FUSS & O'NEILL

TECHNICAL MEMORANDUM

TO: Project Steering Committee
Wood-Pawcatuck Watershed Flood Resiliency Management Plan

FROM: William Guenther, Scientist
David Askew, Senior Project Manager
Erik Mas, P.E., Vice President

DATE: October 12, 2016

RE: Green Infrastructure Assessment
Wood-Pawcatuck Watershed Flood Resiliency Management Plan

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1. Introduction

Fuss and O'Neill performed a screening-level assessment of potential green infrastructure (GI) retrofit sites throughout the Wood-Pawcatuck watershed. The goal of this assessment is to identify opportunities and develop concepts 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 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.

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. In addition to selection and analysis of specific sites, streets within developed areas were also reviewed for their potential to support the use of green infrastructure within the public right-of-way, an approach which is referred to as "green streets." Green streets retrofits can range from simple roadside water quality or bioswales to more comprehensive streetscape retrofits including enhanced landscape design, bicycle and pedestrian access, and traffic-calming measures.

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 of the watershed with the greatest feasibility for and potential benefits from green infrastructure retrofits,
2. Field inventories of the most promising green infrastructure retrofit opportunities in the watershed identified from the screening step,
3. Green infrastructure concept designs for selected retrofit sites.

The 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.

Site Screening Evaluation

A screening evaluation was conducted using publicly-available GIS data for Rhode Island and Connecticut to quickly identify specific sites within the watershed where green infrastructure retrofits can be implemented that would provide water quantity (i.e., runoff reduction) and water quality (i.e., pollutant reduction) benefits. The types of site or parcel-based green infrastructure retrofits with potential applicability in the watershed include:

- Permeable pavement
- Bioretention/bioswales
- Infiltration/filtration systems
- Wet vegetated treatment systems
- Tree boxes and tree planting
- Water harvesting and reuse.

The assessment used the following site evaluation criteria[1] and data sources. Slight variations in the evaluation criteria were required for sites in Rhode Island and Connecticut due to differences in information available from both states.

[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.

1. 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, universities, state facilities, and federal facilities are also potential green infrastructure candidates. Certain types of private parcels (e.g., private schools and churches) may be suitable and were also included in the analysis.

   Publicly-owned properties in the watershed were identified and mapped using the 2011 Land Use/ Land Cover (LULC) dataset from RIGIS and the State/Municipal Parks and Open Space layer available from UCONN MAGIC. The following RIGIS land use categories were included in the selection process: institutional, developed recreation, cemeteries, and airports. The following facility point data was also included in the analysis: colleges and universities (University of Rhode Island), fire stations, schools (public and private), hospitals, libraries, and State Comprehensive Outdoor Recreation Plan (SCORP) sites.

2. Development – Sites within developed areas typically have greater potential for green infrastructure retrofits. Developed areas are more at-risk for flood damages and typically generate greater runoff volumes than undeveloped or lightly-developed areas. The site screening criteria included the following categories from the 2011 Land Use/ Land Cover data: low density development, medium density development, and high density development.

3. 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.[2] For the purposes of this screening evaluation, Natural Resources Conservation Services (NRCS) soil classifications and the Soil Survey Geographic (SSURGO) database were used to assess the feasibility of infiltration practices at a given site. The following describes the soils criteria used in the evaluation:

   - Hydrologic Soil Group – 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. HSG mapping provides an initial estimate of infiltration potential; field investigations are necessary to verify soil conditions for final feasibility determinations and design purposes.

   - Seasonal High Water Table – Depth to the groundwater table is an important consideration for green infrastructure practices that rely on infiltration or water storage, such as constructed wetlands and stormwater basins. Infiltration practices typically require at least 3 feet of separation between the bottom of the infiltration system and

seasonal high groundwater. A deep groundwater table also allows for water storage capacity in the upper part of the soils horizon and can indicate areas where stormwater basin construction is feasible.

4. Impaired Waters – In order to locate green infrastructure where it will have the greatest benefit to water quality, sites were selected that are in close proximity to impaired waters, which are surface waters that do not meet current water quality standards for specific uses such as recreation and aquatic life. For this screening-level analysis, sites within 1/2 mile of mapped water quality impairment were assumed to discharge to the impaired water body.

5. Impervious Cover – Water quality impacts are known to occur in surface waters within drainage basins that have a high degree of impervious cover due to changes in watershed hydrology and pollutant sources that result from development of the landscape with hard 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.

Application of Site Screening Criteria

Attachment 1 depicts an example of the screening methodology applied to the portion of the watershed within the Town of Westerly, Rhode Island. The example is provided to demonstrate the screening methodology and results at a smaller, more readable scale since the methodology and results cannot be easily visualized (in a report format) at the scale of the overall Wood-Pawcatuck watershed. A watershed-wide map at a larger scale was prepared for field investigations.

The site screening process described above was performed by applying each of the screening criteria in succession, thereby reducing the number of selected sites with each successive screening criterion. The results of the site screening process are summarized below and in the example maps in *Attachment 1* for the Westerly portion of the watershed.

1. Site Screening Criterion: Publicly-owned sites within the watershed

   - Rhode Island GIS data layer 2011 Land Use - Land Cover: "Institutional", "Developed Recreation", "Cemeteries", and "Airports"; or
   - Connecticut: GIS State-Municipal Parks and Open Space; or
   - Rhode Island facility point data including colleges and universities, fire stations, schools, hospitals, libraries and State Comprehensive Outdoor Recreation Plan

   Number of sites: 253

2. Site Screening Criterion: Sites with A or B soils and within developed areas

   - Hydrologic Soil Group (HSG) A or B Soils; and
   - Developed Areas

Number of sites: 175/253

3. Site Screening Criterion: Sites with a depth to seasonal high groundwater of at least 6 feet

   - Soils with a seasonal high water at a depth greater than six feet.

     Number of sites: 163/175

4. Site Screening Criterion: Sites within ½ mile of an impaired surface water body

   - Sites within 1/2 mile of an impaired surface water body

   Number of sites: 129/163

5. Site Screening Criterion: Sites with at least 30% impervious, or 1 acre impervious cover.

   Number of sites: 104/129

   (The final example map lists 106 sites. Two sites were combined with nearby sites because they were part of the same complex, under the same ownership.)

Site Screening Results

A total of 104 sites were identified based on the GIS-based screening evaluation. Subsequent to the GIS-based screening, ownership information and aerial photographs were reviewed to verify the suitability of each site for green infrastructure retrofits. Some of the sites were eliminated from further consideration, including sites under private ownership, like golf courses, and sites with relatively small areas of impervious cover that are surrounded by large upland areas, which typically do not generate significant off-site runoff. This final review reduced the number of sites for field level investigation to 82. A few of the sites within the selection are located in the same area. For instance, the University of Rhode Island ("URI") has two separate sites, located at different parts of the campus.

The field investigation included an assessment of the feasibility of green infrastructure retrofits for each site, including specific types of green infrastructure practices, their potential location(s) on the site, expected runoff and pollutant reduction benefits, and other design considerations. Thirty sites were selected from the total of 82 for development of green infrastructure retrofit concepts.

Table 1 lists the geographic distribution of the selected 84 sites within the watershed, which are also shown on the watershed map in Attachment 4.

Table 1. Geographic distribution of potential green infrastructure retrofit sites.

Town	Number of Sites
Charlestown, Rhode Island	6
Exeter, Rhode Island	9
Hopkinton, Rhode Island	18
North Stonington	2
Richmond, Rhode Island	6
South Kingstown, Rhode Island	11
Stonington, Connecticut	3
West Greenwich, Rhode Island	1
Westerly , Rhode Island	26

Sites are generally located in more developed areas of the watershed. Other sites may be considered for field review based on input from the Project Steering Committee, including other publicly-owned sites that are known to contribute to local flooding, sites that are known to contribute to local water quality issues, or sites that may provide significant public education benefit as green infrastructure demonstration sites.

Table 2 is an abbreviated list of all 82 sites from the Excel spreadsheet found in Attachment 2. The spreadsheet includes additional information including acreage, parcel identification numbers, and latitude and longitude locations. Aerial photographs of each site are provided in Attachment 3. Regulatory flood zones are shown on the aerial photographs to avoid siting green infrastructure retrofits within the floodplain.

Table 2. Potential green infrastructure retrofit sites selected for field investigation.

Site Name/Description	Address	Town
Vin Gormley Trailhead Parking	24 Sanctuary Road	Charlestown
Burlingame Management Area	Burlingame State Park Rd	Charlestown
Shannock Baptist Church	1632 Shannock Road	Charlestown
St. Mary's Catholic Church	451-455 Carolina Back Road	Charlestown
Burlingame Management Area	Burlingame State Park Rd	Charlestown
Charlestown Elementary School	363 Carolina Back Road	Charlestown
St. Kateria Tekakwitha Catholic Church	Exeter Rd	Exeter
Exeter Town Animal Shelter	165 S. County Trail	Exeter
Unidentified Building near Animal Shelter	175 S. County Trail	Exeter
Building with Parking Lot	742 Ten Rod Road	Exeter
Exeter Town Hall	675 Ten Rod Road	Exeter
Parking Lot Near Lake	406 Arcadia Road	Exeter
Exeter Job Corps Center	162 Main Street	Exeter
Phoenix House	Gaspee Road and Main Street	Exeter
Exeter Public Library	762 Ten Rod Road	Exeter

Table 2. Potential green infrastructure retrofit sites selected for field investigation.

Site Name/Description	Address	Town
Wood River Health Services	823 Main Street	Hopkinton
Hopkinton Recreation Department	188 Main Street	Hopkinton
Pavillion Steak House	35 Frontier Road	Hopkinton
Chariho Little League	1118 Main Street	Hopkinton
Wyoming Dam Fishing Access	Bridge Street	Hopkinton
Babcock Presbyterian Church	25 Maxson Street	Hopkinton
U.S. Post Office (Ashaway, RI)	131 Main Street	Hopkinton
Seventh Day Baptist Church	8 Church Street	Hopkinton
Ashaway Volunteer Fire Association	213 Main St	Hopkinton
Unidentified Building with Parking Lot	72 High Street	Hopkinton
Trinity Lutheran Church	Rte 216 and Wellstown Rd	Hopkinton
Hope Valley - Wyoming Fire District	996 Main St	Hopkinton
Langworthy Public Library	24 Spring Street	Hopkinton
Abandoned Parking Lot	North of 894 Main Street	Hopkinton
Ashaway Elementary School	12A Hillside Avenue	Hopkinton
Wood River Preschool and Elementary School	1059 Main Street	Hopkinton
Possible DPW facility	51 Bank Street	Hopkinton
Unknown (close to WPWA headquarters)	260 Arcadia Road	Hopkinton
Wheeler High/Middle School	298 Norwich-Westerly Road	N. Stonington
N. Stonington Superintendent and School	313-317 Norwich-Westerly Rd.	N. Stonington
West Vine Street School	25 West Vine Street	Stonington/Pawcatuck
Richmond Carolina Fire District	203 Richmond Town House Rd.	Richmond
Richmond Police Department	1168 Main Street	Richmond
Rhode Island State Police	54 Nooseneck Hill Road	Richmond
Chariho Regional H.S/M.S and Career Center	453 Switch Road	Richmond
Richmond Town Hall	5 Richmond Townhouse	Richmond
Richmond Elementary School	190 Kingstown Road	Richmond
URI, Boss Arena	1 Keaney Road,	South Kingstown
URI, Tennis Courts	Kingstown Road	South Kingstown
Great Swamp Management Area	160-170 Great Neck Road	South Kingstown
West Kingston Fire Department	390 Fairgrounds Road	South Kingstown
West Kingstown Baptist Church	263 Waites Corner Road	South Kingstown
Tuckertown Park	101 Tuckertown Park Drive	South Kingstown
Ryan Center/Meade Stadium	West Alumni Avenue	South Kingstown
West Kingston Services/Center for the Arts	3481 Kingstown Road	South Kingstown
South Kingstown Nursing and Rehab	2115 South County Trail	South Kingstown
West Kingston Elementary School	3119 Ministerial Road	South Kingstown
Unknown	210 Flagg Road	South Kingstown

Table 2. Potential green infrastructure retrofit sites selected for field investigation.

Site Name / Description	Address	Town
West Broad Street School	W. Broad Street	Stonington
West Vine Street School	25 West Vine Street	Stonington
Parking Lot	350 Liberty Street	Stonington
Small Building with Parking Lot	302 Victory Highway	West Greenwich
Watch Hill Fire Department	222 Watch Hill Rd	Westerly
U.S. Post Office	110 Tom Harvey Road	Westerly
Westerly Fire Department	180 Beach Street	Westerly
Unknown Church	45 Elm Street	Westerly
Pilgrim Baptist Church- Central Nursery School	16 Elm Street	Westerly
Grace United Methodist Church	10 Park Ave	Westerly
Immaculate Conception Catholic Church	111 High Street	Westerly
Westerly Town Water Department	68 White Rock Road	Westerly
Bradford School	15 Church Street	Westerly
Westerly Packing	15 Springbrook Road	Westerly
Springbrook Elementary School	39 Springbrook Road	Westerly
Bradford Social Club	2 Bowling Lane	Westerly
Westerly State Airport	62 Airport Road	Westerly
Rotary Park	near 90 Airport Road	Westerly
Public Sports Complex	99 Wilson Street	Westerly
Ocean Community YMCA	77-85 High Street	Westerly
Craig Field Recreation Complex	Mountain Avenue	Westerly
Parking Lot for Football Field	60 Old Hopkinton Road	Westerly
The Westerly Hospital	25 Wells Street	Westerly
Westerly Senior Citizens Center and School	35 State Street	Westerly
St. Pius X School	32 Elm Street	Westerly
Westerly High School	23 Ward Avenue	Westerly
Westerly Town Hall	45 Broad Street	Westerly
93 Tower Street	93 Tower Street	Westerly
Westerly Health Center	280 High Street	Westerly
Bus Depot	8 Springbrook Road	Westerly

Streets Screening Evaluation

A GIS-based screening evaluation was also conducted to identify public streets in the watershed that are potential candidates for green infrastructure retrofits, either along the side of the roadway or below the road surface. This approach is also referred to as "green streets." The feasibility of implementing green infrastructure within the public right-of-way depends on several factors including road type, local topography, soils, and depth to groundwater. The types of green streets or right-of-way green infrastructure retrofits with potential applicability in the watershed include:

- Roadside bioswales/linear bioretention
- Water quality swales
- Belowground infiltration systems including infiltrating catch basins (with appropriate pretreatment)
- Permeable pavement (sidewalks, on-street parking spaces, and low-traffic areas)
- Tree boxes and tree planting (primarily streetscape applications).

The assessment used the following evaluation criteria and data sources. Similar to the sites criteria, slight variations in the evaluation criteria were required for streets in Rhode Island and Connecticut due to differences in information available from both states.

1. Road Type – High traffic volumes and high speed limits are not favorable road conditions for siting right-of-way green infrastructure. Therefore, the evaluation only considered roads classified by the Rhode Island Department of Transportation as "minor roads," "arterials," and "collectors" and roads classified as "primary and secondary roads" in Connecticut.

2. Surrounding Development – Streets within developed areas typically have greater potential for green infrastructure retrofits since developed areas are more at-risk for flood damages and typically generate greater runoff volumes than undeveloped or lightly-developed areas. The screening criteria included streets within areas of developed land use based on the 2011 Land Use/ Land Cover dataset.

3. Subsurface Conditions – Similar to the site screening criteria, streets were selected in areas with Hydrologic Soil Group A and B soils and with groundwater at a depth of at least 6 feet based on soil classification. Streets that are located in areas with these subsurface conditions and meet the above criteria are classified as "low priority" retrofit candidates for street or right-of-way green infrastructure retrofits.

4. Proximity to Surface Water Bodies – Streets within areas having the above characteristics and within ½ mile of a main stem river are identified as "medium priority" retrofit candidates. Main-stem rivers are the primary trunks or downstream segments of a river. Right-of-way retrofits and green streets initiatives typically require "buy-in" from the local community. It is often helpful to garner public support for such projects by focusing on areas located close to familiar and recognized water resources, allowing the public to connect the benefits of the project to well-known local resources.

5. Proximity to Impaired Waters – Streets within areas having the above characteristics and within ½ mile of an impaired water body are identified as "high priority" retrofit candidates. Managing and treating stormwater in close proximity to impaired waters will benefit surface waters most in need of improvement.

Streets Screening Results

The maps in Attachment 5 show prioritized street locations in each subwatershed for right-of-way green infrastructure retrofits. Streets in several high priority areas were evaluated based on review of aerial photographs and limited on-site investigation. Several right-of-way green infrastructure concepts were developed as examples of the type of opportunities that exist in the watershed, including roads located in developed and rural settings.

3. Field Inventories, Site Selection, and Conceptual Designs

Field Inventories

Site visits were conducted at the 82 selected priority sites in June and early July, 2016. The sites and adjacent street areas were walked and visually inspected for potential green infrastructure retrofit opportunities (i.e., impervious surfaces connected to the on-site drainage system, available green space to accommodate new green infrastructure practices, site configuration, drainage features that could be enhanced or improved) and physical site characteristics such as site configuration, drainage patterns, current use, slope, landscaping, subsurface utilities, design complexity, and maintenance access considerations. Field notes on potential green infrastructure retrofit sites were recorded using inventory forms developed by the Center for Watershed Protection and photographs were taken at each location (Attachments 6 and 7).

Sites Selected for Concept Designs

Based on the findings of the field inventories, green infrastructure retrofit opportunities were identified at most of the sites visited. Table 3 identifies the 30 sites selected for development of concept designs. These sites were selected because they: (1) have the greatest feasibility for green infrastructure retrofits, (2) provide the best opportunities to infiltrate (i.e., reduce) runoff, and (3) are distributed geographically throughout the Wood-Pawcatuck watershed. Many of the sites are also in highly visible, public locations and therefore provide good demonstration value.

Table 3. List of sites selected for conceptual designs

Site No.	Site Drainage Area No.	Site Name	Green Infrastructure BMP Type
21	21a	Vin Gormley Trailhead Parking	Underground Infiltration
21	21b	Vin Gormley Trailhead Parking	Bioretention
41	41	URI Tennis Courts	Rain Gardens
50	50a	Wyoming Dam Fishing Access	Pervious Pavers
50	50b	Wyoming Dam Fishing Access	Articulated Concrete Mat
50	50c	Wyoming Dam Fishing Access	Bioretention

Table 3. List of sites selected for conceptual designs

Site No.	Site Drainage Area No.	Site Name	Green Infrastructure BMP Type
73	73	Exeter Town Animal Shelter	Bioretention
93	93a	US Post Office in Westerly	Bioretention
93	93b	US Post Office in Westerly	Bioretention
93	93c	US Post Office in Westerly	Bioretention
93	93d	US Post Office in Westerly	Bioretention
102	102	United Methodist Church	Bioretention
108	108a	Bradford School	Green Roof
108	108b	Bradford School	Underground Infiltration
114	114a	US Post Office in Ashaway/Hopkinton	Underground Infiltration
114	114b	US Post Office in Ashaway/Hopkinton	Underground Infiltration
125	125a	Trinity Lutheran Church	Rain Gardens
125	125b	Trinity Lutheran Church	Rain Gardens
125	125c	Trinity Lutheran Church	Rain Gardens
125	125d	Trinity Lutheran Church	Bioretention
125	125e	Trinity Lutheran Church	Bioretention
129	129	St Mary's Catholic Church	Bioretention
139	139a	Courthouse Center for the Arts	Bioretention
139	139b	Courthouse Center for the Arts	Bioretention
157	157	Richmond Police Department	Underground Infiltration
159	159	RI State Police	Bioretention
173	173a	Exeter Town Hall	Bioretention
173	173b	Exeter Town Hall	Rain Gardens
185	185a	Wheeler High/Middle School	Bioretention
194	185b	Wheeler High/Middle School (combined with drainage area 194d)	Bioretention
185	185c	Wheeler High/Middle School	Bioretention
185A	185d	Wheeler High/Middle School	Bioretention
185A	185e	Wheeler High/Middle School	Bioretention
191	191a	West Vine Street School	Rain Gardens
191	191b	West Vine Street School	Rain Gardens
194	194a	North Stonington Elementary and Administration Buildings	Bioretention
194	194b	North Stonington Elementary and Administration Buildings	Bioretention
194	194c	North Stonington Elementary and Administration Buildings	Bioretention
194	194d	North Stonington Elementary and Administration Buildings	Bioretention
194	194e	North Stonington Elementary and Administration Buildings	Bioretention
194	194f	North Stonington Elementary and	Bioretention

Table 3. List of sites selected for conceptual designs

Site No.	Site Drainage Area No.	Site Name	Green Infrastructure BMP Type
		Administration Buildings	
194	194g	North Stonington Elementary and Administration Buildings	Bioretention
206	206a	Browning Mill Pond Parking Access	Forested Buffer
206	206b	Browning Mill Pond Parking Access	Forested Buffer
206	206d	Browning Mill Pond Parking Access	Bioretention
227	227	Hopkinton Recreation Department	Bioretention
229	229	Tuckertown Park	Bioswales
252	252a	Chariho Little League	Rain Gardens
252	252b	Chariho Little League	Rain Gardens
252	252c	Chariho Little League	Rain Gardens
272A	272a	Westerly Senior Center	Bioretention
272	272b	State Street School	Rain Gardens
272	272c	State Street School	Bioretention
274	274	Westerly High School	Underground Infiltration
275	275	Westerly Town Hall	Bioretention
276	276	Tower Street School and Community Center	Bioretention
280	280a	Ashaway Elementary School	Underground Infiltration
280	280b	Ashaway Elementary School	Bioretention
283	283a	West Kingstown Elementary	Underground Infiltration
283	283b	West Kingstown Elementary	Bioretention
284	284	URI Lot at Boss Arena	Underground Infiltration
286	286a	Richmond Elementary School	Bioretention
286	286b	Richmond Elementary School	Bioretention

Concept Designs

Conceptual green infrastructure retrofit designs were prepared for the selected sites. The design concepts reflect opportunities for infiltration and/or water quality treatment at each site. BMPs were sited to capture and infiltrate/treat the 1-inch Water Quality Volume (WQv), where possible. Opportunities were also evaluated to manage additional runoff from on-site and off-site drainage areas.

Preliminary, planning-level costs were estimated for the site-specific concepts based upon unit costs derived from published sources, engineering experience, and the proposed design concepts. Capital (construction, design, permitting, and contingency) and operation and maintenance costs are included in the estimates, and total annualized costs are presented based on the anticipated design life of each green infrastructure practice. A more detailed breakdown of estimated costs is included in Attachment 9.

Pollutant loads were estimated based upon the land uses associated with each drainage area, using published land use pollutant loading factors for Total Phosphorus, Total Nitrogen, Total Suspended Solids and Fecal Coliform Bacteria. Pollutant load reductions were estimated for each individual drainage area based on published pollutant removal efficiencies for various types of BMPS and the sizing of each individual BMP. Pollutant load reduction calculations are provided in Attachment 10.

The retrofit design concepts, including planning-level costs and estimated pollutant removals, are presented on the concept sheets in Attachment 8. Each concept sheet includes a general site description, the proposed retrofit concept, field images with renderings of retrofit opportunities (where available), typical details of recommended BMPs, and estimates of pollutant removal, runoff reduction, and cost.

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, private property owners, developers) are responsible for evaluating the ultimate feasibility of, as well as design and permitting for, these and similar site-specific concepts.

Attachments:
Attachment 1: Example Site Screening Selection – Westerly, Rhode Island
Attachment 2: Spreadsheet of Potential Green Infrastructure Retrofit Sites
Attachment 3: Aerial Photographs of Selected Retrofit Sites
Attachment 4: Watershed Map of Potential Green Infrastructure Retrofit Sites
Attachment 5: Subwatershed Maps with Potential Green Infrastructure Retrofits
Attachment 6: Field Sheets
Attachment 7: Field Photos
Attachment 8: Retrofit Conceptual Designs
Attachment 9: Planning Level Cost Estimates
Attachment 10: Pollutant Loading and Reduction Calculations

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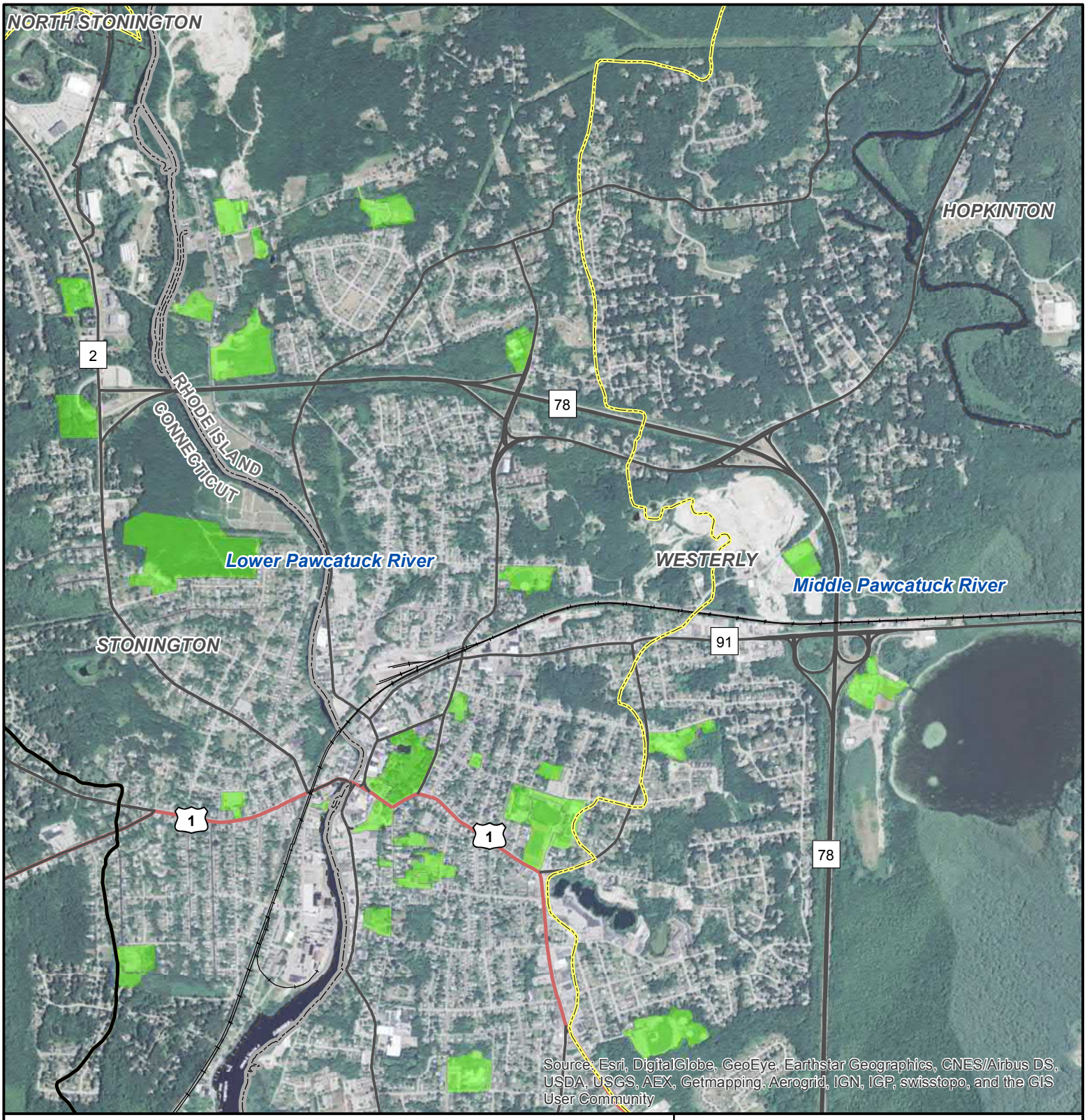
Attachment 1

Example Site Screening Selection – Westerly, Rhode Island



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Selection Criteria:

- Publicly Owned Land (283)
- Pawcatuck Watershed
- Subwatershed Boundary
- Railroad
- State Route
- US Route
- State Boundary
- Town Boundary

Publicly owned property includes Institutional, Developed Recreation, Cemeteries and Airports in RI; and State/Municipal Parks and Open Space in CT.

(RI Facilities Layers were also considered: Colleges/Universities, fire stations, schools,hospitals, libraries, SCORP sites, state facilities, town and city halls).

Example of Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed

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N
W E
S

0 0.175 0.35 0.7 Miles

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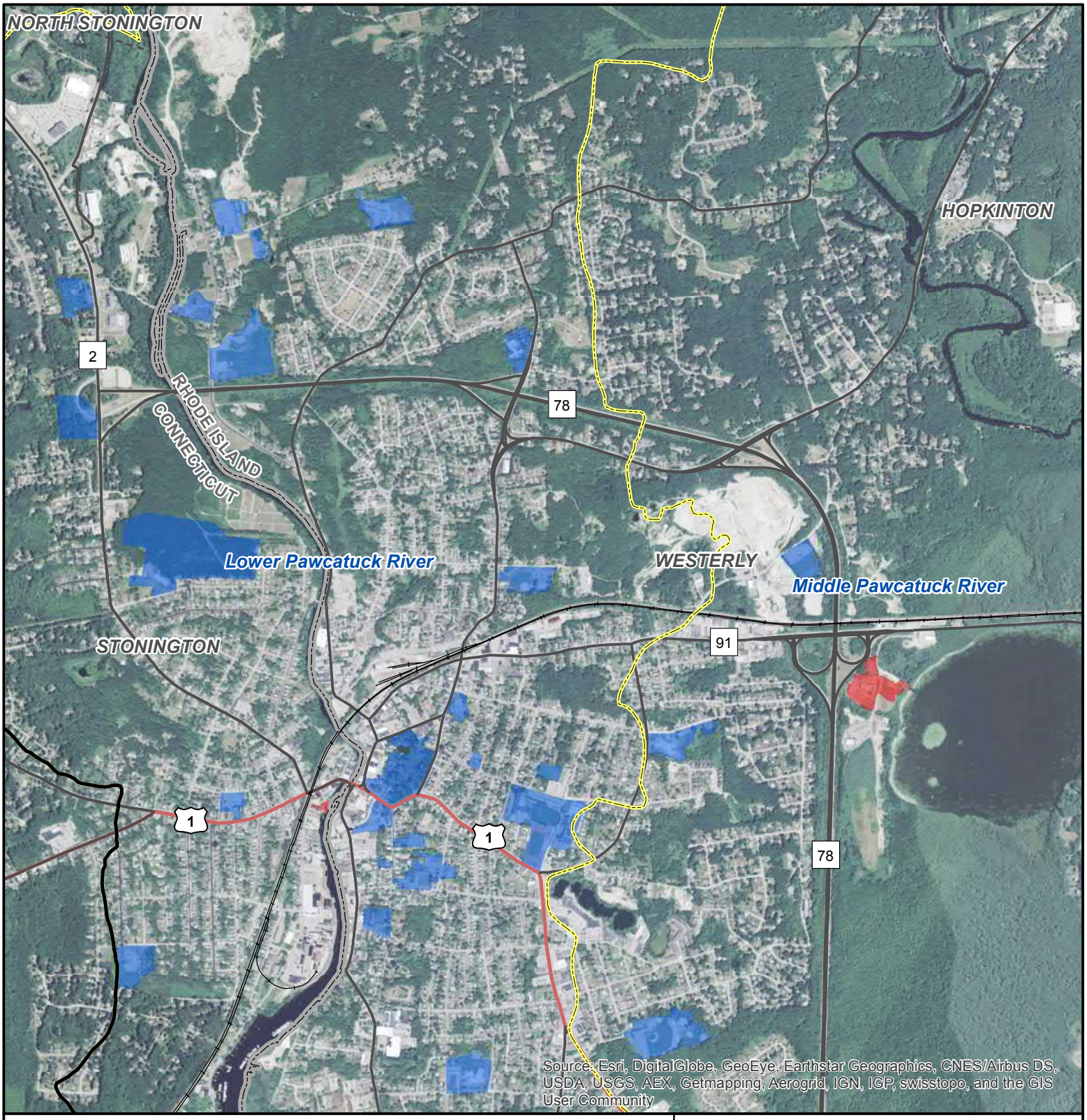

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Selection Criteria:

Presence of AB Soils and Development

- No (108)
- Yes (175)
- Pawcatuck Watershed
- Subwatershed Boundary
- Railroad
- State Route
- US Route
- State Boundary
- Town Boundary

Blue-shaded parcels have AB soils and development.

Percent Impervious is used later in the selection process to identify potentional sites with a high percentage of development.

Example of Potential Green Insfrastructure Sites in the Wood-Pawcatuck Watershed with AB soils and Development.

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N
W E
S

0 0.175 0.35 0.7 Miles

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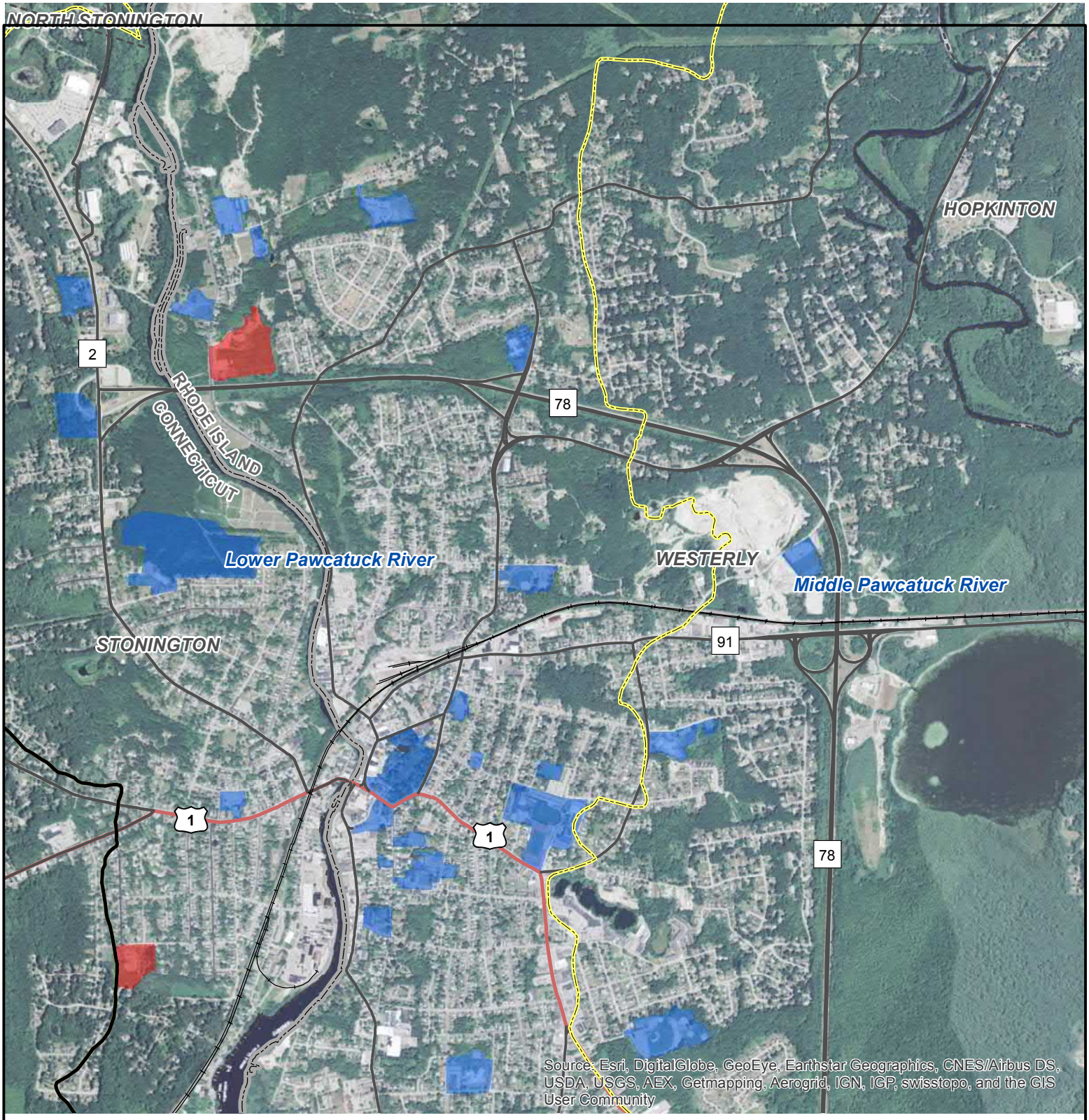

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Selection Criteria: SHWT > 6 feet

- No (12)
- Yes (163)
- Pawcatuck Watershed
- Subwatershed Boundary
- Railroad
- State Route
- US Route
- State Boundary
- Town Boundary

Blue-shaded parcels have AB soils, development, and SHWT depth > 6 feet.

Example of Potential Green Insfrastructure Sites in the Wood-Pawcatuck Watershed with a SHWT > 6 Feet.

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N W E S

0 0.175 0.35 0.7 Miles

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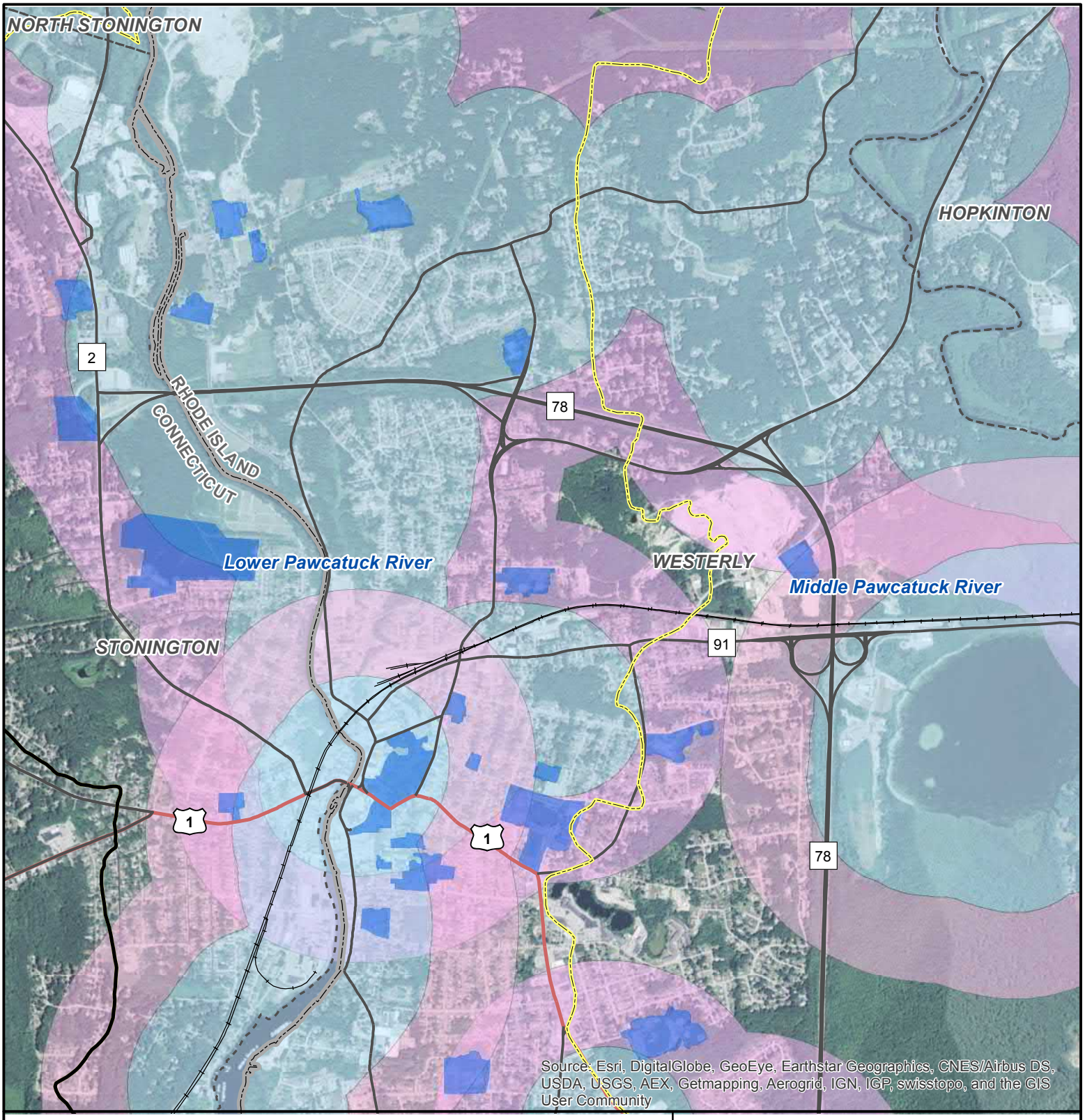

Legend

Selection Criteria: Half Mile to WQ Impairment

- Yes (129)

Distance to Impaired Surface Water

- 1/4 Mile
- 1/2 Mile
- Pawcatuck Watershed
- Subwatershed Boundary
- Railroad
- State Route
- US Route
- State Boundary
- Town Boundary

Blue-shaded parcels have AB soils, development, SHWT depth > 6 feet, and 1/2 mile to Water Quality Impairment.

Example of Potential Green Insfrastructure Sites in the Wood-Pawcatuck Watershed within 1/2 mile of Impaired Surface Waters

FUSS & O'NEILL

N
W E
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0 0.175 0.35 0.7 Miles

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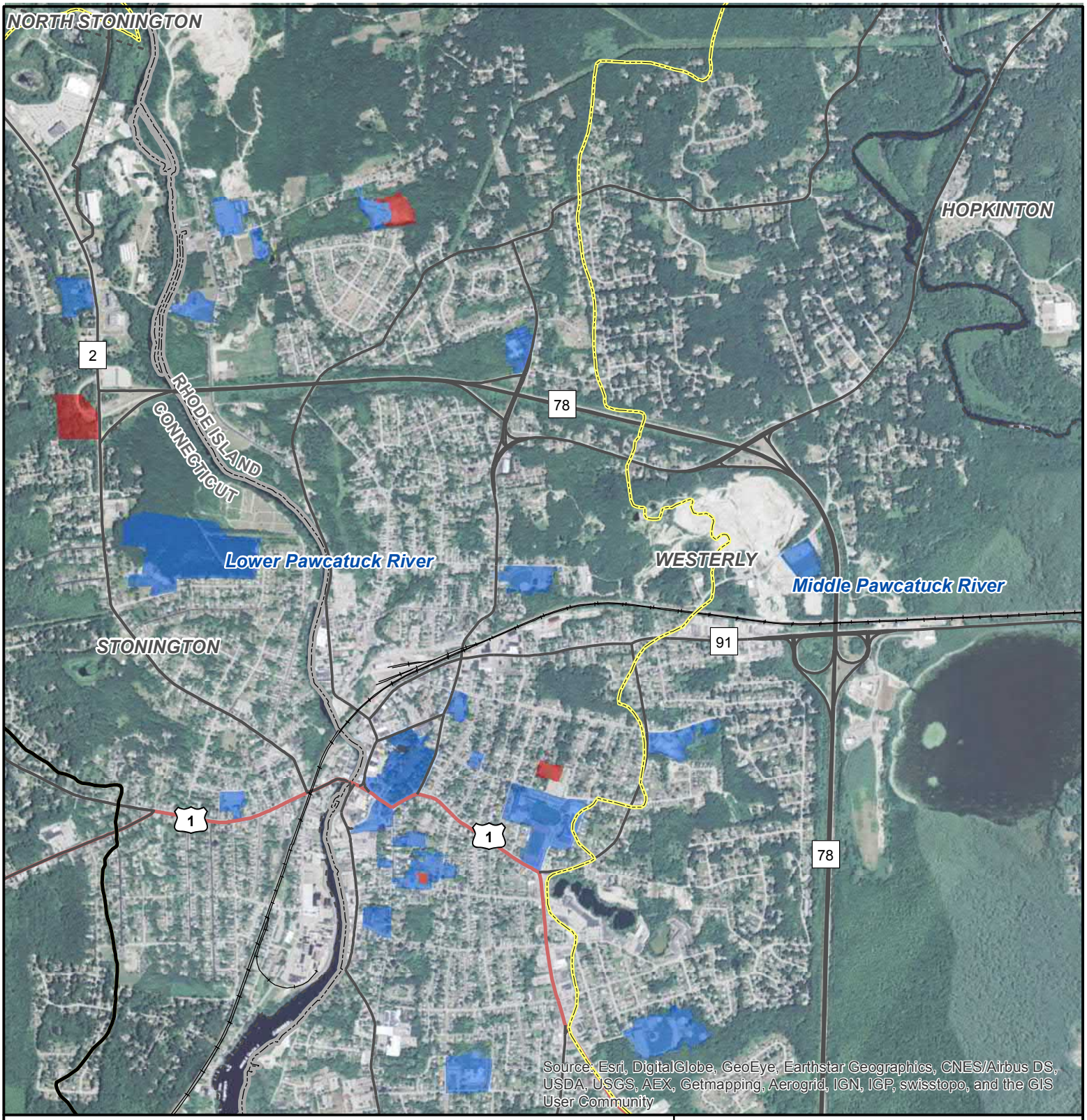

Legend

Selection Criteria:

> = 30 % IC or IC Acres > = 1.0

- No (23)
- Yes (106)
- Pawcatuck Watershed
- Subwatershed Boundary
- Railroad
- State Route
- US Route
- State Boundary
- Town Boundary

Blue-shaded parcels have AB soils, development, SHWT depth > 6 feet, 1/2 mile to Water Quality Impairment, and Greater than 30 % Impervious Cover (IC) or IC > 1 Acre.

Example of Potential Green Insfrastructure Sites in the Wood-Pawcatuck Watershed with Greater than 30 % IC or IC > 1 Acre

FUSS & O'NEILL

N
W E
S

0 0.175 0.35 0.7 Miles

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FUSS & O'NEILL

Attachment 2

Spreadsheet of Potential Green Infrastructure Retrofit Sites

Wood-Pawcatuck Potential Green Infrastructure Sites
Preliminary Site Selection

Site ID#	Site Name	ADDRESS	Town	Lat	Long	ACRES
21	Vin Gormley Trailhead Parking	24 Sanctuary Road	Charlestown	41.3802	-71.677	4.0
99	Burlingame Management Area	Burlingame State Park Rd	Charlestown	41.373	-71.693	4.9
128	Shannock Baptist Church	1632 Shannock Road	Charlestown	41.446	-71.635	0.7
129	St. Mary's Catholic Church	451-455 Carolina Back Road	Charlestown	41.453	-71.66	2.1
217	Burlingame Management Area	Burlingame State Park Rd	Charlestown	41.371	-71.692	14.5
281	Charlestown Elementary School	363 Carolina Back Road	Charlestown	41.447	71.655	6.9
6	The Saint Kateria Tekakwitha Catholic Church	Exeter Rd	Exeter	41.545	-71.527	3.7
73	Exeter Town Animal Shelter	165 S. County Trail	Exeter	41.55	71.529	3.1
163	Adjacent to Animal Shelter	175 S. County Trail	Exeter	41.55	-71.531	2.7
172	Unidentified building with parking lot	742 Ten Rod Road	Exeter	41.579	-71.584	2.0
173	Exeter Town Hall	675 Ten Rod Road	Exeter	41.585	-71.578	2.2
206	Parking Lot Near Lake	406 Arcadia Road	Exeter	41.558	-71.685	7.1
291	Exeter Job Corps Center	162 Main Street	Exeter	41.552	-71.544	19.1
293	Phoenix House and Office Buildings	Gaspee Road and Main Street	Exeter	41.558	-71.542	12.7
294	Exeter Public Library	762 Ten Rod Road	Exeter	41.585	-71.586	6.6
227	Hopkinton Recreation Department	188 Main Street	Hopkinton	41.422	-71.788	22.8
232	Unidentified building and parking lot and adjacent vacant land	35 Frontier Road	Hopkinton	41.445	-71.785	37.2
145	Wood River Health Services	823 Main Street	Hopkinton	41.489	-71.737	1.8
252	Chariho Little League	1118 Main Street	Hopkinton	41.513	-71.706	6.9
50	Wyoming Dam Fishing Access	Bridge Street	Hopkinton	41.515	-71.703	1.2
112	Babcock Presbyterian Church	25 Maxson Street	Hopkinton	41.415	-71.794	1.5
114	U.S. Post Office	131 Main Street	Hopkinton	41.416	-71.791	0.6
116	Seventh Day Baptist Church	8 Church Street	Hopkinton	41.418	-71.791	2.7
119	Ashaway Volunteer Fire Association	213 Main St	Hopkinton	43.198	-71.667	1.3
122	Unidentified building with parking lot	72 High Street	Hopkinton	41.431	-71.792	0.9
125	Trinity Lutheran Church	Corner of Rte 216 and Wellstown Rd	Hopkinton	41.435	-71.795	2.9
154	Hope Valley - Wyoming Fire District	996 Main St	Hopkinton	41.507	-71.716	1.2
155	Langworthy Public Library	24 Spring Street	Hopkinton	41.509	-71.718	0.7
248	Abandoned Parking Lot	N. of Hope Valley Autobody (894 Main Str	Hopkinton	41.499	-71.725	6.4
280	Ashaway Elementary School	12A Hillside Avenue	Hopkinton	41.42	-71.79	5.8
287	Wood River Preschool/Hope Valley Elementary	1059 Main Street	Hopkinton	41.51	-71.712	6.8
288	DPW Facility	51 Bank Street	Hopkinton	41.517	-71.707	5.8
290	North of Wood Pawcatuck Watershed Assoication	260 Arcadia Road	Hopkinton	41.546	-71.695	5.4
185	Wheeler High/Middle School	298 Norwich-Westerly Road	North Stonington	41.439	-71.886	10.3
194	North Stonington Superintendent Elementary School	313-317 Norwich-Westerly Road	North Stonington	41.439	-71.887	43.5
191	West Vine Street School	25 West Vine Street	Pawcatuck	41.386	-71.842	39.53
136	Richmond Carolina Fire District	203 Richmond Town House Road	Richmond	41.472	-71.664	1.2
282	Chariho Regional H.S/M.S and Career Center	453 Switch Road	Richmond	41.449	-71.696	39.2
157	Richmond Police Department	1168 Main Street	Richmond	41.515	-71.699	1.18
159	Rhode Island State Police	54 Nooseneck Hill Road	Richmond	41.52	-71.694	1.1
286	Richmond Town Hall and Elementary School	5 Richmond Townhouse	Richmond	41.499	-71.661	9.13
284	Boss Arena	1 Keaney Road	South Kingstown	41.484	-71.538	24.2
137	Great Swamp Management Area	160-170 Great Neck Road	South Kingstown	41.474	-71.575	3.7
142	West Kingston Fire Department	390 Fairgrounds Road	South Kingstown	41.487	-71.559	2.4
143	West Kingstown Baptist Church	263 Waites Corner Road	South Kingstown	41.49	-71.557	2.0

Wood-Pawcatuck Potential Green Infrastructure Sites
Preliminary Site Selection

Site ID#	Site Name	Address	Town	Lat	Long	Acres
229	Tuckertown Park	101 Tuckertown Park Drive	South Kingstown	41.426	-73.555	24.4
239	Ryan Center-Meade Stadium	West Alumni Avenue	South Kingstown	41.488	-71.536	96.2
139	J & D's West Kingston Services/ Courthouse Center for the Arts	3481 Kingstown Road	South Kingstown	41.484	-71.555	3.1
152	South Kingstown Nursing and Rehab	2115 South County Trail	South Kingstown	41.503	-71.563	4.3
283	West Kingston Elementary School	3119 Ministerial Road	South Kingstown	41.479	-71.551	7.7
285	U.R.I.	210 Flagg Road	South Kingstown	41.492	-71.535	273.8
183	West Broad Street School	W. Broad Street	Stonington	41.377	-71.838	2.8
201	Unidentified parking Lot	350 Liberty Street	Stonington	41.398	-71.846	5.7
179	Unidentified building and parking lot	302 Victory Highway	West Greenwich	41.639	-71.697	0.6
92	Watch Hill Fire Department	222 Watch Hill Rd	Westerly	41.317	-71.848	0.9
93	U.S. Post Office	110 Tom Harvey Road	Westerly	41.342	-71.816	3.5
95	Westerly Fire Department	180 Beach Street	Westerly	41.353	-71.826	1.0
98	Unidentified Church	45 Elm Street	Westerly	41.372	-71.829	3.7
101	Pilgrim Baptist Church- Central Nursery School	16 Elm Street	Westerly	41.375	71.827	2.0
102	Grace United Methodist Church	10 Park Ave	Westerly	41.379	-71.824	1.0
103	Immaculate Conception Catholic Church	111 High Street	Westerly	41.381	-71.825	2.5
107	Westerly Town Water Department	68 White Rock Road	Westerly	41.398	-71.843	4.3
108	Bradford School	15 Church Street	Westerly	41.398	-71.895	4.5
109	Westerly Packing	15 Springbrook Road	Westerly	41.997	-71.836	2.0
110	Springbrook Elementary School	39 Springbrook Road	Westerly	41.401	71.829	3.7
111	Bradford Social Club	2 Bowling Lane	Westerly	41.404	-71.749	0.6
199	Westerly State Airport	62 Airport Road	Westerly	41.357	-71.811	196.3
211	Rotary Park	near 90 Airport Road	Westerly	41.346	-71.814	5.7
216	Public Complex	99 Wilson Street	Westerly	41.367	-71.815	13.9
221	Area adjacent to Ocean Community YMCA	77-85 High Street	Westerly	41.379	-71.828	13.7
223	Craig Field Recreation Complex	Mountain Avenue	Westerly	41.386	-71.822	6.6
224	Large Parking Lot for Football Field	60 Old Hopkinton Road	Westerly	41.387	-71.807	5.3
271	The Westerly Hospital	25 Wells Street	Westerly	41.362	-71.825	15.1
272	Westerly Senior Citizens Center and State Street School	35 State Street	Westerly	41.365	-71.824	8.8
273	St. Pius X School	32 Elm Street	Westerly	41.373	-71.828	6.7
274	Westerly High School	23 Ward Avenue	Westerly	41.375	-71.818	20.5
275	Westerly Town Hall	45 Broad Street	Westerly	41.376	-71829	6.0
276	93 Tower Street	93 Tower Street	Westerly	41.379	-71.814	5.9
277	Westerly Health Center	280 High Street	Westerly	41.396	-71.822	5.1
278	Possible Bus Depot	8 Springbrook Road	Westerly	41.401	-71.838	5.4

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Attachment 3

Aerial Photographs of Selected Retrofit Sites

The Saint Kateria Tekakwitha Catholic Church
Exeter Road
Exeter, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Vin Gormley Trailhead Parking
24 Sanctuary Road
Charlestown, RI

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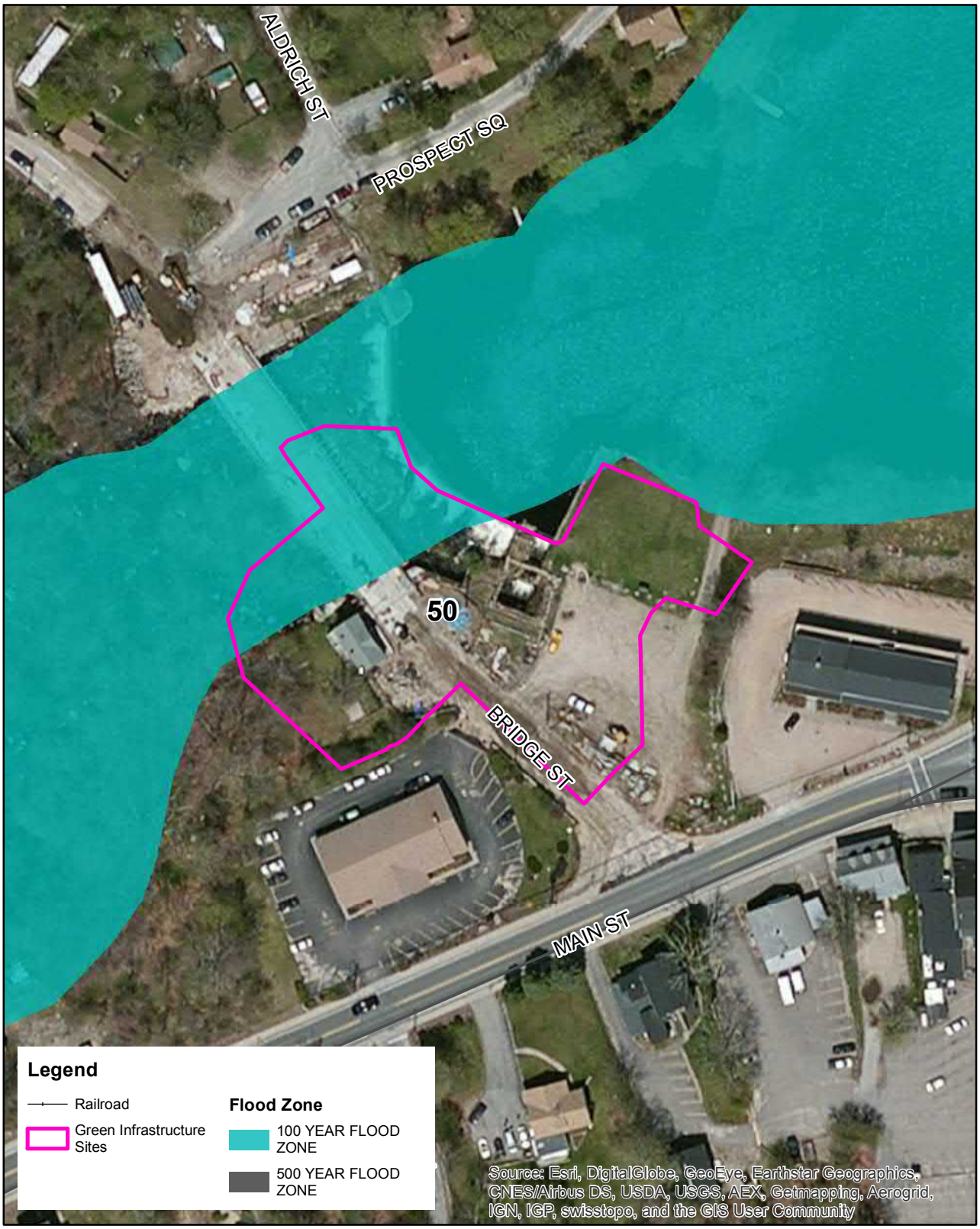
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Wyoming Dam Fishing Access
Bridge Street
Hopkinton, RI



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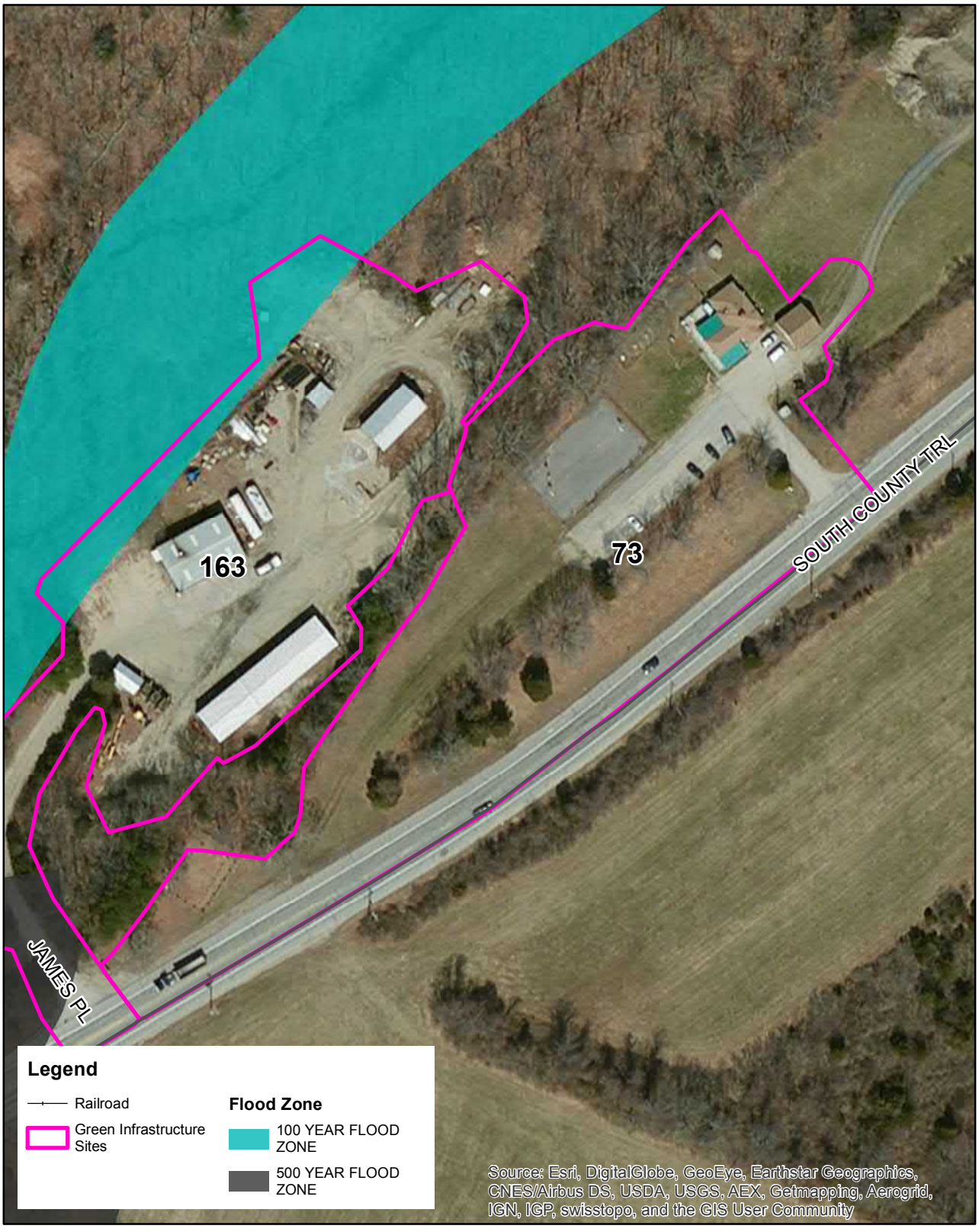
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N
W E
S

Exeter Town Animal Shelter
165 S. County Trail
Exeter, RI



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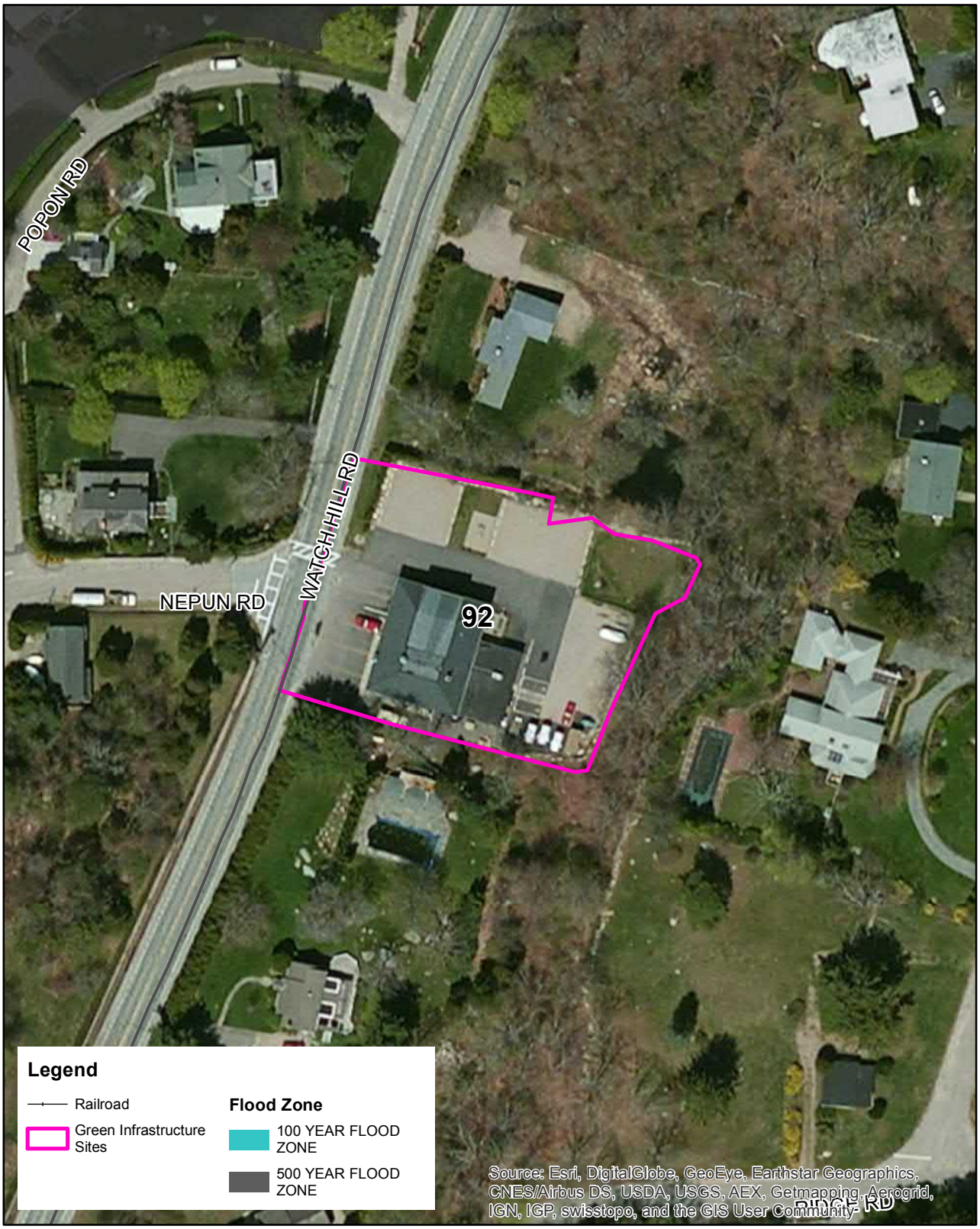
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Watch Hill Fire Department
222 Watch Hill Road
Westerly, RI



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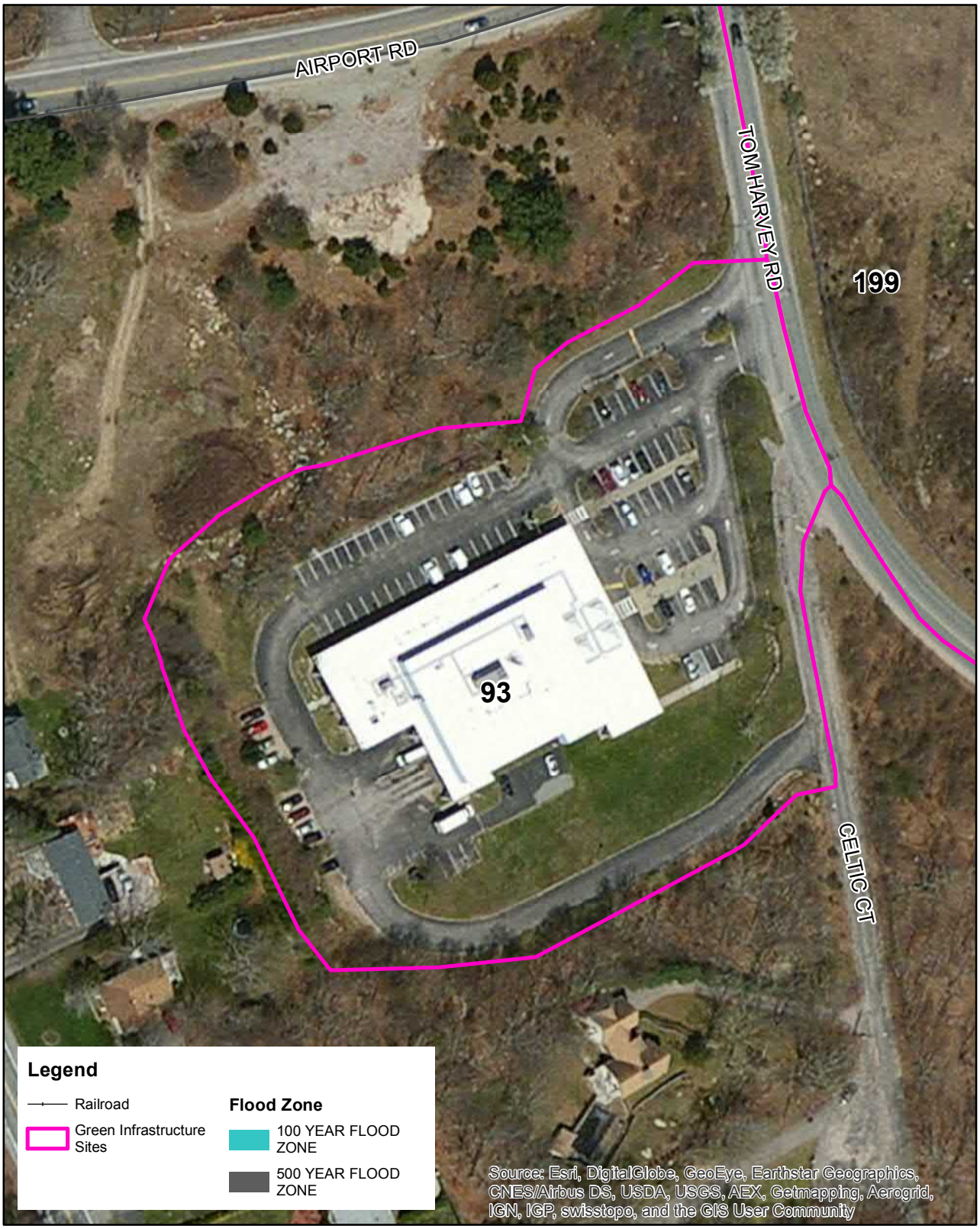
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

U.S. Post Office
110 Town Harvey Road
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Westerly Fire Department
180 Beach Street
Westerly, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N
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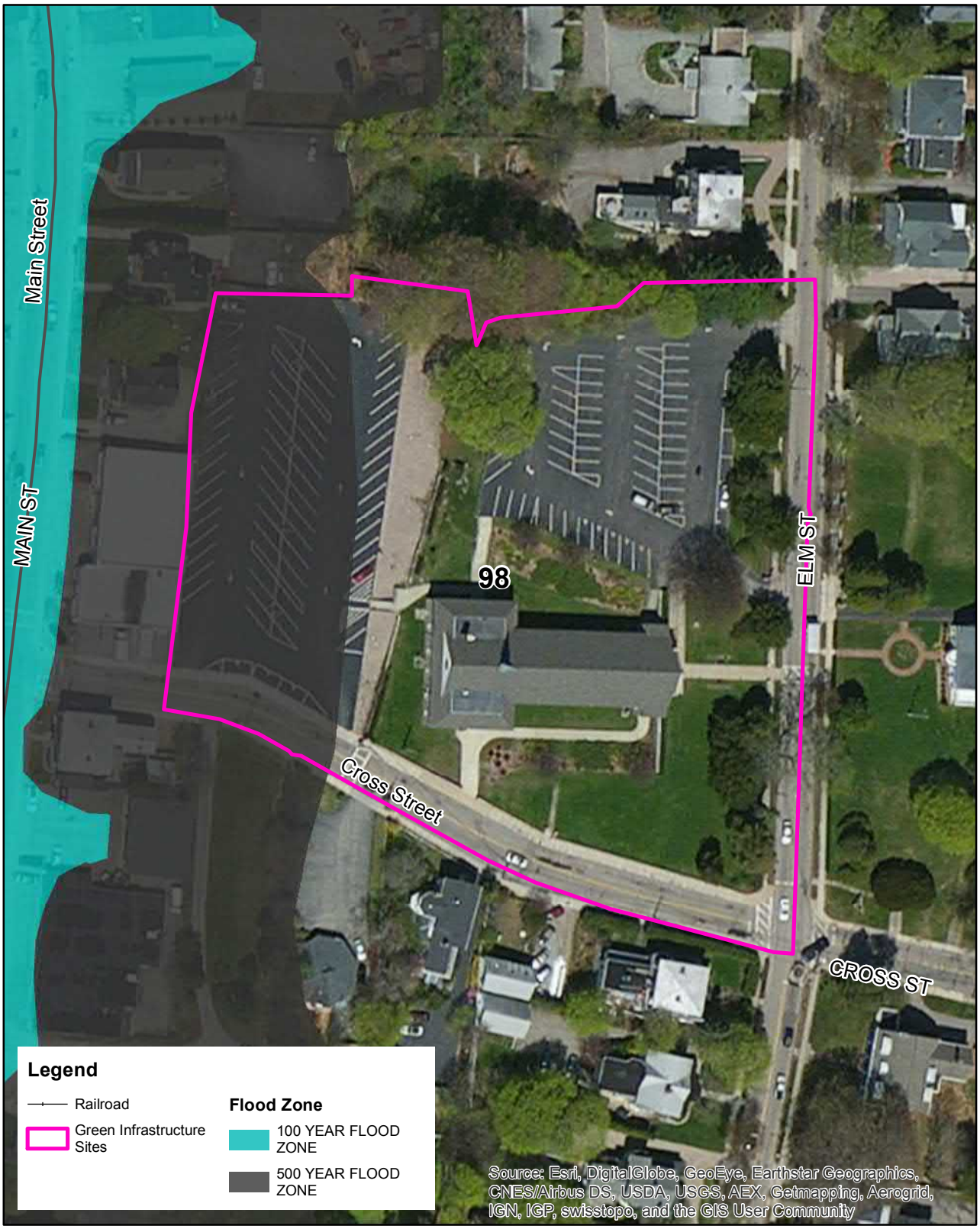
Church
45 Elm Street
Westerly, RI



