- Recharge
- Repair
- Channel Protection
- Other: Drainage
- Flood Control

Retrofit Volume Computations - Target Storage:

MA

Retrofit Volume Computations - Available Storage:

MA

Proposed Treatment Option:

- Extended Detention
- Filtering Practice
- Wet Pond
- Infiltration
- Created Wetland
- Swale
- Bioretention
- Other: pavement reduction

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- Parking lot - pavement reduction & install BR islands
 - near gated exit - install BR along sides of exit (reduce pavement, too)

SITE CONSTRAINTS

Adjacent Land Use:

- Residential
- Commercial
- Institutional -schools
- Industrial
- Transport-Related
- Park
- Undeveloped
- Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Access:

- No Constraints TBD
- Constrained due to:
 - Slope
 - Utilities
 - Structures
 - Other: _____
 - Space
 - Tree Impacts
 - Property Ownership

Conflicts with Existing Utilities:

- None
 - Unknown
- | Yes | Possible | |
|-------------------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sewer |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Water |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Gas |
| <input type="checkbox"/> | <input type="checkbox"/> | Cable |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric |
| <input type="checkbox"/> | <input type="checkbox"/> | Electric to Streetlights |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Overhead Wires |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

Potential Permitting Factors:

- Dam Safety Permits Necessary Probable Not Probable
 - Impacts to Wetlands Probable Not Probable
 - Impacts to a Stream Probable Not Probable
 - Floodplain Fill Probable Not Probable
 - Impacts to Forests Probable Not Probable
 - Impacts to Specimen Trees Probable Not Probable
- How many? _____
 Approx. DBH _____

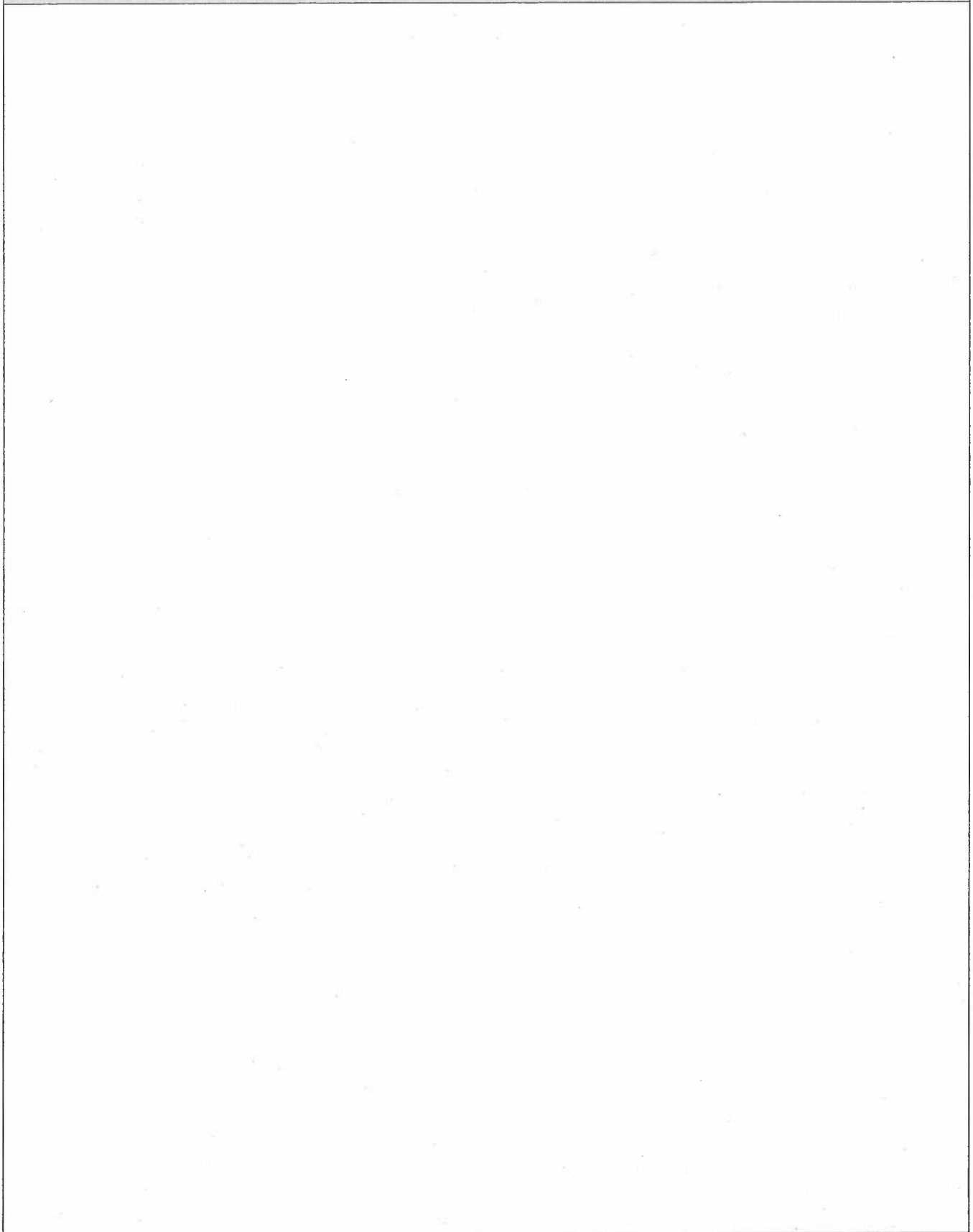
Other factors: _____

Soils:

- Soil auger test holes: Yes No
- Evidence of poor infiltration (clays, fines): Yes No
- Evidence of shallow bedrock: Yes No
- Evidence of high water table (gleying, saturation): Yes No

MA

SKETCH



DESIGN OR DELIVERY NOTES

- Potential future uses of site - EOC, EOP, senior center, Town Hall (empty 3-5 yrs now)
- Paul: Not sure if lot used for field parking - usually see people park along road
- Nearby - schools
- on site - little league field - still used, full sized field, maybe?
- still in schools' property lot, may go to town (4 may. inc. fields)
- Drainage issues - roof drain/ pipes/ stairs + stairwell
- could beautify front - rip out speed bump?
- EOC - solar? No major shortages - 0.5 + 10 - storms, mostly main issue
- could break up PL - is huge
- do see people using path to cut through from fields to PL (near gated exit)

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input checked="" type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

- SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
- IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
- IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
- IF YES, TYPE(S): _____

McCloskey - 23

20 + 29 Paul

23

potential to get rid of parking lot

ED EOC

senior center

Town Hall

3-5 yrs empty

didn't last long as MS - was HS

Not sure if lot used for field parking

- usually see people park along road

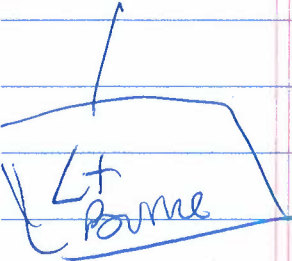
3 CBS in lot

- could turned into something

w/stop past HS

Root HS - 146 near

want price
path
Wodge to
Wodge -
Thy Pittsburg
in.



Paul -
8:30 - 2

Little league field still used

full sized field - maybe still used?

- still in school's property list

↳ eventually go to town?

- would field go w/ it?

drainage issues - roof drain pipes

- stairs - windows/stairwell

71m - route

Senior center
Police

electric
overhead

- change to lot

- something in front - beautification

rip out speed bump!

barretention

EOC - solar - separate solar?

- no major
storage issues
05 2010
major storms -
aside from
that - no
major problems

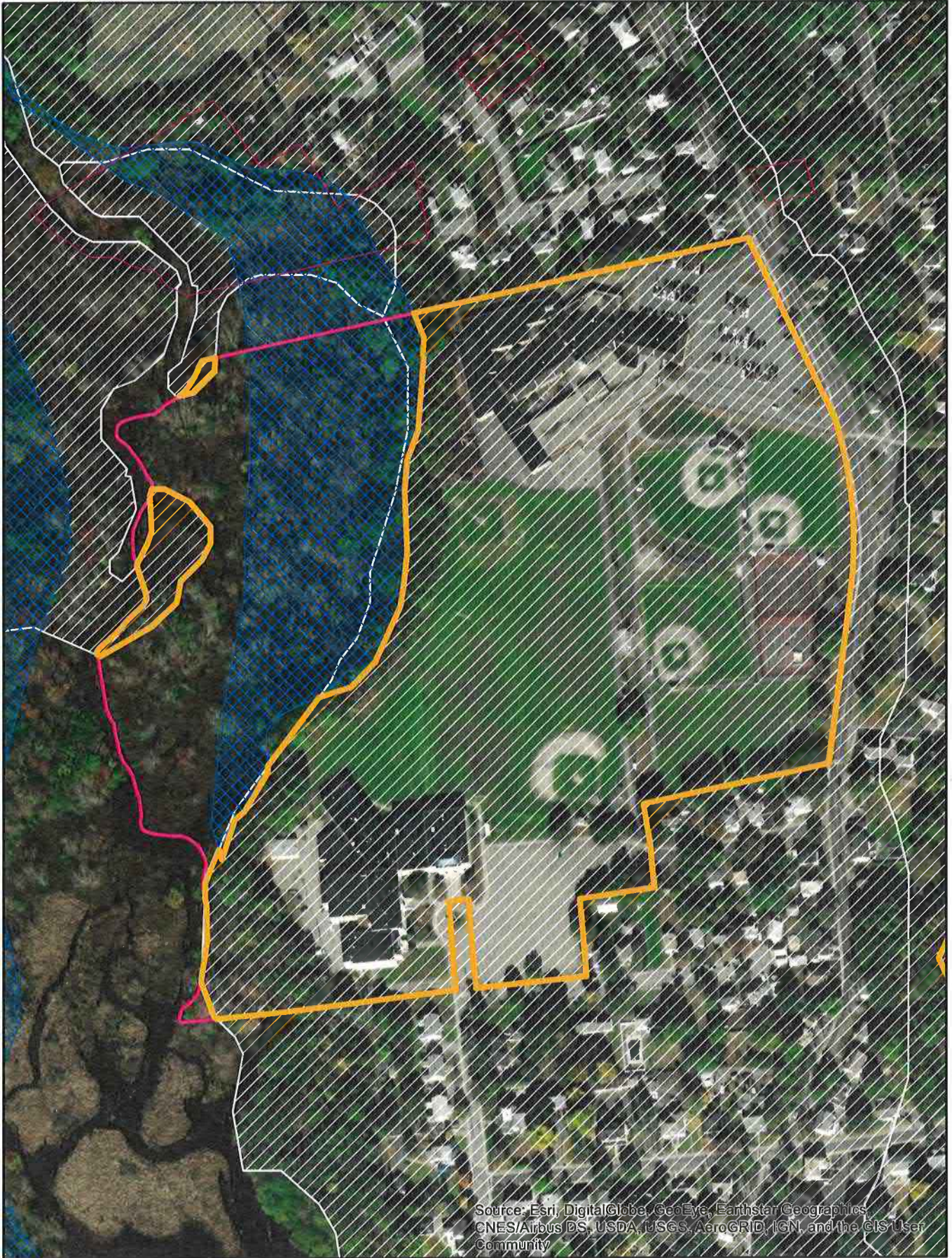
if parking lot staying - break it up - islands -
water retention

parking lot - could break up
"sea of asphalt"

Site Name: Taft Elementary School

Site Number: 2

0 162.5 325 650 Feet



Site Name: Taft Elementary School

Site Number: 2

0 162.5 325 650 Feet

N

walking interactive nature playground → mulched area



solar canopy + broekt. islands - low maint. planting
low maintenance
curriculum
sandybag
away to power etc?
brook canopy

sandybag

McCloskey - senior center 2 E.O.C. etc. 3 likeley plan

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>25</u>				
DATE: <u>8/20/19</u>	ASSESSED BY: <u>JBSH</u>	CAMERA ID:		PICTURES:				
GPS ID:	LMK ID:	LAT:		LONG:				
SITE DESCRIPTION								
Name: <u>Park St.</u>								
Address: <u>Park St, Uxbridge, MA</u>								
Ownership: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown								
If Public, Government Jurisdiction: <input checked="" type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____								
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____								
Proposed Retrofit Location:								
Storage			On-Site					
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<u>TBD</u>	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop	<u>TBD</u>			
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System		<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area				
<input type="checkbox"/> In Road ROW	<input type="checkbox"/> Near Large Parking Lot		<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape				
<input type="checkbox"/> Other: _____			<input type="checkbox"/> Underground	<input type="checkbox"/> Other: _____				
DRAINAGE AREA TO PROPOSED RETROFIT								
Drainage Area ≈ _____			Drainage Area Land Use:					
Imperviousness ≈ _____ %			<input checked="" type="checkbox"/> Residential					
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)					
Notes: <u>N/A</u>			<input type="checkbox"/> SFH (> 1 ac lots)					
			<input type="checkbox"/> Townhouses			<input checked="" type="checkbox"/> Institutional - <u>fire station</u>		
			<input type="checkbox"/> Multi-Family			<input type="checkbox"/> Industrial		
			<input type="checkbox"/> Commercial			<input type="checkbox"/> Transport-Related		
						<input type="checkbox"/> Park		
			<input type="checkbox"/> Undeveloped					
			<input type="checkbox"/> Other: _____					
EXISTING STORMWATER MANAGEMENT								
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible								
If Yes, Describe:								
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:								
<u>Drainage issues - flooding near/on personal property - spilling over to fire department through wall leakage</u>								
Existing Head Available and Points Where Measured:								
<u>N/A</u>								

PROPOSED RETROFIT

Purpose of Retrofit:

- Water Quality Recharge Channel Protection Flood Control
 Demonstration / Education Repair Other: Drainage

Retrofit Volume Computations - Target Storage:

N/A

Retrofit Volume Computations - Available Storage:

N/A

Proposed Treatment Option:

- Extended Detention Wet Pond Created Wetland Bioretention TBD
 Filtering Practice Infiltration Swale Other: _____

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:

- Potential underground infiltration in ~~upside~~ uphill side of road. if utilities to be avoided

SITE CONSTRAINTS

Adjacent Land Use:

- Residential Commercial Institutional - fire station
 Industrial Transport-Related Park
 Undeveloped Other: _____

Access:

- No Constraints TBD
 Constrained due to
 Slope Space
 Utilities Tree Impacts
 Structures Property Ownership
 Other: _____

Possible Conflicts Due to Adjacent Land Use? Yes No

If Yes, Describe:

Conflicts with Existing Utilities:

- None
 Unknown
Yes **Possible**
 Sewer
 Water
 Gas
 Cable
 Electric
 Electric to Streetlights
 Overhead Wires
 Other: _____

Potential Permitting Factors:

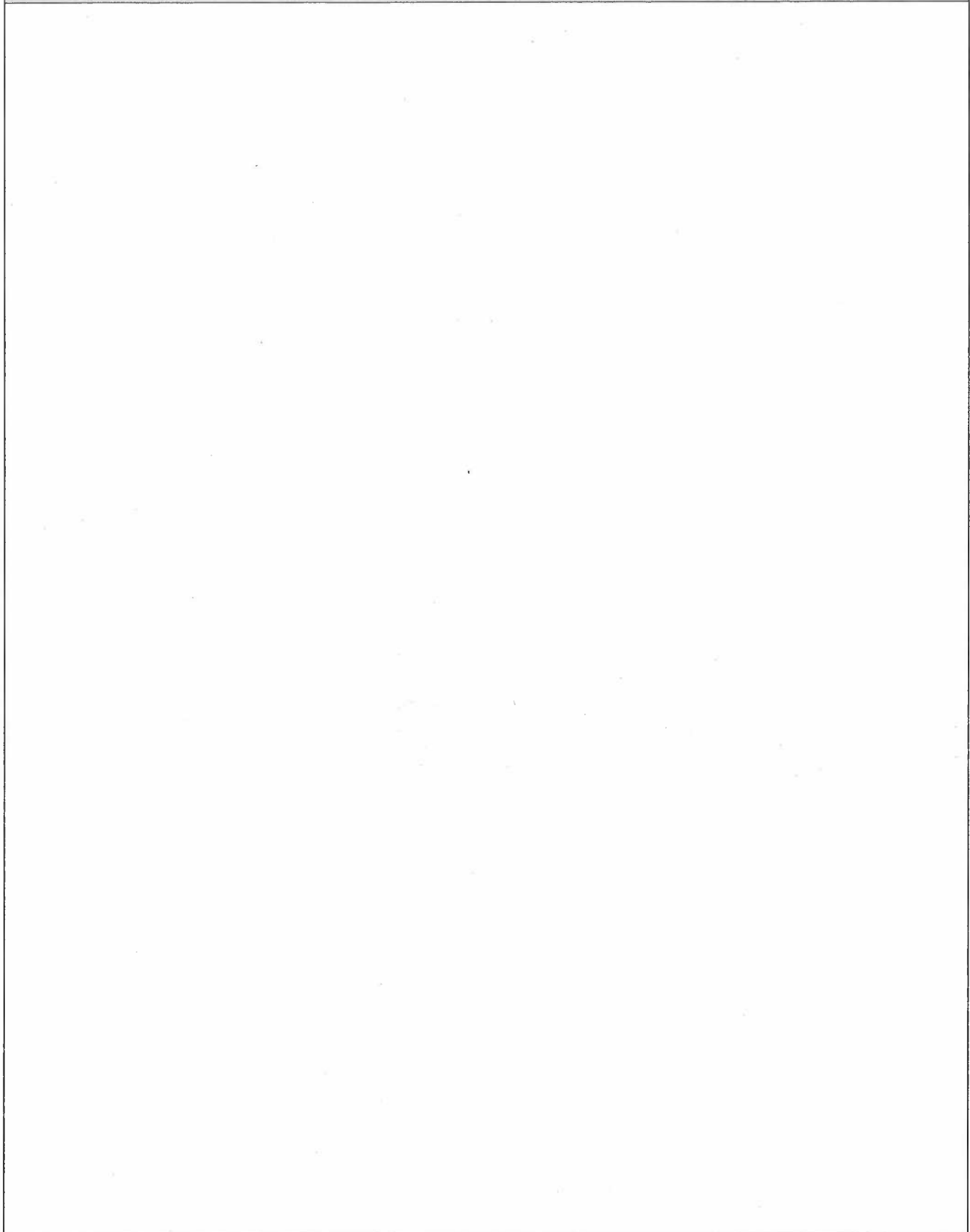
- Dam Safety Permits Necessary Probable Not Probable
 Impacts to Wetlands Probable Not Probable
 Impacts to a Stream Probable Not Probable
 Floodplain Fill Probable Not Probable
 Impacts to Forests Probable Not Probable
 Impacts to Specimen Trees Probable Not Probable
 How many? _____
 Approx. DBH _____

Other factors: _____

Soils:

- Soil auger test holes: Yes No
 Evidence of poor infiltration (clays, fines): Yes No
 Evidence of shallow bedrock: Yes No
 Evidence of high water table (gleying, saturation): Yes No

SKETCH



DESIGN OR DELIVERY NOTES

(This section is currently blank.)

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

<input checked="" type="checkbox"/> Confirm property ownership	<input type="checkbox"/> Obtain existing stormwater practice as-builts
<input checked="" type="checkbox"/> Confirm drainage area	<input type="checkbox"/> Obtain site as-builts
<input type="checkbox"/> Confirm drainage area impervious cover	<input type="checkbox"/> Obtain detailed topography
<input checked="" type="checkbox"/> Confirm volume computations	<input checked="" type="checkbox"/> Obtain utility mapping
<input checked="" type="checkbox"/> Complete concept sketch	<input type="checkbox"/> Confirm storm drain invert elevations
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Confirm soil types

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Property ownership

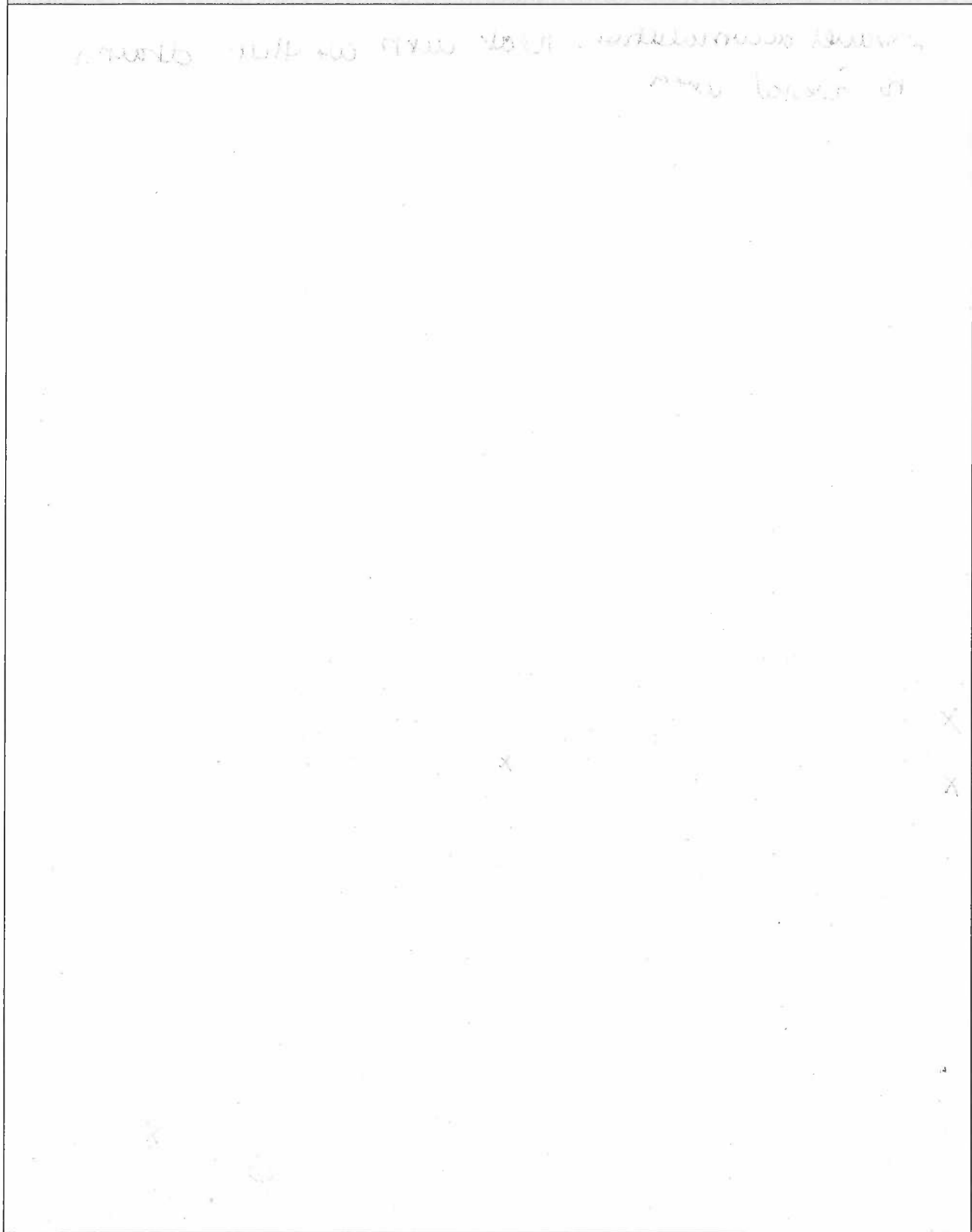
SITE CANDIDATE FOR FURTHER INVESTIGATION:	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> MAYBE

IF YES, TYPE(S): _____

WATERSHED: <u>Blackstone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>20</u>	
DATE: <u>10/15/19</u>		ASSESSED BY: <u>JB 84</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
				LONG:	
SITE DESCRIPTION					
Name: <u>VFW Post # 1385</u>					
Address: _____					
Ownership: <u>VFW</u> <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown					
If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage			On-Site		
<input type="checkbox"/> Existing Pond	<input type="checkbox"/> Above Roadway Culvert	<input type="checkbox"/> Hotspot Operation	<input type="checkbox"/> Individual Rooftop		
<input type="checkbox"/> Below Outfall	<input type="checkbox"/> In Conveyance System	<input type="checkbox"/> Small Parking Lot	<input type="checkbox"/> Small Impervious Area		
<input type="checkbox"/> In Road ROW	<input checked="" type="checkbox"/> Near Large Parking Lot	<input type="checkbox"/> Individual Street	<input type="checkbox"/> Landscape / Hardscape		
<input type="checkbox"/> Other: _____		<input type="checkbox"/> Underground	<input type="checkbox"/> Other: <u>parking lot (large)</u>		
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____			Drainage Area Land Use:		
Imperviousness ≈ _____ %			<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> Institutional	
Impervious Area ≈ _____			<input type="checkbox"/> SFH (< 1 ac lots)	<input type="checkbox"/> Industrial	
Notes: <u>MA</u>			<input type="checkbox"/> SFH (> 1 ac lots)	<input type="checkbox"/> Transport-Related	
			<input type="checkbox"/> Townhouses	<input type="checkbox"/> Park	
			<input type="checkbox"/> Multi-Family	<input type="checkbox"/> Undeveloped	
			<input type="checkbox"/> Commercial	<input type="checkbox"/> Other: _____	
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible					
If Yes, Describe:					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<p>- NO parking lot CB</p> <p>- cut in curb for drainage to adj. forested area</p>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other: <u>Drainage</u>																												
MA	N/A																											
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input checked="" type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input checked="" type="checkbox"/> Other: <u>sediment forebay</u>																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <p>Potential infiltration near Dudley Dogs - remove paving spaces</p> <ul style="list-style-type: none"> - Bioretention islands to break up pavement - Permeable PAVING for Dudley Dogs - Bioretention along road/entrance → where parking spots are currently - make more defined entrance 																												
something near curb cut ↓ sediment forebay																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints TBD Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table style="width: 100%;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Sewer</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Water</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Gas</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Cable</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Electric to Streetlights</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>Overhead Wires</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>Other: _____</td></tr> </tbody> </table>	Yes	Possible		<input type="checkbox"/>	<input type="checkbox"/>	Sewer	<input type="checkbox"/>	<input type="checkbox"/>	Water	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input checked="" type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
Yes	Possible																											
<input type="checkbox"/>	<input type="checkbox"/>	Sewer																										
<input type="checkbox"/>	<input type="checkbox"/>	Water																										
<input type="checkbox"/>	<input type="checkbox"/>	Gas																										
<input type="checkbox"/>	<input type="checkbox"/>	Cable																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric																										
<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Overhead Wires																										
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____																										
Soils: Soil auger test holes: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																												

SKETCH



DESIGN OR DELIVERY NOTES

Gravel accumulation near curb cut that drains to forested area

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

- | | | | |
|--|------------------------------|--|---|
| SITE CANDIDATE FOR FURTHER INVESTIGATION: | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> MAYBE |
| IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
| IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO | <input type="checkbox"/> MAYBE |
- IF YES, TYPE(S): _____

VFW

Site Number:

0 75 150 300 Feet



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

VFW

Site Number:

0 75 150 300 Feet



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

~9:20-9:40

WATERSHED: Blackstone SUBWATERSHED: _____ UNIQUE SITE ID: 27

DATE: 10/15/19 ASSESSED BY: JBSL CAMERA ID: _____ PICTURES: _____

GPS ID: _____ LMK ID: _____ LAT: _____ LONG: _____

SITE DESCRIPTION

Name: District Court
Address: 241 S Main St, Uxbridge, MA

Ownership: Public Private Unknown
If Public, Government Jurisdiction: Local State DOT Other: _____

Corresponding USSR/USA Field Sheet? Yes No If yes, Unique Site ID: _____

Proposed Retrofit Location:

Storage
 Existing Pond Above Roadway Culvert
 Below Outfall In Conveyance System
 In Road ROW Near Large Parking Lot
 Other: per basin in grass triangle

On-Site
 Hotspot Operation Individual Rooftop
 Small Parking Lot Small Impervious Area
 Individual Street Landscape / Hardscape
 Underground Other: multiple streets

DRAINAGE AREA TO PROPOSED RETROFIT

Drainage Area ≈ _____
Imperviousness ≈ _____ %
Impervious Area ≈ _____

Notes: _____

Drainage Area Land Use:
 Residential Institutional
 SFH (< 1 ac lots) Industrial
 SFH (> 1 ac lots) Transport-Related
 Townhouses Park
 Multi-Family Undeveloped
 Commercial Other: _____

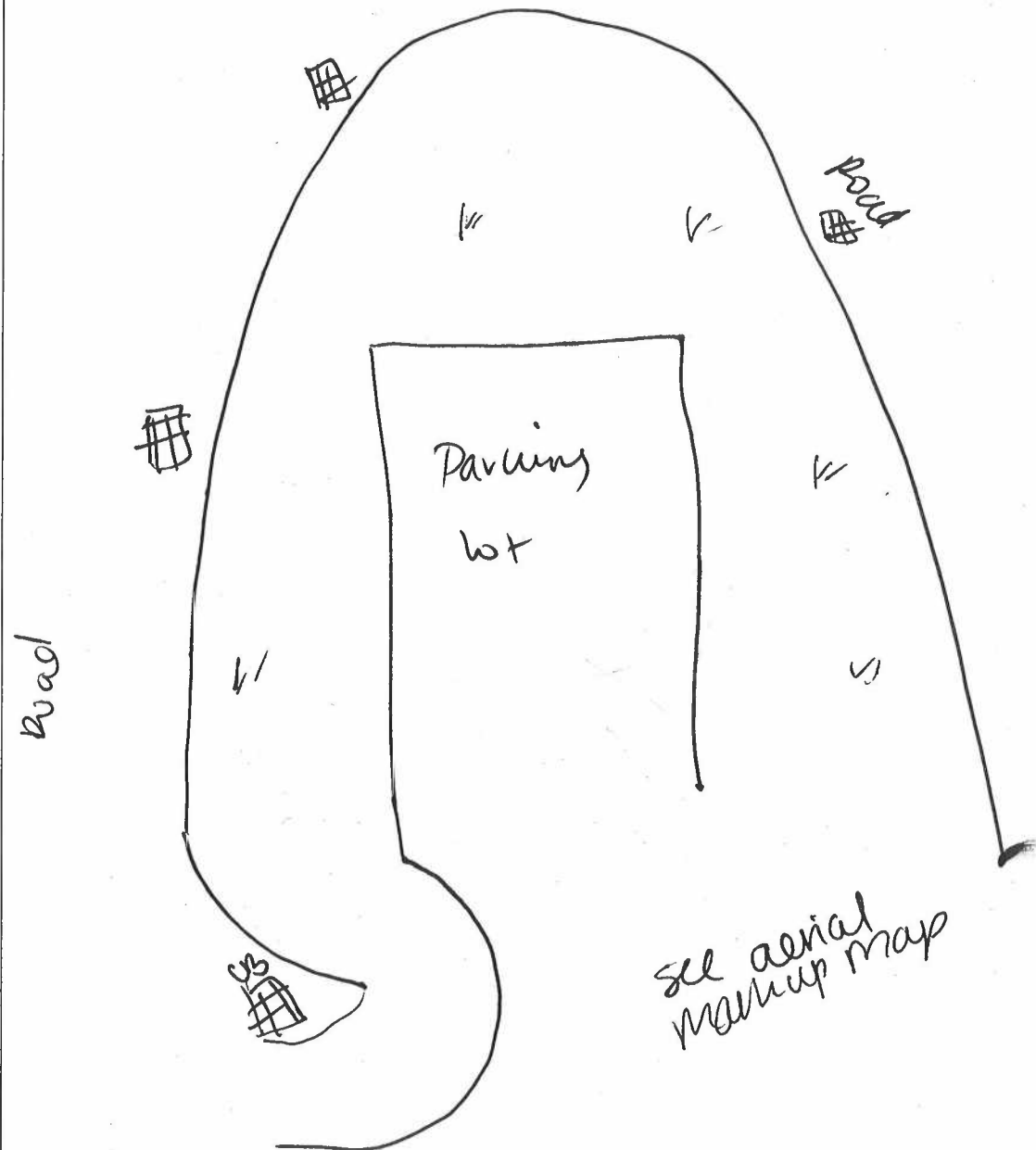
EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: Yes No Possible
If Yes, Describe: _____