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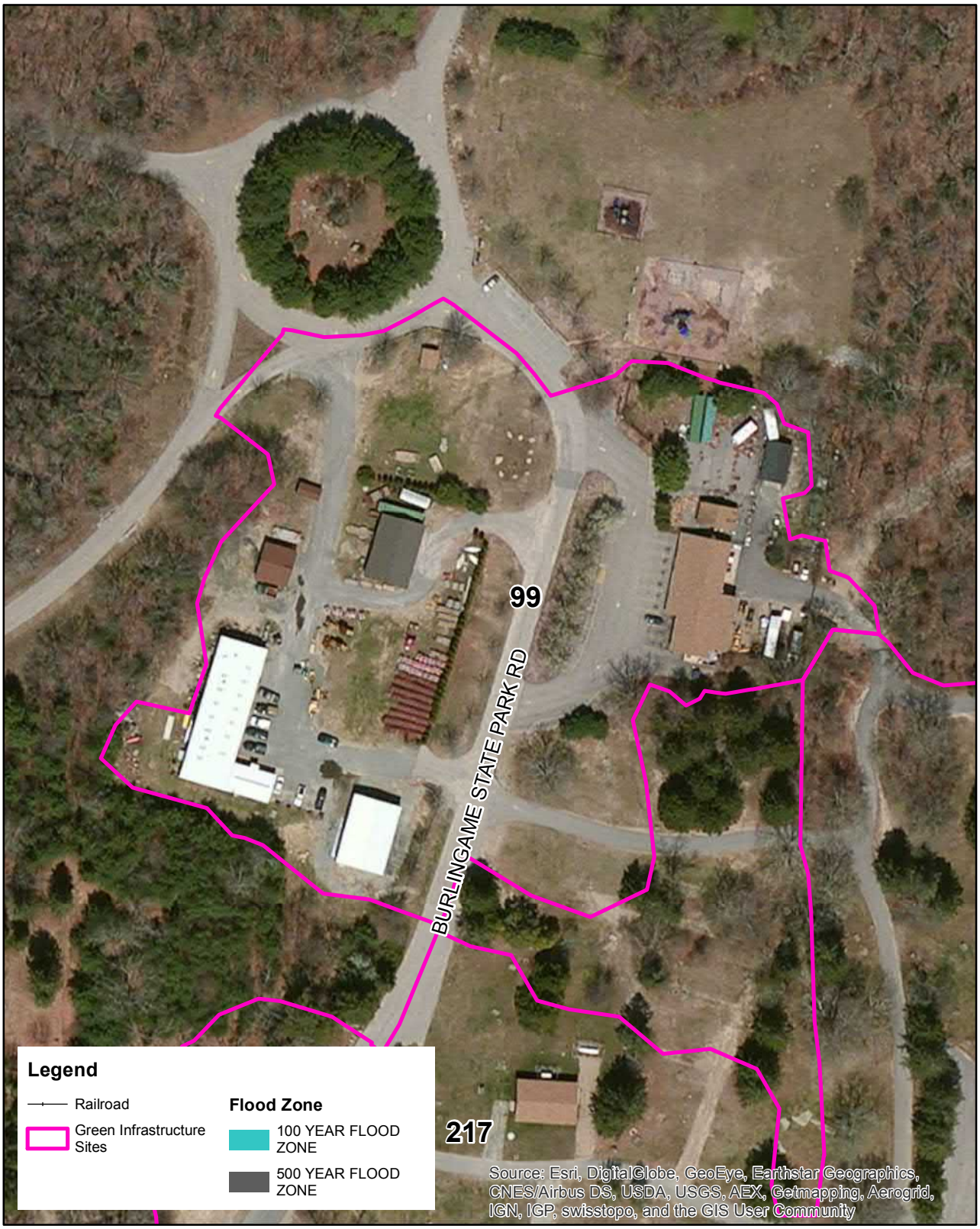
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Burlingame Management Area
Burlingame State Park Rd/ Legiontown Road
Charlestown, RI



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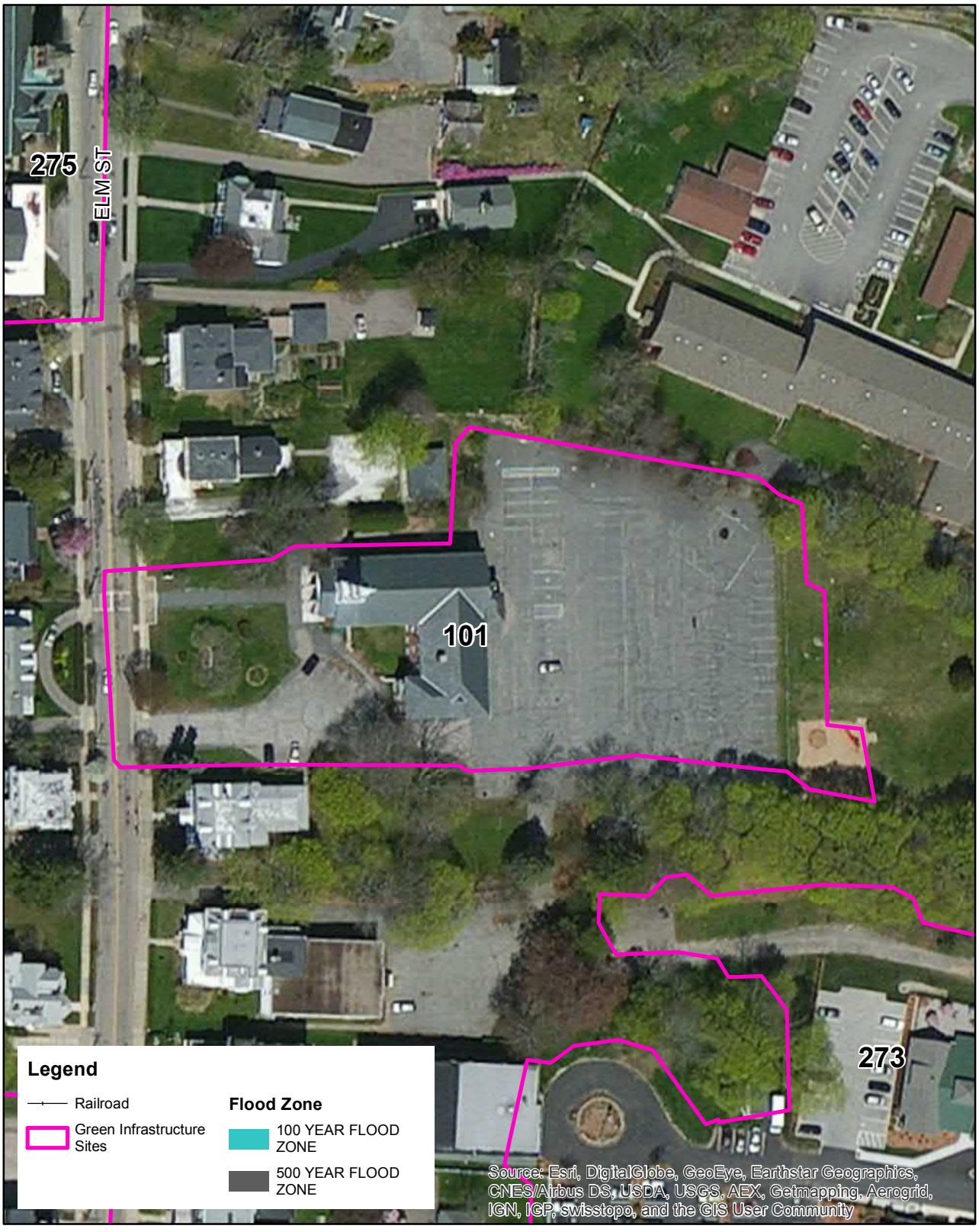
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Pilgrim Baptist Church- Central Nursery School
16 Elm Street
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Grace United Methodist Church
10 Park Avenue
Westerly, RI

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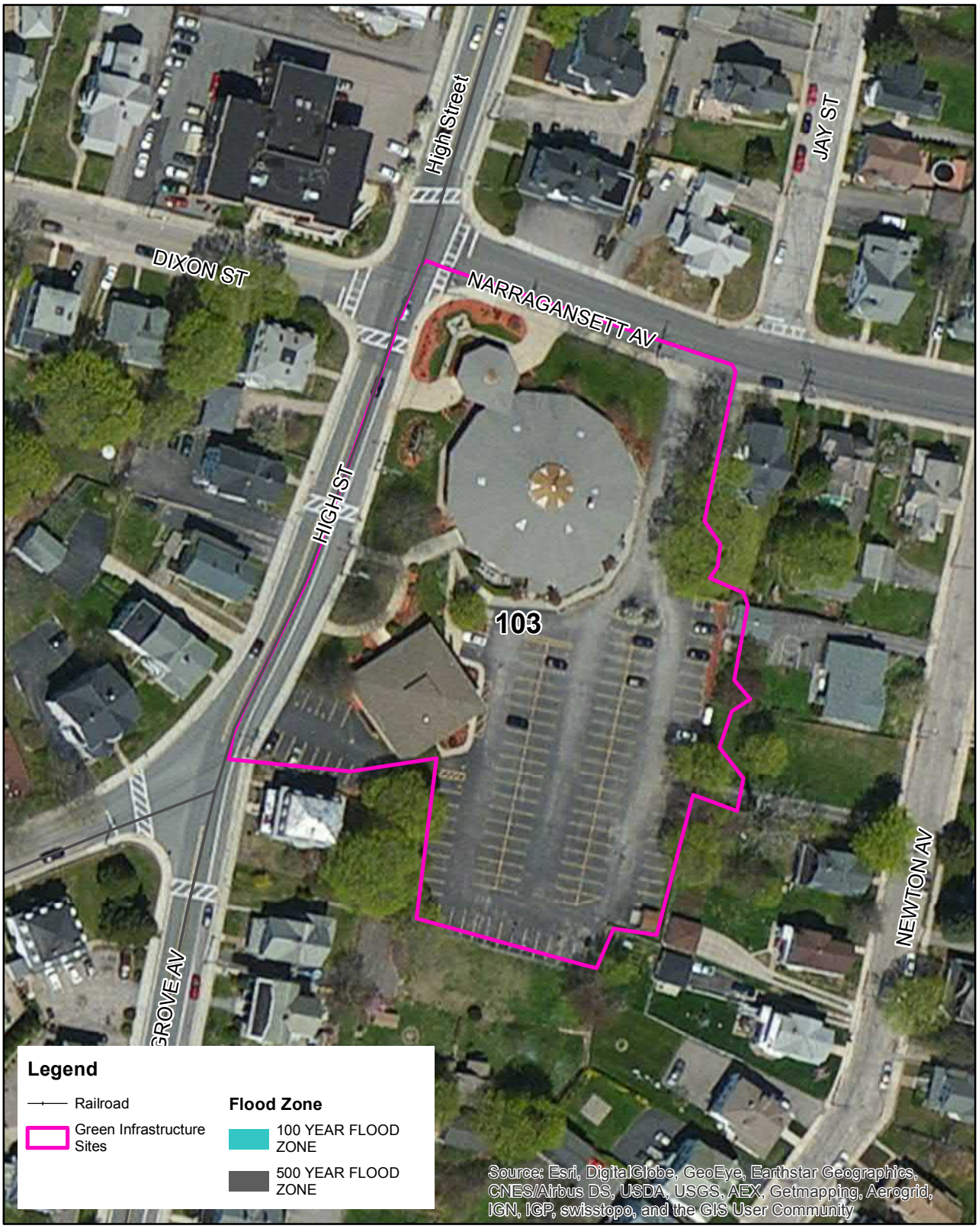
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Immaculate Conception Catholic Church
111 High Street
Westerly, RI



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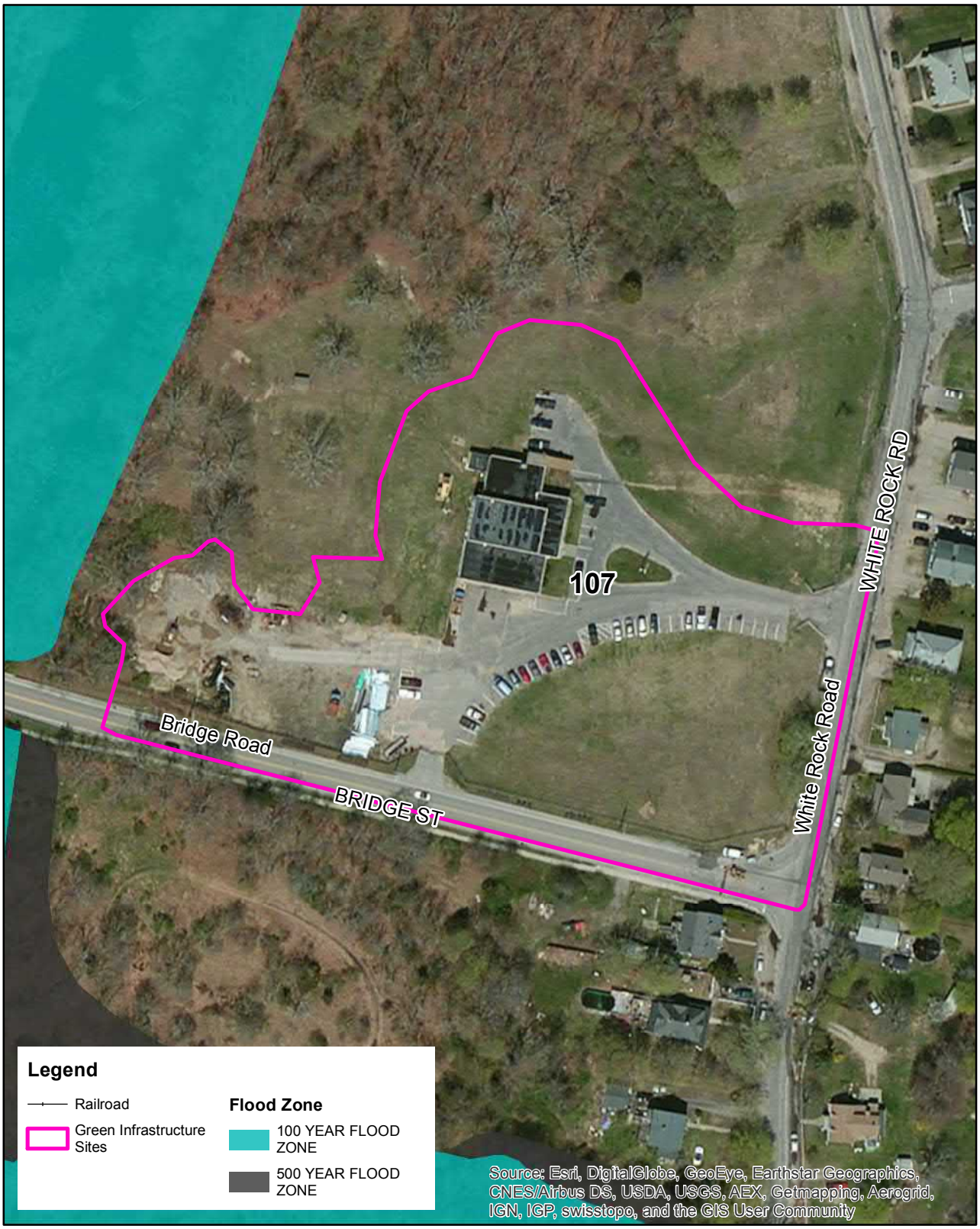
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Westerly Town Water Department
68 White Rock Road
Westerly, RI



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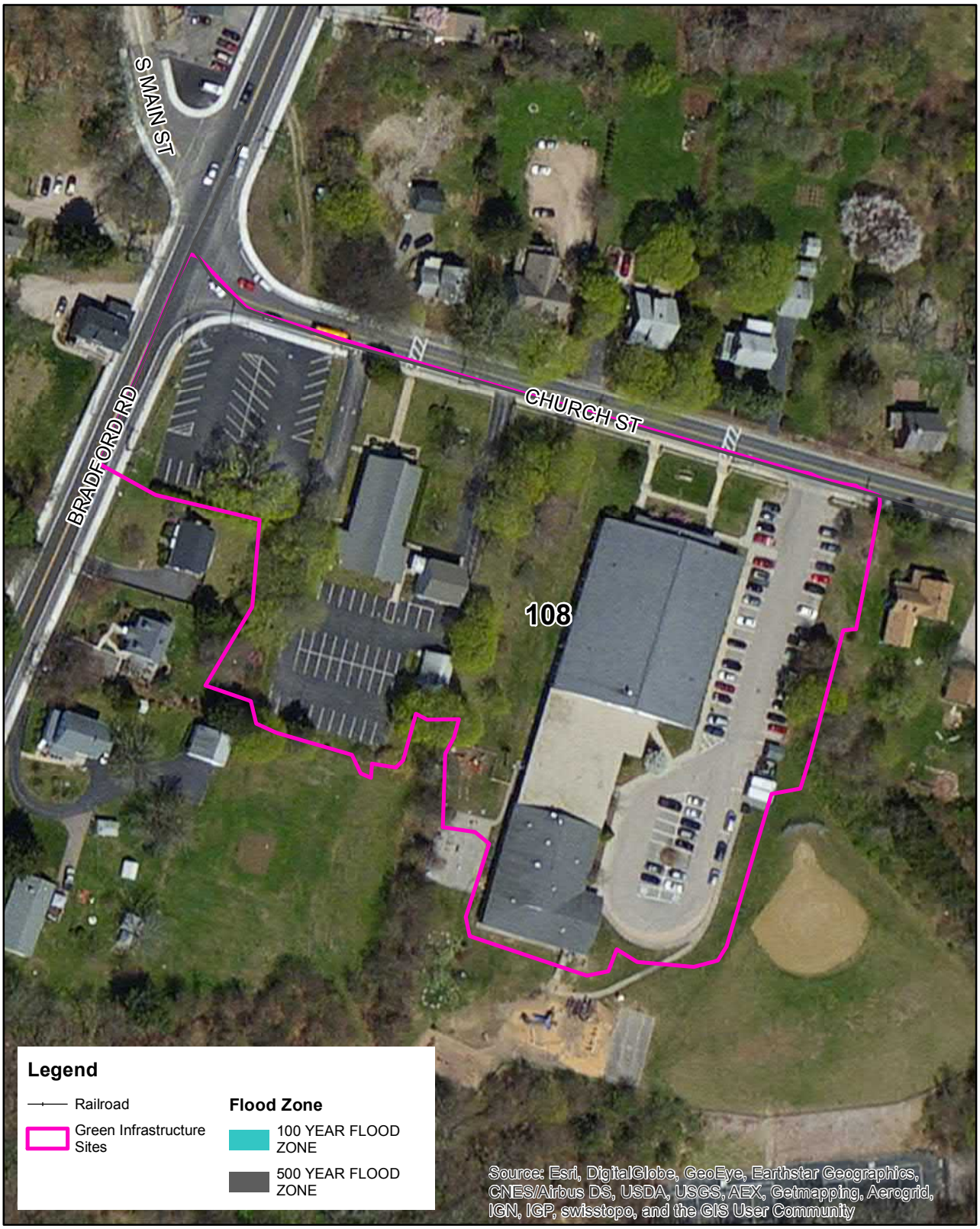
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Bradford School
15 Church Street
Westerly, RI



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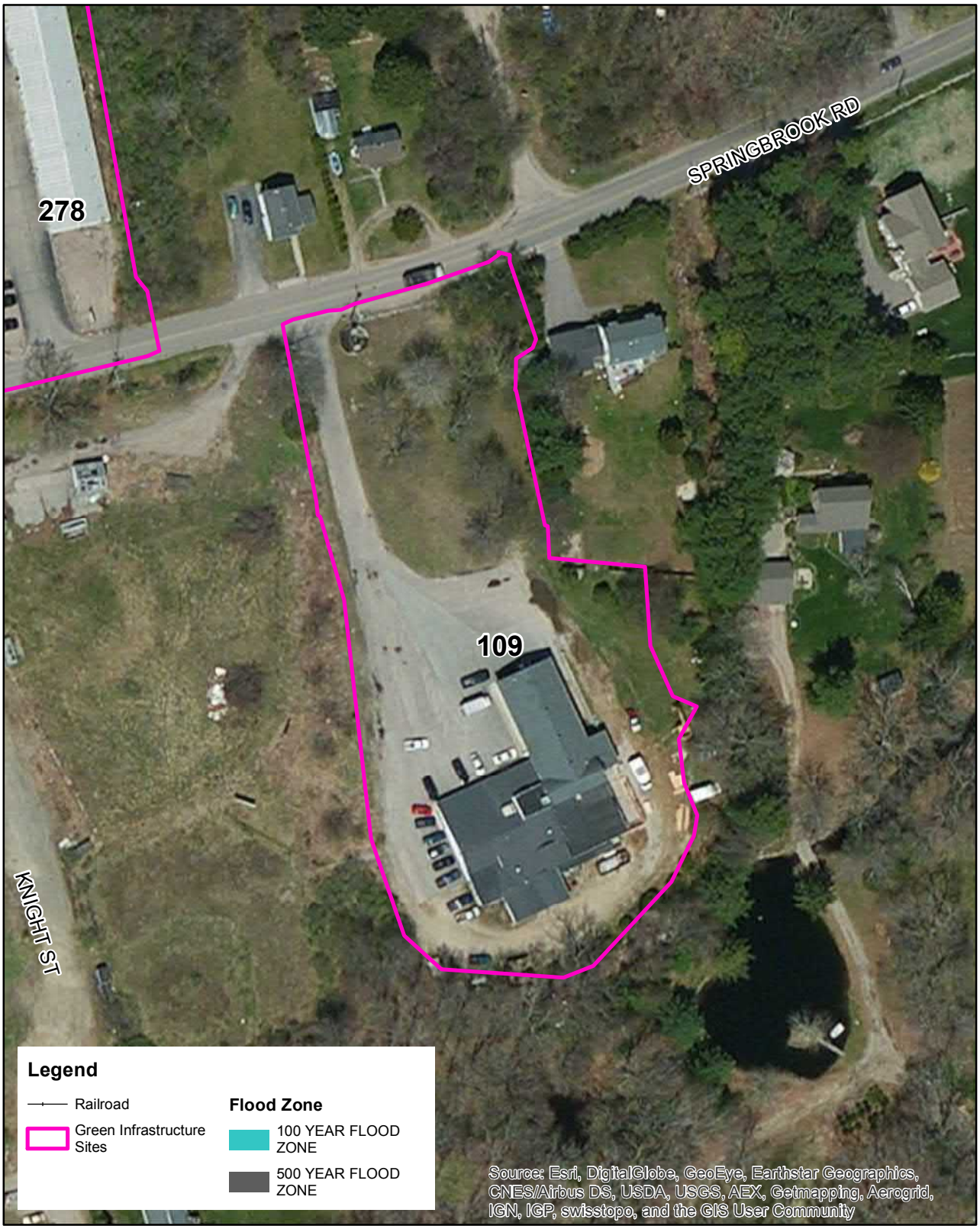
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Westerly Packing
15 Springbrook Road
Westerly, RI



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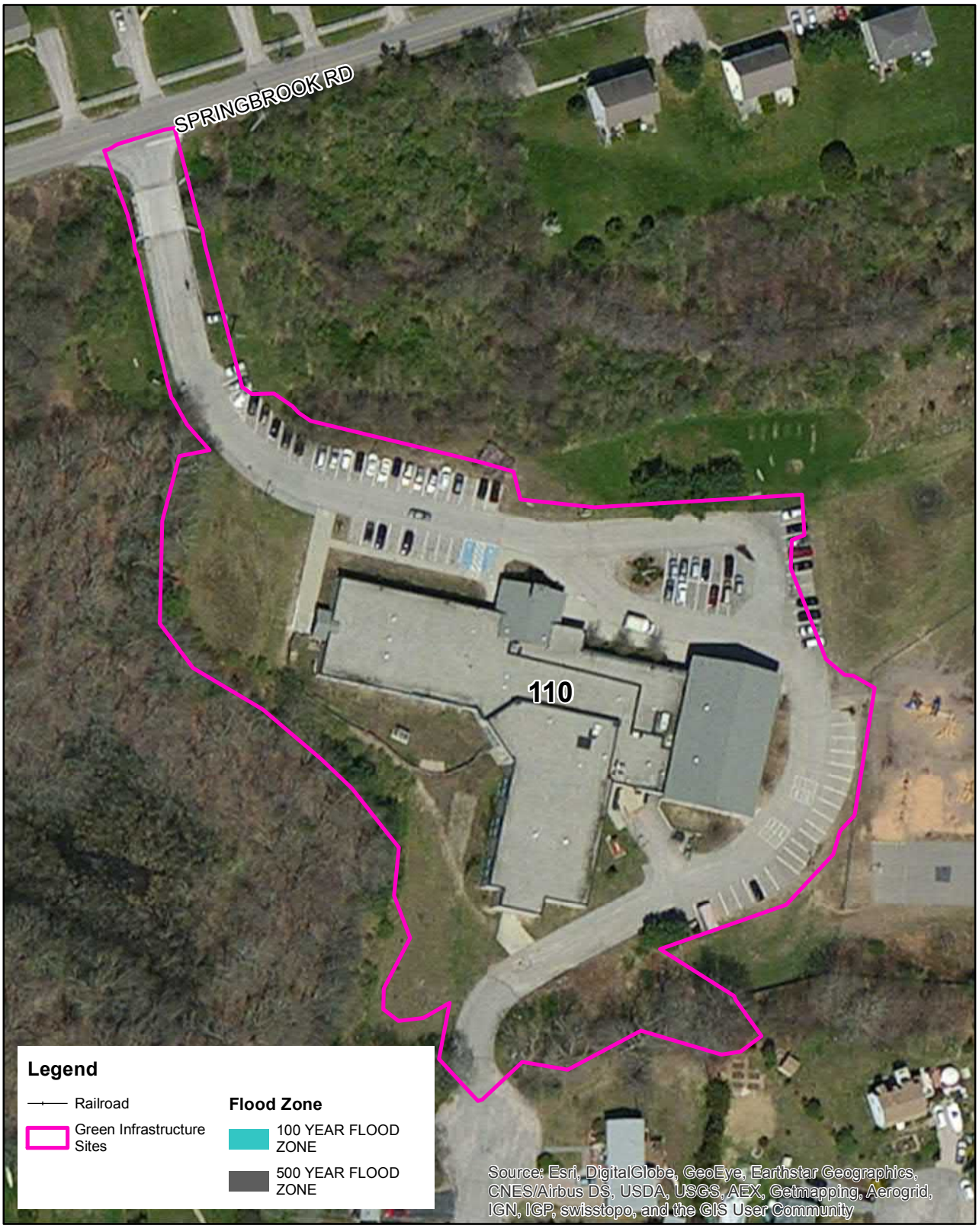
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Springbrook Elementary School
39 Springbrook Road
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Bradford Social Club
2 Bowling Lane
Westerly, RI

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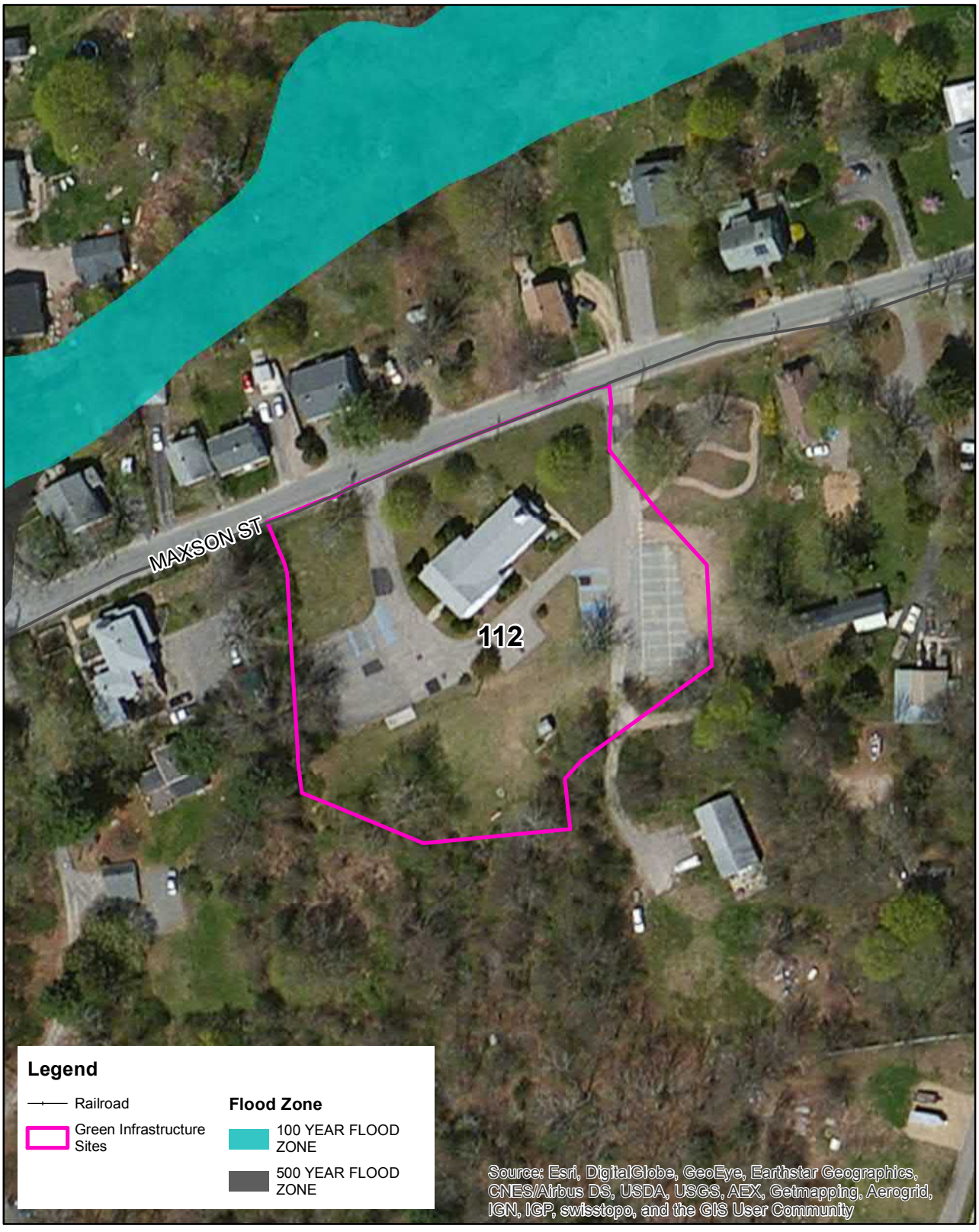
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N
W E
S

Babcock Presbyterian Church
25 Maxson Street
Hopkinton, RI



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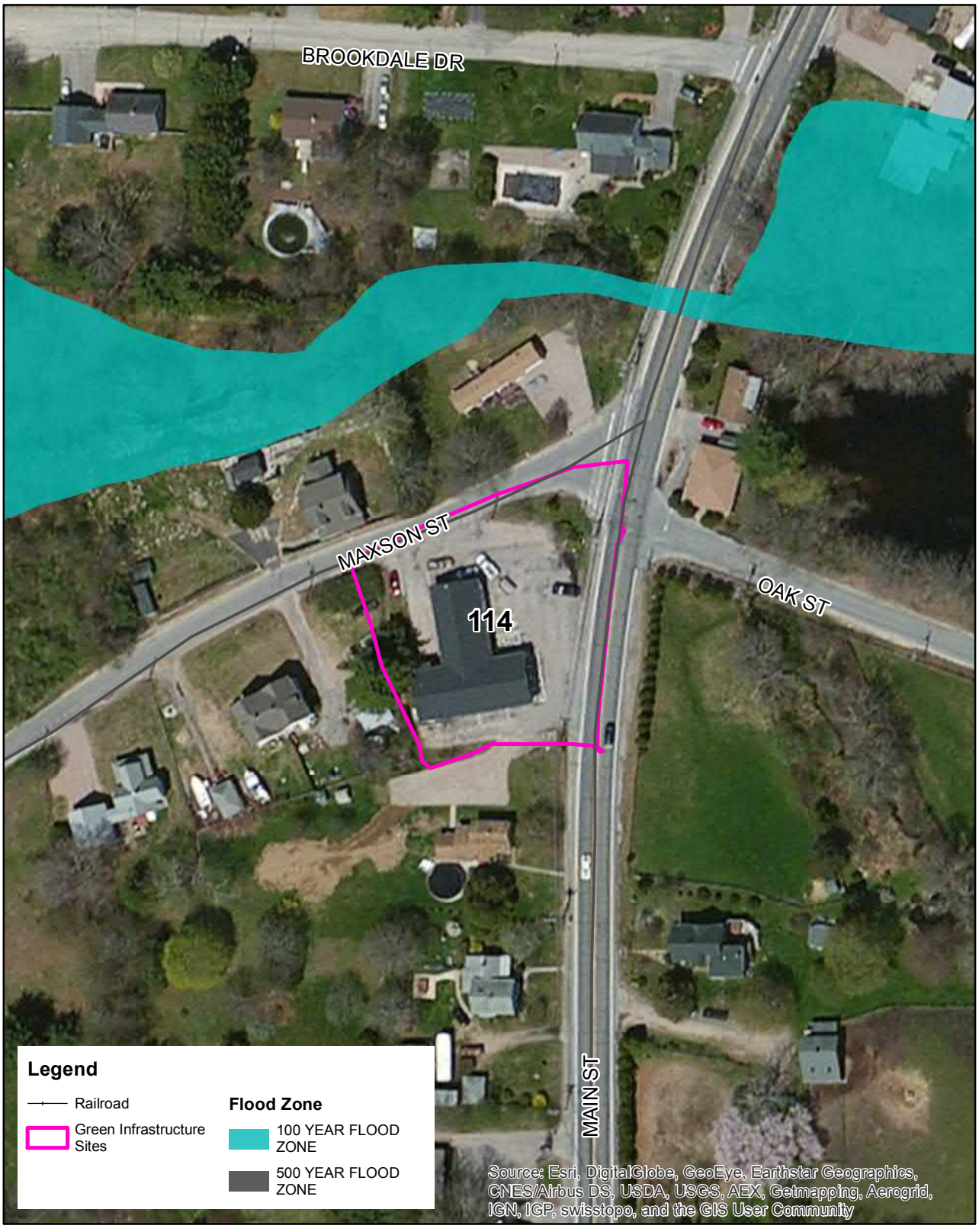
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

U.S. Post Office
131 Main Street
Hopkinton, RI



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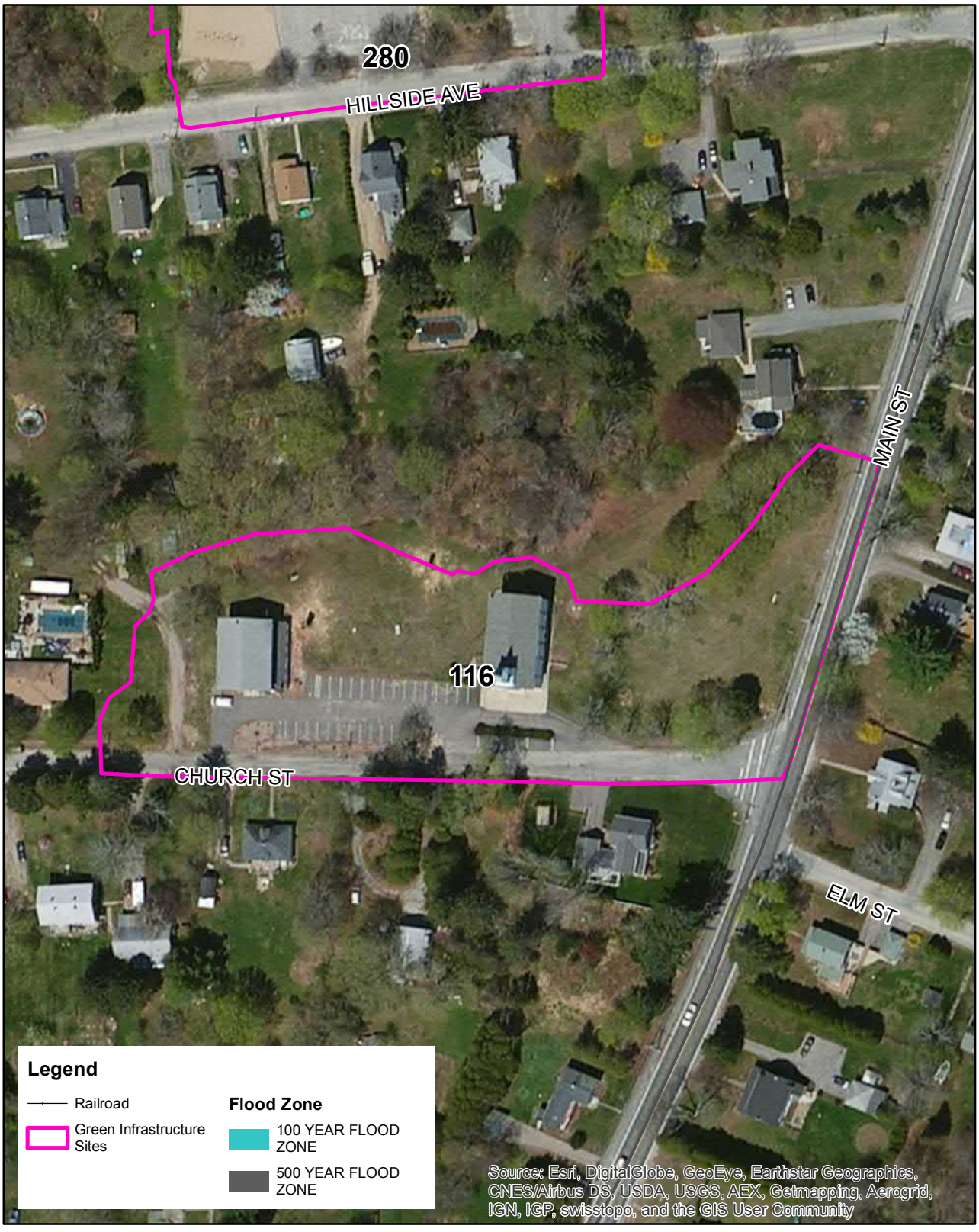
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Seventh Day Baptist Church
8 Church Street
Hopkinton, RI



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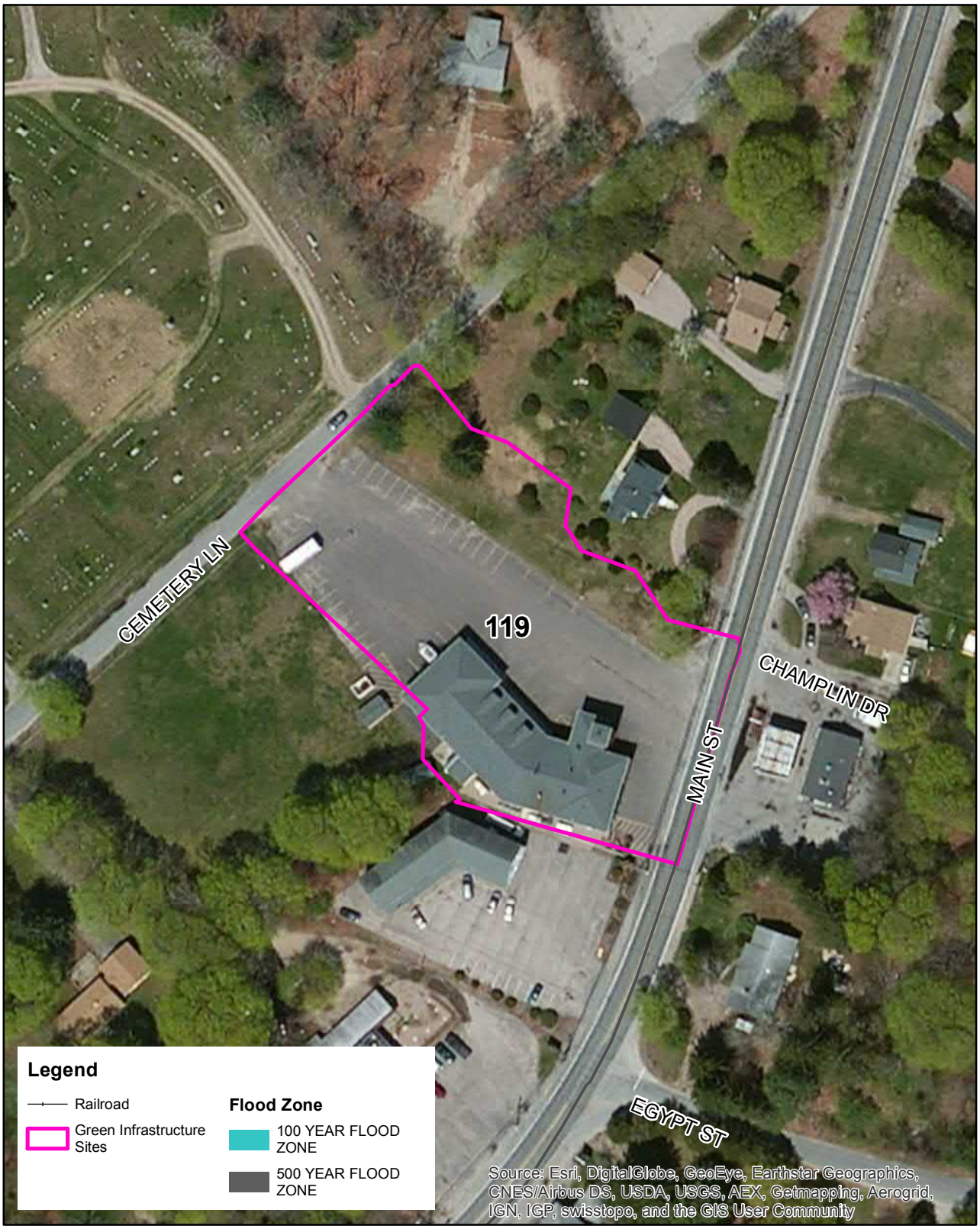
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Ashaway Volunteer Fire Association
213 Main Street
Hopkinton, RI



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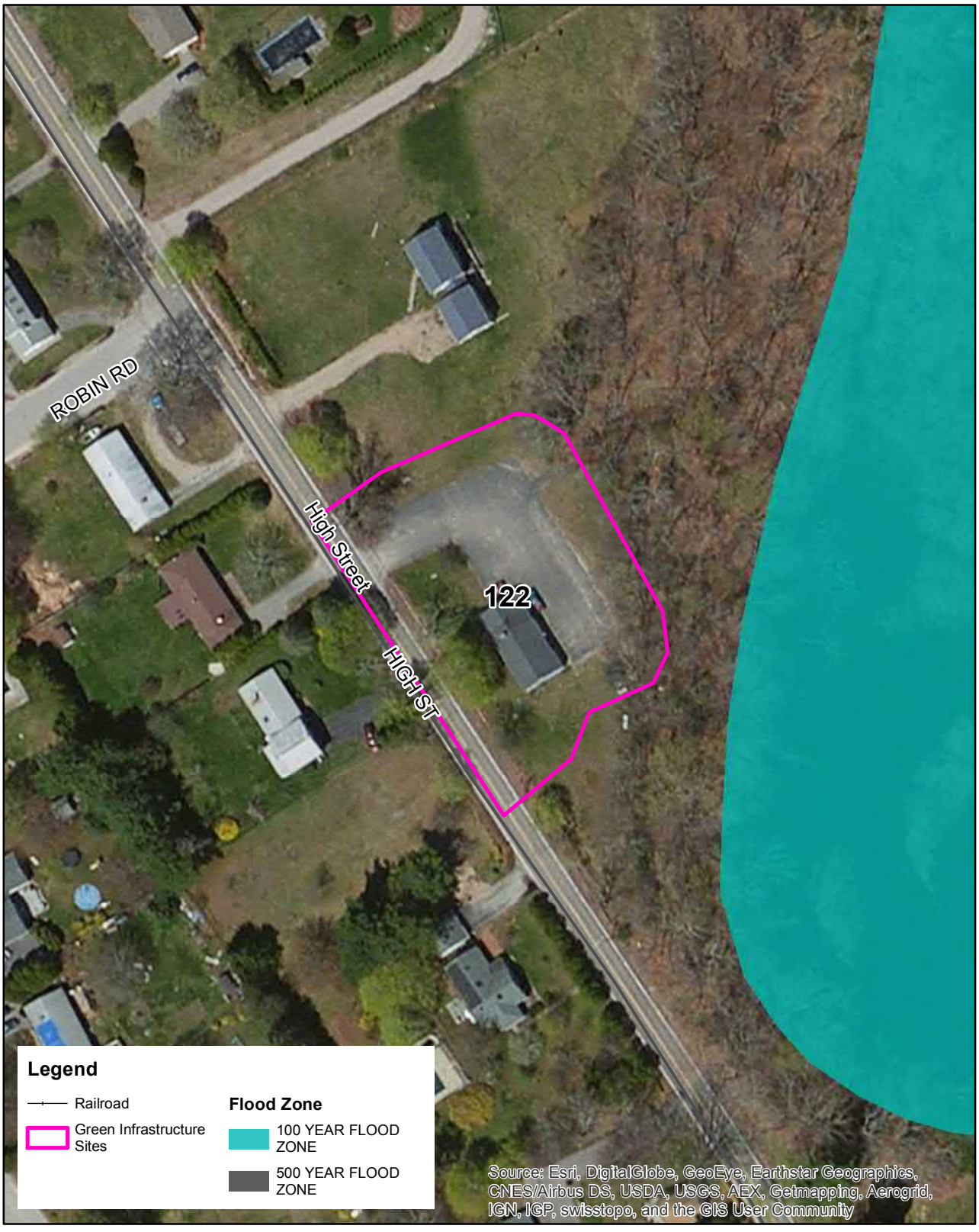
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Small Building with parking lot
72 High Street
Hopkinton, RI



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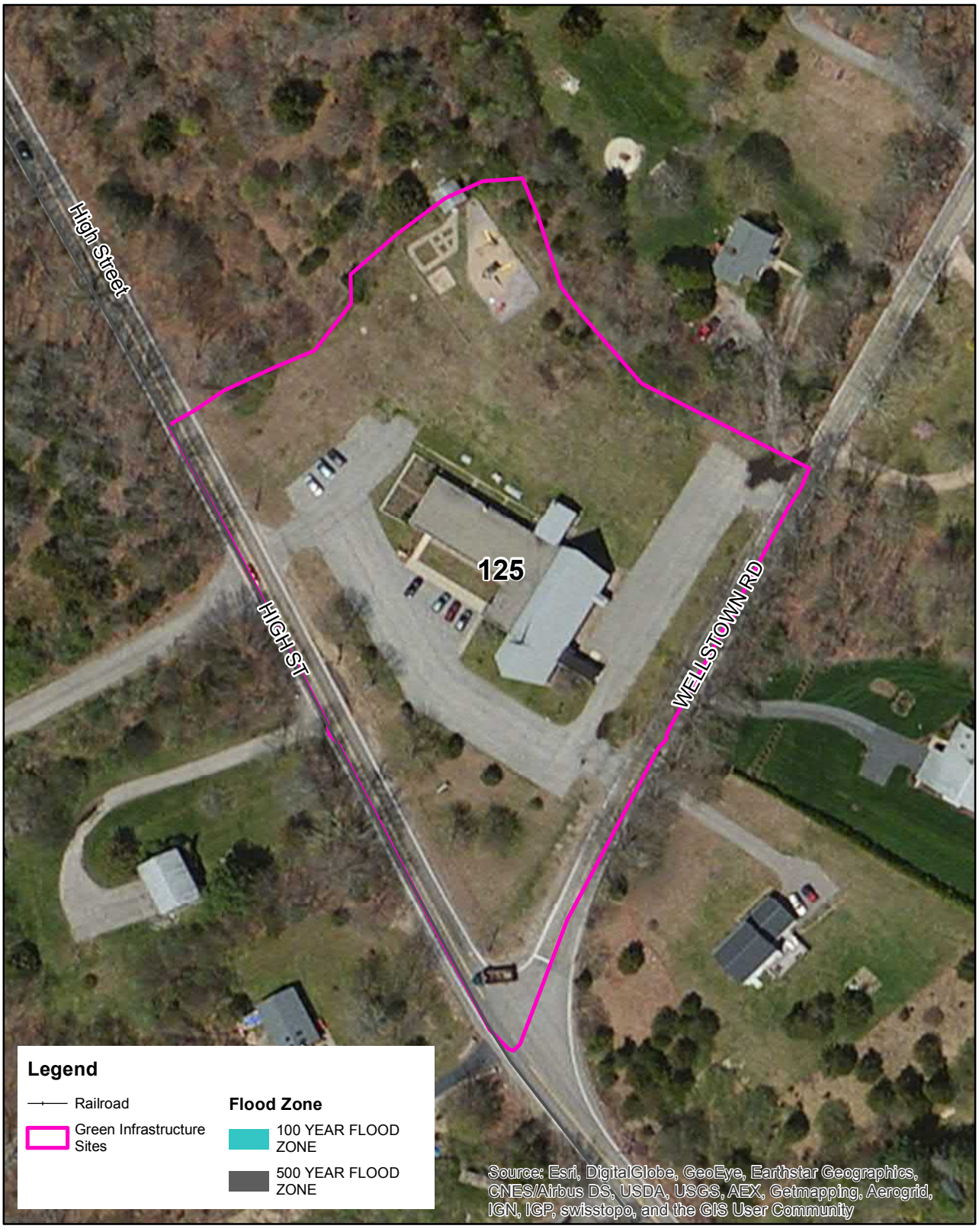
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Trinity Lutheran Church
Corner of Rte 116 and Wellstown Road
Hopkinton, RI



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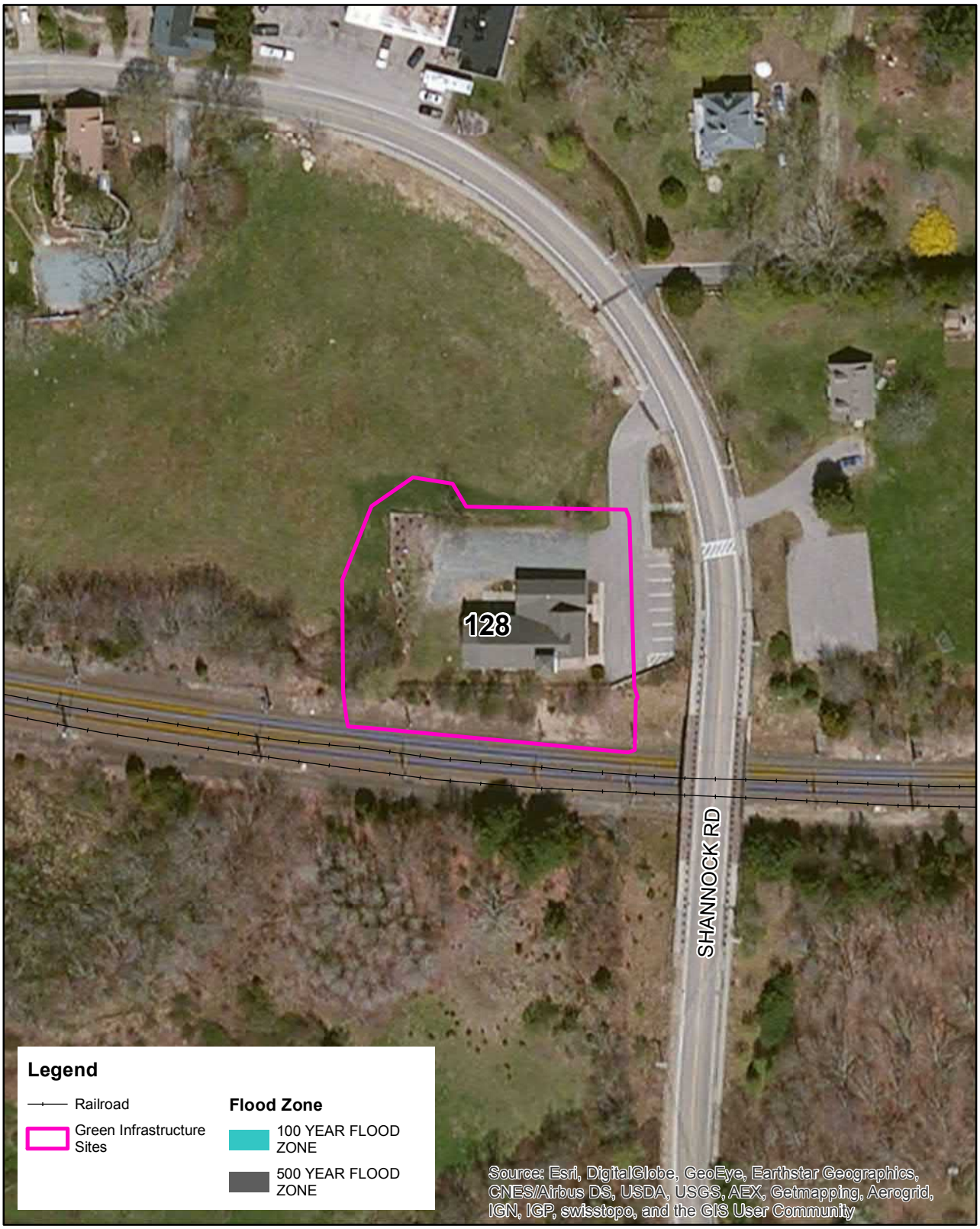
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Shannock Baptist Church
1632 Shannock Road
Charlestown, RI



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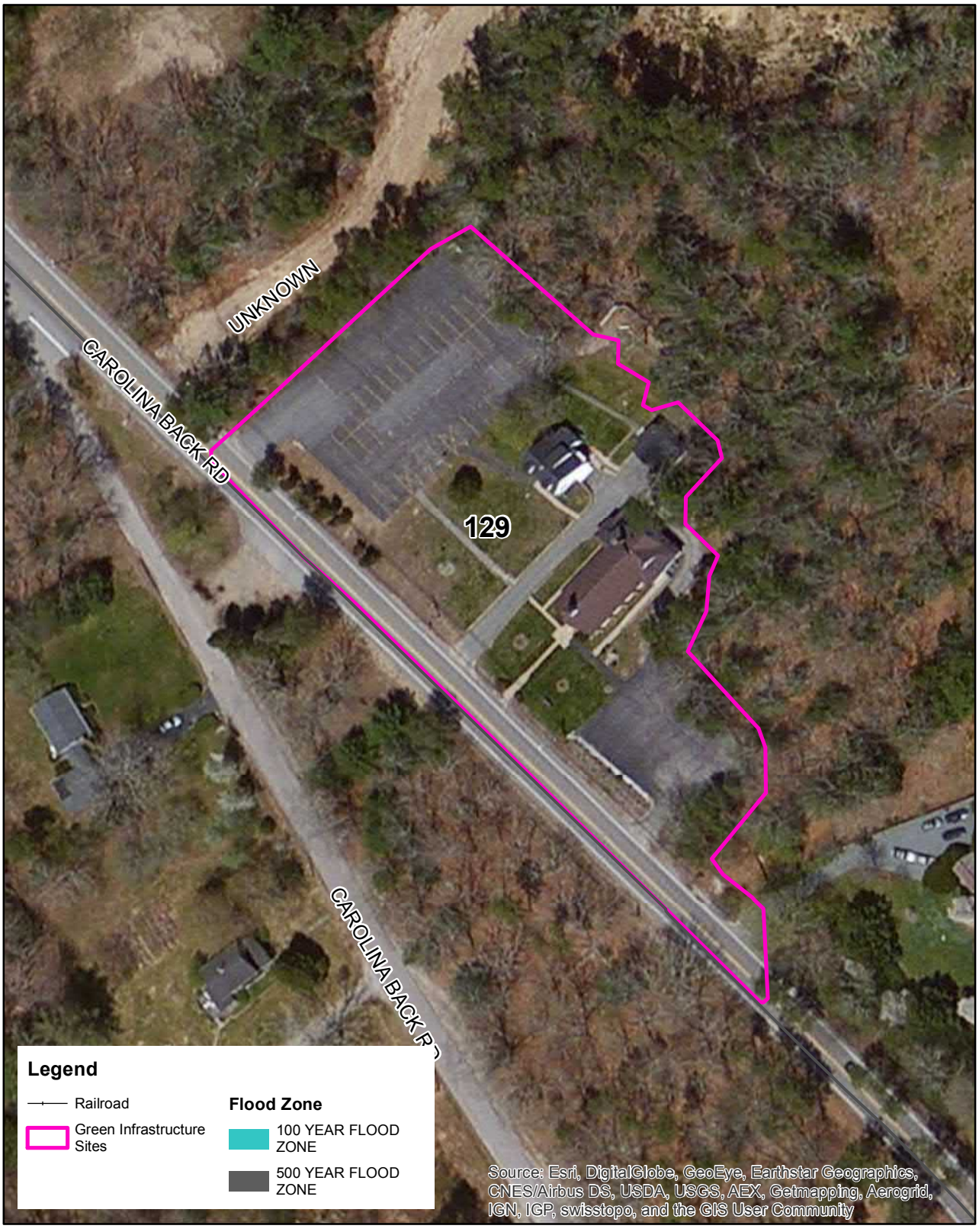
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

St. Mary's Catholic Church
451-455 Carolina Back Road
Charlestown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Hopkinton Town Hall
1 Town House Road
Hopkinton, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Richmond Carolina Fire District
203 Richmond Town House Road
Richmond, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

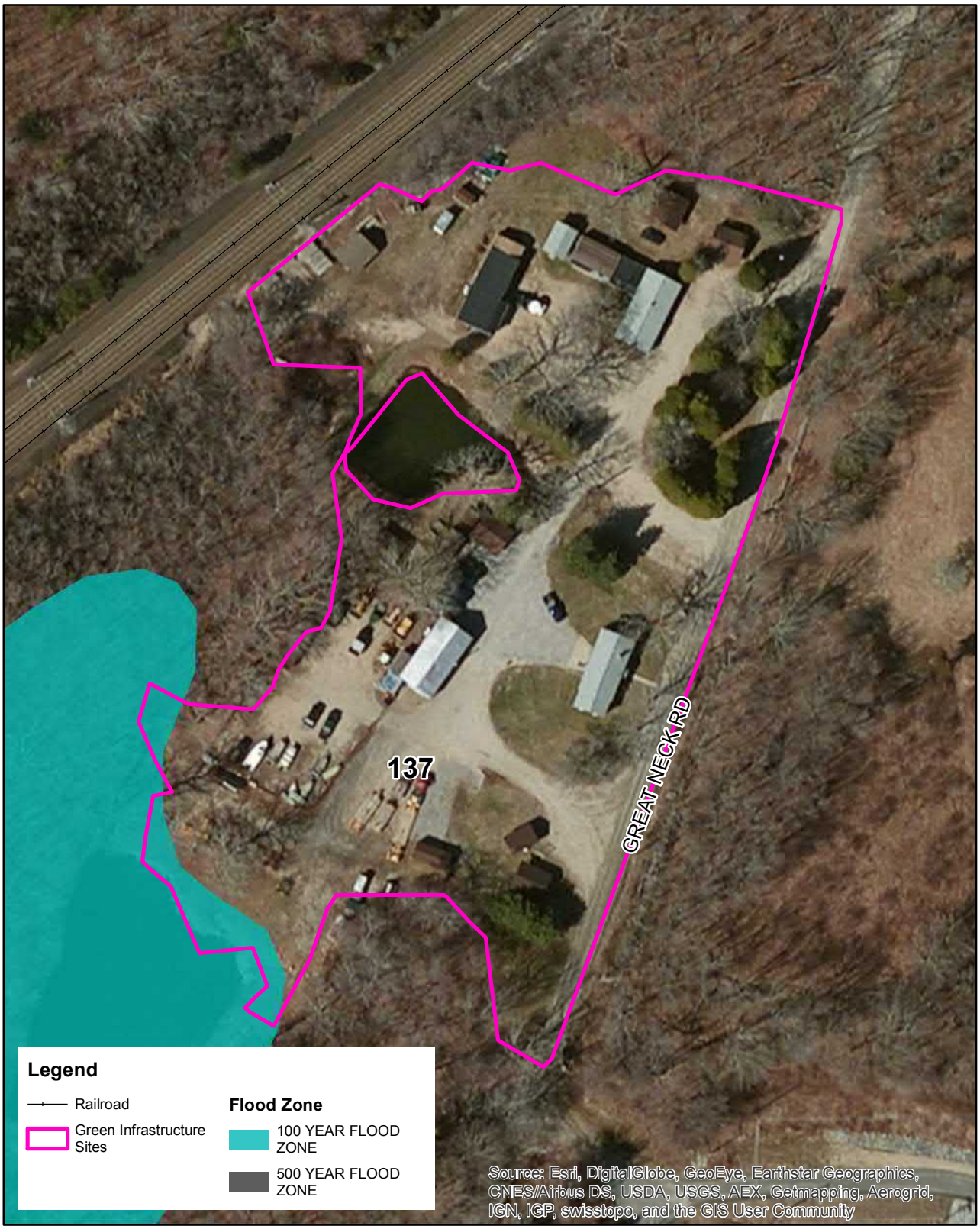
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Great Swamp Management Area
160- 170 Great Neck Road
South Kingstown, RI



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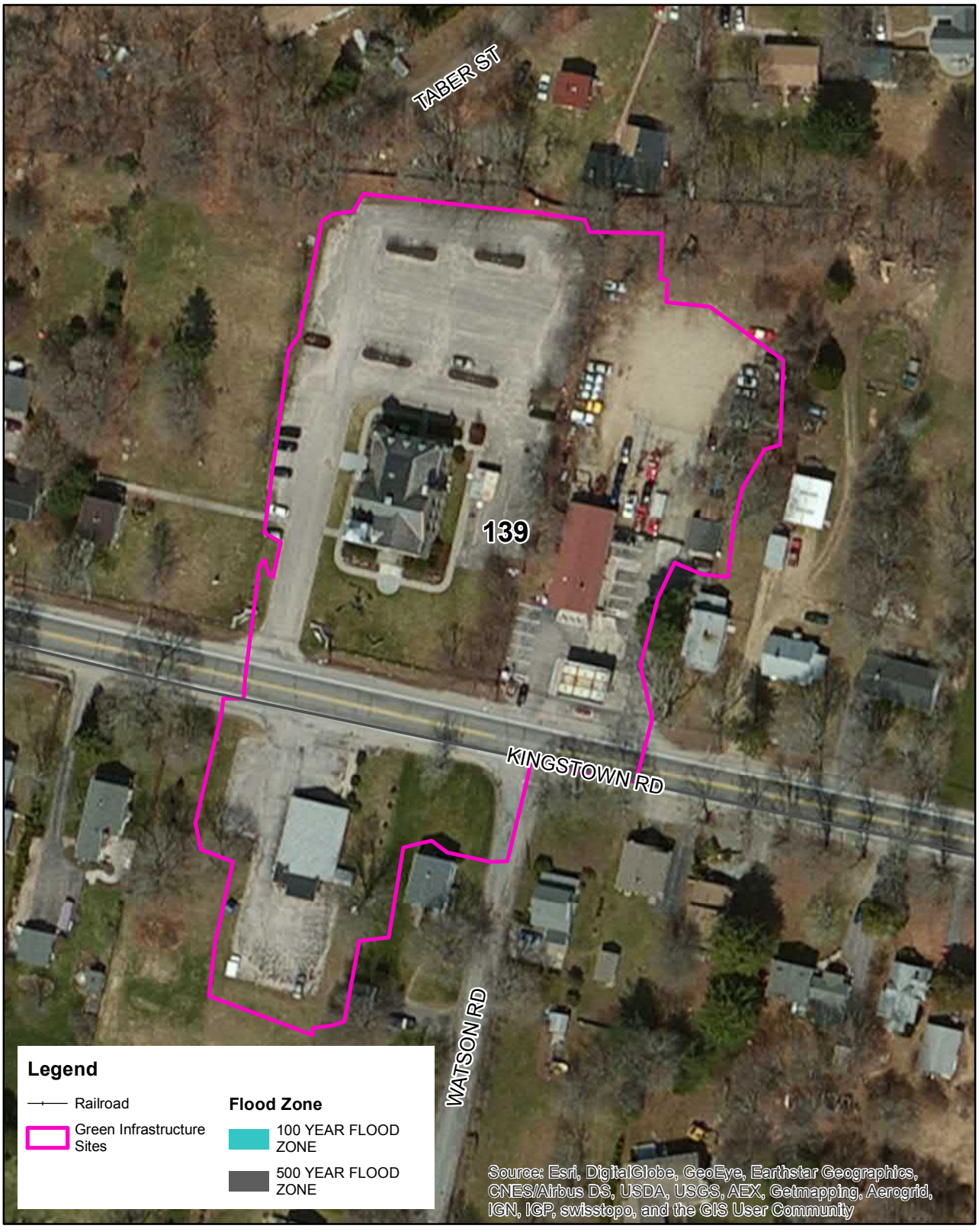
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

J & D West Kingstown Services/ Courthouse Center for the Arts
3481 Kingstown Road
South Kingstown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

West Kingston Fire Department
390 Fairgrounds Road
South Kingstown, RI

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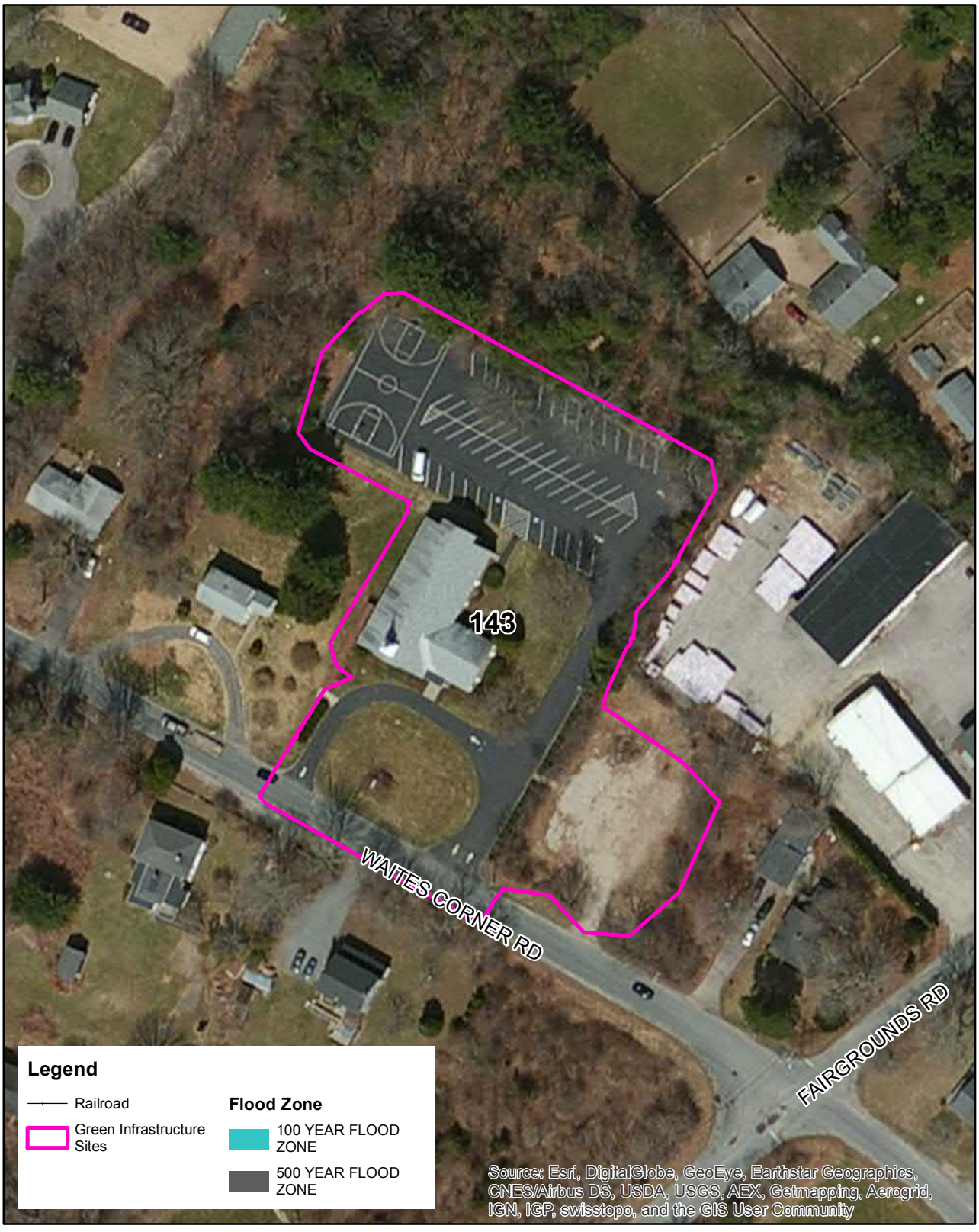
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

West Kingston Baptist Church
263 Waites Corner Road
South Kingstown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Wood River Health Services
823 Main Street
Hopkinton, RI

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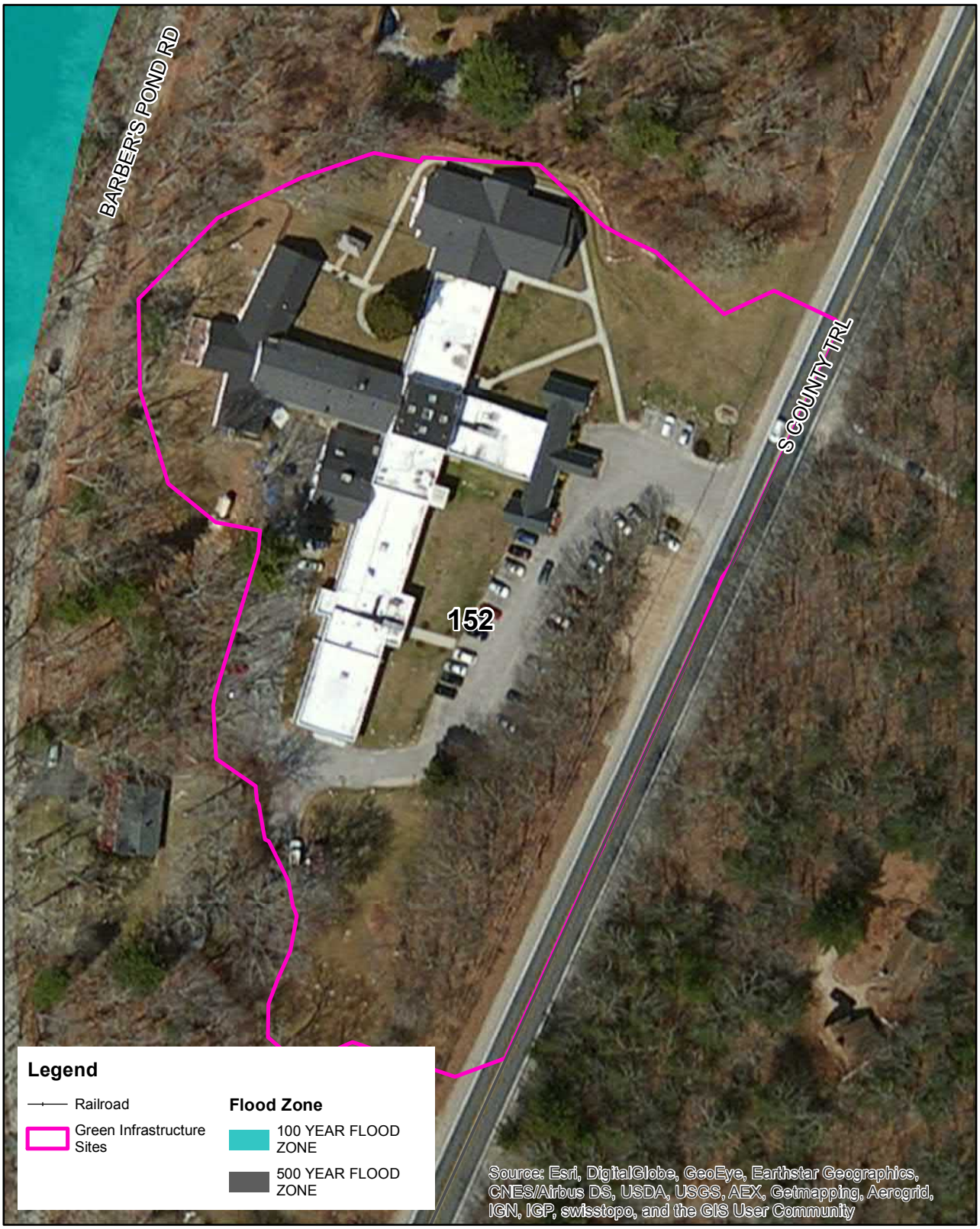
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