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Multiple CBS along road - see map markup

PROPOSED RETROFIT																									
Purpose of Retrofit: <input type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other: <u>Drainage</u>																									
<div style="text-align: right; font-size: small; color: gray;"> DISTRICT COURT 2017 & 2018 ST. OLYMPIA 2017 & 2018 ST. OLYMPIA </div>																									
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input checked="" type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other: _____																									
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: 2 options - 1) curb cut + capture flow from PL - surface connection! 2) inlet - catch basins. divert flow to det. basin on grassy area 3) bioretention island in parking lot																									
SITE CONSTRAINTS																									
Adjacent Land Use: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe: _____	Access: <input checked="" type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																								
Conflicts with Existing Utilities: <input type="checkbox"/> None <input checked="" type="checkbox"/> Unknown <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Yes</th> <th style="width: 10%;">Possible</th> <th style="width: 80%;"></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>Sewer Water <u>manhole/hydrant</u></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Gas</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Cable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Electric to Streetlights</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Overhead Wires</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other: _____</td> </tr> </tbody> </table>	Yes	Possible		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer Water <u>manhole/hydrant</u>	<input type="checkbox"/>	<input type="checkbox"/>	Gas	<input type="checkbox"/>	<input type="checkbox"/>	Cable	<input type="checkbox"/>	<input type="checkbox"/>	Electric	<input type="checkbox"/>	<input type="checkbox"/>	Electric to Streetlights	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Overhead Wires	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	Potential Permitting Factors: Dam Safety Permits Necessary <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Wetlands <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to a Stream <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Floodplain Fill <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Forests <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable Impacts to Specimen Trees <input type="checkbox"/> Probable <input checked="" type="checkbox"/> Not Probable How many? _____ Approx. DBH _____ Other factors: _____
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Soils: Soil auger test holes: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input type="checkbox"/> No																									

SKETCH



DESIGN OR DELIVERY NOTES



FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|--|--|
| <input type="checkbox"/> Confirm property ownership | <input type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

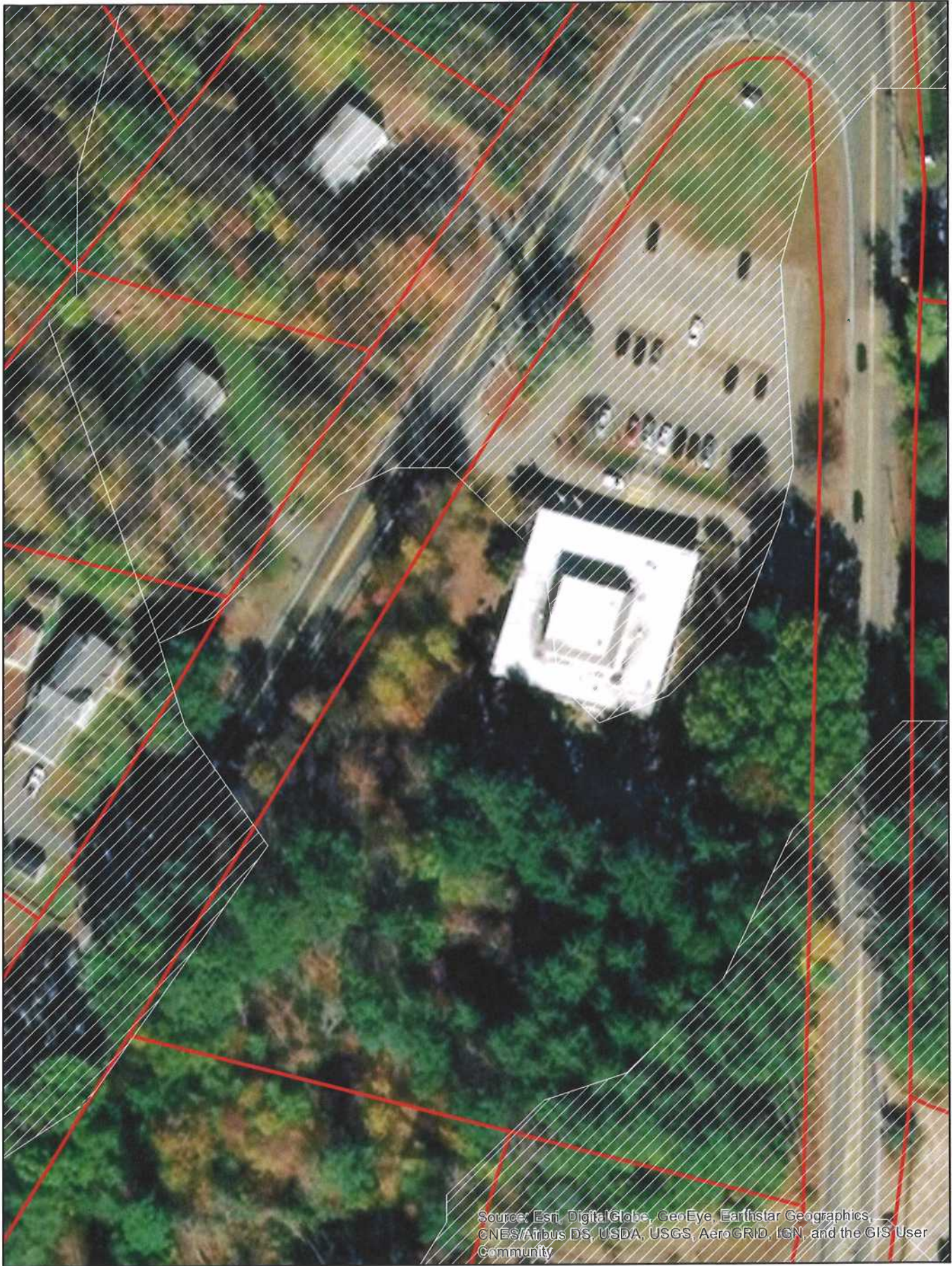
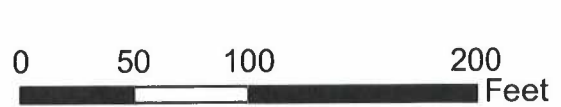
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS



SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 If YES, TYPE(S): _____

Site Name: District Court *by Court*

Site Number:



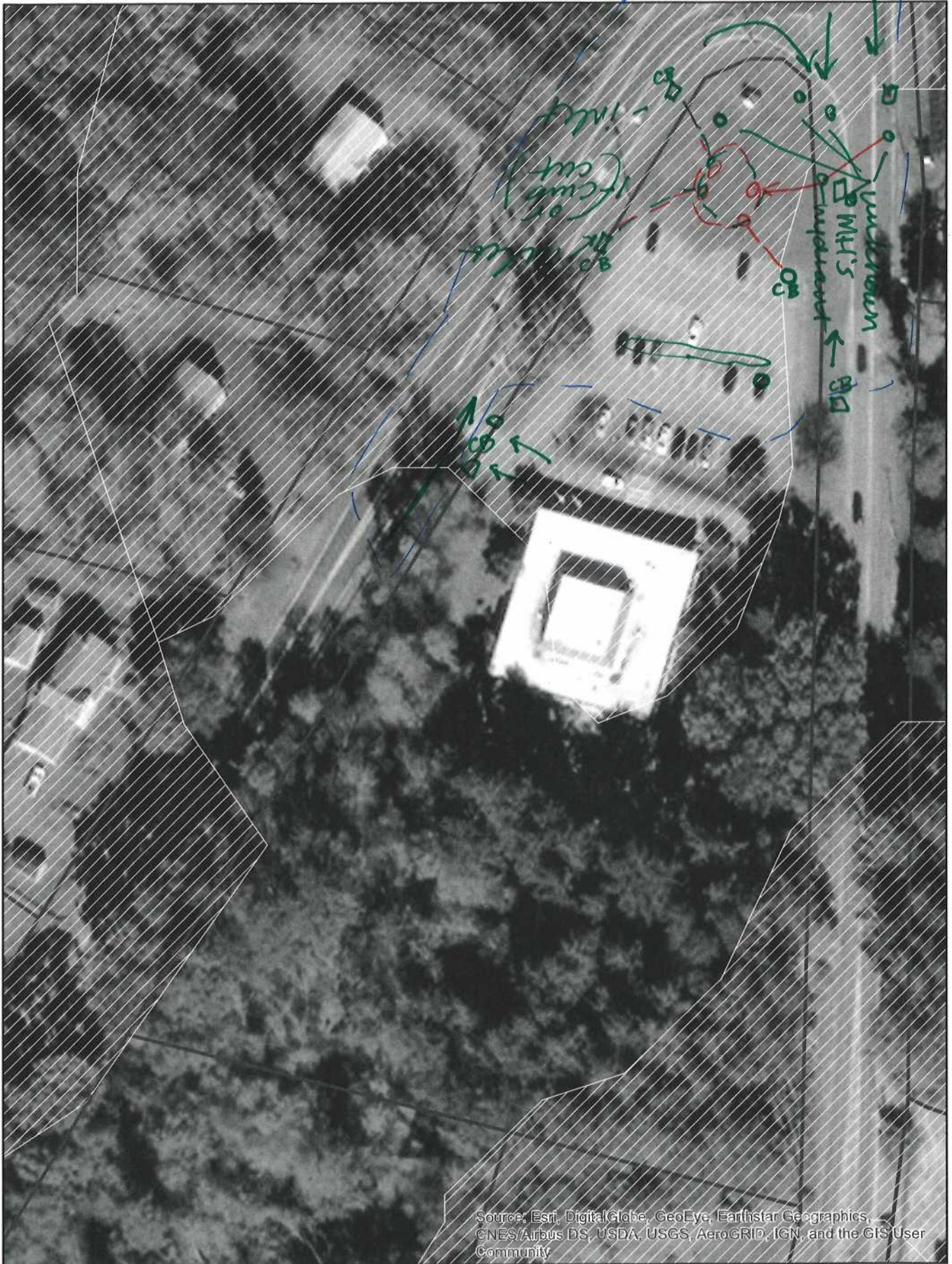
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: District County *MD*

Site Number:



N



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

8:20 ~ 8:50

Retrofit Reconnaissance Investigation

RRI

WATERSHED: Blackstone SUBWATERSHED: UNIQUE SITE ID: 28

DATE: 10/15/19 ASSESSED BY: SH JB CAMERA ID: PICTURES:

GPS ID: LMK ID: LAT: LONG:

SITE DESCRIPTION

Name: Town Common
Address: N. Main Street, Uxbridge, MA

Ownership: Public Private Unknown
If Public, Government Jurisdiction: Local State DOT Other:

Corresponding USSR/USA Field Sheet? Yes No If yes, Unique Site ID:

Proposed Retrofit Location:
Storage Existing Pond Above Roadway Culvert
 Below Outfall In Conveyance System
 In Road ROW Near Large Parking Lot
 Other:
On-Site Hotspot Operation Individual Rooftop
 Small Parking Lot Small Impervious Area
 Individual Street Landscape / Hardscape
 Underground Other:

DRAINAGE AREA TO PROPOSED RETROFIT

Drainage Area ≈
Imperviousness ≈
Impervious Area ≈ N/A%

Drainage Area Land Use:
 Residential Institutional
 SFH (< 1 ac lots) Industrial
 SFH (> 1 ac lots) Transport-Related
 Townhouses Park
 Multi-Family Undeveloped
 Commercial Other:

Notes:

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: Yes No Possible
If Yes, Describe:

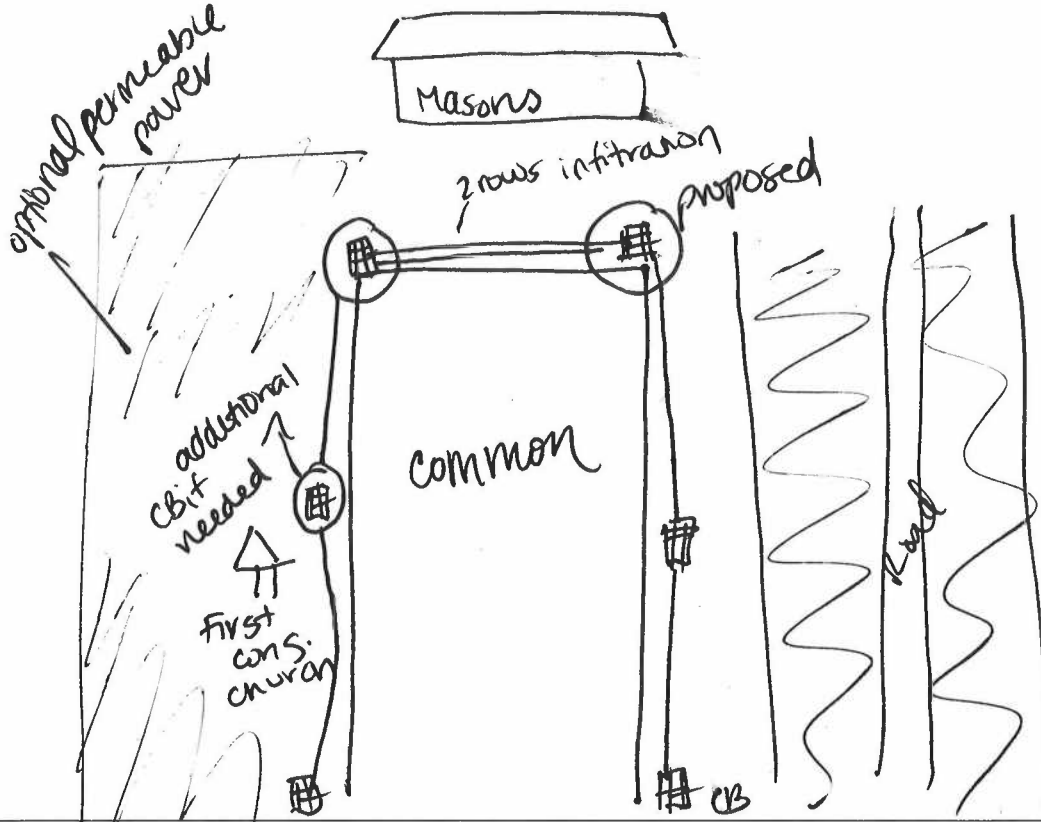
2 catch basins down towards sign on south side of common

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:



PROPOSED RETROFIT																												
Purpose of Retrofit: <input type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other: <u>Drainage</u>																												
Proposed Treatment Option: <input type="checkbox"/> Extended Detention <input type="checkbox"/> Wet Pond <input type="checkbox"/> Created Wetland <input type="checkbox"/> Bioretention <input type="checkbox"/> Filtering Practice <input checked="" type="checkbox"/> Infiltration <input type="checkbox"/> Swale <input type="checkbox"/> Other: _____																												
Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: 3 or 2 additional catch basins/infiltrating basins rows & possible permeable pavement																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Institutional <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Transport-Related <input checked="" type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints Constrained due to <input type="checkbox"/> Slope <input type="checkbox"/> Space <input checked="" type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
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Yes	Possible																											
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Soils: Soil auger test holes: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of poor infiltration (clays, fines): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of shallow bedrock: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Evidence of high water table (gleying, saturation): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <div style="text-align: right; font-size: 2em; margin-left: 200px;">N/A</div>																												

DESIGN OR DELIVERY NOTES



FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|--|
| <input type="checkbox"/> Confirm property ownership | <input checked="" type="checkbox"/> Obtain existing stormwater practice as-builts <i>get drawings?</i> |
| <input checked="" type="checkbox"/> Confirm drainage area | <input type="checkbox"/> Obtain site as-builts |
| <input type="checkbox"/> Confirm drainage area impervious cover | <input type="checkbox"/> Obtain detailed topography |
| <input type="checkbox"/> Confirm volume computations | <input checked="" type="checkbox"/> Obtain utility mapping |
| <input checked="" type="checkbox"/> Complete concept sketch | <input checked="" type="checkbox"/> Confirm storm drain invert elevations |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE

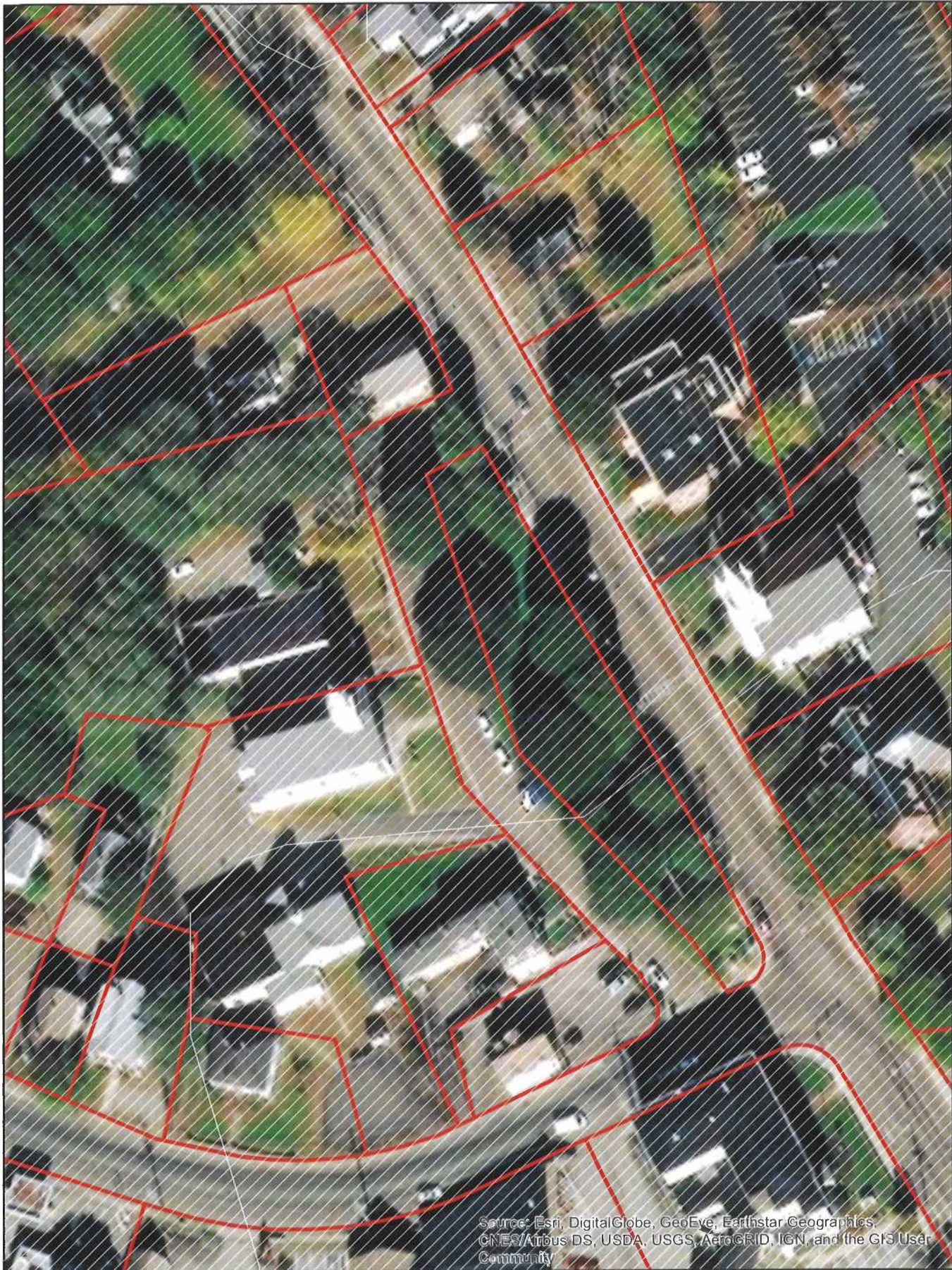
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE

IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE

IF YES, TYPE(S): _____

Site Name: Town Common

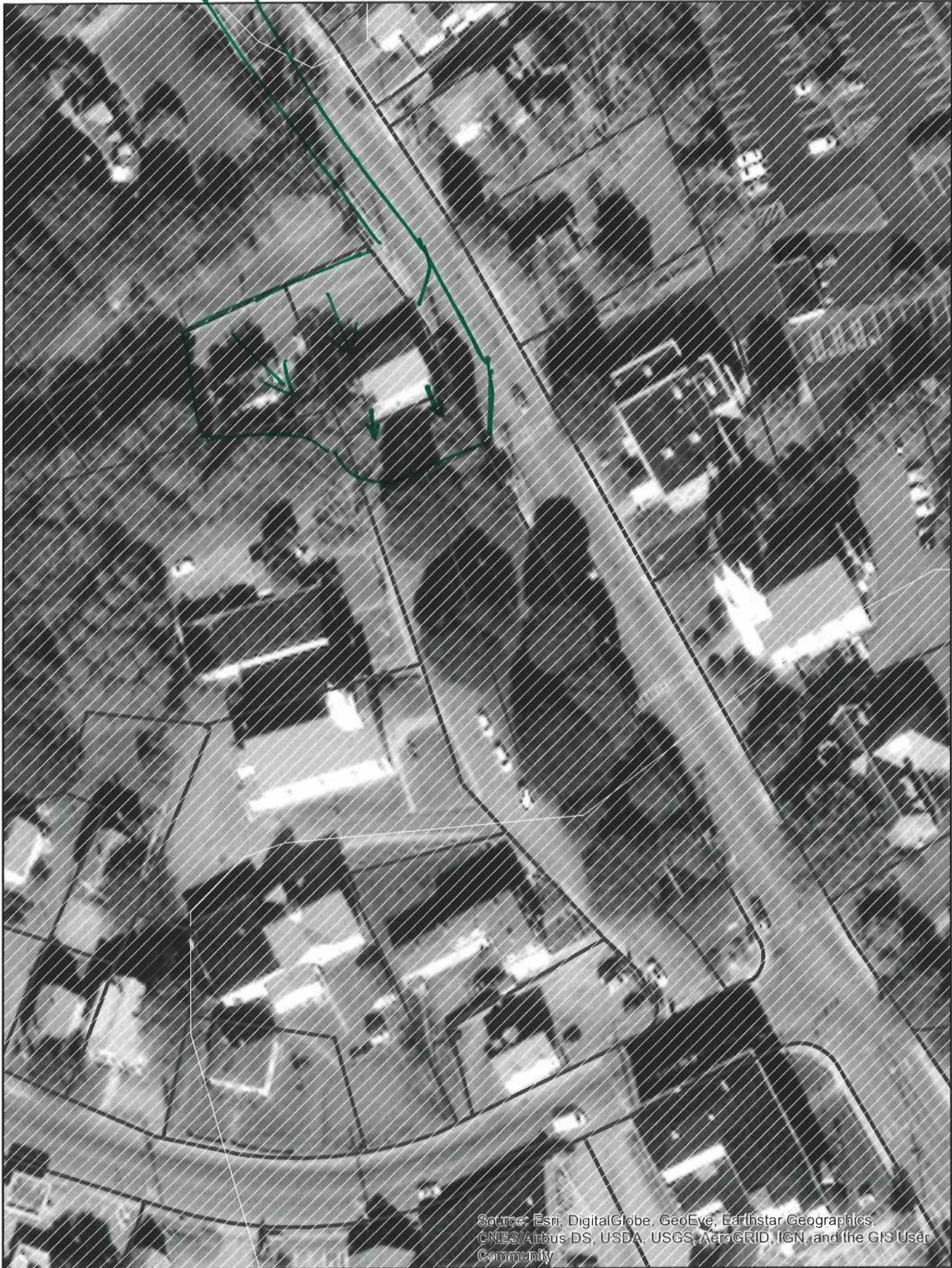
Site Number:



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Site Name: Town Common

Site Number:

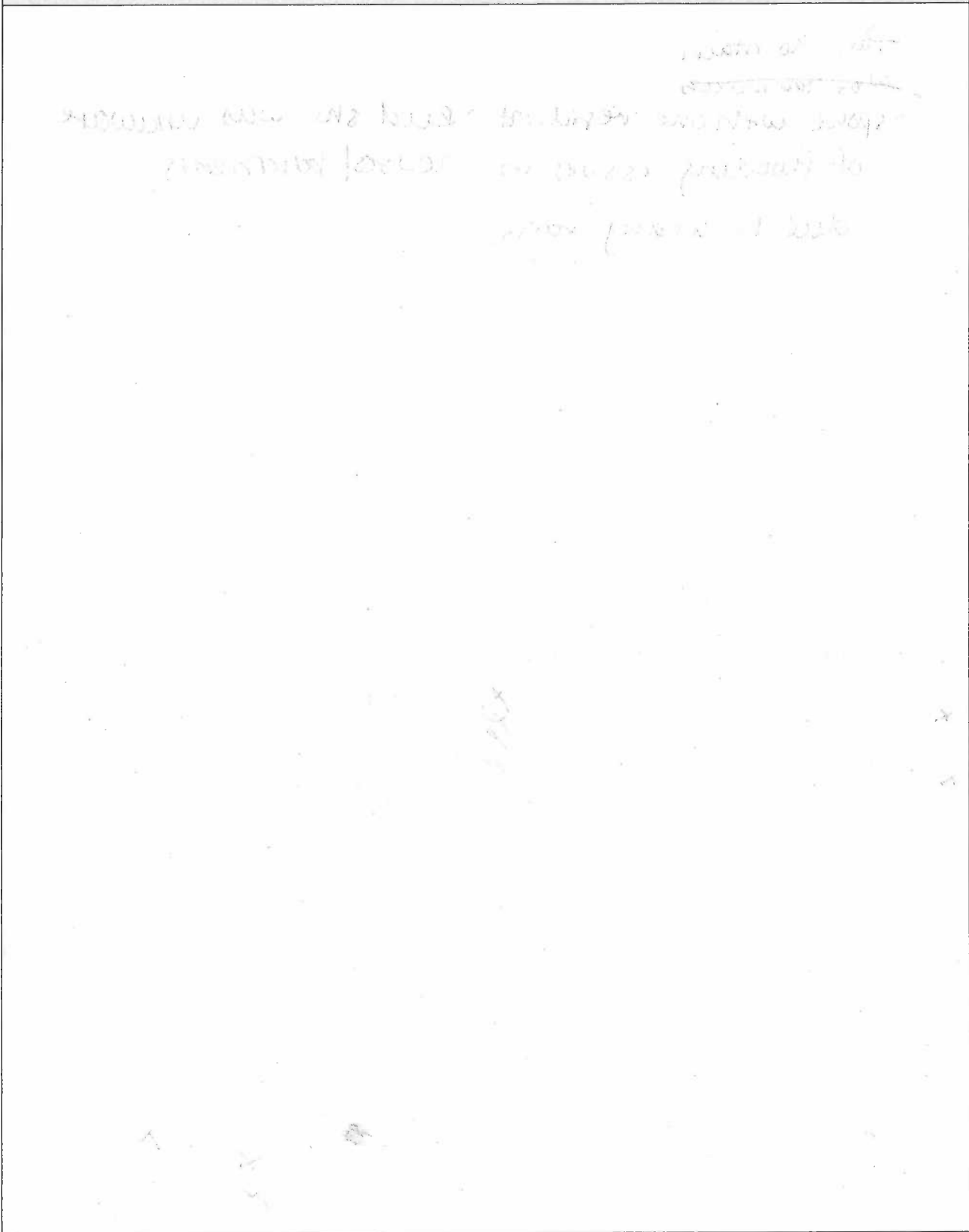


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WATERSHED: <u>Blacustone</u>		SUBWATERSHED:		UNIQUE SITE ID: <u>31</u>	
DATE: <u>10/15/19</u>		ASSESSED BY: <u>MB/SLT</u>		CAMERA ID:	
GPS ID:		LMK ID:		LAT:	
GPS ID:		LMK ID:		LONG:	
SITE DESCRIPTION					
Name: <u>The castles at Scotland Yard</u>					
Address: <u>" , various st. addresses</u>					
Ownership: <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Unknown If Public, Government Jurisdiction: <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> DOT <input type="checkbox"/> Other: _____					
Corresponding USSR/USA Field Sheet? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Unique Site ID: _____					
Proposed Retrofit Location:					
Storage					
<input type="checkbox"/> Existing Pond <input type="checkbox"/> Above Roadway Culvert <input checked="" type="checkbox"/> Below Outfall <input type="checkbox"/> In Conveyance System <input type="checkbox"/> In Road ROW <input type="checkbox"/> Near Large Parking Lot <input checked="" type="checkbox"/> Other: <u>EXISTING basin</u>					
On-Site					
<input type="checkbox"/> Hotspot Operation <input type="checkbox"/> Individual Rooftop <input type="checkbox"/> Small Parking Lot <input type="checkbox"/> Small Impervious Area <input type="checkbox"/> Individual Street <input type="checkbox"/> Landscape / Hardscape <input type="checkbox"/> Underground <input checked="" type="checkbox"/> Other: <u>EXISTING basin</u>					
DRAINAGE AREA TO PROPOSED RETROFIT					
Drainage Area ≈ _____ Imperviousness ≈ _____ % Impervious Area ≈ <u>MA</u>			Drainage Area Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> SFH (< 1 ac lots) <input type="checkbox"/> Industrial <input type="checkbox"/> SFH (> 1 ac lots) <input type="checkbox"/> Transport-Related <input type="checkbox"/> Townhouses <input type="checkbox"/> Park <input type="checkbox"/> Multi-Family <input type="checkbox"/> Undeveloped <input type="checkbox"/> Commercial <input type="checkbox"/> Other: _____		
Notes:					
EXISTING STORMWATER MANAGEMENT					
Existing Stormwater Practice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Possible If Yes, Describe:					
<p><u>Existing basin, does not appear to be capturing water</u></p>					
Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:					
<p><u>- Drainage problems in basements?</u> <u>- Downspouts for gutters very close to houses, appears to be settling in front of some garages</u></p>					

PROPOSED RETROFIT																												
Purpose of Retrofit: <input type="checkbox"/> Water Quality <input type="checkbox"/> Recharge <input type="checkbox"/> Channel Protection <input type="checkbox"/> Flood Control <input type="checkbox"/> Demonstration / Education <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other: <u>drainage</u>																												
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Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance: <ul style="list-style-type: none"> - Grade down along street for sheetflow - Expand existing basin - potential swale to capture flow from Lyalist Dr. - Rain barrel program? for down spouts - vegetate bare areas (esp. slopes) 																												
SITE CONSTRAINTS																												
Adjacent Land Use: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Institutional <input checked="" type="checkbox"/> Industrial <input type="checkbox"/> Transport-Related <input type="checkbox"/> Park <input type="checkbox"/> Undeveloped <input type="checkbox"/> Other: _____ Possible Conflicts Due to Adjacent Land Use? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Describe:	Access: <input type="checkbox"/> No Constraints Constrained due to: <input type="checkbox"/> Slope <input type="checkbox"/> Space <input type="checkbox"/> Utilities <input type="checkbox"/> Tree Impacts <input type="checkbox"/> Structures <input type="checkbox"/> Property Ownership <input type="checkbox"/> Other: _____																											
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SKETCH



DESIGN OR DELIVERY NOTES

- Pan Mountain
 - ~~Not too much~~
 - spoke with one resident - said she was unaware of flooding issues in houses/basements due to heavy rain

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- | | |
|---|---|
| <input type="checkbox"/> Confirm property ownership | <input checked="" type="checkbox"/> Obtain existing stormwater practice as-builts |
| <input checked="" type="checkbox"/> Confirm drainage area | <input checked="" type="checkbox"/> Obtain site as-builts |
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| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Confirm soil types |