South Kingstown Nursing and Rehab
2115 South County Trail
South Kingstown, RI



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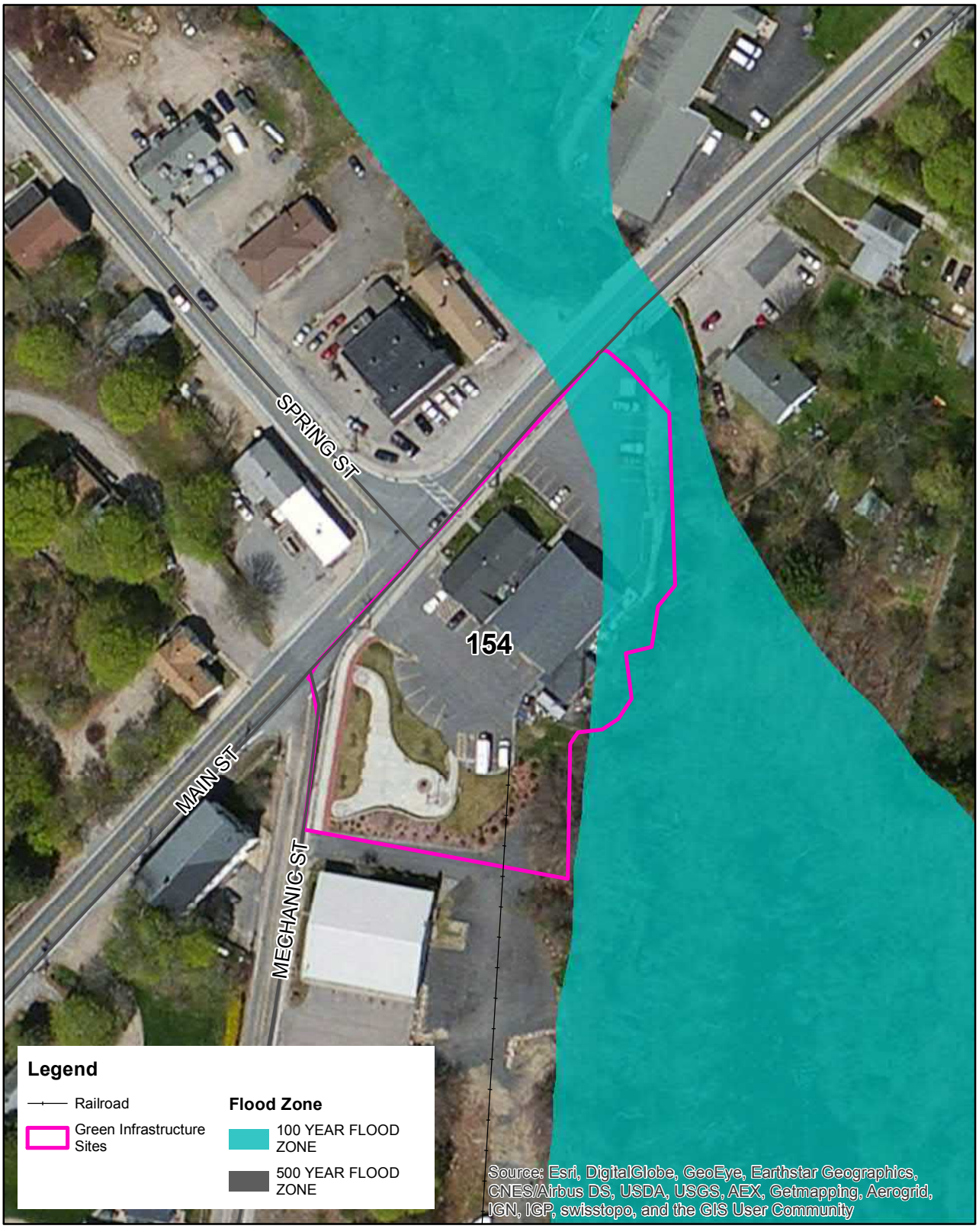
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Hope Valley- Wyoming Fire District
996 Main Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Langworthy Public Library
24 Spring Street
Hopkinton, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Richmond Police Department
1168 Main Street
Richmond, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

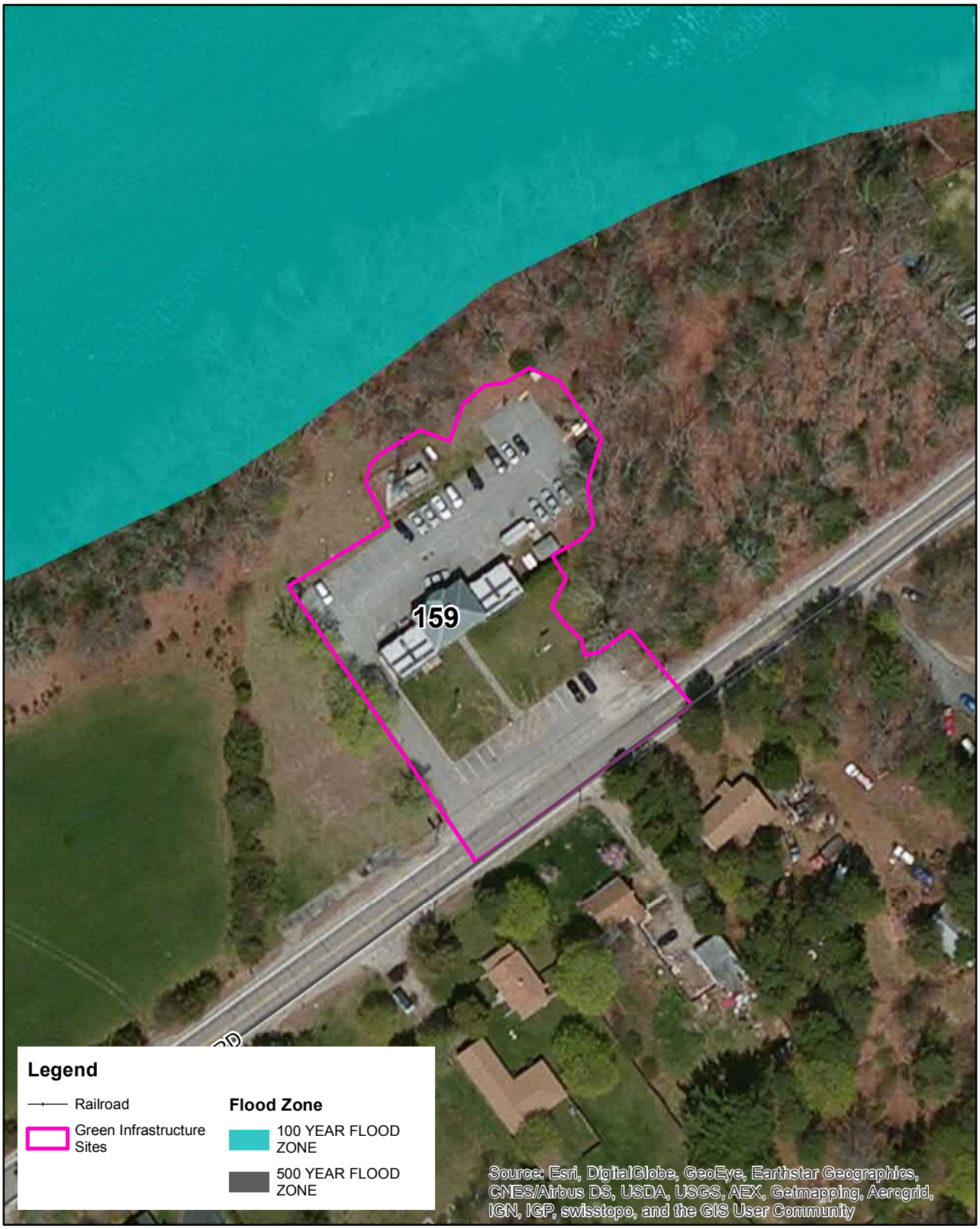
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Rhode Island State Police
54 Nooseneck Hill Road
Richmond, RI



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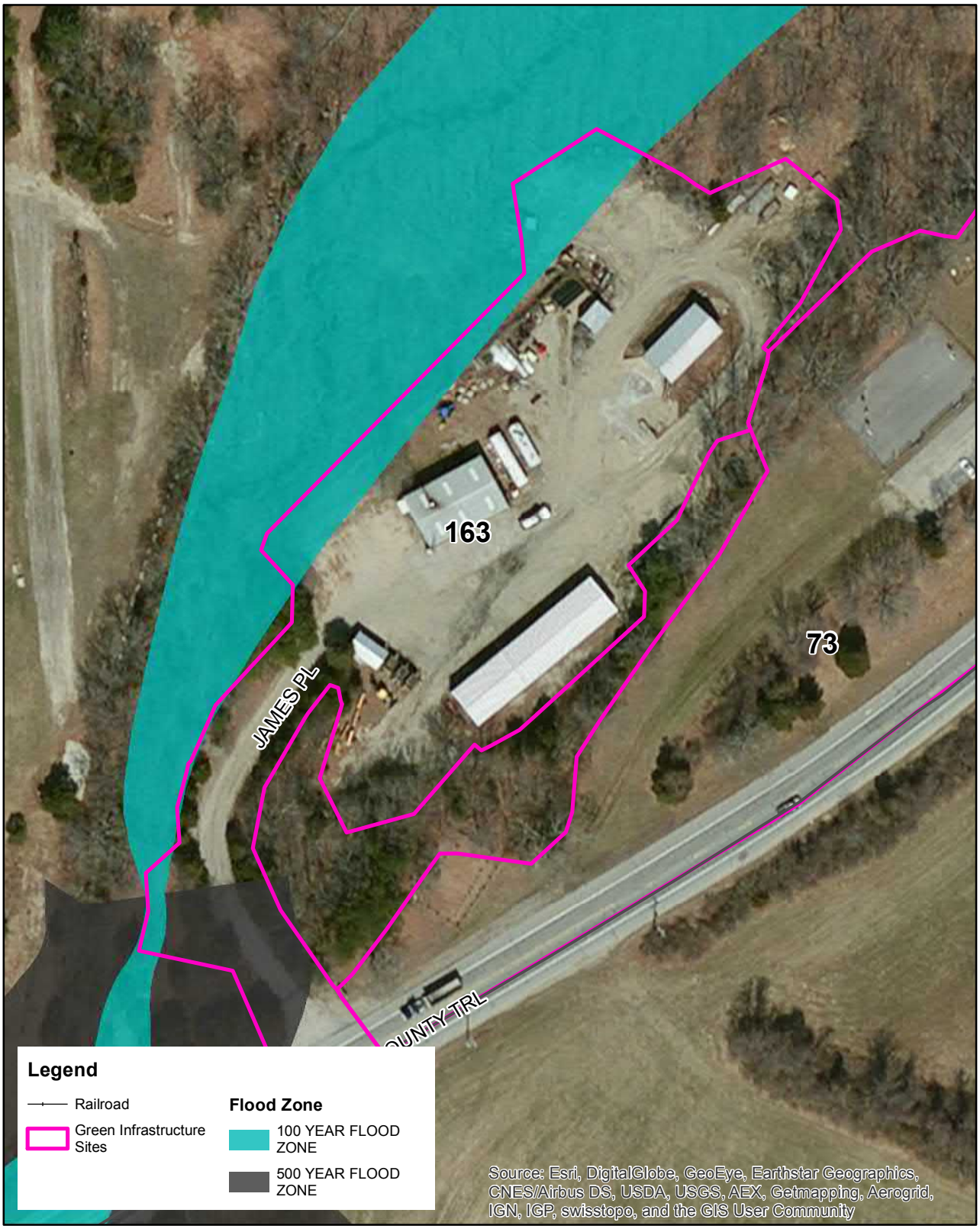
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Unknown
175 S. County Trail
Exeter, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Building with parking Lot
742 Ten Rod Road
Exeter, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

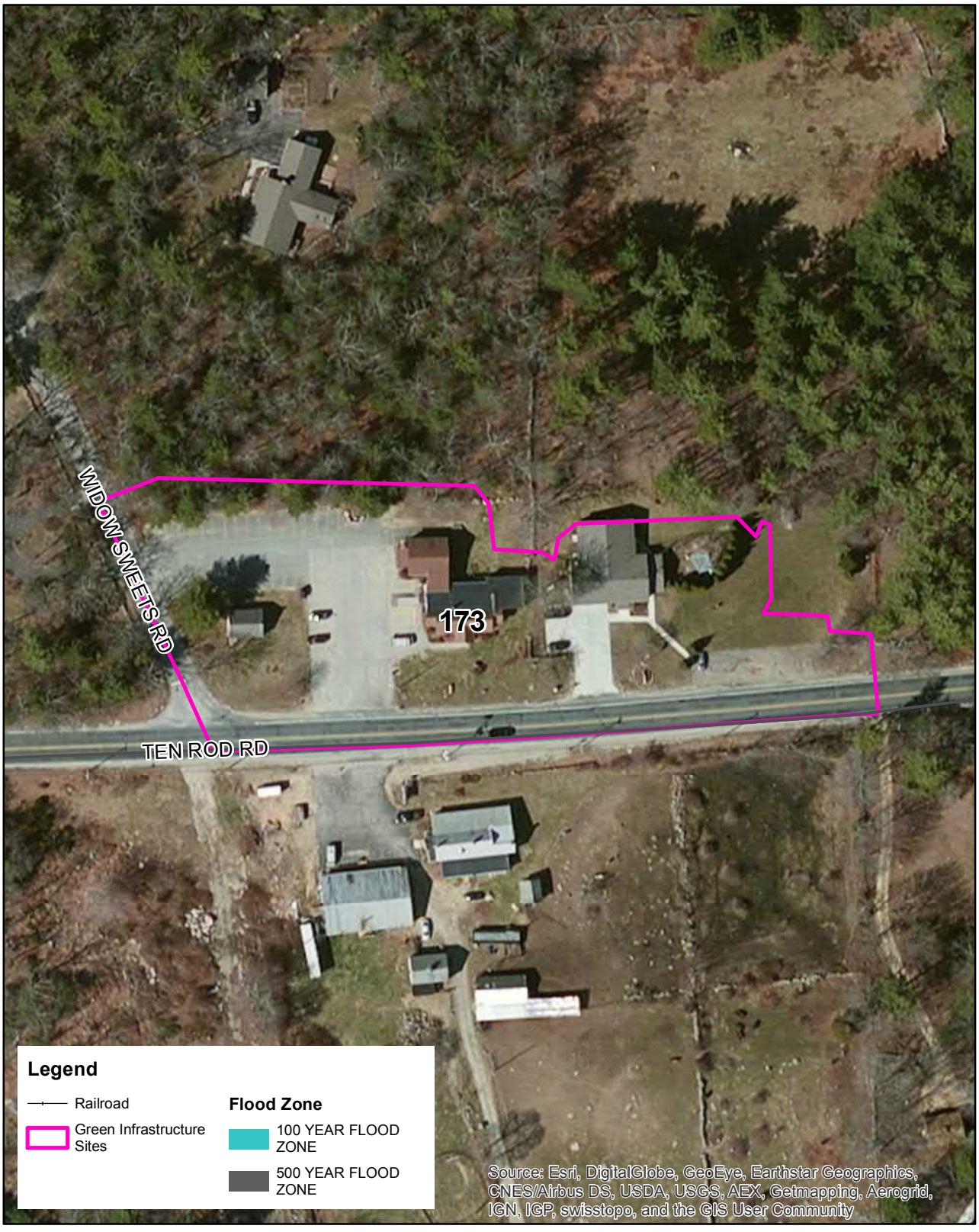
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Exeter Town Hall
675 Ten Rod Road
Exeter, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Small Building with Parking Lot
302 Victory Highway
West Greenwich, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

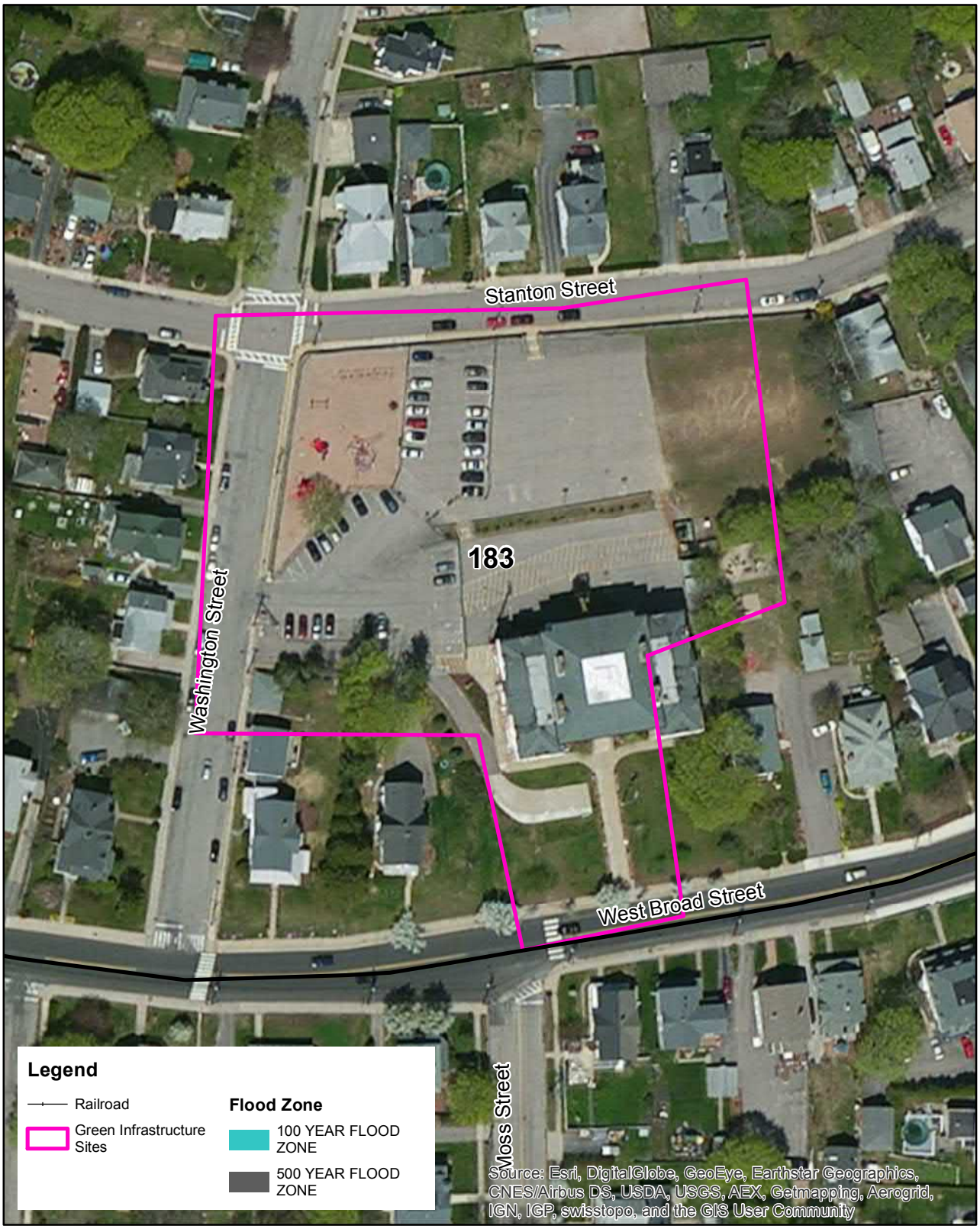
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

West Broad Street School
W. Broad Street
Stonington, RI



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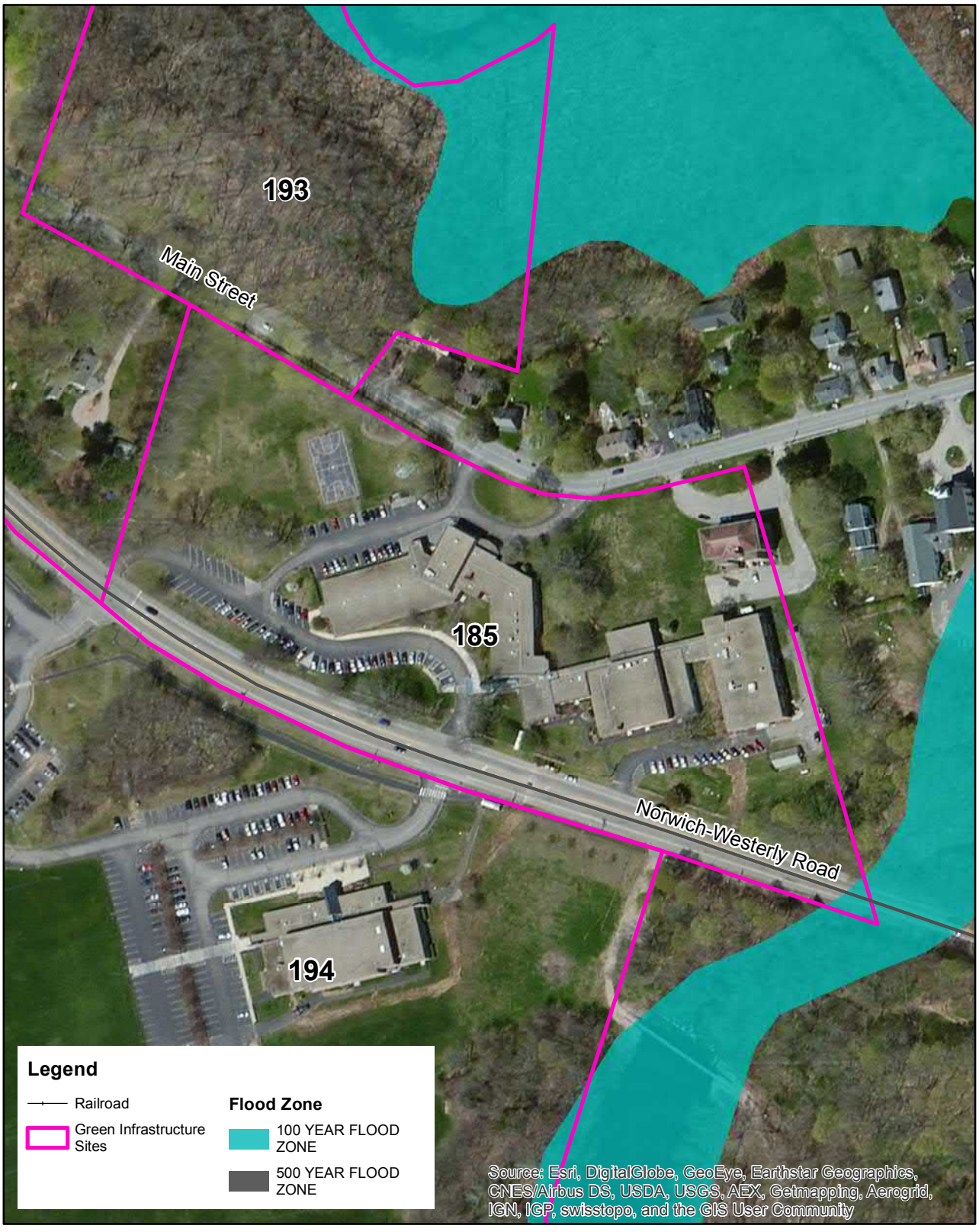
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Wheeler High/middle School
298 Norwich-Westerly Road
North Stonington, CT



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.02 0.04 0.08 Miles

FUSS & O'NEILL

N W E S

West Vine Street School
25 West Vine Street
Stonington, RI

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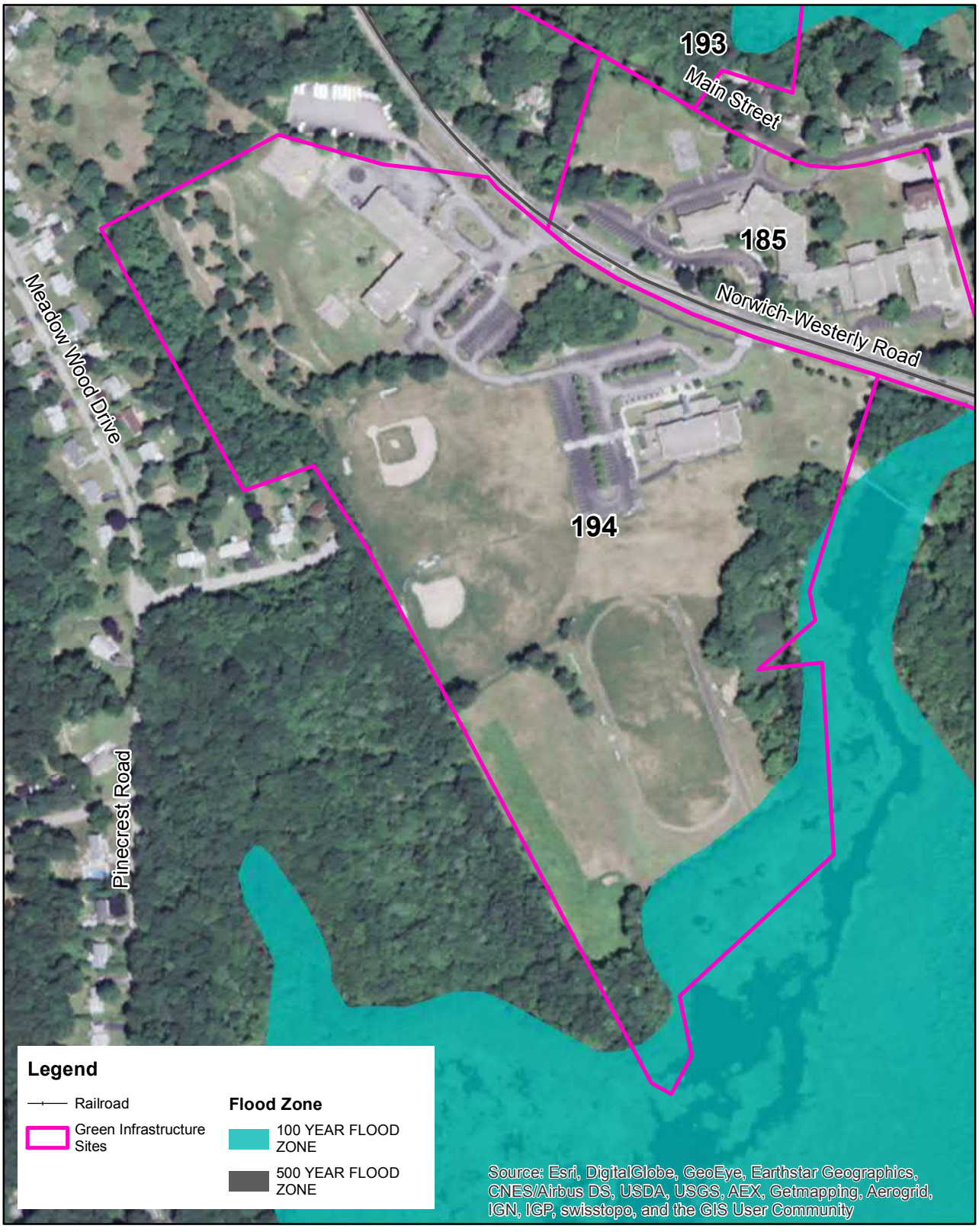
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.04 0.08 0.16 Miles

FUSS & O'NEILL

N W E S

Elementary School
313-317 Norwich-Westerly Road
North Stonington, CT



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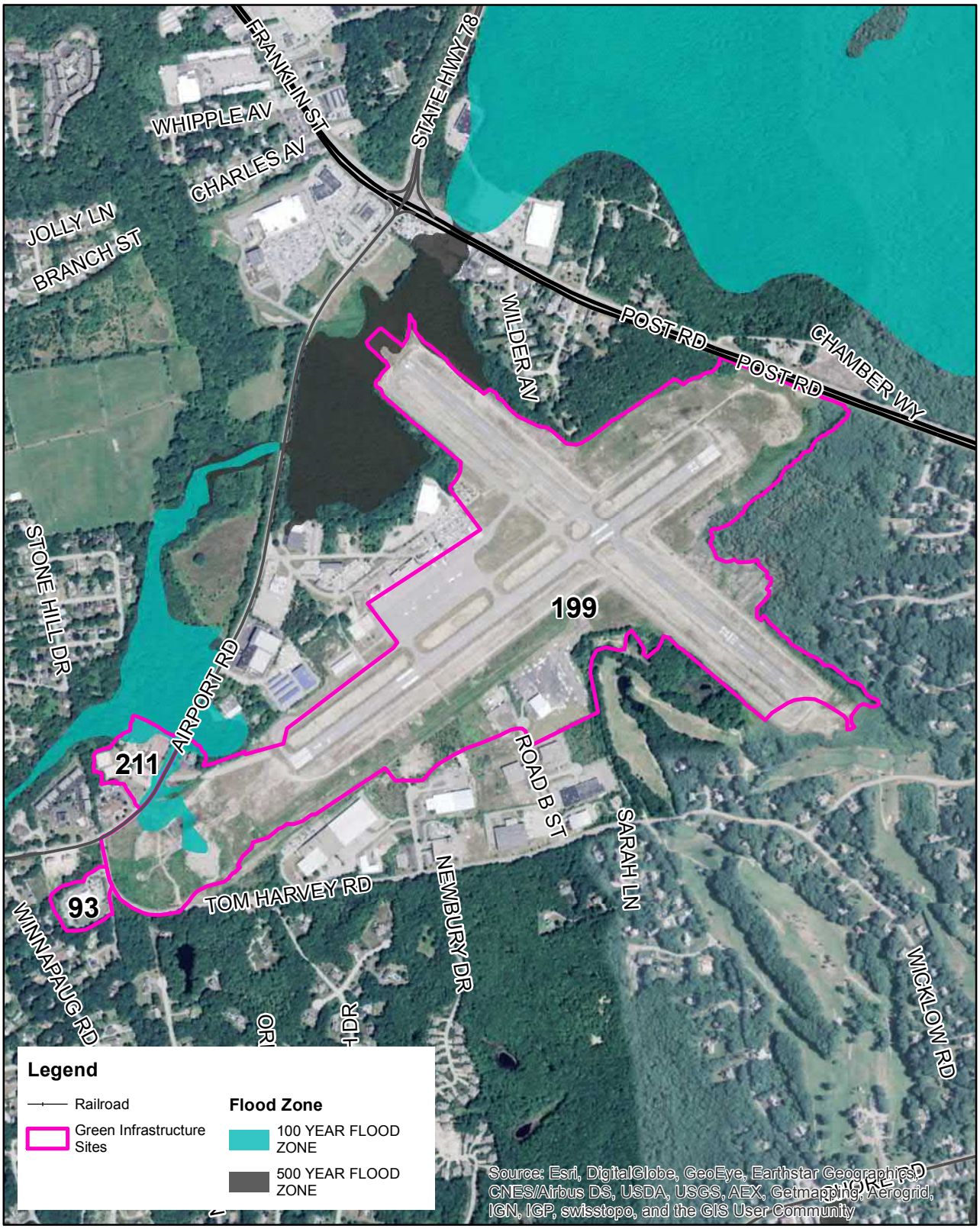
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.035 0.07 0.14 Miles

FUSS & O'NEILL

N W E S

Westerly State Airport
62 Airport Road
Westerly, RI



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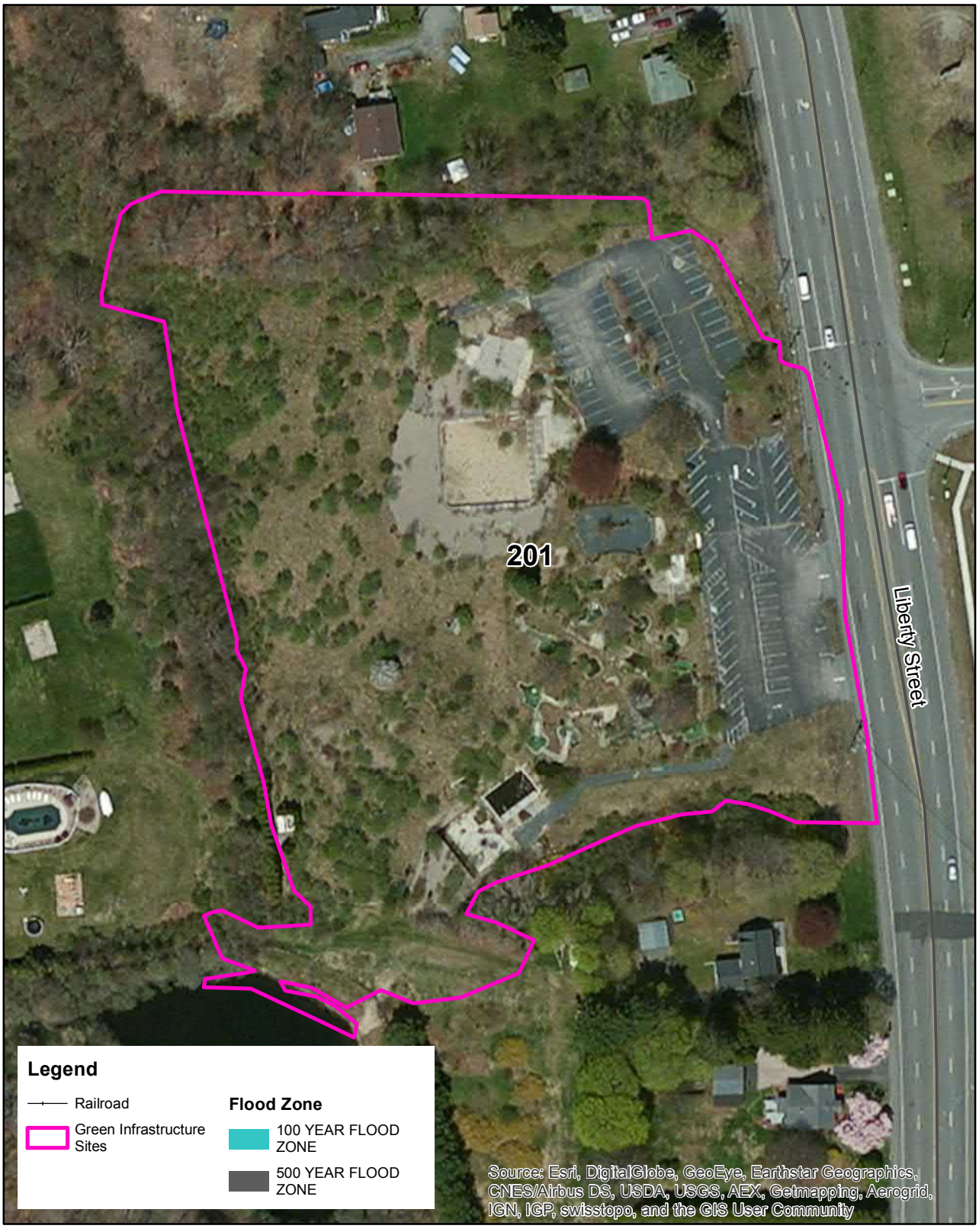
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.1 0.2 0.4 Miles

FUSS & O'NEILL

N W E S

Parking lot
350 Liberty Street
Stonington, RI



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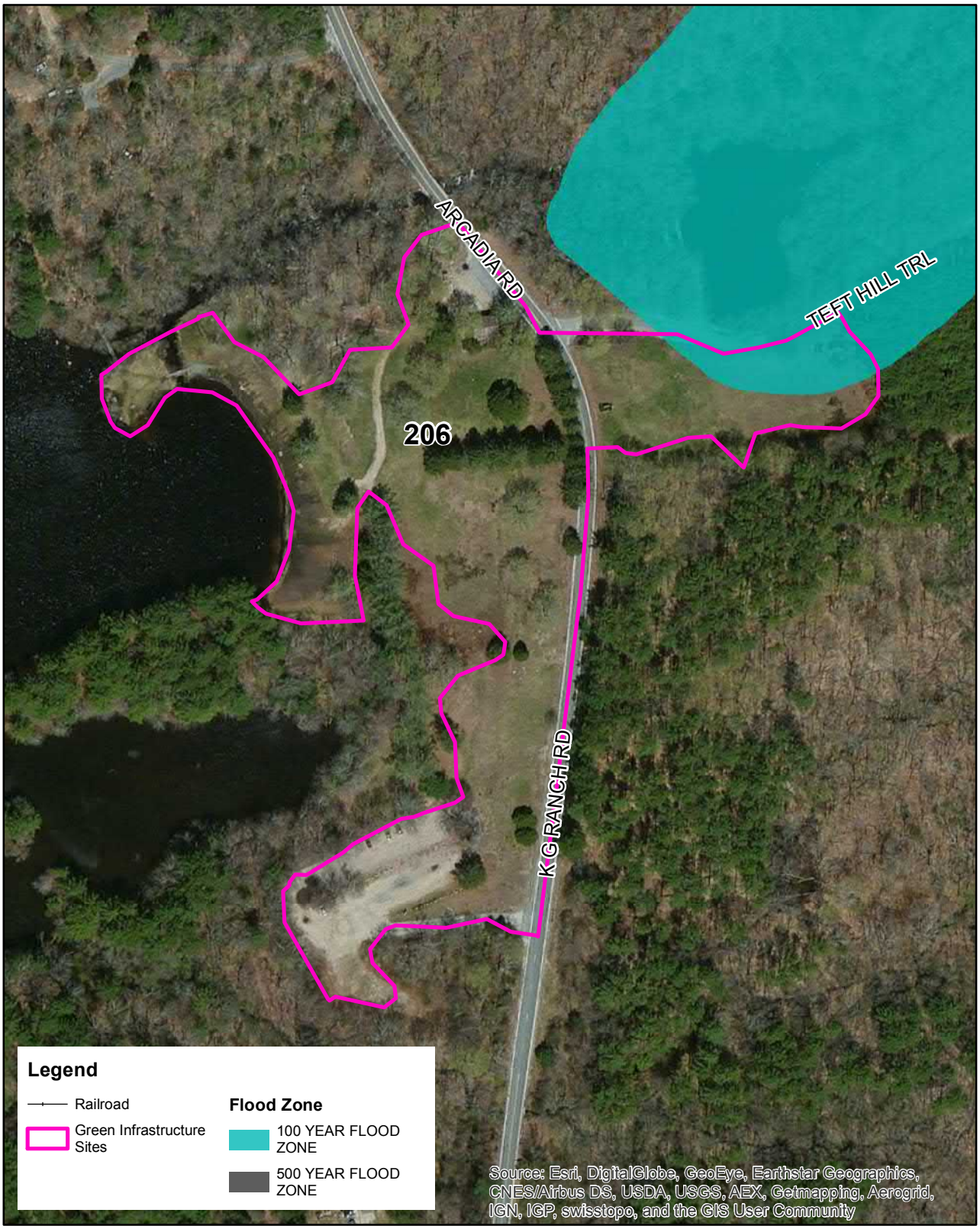
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Parking lot near lake
406 Arcadia Road
Exeter, RI



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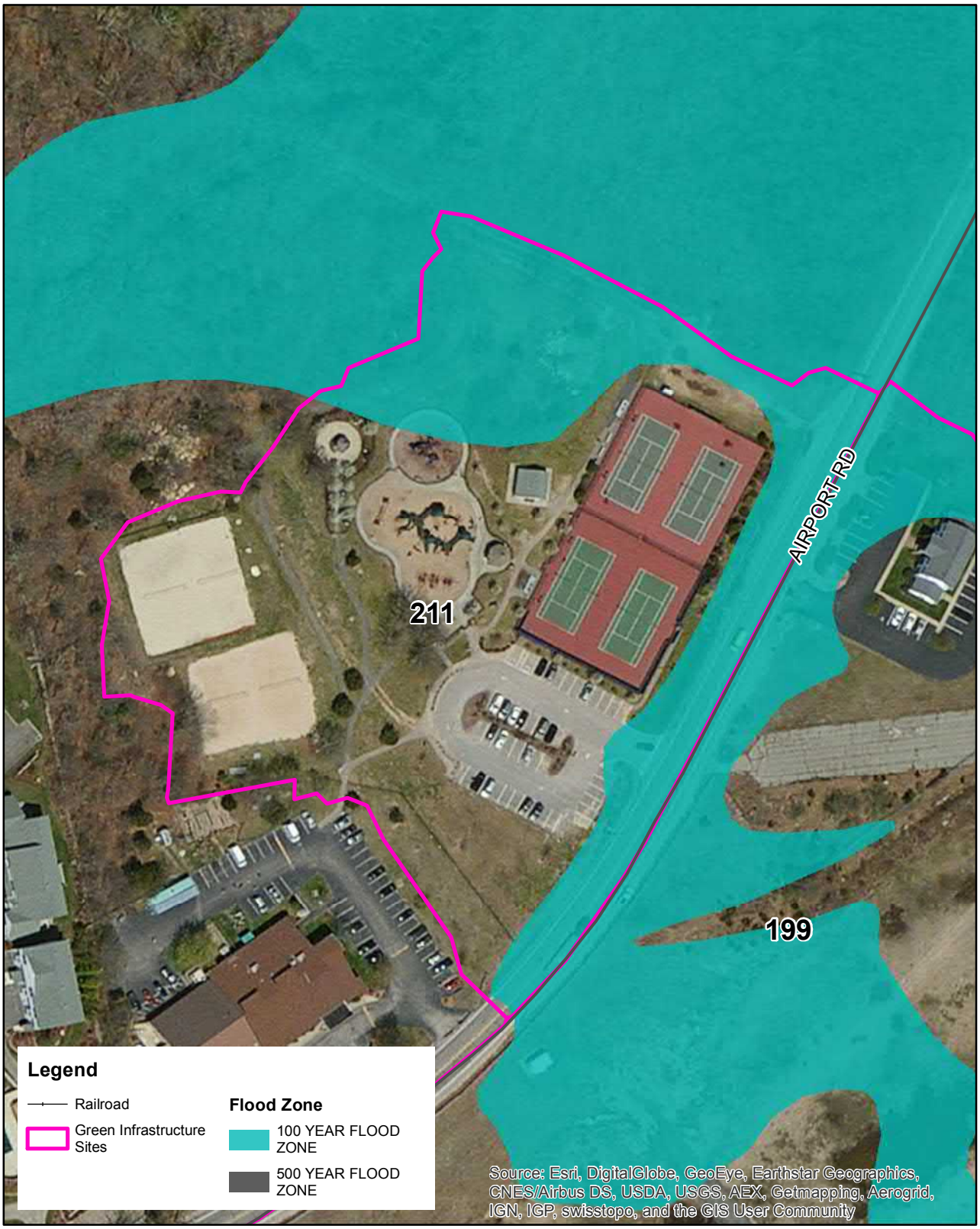
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.02 0.04 0.08 Miles

FUSS & O'NEILL

N W E S

Rotary Park (Tennis Courts, etc.)
Near 90 Airport Road
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Baseball Fields/ parking lot at Public Complex
99 Wilson Street
Westerly, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

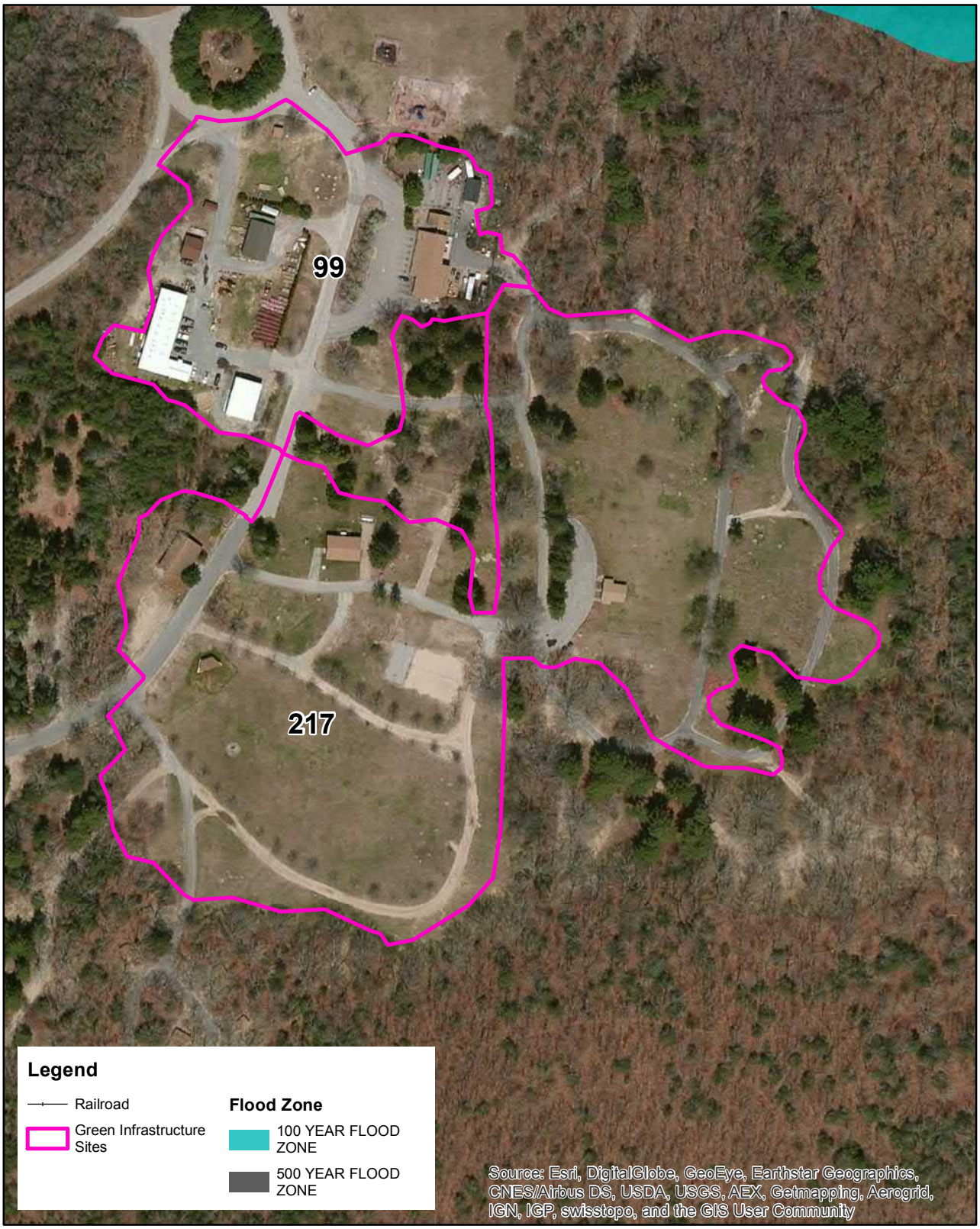
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.025 0.05 0.1 Miles

FUSS & O'NEILL

N W E S

Burlingame Management Area
Burlingame State Park Road/ Legiontown Road
Charlestown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0225 0.045 0.09 Miles

FUSS & O'NEILL

N W E S

Park Area near Ocean Community YMCA
77-85 High Street
Westerly, RI

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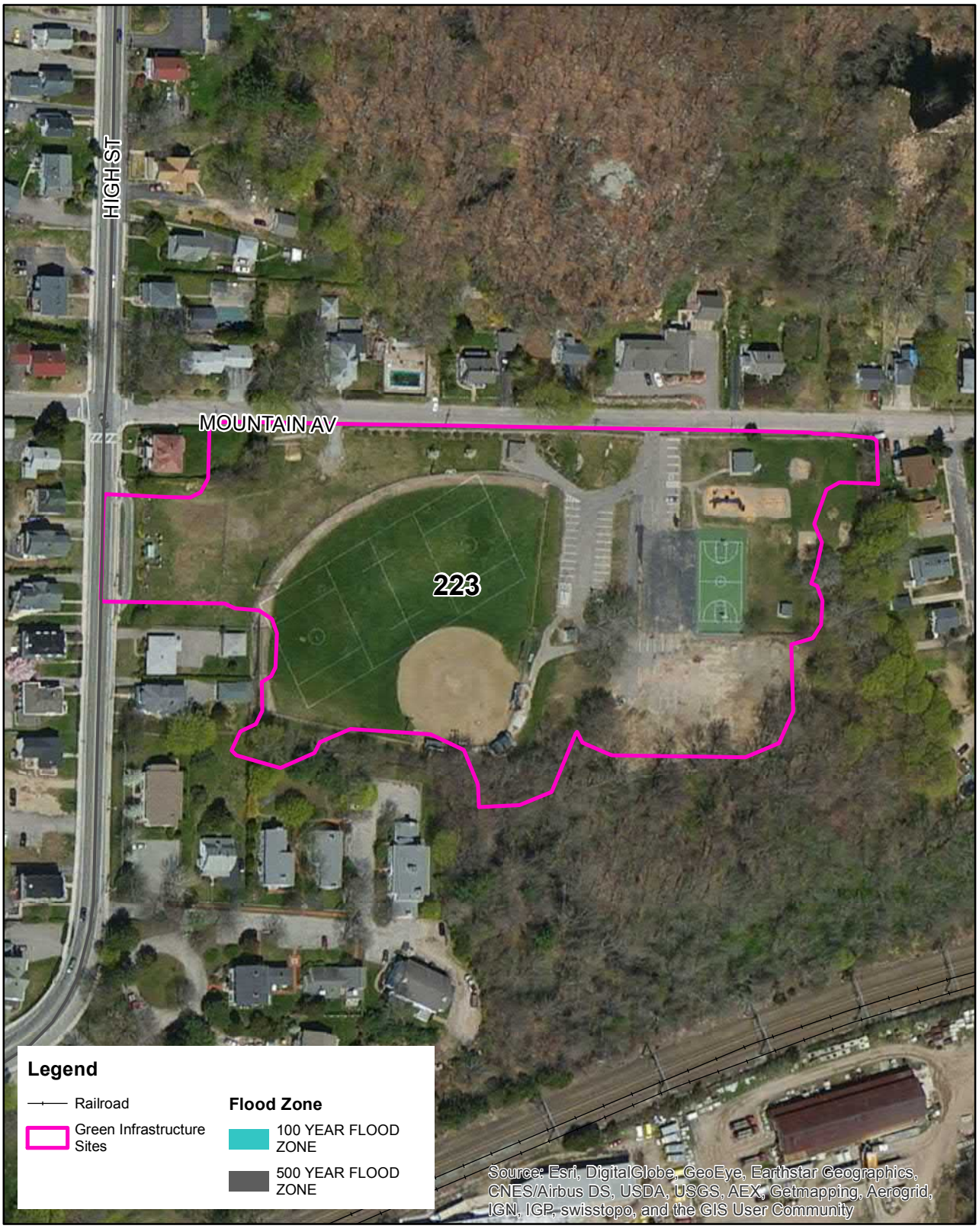
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

FUSS & O'NEILL

N W E S

Craig Field Recreation Complex
Mountain Avenue
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

FUSS & O'NEILL

N W E S

Large Parking Lot for Football Field
60 Old Hopkinton Road
Westerly, RI

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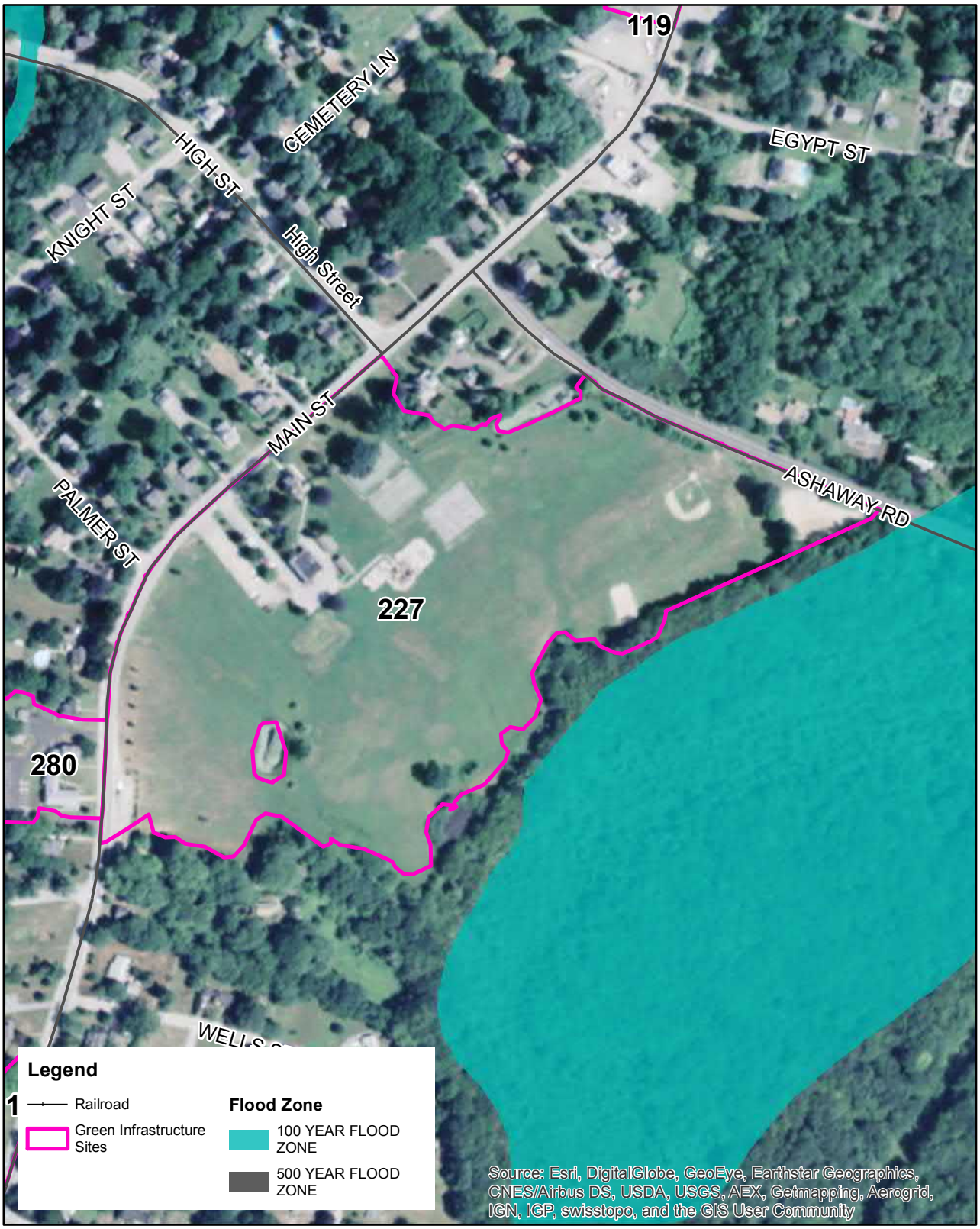
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Hopkinton Recreation Department
188 Main Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0325 0.065 0.13 Miles

FUSS & O'NEILL

N W E S

Tuckertown Park
1010 Tuckertown Park Drive
South Kingstown, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

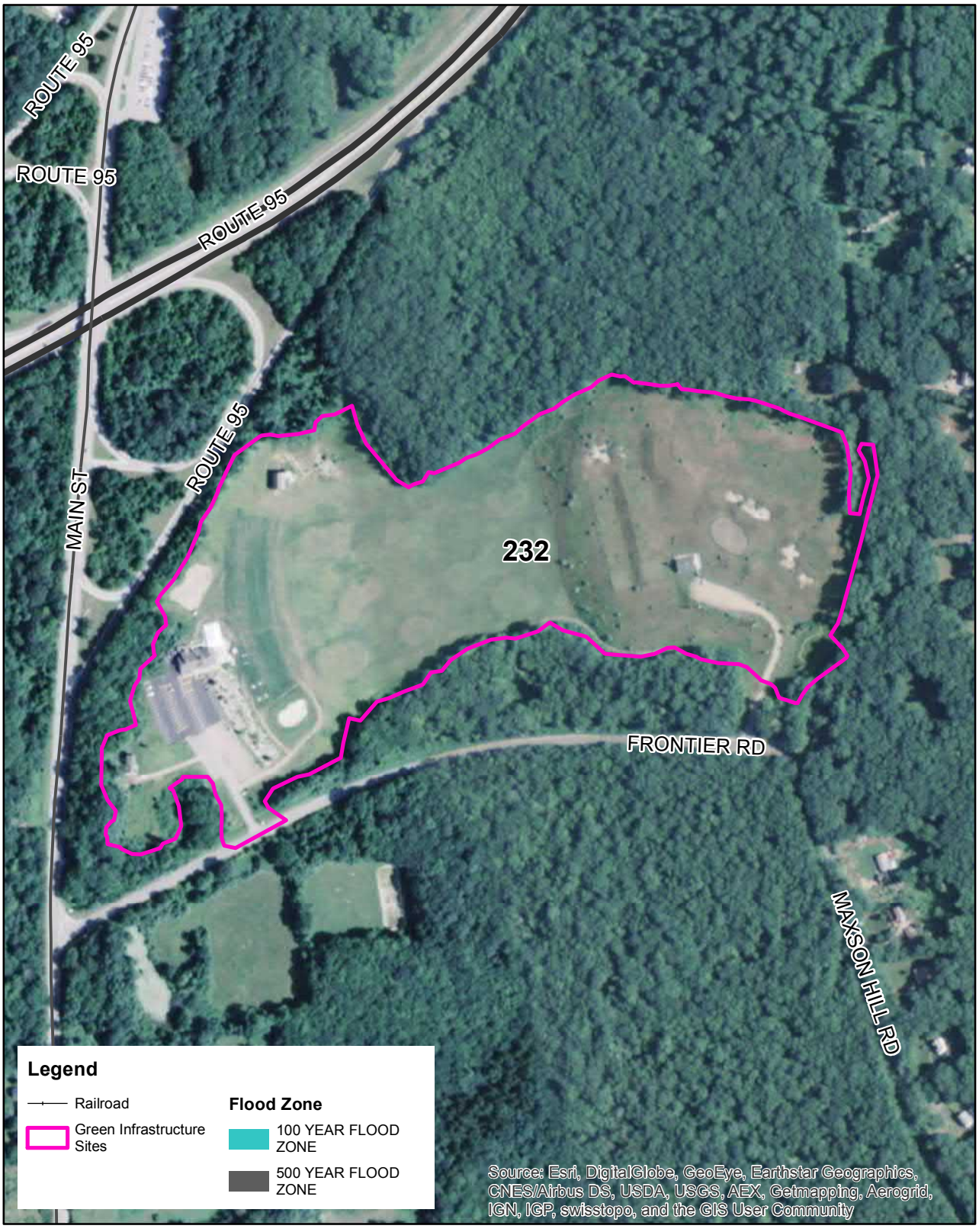
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0425 0.085 0.17 Miles

FUSS & O'NEILL

N W E S

Pavillion Steak House/ Open Space?
35 Frontier Road
Hopkinton, RI



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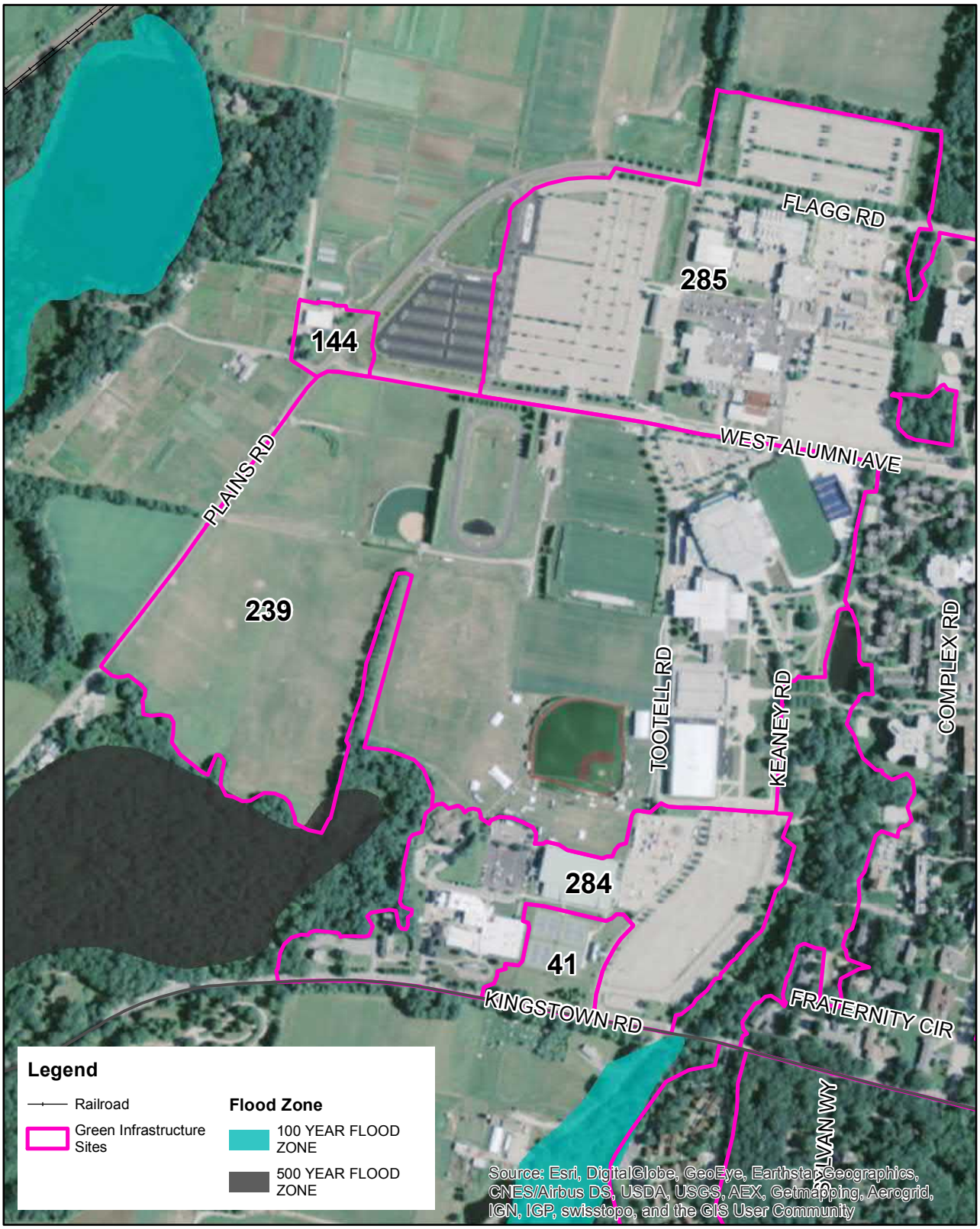
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0425 0.085 0.17 Miles

FUSS & O'NEILL

N W E S

Ryan Center/ Meade Stadium (URI)
West Alumni Avenue
South Kingstown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.05 0.1 0.2 Miles

FUSS & O'NEILL

N W E S

Abandoned parking lot
894 Main Street (Rte 3/ Nooseneck Hill Road)
Hopkinton, RI

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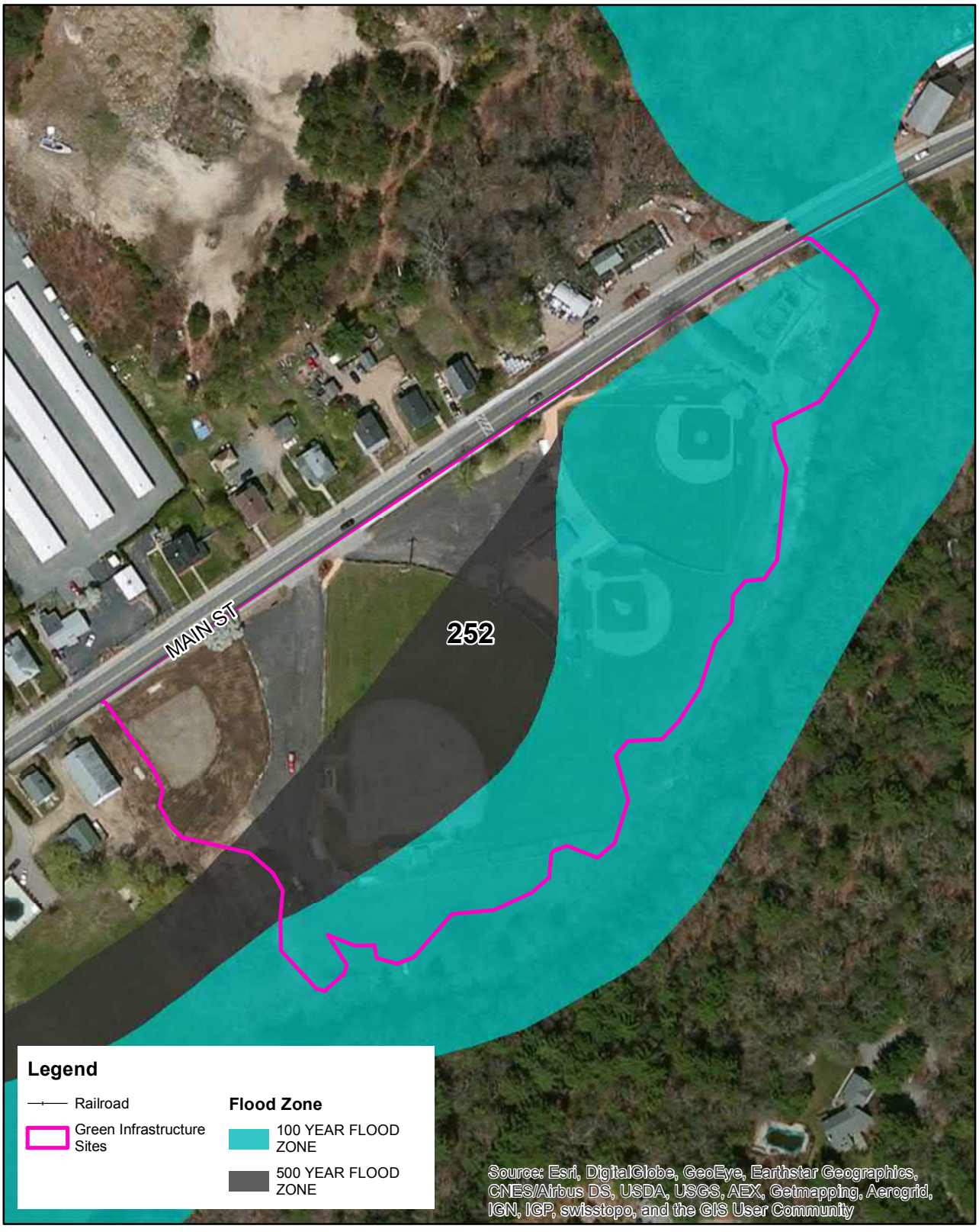
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Chariho Little League
1118 Main Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

The Westerly Hospital
25 Wells Street
Westerly, RI

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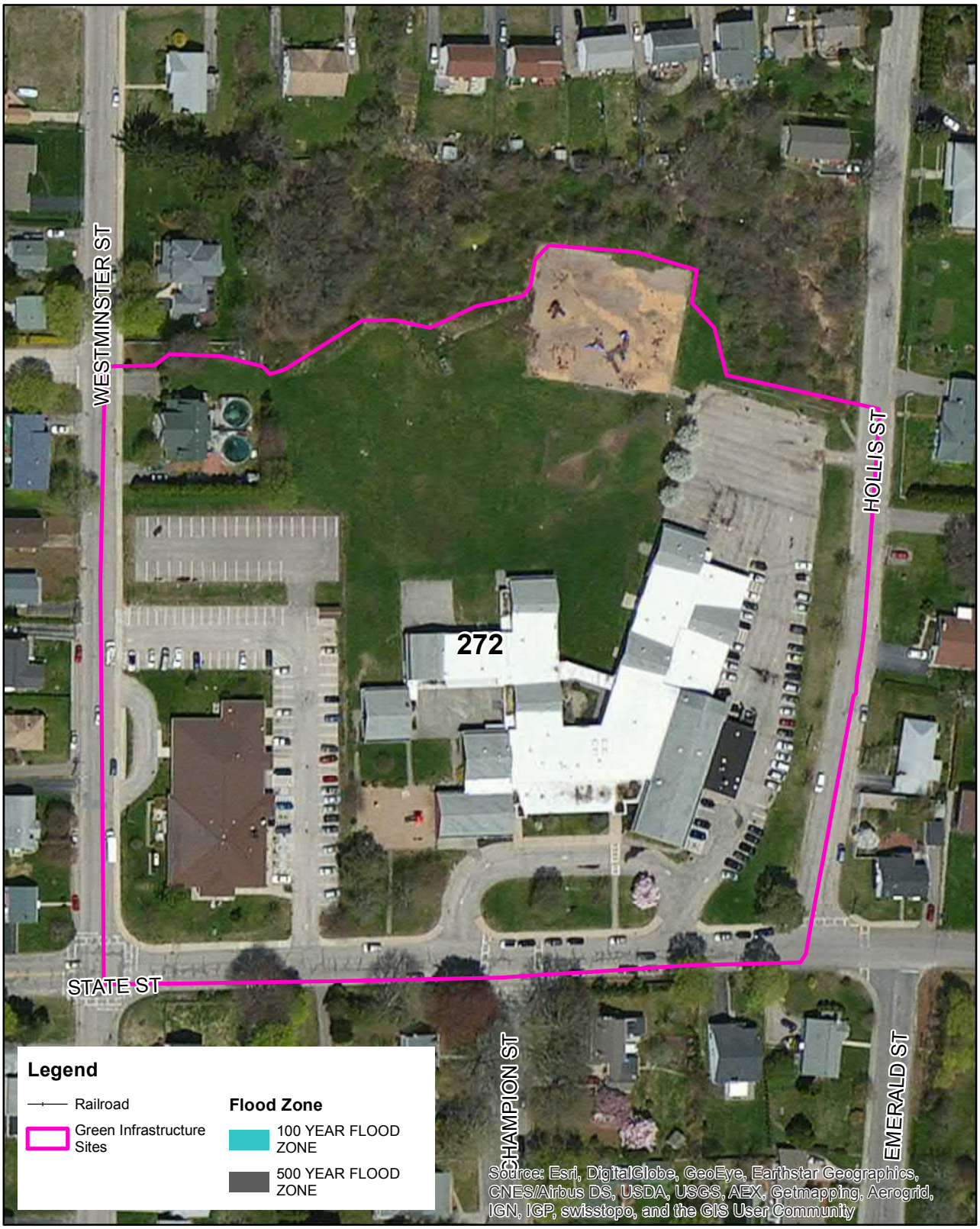
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0275 0.055 0.11 Miles

FUSS & O'NEILL

N W E S

Westerly Senior Citizens Center and State Street School
35 State Street
Westerly, RI