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION: YES NO MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S): YES NO MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S): YES NO MAYBE
 IF YES, TYPE(S): _____

Attachment C

Potential Green Infrastructure Retrofit Opportunities

Summary of Green Infrastructure Site Recommendations for the Town of Uxbridge

Site Number	Site Name	Address	Owner	Potential Retrofit Options
1	Whitin Intermediate School	120 Granite St.	Town of Uxbridge	Bioretention; Underground Infiltration; Green Roof; Regrade Terrain for Positive Drainage; Revegetation of Eroded Slope
2	Taft Early Learning Center	16 Granite St.	Town of Uxbridge	Bioretention; Native Plantings; Pavement Removal; Rain Gardens; Rain Barrels; Tree plantings; Interactive Nature Playground; Solar Canopy
3	Uxbridge High School	300 Quaker Hwy.	Town of Uxbridge	Improve Drainage Swales; Bioswales; Maintain Existing Practices; Remove Silt/Sock
4	Uxbridge Youth Fields, Uxbridge Dog Park, and Community Garden	320, 359 Sutton St.	Town of Uxbridge	
5	Possible pocket park (on corner near CVS)	327 N. Main St.	Town of Uxbridge	
6	D'Alfonso Field	157 Hecla St.	Town of Uxbridge	Pavement Removal; Maintain Existing Practices; Elevate or Flood-Proof Existing Infrastructure
7	Department of Public Works Facility	147 Hecla St.	Town of Uxbridge	Pavement Removal; Maintain Existing Practices; Elevate or Flood-Proof Existing Infrastructure
8	Uxbridge Free Public Library	15 N. Main St.	Town of Uxbridge	ADA accessible ramp with integrated bioretention providing access to library from parking lot at the rear of the building
9	Uxbridge Housing Authority	31 Calumet Ct.	Town of Uxbridge	Expand Existing Swales/Convert Existing Swales to Bioswales; Install Bridge over Commonly Traversed Swale; Maintain Existing Swales
10	Uxbridge Town Police Department	275 Douglas St.	Town of Uxbridge	Expand Existing Swales/Convert Existing Swale to Bioswale; Remove Sediment and Debris near Wetlands
11	Uxbridge Senior Center	36 S. Main St.	Town of Uxbridge	Rain Garden; Bioretention; Rain Barrel; Permeable Pavement
12	Wastewater Treatment Facility	71 River Rd.	Town of Uxbridge	
13	Uxbridge Water Division	105 Blackstone St.	Town of Uxbridge	
14	Uxbridge Town Hall	21 S. Main St.	Town of Uxbridge	Drywell/Infiltrating Catch Basin; Permeable Paving in Parking Bays
15	Fire Station - 313 N. Main Street	313 N. Main St.	Town of Uxbridge	
16	Uxbridge Fire Department - 31 S. Main Street	31 S. Main St.	Town of Uxbridge	Green Roof
17	Uxbridge Fire Station #3 - 222 Aldrich Street	222 Aldrich St.	Town of Uxbridge	Detention Basin; Pave Turnaround Area
18	Water Tower	45 Richardson St.	Town of Uxbridge	
19	Pout Pond Recreational Area and Parking Lot	70 West River Rd.	Town of Uxbridge	Reconfiguration of Lot to Improve Parking, Remove Pavement, and Integrate Bioretention
20	Capron's Dam State Parcel	24 Mendon St.	Commonwealth of Massachusetts	
21	Mass. Highway Maintenance Facility	596 Douglas St.	Commonwealth of Massachusetts	
22	Rice City Pond- State Parcel	Hartford Ave. East	Commonwealth of Massachusetts	
23	McCloskey Building	62 Capron St.	Town of Uxbridge	Bioretention; Pavement Removal; Native Plantings; Drywells; Solar Canopy
24	River Road corridor (west bank of Blackstone River)	River Road	Town of Uxbridge/Private	Expand the Existing Riparian Buffer with Native Plantings
25	Park Street	Park Street	Town of Uxbridge	Drywells; Investigate and Replace Catch Basin
26	VFW Parking Lot	VFW Post 1385, 13 Cross Rd.	VFW	Bioretention; Fix Raised Catch Basin
27	District Court	261 S. Main St	MA Court Facilities Bureau	Bioretention
28	Uxbridge Town Common	S. Main St.	Town of Uxbridge	Underground Infiltration; Permeable Pavers
29	The Castles at Scotland Yard	Loyalist Ln, Gentry Ln, etc.	Private	Rain Barrels; Green Street
30	Commercial Area on Douglas Street	596 Douglas St.	Private	
31	South Main Street Parking Lot	South Street	Town of Uxbridge	Bioretention; Permeable Pavement; Pavement Removal

Attachment D

Retrofit Design Concepts

Site 1 – Whitin Intermediate School

Bioswale, Underground Infiltration, Green Roof, and Slope Revegetation

120 Granite Street, Uxbridge, Massachusetts

Site Description

The Whitin Intermediate School serves students in grades 4-7. Facilities on site include the school building, parking lots, tennis court, and ball fields. Water frequently pools along the east face of the school's north wing and additional drainage issues have been reported along the back of the school near the outdoor basketball court, and potentially contribute to moisture-related problems within the building. In addition, drainage from the basketball court is damaging the basketball court and eroding soil along the edges of the basketball court, exposing and mobilizing sediment.

Proposed Concept

- Install a bioretention swale (“bioswale”) in an existing low area along the west side of the school north of the basketball court to filter and infiltrate runoff. The grate of the existing catch basin in this low area can be elevated to form an overflow structure.
- Install underground infiltration devices beneath the basketball court to reduce runoff from the basketball court. Consider resurfacing the basketball court with permeable pavement. (Note that soil type and drainage properties must be confirmed for this element; there is some shallow bedrock in the vicinity.)
- Consider installation of an extensive green roof on one or more wings of the school to capture runoff, control moisture, and provide passive heating and cooling for the building.
- Regrade the lawn along the front face of the north wing to direct runoff away from the foundation (i.e. create positive drainage) toward an existing catch basin.
- Revegetate the slopes leading up to the basketball court with native, erosion-resistant vegetation (e.g. native grasses or ground covers).
- Install educational signage to inform students and visitors about the function and benefits of green stormwater infrastructure and low impact development.
- Incorporate stormwater concepts into the school's curriculum, using the proposed retrofits as real-world examples and sites for hands-on learning.

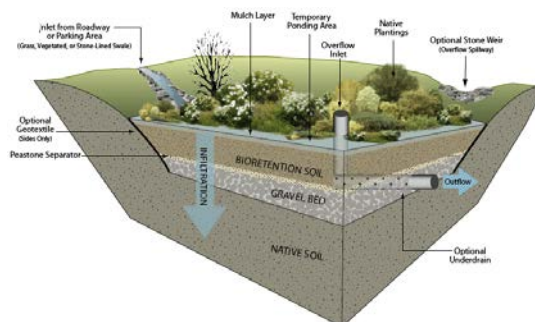


Image 1: Typical diagram of a bioretention basin. Image source: MA Clean Water Toolkit



Image 2: Armored swale and a damaged portion of the basketball court due to concentrated stormwater runoff. Image source: Fuss & O'Neill

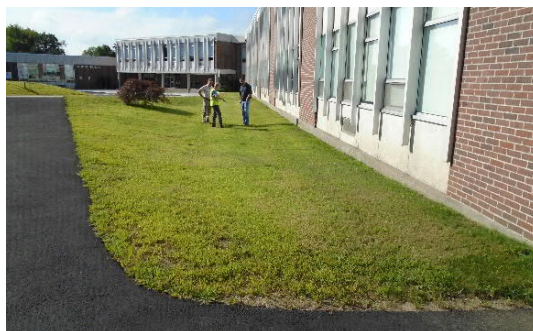


Image 3: Front face of the north wing, where the terrain should be regraded to direct runoff away from the foundation. Image source: Fuss & O'Neill

Bioswale Concept Summary

Total Impervious Area: 0.19 acres
Treated Water Quality Volume: 810 ft³

Underground Infiltration Concept Summary

Total Impervious Area: 0.13 acres
Treated Water Quality Volume: 580 ft³

Green Roof Concept Summary¹

Total Impervious Area: 0.06 acres
Treated Water Quality Volume: 270 ft³

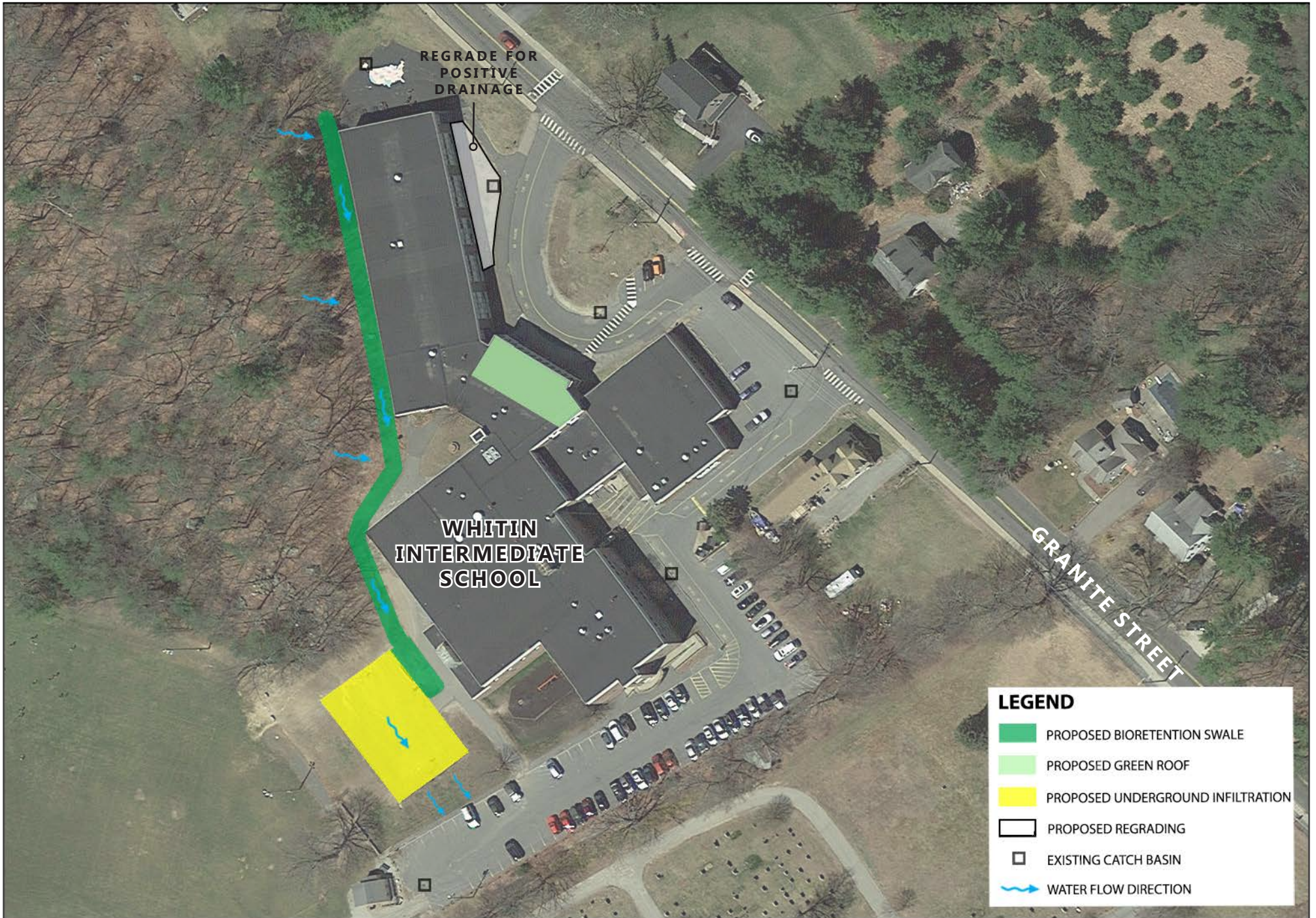
Estimated Cost

Bioswale: \$22,000
Underground Infiltration: \$32,000
Green Roof¹: \$89,000

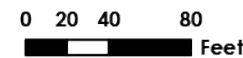
¹Summary and cost values for the green roof are based on a limited installation over the school entrance and will vary based on the scale of the green roof installed.



Image 4: Photograph of green roof and outdoor class space. Image source: National Wildlife Federation Blog



WHITIN INTERMEDIATE SCHOOL, UXBRIDGE MA



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Site 2 – Taft Early Learning Center Bioretention, Rain/Pollinator Garden, Pavement Removal, Integrated Nature Playground 16 Granite Street, Uxbridge, Massachusetts

Site Description

The Taft Early Learning Center (ELC) serves students in Pre-K and grades K-3. The school has two courtyards used for play, as well as a large, irregular area of unmarked pavement extending around the back of the school. Erosion along the edge of this paved area has created a sharp drop of about 4-6 inches which is a safety concern for students. A large parking lot faces Granite Street, with two driveways providing access from Granite Street.

Proposed Concept

- Extend the sidewalk from Granite Street along the north driveway to the school, providing better walking access for students and families that walk to school. Install a bioretention swale along the proposed sidewalk on the north side to capture and treat stormwater runoff from Granite Street and the north driveway.
- Convert the grass islands in the parking lot to bioretention basins and install a large bioretention basin in the southeast corner of the parking lot in order to filter stormwater runoff from the parking lot.
- Consider pavement removal in the unused former recreation area immediately south of the school.
- Install an interactive rain garden/pollinator garden in the Horse Garden (the courtyard used for recreation by grades K-3). The grates of the existing catch basins in this courtyard can be elevated to serve as overflow structures.
- Install rain barrels in the Horse Garden to capture additional stormwater that may be used by the students to water the rain garden during dry periods.
- Consider installing tree plantings and/or tree filters in the Pre-K courtyard
- Extend the existing playground behind the school by creating an interactive nature playground. The playground surface would be constructed of permeable material, allowing stormwater drainage and eliminating the existing sharp drop at the edge of the pavement.
- Consider installation of a solar canopy over the parking bays in the parking lot, to provide renewable power generation for the school and to shade the parking lot.
- Install educational signage to inform students and visitors about the function and benefits of green stormwater infrastructure and low impact development. Incorporate stormwater concepts into the school's curriculum, using the proposed retrofits as real-world examples and sites for hands-on learning.



Image 1: Example of an established bioretention basin with a concrete curb cut and concrete pretreatment structure to remove sediment before runoff enters the planted portion of the basin. Image source: Fuss & O'Neill



Image 2: A nature-based playground at Clark Reservation State Park in Jamesville, NY. The playground features various play structures, statues of native animals, a scavenger hunt, and native vegetation. Image source: Parkitects (<https://www.playgroundinfo.com/playgrounds/clark-reservation-state-park/>)



Bioretention Concept Summary (4 Basins)

Total Impervious Area: 1.16 acres

Treated Water Quality Volume: 5,050 ft³

Pavement Removal Summary

Total Impervious Area: 0.12 acres

Treated Water Quality Volume: 510 ft³

Estimated Cost

Bioretention Basins with New Sidewalk: \$151,000

Pavement Removal: \$22,000



Image 3: Solar Canopy over the parking lot at the Rosham Visitor Center at the University of Massachusetts Amherst. Image source: <https://www.umass.edu/sustainability/robsham-visitor-center-solar-canopies>

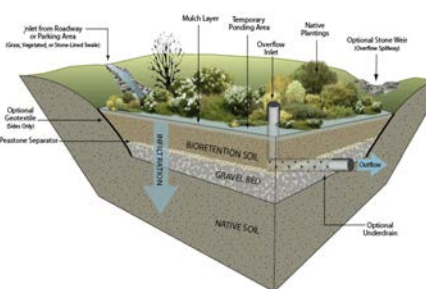
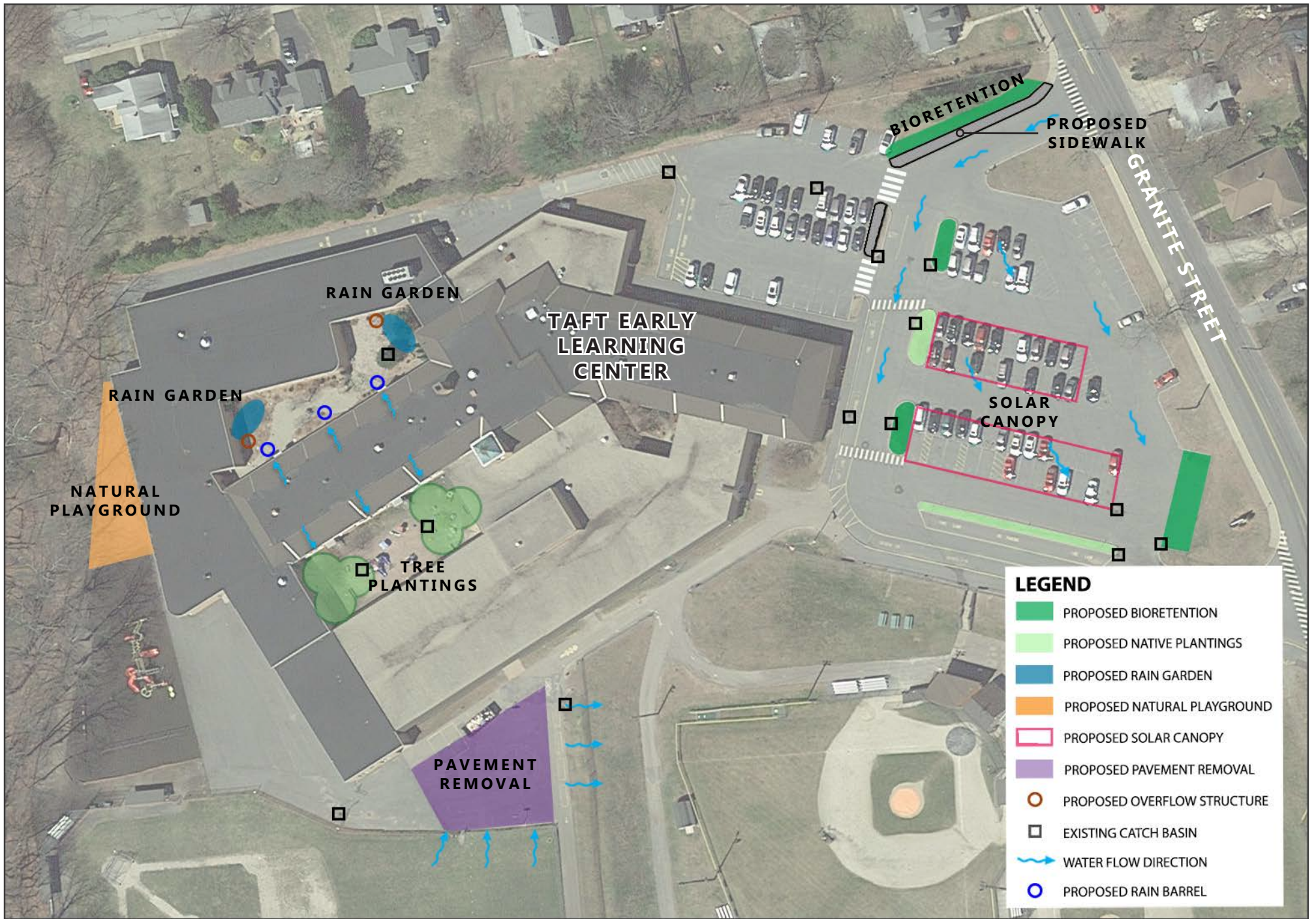
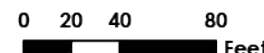


Image 4: Typical parking lot with bioretention and diagram of a bioretention basin. Image source: MA Clean Water Toolkit



TAFT EARLY LEARNING CENTER, UXBRIDGE MA



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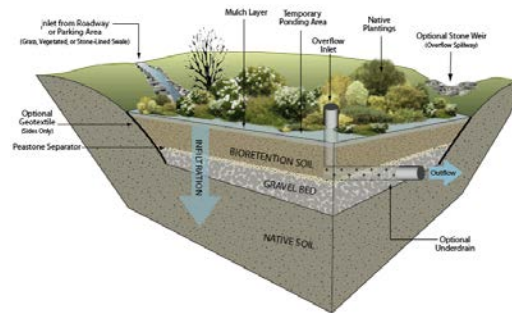
Site 3 – Uxbridge Free Public Library ADA Accessible Ramp with Integrated Bioretention 15 North Main Street, Uxbridge, Massachusetts

Site Description

As a public institution located in the heart of Uxbridge, the Uxbridge Free Public Library is well-suited to provide free, local education regarding climate resiliency and stormwater management. The Library does not have its own parking lot, but is informally accessed via an adjacent privately-owned parking lot, and an informal “herd path” has formed climbing the short, steep slope from the parking lot to the back of the library. However, this route is not accessible by ADA standards, and repeated passage over the grass on this slope has resulted in exposure of soils on the slope, which could lead to erosion in the future.

Proposed Concept

- Acquire the parking lot immediately behind the library and/or obtain a formal agreement allowing use of the parking lot by library patrons.
- Install an ADA-accessible stairway and ramp with integrated bioretention basins from the parking lot to the back of the library and the nearest public entrance to the library. The access path on the flat portion of the walkway may be constructed with permeable pavers.
- Install educational signage to inform library visitors about the function and benefits of green stormwater infrastructure and low impact development.
- Conduct education and events relating to climate resiliency and stormwater management at the library, including tours of the proposed walkway and integrated bioretention.



Bioretention Concept Summary
Total Impervious Area: 0.23 acres
Treated Water Quality Volume: 1,000 ft³

Estimated Cost
ADA Accessible Ramp with Integrated Bioretention:
\$68,000

Image 1: Typical diagram of a bioretention basin. Image source: MA Clean Water Toolkit



Image 2: Sample rendering of an ADA accessible ramp with integrated bioretention. Image Source: Fuss & O'Neill



PUBLIC LIBRARY, UXBRIDGE MA

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Site 4 – Uxbridge Senior Center

Rain Barrels, Bioretention, and Permeable Pavement

36 South Main Street, Uxbridge, Massachusetts

Site Description

The Uxbridge Senior Center provides a wide array of services and events for elderly residents of the town. The property is also located in the heart of downtown Uxbridge, across the street from the fire station, and is therefore highly visible to Uxbridge residents. A small parking lot (19 spaces) is located on the south side of the building.

Proposed Concept

- Install rain barrels at each of the downspouts at the front face of the building. Collected water can be used to water potted plants, gardens, or a potential rain garden at the front of the building (see below).
- Install a rain garden between the sidewalk and the street. In addition to stormwater treatment benefits, the rain garden could provide aesthetic value and pollinator habitat, as well as recreational opportunities for seniors in the community who might be interested in helping maintain the small garden.
- Maintain or enlarge/enhance an existing bioretention basin at the north end of the parking lot to capture, filter, and infiltrate runoff.
- As an alternative to the parking lot bioretention basin, consider replacing asphalt in the existing parking spaces with porous asphalt (permeable pavement), to decrease stormwater runoff at the site.
- Incorporate basic bioretention basin maintenance activities (watering, pruning, and selection of plants) and climate resiliency-related educational opportunities into senior center programming.



Image 3: Example of an installed rain barrel. Image source: CT DEEP



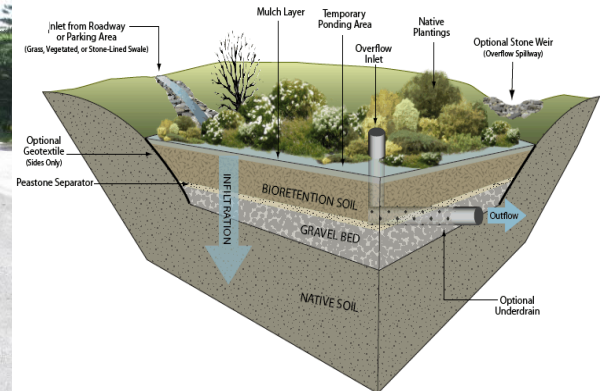
Image 1: Example of an established bioretention basin with a concrete curb cut and concrete pretreatment structure to remove sediment before runoff enters the planted portion of the basin.



Image 2: Porous asphalt parking lot during a rainfall event. Image source: Potomac Conservancy



Image 4: Typical parking lot with bioretention and diagram of a bioretention basin. Image source: MA Clean Water Toolkit.



Rain Garden Concept Summary
 Total Impervious Area: 0.06 acres
 Treated Water Quality Volume: 240 ft³

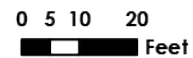
Parking Lot Treatment Alternative 1 -
 Bioretention Concept Summary
 Total Impervious Area: 0.18 acres
 Treated Water Quality Volume: 790 ft³

Parking Lot Treatment Alternative 2 -
 Permeable Pavement Concept Summary
 Total Impervious Area: 0.18 acres
 Treated Water Quality Volume: 790 ft³

Estimated Cost
 Rain Garden: \$8,000
 Alternative 1 - Bioretention: \$20,000
 Alternative 2 - Permeable Pavement: \$32,000
 Rain Barrels: \$200



SENIOR CENTER, UXBRIDGE MA



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Site 5 – South Main Street Parking Lot

Permeable Pavement, Pavement Removal, Bioretention

32 South Main Street, Uxbridge, Massachusetts

Site Description

The South Main Street Parking Lot is a proposed parking lot on a site that is currently vacant. The site of the proposed lot is located in the heart of downtown Uxbridge, across the street from the fire station and the Town Hall, and is therefore highly visible to Uxbridge residents. The proposed parking lot is in the design stage and is expected to go to construction in 2020 and the project has a limited budget. The proposed site plan does not currently include provisions for green stormwater management. However, the Town of Uxbridge could update the design to include green infrastructure practices if desired.

The site directly abuts the Providence and Worcester Railroad, and a large patch of existing pavement is located on the railroad property abutting the Town parcel.

Proposed Concept

- Update the proposed site plan to include a bioretention basin at the northeast end of the parking lot to treat and infiltrate runoff from the proposed lot.
- As an alternative to the bioretention basin, consider updating the proposed site plan to include porous asphalt (permeable pavement) within the parking spots in the proposed parking lot (permeable pavement cannot be used in drive lanes). Typical de-icing practices at the proposed lot should be considered before installing permeable paving, as sand used for de-icing can clog the pores in permeable pavement, reducing its effectiveness.
- Negotiate with the Providence and Worcester Railroad to remove the existing degraded pavement abutting the northeast boundary of the property, in order to reduce impervious area and stormwater runoff.
- Install educational signage to inform visitors about the function and benefits of green stormwater infrastructure and low impact development.



Image 1: Example of an established bioretention basin with a concrete curb cut and concrete pretreatment structure to remove sediment before runoff enters the planted portion of the basin. Image source: Fuss & O'Neill



Image 2: Porous asphalt parking lot during a rainfall event. Image source: Potomac Conservancy



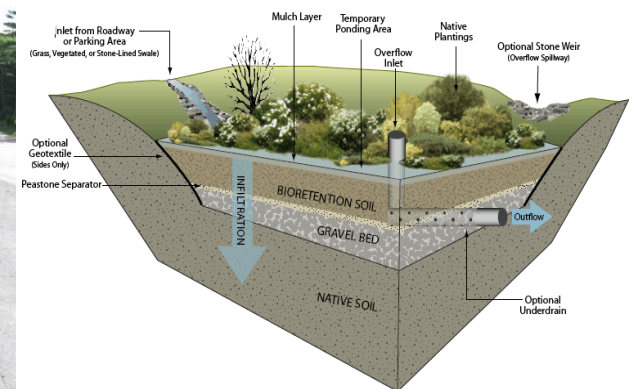
Image 3: Typical parking lot with bioretention and diagram of a bioretention basin. Image source: MA Clean Water Toolkit

Pavement Removal Concept Summary
 Total Impervious Area Removed: 0.04 acres
 Water Quality Volume Reduction: 170 ft³

Parking Lot Treatment Alternative 1 -
 Bioretention Concept Summary
 Total Impervious Area: 0.14 acres
 Treated Water Quality Volume: 610ft³

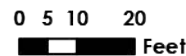
Parking Lot Treatment Alternative 2 -
 Permeable Pavement Concept Summary
 Total Impervious Area: 0.14 acres
 Treated Water Quality Volume: 610 ft³

Estimated Cost
 Pavement Removal: \$8,000
 Alternative 1 - Bioretention: \$19,000
 Alternative 2 - Permeable Pavement: \$17,000





SOUTH MAIN PARKING LOT, UXBRIDGE MA



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Site 6 – Pout Pond Recreational Area Pavement Reduction, Reconfiguration and Repaving of Parking Area, Bioretention West River Road, Uxbridge, Massachusetts

Site Description

The Pout Pond Recreational Area is a popular public outdoor recreational area with a beach, playground, snack shack, and small trail around the southern shore of the pond. The parking lot serving the recreational area is aging, with large areas of pavement having broken down completely, allowing vegetation to grow through. The existing lot is unlined, so parking currently takes place haphazardly and primarily around the edges of the large existing lot. Runoff from the parking lot runs toward the beach access and Pout Pond.

Proposed Concept

- Install four bioretention basins in multiple locations, including at the end of the parking lot closest to the beach to capture runoff before it enters the beach area. Consider accessibility needs when designing the bioretention basins.
- Assess current parking needs and reconfigure the parking spaces to most efficiently make use of the available paved area to meet parking needs. Remove any unneeded pavement on the south side of the lot, restoring the pavement removal area with native vegetation, and repave the remaining parking lot.
- Install educational signage to inform visitors about the function and benefits of green stormwater infrastructure and low impact development.p



Image 1: Example of an established bioretention basin with a concrete curb cut and concrete pretreatment structure to remove sediment before runoff enters the planted portion of the basin. Image source: Fuss & O'Neill

Pavement Reduction Concept Summary
 Total Impervious Area Removed: 0.23 acres
 Water Quality Volume Reduction: 1,000 ft³

Bioretention Concept Summary
 Total Impervious Area: 0.55 acres
 Treated Water Quality Volume: 2,380 ft³

Estimated Cost
 Reconfigured and Repaved Parking Lot with Bioretention Basins: \$164,000

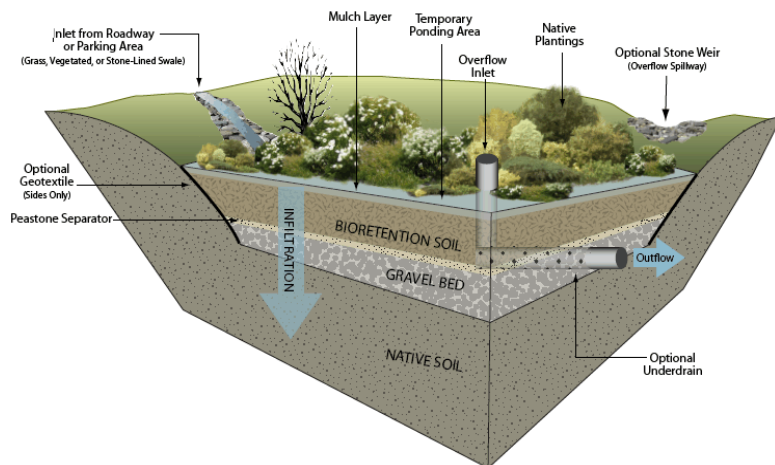


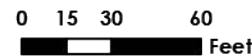
Image 2: Typical diagram of a bioretention basin. Image source: MA Clean Water Toolkit



Image 3: Rendering of a typical bioretention area with plantings. Image source: Johnson County Soil and Water District



POUT POND, UXBRIDGE MA



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Site 7 – McCloskey Building

Bioretention, Pavement Reduction, Solar Canopy, Drywells

62 Capron Street, Uxbridge, Massachusetts

Site Description

The McCloskey Building, a former middle school, has been vacant for the last 3-5 years. Although the property still belongs to the Uxbridge Public Schools, the Town of Uxbridge is currently considering potential future uses for the building, parking lot, and surrounding fields, including converting the site to an emergency operations center, a senior center, Town Hall, or a center for specialized educational services. Although a number of potential green infrastructure practices are listed below, the final selection of practices to be implemented would depend on the ultimate future use of the site.