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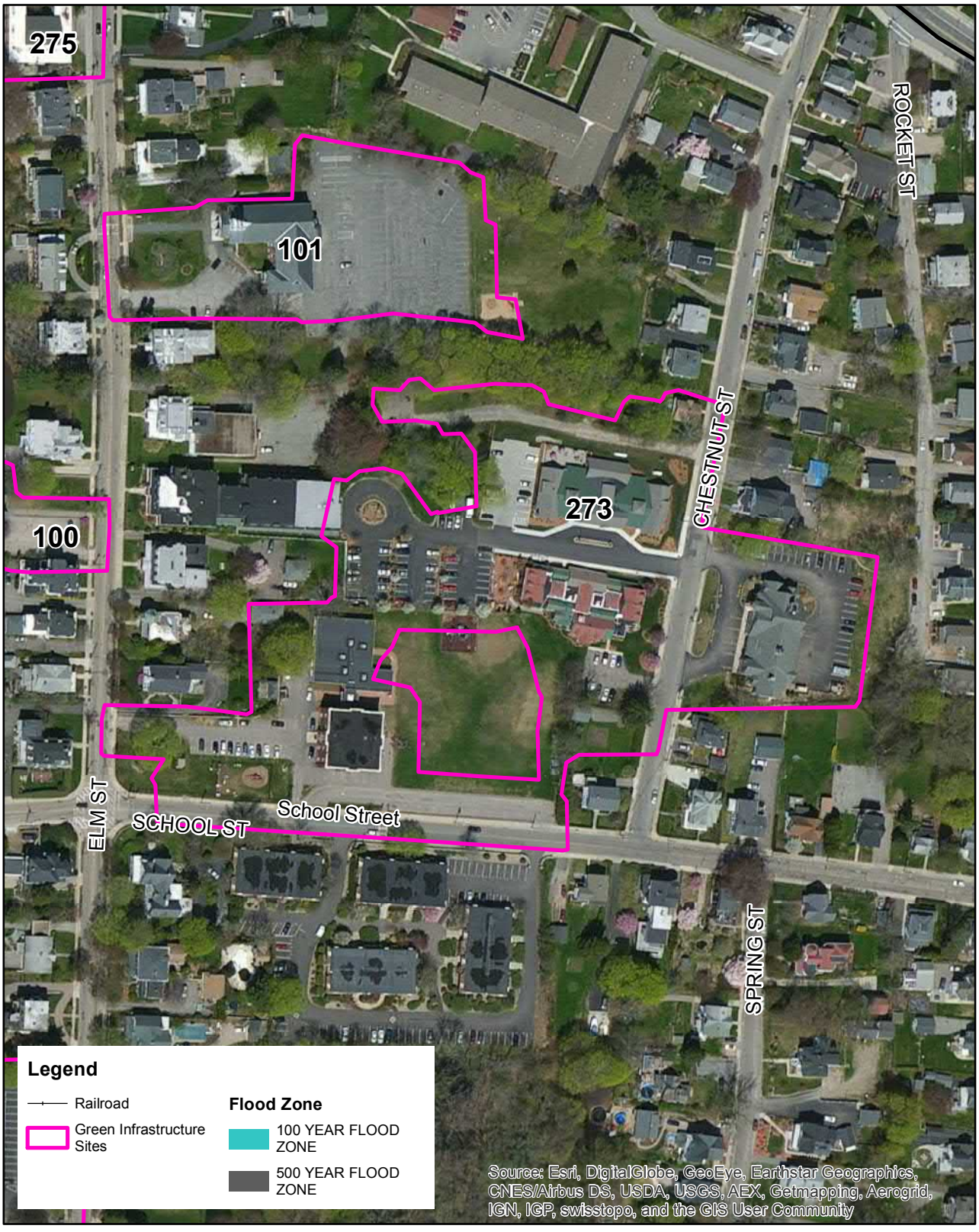
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N
W E
S

St. Pius X School
32 Elm Street
Westerly, RI



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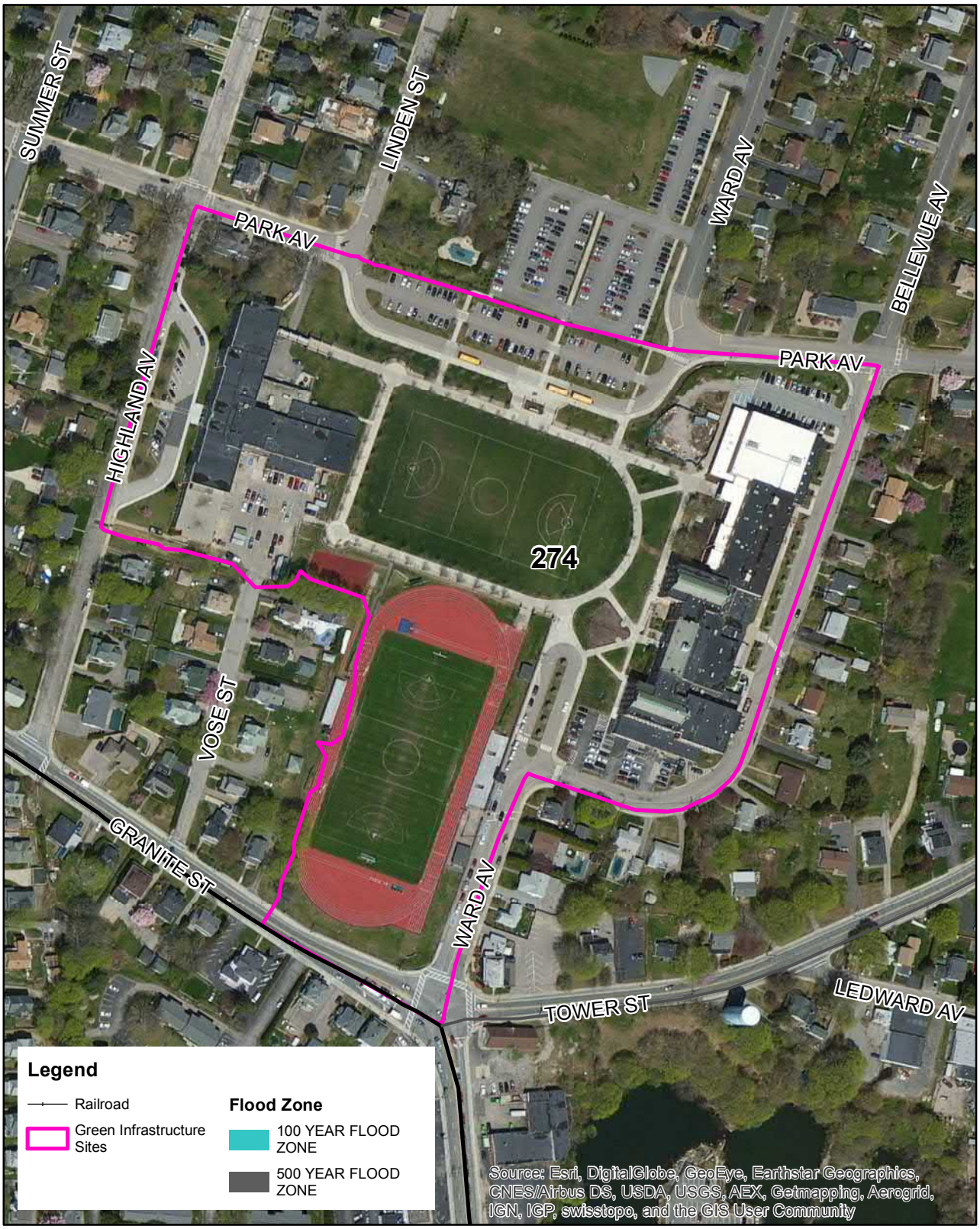
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

FUSS & O'NEILL

N W E S

Westerly High School
23 Ward Avenue
Westerly, RI



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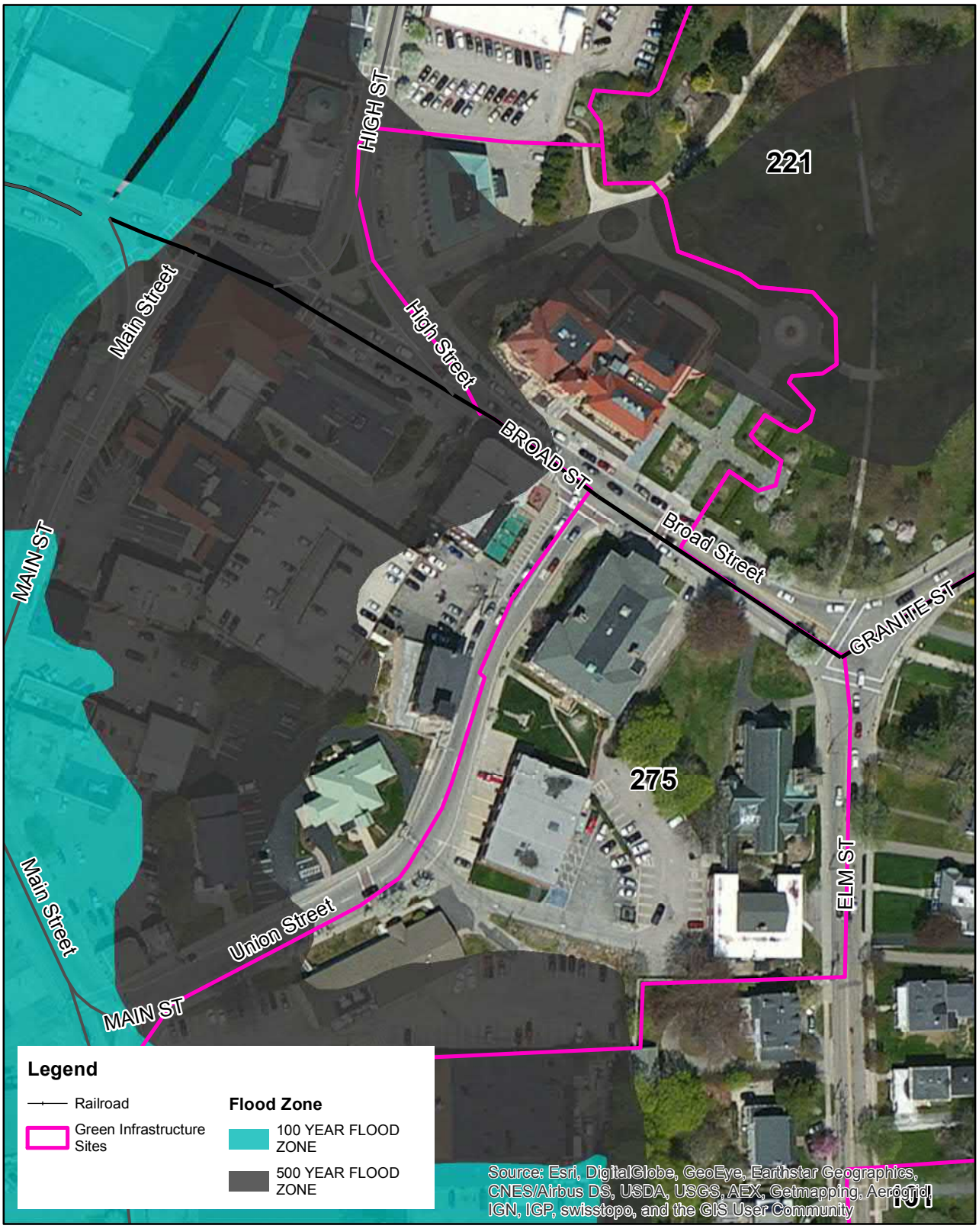
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.025 0.05 0.1 Miles

FUSS & O'NEILL

N W E S

Westerly Town Hall
45 Broad Street
Westerly, RI



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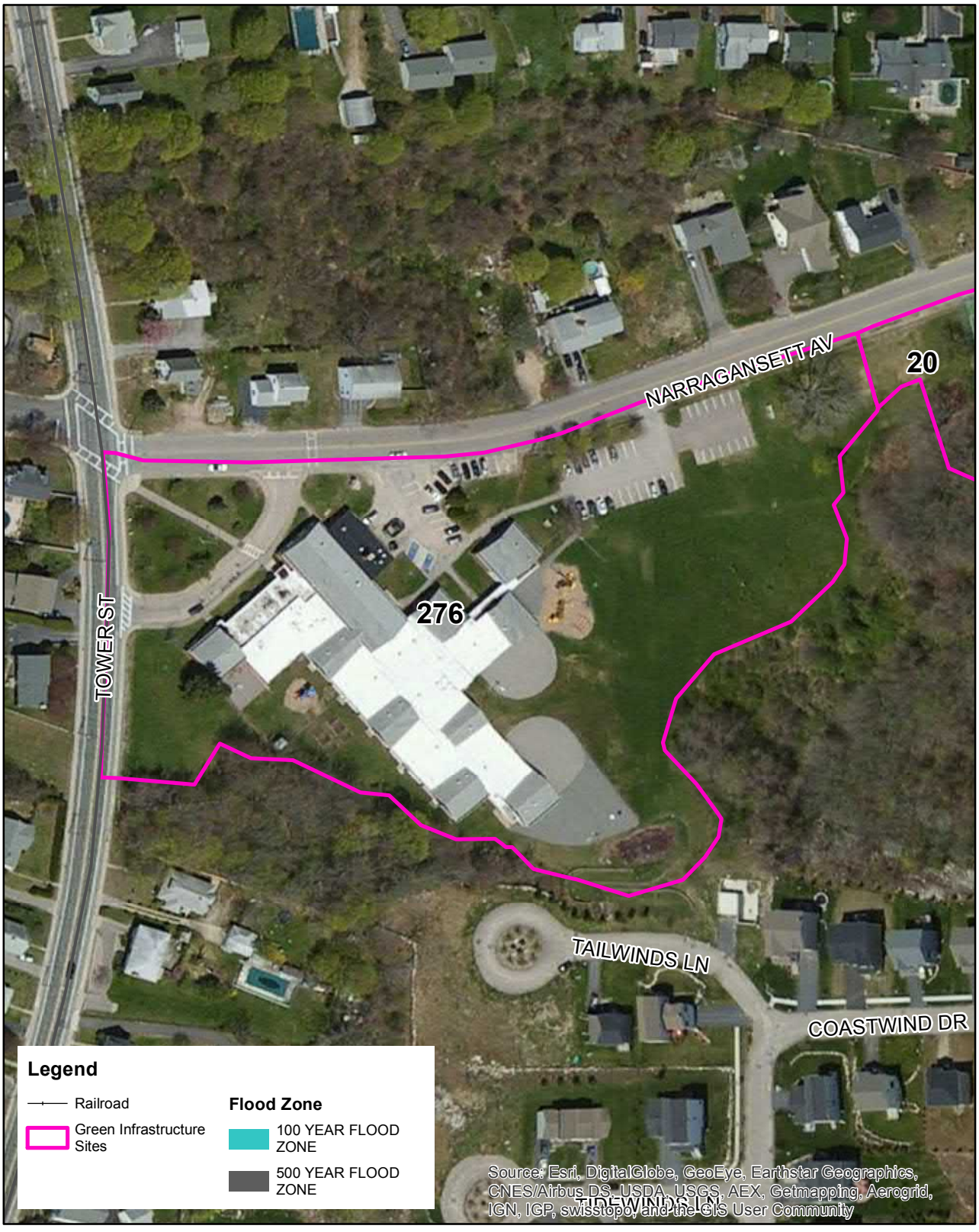
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Tower Street School Community Center
93 Tower Street
Westerly, RI



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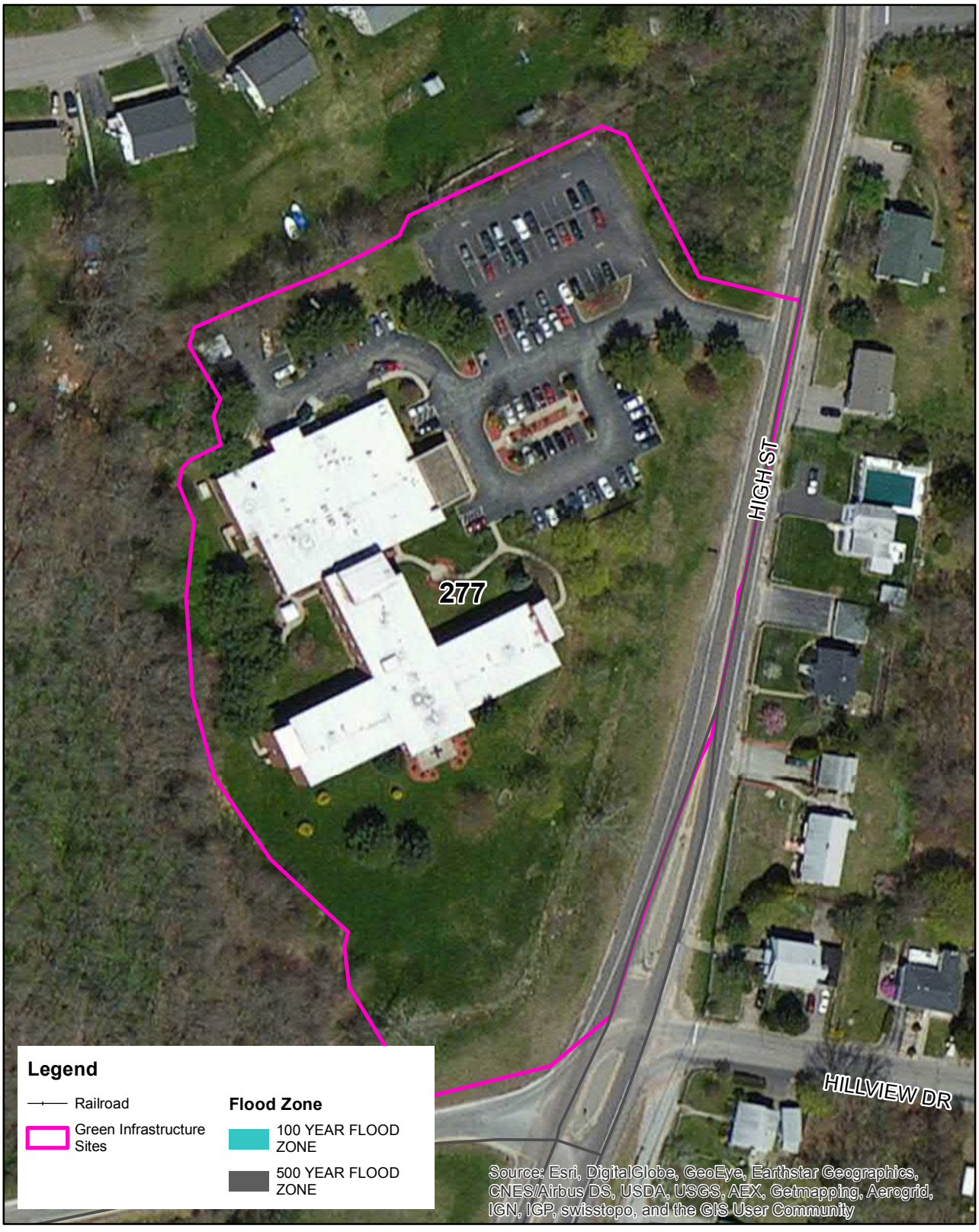
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Westerly Health Center
280 High Street
Westerly, RI



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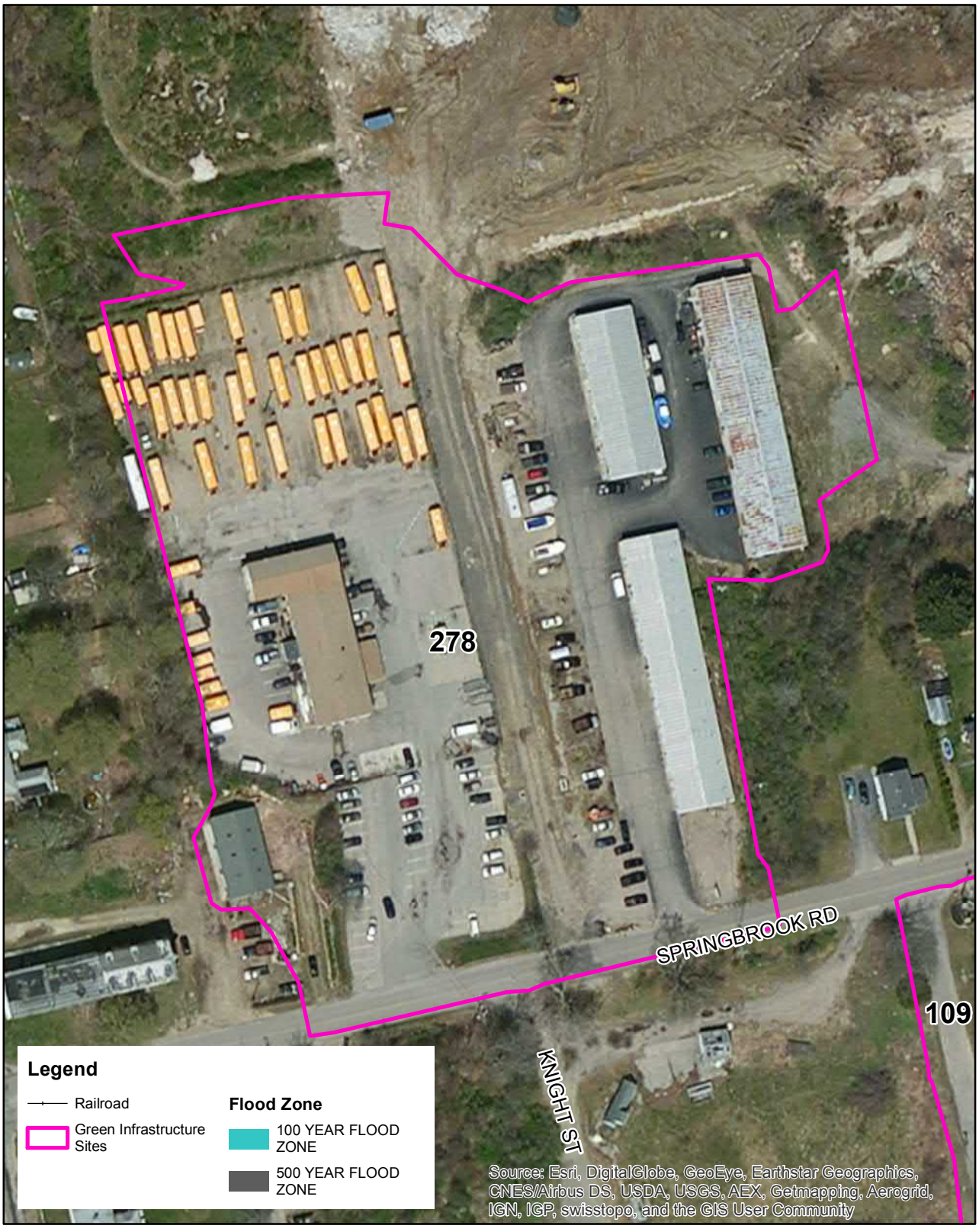
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Bus Depot- Unknown
8 Springbrook Road
Westerly, RI



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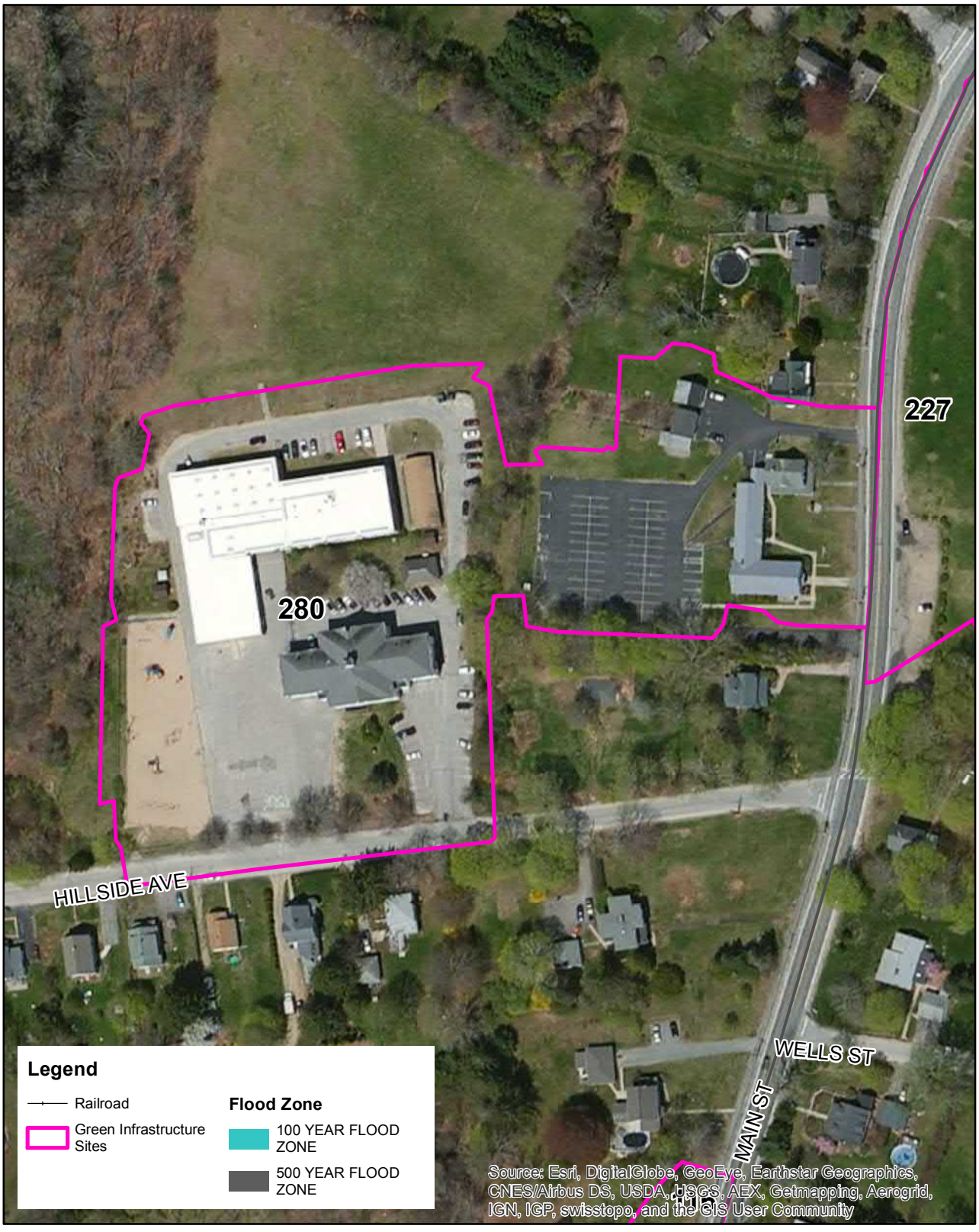
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Ashaway Elementary School
12A Hillside Avenue
Hopkinton, RI



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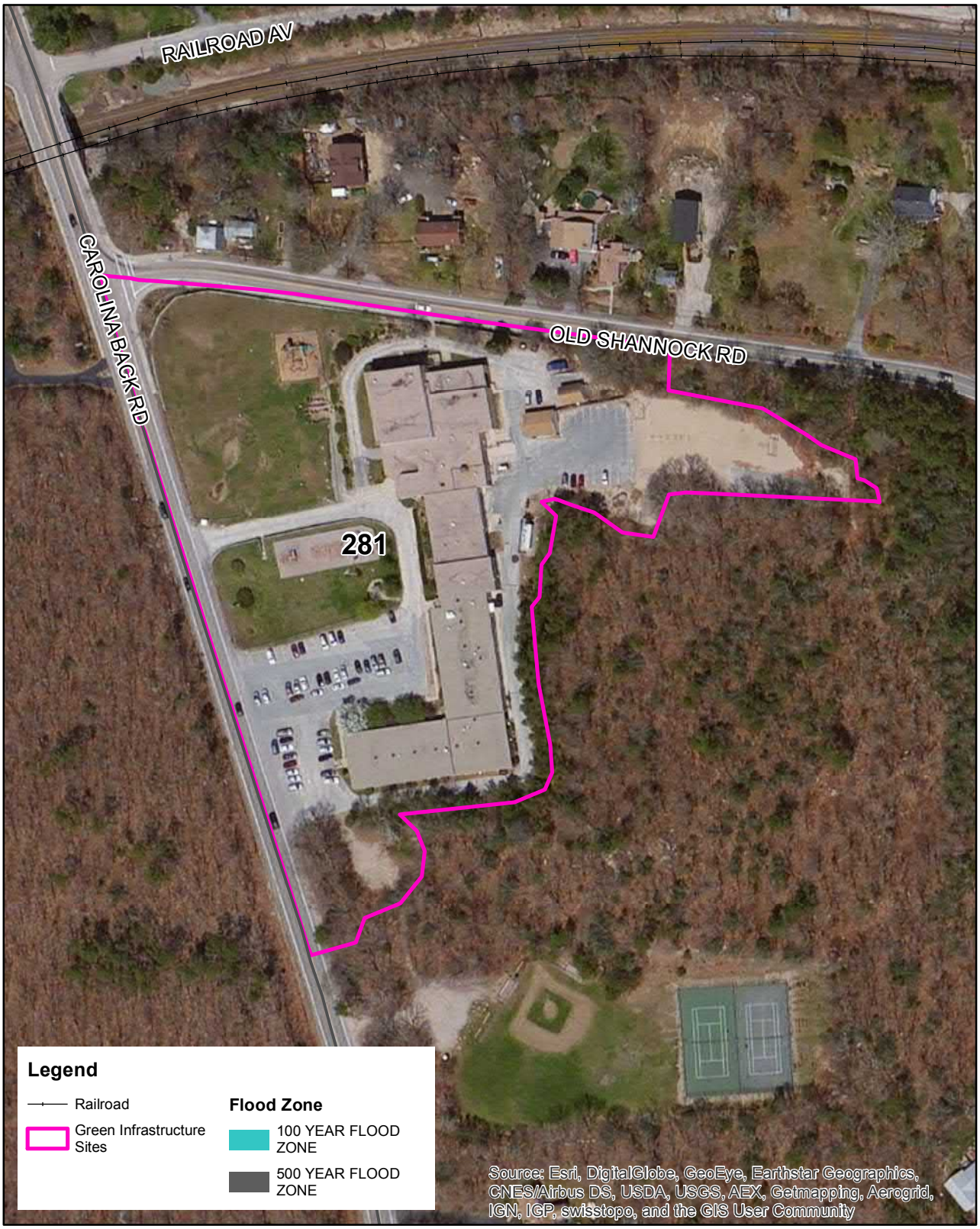
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Charlestown Elementary School
363 Carolina Back Road
Charlestown, RI



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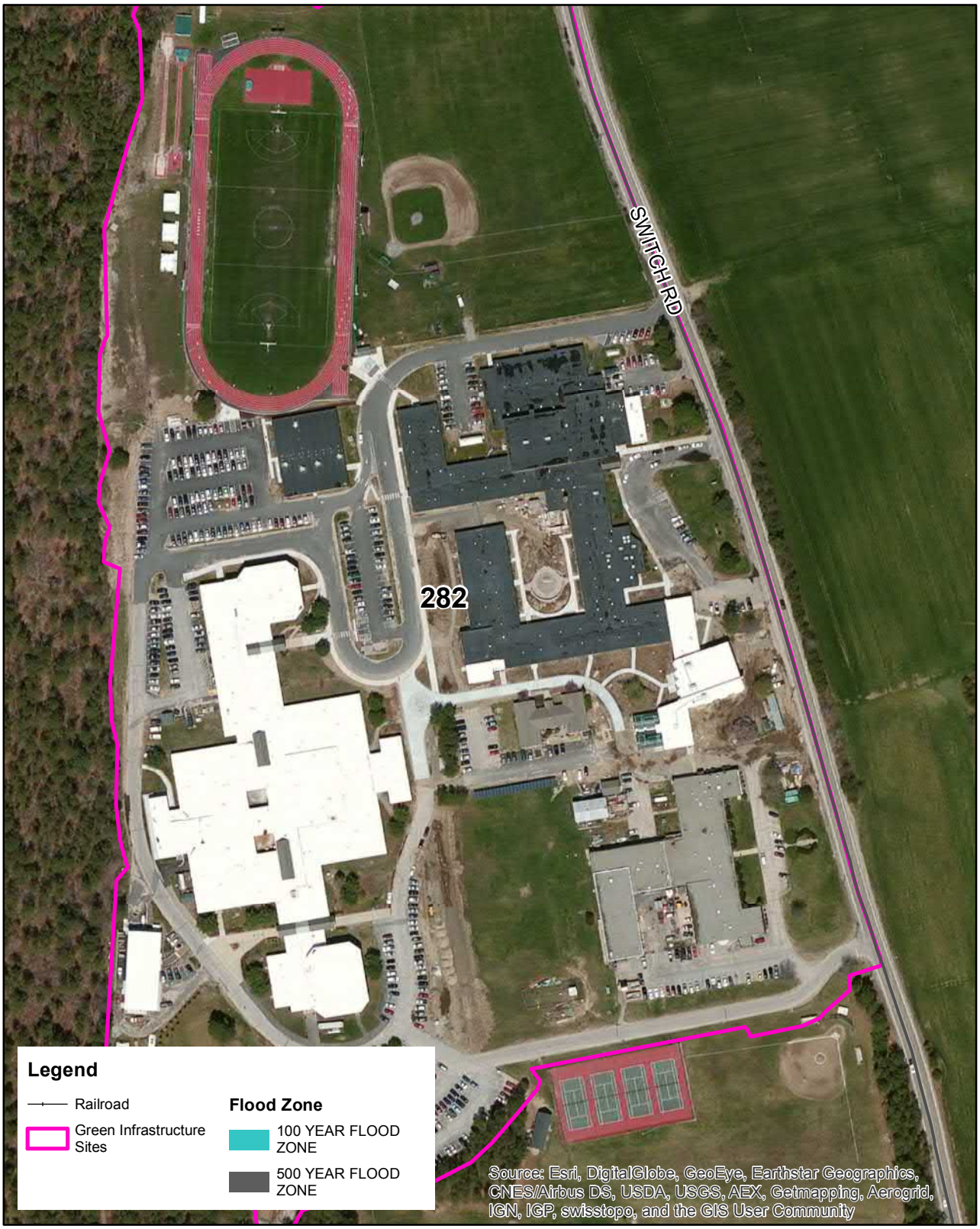
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Chariho Regional High School/Middle School/ Tech Center
453 Switch Road
Richmond, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0225 0.045 0.09 Miles

FUSS & O'NEILL

N W E S

West Kingston Elementary School
3119 Ministerial Road
South Kingstown, RI

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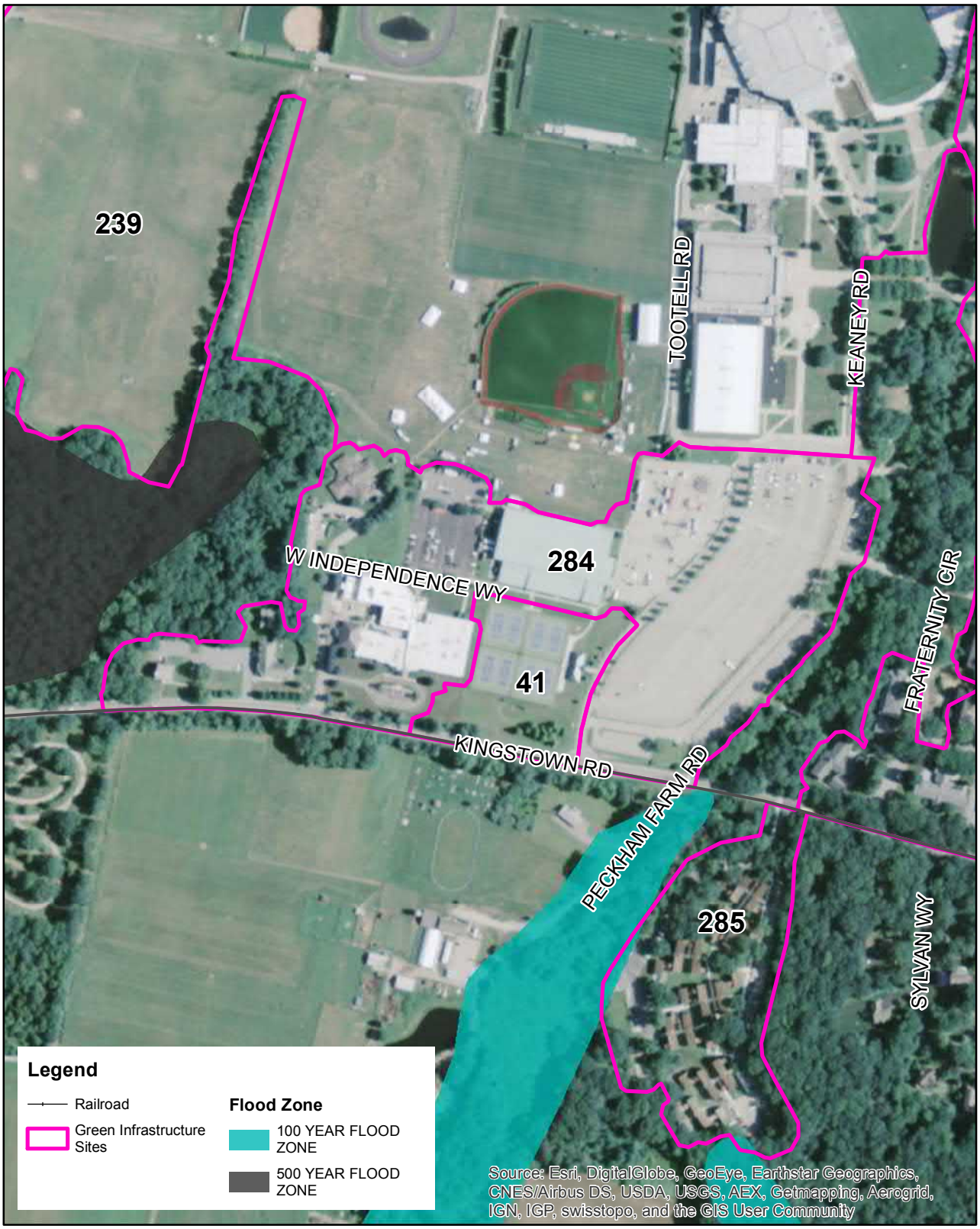
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Boss Arena
1 Keaney Road
South Kingstown, RI



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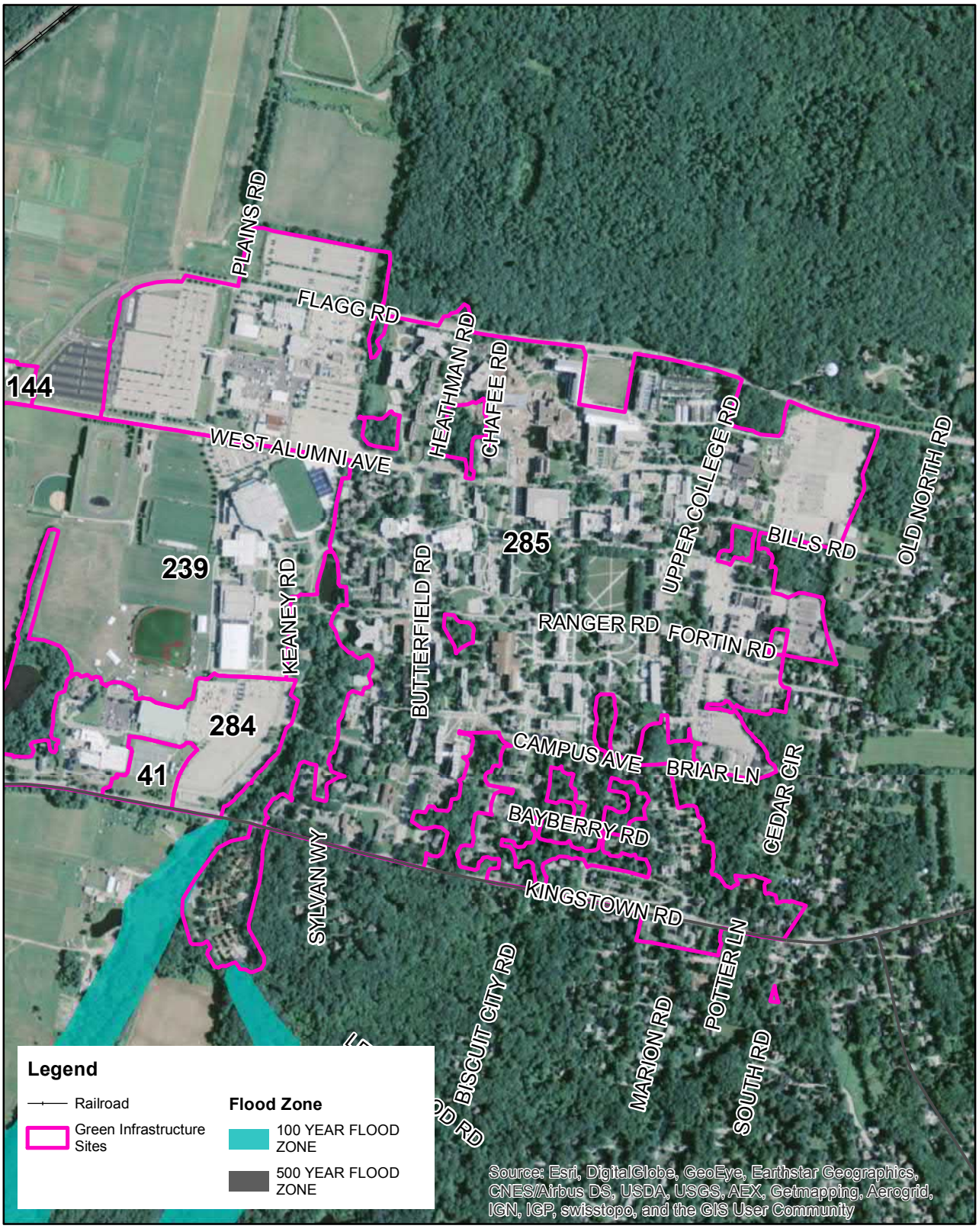
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.04 0.08 0.16 Miles

FUSS & O'NEILL

N W E S

URI Campus and parking lots along Flagg Road
210 Flagg Road
South Kingstown, RI



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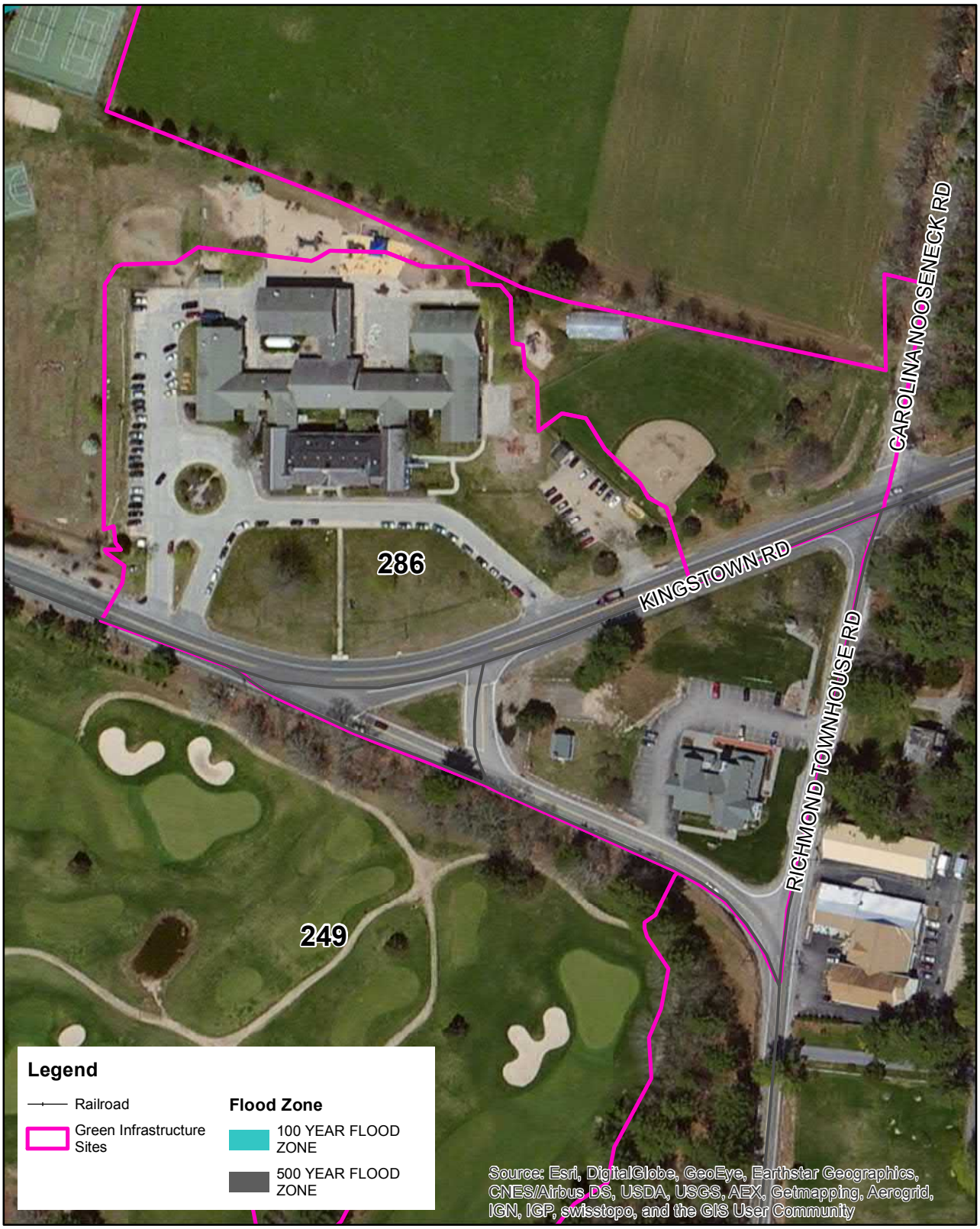
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.1 0.2 0.4 Miles

FUSS & O'NEILL

N W E S

Richmond Town Hall/ Richmond Elementary School
5 Richmond Townhouse Road/ 190 Kingstown Road
Richmond, RI



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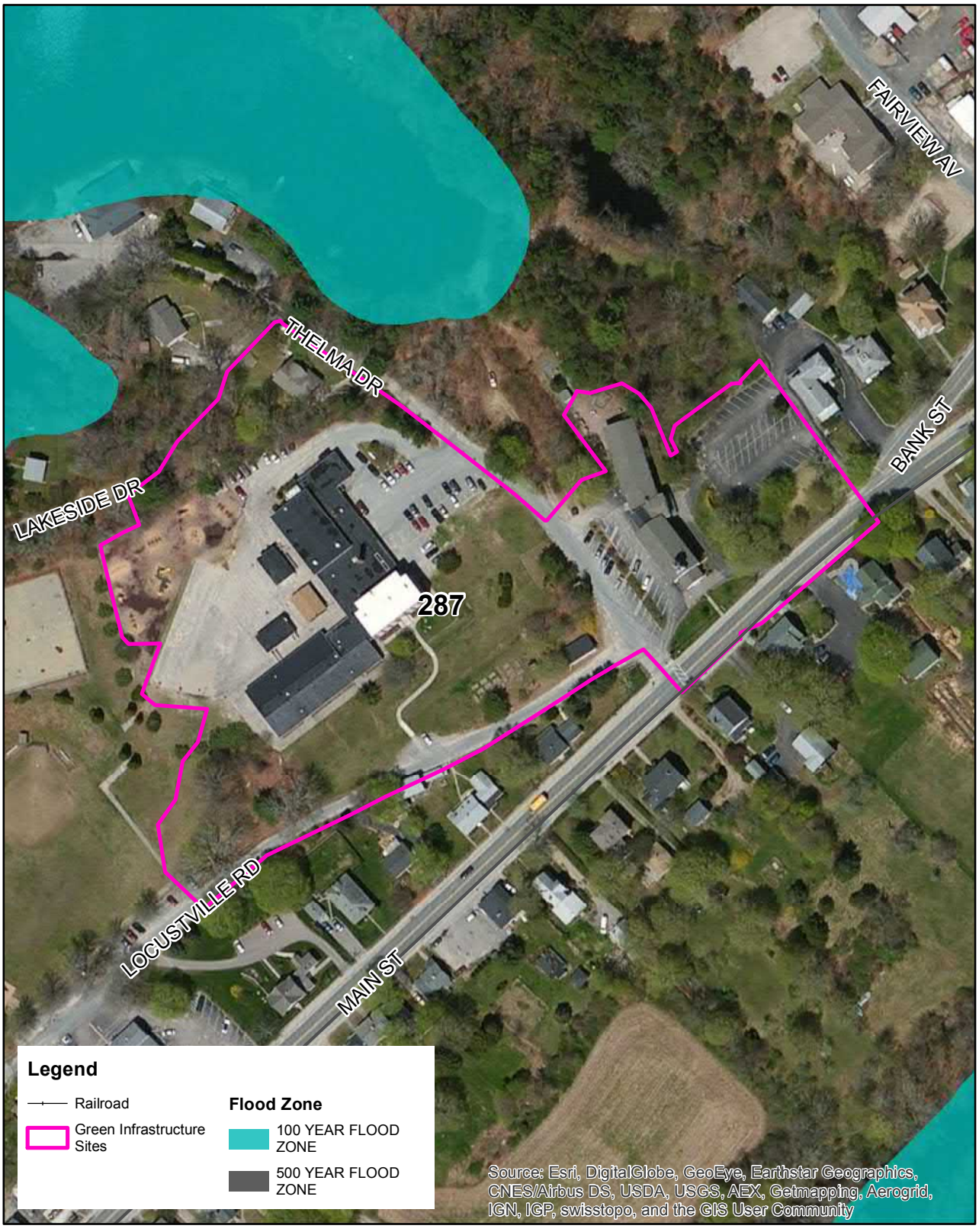
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Wood River Preschool/ Hope Valley Elementary School
1059 Main Street
Hopkinton, RI



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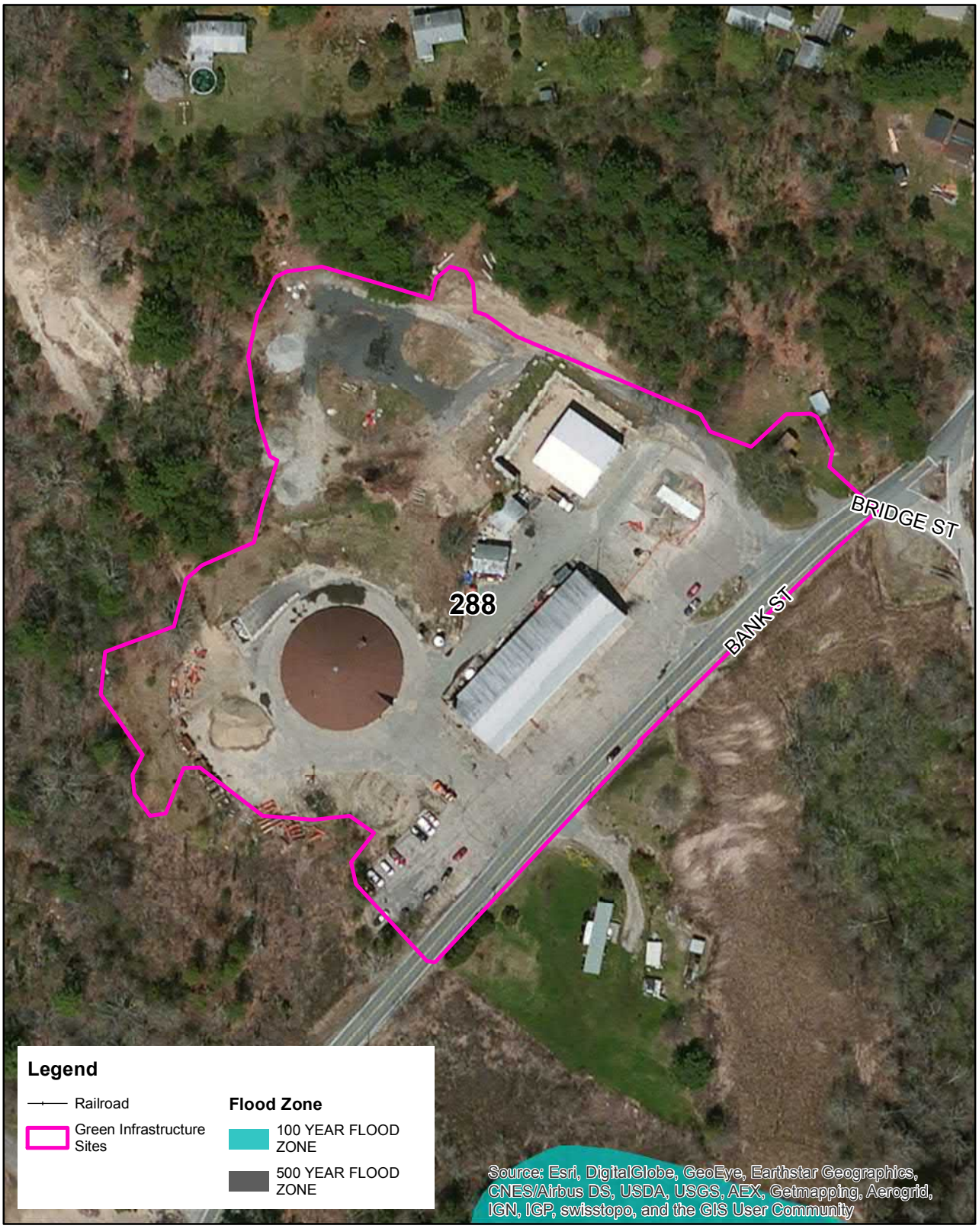
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

DPW Facility? Unknown
51 Bank Street
Hopkinton, RI



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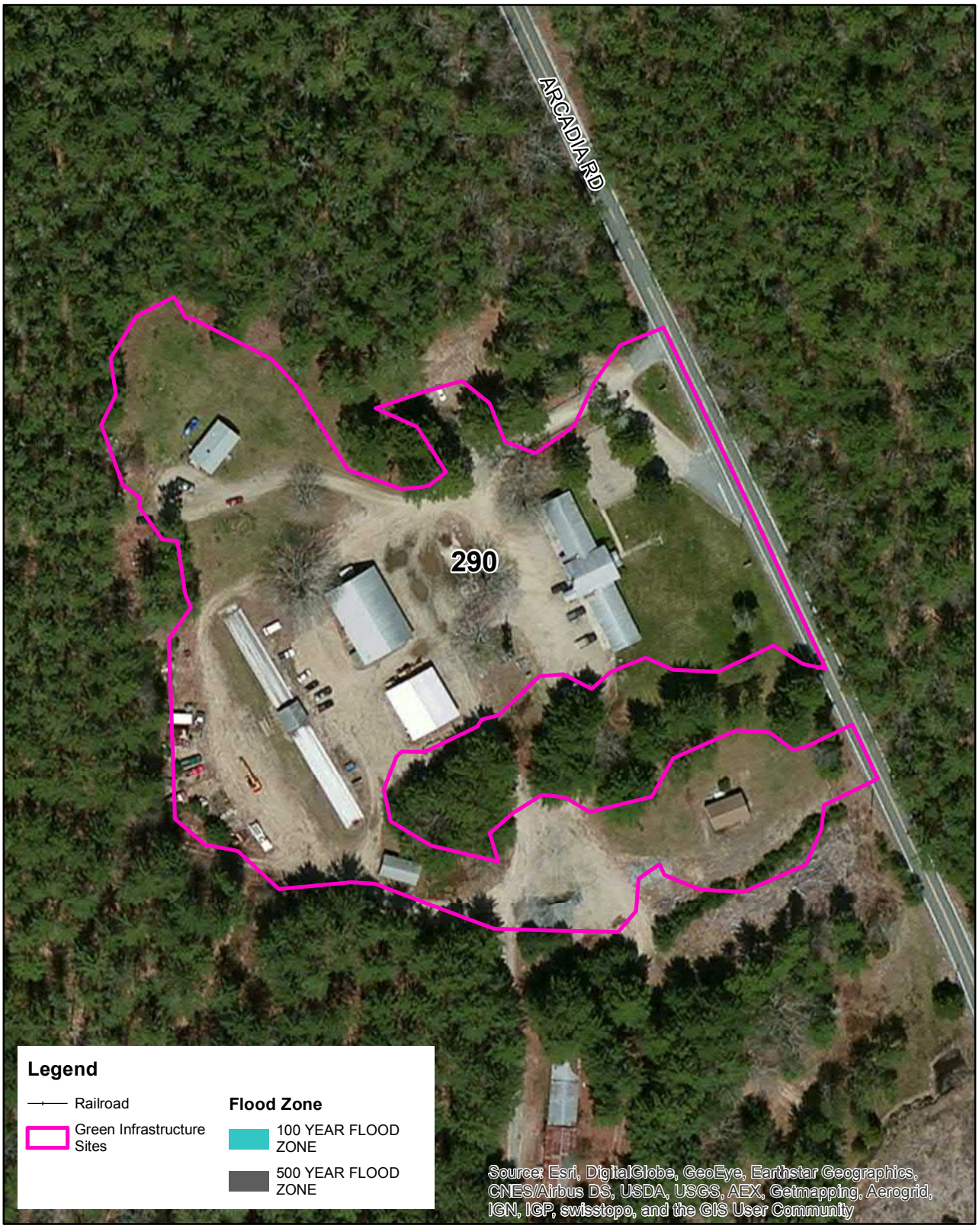
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Unknown (1/4 Mile North of Wood-Pawcatuck Watershed Association)
260 Arcadia Road
Richmond, RI



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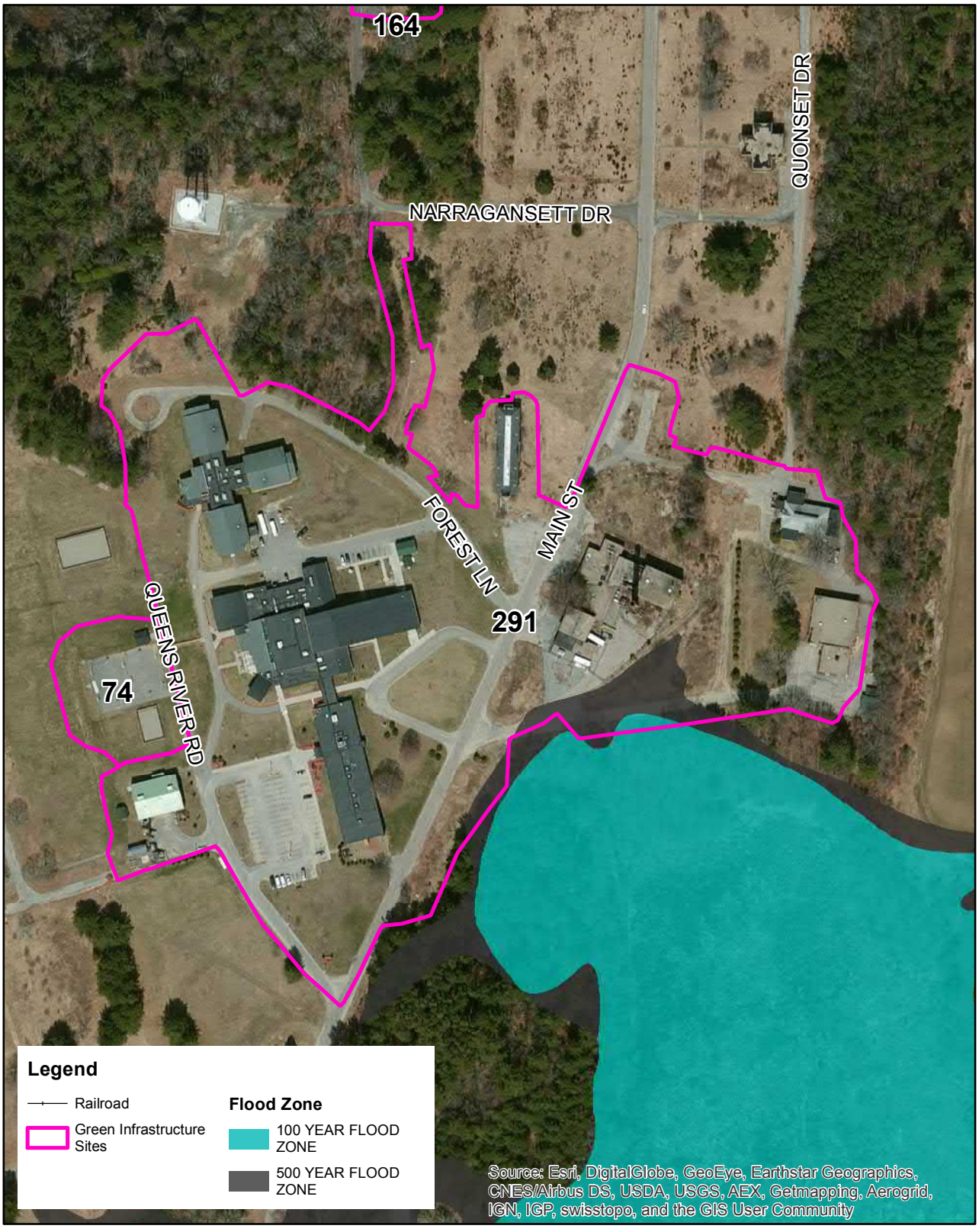
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Exeter Job Corps
162 Main Street
Exeter, RI



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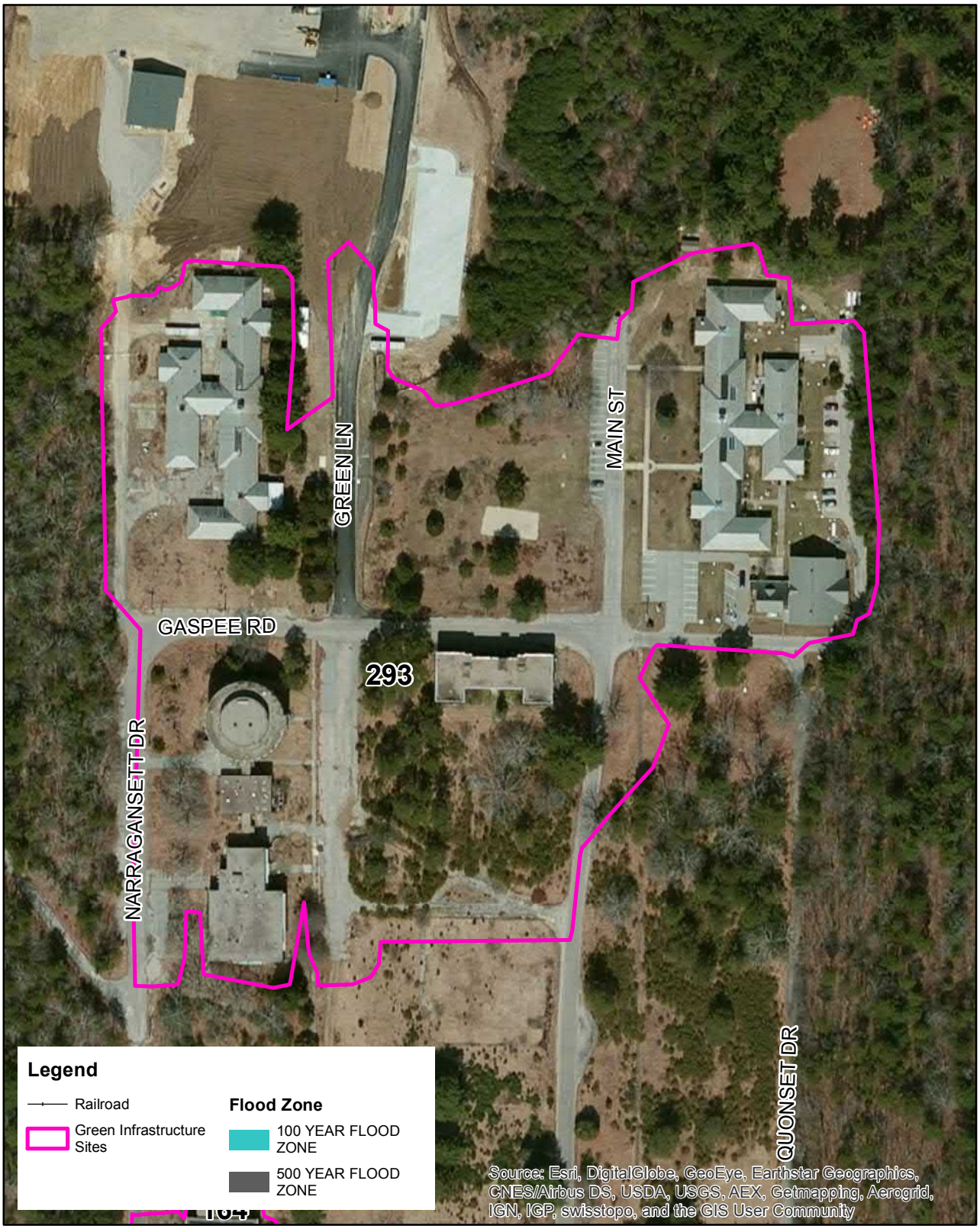
Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.025 0.05 0.1 Miles

FUSS & O'NEILL

N W E S

Phoenix House and other Office Buildings?
Gaspee Road and Main Street
Exeter, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

FUSS & O'NEILL

N W E S

Exeter Public Library
762 Ten Rod Road
Exeter, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

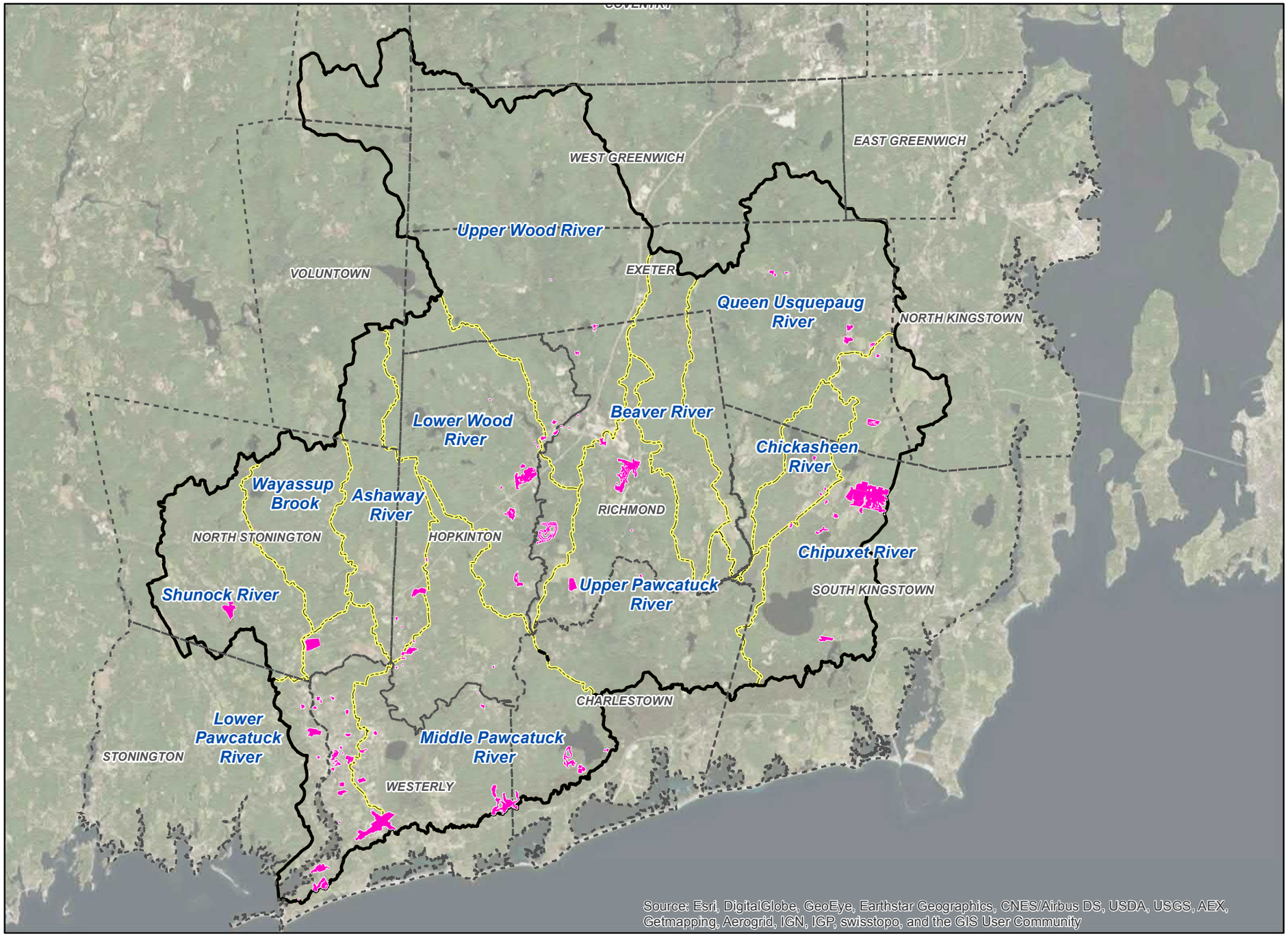
FUSS & O'NEILL

N W E S

FUSS & O'NEILL

Attachment 4

Watershed Map of Potential Green Infrastructure Retrofit Sites



Distribution of Potential Green Infrastructure Sites within the Wood-Pawcatuck Watershed.

Legend

- Green Infrastructure Sites
- Town Boundary
- Wood-Pawcatuck Watershed
- Subwatershed Boundary

FUSS & O'NEILL

N
W E
S

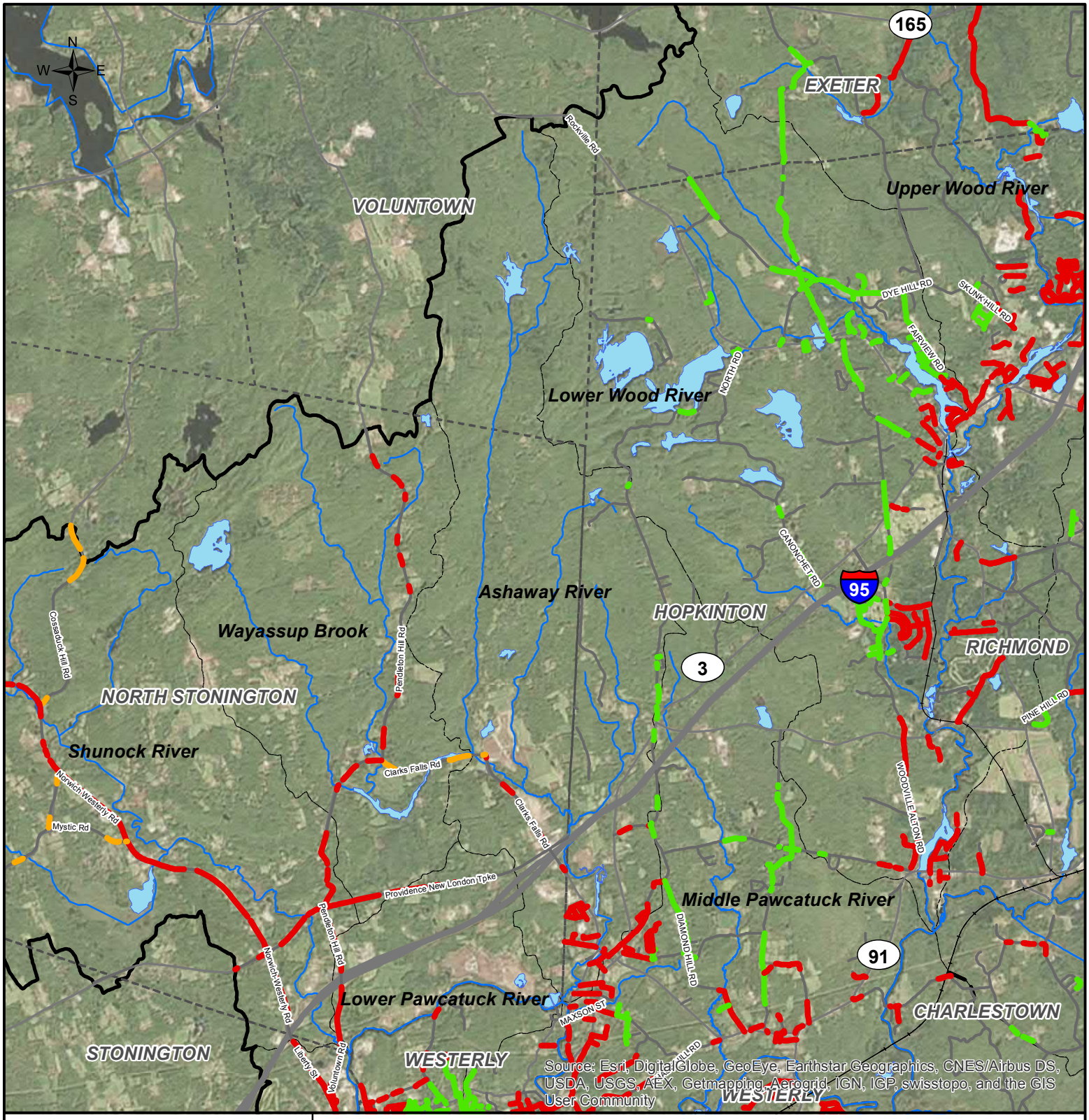
0 1.5 3 6 Miles

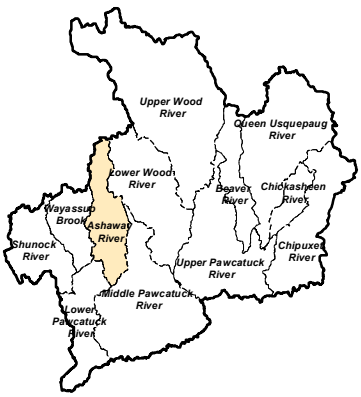
Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\WatershedWideMap_20160411.mxd

FUSS & O'NEILL

Attachment 5

Example Streets Screening Selection – Westerly, Rhode Island





Ashaway River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate

- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

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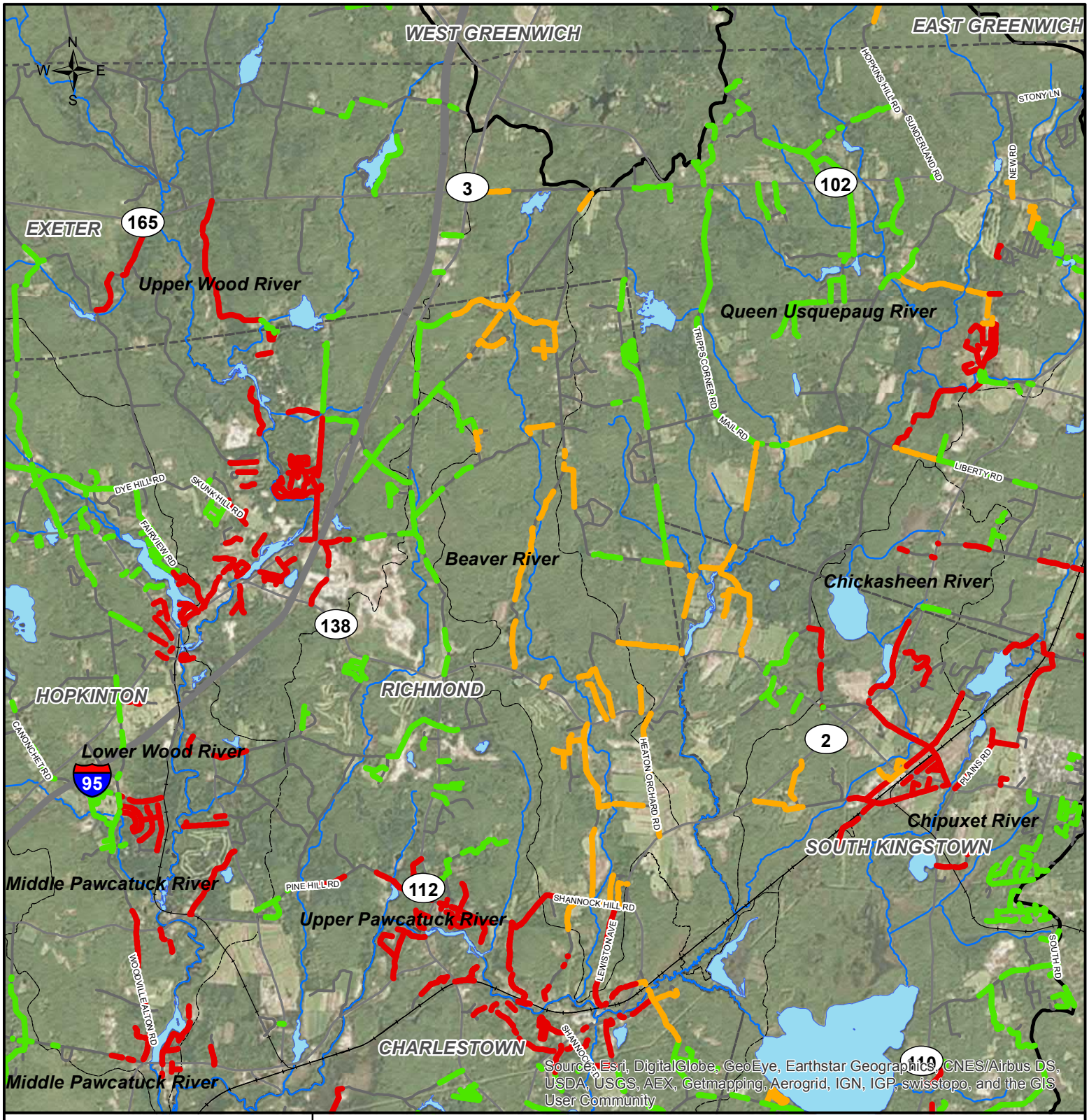
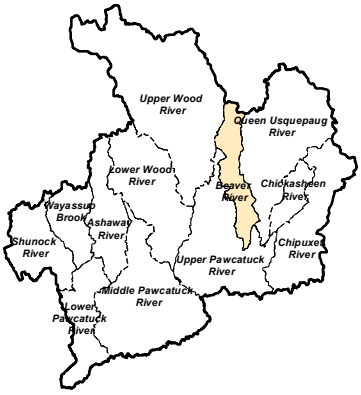




Beaver River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

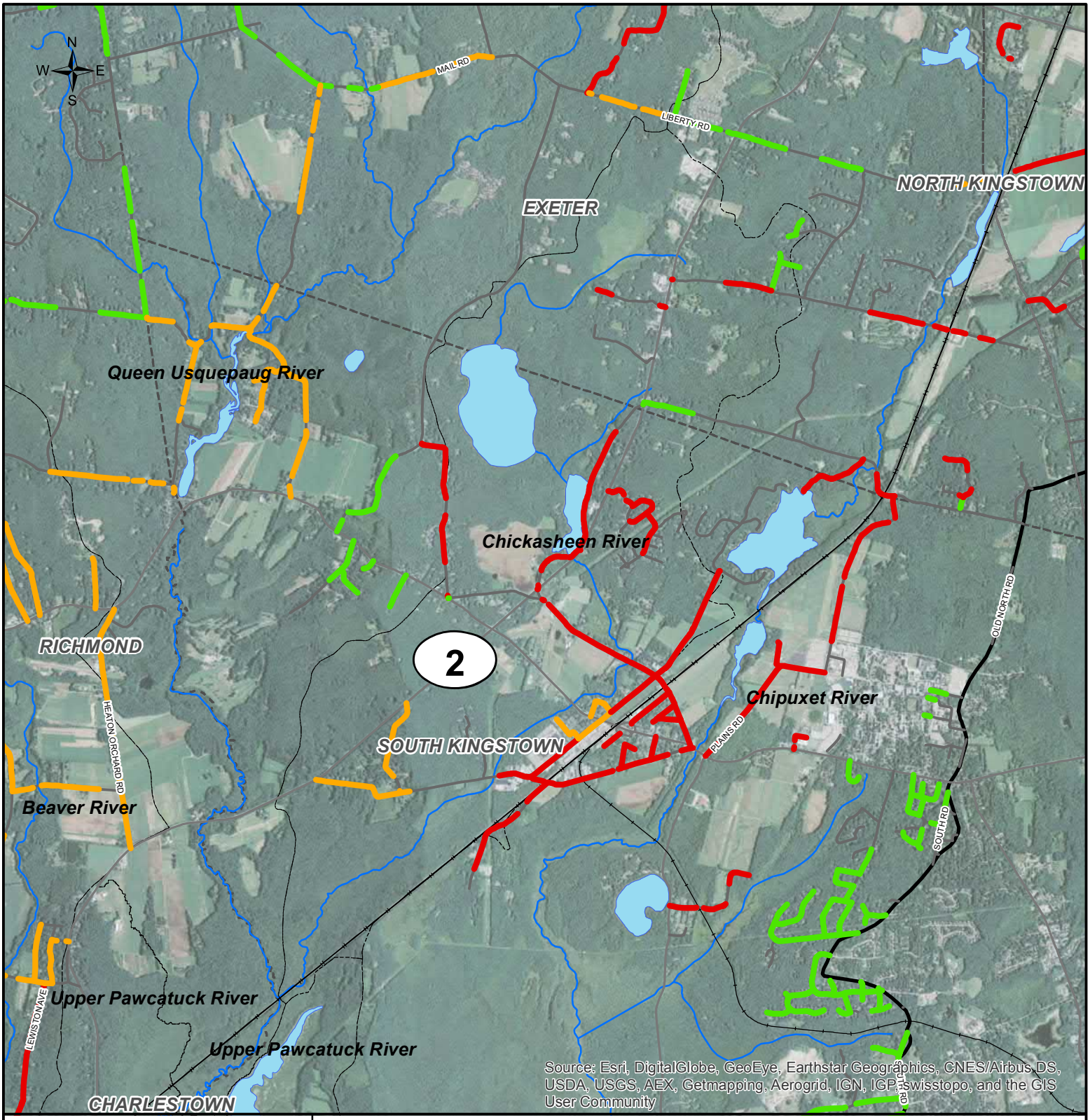
- Municipal Roads
- Railroad
- State Route
- US Route
- Interstate

- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\GreenStreets_2ndRound.mxd



Chickasheen River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate
- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.275 0.55 1.1 Miles

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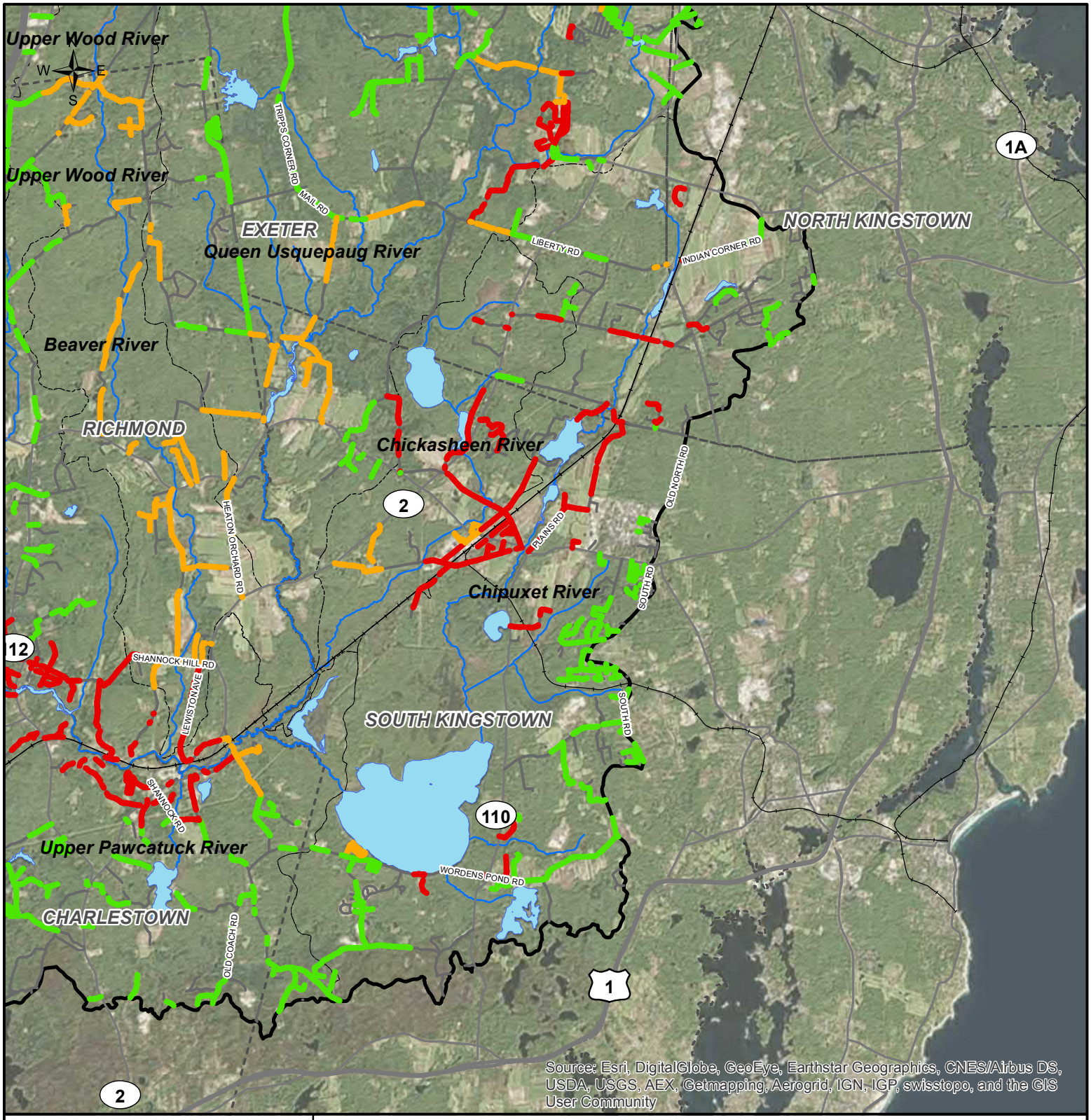

Chipuxet River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate
- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

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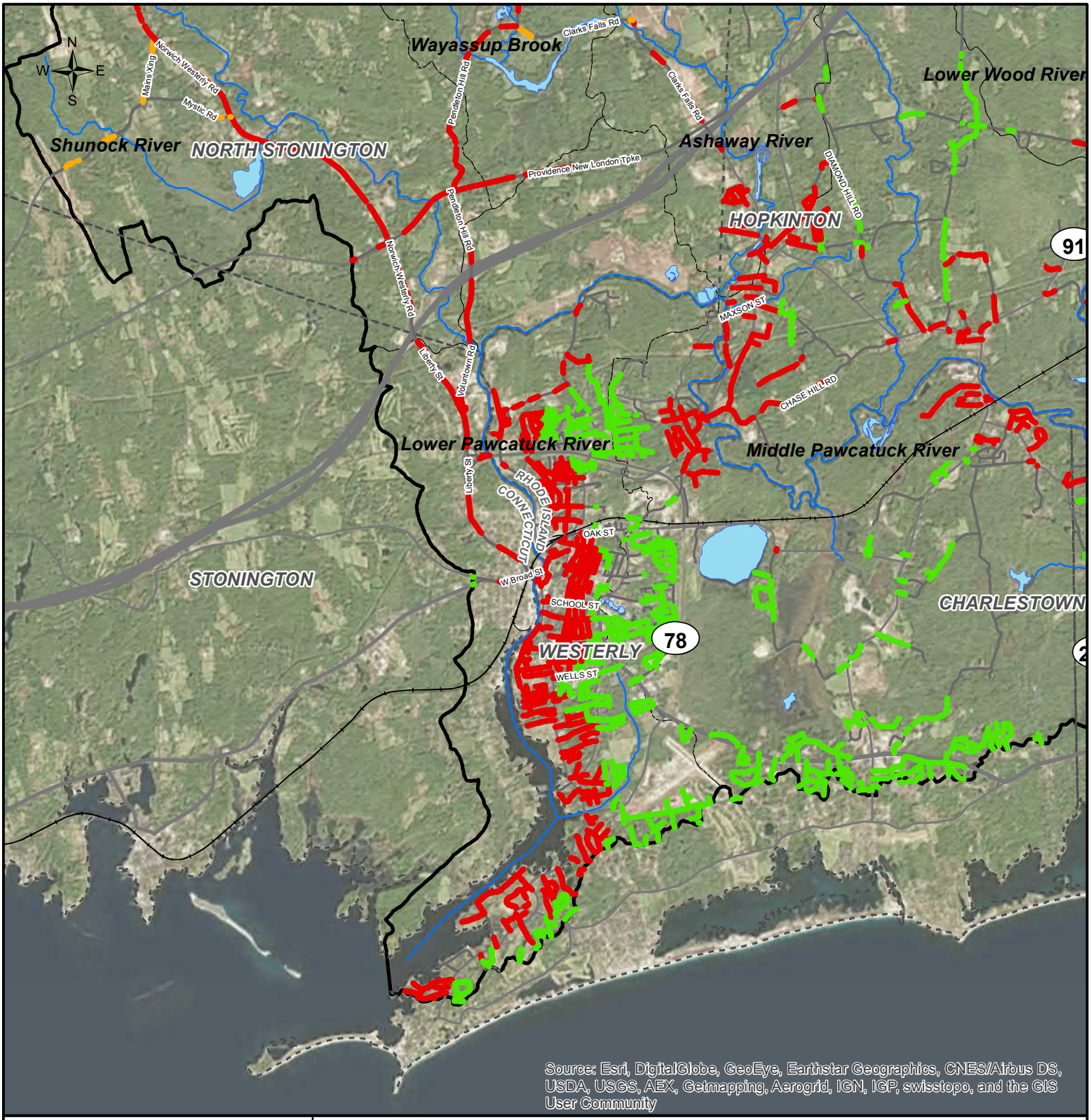

Lower Pawcatuck River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate

- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.45 0.9 1.8 Miles

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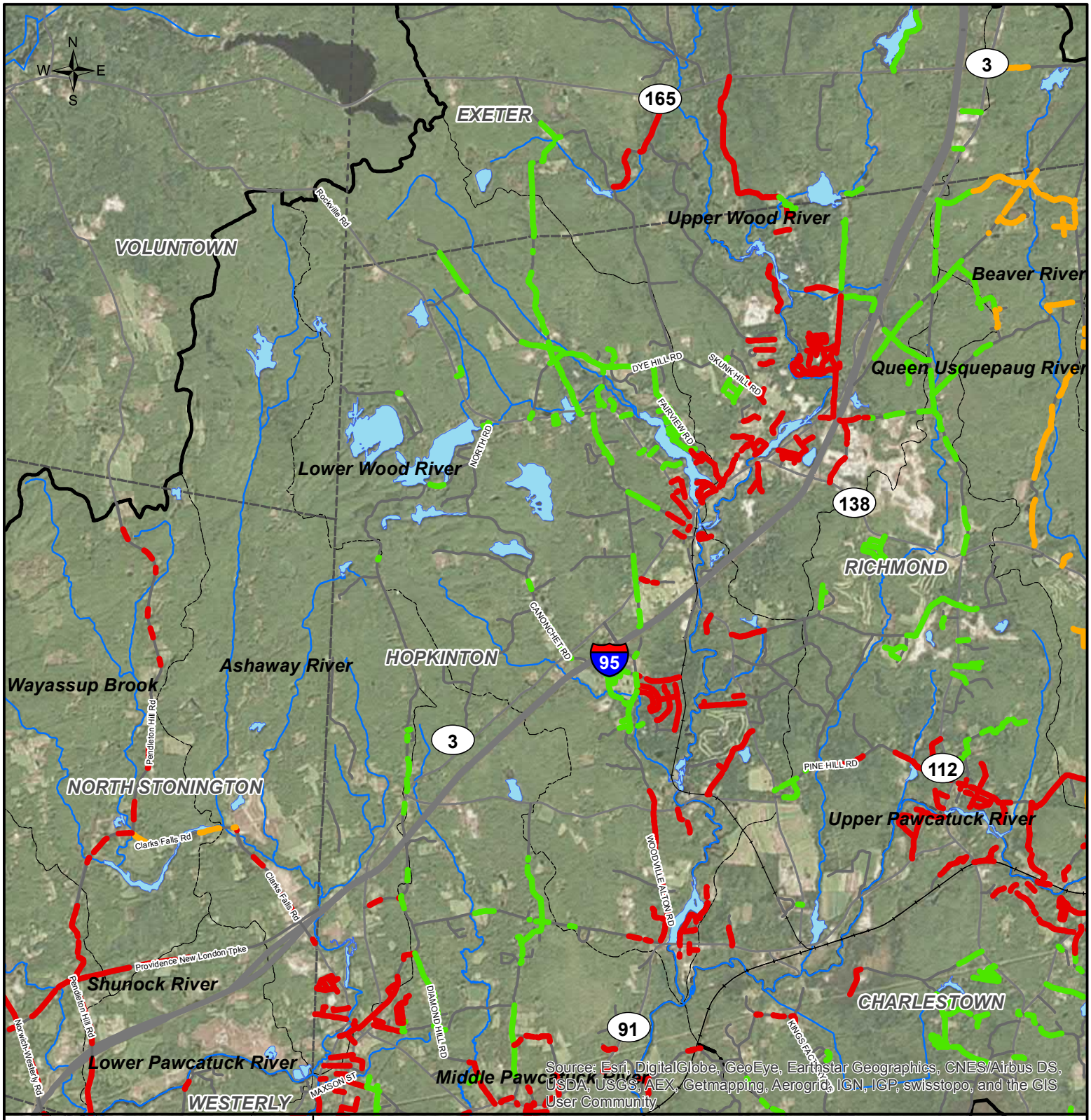

Lower Wood River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate
- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

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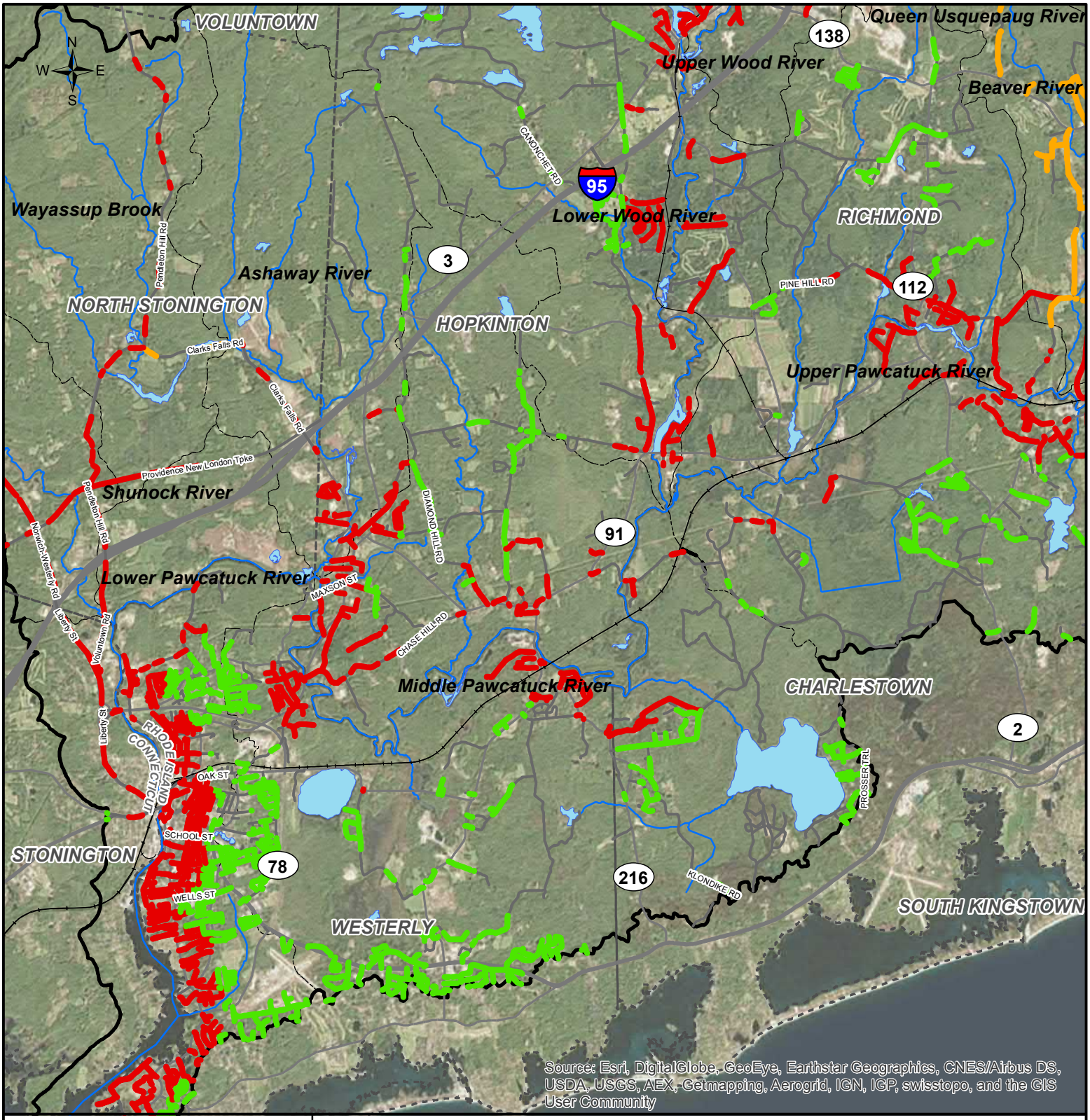

Middle Pawcatuck River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate

- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

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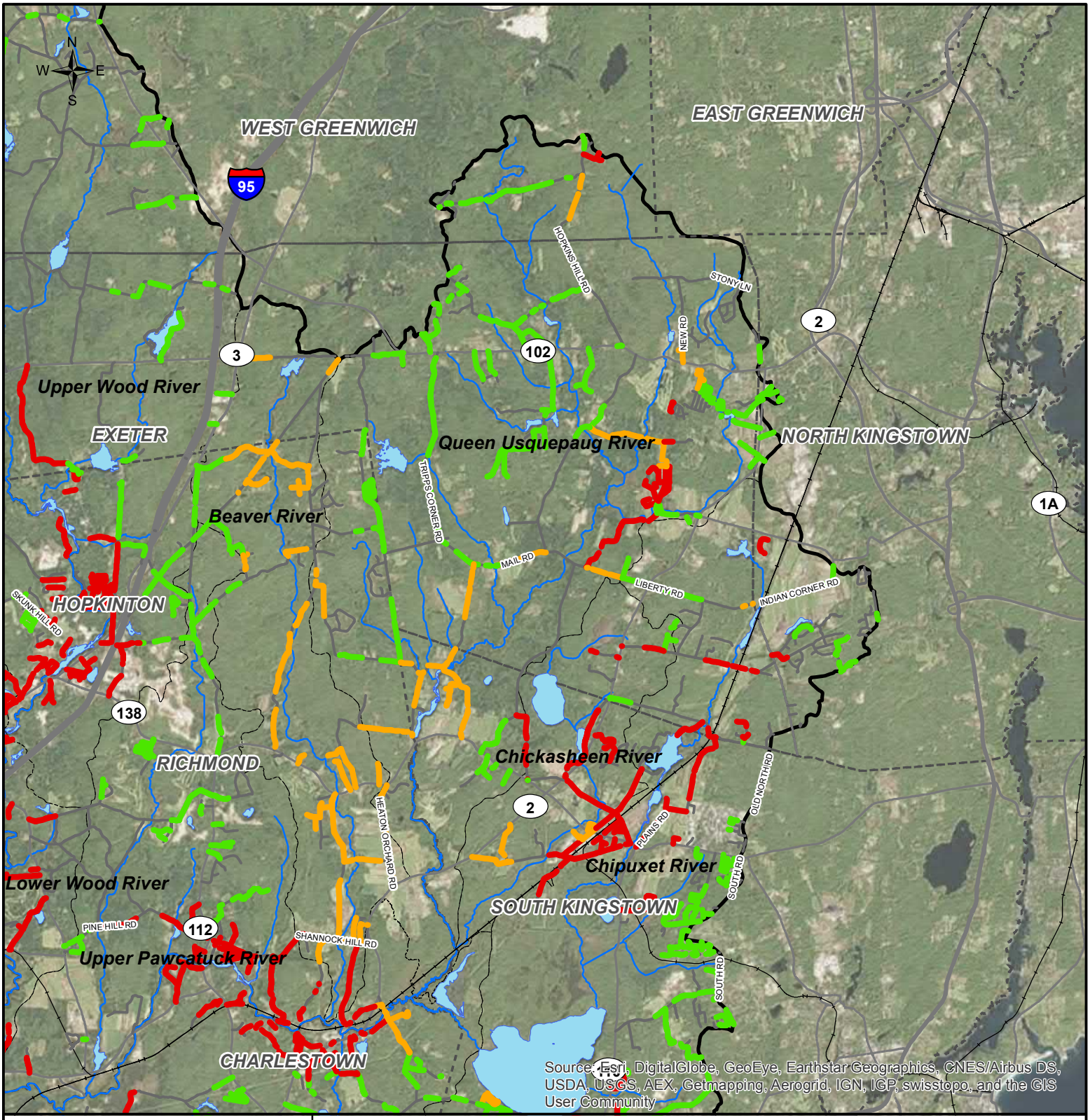


Queen Usquepaug River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

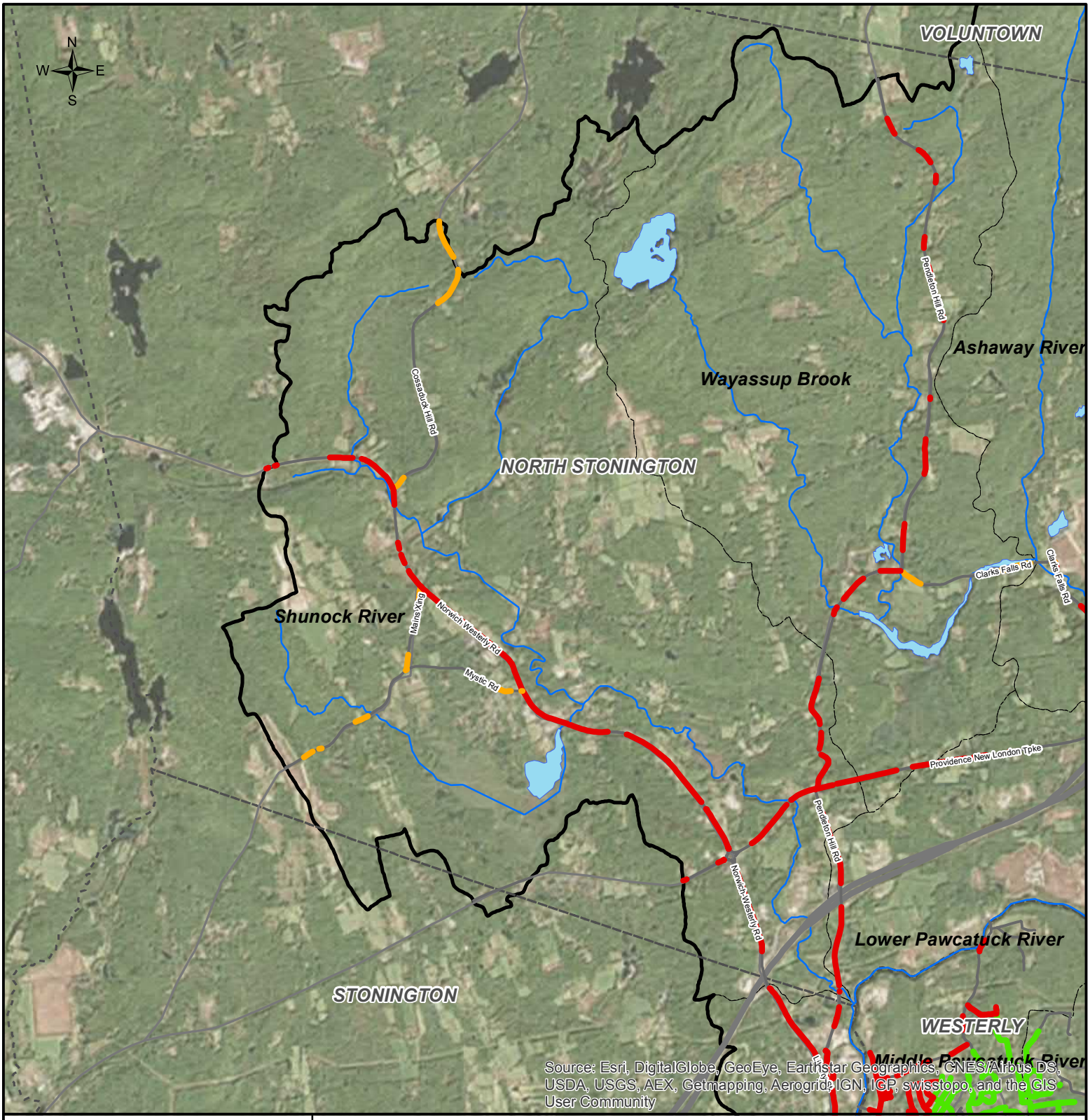
- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate

- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\GreenStreets_2ndRound.mxd



Shunock River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate
- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.325 0.65 1.3 Miles

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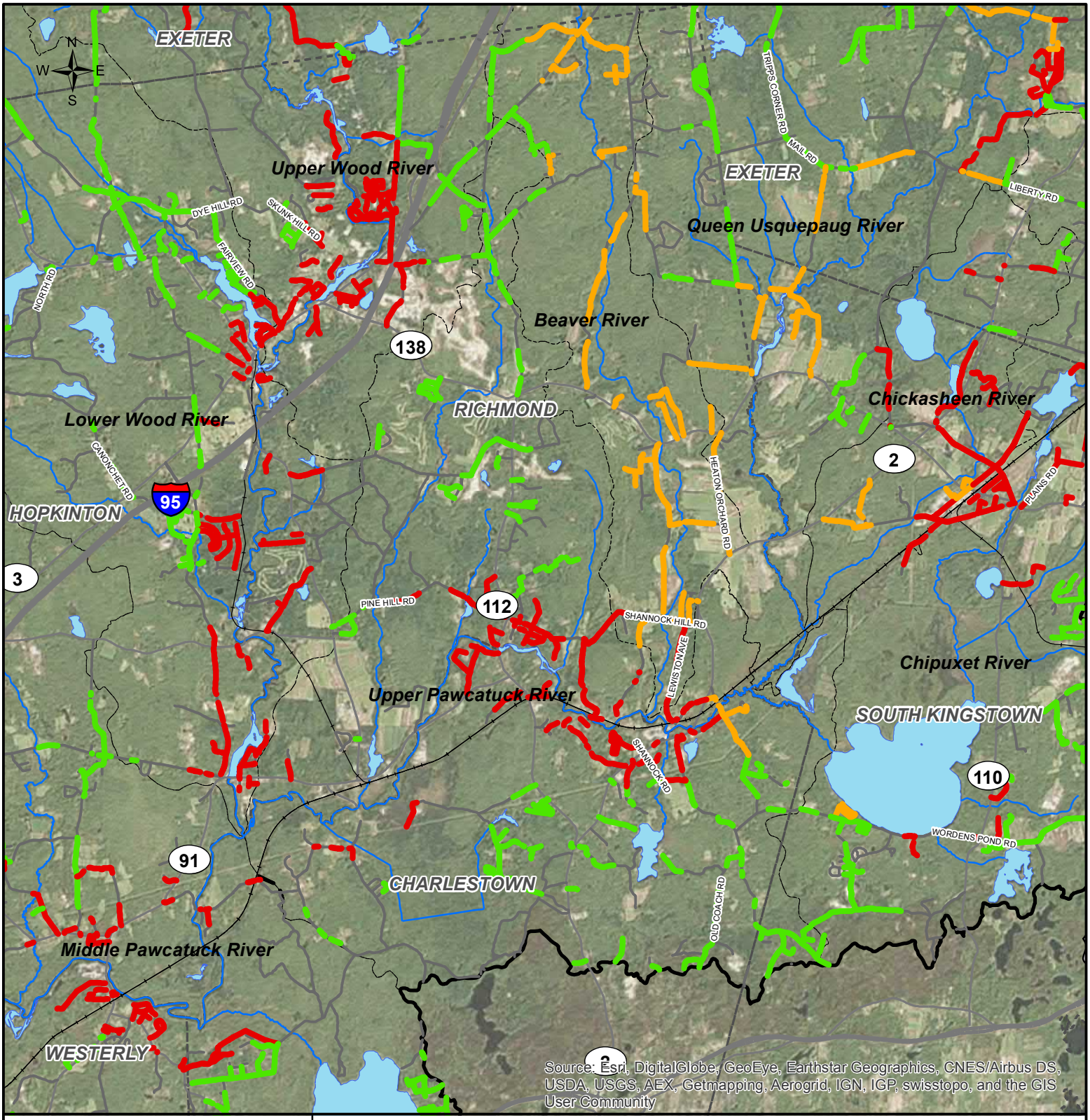
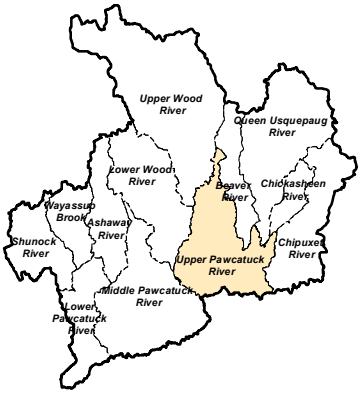




Upper Pawcatuck River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

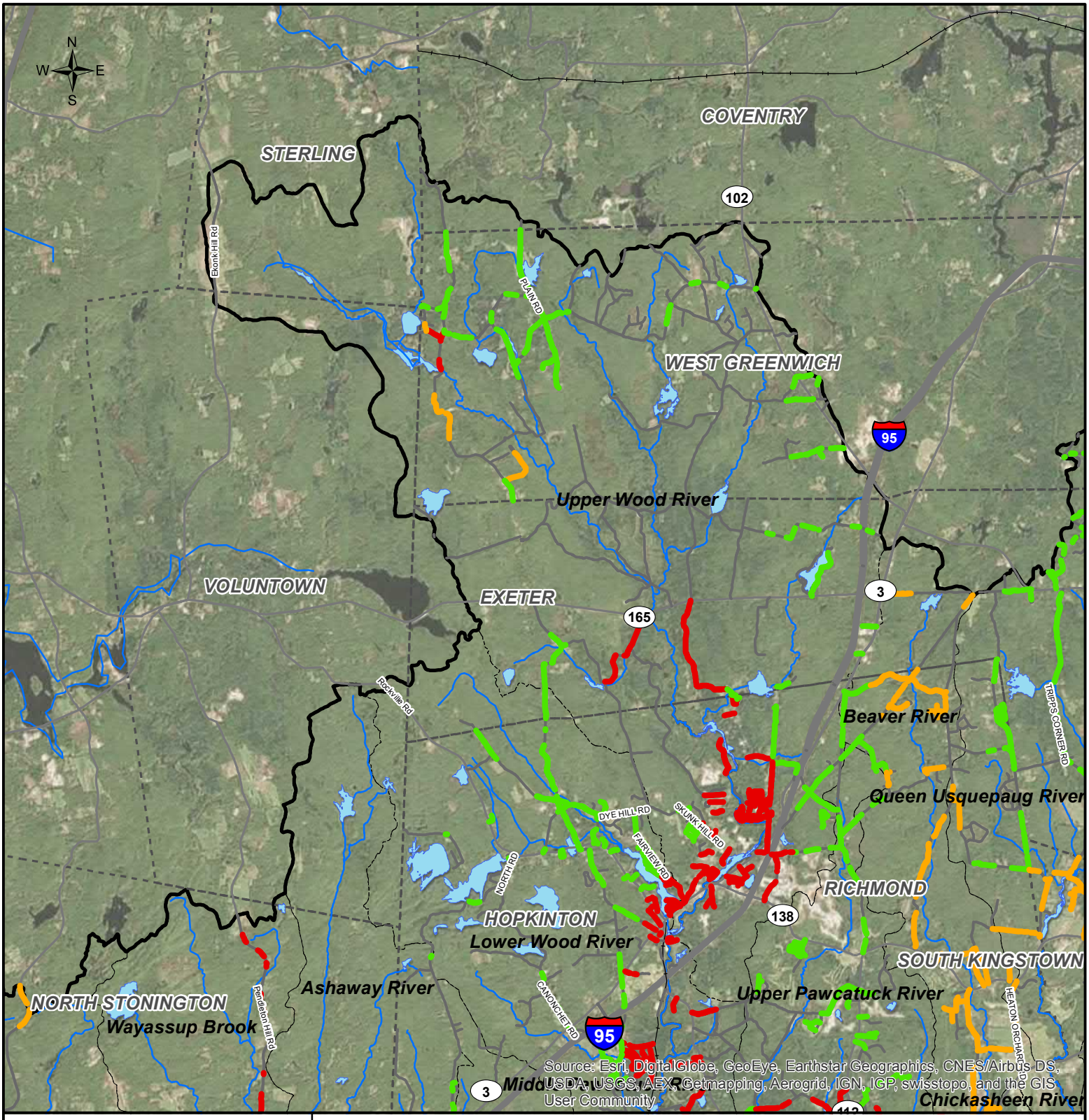
Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate
- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\GreenStreets_2ndRound.mxd



Upper Wood River- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

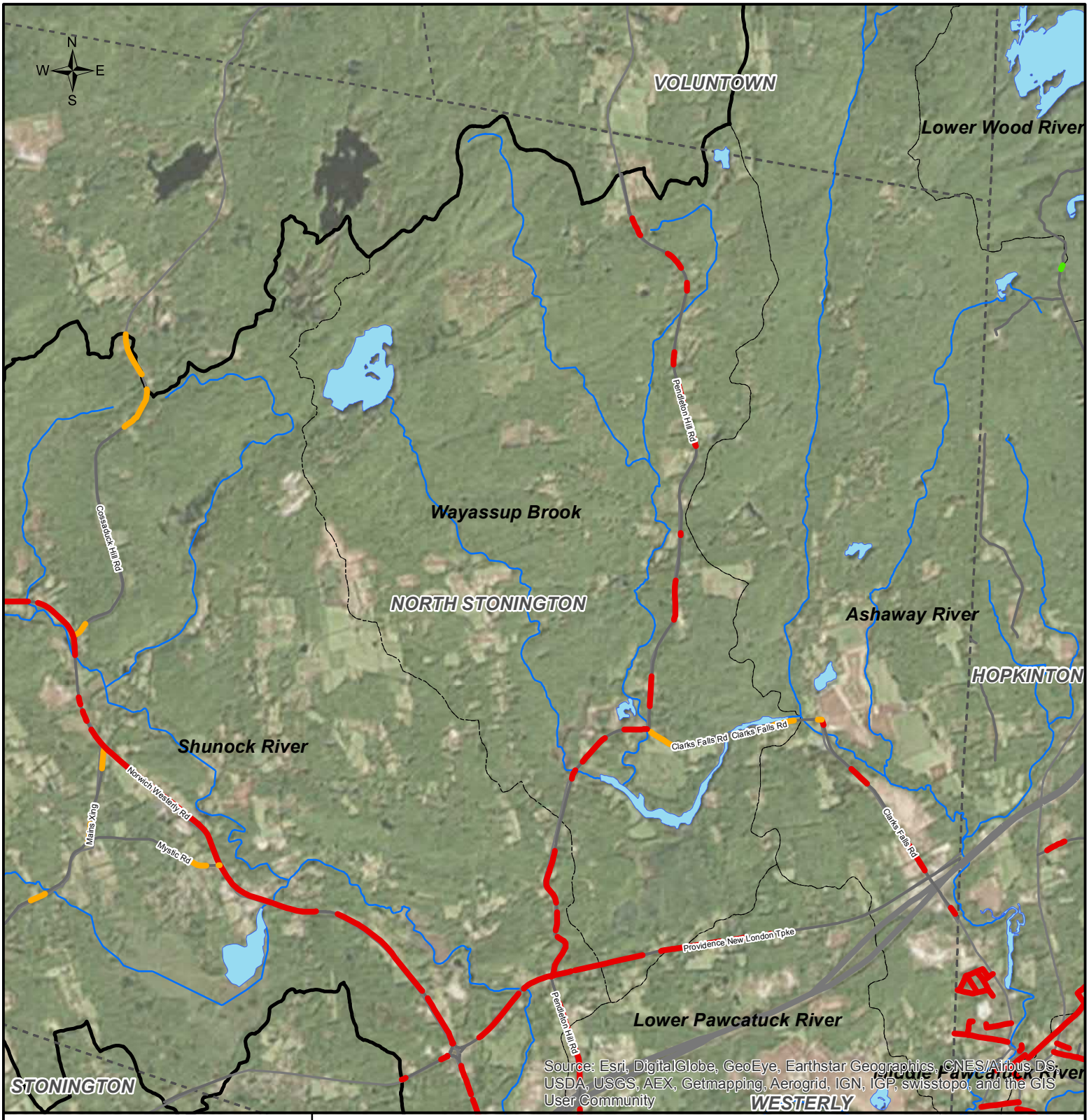
Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate
- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.5 1 2 Miles

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\GreenStreets_2ndRound.mxd



Wayassup Brook- Prioritization of Potential Street/Right-of-Way Green Infrastructure Retrofits in the Wood-Pawcatuck Watershed

Legend

Potential Street/Right-of-Way Green Infrastructure Retrofits
- Low Priority
- Medium Priority
- High Priority

- Municpal Roads
- Railroad
- State Route
- US Route
- Interstate
- Streams/Rivers
- Lake/ Pond/ Reservoir
- Town Boundary
- Wood-Pawcatuck Watershed Boundary
- Subwatershed Boundary

FUSS & O'NEILL

0 0.3 0.6 1.2 Miles

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FUSS & O'NEILL

Attachment 6

Field Sheets

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 6	
DATE: 7/5/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: #1-11 11:45 + 1:26?
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Saint Katerie Tekakwita Catholic Church
Address: Exeter Road, Exeter, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

All runoff drains w/ no erosion

Existing Head Available and Points Where Measured:

Unique Site ID: 6

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

SITE CONSTRAINTS

Adjacent Land Use:
☐ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☒ Other: Ag
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	
☐	☐	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

Unique Site ID: 6

SKETCH

Unique Site ID: 6

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 6

The Saint Kateria Tekakwitha Catholic Church
Exeter Road
Exeter, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 21	
DATE: 6/2/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: 2141145 - 1530
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Vin Gormley Trailhead Parking
Address: 24 Sanctuary Road, Charlestown, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☐ Small Parking Lot
- ☐ Individual Street
- ☒ Underground
- ☐ Individual Rooftop
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ Other: large parking lot

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes: due extent of uphill drainage boundary

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ~~☒ Yes~~ ☒ No ☐ Possible
If Yes, Describe:

drainage toward pond routed thru pipe to woods, but pipe is half-filled with gr
2-3 catch basins in parking lot

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

Severe erosion downslope of parking lot thru picnic area
Catch basins capture some water from parking lot + discharge - where?
upper edge of parking lot bordered by sediment basins

~~Existing Head Available and Points Where Measured~~:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Infiltration under parking lot

Conversion of existing swales to bioswales

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	
☐	☐	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

Unique Site ID: 21

SKETCH

Unique Site ID: 21

DESIGN OR DELIVERY NOTES

parking lot normally 50 - 75% full during summer months

High priority site

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: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Need to know soil ~~infiltr~~ type beneath parking lot

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): _____

Unique Site ID: 21

Vin Gormley Trailhead Parking
24 Sanctuary Road
Charlestown, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Part of Burlingame State Park

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 284-41-239	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 9:19-945
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Boss Arena, ~~West~~
Address: 1 Keaney Road, South Kingstown, RI

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

Corresponding USSR [redacted] ☐ No If yes, Unique Site ID:

Proposed Retrofit Location:

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

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 ≈ _____

Notes: may include runoff from adjacent facilities

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ ~~Yes~~ ☒ No ☐ Possible
If Yes, Describe:

~~CBs, scattered, surrounding pavement damaged~~

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

large parking lots w/ grey infrastructure only. CBs widely scattered, Berms + parking lot corners badly eroded
Building downspouts go into ground

CBs, scattered, surrounding pavement damaged

~~**Existing Head Available and Points Where Measured:**~~

No access to 239 due to Special Olympics

Unique Site ID: 284

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☒ Filtering Practice ☒ Infiltration ☒ Swale ☐ Other: permeable pavement

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

- Convert grass medians/edges to bioretent
- Convert parking to permeable
- Underground Infiltration
- curb cuts for sheet flow

Route downspouts to raingarden along tennis courts

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: use

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? 1-2 dozen
Approx. DBH 4-6"

Other factors: Depth to groundwater

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

Unique Site ID:_____

SKETCH

Unique Site ID: 284

DESIGN OR DELIVERY NOTES

converting grass strips to bioretention would require small loss of driving/parking space; would help w/ maintenance of pavement around catch basins

URI already has clear interest in stormwater management

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: _____

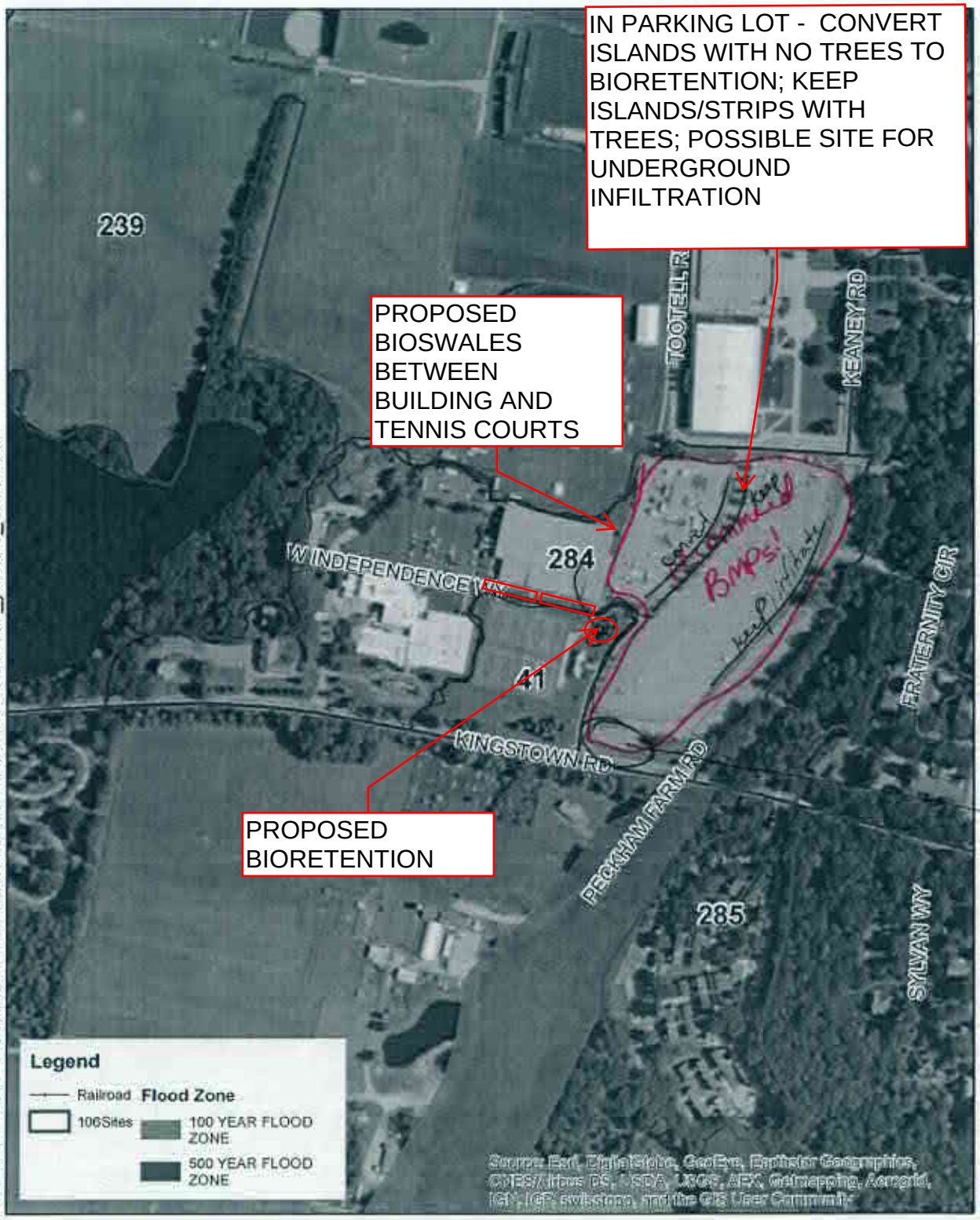
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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): _____

Unique Site ID: 284

Boss Arena
1 Keaney Road
South Kingstown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.04 0.08 0.16 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 50	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1250-1315
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Wyoming Dam Fishing Access
Address: Bridge St, Hopkinton

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☒ Small Parking Lot
- ☐ Individual Street
- ☐ Underground
- ☐ Individual Rooftop
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ Other: Boat launch

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

water from adjacent inn + ~~from Road~~ parking lot drains to site.
rills + erosion in on-site unimproved parking lot
deep catch basins on adjacent road not connected

Existing Head Available and Points Where Measured:

Unique Site ID: _____

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: ACBM along boat launch

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:
"Pave" boat launch w/ ACBM (open cell) to stabilize (gravel-filled)
bioretention @ upper end of lot + around three ROW
curb cuts to capture road runoff + additional runoff from inn lot
~~use as~~ run overflows to storm system

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 feasibility?
☒ Slope ☒ Space
☒ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other:_____

Conflicts with Existing Utilities:
~~None~~
☐ Unknown

Yes	Possible	
☐	☐	Sewer
☐	☐	Water
☐	☐	Gas
☐	☐	Cable
☐	☐	Electric
~~☐~~	☐	~~Electric to Streetlights~~
☒		Overhead Wires
☒	☐	Other: Comm

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

Unique Site ID:_____

SKETCH

Unique Site ID:_____

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

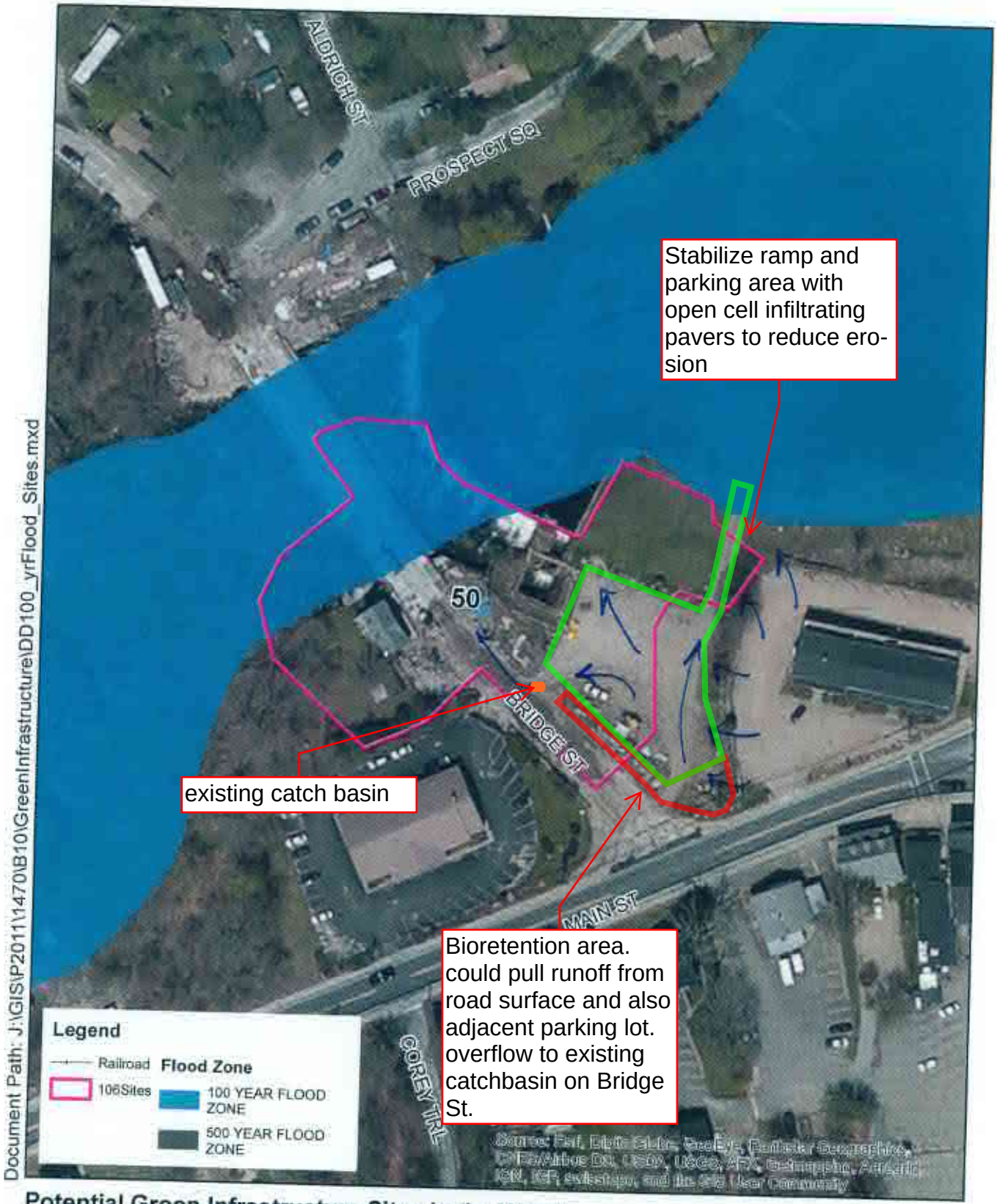
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

SITE CANDIDATE FOR FURTHER INVESTIGATION:	[x] YES	[ ] NO	[ ] MAYBE	!!
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	[x] YES	[ ] NO	[ ] MAYBE	
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	[ ] YES	[ ] NO	[ ] MAYBE	

IF YES, TYPE(S):_____

Unique Site ID:_____

Wyoming Dam Fishing Access
Bridge Street
Hopkinton, RI



Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 73	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 8:00 - 8:10
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Exeter Animal Shelter
Address: 165 South County Trail, Exeter

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Parking lot + basketball court + roofs drain sheet to grass; grassy area is rutted + puddled due to recent rain. No formal infrastructure or outfalls to nearby ditch. Roof downspouts empty onto ground

~~Existing Head Available and Points Where Measured~~:
Row drains large portion of highway immediately before steep drop

Unique Site ID: 73

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
Swales in ROW; bioretention @ end of parking lot
High potential for recharge

SITE CONSTRAINTS

Adjacent Land Use: ? Hard to see thru trees
☐ 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	
☐	☒	Sewer
☐	☒	Water
☐	☒	Gas
☐	☒	Cable
☐	☒	Electric
☐	☐	Electric to Streetlights
☐		Overhead Wires
☐	☐	Other:_____

Hard to discern; utility trench possible in driveway

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

Puddling after recent heavy rain; may normally infiltrate fine or be due to compaction

Unique Site ID:_____

DESIGN OR DELIVERY NOTES

Building had solar panels + evidence of other community involvement; would be good close project site

Possibility of ROW swales as mitigation project?

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

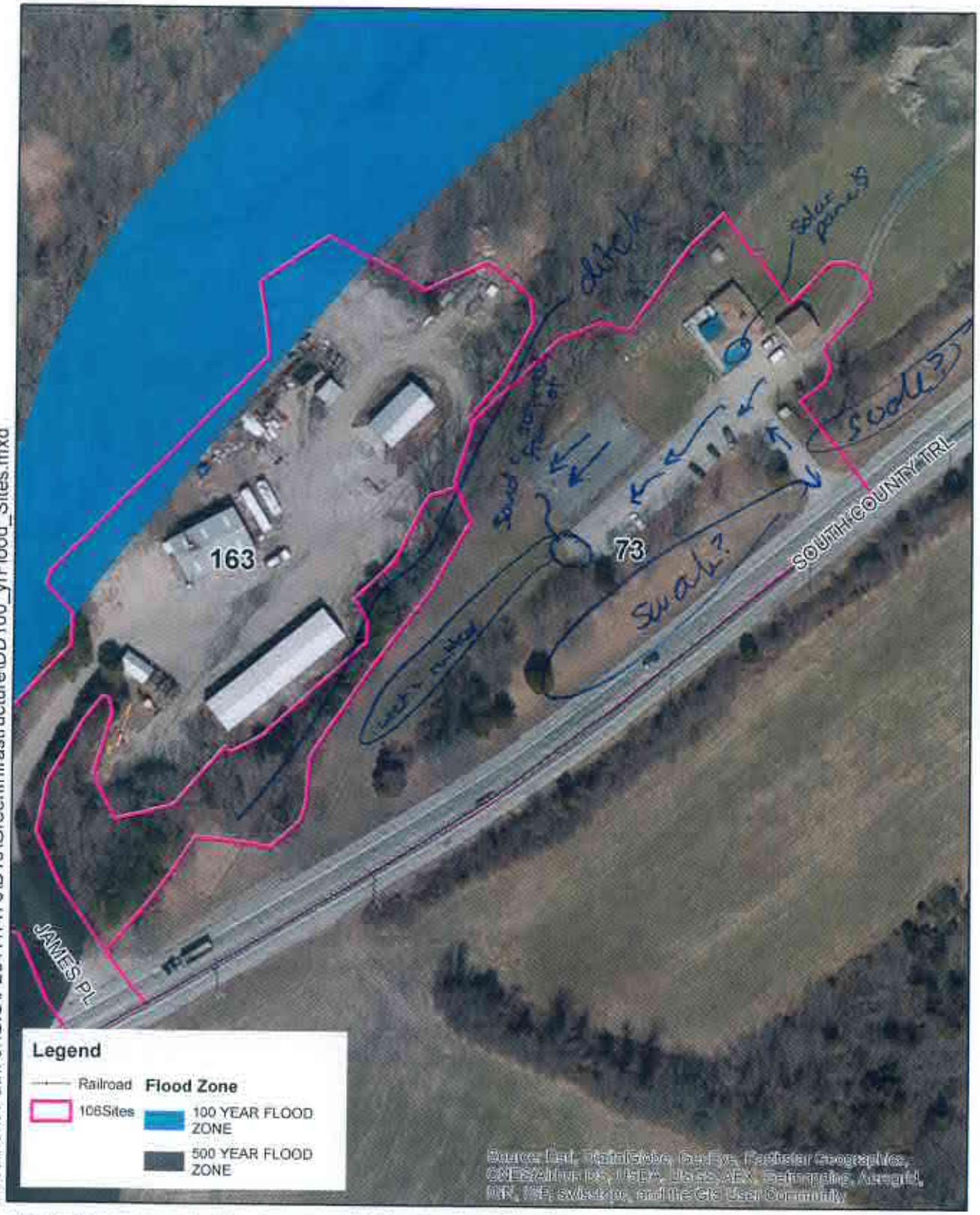
IF YES, TYPE(S):_____

Unique Site ID:_____

SKETCH

Unique Site ID: 73

Exeter Town Animal Shelter
165 S. County Trail
Exeter, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:		UNIQUE SITE ID: 92
DATE: 6/9/16	ASSESSED BY: RW/USG	CAMERA ID: C	PICTURES: 830-900
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Watch Hill Fire Department
Address: 222 Watch Hill Road, Westerly

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Ponds (state + homeowner owned, detention, off-site)
Detention Basin w/ Pretreatment
. collects roof + some PL runoff; seems to in

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

Lots of pavement; ROW simple storm drain system flows to swale which flows to pond
Runoff seems well-managed on site

~~Existing Head Available and Points Where Measured:~~

Unique Site ID: 92

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Row Infiltration @ double CB to help handle water volume

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	
☐	☒	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

Unique Site ID: 92

SKETCH

Unique Site ID: 92

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

Unique Site ID: 92

Watch Hill Fire Department
222 Watch Hill Road
Westerly, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 93	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 900-930
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: _____
Address: _____

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

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

Proposed Retrofit Location:

Storage
- ☐ Existing Pond
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other: _____
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: large area uphill/offsite drains to drainage system

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

EXISTING STORMWATER MANAGEMENT

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

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

large conveyance system throut PL, w/many DMHs + CBS (v. deep)
Sand throut parking lot
Conveyances to CBS very large in places, evidence of large amount of runoff

~~**Existing Head Available and Points Where Measured:**~~

Unique Site ID: 93

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [x] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [x] Infiltration
- [ ] Created Wetland
- [x] Swale
- [x] Bioretention
- [ ] Other:

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

Convert sidewalks to bioswales
Underground infilt. to handle large volume of runoff
Bioretention

SITE CONSTRAINTS

Adjacent Land Use:
- [x] Residential
- [x] Commercial
- [ ] Institutional
- [ ] Industrial
- [ ] Transport-Related
- [ ] Park
- [ ] Undeveloped
- [ ] Other:

Possible Conflicts Due to Adjacent Land Use? [ ] Yes [ ] No

If Yes, Describe:

Access:
- [x] No Constraints

Constrained due to
- [ ] Slope
- [ ] Space
- [ ] Utilities
- [ ] Tree Impacts
- [ ] Structures
- [ ] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [ ] Unknown

Yes	Possible	
[ ]	[x]	Sewer
[ ]	[x]	Water
[ ]	[x]	Gas
[ ]	[x]	Cable
[ ]	[x]	Electric
[x]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[x] Not Probable

How many?
Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 93

SKETCH

Unique Site ID: 93

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [ ] Confirm property ownership
- [x] Confirm drainage area
- [x] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [x] Complete concept sketch
- [ ] Obtain existing stormwater practice as-builts
- [x] Obtain site as-builts
- [x] Obtain detailed topography
- [x] Obtain utility mapping
- [x] Confirm storm drain invert elevations
- [x] Confirm soil types
- [ ] Other: need to email Postmaster to get plans

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S): _____

Unique Site ID: 93

U.S. Post Office
110 Town Harvey Road
Westerly, RI

Many CBs

No ponding issues

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 95	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: —	PICTURES: —
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Westerly Fire Department
Address: 180 Beach Street, Westerly RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Entirely w/in 100 + 500 yr floodplain

Existing Head Available and Points Where Measured:

Unique Site ID: 95

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

None - site w/in floodplain

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: FLOODPLAIN

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

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

Unique Site ID: 95

SKETCH

Unique Site ID: 93

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 95

Westerly Fire Department
180 Beach Street
Westerly, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 99	
DATE: 6/2/16	ASSESSED BY: RLW/WG	CAMERA ID: 1	PICTURES: - 14:4/5
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Burlingame Management Area
Address: Burlingame State Park Rd/Legion town Road

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible
If Yes, Describe: one CB in parking lot @ maintenance area drains to distant swale downslope

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

Some minor erosion along roads + in campsites but no major problem areas

~~**Existing Head Available and Points Where Measured:**~~

Unique Site ID: 99

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention None
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other:_____

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

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	
☐	☐	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

Unique Site ID: 99

SKETCH

Unique Site ID: 99

DESIGN OR DELIVERY NOTES

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:_____

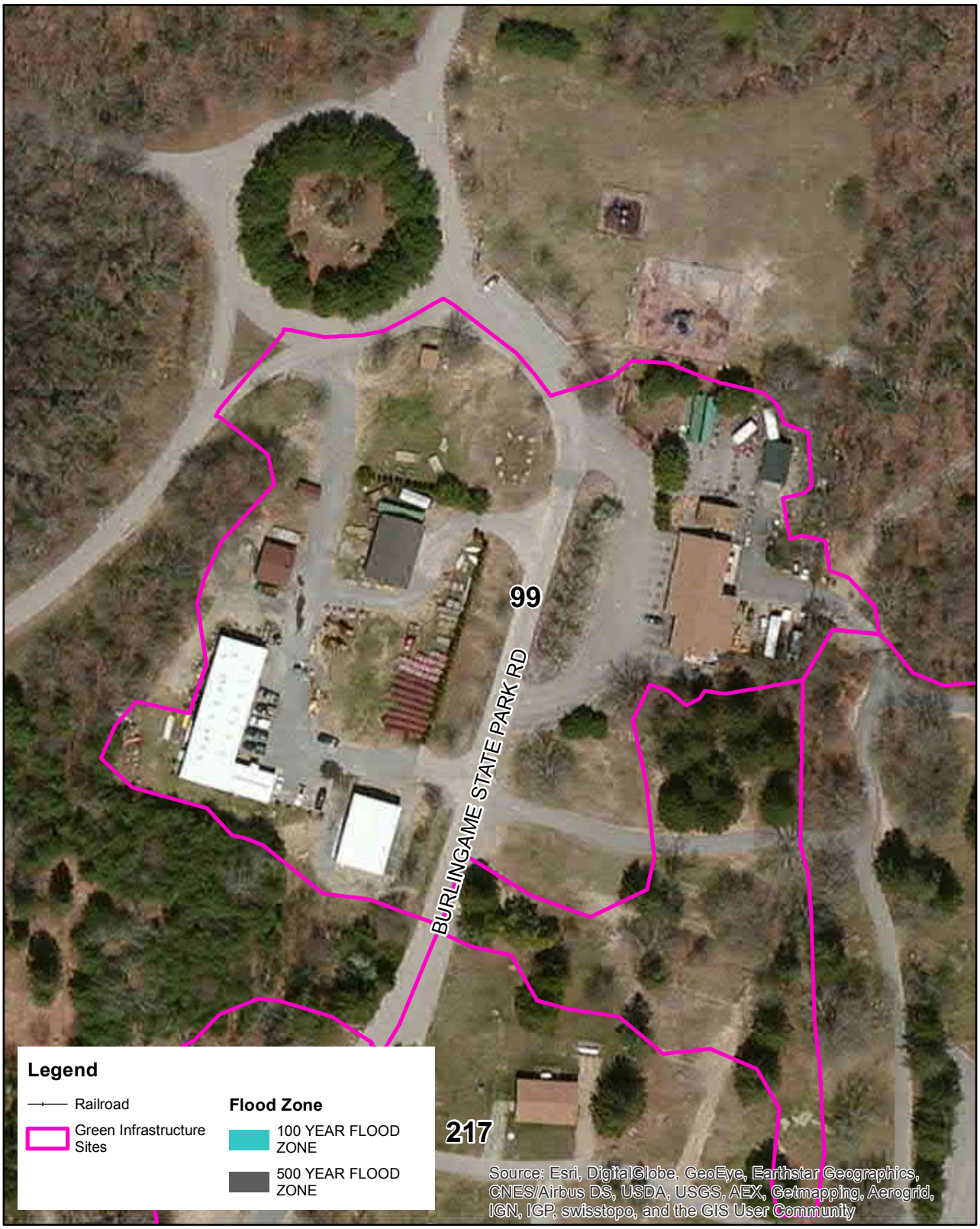
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 99

Burlingame Management Area
Burlingame State Park Rd/ Legiontown Road
Charlestown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 107	
DATE: 6/2/16	ASSESSED BY: RW WG	CAMERA ID: A	PICTURES: 13:10 - 13:20
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: ~~Central Baptist~~ Pilgrim Baptist Church - Central Nursery School
Address: 16 Elm Street, Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Existing Head Available and Points Where Measured:

Need approval for access; revisit week of June 6?

Unique Site ID: 101

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

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	
☐	☐	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

Unique Site ID: 101

SKETCH

DESIGN OR DELIVERY NOTES

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:_____

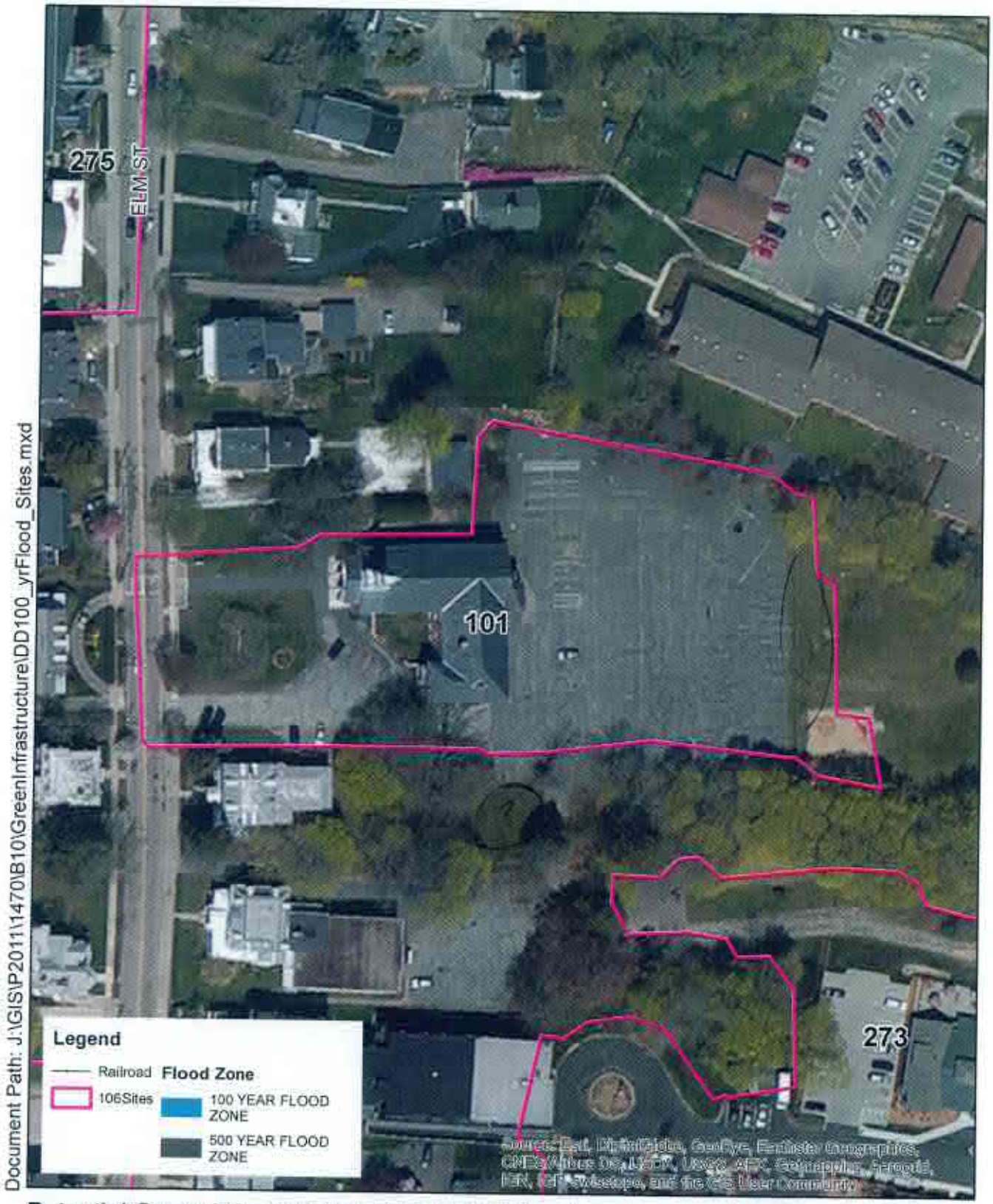
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 101

Pilgrim Baptist Church- Central Nursery School
16 Elm Street
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 102	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 930 - 10
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Grace United Methodist Church
Address: 10 Park Avenue, Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Roof runoff directed to PL; PL drains to residential backyards
Evidence of ponding (+ sed deposition) in low corner
No CBs, drains

Existing Head Available and Points Where Measured:

Unique Site ID: 102

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale ☐ Other: ~~permeable pavers~~

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:
Bioretention in messy grass strip along parking lot (appears unkempt)
Regrade parking lot to direct to basin, @ top
Possible RAW swale!