Proposed Concept

- Install bioretention basins within the parking lot and at the north end of the building to filter and infiltrate stormwater. This concept proposes two large bioretention basins within the existing parking lot and one smaller bioretention basin at the north end of the building to treat runoff from a portion of the building roof.
- Pavement will be removed within sections of the parking lot to construct the bioretention basins, further contributing to the reduction of runoff volumes. Note that the number of parking spaces required to remain in the lot and the amount of pavement that could therefore be removed will depend on the new function selected for the site.
- Consider installation of solar canopies over the remaining parking bays (after assessment of parking needs and reconfiguration of the lot) in order to shade the parking lot and to supply renewable energy to the McCloskey Building. This practice will be especially beneficial if the decision is made to convert the site to an emergency operations shelter, which must have a source of energy even if a portion of the traditional energy grid fails.
- Install drywells near the south end of the building to treat and infiltrate runoff from Capron Street and Fair Street. Note that pretreatment measures should be included to remove pollutants from runoff before it enters the drywells and is allowed to infiltrate into the soil.
- Consider pavement reduction at rear of building, where feasible, and restore using native vegetation to filter runoff before it enters Caprons Pond, which is located immediately west of the McCloskey Building.
- Install educational signage to inform visitors about the function and benefits of green stormwater infrastructure and low impact development.



Image 1: Example of an established bioretention basin with a concrete curb cut and concrete pretreatment structure to remove sediment before runoff enters the planted portion of the basin. Image source: Fuss & O'Neill

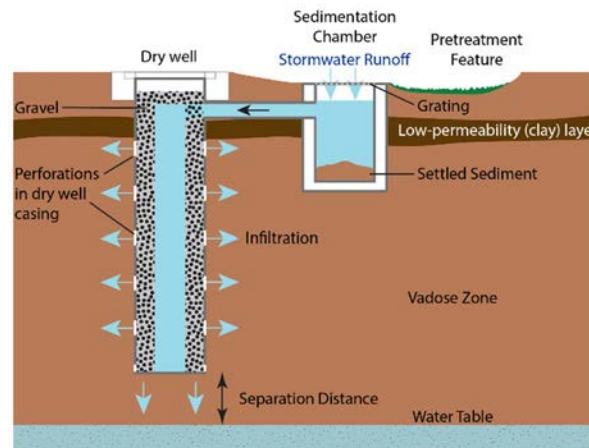


Image 2: Diagram of a typical dry well with pretreatment. Arrows indicate the direction of flow through the dry well system and into the surrounding soils. Image credit: E. Edwards and B. Mandler

Bioretention Concept Summary (3 basins)
 Total Impervious Area: 1.78 acres
 Treated Water Quality Volume: 7,700 ft³

Pavement Reduction Summary
 Total Impervious Area Removed: 0.31 acres
 Water Quality Volume Reduction: 1,300 ft³

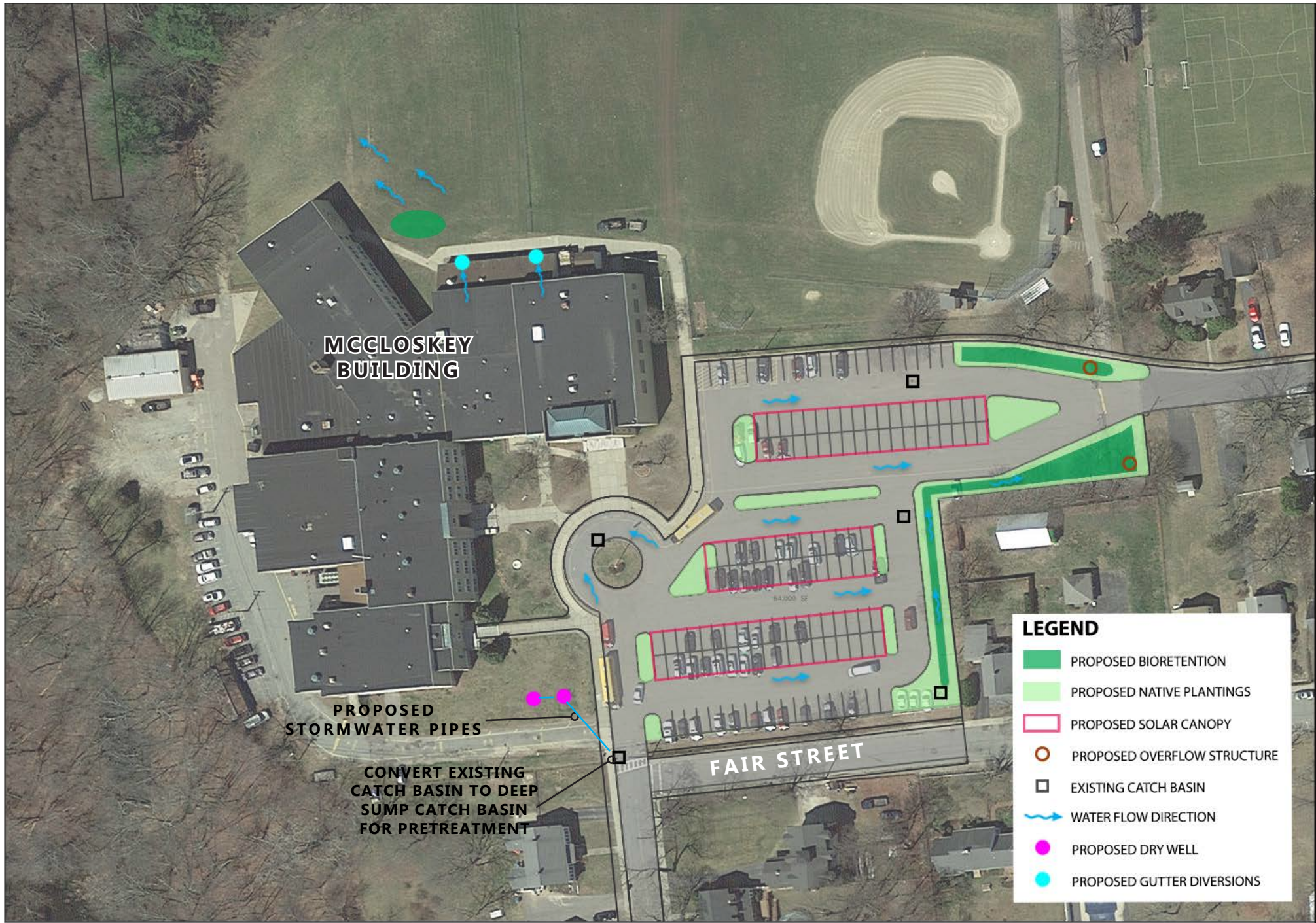
Drywell Concept Summary
 Total Impervious Area: 1.58 acres
 Treated Water Quality Volume: 6,900 ft³

Estimated Cost¹
 Bioretention (3 basins; includes pavement removal within those areas): \$231,000
 Drywells (2): \$54,000

¹Conceptual level cost estimates have not been developed for the proposed landscaped parking lot islands

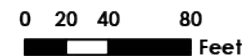


Image 3: Solar canopy over the parking lot at the Rosham Visitor Center at the University of Massachusetts Amherst. Image source: <https://www.umass.edu/sustainability/obsham-visitor-center-solar-canopies>



MCCLOSKEY BUILDING, UXBRIDGE MA

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Site 8 – Uxbridge Town Common

Underground Infiltration, Permeable Pavers

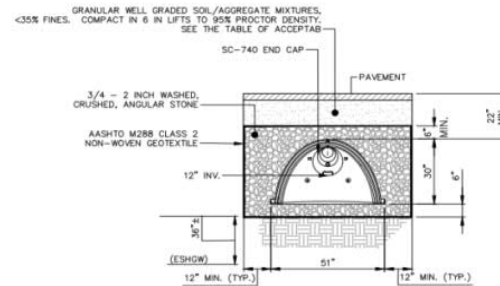
Court Street, Uxbridge, Massachusetts

Site Description

The Uxbridge Town Common is a highly visible public open space bounded by North Main Street, Douglas Street, and Court Street. The space consists of a lawn with approximately a dozen mature trees and contains multiple memorials. Stormwater currently pools at the north end of the Common on the surface of Court Street.

Proposed Concept

- Install underground infiltration beneath the pavement on Court Street, at the north end of the Town Common, to treat and infiltrate stormwater runoff.
- Consider installing permeable pavers along the west side of the Town Common in order to filter and infiltrate runoff that cannot be captured by underground infiltration chambers due to limited space. Although more expensive than porous asphalt, permeable pavers are aesthetically more pleasing and may be more appropriate for a town common setting. The permeable pavers will have the added benefit of delineating parking spaces along the Town Common.
- Install educational signage to inform visitors about the function and benefits of green stormwater infrastructure and low impact development.



STORMTECH SC-740 CHAMBER INFILTRATION SYSTEM
NOT TO SCALE

Image 1: Typical detail of an underground infiltration chamber.
Image source: StormTech

Underground Infiltration Summary

Total Impervious Area: 0.47 acres
Treated Water Quality Volume: 600 ft³

Permeable Pavers Concept Summary

Total Impervious Area: 0.47 acres
Treated Water Quality Volume: 2,000 ft³

Estimated Cost

Underground Infiltration: \$32,000
Permeable Pavers: \$35,000



Image 2: Underground infiltration chambers being installed. Image source: StormTech



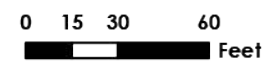
Image 3: Permeable pavers installed in parking spaces within a parking lot. Image Source: GeoSyntec



LEGEND

- PROPOSED UNDERGROUND INFILTRATION
- PROPOSED PERMEABLE PAVERS
- PROPOSED CATCH BASIN
- EXISTING CATCH BASIN
- WATER FLOW DIRECTION

TOWN COMMON, UXBRIDGE MA



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Site 9 – Park Street

Dry Wells, Catch Basin Investigation and Replacement

Park Street, Uxbridge, Massachusetts

Site Description

Park Street is a steep, narrow, mostly residential street west of South Main Street. The steep grade, combined with aging drainage infrastructure, has resulted in flooding on adjacent private property, as well as seepage and piping (the transport of soil) through a retaining wall at the Uxbridge Fire Department at the east end of Park Street. The seepage is occurring at the site of an existing catch basin which accepts a significant amount of runoff from Park Street, Park Terrace, and Pleasant Street.

Proposed Concept

- Install one or more dry wells at the intersection of Park Street, Park Terrace, and Pleasant Street. Install a flow diversion device and pretreatment device(s) in the catch basin at the northwest corner of the intersection to divert water into the dry well(s). Diverting and infiltrating runoff at this intersection will reduce flow to stormwater infrastructure farther down the hill, including the leaking catch basin, reducing pressure on the system.
- Assess the condition of the leaking catch basin on Park Street as well as the retaining wall and the roadbed beneath Park Street. Select and install an appropriate replacement catch basin for the site. Repair the roadbed and retaining wall as needed to ensure public safety.



Image 2: A catch basin on Park Street that appears to be associated with flowing seepage through the adjacent retaining wall (see Image 3).

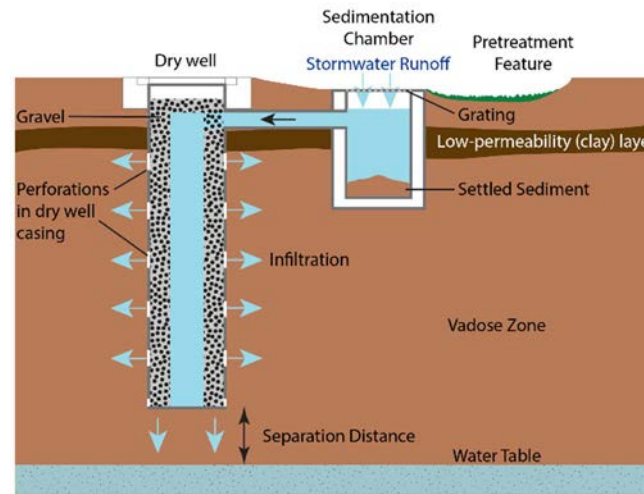


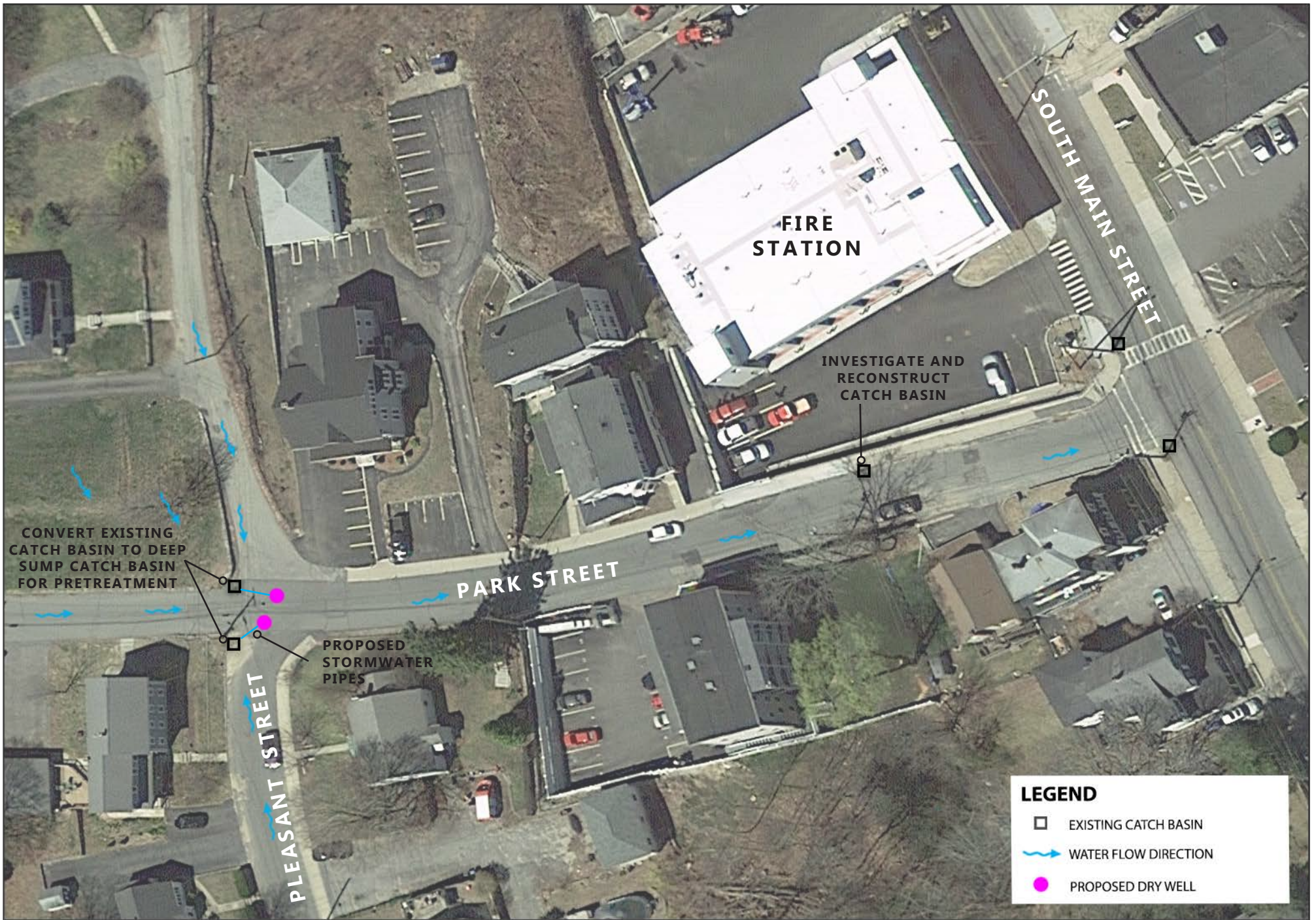
Image 1: Diagram of a typical dry well with pretreatment. Arrows indicate the direction of flow through the dry well system and into the surrounding soils. Image credit: E. Edwards and B. Mandler



Image 3: Sediment deposited below an area of seepage through the retaining wall between the fire station and Park Street. The seepage flows at extremely high flow rates during rain events and appears to be associated with the catch basin in Image 2 (which is also located just outside the bottom edge of this image).