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	
☐	☑	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

Unique Site ID: 102

SKETCH

Unique Site ID: 102

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S):_____

Unique Site ID: 102

Grace United Methodist Church
10 Park Avenue
Westerly, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: # 103	
DATE: 6/7/16	ASSESSED BY: RLW, WG	CAMERA ID: A	PICTURES: 1115 - 1139
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Church of the Immaculate Conception
Address: 111 High Street, Westerly RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈

Notes: Bottom of "bowl"; need to map drainage area

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☐ No ☐ Possible
If Yes, Describe:
Grey infrastructure only

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Parking lot contains ~ CBs + one long drain in driveway (C in PL)
Steep slopes generally surround; more CBs contributing from top of slope??
2nd ary access road/alley contains CB + is adjacent to open lawn; ~~flat~~
Downspouts straight into ground

Existing Head Available and Points Where Measured:

Unique Site ID: 103

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

offline practice along alley; curb cut? bioretention/grotto?
infiltration under lower end of parking lot

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	
☐	☒	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

Unique Site ID: 103

SKETCH

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 103

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 107	
DATE: 6/2/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: 830-900
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Westerly Town Water Department
Address: ~68 White Rocks Rd, Westerly, RI 02891

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☒ ~~Small Parking Lot~~
- ☐ Individual Street
- ☐ Underground
- ☒ ~~Individual Rooftop~~
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ ~~Other: Drive way~~

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes: parking area, building, large lawn
possible opportunity to take storm drainage offline?

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

EXISTING STORMWATER MANAGEMENT

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

Swale captures road runoff + off-site drainage. Pretreatment CROW consists of gravel strip. Swale continues up road to 1st residence on river side of road. GR

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

~~4 wells~~
Lots of sand in pretreatment. Swale heavily vegetetated. Far side of street equipped w/ catch basins. Road relatively new. Gravel provides own conveyance + keeps water from swale?

Existing Head Available and Points Where Measured:

4 wells on property; DPW would not let us assess ~~[illegible]~~

Unique Site ID: 107

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Update ROW swale if needed

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: Manager Attitudes

Conflicts with Existing Utilities:
☐ None
☐ Unknown

Yes	Possible	
☐	☒	Sewer
☒	☐	Water (wells)
☐	☐ ?	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

Unique Site ID: 107

SKETCH

Unique Site ID: 107

Retrofit Reconnaissance Investigation **RRI**

DESIGN OR DELIVERY NOTES

- Spoke to Paul C. (card obtained)
  DPW superintendant
- Paul said he feels uncomfortable w/ BMPs due to presence of drinking water wells
  - has plans of drainage (all stormwater drains to Pawcatuck R. via drains)
- Signs regarding wellhead protection area, cleanup of pet waste, + RIDEM permit for recent storm drain install all attached to fence. ↳ app # 13-011

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: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Unlikely site due to presence of wells; would require coaxing otherly Westerly officials not on site

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): _____

Unique Site ID: 107

Westerly Town Water Department
68 White Rock Road
Westerly, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 108	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1136-1234
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Bradford School (+ St Vincents Catholic Church)
Address: 15 Church St (+ 8 Church St) Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

School: Roof drains prob to storm system; roof sometimes floods in heavy rain
2 CBs in small lot
Parking lots drain to CBs that run to (road?)

Church: No formal drainage; paved areas on rel steep slope; overflows to CBs in road

~~**Existing Head Available and Points Where Measured:**~~

~~Rx~~

Unique Site ID: 108

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☒ Infiltration (Church + School) ☐ Swale ☒ Other: Green Roof (School)

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

Build green roof (w/ solar?) on flat portion of roof; design to ~~the~~ reduce water loading to roof drains (ET + direct toward roof edge); students might have access to roof via stairwell

Underground infiltration in one or more lots?

Det. nature of upcoming expansion and det. if more BMPs could be added

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: church

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

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

Unique Site ID: 108

SKETCH

Unique Site ID: 108

DESIGN OR DELIVERY NOTES

Gpsi'l
ball field heavily used by students

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [ ] Confirm property ownership
- [x] Confirm drainage area
- [x] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [ ] Complete concept sketch
- [ ] Obtain existing stormwater practice as-builts
- [x] Obtain site as-builts
- [x] Obtain detailed topography
- [ ] Obtain utility mapping
- [x] Confirm storm drain invert elevations
- [x] Confirm soil types
- [x] Other: Obtain plans for upcoming construction @ school

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

~~Baseball~~

SITE CANDIDATE FOR FURTHER INVESTIGATION: school	[x] YES	[ ] NO	[ ] MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	[x] YES	[ ] NO	[ ] MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	[ ] YES	[ ] NO	[ ] MAYBE

IF YES, TYPE(S):

Unique Site ID: 108

Bradford School
15 Church Street
Westerly, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 109	
DATE: 6/2/16	ASSESSED BY: RW, WG	CAMERA ID: A	PICTURES: 900-920
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Westerly Packing Co
Address: 15 Springbrook Road Westerly

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☒ ~~Small Parking Lot~~
- ☐ Individual Street
- ☐ Underground
- ☒ ~~Individual Rooftop~~
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ Other: Soil stockpiles, disturbed area

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes: area marked on GIS map drains west to adjacent site

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

EXISTING STORMWATER MANAGEMENT

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

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

Site recently under construction, still ~~appears~~ disturbed. ~~Road Base~~ Parking lot surfaced w/ well-graded gravel. Area below parking lot (west of site potentially owned by same owner receives runoff from upper lot via access road + slope. Some runoff from (south side) back of site enters woods + wetlands on private property to the south

Existing Head Available and Points Where Measured:

Unique Site ID: 109

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
Possible location in stockpile/undeveloped area downhill (west) of site, but unsure of ownership of that area.

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	
☐	☐ ?	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

ponding in compacted areas due to recent site work

Unique Site ID: 109

#109

SKETCH

Unique Site ID: 109

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [x] Confirm property ownership
- [x] Confirm drainage area
- [x] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [x] 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: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Property ownership? Planned land use? Planned additional development of site

Possible parking for site 278?

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): _____

Unique Site ID: 109

Westerly Packing
15 Springbrook Road
Westerly, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 110	
DATE: 6/2/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: ~~76~~ None
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Elementary School
Address: 39 Springbrook Rd, Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈

Notes: School building, grounds

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ ~~Yes~~ ☒ No ☐ Possible
If Yes, Describe:

Grey water drainage (catch basins visible)

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

~~Existing Head Available and Points Where Measured:~~ from front office:
"swamp area on site"

Grades K-4

 limited assessment

Unique Site ID: 110

Need clearance thru superintendants office

PROPOSED RETROFIT

Purpose of Retrofit:
☒ Water Quality ☒ Recharge ? ☐ Channel Protection ☐ Flood Control
☒ Demonstration / Education ☐ Repair ☐ Other:_____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Bioretention or swale w/ native planting plan; visible to demonstration purposes; utilize existing catch basin(s) as overflow structure(s)
-curb cuts or or take portion of traditional storm sewer site drainage offline

SITE CONSTRAINTS

Adjacent Land Use: confirm; too hard to det on site
☐ 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	
☐	☒	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	unable to determine
Evidence of poor infiltration (clays, fines):	☐ Yes	☐ No	
Evidence of shallow bedrock:	☐ Yes	☐ No	
Evidence of high water table (gleying, saturation):	☐ Yes	☐ No	

Unique Site ID: 110

SKETCH

DESIGN OR DELIVERY NOTES

Grounds nicely landscaped; need to match aesthetic

~~Lots of~~

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [ ] Confirm property ownership
- [x] Confirm drainage area
- [x] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [x] Complete concept sketch
- [x] Obtain existing stormwater practice as-builts
- [x] Obtain site as-builts
- [x] Obtain detailed topography
- [x] Obtain utility mapping
- [ ] Confirm storm drain invert elevations
- [ ] Confirm soil types
- [x] Other: Permission to access school sites

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S): _____

Unique Site ID: 116

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 110	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 115-200
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Springbrook Elementary School
Address: 39 Springbrook Road, Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ☑ Possible
If Yes, Describe:

Infiltration/dry wells?
Bioretention or detention basin on S. side of school, poorly maintained

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

water drains outward from building (no significant off-site runoff, if any.
Flow runs largely to CBs. that may be or may lead to infiltration chambers before overflowing to nearby stream

Existing Head Available and Points Where Measured:

Unique Site ID: 110

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Install additional infiltration if needed/not present

Build dense bioretention basin along parking lot for educational purposes

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	
☐	☒	Sewer
☐	☒	Water
☐	☒	Gas
☐	☒	Cable
☒	☐	Electric
☒	☐	Electric to Streetlights
☐		Overhead Wires
☐	☐	Other:_____

1 or both

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

Unique Site ID: 110

SKETCH

Unique Site ID: 110

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 110

Springbrook Elementary School
39 Springbrook Road
Westerly, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

green street

potential BRB

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

entrance used in emergency sit.

potential expansion plans...

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 111	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: ✓
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Bradford Social Club
Address: 2 Bowring Lane, Westerly, RI

Ownership: ☐ Public ☒ Private ☐ Unknown w/ surveillance
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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
No detailed assessment completed

Existing Head Available and Points Where Measured:

Unique Site ID: 111

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☒ Infiltration ☐ Swale ☒ Other: alt: permeable pavement

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

Infiltration under parking lot

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	
☐	☐	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

?

Unique Site ID: ///

SKETCH

Unique Site ID: 111

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 111

Bradford Social Club
2 Bowling Lane
Westerly, RI

Document Path: J:\GIS\P2011\11470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS&O'NEILL

N
W E
S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 12	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 215 - 230
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Babcock Presbyterian Church
Address: 25 Maxson Street, Hopkinton RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes: k

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

EXISTING STORMWATER MANAGEMENT

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

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

No CBs; drains to street down steep driveways

Existing Head Available and Points Where Measured:

Unique Site ID: 12

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

permeable ~~pt~~ or infiltration

* steep slopes limit locations

take curbs out to disperse some runoff into grass?

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: ~~feedstore~~

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

Conflicts with Existing Utilities:
☐ None
☐ Unknown

Yes	Possible		
☒	☐	Sewer	2 wells on site near building
☒	☐	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

Unique Site ID: 112

SKETCH

Unique Site ID: 112

Design or Delivery Notes

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:_____

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):_____

Unique Site ID: 112

Babcock Presbyterian Church
25 Maxson Street
Hopkinton, RI

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

poss: take curb out

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 114	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1230-1245
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: U.S. Post Office
Address: 131 Main Street Hopkinton, RI

Ownership: ☒ Public ☐ Private ☐ Unknown
If Public, Government Jurisdiction: ☐ Local ☐ State ☐ DOT ☒ Other: ~~Fedora~~ Federal

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

Proposed Retrofit Location:

Storage
- ☐ Existing Pond
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other: _____
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes: adjacent residential areas

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

EXISTING STORMWATER MANAGEMENT

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

CBs, mostly plugged

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

Post office, adjacent streets + residential areas drain to CBs
heavy sediment load → packed CBs
CBs still flowing despite being filled w/ sand

Existing Head Available and Points Where Measured:

Unique Site ID: 114

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

linear infiltration or swales along either road (across the road from site)
-add new CB(s) where needed

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	
☐	☒	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

Unique Site ID: 114

SKETCH

Unique Site ID: ~~145~~ 114

DESIGN OR DELIVERY NOTES

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: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

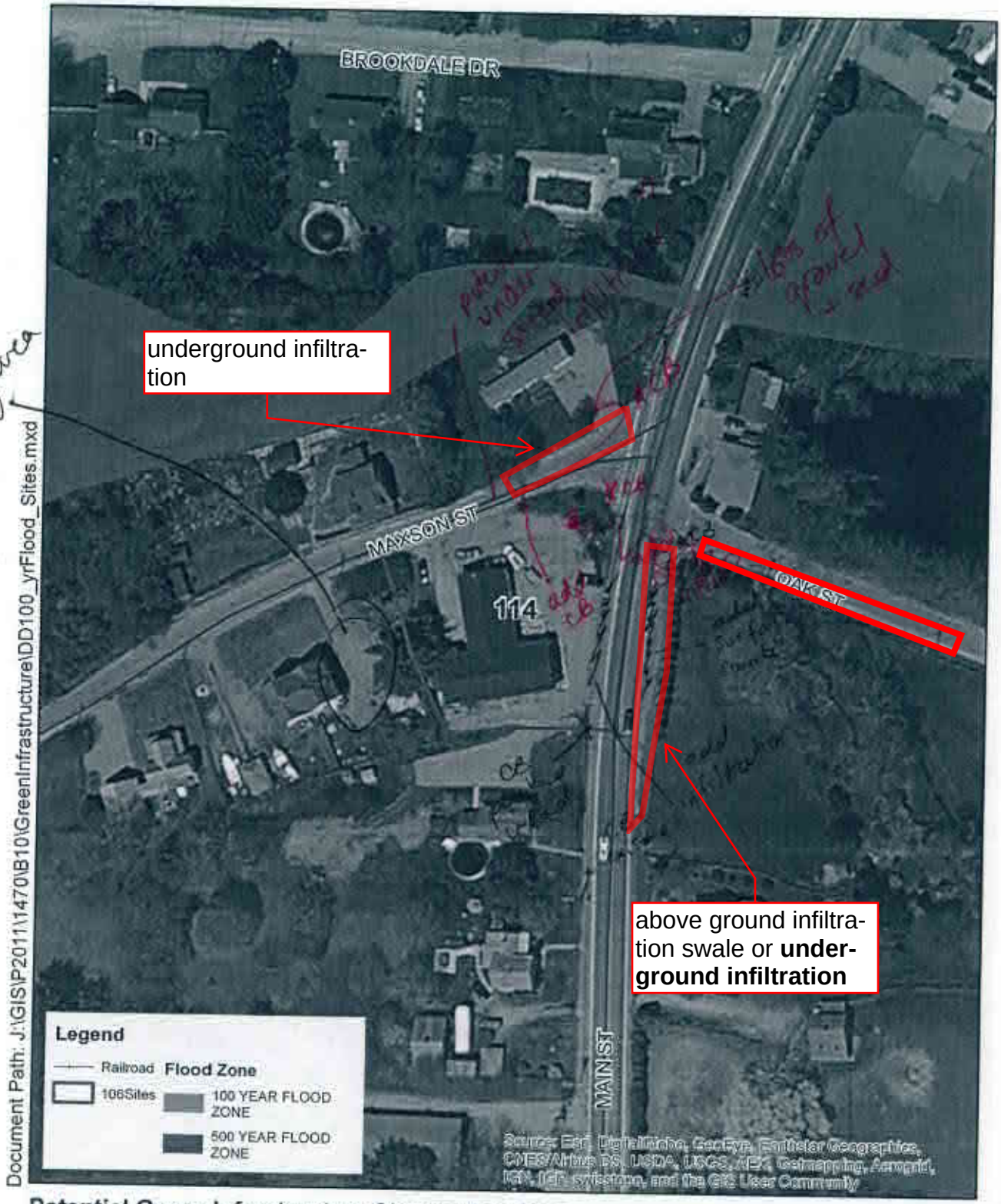
Heavy sediment load to any practice unless nearby driveways are stabilized

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): _____

Unique Site ID: [redacted] 114

U.S. Post Office
131 Main Street
Hopkinton, RI



Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 116	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 230-235
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Seventh Day Baptist Church
Address: 8 Church St, Hopkinton, RI

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
- ☐ Below Outfall
- ☒ In Road ROW ?
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: May extend past trees to the North

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

EXISTING STORMWATER MANAGEMENT

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

planters in parking lot might be bioretention (no surrounding curb) but ~~might~~ may handle little runoff

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

runoff drains to church st., large portion of area recently repaved w/ expanded pavement

Existing Head Available and Points Where Measured:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Place bioretention on w side of church or remove pavement along Row to place bioretention along street

Alt: ~~Inf~~ underground infiltration in Road ROW?

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	
☐	☐	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

Unique Site ID: 116

SKETCH

Unique Site ID: 16

DESIGN OR DELIVERY NOTES

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: _____

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): _____

Unique Site ID: 116

Seventh Day Baptist Church
8 Church Street
Hopkinton, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

entire parking lot FUSD repaved & expanded

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 119	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1245 - 1300
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Ashaway Fire Station
Address: 213 Main Street, Hopkinton RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: mostly on site

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☒ No ☐ Possible
If Yes, Describe:
Street CBs only (main St)

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
paved parking lot + building roof drain back toward cemetery

Sediment pooled in back of lot
downspouts mostly drain into ground

Existing Head Available and Points Where Measured:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

~~Swale~~? Bioretention?
surface infiltration or underground infiltration under parking lot

SITE CONSTRAINTS

Adjacent Land Use:
☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☒ Park Cemetery
☐ 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	
☐	☒	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

Unique Site ID:_____

SKETCH

Unique Site ID: 119

Design or Delivery Notes

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: _____

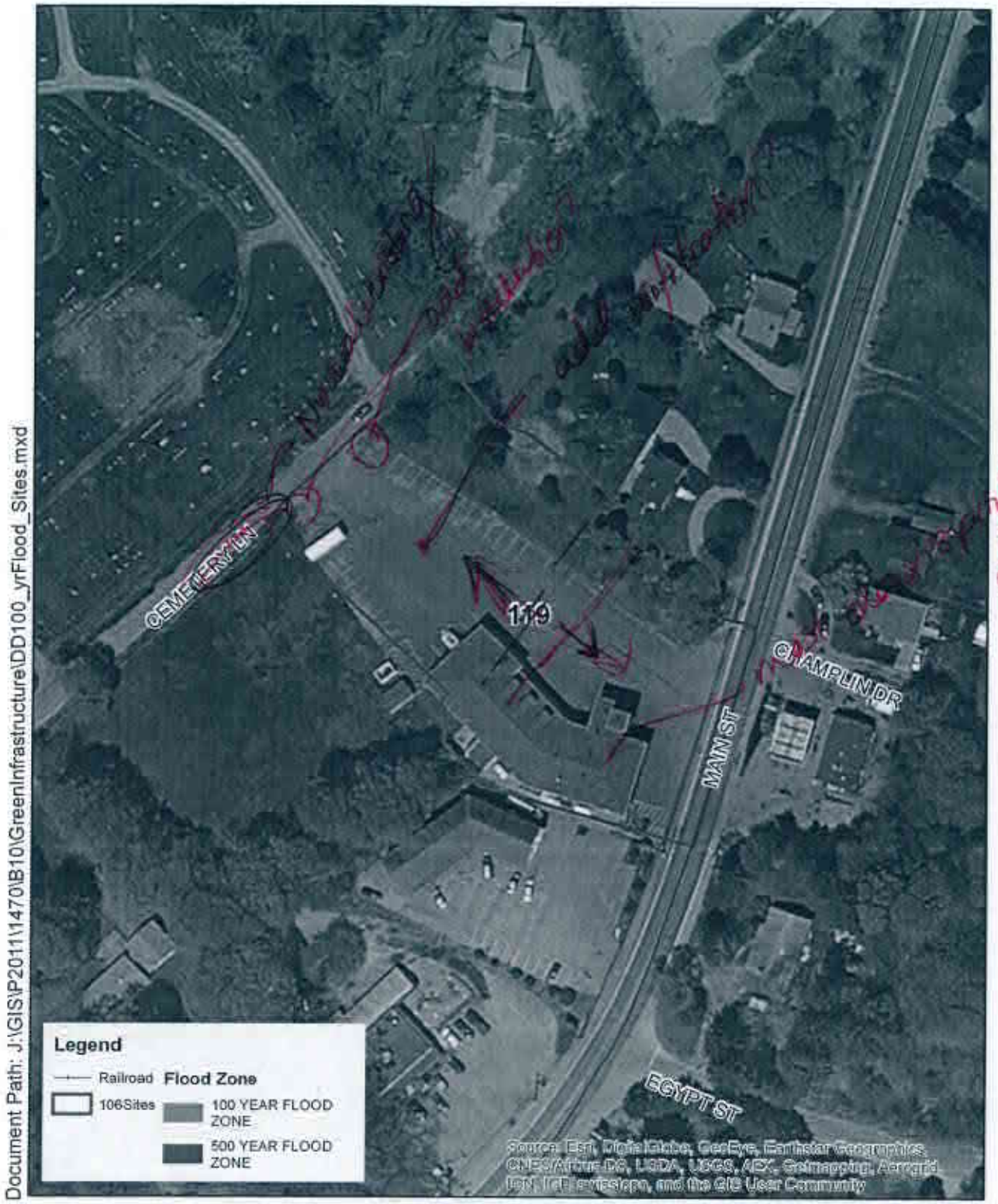
Initial Feasibility and Construction Considerations

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): _____

Unique Site ID: 119

Ashaway Volunteer Fire Association
213 Main Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 125	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 235-245
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Trinity Lutheran Church
Address: Corner of Rte 116 & Wellstown Rd, Hopkinton RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
~~Sm~~ minor swale along road edge; No formal infrastructure

~~Existing Head Available and Points Where Measured~~:

Unique Site ID: 125

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [ ] Demonstration / Education
- [x] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [x] Swale
- [x] Bioretention
- [ ] Other:

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

Swales along row along Wellstown Rd and/or bioretention in greenspace on high St. side of high street

SITE CONSTRAINTS

Adjacent Land Use:
- [x] Residential
- [ ] Commercial
- [x] Institutional
- [ ] Industrial
- [ ] Transport-Related
- [ ] Park
- [x] Undeveloped
- [ ] Other:

Possible Conflicts Due to Adjacent Land Use? [ ] Yes [ ] No

If Yes, Describe:

Access:
- [x] No Constraints

Constrained due to
- [ ] Slope
- [ ] Space
- [ ] Utilities
- [ ] Tree Impacts
- [ ] Structures
- [ ] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [x] Unknown

Yes	Possible	
[ ]	[ ]	Sewer
[ ]	[ ]	Water
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[ ]	Electric
[ ]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[x] Not Probable

How many?

Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 125

SKETCH

Unique Site ID: 125

DESIGN OR DELIVERY NOTES

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:_____

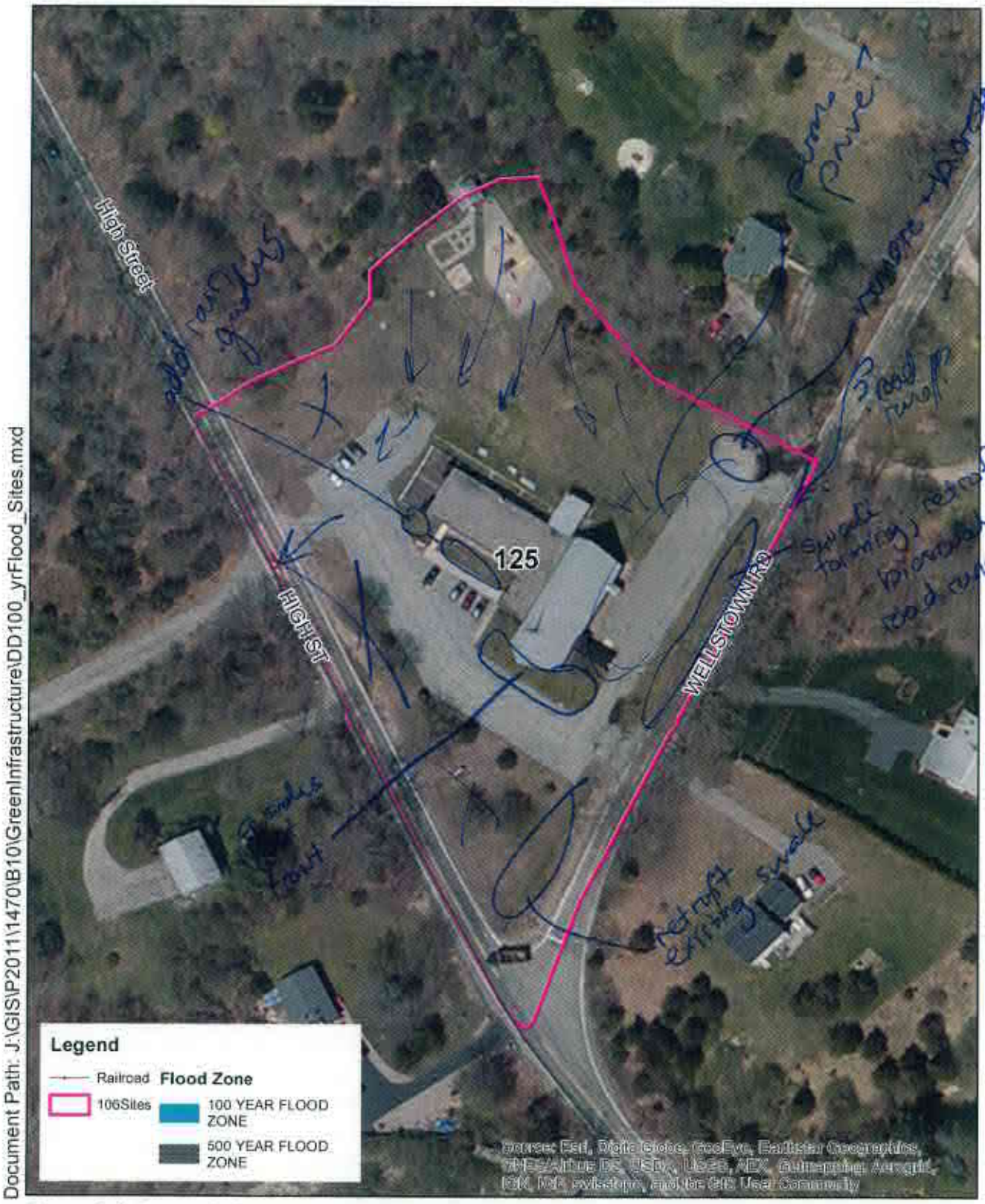
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 125

Trinity Lutheran Church
Corner of Rte 116 and Wellstown Road
Hopkinton, RI



Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 128	
DATE: 7/5/16	ASSESSED BY: RLO/LWG	CAMERA ID: C	PICTURES: 813 - 817
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Shannock Baptist Church
Address: 1632 Shannock Rd Charlestown RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Steep driveway + parking

No erosion problem

Existing Head Available and Points Where Measured:

Unique Site ID: 128

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

NA

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	
☐	☐	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	did not check
Evidence of poor infiltration (clays, fines):	☐ Yes ☐ No	
Evidence of shallow bedrock:	☐ Yes ☐ No	
Evidence of high water table (gleying, saturation):	☐ Yes ☐ No	

Unique Site ID: 128

SKETCH

Unique Site ID: 128

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- ☐ Confirm property ownership
- ☐ Confirm drainage area
- ☐ Confirm drainage area impervious cover
- ☐ Confirm volume computations
- ☐ Complete concept sketch NA
- ☐ 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:_____

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):_____

Unique Site ID: 128

Shannock Baptist Church
1632 Shannock Road
Charlestown, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Shannock Baptist Church
1632 Shannock Road
Charlestown, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 129	
DATE: 7/5/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 819-838
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: St Mary's Catholic Church
Address: 451-455 Carolina Back Rd, Charlestown RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☐ No ☒ Possible
If Yes, Describe:
det. if roof gutters go to dry well

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
most runoff appears to drain to road + contains a lot of sand
No erosion problems on site but are created along highway

Existing Head Available and Points Where Measured:

Unique Site ID: 129

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Infiltration - under parking lots

Bioretention - in triangle area across street from church
- natural low point; one pipe currently installed; receives road runoff
- possible public property (park)

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	
☐	☐	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

ponding water could be due to road runoff of fines

Unique Site ID: 129

Design or Delivery Notes

WPWA should determine re paving plans for church parking lots ~~to dep. pass~~ ~~St~~.

- repaving = opportunity for underground infiltration + /or permeable paving

Bioretention is better option

Follow-up Needed to Complete Field Concept

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

Initial Feasibility and Construction Considerations

Site Candidate for Further Investigation:	[x] Yes	[ ] No	~~[ ] Maybe~~
Is Site Candidate for Early Action Project(s):	[ ] Yes	[x] No	[ ] Maybe
If no, site candidate for other Restoration Project(s):	[ ] Yes	[x] No	[ ] Maybe

If yes, type(s): _____

Unique Site ID: 129

SKETCH

Unique Site ID: 129

St. Mary's Catholic Church
451-455 Carolina Back Road
Charlestown, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

St. Mary's Catholic Church
451-455 Carolina Back Road
Charlestown, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 136	
DATE: 6/16/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 13:30 – 14:00
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Richmond Carolina Fire District
Address: 200 Richmond Town House Rd

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: None

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

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Minor drainage problems (erosion, deposition); no impacts visible off-site

"Nothing bad enough to ~~the~~ throw money at"

Existing Head Available and Points Where Measured:

Unique Site ID: 136

PROPOSED RETROFIT

Purpose of Retrofit:
☐ Water Quality ☐ Recharge ☐ Channel Protection ☐ Flood Control
☐ Demonstration / Education ☐ Repair ☐ Other: No need

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention NONE
☐ Filtering Practice ☐ Infiltration ☐ Swale ☐ Other:

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

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	
☒	☐	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

Unique Site ID: 136

DESIGN OR DELIVERY NOTES

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: None

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): _____

Unique Site ID: 136

SKETCH

Unique Site ID: 136

Richmond Carolina Fire District
203 Richmond Town House Road
Richmond, RI

Document Path: J:\GISP2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID:	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 137
GPS ID:	LMK ID:	LAT:	LONG: 11:15 - 11:23

SITE DESCRIPTION

Name: Great Swamp Management Area
Address: 160-170 Great Neck Rd, South Kingstown, RI

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: None

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

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 ≈ _____

Notes: Maintenance area - poss spills, high sed loads from unimproved roads

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

EXISTING STORMWATER MANAGEMENT

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

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

No pavement; all impervious surfaces are gravel
Existing ponds on site; woods surround site

Existing Head Available and Points Where Measured:

Unique Site ID: 137

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

~~None really easily feasible~~
~~conversion of ROW Swale to filtering practice to really~~
~~use catch basin as overflow~~

None feasible

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		
☐	☐	Sewer	
☒	☐	Water	wells
☐	☐	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

Unique Site ID: 137

SKETCH

Unique Site ID: 137

DESIGN OR DELIVERY NOTES

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:_____

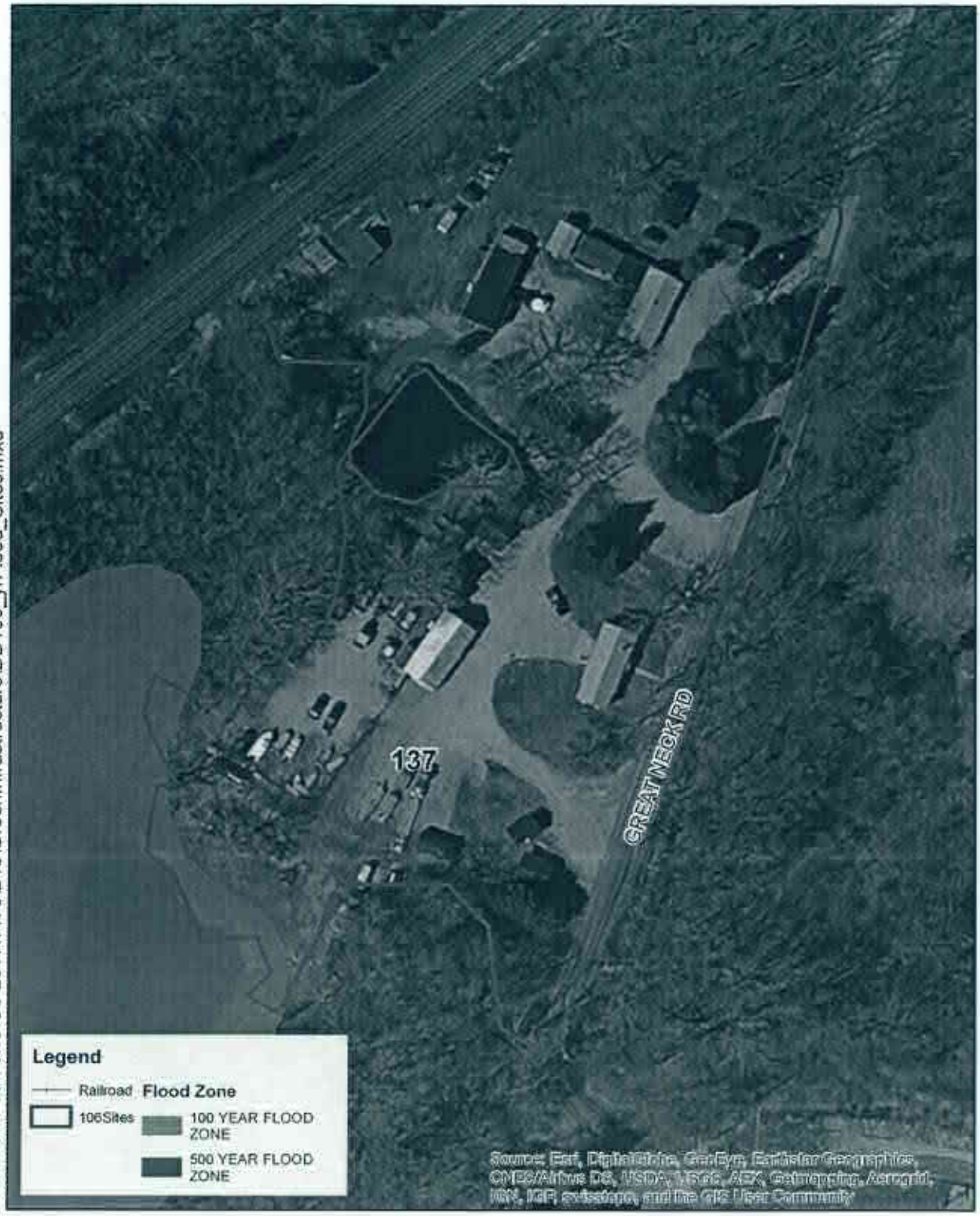
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 137

Great Swamp Management Area
160- 170 Great Neck Road
South Kingstown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:		UNIQUE SITE ID: 139
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1030-11
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: J&D West Kingstown Services/Courthouse Center for the arts
Address: 3481 Kingstown Road, South Kingstown, RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈

Notes: Row swale would drain road + site

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

EXISTING STORMWATER MANAGEMENT

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

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

Small drainage area; no obvious erosion or contamination problems
only formal drainage @ street (swale)
downspouts go into ground.

~~Existing Head Available~~ and Points Where Measured:

Unique Site ID: 139

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [ ] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [x] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [ ] Swale
- [x] Bioretention
- [ ] Other:

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

Parking lot bioretention?
(replace tree islands)

Retrofit swale in ROW?

SITE CONSTRAINTS

Adjacent Land Use:
- [x] Residential
- [x] Commercial
- [x] 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
- [x] Utilities
- [ ] Structures
- [ ] Space
- [x] Tree Impacts
- [ ] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [ ] Unknown

Yes	Possible	
[ ]	[ ]	Sewer
[x]	[ ]	Water wells
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[ ]	Electric
[ ]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[x] Probable	[ ] Not Probable

How many?
Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 139

SKETCH

Unique Site ID: 139

DESIGN OR DELIVERY NOTES

allow for incorporation of art

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: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

No apparent need for treatment/source of contamination

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): _____

Unique Site ID: 139

J & D West Kingstown Services/ Courthouse Center for the Arts
3481 Kingstown Road
South Kingstown, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 143	
DATE: 7/5/16	ASSESSED BY: RWhitty	CAMERA ID: C	PICTURES: ~11:40 - 11:46
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: West Kingston Baptist Church now Harbor Church
Address: 263 Waites Corner Road, South Kingstown RI

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
- ☐ Below Outfall
- ☑ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☑ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Road drains into site

~~Drainage~~

Existing Head Available and Points Where Measured:

Unique Site ID: 143

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Bioretention at front to capture site + road

Some disconnection for lot or puddled corner (e.g. perm spots or underground infilt.)

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: shade

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

Unique Site ID: 143

Design or Delivery Notes

Follow-up Needed to Complete Field Concept

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

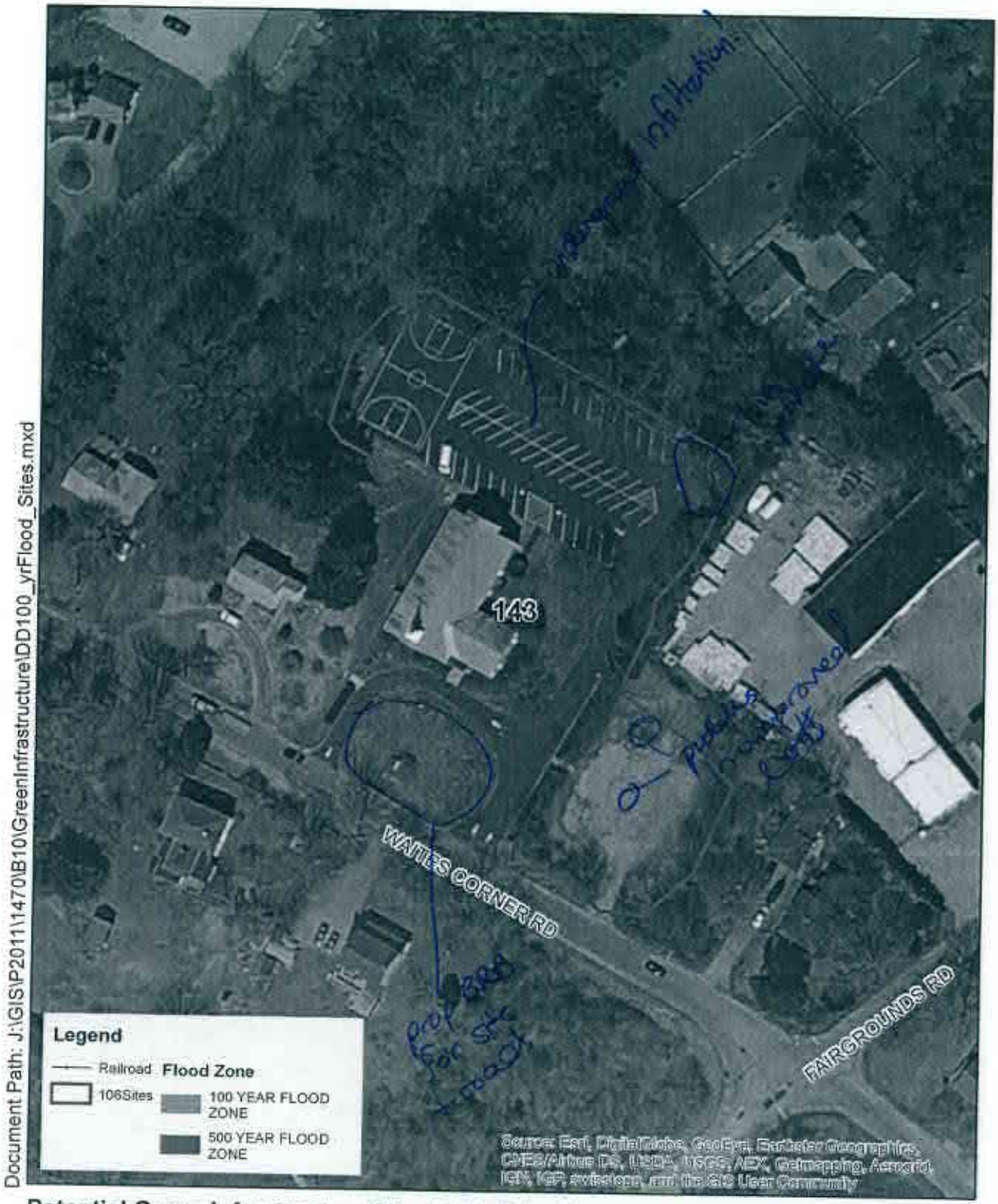
If yes, type(s): _____

Unique Site ID: 143

SKETCH

Unique Site ID: 143

West Kingston Baptist Church
263 Waites Corner Road
South Kingstown, RI



Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 144	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 9:00 - 9:9
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Farm shed w/ Greenhouses
Address:

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible
If Yes, Describe:
Swale, grass acts as filterstrips

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

Existing Head Available and Points Where Measured:

Unique Site ID: 144

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

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	
☐	☐	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

Unique Site ID: 144

SKETCH

Unique Site ID: 144

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 144

Farm Shed with Greenhouses
370 Plains Road
South Kingstown, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 145	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1305 - 1330
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Wood River Health Services
Address: 823 Main Street, Hopkinton, RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☐ No ☐ Possible
If Yes, Describe:
~~paved~~

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
paved swales drain roof + parking lot to Main Street

~~Existing Head Available and Points Where Measured:~~
lots of sed in Rte 3 swale @ bottom of hill

Unique Site ID: 145

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

w/ check dams
- capture water from parking lot + roof w/out losing parking spaces
- route to swale along road or bioretention @ light pole in parking lot

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	
☐	☐ ?	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

Unique Site ID: 145

DESIGN OR DELIVERY NOTES

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: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

private property w/ steep slopes + limited space
→ unlikely 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): _____

Unique Site ID: 145

SKETCH

Unique Site ID: 145

Wood River Health Services
823 Main Street
Hopkinton, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 147	
DATE: 6/13/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: ~~152~~ 11-11:15
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: ~~Courthouse~~ Fire Department
Address:

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Downspouts empty to ground
No formal treatment visible

Existing Head Available and Points Where Measured:

Unique Site ID: 147

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Possible Rain swale conversion on neighbor's lawn

Rooftop disconnection to bioretention in back

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	
☐	☒	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

Unique Site ID: 147

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 147

* no aerial available

SKETCH

Unique Site ID: 147

Print map + draw concept

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:		UNIQUE SITE ID: 152
DATE: 7/5/16	ASSESSED BY: RW/WS	CAMERA ID: C	PICTURES: 11:35-11:40
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: South Kingstown Nursing + Rehab
Address: 2115 South County Trail, South Kingstown, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Formal CBs in parking lot

Existing Head Available and Points Where Measured:

Unique Site ID: 152

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [ ] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [ ] Swale
- [x] Bioretention
- [ ] Other:

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

Bioretention in front lawns

SITE CONSTRAINTS

check aerial?

Adjacent Land Use:
- [x] 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
- [x] Space
- [ ] Utilities
- [ ] Tree Impacts
- [ ] Structures
- [x] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [x] Unknown

Yes	Possible	
[ ]	[ ]	Sewer
[ ]	[ ]	Water
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[ ]	Electric
[ ]	[ ]	Electric to Streetlights
[x]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[x] Not Probable

How many?
Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 152

SKETCH

Unique Site ID: 152

Design or Delivery Notes

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: _____

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): _____

Unique Site ID: 152

South Kingstown Nursing and Rehab
2115 South County Trail
South Kingstown, RI

Document Path: J:\GIS\P2011\1470\B10\Green\Infrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS&O'NEILL

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 154	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: —	PICTURES: 1 —
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Hope Valley Wyoming fire District
Address:

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: NO

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

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
All impervious, drains to CBs that go straight to river

Existing Head Available and Points Where Measured:

Unique Site ID:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

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	
☐	☐	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

Unique Site ID:_____

SKETCH

Unique Site ID:_____

DESIGN OR DELIVERY NOTES

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:_____

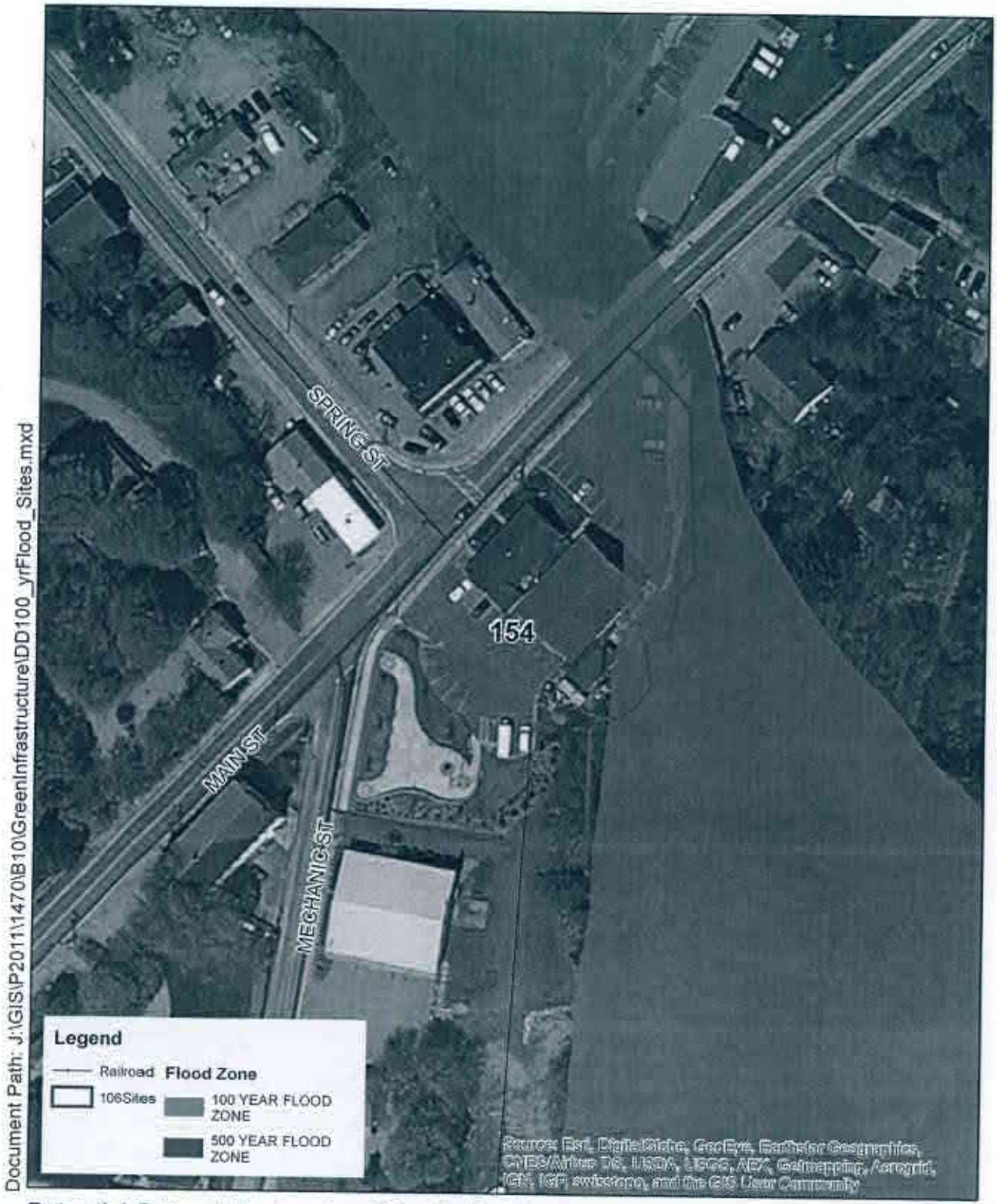
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID:_____

Hope Valley- Wyoming Fire District
996 Main Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N
W E
S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 155	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 11:50 - 12:00
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Langworthy Public Library
Address: 249 Spring Street, Hopkinton RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes: limited to on-site (road is curbed)

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

EXISTING STORMWATER MANAGEMENT

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

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

gravel currently plowed; gravel pushed into windrows @ bottom of lot; some sed going over bank into reservoir; no roof drains to gutters into the ground; outfall loc'n unknown but likely over edge of embankment

Existing Head Available and Points Where Measured:

Unique Site ID: 155

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: porous pavement w/ level spreader course
☒ Other: rooftop disconnection

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

permeable pavers in lot
disconnect gutters to flow over permeable lot
include practices to disperse flow

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

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

Unique Site ID:_____

SKETCH

Unique Site ID:_____

Design or Delivery Notes

Follow-up Needed to Complete Field Concept

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

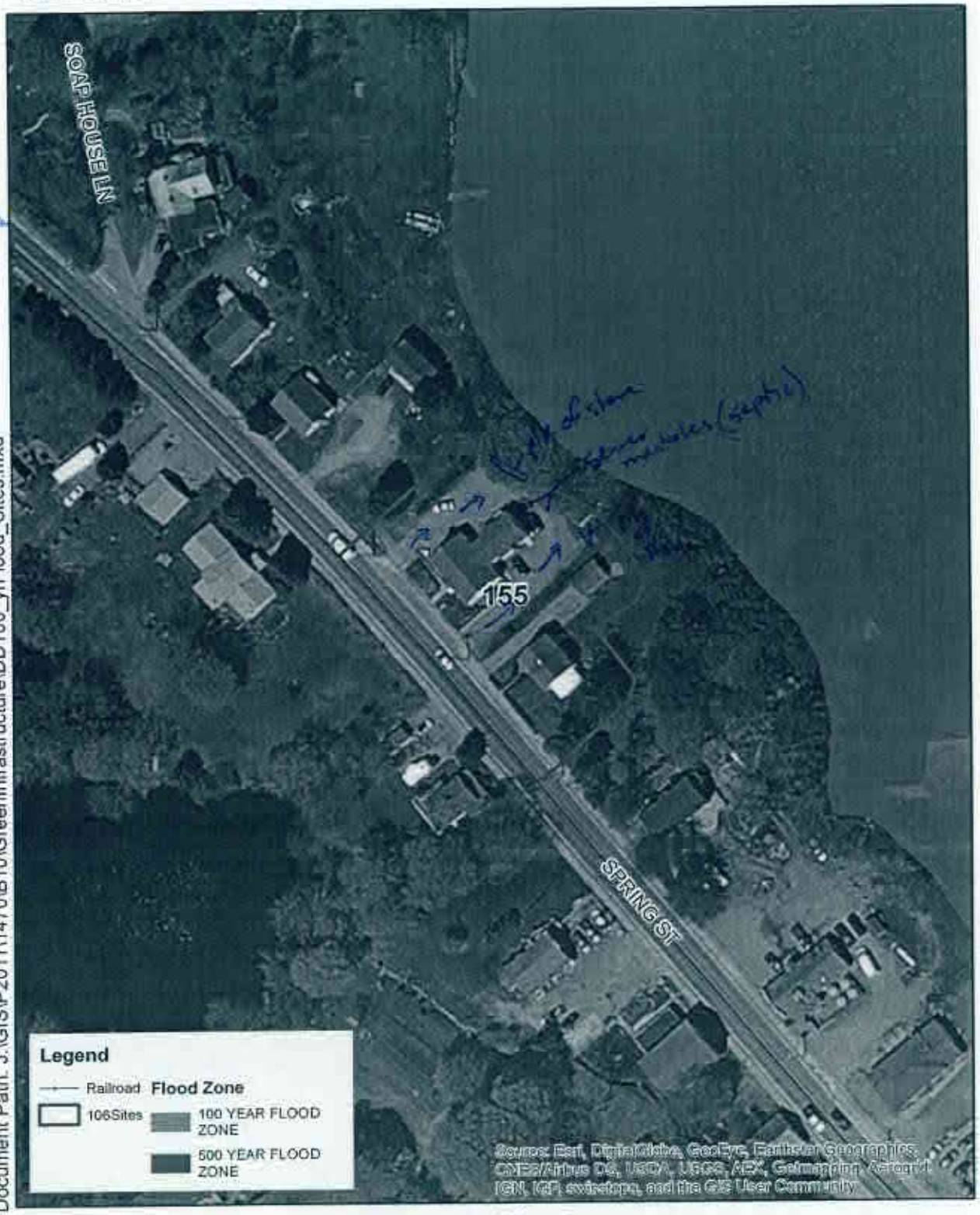
Initial Feasibility and Construction Considerations

Site Candidate for Further Investigation:	[x] Yes	[ ] No	[ ] Maybe
Is Site Candidate for Early Action Project(s):	[ ] Yes	[x] No	[x] Maybe
If no, site candidate for Other Restoration Project(s):	[ ] Yes	[ ] No	[ ] Maybe

If yes, type(s):_____

Unique Site ID: 155

Langworthy Public Library
24 Spring Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 157	
DATE: 6/6/16	ASSESSED BY:	CAMERA ID:	PICTURES: 13:15 - 13:30
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Richmond Police Dept
Address: 1168 Main St, Richmond RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes: on-site only

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
parking lot full of sand; roof drains to parking lot

Many large CBs (?) - v. deep, one replaced @ some pt

Existing Head Available and Points Where Measured:

Unique Site ID: 157

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ~~☒ Bioretention~~
☐ Filtering Practice ☒ Infiltration ☐ Swale ☒ Other: rooftop disconnection (combine w/ perm. paving)

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

to move planters/basins from building, more sidewalk toward building
permeable parking spaces or underground

Sweep!

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	
☒	☐	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

Unique Site ID: 157

SKETCH

Unique Site ID: 157

DESIGN OR DELIVERY NOTES

good potential!

det if dry wells on site

Clear flooding + sed problem (large berms of deposited material @ back of lot; parking lot coated in sand

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Are there already dry wells on site?

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

IF YES, TYPE(S):_____

Unique Site ID: 157

Richmond Police Department
1168 Main Street
Richmond, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 159	
DATE: 7/5/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 11-11:15
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Rhode Island State Police
Address: 54 Nooseneck Hill Road Richmond, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Road drains to highway; no formal infrastructure; water currently drains down highway directly into creek/wetland @ bridge
x is damaging bridge

Existing Head Available and Points Where Measured:

V. close to impaired water!

PROPOSED RETROFIT

Purpose of Retrofit:
☒ Water Quality ☒ Recharge ☒ Channel Protection ☐ Flood Control
☒ Demonstration / Education ~~☒ Repair~~ ☐ Other:_____

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
Regrade parking lot toward lawn; disconnect downspouts
Construct bioretention basin(s) in front lawn to capture both; grass pretreatment

Overflow? - difficult - need exfiltr system

SITE CONSTRAINTS

Adjacent Land Use:
☒ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☒ Other: AG
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	
☐	☐	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

Unique Site ID: 159

DESIGN OR DELIVERY NOTES

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:_____

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): Meadow/wildflowers/butterflys in adjacent lawn

Unique Site ID: 159

SKETCH

Unique Site ID: 159

Rhode Island State Police
54 Nooseneck Hill Road
Richmond, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:		UNIQUE SITE ID: 163
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: 7:30-8
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Exeter Public Works "Adjacent to Animal Shelter
Address: 175 South County Trail, Exeter, RI

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~~ Basin
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈

Notes: off-site little contributing area

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

EXISTING STORMWATER MANAGEMENT

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

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

Existing Head Available and Points Where Measured:

Unique Site ID: 163

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

None needed; public works maintains detention basin on site due to high sand loads

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	
☐	☐	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

Unique Site ID: 163

SKETCH

Unique Site ID: 163

DESIGN OR DELIVERY NOTES

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:_____

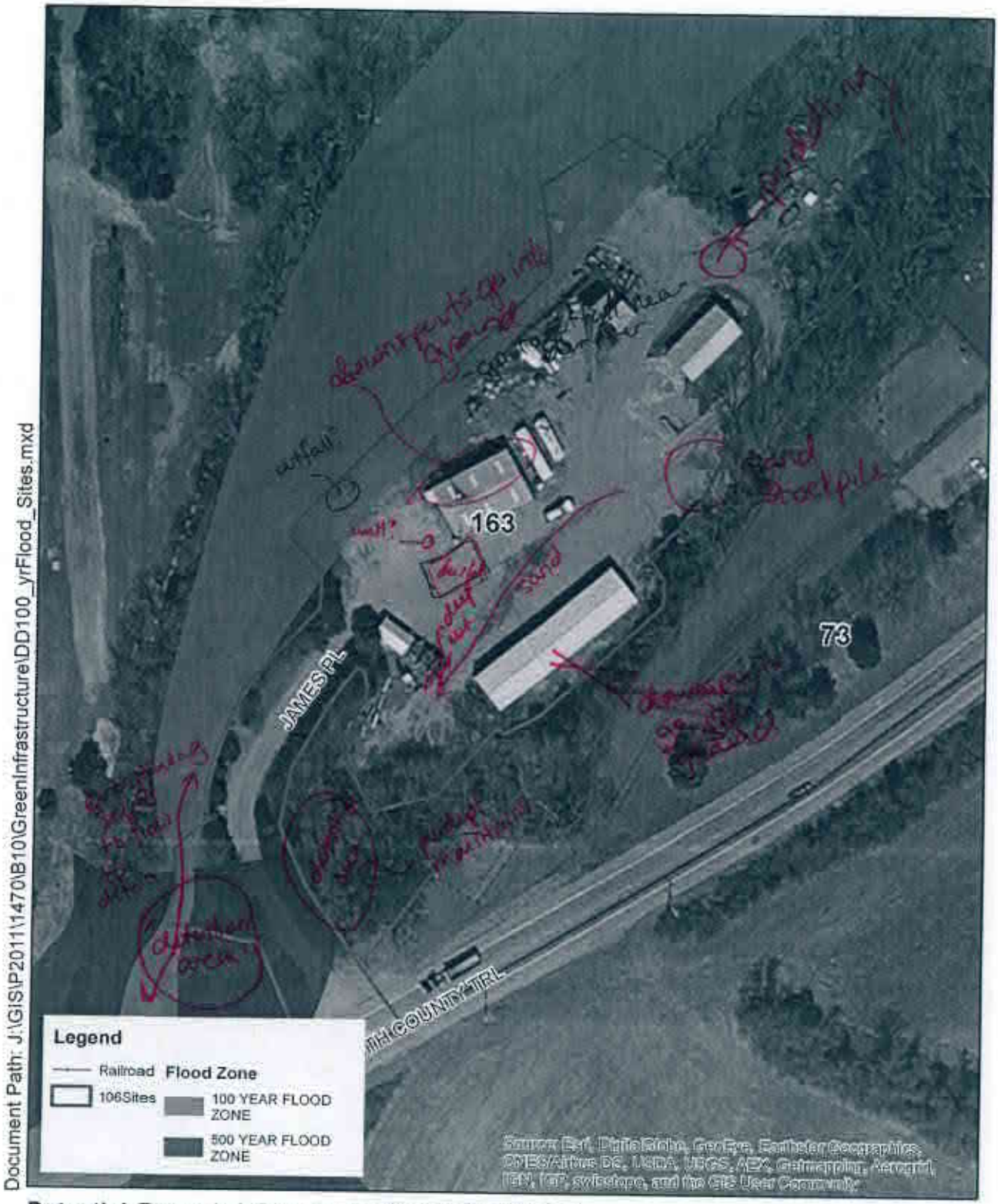
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 163

Unknown
175 S. County Trail
Exeter, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

sand does not seem to be getting

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 172	
DATE: 6/16/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 8:45-9:00
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name:

Address: 742 old Ten Rod Road, Exeter, RI

Ownership: ☐ Public ☐ Private ☒ Unknown Church?
If Public, Government Jurisdiction: ☐ Local ☐ State (ROW) ☐ DOT ☐ Other:

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

Proposed Retrofit Location:

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

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ~~☐ Yes~~ ☒ No ☐ Possible
If Yes, Describe:

Most runoff turns to rock channel & forest before entering creek

~~Runoff to~~

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

Runoff toward road flows through rock wall @ concentrated pt; swale along road carries water under driveway & along road swale is v. steep; all slopes around lot v. steep

No soil buildup on lot; appears unsanded

Existing Head Available and Points Where Measured:

Unique Site ID: 172

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:
small basin/bioswale in road ROW (RH side of driveway) LH side of driveway too steep?

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	
☐	☐	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

Unique Site ID:_____

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [x] 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:_____

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):_____

Unique Site ID:_____

SKETCH

Unique Site ID:_____

Building with parking Lot
742 Ten Rod Road
Exeter, RI

Potential
swale

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 172	
DATE: 6/16/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 8:45-9:00
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name:

Address: 742 old Ten Rod Road, Exeter, RI

Ownership: ☐ Public ☐ Private ☒ Unknown Church?
If Public, Government Jurisdiction: ☐ Local ☐ State (ROW) ☐ DOT ☐ Other:

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

Proposed Retrofit Location:

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

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ~~☐ Yes~~ ☒ No ☐ Possible
If Yes, Describe:

Most runoff turns to rock channel & forest before entering creek

~~Runoff to~~

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

Runoff toward road flows through rock wall @ concentrated pt; swale along road carries water under driveway & along road swale is v. steep; all slopes around lot v. steep

No soil buildup on lot; appears unsanded

Existing Head Available and Points Where Measured:

Unique Site ID: 172

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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

Describe Elements of Proposed Retrofit, Including Surface Area, Maximum Depth of Treatment, and Conveyance:
small basin/bioswale in road ROW (RH side of driveway) LH side of driveway too steep?

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	
☐	☐	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

Unique Site ID:_____

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [x] 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:_____

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):_____

Unique Site ID:_____

SKETCH

Unique Site ID:_____

Building with parking Lot
742 Ten Rod Road
Exeter, RI

Potential
swale

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 173	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 820-845
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Exeter Town Hall + Fire Dept
Address: 675 Old Tenmile Rd. Exeter

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
No catch basins or Swales on draining main site
Road shows evidence of high sed load - erosion/deposition along pavement edge.

~~**Existing Head Available and Points Where Measured:**~~

Unique Site ID: 173

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Bioretention in locations that avoid bedrock + util. + are highly visible; one site would require removal of massive tree stump

Overtop over berm or level spreader back into road.

Possibly excavate +/or armor roadside swale to prevent erosion + road damage

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	
☐	☒	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

Unique Site ID: 173

SKETCH

Unique Site ID: 173

DESIGN OR DELIVERY NOTES

parking lots @ both subsites are v. new
-unlikely for infiltration or permeable paving

sites are currently well maintained

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S):

Unique Site ID: 173

Exeter Town Hall
675 Ten Rod Road
Exeter, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

FUSS & O'NEILL

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 179	
DATE: 7/5/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 140 - 145
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Small Building w/ Parking Lot Town Hall Annex
Address: 302 Victory Highway West Greenwich, RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☐ Small Parking Lot
- ☐ Individual Street
- ☐ Underground
- ☐ Individual Rooftop
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ Other: Adjacent site

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Existing Head Available and Points Where Measured:

Unique Site ID: 179

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
On adjacent lot...
Bioswale in Road ROW

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	
☐	☐	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

Unique Site ID: 179

DESIGN OR DELIVERY NOTES

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:_____

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):_____

Unique Site ID: 179

SKETCH

Unique Site ID: 179

Small Building with Parking Lot
302 Victory Highway
West Greenwich, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 183	
DATE: 7/1/16	ASSESSED BY: RW/WG	CAMERA ID: B phone	PICTURES: 16:07 - 1016
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: West Broad St School
Address: W Broad St, Stonington, ~~CT~~

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ ~~Near Large Parking Lot~~

On-Site
- ☐ Hotspot Operation
- ☐ Small Parking Lot
- ☐ Individual Street
- ☒ ~~Underground~~
- ☐ Individual Rooftop
- ☐ Small Impervious Area
- ☒ ~~Landscape / Hardscape~~
- ☒ Other: front of building

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
heavily paved, steep, No EBs b/c all water drains straight off site

Existing Head Available and Points Where Measured:

Unique Site ID: 183

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
small basin in front of school

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	
☐	☐	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

Unique Site ID: 183

SKETCH

Unique Site ID: 183

DESIGN OR DELIVERY NOTES

all parking space currently used for parking
lots of sewer manholes on site

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:_____

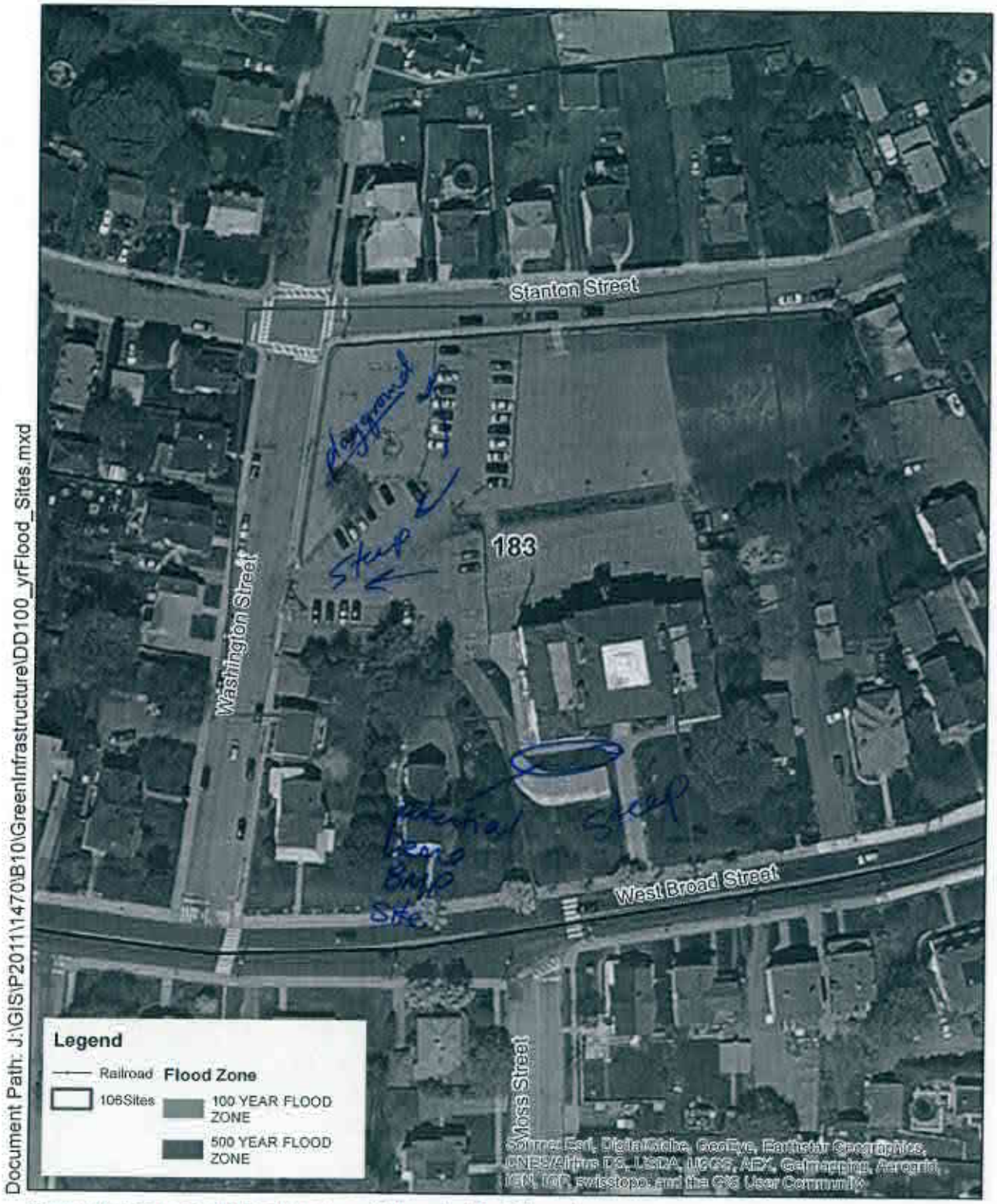
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 183

West Broad Street School
W. Broad Street
Stonington, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 185	
DATE: 7/1/16	ASSESSED BY: RW/WG	CAMERA ID: B. Phone	PICTURES: 9-930
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: N. Stonington Middle + High School
Address:

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Formal drainage @ back + front of school; roof drains probably thru center of building?
Some parking lots - No formal drainage

Existing Head Available and Points Where Measured:

Unique Site ID: 185

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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

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

Demo bioretention & dry swales
-exfiltration w/ overflow just in case
Multi-chamber treatmnt - work around trees + signs; ~~foot~~
landscaping
Dry swale in back of school w/ check dams near library to correct erosion problem
+ bioretention for driveway

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	
☐	☒	~~Sewer~~
☐	☒	~~Water~~
☒	☒	~~Gas~~ ✓
☐	☒	~~Cable~~
☒	☐	Electric ✓
☐	☐	Electric to Streetlights
☐	No	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?_____ ↳ design to avoid
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

ledge + boulders

Unique Site ID: 185

SKETCH

Unique Site ID: 185

DESIGN OR DELIVERY NOTES

Evidence of farm, stormwater, green thinking
- site had bonfires, chickens, greenhouse, compost on site

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

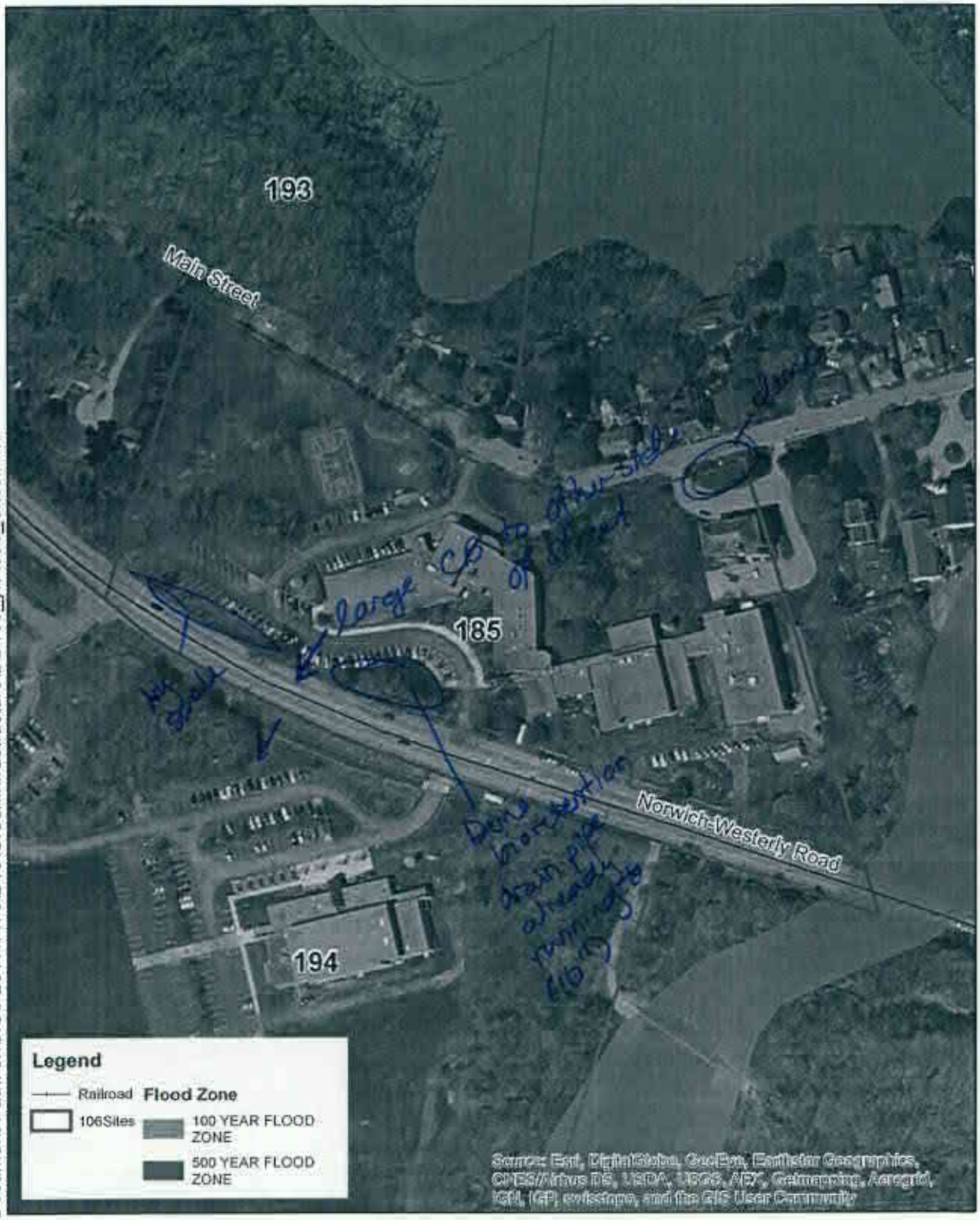
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S): _____

Unique Site ID: 185

Wheeler High/middle School
Municipal school open to public without fee
North Stonington, CT



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.02 0.04 0.08 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 191	
DATE: 7/1/16	ASSESSED BY: RW/WG	CAMERA ID: iPhone	PICTURES: 1020-1055
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: West Vine St School
Address: 25 W. Vine St, Stoningtoo,

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Deep CBs along road
Destination of roof drainage unknown
Some erosion problems assoc. w/ roof runoff?