Dry Well Concept Summary
 Total Impervious Area: 2.2 acres
 Treated Water Quality Volume: 8,100 ft³

Estimated Cost
 Dry Wells (2): \$73,000
 Catch Basin Investigation and Replacement:
 Cost will depend on the results of the investigation.



PARK STREET, UXBRIDGE MA

0 12.5 25 50 Feet



FUSS & O'NEILL
 1550 Main Street, Suite 400
 Springfield, MA 01103
 413.452.0445 | www.fando.com

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Site 10 – Uxbridge District Court Bioretention

261 South Main Street, Uxbridge, Massachusetts

Site Description

The intersection of Massachusetts Routes 122 and 146A is a highly visible location due to the high volume of passing traffic and the presence of the Uxbridge District Court immediately south of the intersection. The lot on which the Uxbridge District Court sits includes a large area of open space at the north end of the lot which receives a considerable volume of runoff from the adjacent roadways, as evidenced by the presence of a catch basin in this open area. Additional open space exists immediately north of the intersection, in the right-of-way to the west of Route 122.

Proposed Concept

- Utilize the natural depression in the topography to install a bioretention basin in the open space north of the Uxbridge District Court to capture, treat, and infiltrate runoff from the District Court parking lot and surrounding roadways. Convert an existing manhole to an overflow structure, or install a separate overflow structure that drains to existing stormwater infrastructure. Add diversion structures to existing catch basins as needed to direct flow into the bioretention basin.
- Install educational signage to inform visitors to the Uxbridge District Court about the function and benefits of green stormwater infrastructure and low impact development.

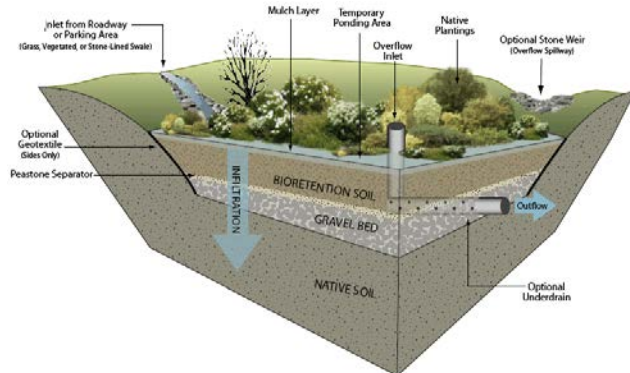


Image 2: Typical diagram of a bioretention basin. Image source: MA Clean Water Toolkit.



Image 1: Example of an established bioretention basin with a concrete curb cut and concrete pretreatment structure to remove sediment before runoff enters the planted portion of the basin.

Bioretention Concept Summary
 Total Impervious Area: 1.16 acres
 Treated Water Quality Volume: 5,050 ft³

Estimated Cost
 Bioretention: \$71,000



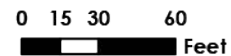
Image 3: Photo of the existing site with the conceptual basin area indicated in green.



LEGEND

- PROPOSED BIORETENTION
- EXISTING MANHOLE
- PROPOSED OVERFLOW STRUCTURE
- EXISTING CATCH BASIN
- WATER FLOW DIRECTION

DISTRICT COURT, UXBRIDGE MA



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Attachment E

Sizing Calculations for Proposed Green Infrastructure Practices

Bioretention Practice Sizing

Site Number	Site Name	Impervious Area (SF)	Impervious Area (acres)	Hydrologic Soil Group	Water Quality Volume Under Current Climate Conditions (CF)	Water Quality Volume Under Climate Change (20% increase in rainfall) (CF)	Sizing For (in):	Filter Depth (ft)	Coefficient of Permeability (ft/day)	Average Ponding Depth (ft)	Filter Bed Drain Time (days)	Area of filter (SF)
1	Whitin Intermediate School - Back Drive	8,114	0.19	C	676.1	811.4	1.2	1	1	0.5	2	270.5
2	Taft ELC - Driveway Basin (New Sidewalk)	4,066	0.09	A	338.8	406.6	1.2	4	1	0.5	2	180.7
2	Taft ELC - North Basin (Main Lot)	3,551	0.08	A	295.9	355.1	1.2	4	1	0.5	2	157.8
2	Taft ELC - South Basin (Main Lot)	4,847	0.11	A	403.9	484.7	1.2	4	1	0.5	2	215.4
2	Taft ELC - East Basin (Main Lot)	37,992	0.87	A	3,166.0	3,799.2	1.2	4	1	0.5	2	1,688.5
3	Uxbridge Free Public Library	9,958	0.23	A	829.8	995.8	1.2	4	1	0.5	2	442.6
4	Uxbridge Senior Center - Front Rain Garden	2,431	0.06	A	202.6	243.1	1.2	4	1	0.5	2	108.0
4	Uxbridge Senior Center - Back Basin	7,865	0.18	A	655.5	786.5	1.2	4	1	0.5	2	349.6
5	South Main Street Parking Lot	6,053	0.14	A	504.4	605.3	1.2	4	1	0.5	2	269.0
6	Pout Pond Recreational Area - West Basin (Large)*	9,229	0.21	A	769.1	922.9	1.2	4	1	0.5	2	410.2
6	Pout Pond Recreational Area - West Basin (Small)	2,326	0.05	A	193.8	232.6	1.2	4	1	0.5	2	103.4
6	Pout Pond Recreational Area - East Basin (Large)*	9,222	0.21	A	768.5	922.2	1.2	4	1	0.5	2	409.9
6	Pout Pond Recreational Area - East Basin (Small)	3,016	0.07	A	251.3	301.6	1.2	4	1	0.5	2	134.0
7	McCloskey Building - Northwest Basin	1,438	0.03	A	119.8	143.8	1.2	4	1	0.5	2	63.9
7	McCloskey Building - North Parking Lot Basin	28,564	0.66	A	2,380.4	2,856.4	1.2	4	1	0.5	2	1,269.5
7	McCloskey Building - South Parking Lot Basin	47,423	1.09	A	3,952.0	4,742.3	1.2	3	1	0.5	2	2,032.4
10	Uxbridge District Court	32,997	0.76	A	2,749.7	3,299.7	1.2	4	1	0.5	2	1,466.5

Attachment F

Planning Level Cost Estimates

Order of Magnitude Cost Estimates

Order of Magnitude Cost Range																	
Site Number	Location and BMP Type		Construction					Planning and Design		Cost Range			Life Cycle				
			Unit Cost	Unit	Adjustment Factor	Quantity	Base Cost	Allowance	Cost	Total Cost	-30%	50%	Lifespan (yrs.)	Annual Cost Over Lifespan	O&M (% Cost)	O&M (\$/yr.)	Total Capitalized Cost/Year Over Lifespan
1	Whitin Intermediate School	Underdrained Bioswale	\$71,036.80	Acres of impervious area treated	1.2	0.19	\$16,196	30%	\$4,860	\$22,000	\$15,000	\$33,000	20	\$1,620	4%	\$60	\$1,680
		Underground Infiltration	\$54.03	CF Storage Volume	1.0	449	\$24,280	30%	\$7,280	\$32,000	\$22,000	\$48,000	75	\$1,350	4%	\$50	\$1,400
		Green Roof	\$25.60	SF	1.0	2650	\$67,840	30%	\$20,350	\$89,000	\$62,000	\$134,000	40	\$4,500	4%	\$180	\$4,680
2	Taft Early Learning Center	Driveway Bioretention Basin and New Sidewalk	\$71,036.80	Acres of impervious area treated	1.4	0.09	\$8,951	30%	\$2,690	\$12,000	\$8,000	\$18,000	20	\$880	4%	\$40	\$920
		North Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.4	0.08	\$7,956	30%	\$2,390	\$11,000	\$8,000	\$17,000	20	\$810	4%	\$30	\$840
		South Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.4	0.11	\$10,940	30%	\$3,280	\$15,000	\$11,000	\$23,000	20	\$1,100	4%	\$40	\$1,140
		East Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.4	0.87	\$86,523	30%	\$25,960	\$113,000	\$79,000	\$170,000	20	\$8,310	4%	\$330	\$8,640
		Pavement Removal	\$30.00	SY	1.0	563	\$16,900	30%	\$5,070	\$22,000	\$15,000	\$33,000	20	\$1,620	4%	\$60	\$1,680
3	Uxbridge Free Public Library	Accessible Ramp and Stairs with Integrated Bioretention	See project-specific cost estimate							\$68,000	\$48,000	\$102,000	20	\$5,000	4%	\$200	\$5,200
4	Uxbridge Senior Center	Front Rain Garden	\$71,036.80	Acres of impervious area treated	1.4	0.06	\$5,967	30%	\$1,790	\$8,000	\$6,000	\$12,000	20	\$590	4%	\$20	\$610
		Back Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.2	0.18	\$15,344	30%	\$4,600	\$20,000	\$14,000	\$30,000	20	\$1,470	4%	\$60	\$1,530
		Permeable Pavement (Porous Asphalt)	\$4.24	CF Storage Volume	1.0	2,824	\$24,230	30%	\$7,270	\$32,000	\$22,000	\$48,000	20	\$2,350	4%	\$90	\$2,440
		Rain Barrels	\$150.00	EA	1.0	1	\$150	5%	\$10	\$200	\$0	\$0	20	\$10	2%	\$0	\$10
5	South Main Street Parking Lot	Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.4	0.14	\$13,923	30%	\$4,180	\$19,000	\$13,000	\$29,000	20	\$1,400	4%	\$60	\$1,460
		Permeable Pavement (Porous Asphalt)	\$4.24	CF Storage Volume	1.0	1,458	\$12,511	30%	\$3,750	\$17,000	\$12,000	\$26,000	20	\$1,250	4%	\$50	\$1,300
		Pavement Removal	\$30.00	SY	1.0	186	\$5,567	30%	\$1,670	\$8,000	\$6,000	\$12,000	20	\$590	4%	\$20	\$610
6	Pout Pond Recreational Area	West Bioretention Basin (Large)	\$71,036.80	Acres of impervious area treated	1.2	0.21	\$17,901	30%	\$5,370	\$24,000	\$17,000	\$36,000	20	\$1,770	4%	\$70	\$1,840
		West Bioretention Basin (Small)	\$71,036.80	Acres of impervious area treated	1.2	0.05	\$4,262	30%	\$1,280	\$6,000	\$4,000	\$9,000	20	\$440	4%	\$20	\$460
		East Bioretention Basin (Large)	\$71,036.80	Acres of impervious area treated	1.2	0.21	\$17,901	30%	\$5,370	\$24,000	\$17,000	\$36,000	20	\$1,770	4%	\$70	\$1,840
		East Bioretention Basin (Small)	\$71,036.80	Acres of impervious area treated	1.2	0.07	\$5,967	30%	\$1,790	\$8,000	\$6,000	\$12,000	20	\$590	4%	\$20	\$610
		Pavement Removal	\$30.00	SY	1.0	996	\$29,867	30%	\$8,960	\$39,000	\$27,000	\$59,000	20	\$2,870	4%	\$110	\$2,980
		Pavement Milling and Repaving	\$25.00	SY	1.0	1,933.33	\$48,333	30%	\$14,500	\$63,000	\$44,000	\$95,000	20	\$4,640	4%	\$190	\$4,830
7	McCloskey Building	Northwest Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.2	0.03	\$2,557	30%	\$770	\$4,000	\$3,000	\$6,000	20	\$290	4%	\$10	\$300
		North Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.4	0.66	\$65,638	30%	\$19,690	\$86,000	\$60,000	\$129,000	20	\$0	4%	\$0	\$0
		South Bioretention Basin	\$71,036.80	Acres of impervious area treated	1.4	1.09	\$108,402	30%	\$32,520	\$141,000	\$99,000	\$212,000	20	\$10,380	4%	\$420	\$10,800
		Dry Well	\$12,850.00	EA	1.2	2	\$40,840	30%	\$12,250	\$54,000	\$38,000	\$81,000	30	\$3,120	4%	\$120	\$3,240
8	Town Common	Underground Infiltration	\$54.03	CF Storage Volume	1.0	449.4	\$24,280	30%	\$7,280	\$32,000	\$22,000	\$48,000	75	\$1,350	4%	\$50	\$1,400
		Permeable Pavement (Permeable Pavers)	\$6.40	SF	1.0	2,720	\$26,475	30%	\$7,940	\$35,000	\$25,000	\$53,000	20	\$2,580	4%	\$100	\$2,680
9	Park Street	Dry Well	\$12,850.00	EA	1.4	2	\$55,980	30%	\$16,790	\$73,000	\$51,000	\$110,000	30	\$4,220	4%	\$170	\$4,390
10	District Court	Bioretention Basin	\$71,036.80	Acres of impervious area treated	1	1	\$53,988	30%	\$16,200	\$71,000	\$50,000	\$107,000	20	\$5,220	4%	\$210	\$5,430
									Total	\$1,148,200	\$804,000	\$1,728,000					

Notes:
 Rate of Inflation used = 2%
 Interest (discount) rate used = 6%
 Costs are based on screening-level evaluations of site characteristics and should be used for planning purposes only. Construction costs could vary significantly.
 Quantities were determined through sizing calculations according to recommended formulas. BMP size may vary slightly on the concept sheets provided, as these images are provided for illustrative purposes only.

Uxbridge Free Public Library - Order of Magnitude Cost Estimate

ORDER OF MAGNITUDE OPINION OF CONSTRUCTION COST	DATE PREPARED:	4/20/2020		
PROJECT: TOWN OF UXBRIDGE	BASIS: STAIRS AND RAMP WITH INTERGRATED BIORETENTION			
LOCATION: UXBRIDGE FREE PUBLIC LIBRARY	ESTIMATOR: JHB	CHECKED BY: JA		
DESCRIPTION: ACCESSIBLE RAMP WITH GREEN STORMWATER BMPS	JOB NO.	20170390.F50		
<p>This is an order of magnitude cost estimate, as defined by the American Association of Cost Engineers, that is expected to be within -30 to +50 percent of the actual project cost. Fuss & O'Neill has no control over the cost of labor, materials, equipment or services furnished by others or market conditions. Fuss & O'Neill's opinion of probable Total Project Costs and Construction Cost are made on the basis of Fuss & O'Neill's experience and qualifications and represent Fuss & O'Neill's best judgment as an experienced and qualified professional engineer, familiar with the construction industry. Fuss & O'Neill cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable cost prepared by Fuss & O'Neill.</p>				
ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONCRETE WALKWAY (ASSUME 5')	CY	35	\$120.00	\$4,200.00
HANDRAILS	LF	179	\$120.00	\$21,480.00
FORM IN PLACE CONCRETE STAIRS	CY	6	\$650.00	\$3,791.67
PLANTING	LS	130	\$32.50	\$4,225.00
TOP SOIL EXCAVATED	CY	87	\$30.00	\$2,606.67
CONTROLLED DENSITY FILL	CY	53	\$150.00	\$7,916.67
PEA GRAVEL	CY	14	\$25.00	\$362.04
BIORETENTION SOIL MIX	CY	130	\$35.00	\$4,561.67
BIORETENTION STONE	CY	43	\$65.00	\$2,823.89
		SUBTOTAL		\$51,967.59
		SUBTOTAL (ROUNDED)		\$52,000.00
		30% Contingency		\$16,000.00
				\$68,000.00