Existing Head Available and Points Where Measured:

Unique Site ID: 191

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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

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

Front door: drain thru pavement to demo Bioretention in front of school along walkway (bidirectional, multichamber)

Front lot: bioretention ~~along~~ btwn lot + street w/ sed forebay

Field corner: fenced off bioretention w/ existing CB as overflow

~~Lot across st~~ ~~field corner~~: Bioretention - demo, w/ sed forebay; take parking 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
Constrained due to
☐ Slope ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other:_____

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_____

Buffers

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~~

~ possibly based on presence of CB in ~~need for~~ corner of field

↳ nearby wetland/ pond; water in CBs

Unique Site ID: 191

DESIGN OR DELIVERY NOTES

- Old school - potentially scheduled for upgrades based on age + appearance
- lots of community gardens on site
- parking lot ↑ across street appears in need of upgrades

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

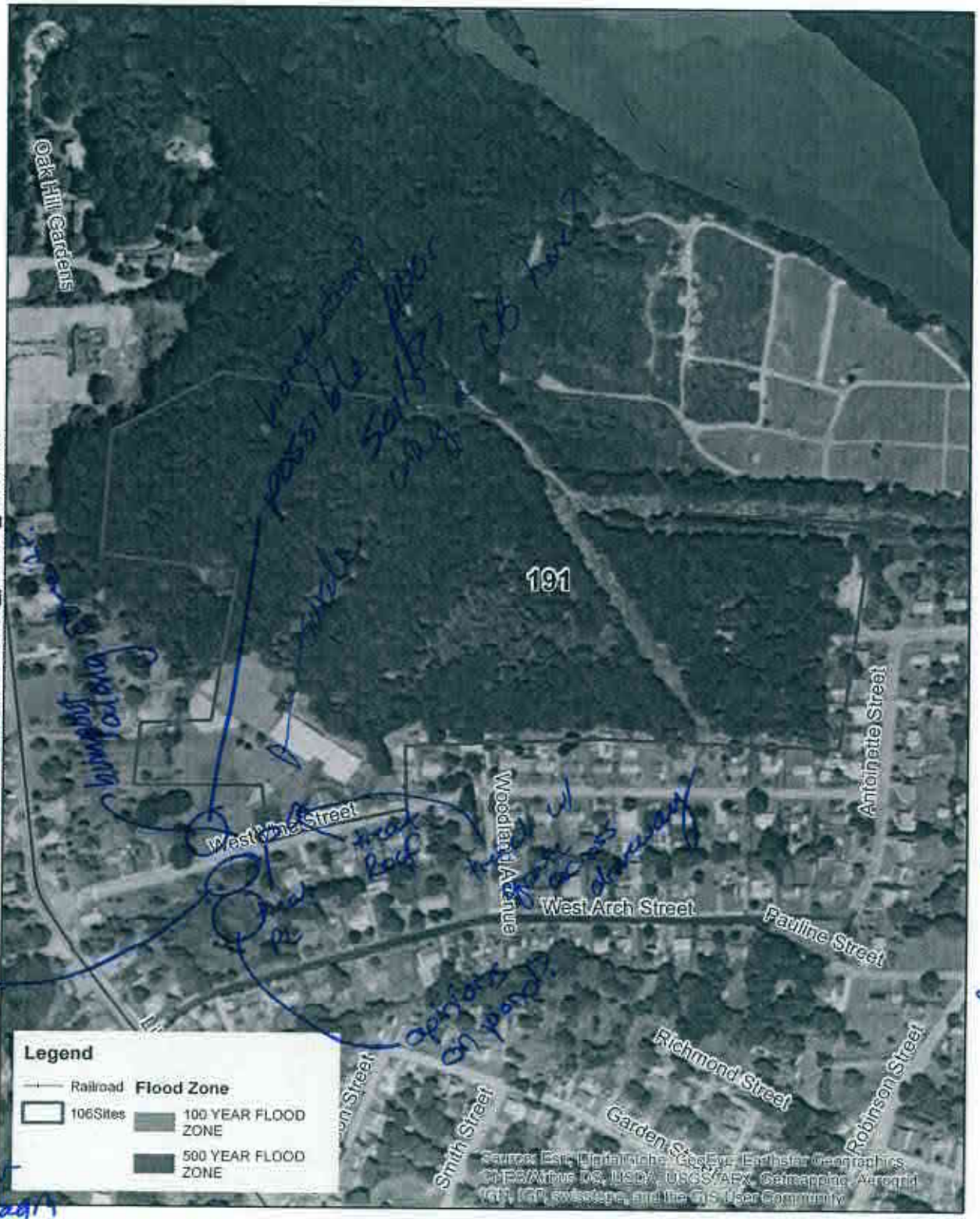
IF YES, TYPE(S):

Unique Site ID: 191

SKETCH

Unique Site ID: 191

West Vine Street School
25 West Vine Street
Stonington, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.04 0.08 0.16 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 194	
DATE: 7/1	ASSESSED BY: RW/WG	CAMERA ID: P	PICTURES: 8-9
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: St Stonington Elementary School
Address:

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☐ No ☒ Possible
If Yes, Describe: May have infiltration practices

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

Steep parking, lots of water,
lots of deep catch basins

Existing Head Available and Points Where Measured:

Unique Site ID: 194

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale ☒ Other: cisterns for water capture

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

- cisterns @ 2 locations where stormwater conc. by grade + CBs to capture water for use in irrigation
- bioretention demo cells along admin building parking lot + in parking lot islands

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: field usage

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

ledge + boulders

Unique Site ID: 194

SKETCH

Unique Site ID: 194

DESIGN OR DELIVERY NOTES

are fields fertilized

evidence of large irrigation system? (alt infiltration)
- drawn from well?

Note existing stormwater outlets in swale along main road

Dumpster relocation from S. to north end of parking lot @ admin building

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: _____

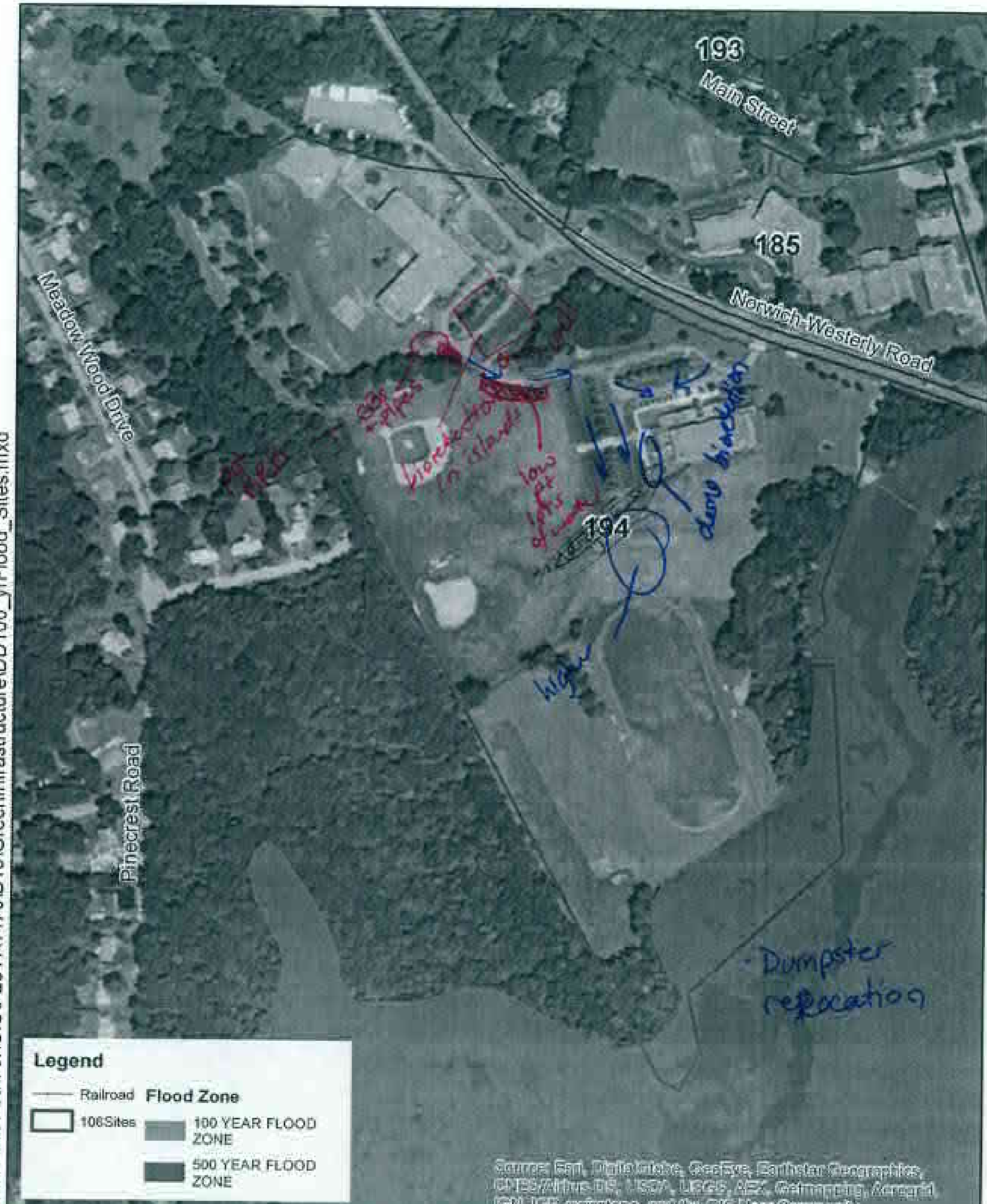
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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): _____

Unique Site ID: 194

Elementary School
Municipal school open to public without fee
North Stonington, CT



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.035 0.07 0.14 Miles

FUSS & O'NEILL

N W E S

Bedrock? boulders not

cisterns irrigate

underground

obvious good site

takes

underground system under outfield

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 199	
DATE: 7/5/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1245-1255
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Westerly Airport
Address: 62 Airport Road, Westerly RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Investigated Parking areas only.
Lot @ front entrance tightly packed; island in middle planted w/ flowers + shrubs; CBs in lot unknown

Adjacent lot is unimproved

Existing Head Available and Points Where Measured:

visit was short due to low potential @ site

Unique Site ID: 199

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
Retrofit island @ airport entrance parking lot; regrade lot to drain if necessary

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	
☐	☐	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

Unique Site ID: 199

SKETCH

Unique Site ID: 199

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

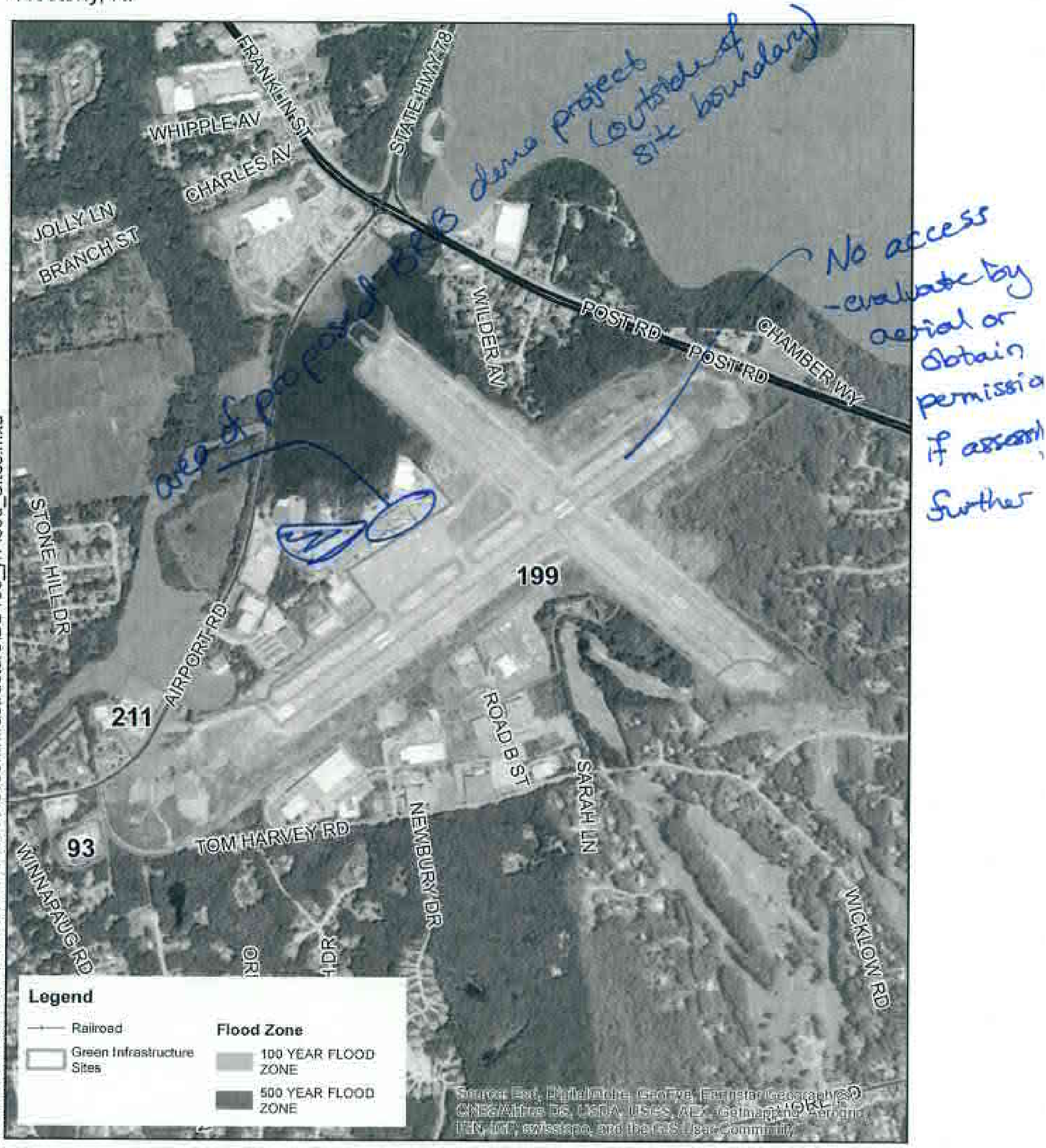
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 199

Westerly State Airport
62 Airport Road
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.1 0.2 0.4 Miles

FUSS & O'NEILL

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 201	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 2-215
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Parking Lot - formerly a theme park/attraction
Address: 350 Liberty Street, Stonington, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☒ In Conveyance System
- ☒ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☐ Small Parking Lot
- ☐ Individual Street
- ☐ Underground
- ☐ Individual Rooftop
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ Other: Remove Pavement

Pay attent to develop

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Site consists of overgrown pavement w/ "ghost infrastructure etc.

(drains to swale along road, + to culvert under road

No other formal infrastructure visible

Existing Head Available and Points Where Measured:

Unique Site ID: 201

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Remove pavement to reduce impervious surface.

If/when site is redeveloped, approach developer about storm-water BMPs ("have on the radar")

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	
☐	☐	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

Unique Site ID: 201

SKETCH

Unique Site ID: 201

Design or Delivery Notes

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:_____

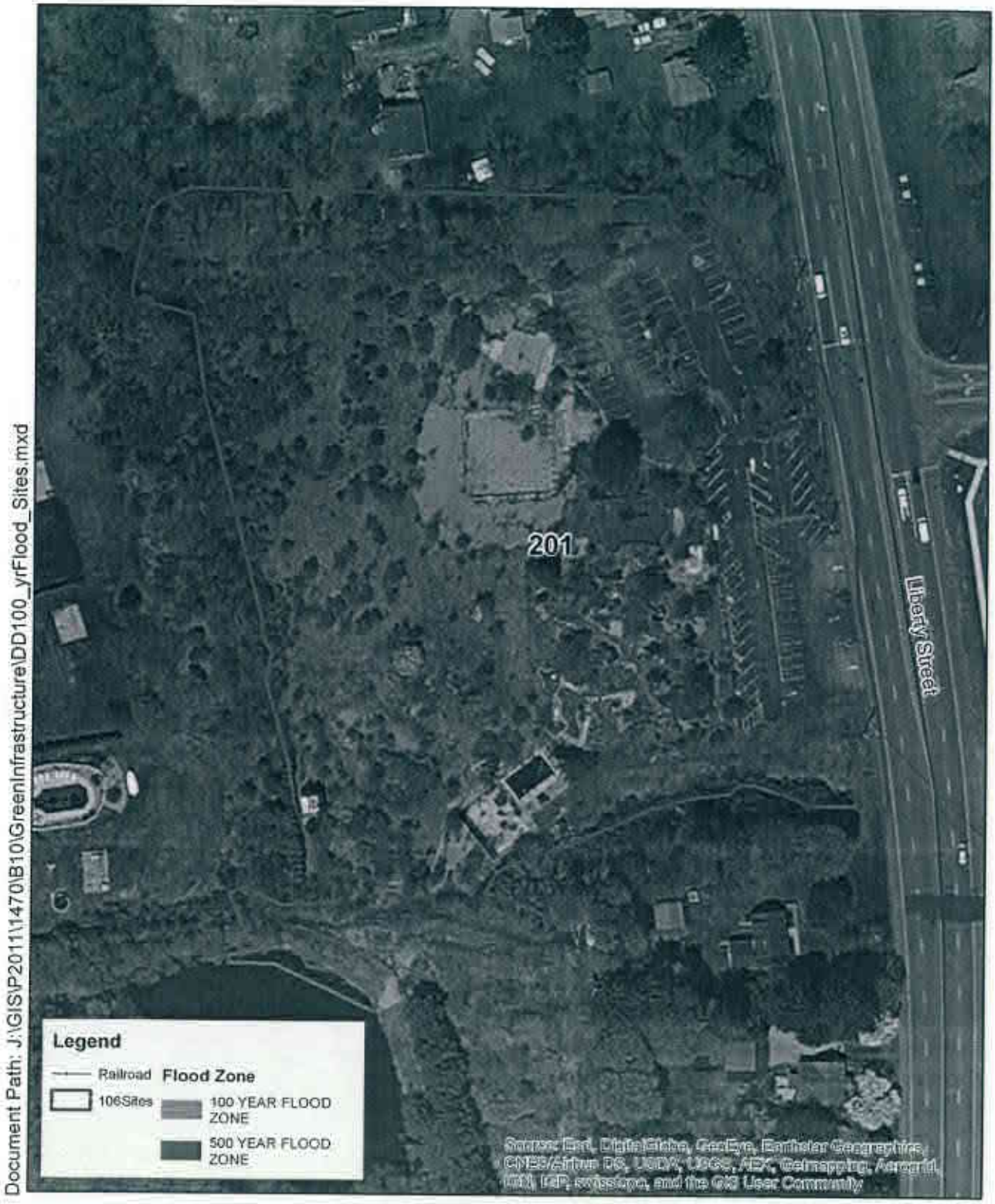
Initial Feasibility and Construction Considerations

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):_____

Unique Site ID: 201

Parking lot
350 Liberty Street
Stonington, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:		UNIQUE SITE ID: 206
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 14:00 - 14:37
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Parking Lot Next to Lake
Address: 406 Arcadia Rd, Exeter, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot +1?

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 ≈

Notes: Road (crowned, from bedrock outcrop) + parking area

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Heavily rutted driveway
Puddles, rills, + sediment piles throughout lot
Fronts direct ~~to~~ pond deeply eroded + deposit sed to pond

~~Existing Head Available and Points Where Measured~~:

Unique Site ID: 206

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale ☐ Other: parking/driving lane closure + path stabilization

suggestions

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

Bioretention to collect driveway runoff + potentially road runoff.
Swale w/ check dams along west side of road + entering bioretention; would require (or) moving fence
Close one or both turning lanes in parking lot + create single

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	
☐	☐	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: should not be an issue due to nature of work

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

Unique Site ID: 206

SKETCH

Unique Site ID: 206

DESIGN OR DELIVERY NOTES

Need

- trail closure/stabilization
- portapotties - move
- delineate parking?
- resurface lot w/ gravel

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

clear need

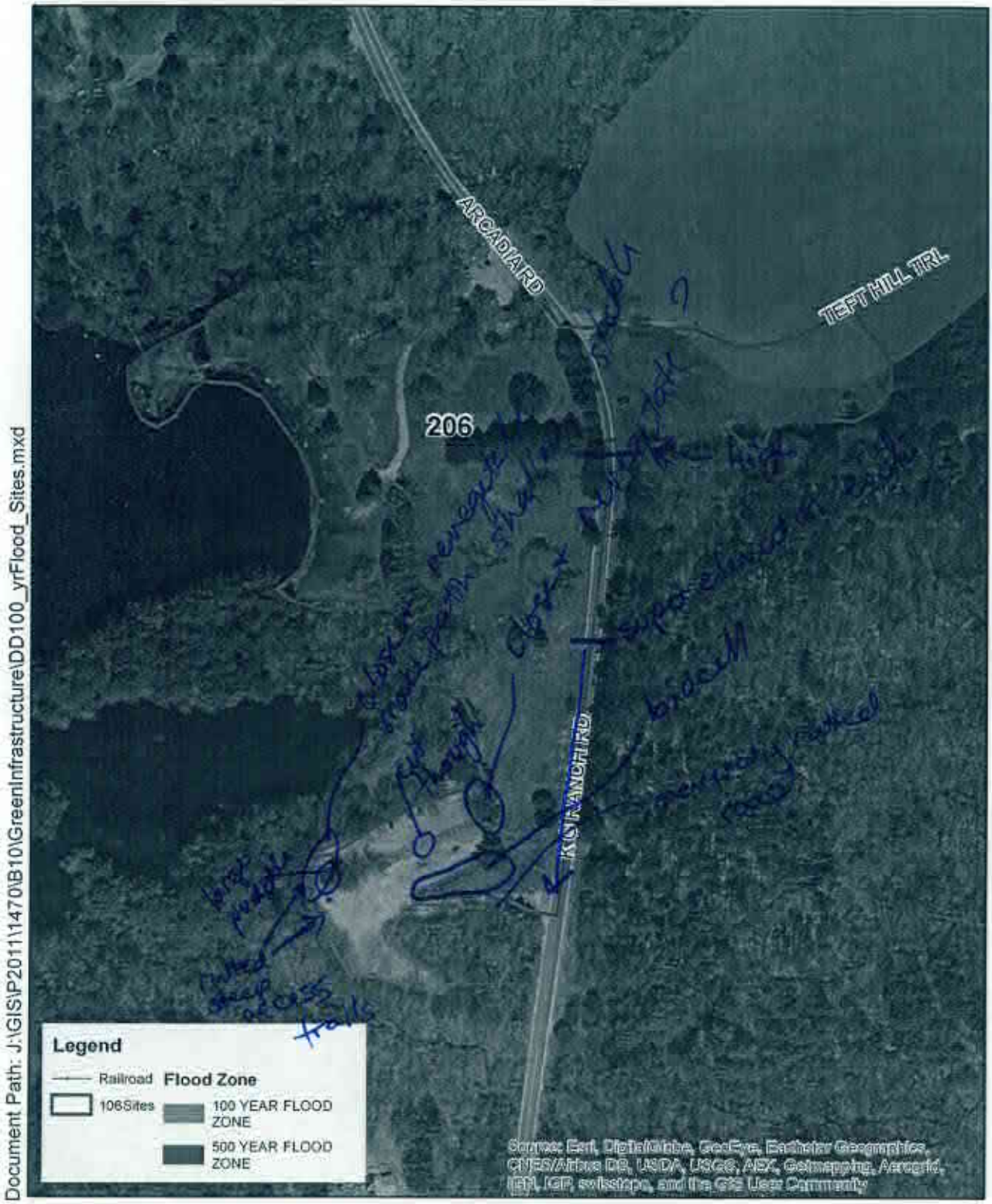
evidence of plowing?

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

IF YES, TYPE(S): _____

Unique Site ID: 206

Parking lot near lake
406 Arcadia Road
Exeter, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.02 0.04 0.08 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 216	
DATE: 6/2/16	ASSESSED BY: RLW/WG	CAMERA ID: A	PICTURES: 1250 - 1310
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Public Complex - Baseball fields / parking lot
Address: 99 Wilson Street, Westerly RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ ~~Near~~ Large Parking Lot

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 ≈ _____

Notes: Possible DA from uphill of playground

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

EXISTING STORMWATER MANAGEMENT

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

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

No formal drainage, no CBs in large lot; one CB in back parking lot
drainage across large parking lot exits thru curb cut

field drainage? ~~does no~~

Existing Head Available and Points Where Measured:

Unique Site ID: 216

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Bioretention

Partial Permeable Parking Lot

Reduce parking lot size

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	
☐	☒	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

Unique Site ID: 216

SKETCH

DESIGN OR DELIVERY NOTES

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: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Parking lot usage?
possible to split to Main + overflow lots

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): Knotweed Removal

Unique Site ID: 216

Baseball Fields/ parking lot at Public Complex
99 Wilson Street
Westerly, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.025 0.05 0.1 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 217	
DATE: 6/2/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: -2.45
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Burlingame Management Area
Address: Burlingame State park Road

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Gradually sloping; no formal drainage

Existing Head Available and Points Where Measured:

Unique Site ID: 217

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

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	
☐	☐	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

Unique Site ID: 217

SKETCH

Unique Site ID: 217

Design or Delivery Notes

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: _____

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): _____

Unique Site ID: 217

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 221	
DATE: 6/2/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: =1243
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Area adjacent to Ocean Community YMCA
Address: 77-85 High Street, Westerly, RI

Ownership: ☒ Public ☒ Private ☐ Unknown 501C3
If Public, Government Jurisdiction: ☒ Local ☐ State ☐ DOT ☐ Other:

library + park

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

Proposed Retrofit Location:

Storage
- ☒ Existing Pond
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☒ ~~In Conveyance System~~
- ☐ Near Large Parking Lot

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 ≈ _____

Notes: ~~Road~~ Everything drains to park

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

EXISTING STORMWATER MANAGEMENT

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

Rain Garden w/ pretreatment, unmaintained?

CBs surrounding park

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

CBs throughout parks w/ deep sumps to catch sediment

~~Existing Head Available and Points Where Measured~~:

Unique Site ID:_____

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [ ] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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

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

- Infiltration under field
- Dry swale under bridge

SITE CONSTRAINTS

Adjacent Land Use:
- [x] Residential
- [x] 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
- [x] Space
- [ ] Utilities
- [x] Tree Impacts
- [ ] Structures
- [x] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [ ] Unknown

Yes	Possible	
[ ]	[ ]	Sewer
[ ]	[ ]	Water
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[x]	Electric
[ ]	[x]	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:

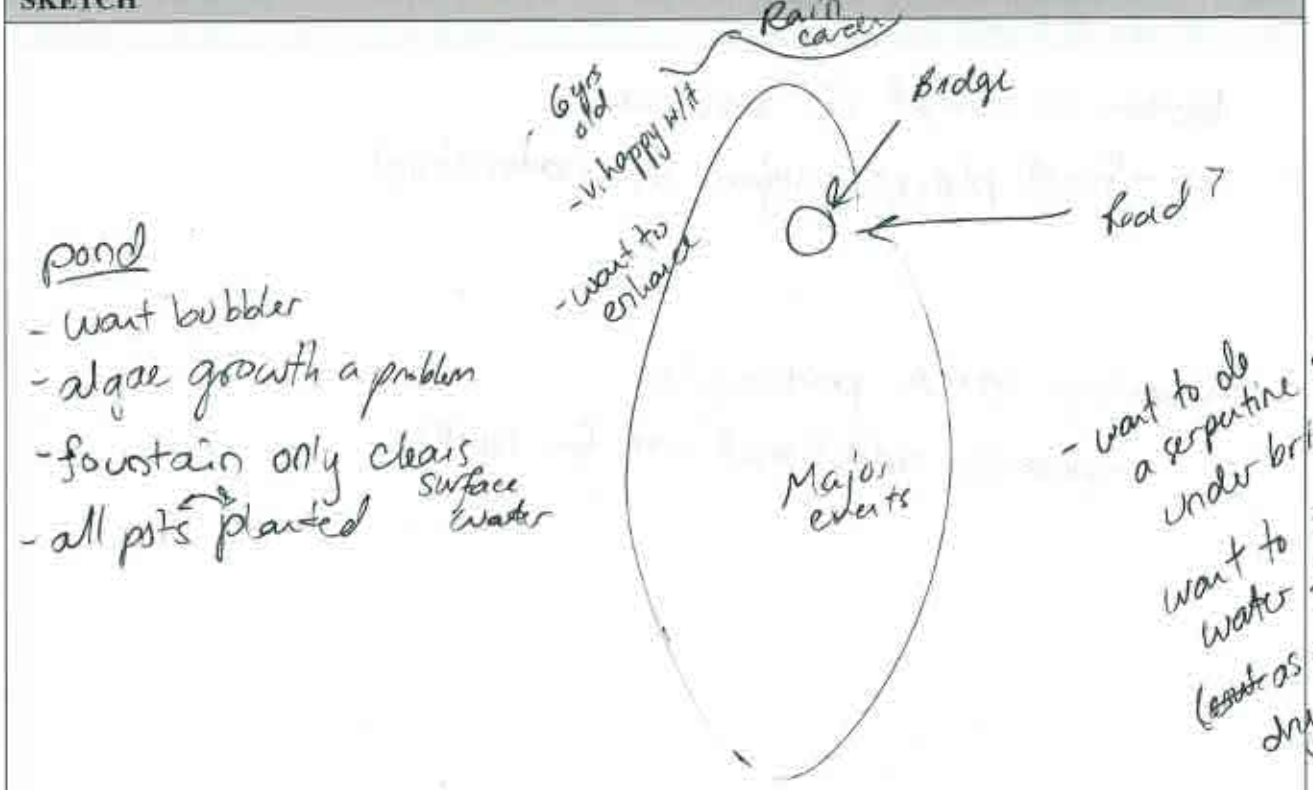
Soil auger test holes:	[ ] Yes	[ ] No
Evidence of poor infiltration (clays, fines):	[ ] Yes	[ ] No
Evidence of shallow bedrock:	[ ] Yes	[ ] No
Evidence of high water table (gleying, saturation):	[ ] Yes	[ ] No

Unique Site ID:_____

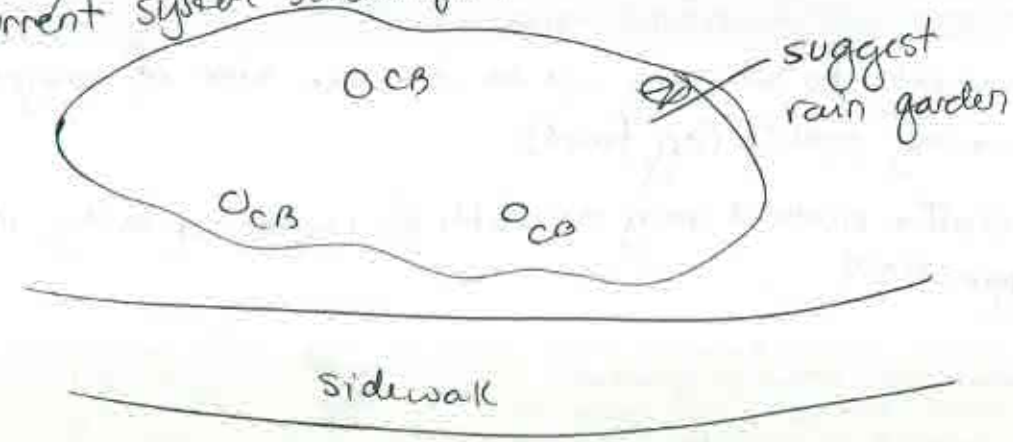
#221

Retrofit Reconnaissance Investigation **RRI**

SKETCH



pond: geosynthetic clay liner (2006)
catch basins - sump
stream is covered (use to run down middle of field.
All neighborhoods drain here; current system surcharged; ~~catch basin~~ DMH covers are bolted down



road catch basins go to "trunk line" down center of town"

Unique Site ID:_____

Central Baptist

DESIGN OR DELIVERY NOTES

better to treat @ source?
- find places higher in watershed

Nearby- YMCA parking lot
- possible additional site for BMPs

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:_____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

field unlikely to be dug up as it is the site of major community events (eg fairs)

Park staff + owners very amenable to water quality improvement suggestions

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):_____

Unique Site ID:_____

Park Area near Ocean Community YMCA
77-85 High Street
Westerly, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

FUSS & O'NEILL

N W E S

Design or Delivery Notes

Follow-up Needed to Complete Field Concept

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

Initial Feasibility and Construction Considerations

Site Candidate for Further Investigation:	[x] Yes	[ ] No	[ ] Maybe
Is Site Candidate for Early Action Project(s):	[x] Yes	[ ] No	[ ] Maybe
If no, site candidate for other Restoration Project(s):	[ ] Yes	[ ] No	[ ] Maybe

If yes, type(s): _____

Unique Site ID: 223

SKETCH

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 223	
DATE: 6/2/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: 1030 - 1105
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Craig Field Recreation Complex
Address: Mountain Avenue, Westerly RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: possible to capture off site runoff

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ ~~Yes~~ ☒ No ☐ Possible
If Yes, Describe:

Off-site CBs only

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

drainage channels on site minor, disappear before wooded area, drop sediment, minor erosion ~~easily~~ only

field not drained but not soggy; wet areas immediately south Southern part

~~**Existing Head Available and Points Where Measured:**~~

Unique Site ID: 223

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☒ Swale ☒ Other: Permeable parking lot

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

U ~~disproved~~
Bleachers on gravelpave/permeable pavement
gravelpave or grasspave ~~boerflow~~ parking lot(s)
disconnect CBs in NE corner (bioswale)

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: per
☐ No Constraints
Constrained due to
☒ Slope ? ☐ Space
☐ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☒ Other: Bedrock,

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_____

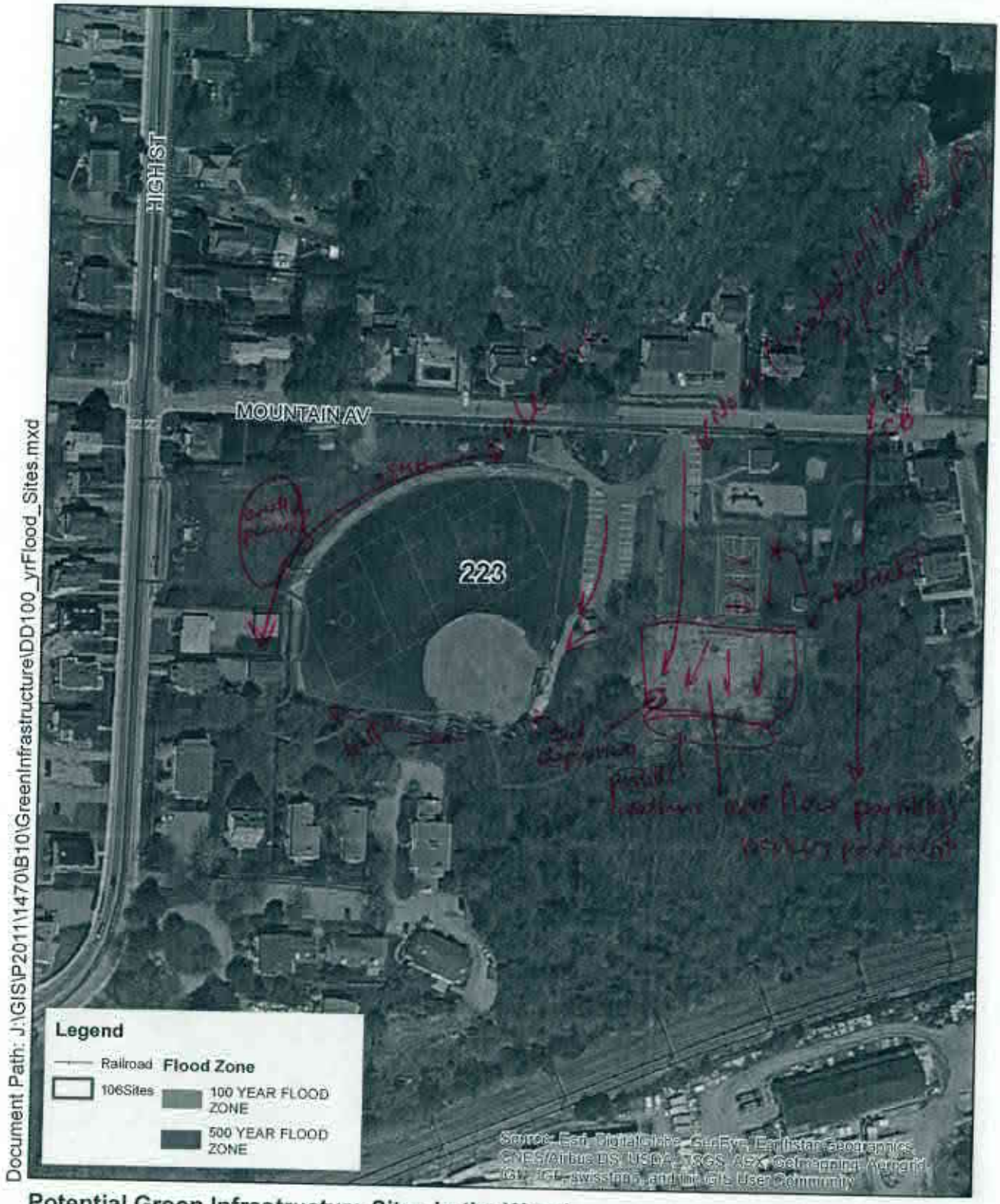
Other factors:_____

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 southern edge

Unique Site ID: 223

Craig Field Recreation Complex
Mountain Avenue
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

FUSS & O'NEILL

N W E S

- wet @ south end of site
- wetland south of site

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 224	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID:	PICTURES: ~~224~~ 1245 - 115
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Large Parking Lot for football field
Address: 60 Old Hopkinton Rd, Westerly RI

Ownership: ☒ Public ☒ Private ☐ Unknown Town-Owned, 99-year lease
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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☒ In Conveyance System existing swale filled in
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: includes highway

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible
If Yes, Describe: Swale - not grassy, full of sed

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

Parking Lot Damaged by runoff + flooding
2 CBs in road drain to lot; lot & drains to fields
Swale along SW edge of site filled w/ sed from adjacent quarry + results in flooding in upper + lower fields as well as lot

~~**Existing Head Available and Points Where Measured:**~~

Clear need for drainage improvements & pollutant reduction
CB @ bottom of field (SW corner) receives swale + other runoff; outlet unknown; impacted by quarry sed

Unique Site ID: 224

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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

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

may not be practical

Infiltrators under parking lot
- may have to be deep due to terraced relationship btwn lot & fields

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	
☐	☐	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

Unique Site ID: 224

SKETCH

Unique Site ID: 204

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [x] Confirm property ownership
- [x] Confirm drainage area
- [x] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [x] Complete concept sketch
- [x] Obtain existing stormwater practice as-builts
- [x] Obtain site as-builts
- [x] Obtain detailed topography
- [x] Obtain utility mapping
- [x] Confirm storm drain invert elevations
- [x] Confirm soil types
- [ ] Other: as in who is allowed to make improvements

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

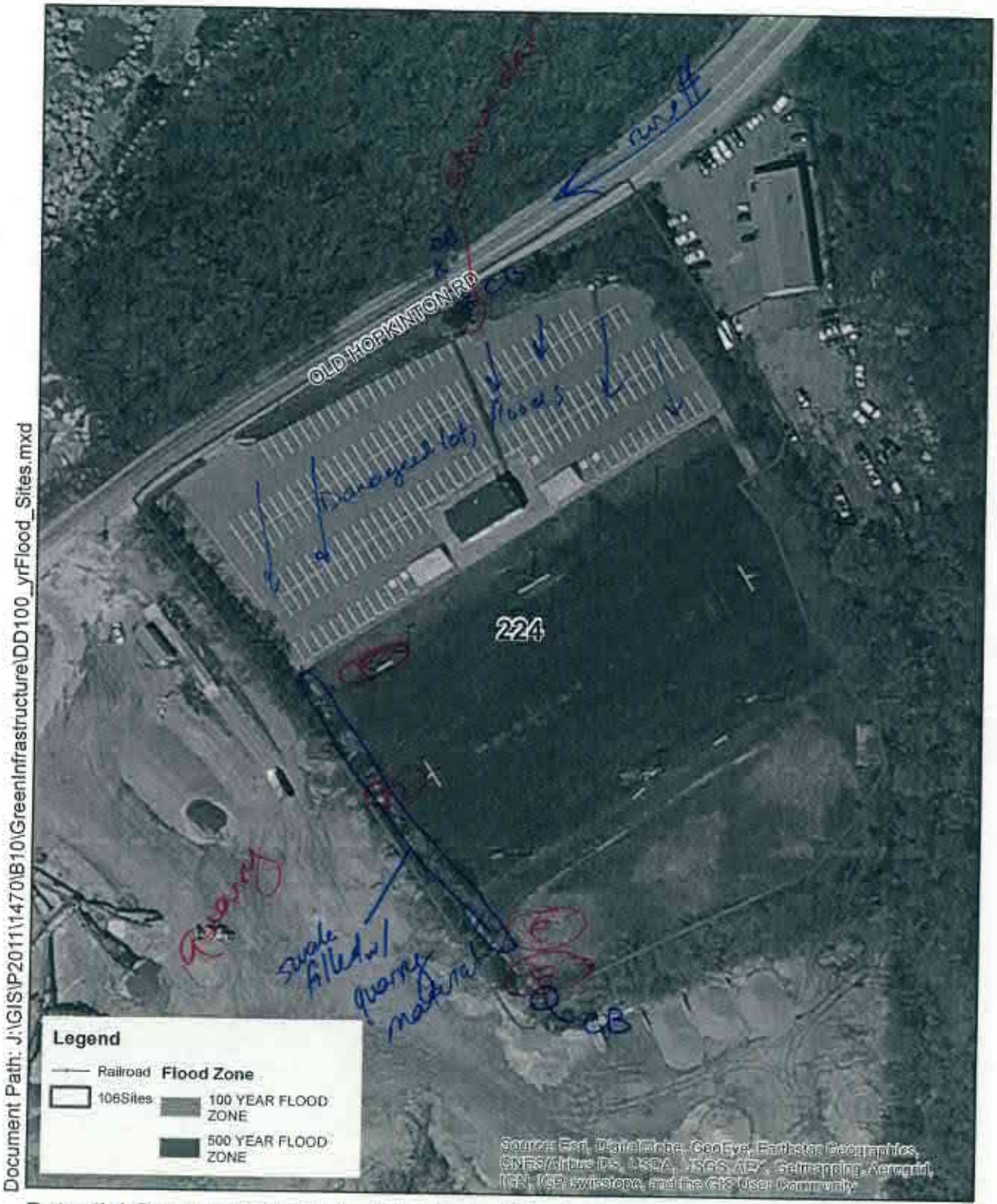
clear read!

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

IF YES, TYPE(S): _____

Unique Site ID: 224

Large Parking Lot for Football Field
60 Old Hopkinton Road
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 227	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 11:45-12:45
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Hopkinton Recreation Department
Address: 188 Main Street, Hopkinton, RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☒ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈

Notes: includes road, some residential neighborhood, potentially

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

EXISTING STORMWATER MANAGEMENT

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

one small demo project on small outbuilding (rain barrels & disconnected spouts)

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

~~one small~~ heavily silted CB @ roads edge
former CB filled in/capped in Parking Lot?
Half of PL paved, half unimproved, sand from road + unpaved parking lot deposited in paved parking lot

Existing Head Available and Points Where Measured:

Unique Site ID:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Bioretention for roof or road (take storm sewer off line)?

focus on Road ROW + CBS
- off line?

Maintain Road ROW to manage sed

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	
☐	☐	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

Unique Site ID:_____

SKETCH

Unique Site ID:_____

DESIGN OR DELIVERY NOTES

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: Catch basin locations, inlet, + outlet

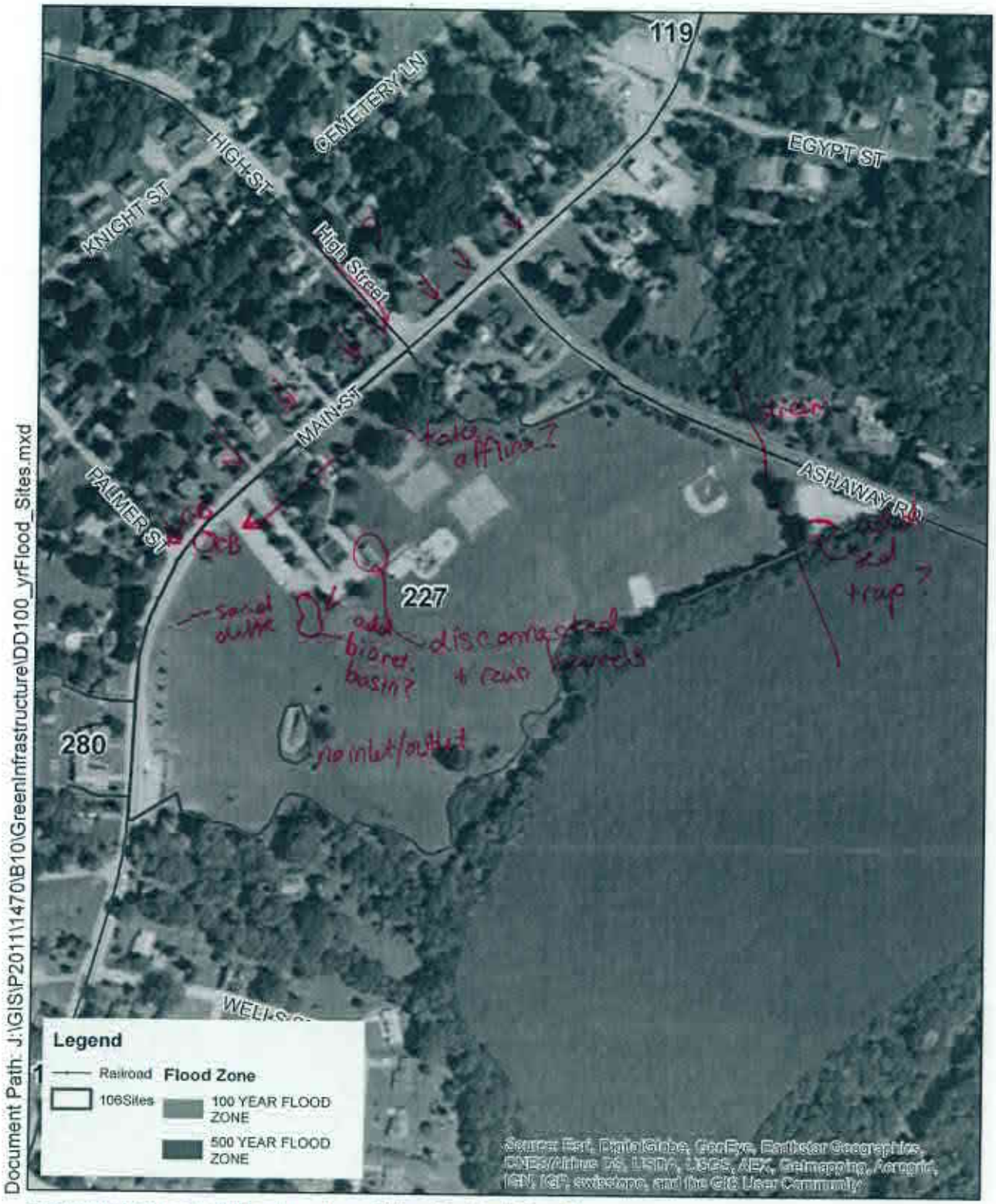
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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): _____

Unique Site ID: _____

Hopkinton Recreation Department
188 Main Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0325 0.065 0.13 Miles

FUSS & O'NEILL

N W E S

5079

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 229	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 9:45 - 1030
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Tuckertown Park
Address: 1010 Tuckertown Park Drive

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ~~☐ Yes~~ ☒ No ☐ Possible
If Yes, Describe:
2 catch basins; drainage under fields, one conveys but does not capture water

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
No erosion visible; no formal drainage
sand + seal deposited on pavement; possible standing water @ times
"plenty of buffer" on site

~~**Existing Head Available and Points Where Measured:**~~
"clean up after dog" signs on site

Unique Site ID: 229

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [ ] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [x] Infiltration
- [ ] Created Wetland
- [ ] Swale
- [x] ~~Bioretention~~
- [x] Other: permeable parking

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

infiltration or permeable parking in various lots;
some sort of infiltration under fields?] remove fertilizer from stormwater
some drainage system of fields

SITE CONSTRAINTS

Adjacent Land Use:
- [ ] Residential
- [ ] Commercial
- [x] Institutional
- [ ] Industrial
- [ ] Transport-Related
- [x] Park
- [x] Undeveloped
- [ ] Other:

Possible Conflicts Due to Adjacent Land Use? [ ] Yes [ ] No

If Yes, Describe:

Access:
- [ ] No Constraints

Constrained due to
- [x] Slope
- [x] Space
- [ ] Utilities
- [ ] Tree Impacts
- [ ] Structures
- [ ] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [x] Unknown

Yes	Possible	
[ ]	[ ]	Sewer
[ ]	[ ]	Water
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[ ]	Electric
[ ]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[x] Probable	[ ] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[x] Probable	[ ] Not Probable

How many?
Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 229

SKETCH

Unique Site ID: 229

DESIGN OR DELIVERY NOTES

little need for treatment perceived?

but fields in good shape - may be fertilized

- treatment would remove nutrients ~~from~~ inputs from adjacent swamp/

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:_____

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):_____

Unique Site ID: 229

Tuckertown Park
1010 Tuckertown Park Drive
South Kingstown, RI

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0425 0.085 0.17 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 232	
DATE: 7/5/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1.10 - 1.20
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Pavilion Steak House
Address: 35 Frontier Road, Hopkinton, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Newly resurfaced lot directs to CBs

Rest of site is vegetated, no room or need for treatment

Existing Head Available and Points Where Measured:

Unique Site ID: 232

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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
☐ 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	
☐	☑	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

Unique Site ID: 232

SKETCH

Unique Site ID: 232

DESIGN OR DELIVERY NOTES

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: _____

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): Meadow / forest restoration

Unique Site ID: 232

Pavillion Steak House/ Open Space?
35 Frontier Road
Hopkinton, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

fresh surfaced parking lot

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0425 0.085 0.17 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 248	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 12:05-
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Abandoned Parking Lot Enchanted Forest of RI
Address: 894 Main Street (Rte 3/Nooseneck Hill Rd)

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: also captures Road runoff

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

EXISTING STORMWATER MANAGEMENT

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

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

Paved, overgrown lot; portion of Rte 3 drains to lot
"Ghost" infrastructure (CBs)

~~**Existing Head Available and Points Where Measured:**~~

Unique Site ID: _____

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☐ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: Remove all paved areas

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

~~Pave~~ Remove all pavement

town purchase in order to perform stormwater BMPs

Encourage stormwater treatment if site ever developed again

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 Some Could be removed
☒ 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

Unique Site ID:_____

SKETCH

Historic?
Cemetery site?

Unique Site ID:_____

Design or Delivery Notes

Follow-up Needed to Complete Field Concept

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

Initial Feasibility and Construction Considerations

Site Candidate for Further Investigation:	[x] Yes	[ ] No	[ ] Maybe
Is Site Candidate for Early Action Project(s):	[x] Yes	[ ] No	[ ] Maybe
If no, site candidate for other Restoration Project(s):	[ ] Yes	[ ] No	[ ] Maybe

If yes, type(s):_____

Unique Site ID:_____

Abandoned parking lot
894 Main Street (Rte 3/ Nooseneck Hill Road)
Hopkinton, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: ~~252~~	
DATE: 6/6/16	ASSESSED BY: RW/KT	CAMERA ID: C	PICTURES: 10:00 - 11:00
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Charina Little league
Address: 1118 Main St, Hopkinton

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

No formal stormwater on site, road CBs seem to hook up to road system.

Parking lots receive heavy runoff but sed settles out before grounds, no erosion in grass

Existing Head Available and Points Where Measured:

Unique Site ID: 252

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
2-3 ft wide bioretention strips along edges of parking lot/field
provide walk ways & culverts where necessary

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	
☐	☒	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

Unique Site ID: 252

SKETCH

Unique Site ID: 252

DESIGN OR DELIVERY NOTES

site currently well maintained, highly visible

current parking use is

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: _____

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): _____

Unique Site ID: 252

Chariho Little League
1118 Main Street
Hopkinton, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 271	
DATE: 7/5/16	ASSESSED BY: RWLWG	CAMERA ID: C	PICTURES: 910-928
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: The Westerly Hospital
Address: 25 Wells Street, Westerly RI

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

dry wells? @ private med. facility

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

Existing Head Available and Points Where Measured:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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

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

Small biocells, same as pretreatment for infiltration

improve existing basin in employee lot

large dry wells ??

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	
☐	☒	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

Unique Site ID: 271

SKETCH

Unique Site ID: 271

DESIGN OR DELIVERY NOTES

- pay attention to feature facility upgrades
- little space; parking lots v. full
  - many lots recently resurfaced

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [ ] Confirm property ownership
- [x] Confirm drainage area
- [ ] Confirm drainage area impervious cover
- [ ] Confirm volume computations
- [x] Complete concept sketch
- [x] Other: check RS rules on Dry wells
- [x] Obtain existing stormwater practice as-builts
- [ ] Obtain site as-builts
- [ ] Obtain detailed topography
- [x] Obtain utility mapping
- [x] Confirm storm drain invert elevations
- [x] Confirm soil types

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S): _____

Unique Site ID: 271

The Westerly Hospital
25 Wells Street
Westerly, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0275 0.055 0.11 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	**SUBWATERSHED:**	**UNIQUE SITE ID:** 272

DATE: 7/8/16	**ASSESSED BY:** RW/WG	**CAMERA ID:** C	**PICTURES:** 929-1005
GPS ID:	**LMK ID:**	**LAT:**	**LONG:**

SITE DESCRIPTION

Name: Westerly Senior Citizens Center + State St School

Address: 35 State St, Westerly RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ~~☒ Possible~~

If Yes, Describe:

~~No info avail currently~~

Swale @ senior center - undersized + needs maintenance

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

water drains to CBs ~~many lots w steep~~ in lots; roofdrains mostly into ground w/ some aboveground (+ eroding pavement/soil)

Existing Head Available and Points Where Measured:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
Behind school: Individual BR cells for rooftop disconnection
Berm PL + construct infiltration basin(s) adj. to playground (shallow, grassed)

@ Senior Center:

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: student use area

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

Unique Site ID: 272

SKETCH

Unique Site ID: 272

DESIGN OR DELIVERY NOTES

Split into two sites.

Green streets potential in surrounding neighborhoods

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [x] Confirm property ownership senior center
- [x] Confirm drainage area
- [ ] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [x] Complete concept sketch
- [x] Obtain existing stormwater practice as-builts
- [ ] Obtain site as-builts
- [ ] Obtain detailed topography
- [x] Obtain utility mapping
- [ ] Confirm storm drain invert elevations
- [x] Confirm soil types

storm drains

- [ ] Other: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S): Meadow, butterfly garden

Unique Site ID: 272

Westerly Senior Citizens Center and State Street School
35 State Street
Westerly, RI

prop.: improve existing swale

gutters drain into ground

green street (narrow, biofilter cells)

v. deep catch basins along street

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

FUSS & O'NEILL

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 273	
DATE: 6/2/16	ASSESSED BY: RW, BG	CAMERA ID: A	PICTURES: 13:20 -
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Pius X School
Address:

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Site almost entirely used for various uses;

Existing Head Available ~~and Points Where Measured~~:

Preliminary Assessment Only due to lack of site access

*unlikely, but staff may contact us about projects in future

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [ ] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [x] Swale
- [x] Bioretention
- [ ] Other:

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

limited to small, scattered projects

SITE CONSTRAINTS

Adjacent Land Use:
- [x] Residential
- [ ] Commercial
- [x] Institutional
- [x] 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
- [x] Space
- [ ] Utilities
- [ ] Tree Impacts
- [ ] Structures
- [x] Property Ownership
- [x] Other: ~~Other uses of open spa~~

Conflicts with Existing Utilities:
- [ ] None
- [ ] Unknown

Yes	Possible	
[ ]	[x]	Sewer
[ ]	[x]	Water
[ ]	[x]	Gas
[ ]	[x]	Cable
[ ]	[x]	Electric
[ ]	[x]	Electric to Streetlights
[x]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[ ] Not Probable

How many?

Approx. DBH

Other factors:

Soils:

Soil auger test holes:	[ ] Yes [ ] No	unable to fully assess site
Evidence of poor infiltration (clays, fines):	[ ] Yes [x] No	
Evidence of shallow bedrock:	[ ] Yes [x] No	
Evidence of high water table (gleying, saturation):	[ ] Yes [ ] No	

Unique Site ID: 273

Design or Delivery Notes

No space available on site

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:_____

Initial Feasibility and Construction Considerations

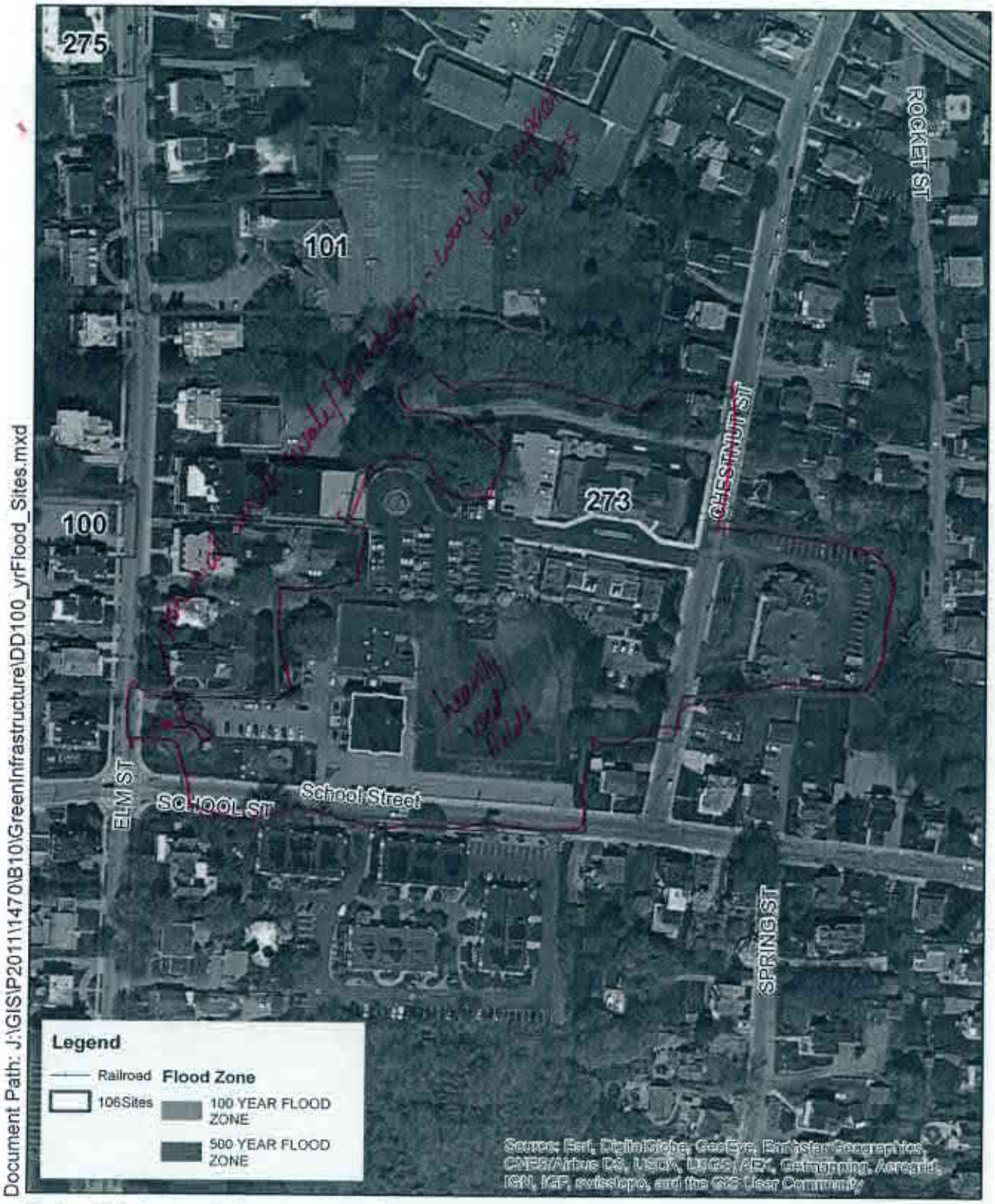
Site Candidate for Further Investigation:	☐ Yes	☒ No	☐ Maybe
Is Site Candidate for Early Action Project(s):	☐ Yes	☒ No	☐ Maybe
If no, site candidate for other Restoration Project(s):	☐ Yes	☒ No	☐ Maybe

If yes, type(s):_____

Unique Site ID: 273

SKETCH

St. Pius X School
32 Elm Street
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 274	
DATE: 6/9/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: # 10:15- 11:30
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Westerly High School
Address: 23 Ward Avenue Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible
If Yes, Describe:
infiltration tanks + dry wells

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Building gutters into ground; overflow heavily
every building has a central storm drain system

~~**Existing Head Available and Points Where Measured:**~~
Babcock CB surcharges

Unique Site ID: 274

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

large infiltration pits in 1977 parking lot, Park St parking lots, Bellevue ave curve parking lot, + football field

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:_____

- generally avoid bioretention

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

in some places not all

Unique Site ID: 274

SKETCH

Unique Site ID: 274

DESIGN OR DELIVERY NOTES

Street width is town ordinance

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

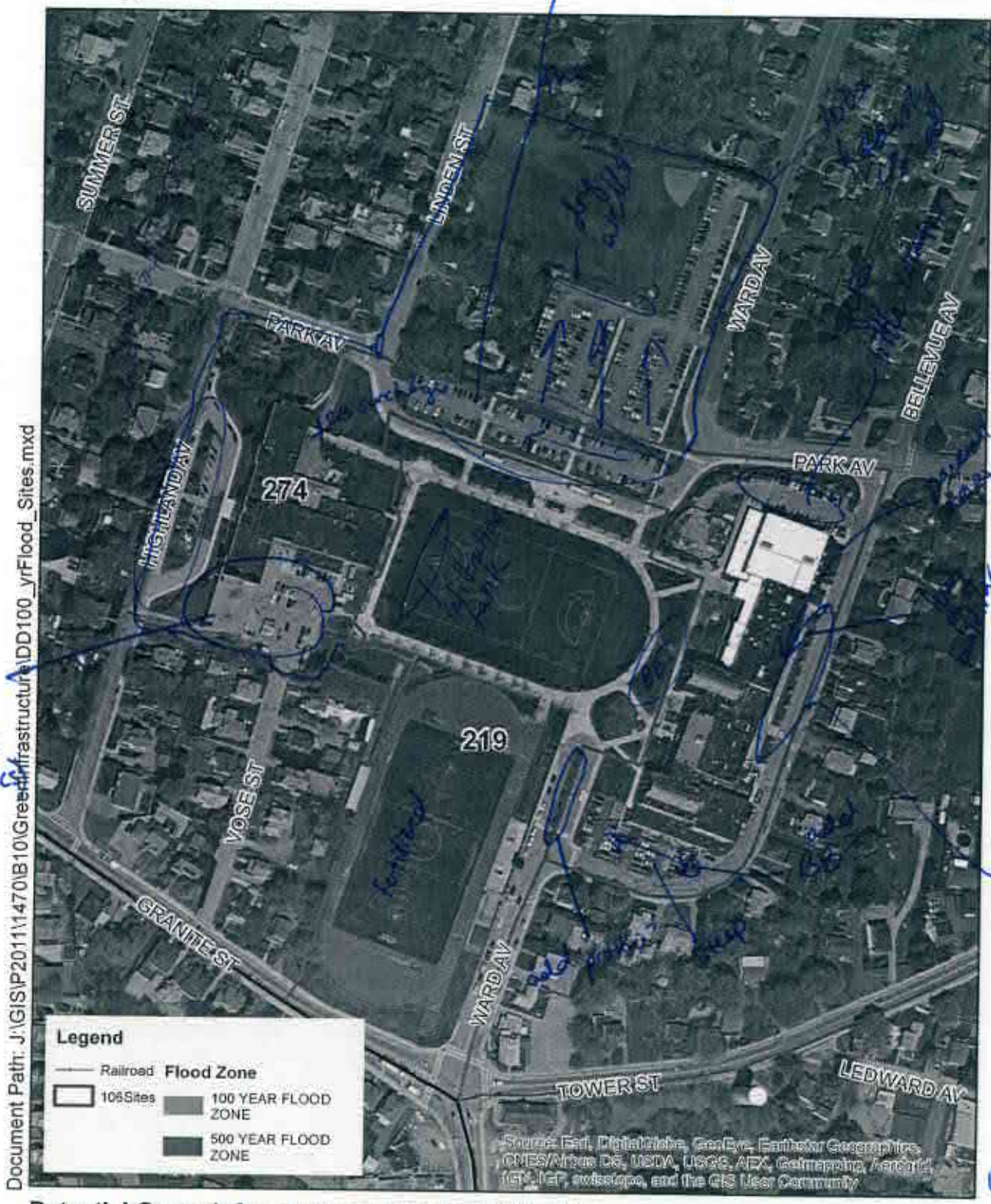
town losing ppl; may not have $
School laying off teachers

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): _____

Unique Site ID: 274

Westerly High School
23 Ward Avenue
Westerly, RI



Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.025 0.05 0.1 Miles

FUSS & O'NEILL

N W E S

there lots connect to storm drains on park ave

No expansion or repaving projects planned in next 5 years

problem trees

Fields get swampy
Not currently turf.

Cleanup site (formal oil tanks)

every roof has central drain to storm sewer

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	**SUBWATERSHED:**	**UNIQUE SITE ID:**	
DATE: 6/2/16	**ASSESSED BY:** RW/BWG	**CAMERA ID:** A	**PICTURES:** ~~13-15~~ 14:4-
GPS ID:	**LMK ID:**	**LAT:**	**LONG:**

SITE DESCRIPTION

Name: Westerly Town Hall
Address: 45 Broad Street, Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near ~~Large~~ Parking Lot

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☐ No ☐ Possible
If Yes, Describe: Parking lot CBs in Church parking lot

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
~~lot of im~~ small area, high impervious percentage

~~**Existing Head Available and Points Where Measured:**~~

Unique Site ID: 275

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Bioretention basin draining lawn, church roof, + small parking lot
- ~~Head~~ cut down bit. berm to allow part of parking lot to enter practice
- v. visible to public

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	
☐	☐	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

Unique Site ID: 275

SKETCH

Unique Site ID: 275

DESIGN OR DELIVERY NOTES

No space at Westerly Town Hall;
focus on church next door if any

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

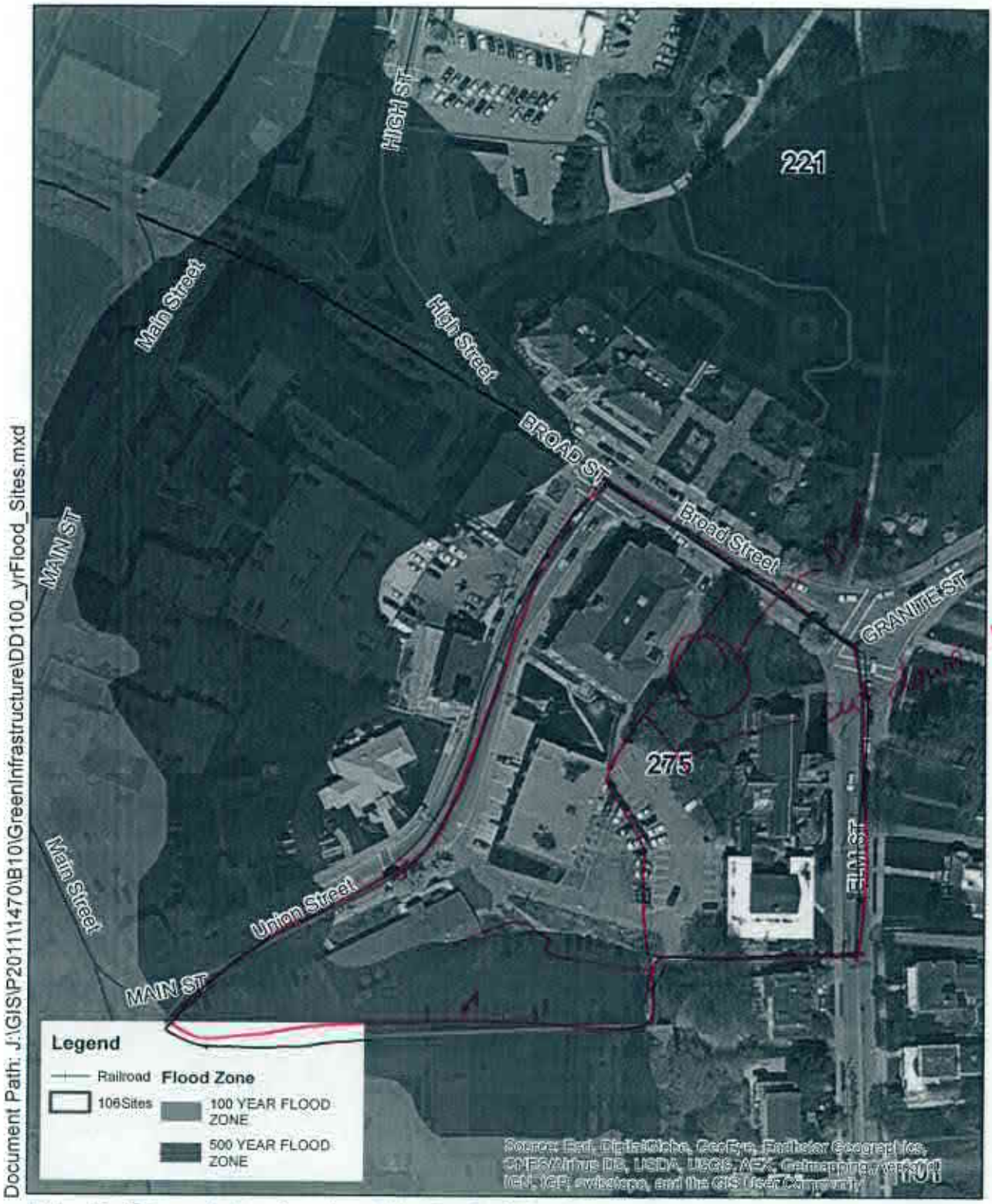
Contact Christ church about bioretention on ~~their site~~ their property

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

IF YES, TYPE(S):

Unique Site ID: 275

Westerly Town Hall
45 Broad Street
Westerly, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 276	
DATE: 7/1/16	ASSESSED BY: RW/DG	CAMERA ID: B. phone	PICTURES: 11-11:18
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Tower Street School Community Center
Address: 93 Tower Street, Westerly RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

"in a bowl" @ front; front + back is steep
Practically perched on hill
V. steep slopes but not much visible erosion

Existing Head Available and Points Where Measured:

Unique Site ID: 276

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [x] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [ ] Swale
- [x] Bioretention
- [x] Other: pavement disconnection

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

- recreational improvements + pavement disconnection
- possible demo bioretention projects w/ ~~the~~ rec redelpmt
- parking lot bioretention (D/S edge of farthest lot)
  - change plowing operation

SITE CONSTRAINTS

Adjacent Land Use:
- [x] Residential
- [ ] Commercial
- [x] 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
- [x] Unknown — none visible near building

Yes	Possible	
[ ]	[x]	Sewer
[ ]	[x]	Water
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[x]	Electric
[ ]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[x] Not Probable

How many?
Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 2706

SKETCH

Unique Site ID: 276

DESIGN OR DELIVERY NOTES

Rec. area in need of upgrades

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [ ] Confirm property ownership
- [x] Confirm drainage area
- [x] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [x] Complete concept sketch
- [x] Other: obtain redevelopment/upgrade plans if any
- [x] Obtain existing stormwater practice as-builts
- [x] Obtain site as-builts
- [x] Obtain detailed topography
- [x] Obtain utility mapping
- [x] Confirm storm drain invert elevations
- [x] Confirm soil types

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S): _____

Unique Site ID: 276

Tower Street School Community Center
93 Tower Street
Westerly, RI

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 277	
DATE: 6/2/16	ASSESSED BY: RW/WG	CAMERA ID: A	PICTURES: ~~0~~ 1015-1030
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Westerly Health Center
Address: 280 High Street, Westerly, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: possible offsite drainage from main road, though outfitted w/ CBs

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible
If Yes, Describe:
Swale (see picture) receives roof drainage from Catch basins; does not appear to be green infrastructure

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Steep slopes from main road to parking lot
Downspouts empty to grass

Existing Head Available and Points Where Measured:
Site only partially assessed; ask "Chris" for site access

Unique Site ID: 277

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

Swale @ site of existing swale
- require tree removal
- accept swale from parking lot (need new CB)

Replace raised islands w/ bioretention?

SITE CONSTRAINTS

Adjacent Land Use:
☐ Residential ☐ Commercial ☐ Institutional
☐ Industrial ☒ Transport-Related ☐ Park
☐ Undeveloped ☒ Other: Highway ?
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	
☐	☒	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

Unique Site ID: 277

SKETCH

Unique Site ID: 277

DESIGN OR DELIVERY NOTES

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: Obtain site access permission

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

~~Access difficulties too~~

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): _____

Unique Site ID: 277

Westerly Health Center
280 High Street
Westerly, RI

Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.01 0.02 0.04 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 278	
DATE: 6/2/16	ASSESSED BY: RW, WG	CAMERA ID: A	PICTURES: 925-10:00
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Bus Depot "Westerly Municipal Garage Annex"
Address: 8 Springbrook Road Westerly RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ~~☒ Near Large Parking Lot~~

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 ≈ _____

Notes: On site drainage only, probably

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ~~☒ Yes~~ ~~☒ No~~ ☐ Possible
If Yes, Describe:

~~1 catch basin, 4 years old~~

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

Water drains to catch basin in front parking lot; No catch basins visible elsewhere
Water leaves bus depot SW corner thru small swale; drops considerable sediment @ edge of parking lot; clear water issues on site
PL CB ~4 years old, probably connects to Road drain?

~~**Existing Head Available and Points Where Measured:**~~

Drainage to swale in SW corner near Maintenance building stays
- standing water during most storms; deposits sand to fines
- overflows + erodes swale during larg

Unique Site ID: 278

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ ~~Bioretention~~ sand filter?
☒ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: ~~permeable paving~~

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

Sand filter or other filter practice to remove contaminants
Located near existing catch basin using CB as overflow + taking up some parking spaces (~6)
Repave + regrade lot; take up some parki
might need deep filter to achieve WQv
Other: different paving practice under buses (permeable filtering surface)

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: Drainage patterns, Bus access

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

Unique Site ID: 278

SKETCH

DESIGN OR DELIVERY NOTES

Existing parking lot in poor shape

Buses park @ top of lot. in unpaved area

Diesel storage tanks D/H of buses, uphill of CB

PL: 40 spaces; not efficiently laid out but buses enter/exit through employee parking lot; filled to capacity

Q: ~~parking lot this size needed? May be used to capacity?~~

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: determine actual sites needed

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

Biggest issue will be loss of parking spaces

Consider reconfiguring parking lot + moving entrance east for straight shot for busses

Determine ownership @ site 109

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): _____

Unique Site ID: 278

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 280	
DATE: 7/1/16	ASSESSED BY: RW/WG	CAMERA ID: B phone	PICTURES: 1128 - 1140
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Ashaway Elementary School
Address: 12A Hillside Ave, Hopkinton RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
old building - roof drains to PL; newer building roof drains into ground
few CBs on site

Existing Head Available and Points Where Measured:

Unique Site ID: 280

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☐ Filtering Practice ☐ Infiltration ☐ Swale ☒ Other: permeable parking lot

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

- permeable parking lot in rec area
- bioretention in front lawn?
- bioretention for rooftop disconnection behind + in front of newer school

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: plowing

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

Unique Site ID: 280

SKETCH

Unique Site ID: 290

DESIGN OR DELIVERY NOTES

Bus route?

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

- [ ] Other: _____

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S): _____

Unique Site ID: 280

Ashaway Elementary School
12A Hillside Avenue
Hopkinton, RI

underground linear infiltration. Could be placed toward end of street (west) and connected to catch basin on Laurel St. for overflow

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Michael Celona
617 624 5228

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: ~~175~~ 281	
DATE: 7/1/16	ASSESSED BY: RW/WG	CAMERA ID: B Phan	PICTURES: 12:08
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Charlestown Elementary School
Address: 363 Carolina Back Rd

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
v. steep, water drained off site using CBs + surface conveyances
· steep roads + parking lots

Existing Head Available and Points Where Measured:

Unique Site ID: ~~175~~ 281

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

treat road using infiltration under parking lot

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 unlikely

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

Unique Site ID: ~~175~~ 281

SKETCH

Unique Site ID: TES 281

Design or Delivery Notes

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: _____

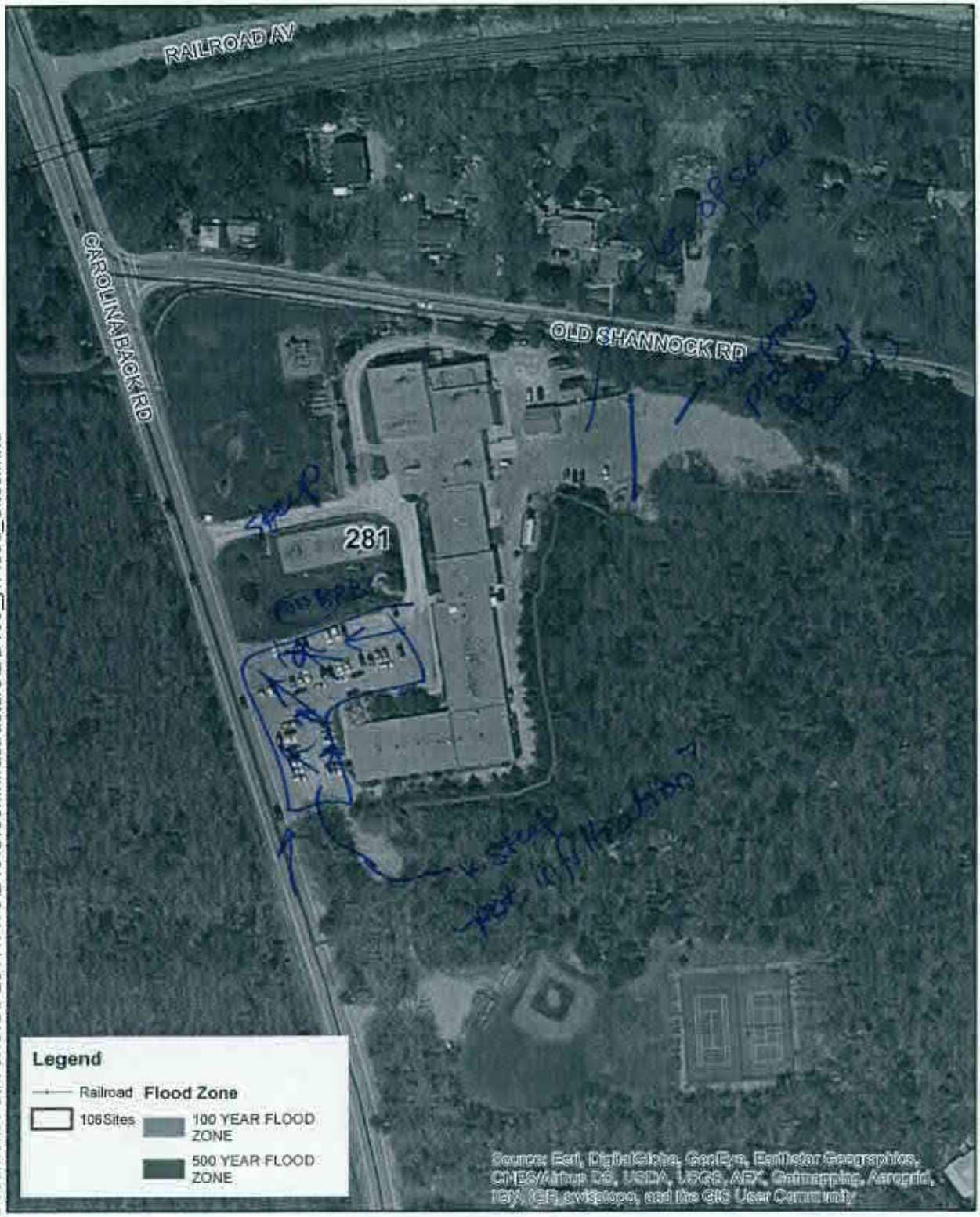
Initial Feasibility and Construction Considerations

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): _____

Unique Site ID: 1735 281

Charlestown Elementary School
363 Carolina Back Road
Charlestown, RI



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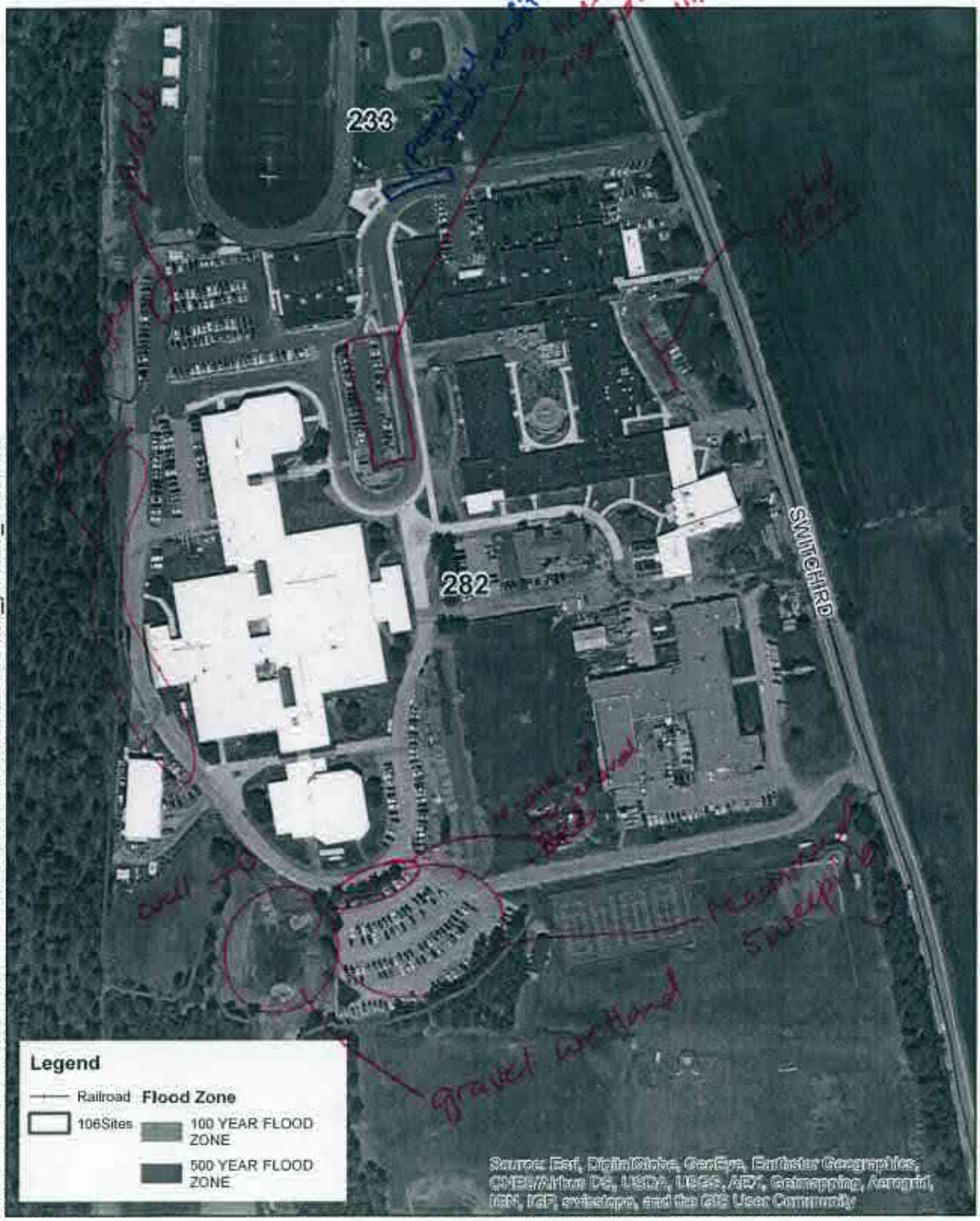
Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Chariho Regional High School/Middle School/ Tech Center
453 Switch Road
Richmond, RI



Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0225 0.045 0.09 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:		UNIQUE SITE ID: 282
DATE: 7/1/16	ASSESSED BY: RW/WG	CAMERA ID: B. Phone	PICTURES: ~~287~~ 13:30 - 13:30
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION Regional

Name: Charles High School/Middle School + Care

Address:

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☐ Small Parking Lot
- ☐ Individual Street
- ☐ Underground
- ☐ Individual Rooftop
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ Other: along driveway

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Infiltration??

Large Gravel Wetland

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

Complicated; large CBs to handle water

Existing Head Available and Points Where Measured:

16,000 730 16,000 200

2,800 1,100

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [ ] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [x] Swale
- [ ] Bioretention
- [ ] Other:

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

v. small swale as demo project in existing small swale

SITE CONSTRAINTS

Adjacent Land Use:
- [ ] Residential
- [ ] Commercial
- [ ] Institutional
- [ ] Industrial
- [ ] Transport-Related
- [ ] Park
- [x] Undeveloped
- [x] Other: AG - turf farm

Possible Conflicts Due to Adjacent Land Use? [ ] Yes [x] No

If Yes, Describe:

Access:
- [ ] No Constraints

Constrained due to
- [ ] Slope
- [x] Space
- [x] Utilities
- [ ] Tree Impacts
- [ ] Structures
- [ ] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [ ] Unknown

many

Yes	Possible	
[ ]	[x]	Sewer
[ ]	[x]	Water
[ ]	[x]	Gas
[ ]	[x]	Cable
[ ]	[x]	Electric
[ ]	[x]	Electric to Streetlights
[ ]	[ ]	Overhead Wires
[ ]	[x]	Other: Comm?

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[x] 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 [x] No

Unique Site ID: 282

SKETCH

Unique Site ID: 282

1 4 0

Retrofit Reconnaissance Investigation **RRI**

DESIGN OR DELIVERY NOTES

Multiple fuel tanks on site

little opportunity for projects (space, utilities)

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

only b/c it's a school

Unique Site ID: 282

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 283	
DATE: 7/1/16	ASSESSED BY: RG/WG	CAMERA ID: Bphone	PICTURES: 2-230
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: West Kingstown Elementary School
Address: 3119 Ministerial Road, South Kingstown RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

On-Site
- ☐ Hotspot Operation
- ☐ Small Parking Lot
- ☐ Individual Street
- ☐ Underground
- ☐ Individual Rooftop
- ☐ Small Impervious Area
- ☐ Landscape / Hardscape
- ☒ Other: along driveway

DRAINAGE AREA TO PROPOSED RETROFIT

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

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

~~is~~ dry wells??

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

See 2 large CBs in Parking lot appear to capture v. little parking lot

Roof drains go to where? CBs drain to where??

Existing Head Available and Points Where Measured:

Unique Site ID: 283

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [ ] Demonstration / Education
- [x] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [x] Swale
- [x] Bioretention
- [ ] Other:

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

swale + bioretention along exit driveway?

bioretention @ top of entrance driveway

dry wells?

SITE CONSTRAINTS

Adjacent Land Use:
- [ ] Residential
- [ ] Commercial
- [ ] Institutional
- [ ] Industrial
- [ ] Transport-Related
- [ ] Park
- [x] Undeveloped
- [x] Other: ag

Possible Conflicts Due to Adjacent Land Use? [ ] Yes [x] No

If Yes, Describe:

Access:
- [ ] No Constraints

Constrained due to
- [x] Slope ??
- [ ] Utilities
- [ ] Structures
- [ ] Other:
- [ ] Space
- [ ] Tree Impacts
- [ ] Property Ownership

Conflicts with Existing Utilities:
- [ ] None
- [x] Unknown — unlikely!

Yes	Possible	
[ ]	[x]	Sewer
[ ]	[ ]	Water
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[ ]	Electric
[ ]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[ ]	[ ]	Other:

?

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[x] Not Probable

How many?
Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 283

DESIGN OR DELIVERY NOTES

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:_____

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

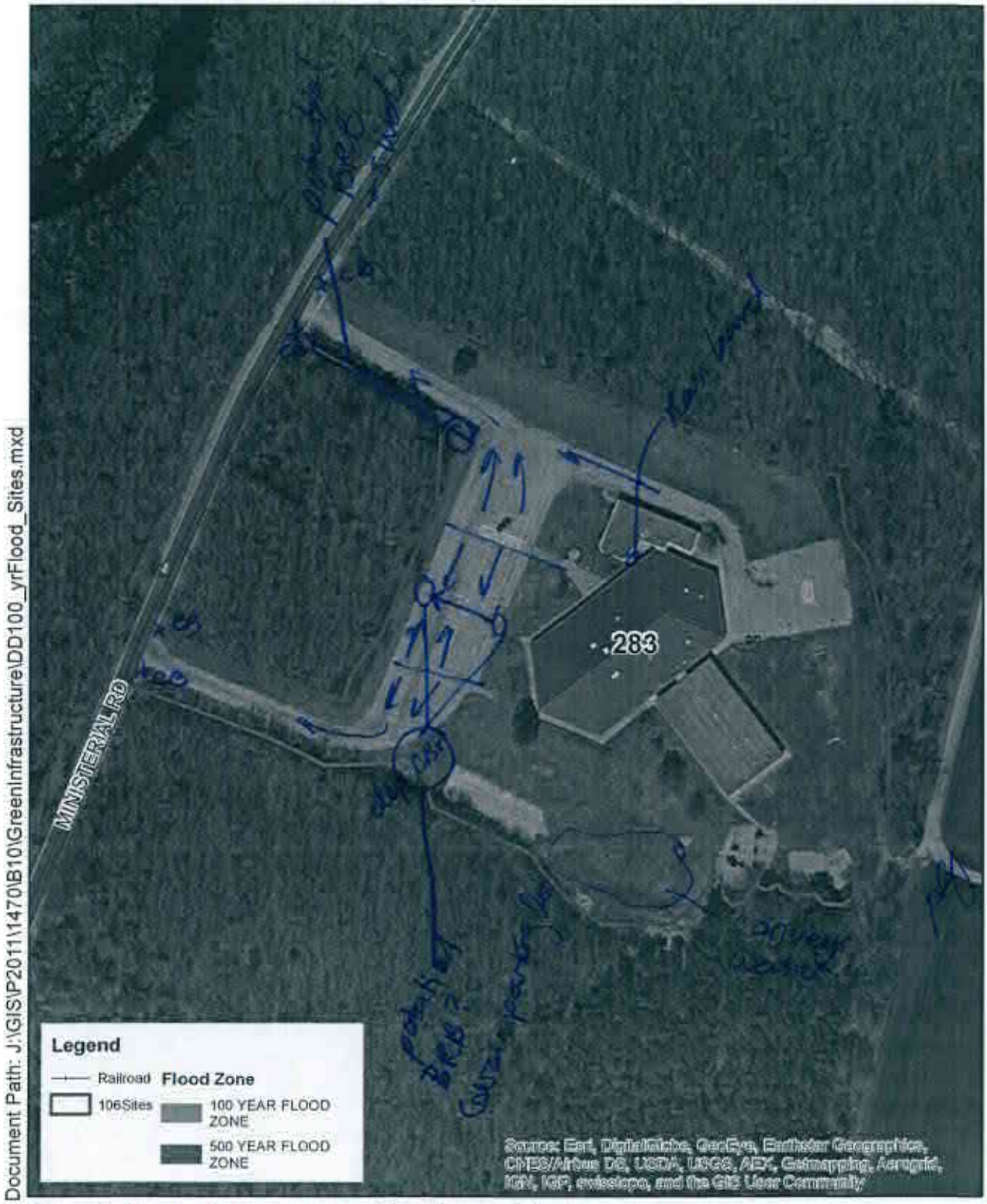
IF YES, TYPE(S):_____

Unique Site ID: 283

SKETCH

Unique Site ID: 283

West Kingston Elementary School
3119 Ministerial Road
South Kingstown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 284-41-239	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 9:19-945
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Boss Arena, ~~West~~
Address: 1 Keaney Road, South Kingstown, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: may include runoff from adjacent facilities

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ ~~Yes~~ ☒ No ☐ Possible
If Yes, Describe:

~~CBs, scattered, surrounding pavement damaged~~

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

large parking lots w/ grey infrastructure only. CBs widely scattered, Berms + parking lot corners badly eroded
Building downspouts go into ground

CBs, scattered, surrounding pavement damaged

~~**Existing Head Available and Points Where Measured:**~~

No access to 239 due to Special Olympics

Unique Site ID: 284

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
☐ Extended Detention ☐ Wet Pond ☐ Created Wetland ☒ Bioretention
☒ Filtering Practice ☒ Infiltration ☒ Swale ☐ Other: permeable pavement

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

- Convert grass medians/edges to bioretent
- Convert parking to permeable
- Underground Infiltration
- curb cuts for sheet flow

Route downspouts to raingarden along tennis courts

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: use

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? 1-2 dozen
Approx. DBH 4-6"

Other factors: Depth to groundwater

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

Unique Site ID:_____

SKETCH

Unique Site ID: 284

DESIGN OR DELIVERY NOTES

converting grass strips to bioretention would require small loss of driving/parking space; would help w/ maintenance of pavement around catch basins

URI already has clear interest in stormwater management

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: _____

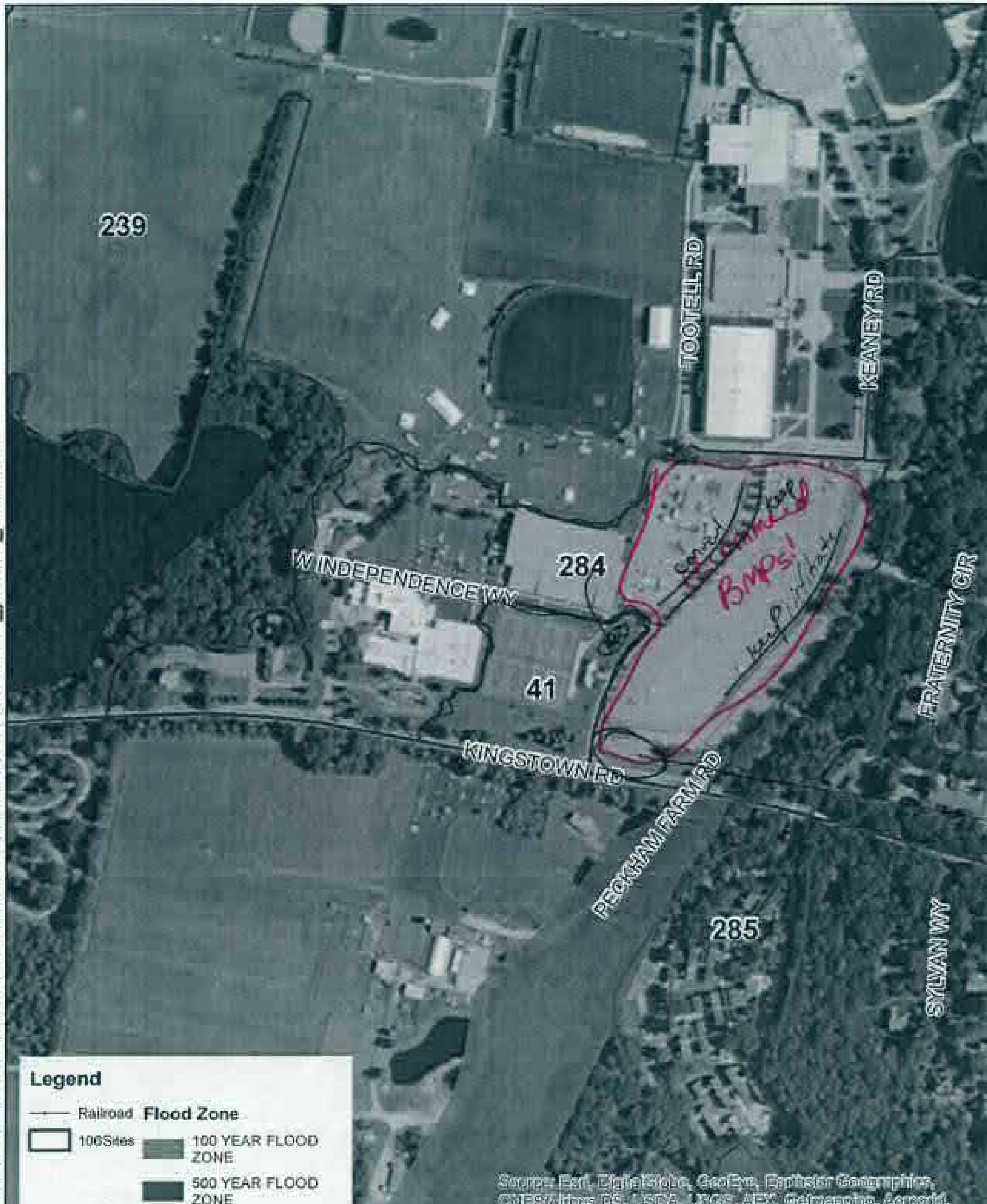
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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): _____

Unique Site ID: 284

Boss Arena
1 Keaney Road
South Kingstown, RI



overflow lot make pervious

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.04 0.08 0.16 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 285	
DATE: 6/3/16	ASSESSED BY: RW/WG	CAMERA ID: 8 C	PICTURES: 830-900
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: University RI Campus + Parking lots along Flagg
Address: 210 Flagg Road, South Kingstown, RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

Massive stormwater basins @ NW end of campus; poss. permeable pavmt @ Plains Rd parking

* Eastern lots No treatment

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

Eastern lots consist of impermeable pavement, no islands

Existing Head Available and Points Where Measured:

Unique Site ID: 285

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [x] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [x] Infiltration
- [ ] Created Wetland
- [ ] Swale
- [x] Bioretention
- [x] Other: permeable paving

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

add bioretention, permeable parking spaces in parking lots

or expand bioretention in lots

·infiltration system? (underground)

SITE CONSTRAINTS

Adjacent Land Use:
- [ ] Residential
- [ ] Commercial
- [x] 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
- [x] Slope
- [x] Utilities
- [x] Structures
- [x] Space
- [x] Tree Impacts
- [x] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [ ] Unknown

Yes	Possible	
[ ]	[x]	Sewer
[x]	[x]	Water
[ ]	[x]	Gas
[ ]	[x]	Cable
[ ]	[x]	Electric
[ ]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[x]	[ ]	Other: steam

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[x] Not Probable

How many?

Approx. DBH

Other factors:

Soils:

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

Unique Site ID: 285

SKETCH

Unique Site ID: 285

DESIGN OR DELIVERY NOTES

- potential parking conflicts (e.g. buses)
- high capacity parking lot may need to retain max. capacity

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: confirm planned bmps (URI may have future plans)

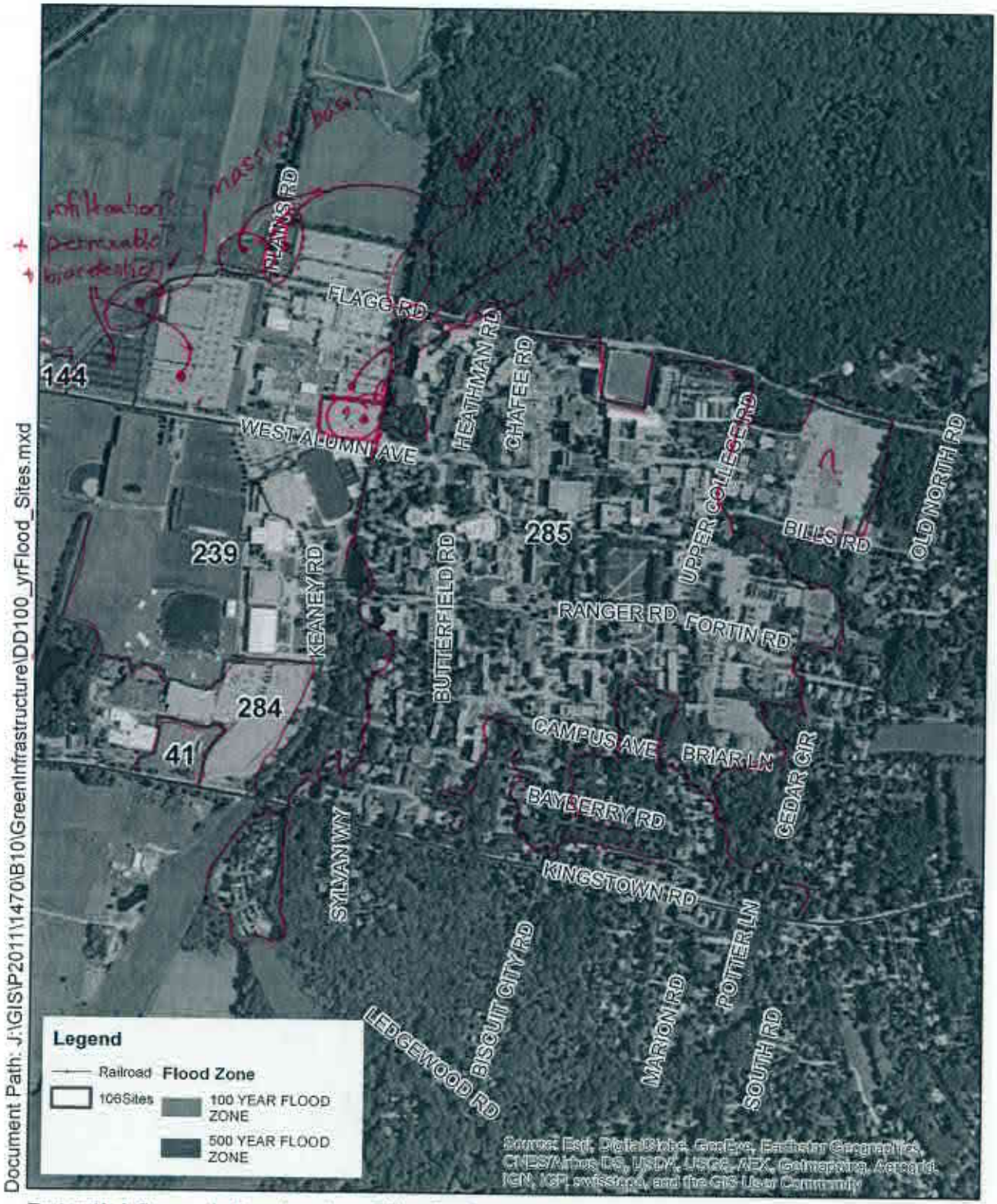
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):

Unique Site ID: 285

URI Campus and parking lots along Flagg Road
210 Flagg Road
South Kingstown, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.1 0.2 0.4 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 286	
DATE: 7/1/16	ASSESSED BY: RW/LMG	CAMERA ID: B phone	PICTURES: ~130 - ~~137~~ 148
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name:_____
Address:_____

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:_____
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

On-Site @ school
- ☐ 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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible
If Yes, Describe:
↳ @ town hall

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
No formal drainage/CBs on properties (only in St)

Existing Head Available and Points Where Measured:

Unique Site ID: 286

PROPOSED RETROFIT

Purpose of Retrofit:
- [x] Water Quality
- [x] Demonstration / Education
- [x] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:
- [ ] Extended Detention
- [ ] Filtering Practice
- [ ] Wet Pond
- [ ] Infiltration
- [ ] Created Wetland
- [ ] Swale
- [x] Bioretention
- [ ] Other:

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

Retrofit flagpole area?

Route CB into BRB to front lawn area?

SITE CONSTRAINTS

Adjacent Land Use:
- [ ] Residential
- [ ] Commercial
- [x] Institutional
- [ ] Industrial
- [ ] Transport-Related
- [ ] Park
- [ ] Undeveloped
- [x] Other: ag, golf course

Possible Conflicts Due to Adjacent Land Use? [ ] Yes [ ] No

If Yes, Describe:

Access:
- [x] No Constraints

Constrained due to
- [ ] Slope
- [ ] Utilities
- [ ] Structures
- [ ] Space
- [ ] Tree Impacts
- [ ] Property Ownership
- [ ] Other:

Conflicts with Existing Utilities:
- [ ] None
- [ ] Unknown

Yes	Possible	
[ ]	[ ]	Sewer
[x]	[x]	Water wells
[ ]	[ ]	Gas
[ ]	[ ]	Cable
[ ]	[ ]	Electric
[ ]	[ ]	Electric to Streetlights
[ ]		Overhead Wires
[ ]	[ ]	Other:

Potential Permitting Factors:

Dam Safety Permits Necessary	[ ] Probable	[x] Not Probable
Impacts to Wetlands	[ ] Probable	[x] Not Probable
Impacts to a Stream	[ ] Probable	[x] Not Probable
Floodplain Fill	[ ] Probable	[x] Not Probable
Impacts to Forests	[ ] Probable	[x] Not Probable
Impacts to Specimen Trees	[ ] Probable	[x] Not Probable

How many?_____

Approx. DBH_____

Other factors:_____

Soils:

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

Unique Site ID:_____

SKETCH

Unique Site ID: 286

DESIGN OR DELIVERY NOTES

- greenhouse on site

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

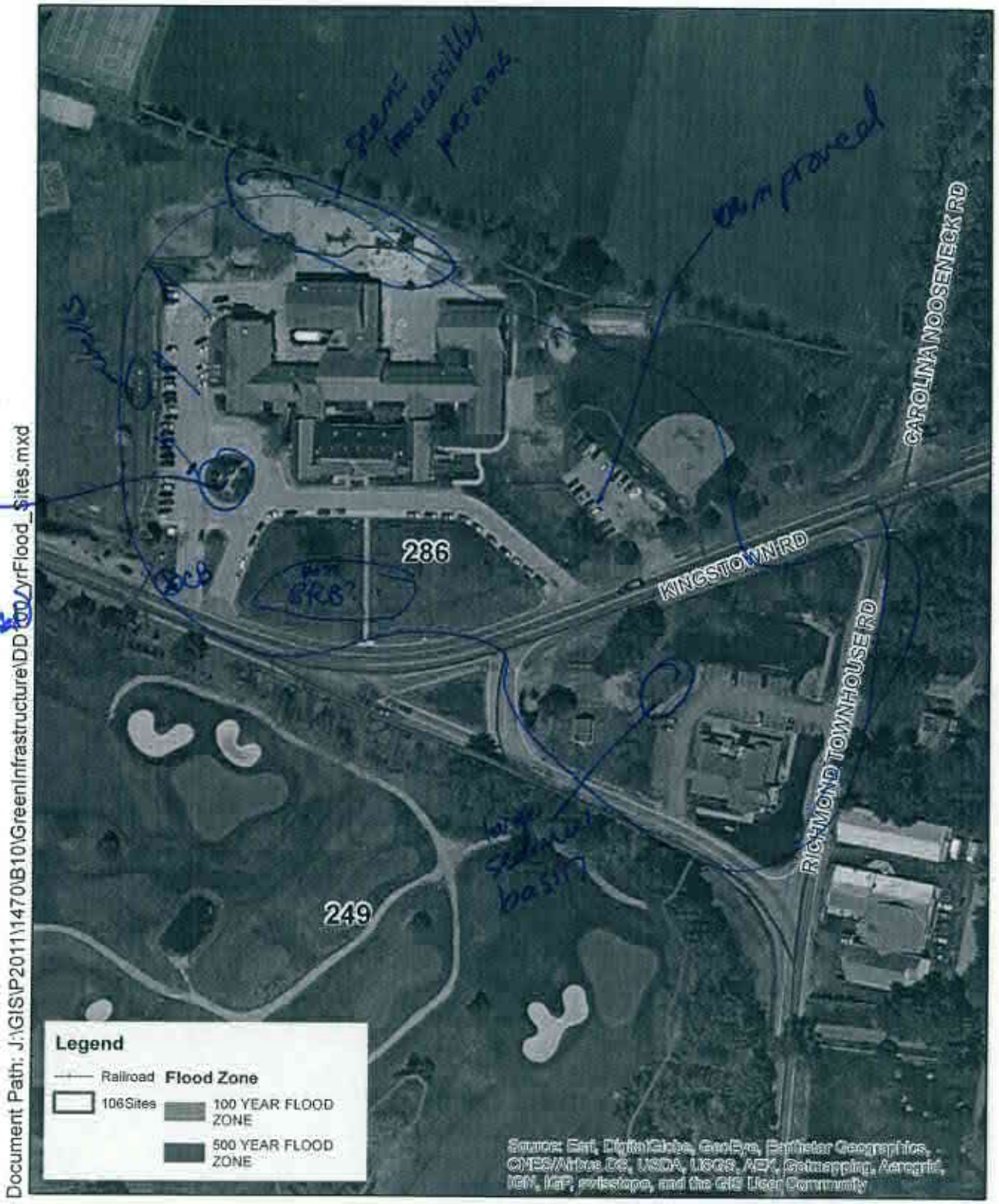
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 286

Richmond Town Hall/ Richmond Elementary School
5 Richmond Townhouse Road/ 190 Kingstown Road
Richmond, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Richmond Town Hall/ Richmond Elementary School
5 Richmond Townhouse Road/ 190 Kingstown Road
Richmond, RI

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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 287	
DATE: 7/5/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 1045-11
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Wood River Preschool / Hope Valley Elementary School
Address: 1089 Main St, Hopkinton RI

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☒ Yes ☐ No ☐ Possible
If Yes, Describe: Rain gardes near playground seems in good shape

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
steep lots drain to C.Bs. (front/side)

Existing Head Available and Points Where Measured:

Unique Site ID: 287

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
Expand existing bioretention to capture roof leaders + parking lot

Louisville Rd
- install permeable paving parking spaces + lot at all
infiltration under road

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: could avoid
☐ No Constraints
Constrained due to
☑ Slope ☑ Space
☑ Utilities ☐ Tree Impacts
☐ Structures ☐ Property Ownership
☐ Other:_____

Conflicts with Existing Utilities:
☒ None Confirm
☐ 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

Unique Site ID: 287

SKETCH

Unique Site ID: 287

Design or Delivery Notes

park - town/village?

Follow-up Needed to Complete Field Concept

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

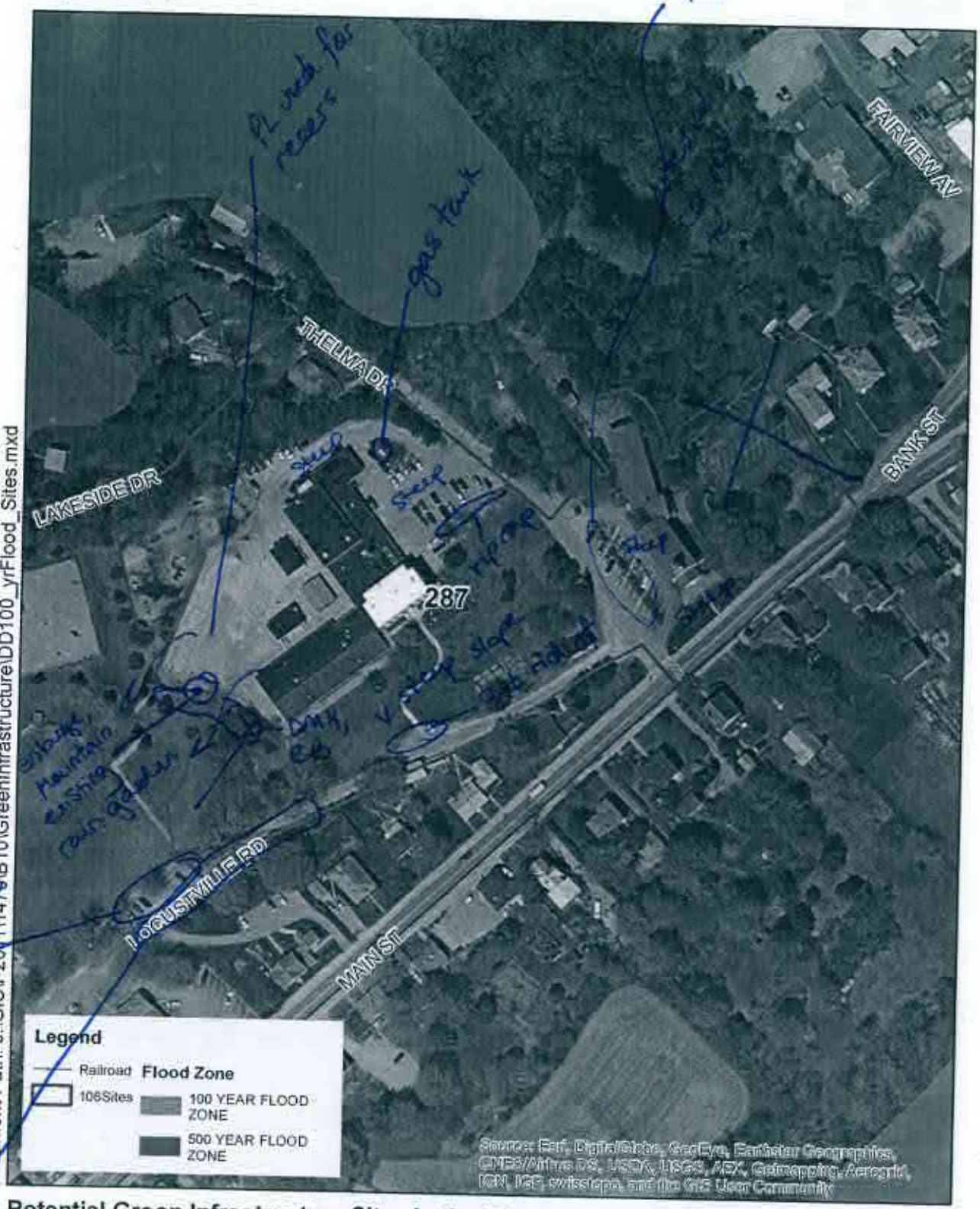
Initial Feasibility and Construction Considerations

Site Candidate for Further Investigation:	[x] Yes	[ ] No	[ ] Maybe
Is Site Candidate for Early Action Project(s):	[ ] Yes	[ ] No	[x] Maybe
If no, site candidate for Other Restoration Project(s):	[ ] Yes	[ ] No	[ ] Maybe

If yes, type(s):

Unique Site ID: 287

Wood River Preschool/ Hope Valley Elementary School
1059 Main Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.015 0.03 0.06 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 288	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 11:20 - 11:40
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: DPW Facility? Unknown
Address: 51 Bank St, Hopkinton RI

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
- ☐ Below Outfall
- ☒ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes: v. large, v. highly disturbed

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

EXISTING STORMWATER MANAGEMENT

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

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:
Large amounts of sand + salt in runoff; most runs onto road + into creek
SW of salt dome, runs straight into wetland.
Main roof runoff enters CB

~~**Existing Head Available and Points Where Measured:**~~
definite need for trea

Unique Site ID: 288

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:
@ Road ROW: excavate slope @ D/S end of lot + create ~~seed~~ bioswale or seed. basin; remove some parking lot + build retaining wall to support adjacent lot (+ add'l new parking)
under front lot: infiltration chambers; new CBs or retrofit CBs to direct water; provide cleanouts

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: environmental concerns

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: Definitely w/in wetland buffer

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 wetland nearby

Unique Site ID: 288

SKETCH

Unique Site ID: 888

DESIGN OR DELIVERY NOTES

Winter treatments
- mostly salt
- v. little brine
- sand used only when icy

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

- [ ] Confirm property ownership
- [x] Confirm drainage area
- [x] Confirm drainage area impervious cover
- [x] Confirm volume computations
- [x] Complete concept sketch
- [x] Obtain existing stormwater practice as-builts
- [x] Obtain site as-builts
- [x] Obtain detailed topography
- [x] Obtain utility mapping
- [x] Confirm storm drain invert elevations
- [ ] Confirm soil types
- [x] Other: confirm LUHPPL / Hotspot status

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

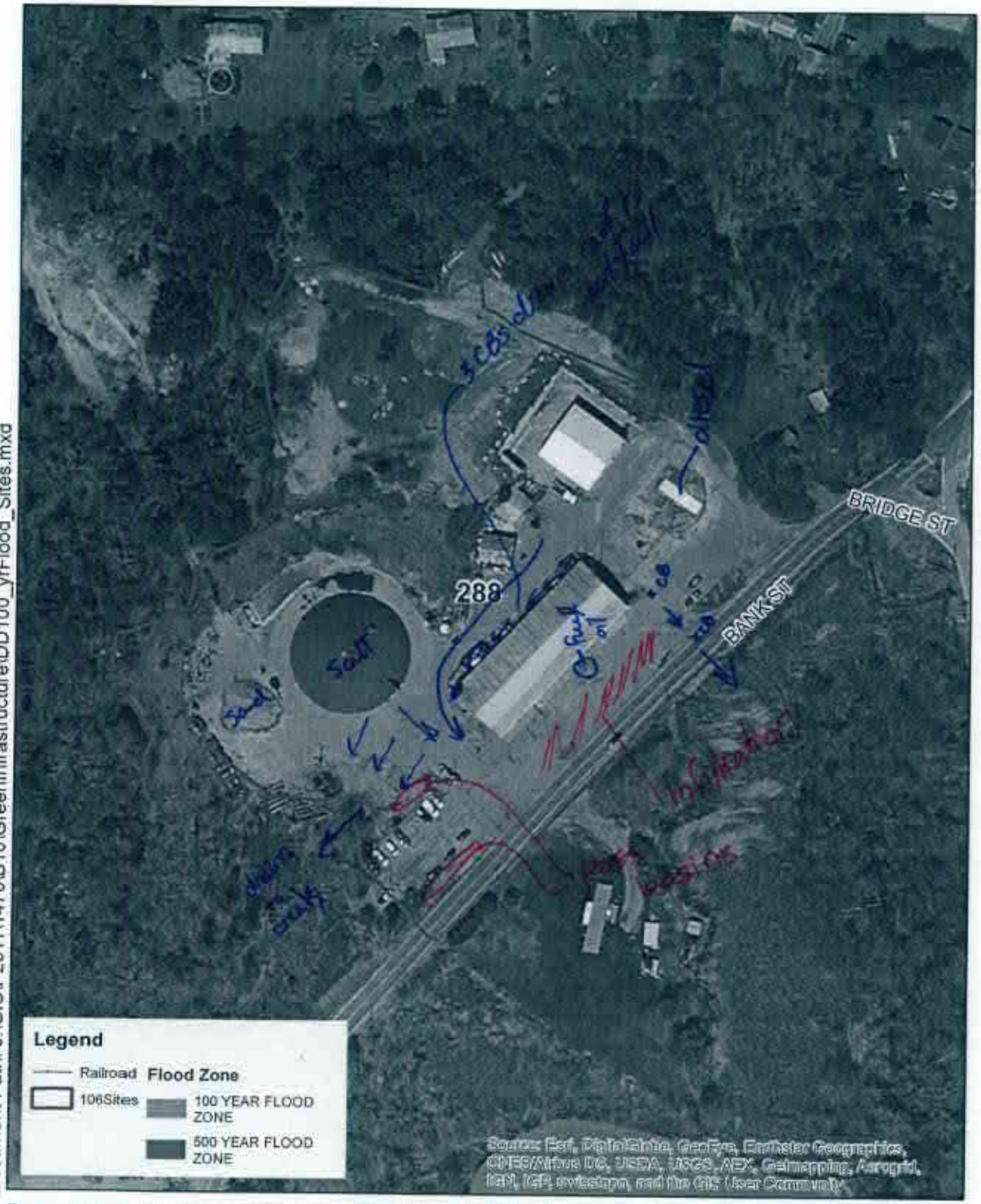
definitely need for treatment; willing partner in management

SITE CANDIDATE FOR FURTHER INVESTIGATION:	[x] YES	[ ] NO	[ ] MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	[x] YES	[ ] NO	[x] ~~MAYBE~~
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	[ ] YES	[x] NO	[ ] MAYBE

IF YES, TYPE(S):

Unique Site ID: 288

DPW Facility? Unknown
51 Bank Street
Hopkinton, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 290
DATE: 6/6/16	ASSESSED BY: RW/WG CAMERA ID: C	PICTURES: 11:00 - 11:15
GPS ID:	LMK ID: LAT:	LONG:

SITE DESCRIPTION

Name: Unknown
Address: 260 Arcadia Rd, Richmond

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: NO

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

all surface conditions unimproved

No need for improvement over current conditions

Existing Head Available and Points Where Measured:

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

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	
☐	☐	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

Unique Site ID: 290

SKETCH

Unique Site ID: 290

DESIGN OR DELIVERY NOTES

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:_____

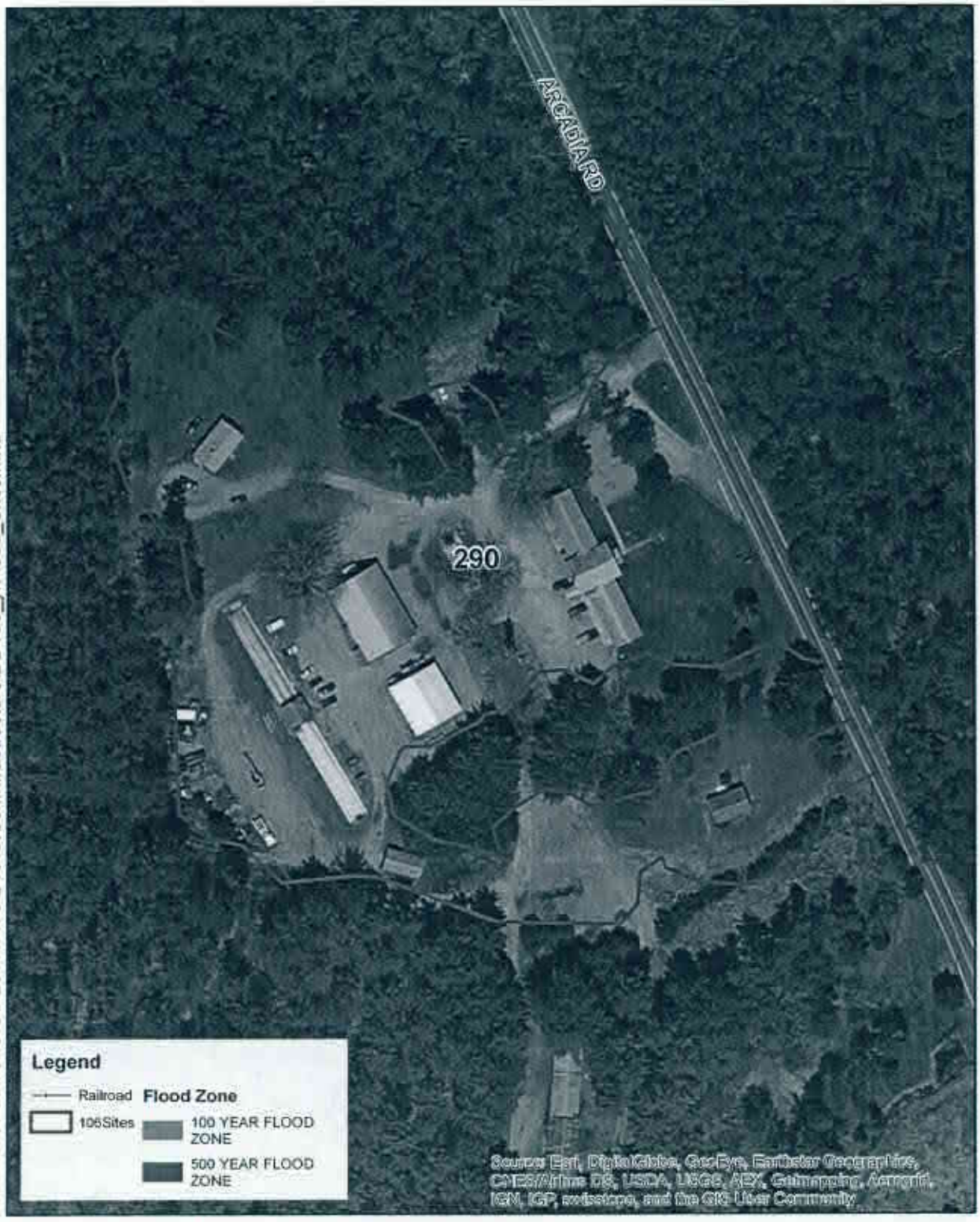
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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):_____

Unique Site ID: 290

Unknown (1/4 Mile North of Wood-Pawcatuck Watershed Association)
260 Arcadia Road
Richmond, RI



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Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

FUSS & O'NEILL

N W E S

Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: ~~52~~ 293	
DATE: 6/6/16	ASSESSED BY: RW/WG	CAMERA ID: C	PICTURES: 950-955
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Phoenix House
Address:

Ownership: ☐ Public ☒ Private ~~☒ Unknown~~ Non profit + various
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
- ☐ Below Outfall
- ☐ In Road ROW
- ☐ Other:
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☐ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

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

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

Existing Head Available and Points ~~Where Measured~~:

Not assessed in detail due to nature of institution

Unique Site ID: 293

PROPOSED RETROFIT

Purpose of Retrofit:

- [x] Water Quality
- [x] Demonstration / Education
- [ ] Recharge
- [ ] Repair
- [ ] Channel Protection
- [ ] Other:
- [ ] Flood Control

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

Proposed Treatment Option:

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

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

No need; could use bioretention in front lawn to capture some roof/stop minor erosion

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
- [ ] Utilities
- [ ] Structures
- [ ] Other:
- [x] Space
- [x] Tree Impacts
- [x] Property Ownership

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

Unique Site ID: 293

SKETCH

Unique Site ID: 193

DESIGN OR DELIVERY NOTES

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: Get permission to visit site

INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

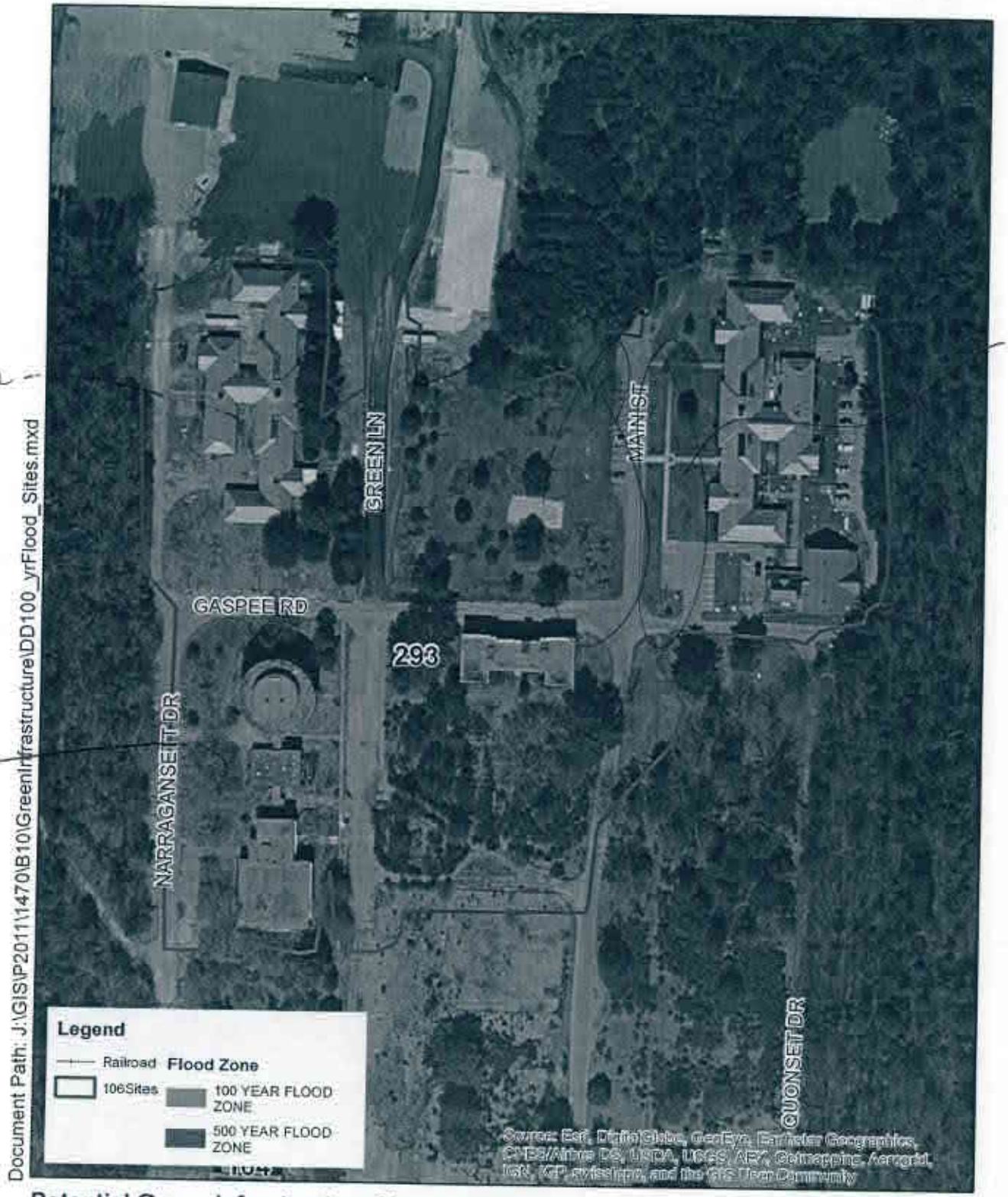
SITE CANDIDATE FOR FURTHER INVESTIGATION:	☐ YES	☐ NO	☒ MAYBE
IS SITE CANDIDATE FOR EARLY ACTION PROJECT(S):	☐ YES	☒ NO	☐ MAYBE
IF NO, SITE CANDIDATE FOR OTHER RESTORATION PROJECT(S):	☐ YES	☒ NO	☐ MAYBE

IF YES, TYPE(S): _____

Unique Site ID: 293

Camera pics - 950-955
6/6/16

Phoenix House and other Office Buildings?
Gaspee Road and Main Street
Exeter, RI



Document Path: J:\GIS\P2011\1470\B10\GreenInfrastructure\DD100_yrFlood_Sites.mxd

Gone

Gone

Poss bioretent in front lawn

Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0175 0.035 0.07 Miles

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Retrofit Reconnaissance Investigation **RRI**

WATERSHED:	SUBWATERSHED:	UNIQUE SITE ID: 294	
DATE: 6/6/16	ASSESSED BY: RW/MG	CAMERA ID: C	PICTURES: 900 - 935
GPS ID:	LMK ID:	LAT:	LONG:

SITE DESCRIPTION

Name: Exeter Public Library
Address: 767 Ten Rod Rd Exeter

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
- ☐ Below Outfall
- ☐ In Road ROW
- ☒ Other: near ~~road~~ CBs that can be taken at
- ☐ Above Roadway Culvert
- ☐ In Conveyance System
- ☒ Near Large Parking Lot

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 ≈ _____

Notes:

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

EXISTING STORMWATER MANAGEMENT

Existing Stormwater Practice: ☐ Yes ☒ ~~No~~ ☒ Possible
If Yes, Describe:

Possible practices under lawn?

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

several large, deep catch basins, one w/ lots of sediment steep slope in road; obvious large amount of sediment & runoff

~~Existing Head Available and Points Where Measured:~~

Unique Site ID: 294

PROPOSED RETROFIT

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

Retrofit Volume Computations - Target Storage:

Retrofit Volume Computations - Available Storage:

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:

- Bioretention @ east end of lawn to capture runoff from lawns, mult roads
- take drains off line if possible

*also armor roof outfall?

SITE CONSTRAINTS

Adjacent Land Use:
☐ Residential ☐ Commercial ☒ Institutional
☒ Industrial ☐ Transport-Related ☐ Park
☐ Undeveloped ☒ Other: AG

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	
☐	☐	Sewer
☐	☐	Water
☐	☐	Gas
☐	☐	Cable
☐	☒	Electric
☐	☒	Electric to Streetlights
☐		Overhead Wires
☐	☐	Other:_____

Need plas

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

elsewhere on site; not in proposed project area

Unique Site ID:_____

SKETCH

Unique Site ID: 294

DESIGN OR DELIVERY NOTES

FOLLOW-UP NEEDED TO COMPLETE FIELD CONCEPT

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

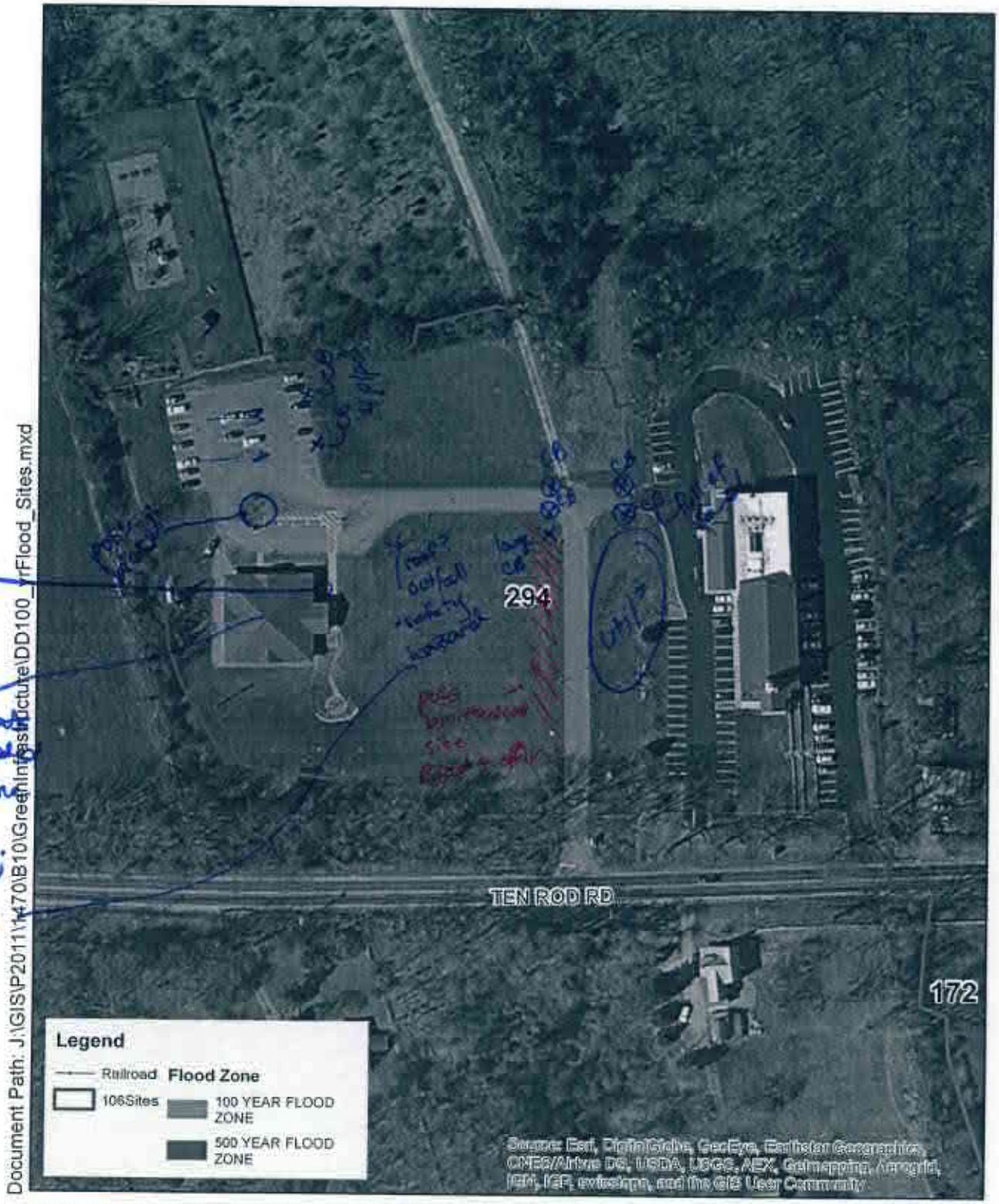
INITIAL FEASIBILITY AND CONSTRUCTION CONSIDERATIONS

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

IF YES, TYPE(S):_____

Unique Site ID:_____

Exeter Public Library
762 Ten Rod Road
Exeter, RI



Potential Green Infrastructure Sites in the Wood-Pawcatuck River Watershed with AB Soils, Development, SHWT > 6 Ft, within 1/2 mile of WQ Impairment, and >= 30 % Impervious OR IC >= 1 Acre

0 0.0125 0.025 0.05 Miles

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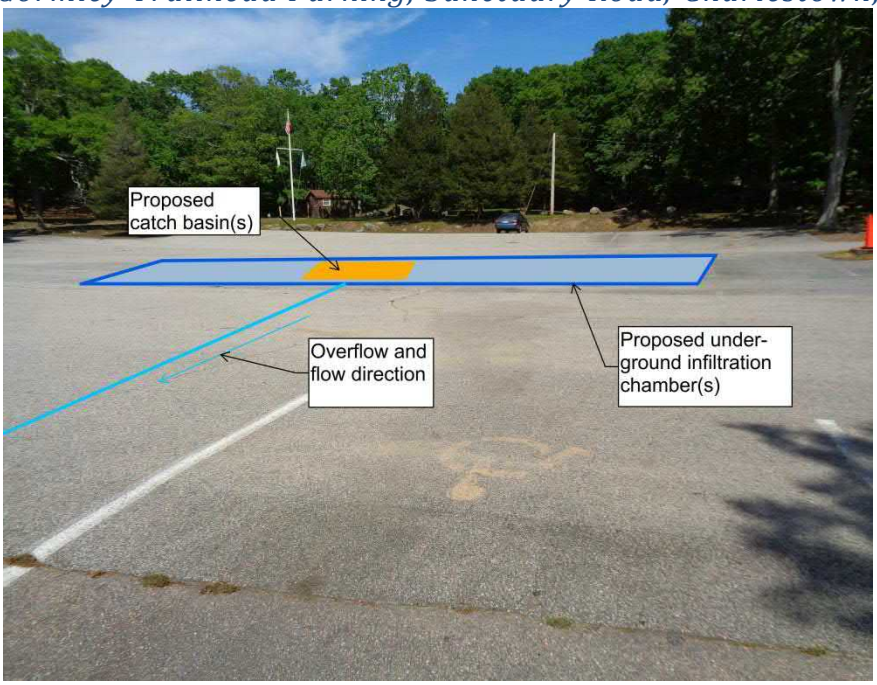
N W E S

FUSS & O'NEILL

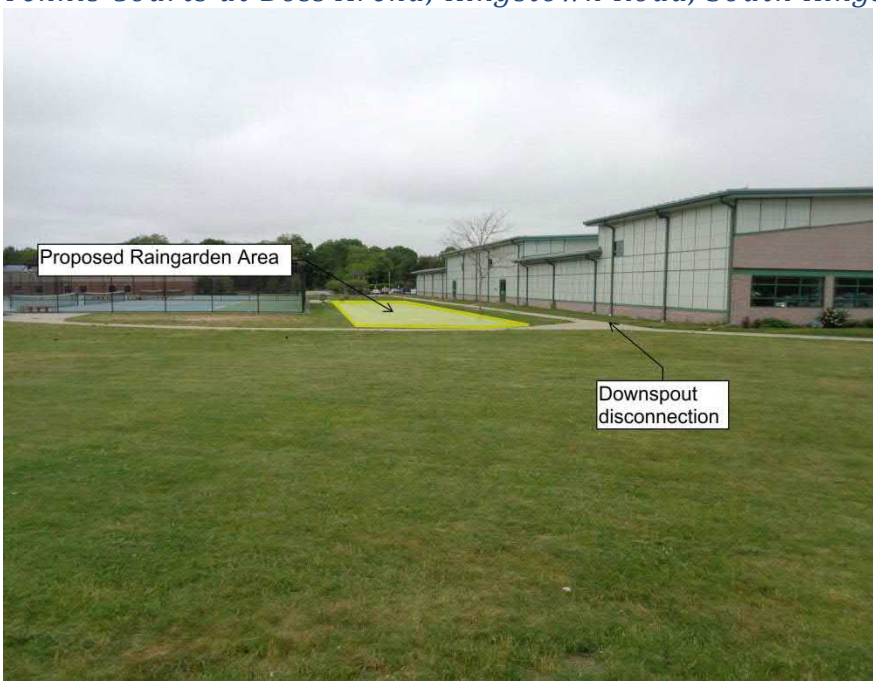
Attachment 7

Field Photos

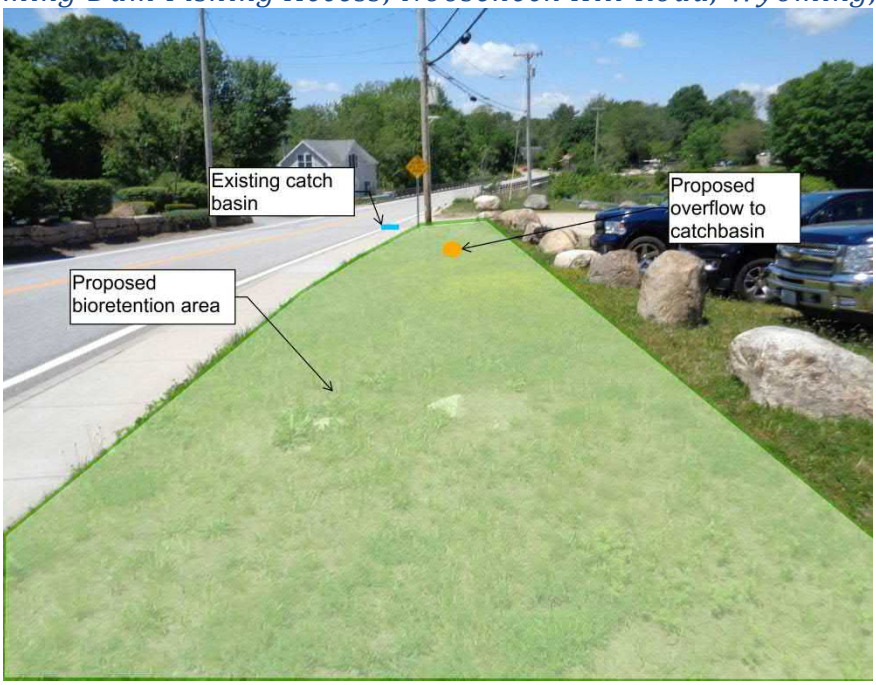
Site 21: Vin Gormley Trailhead Parking, Sanctuary Road, Charlestown, RI



Site 41: URI Tennis Courts at Boss Arena, Kingstown Road, South Kingston, RI



Site 50: Wyoming Dam Fishing Access, Nooseneck Hill Road, Wyoming, RI

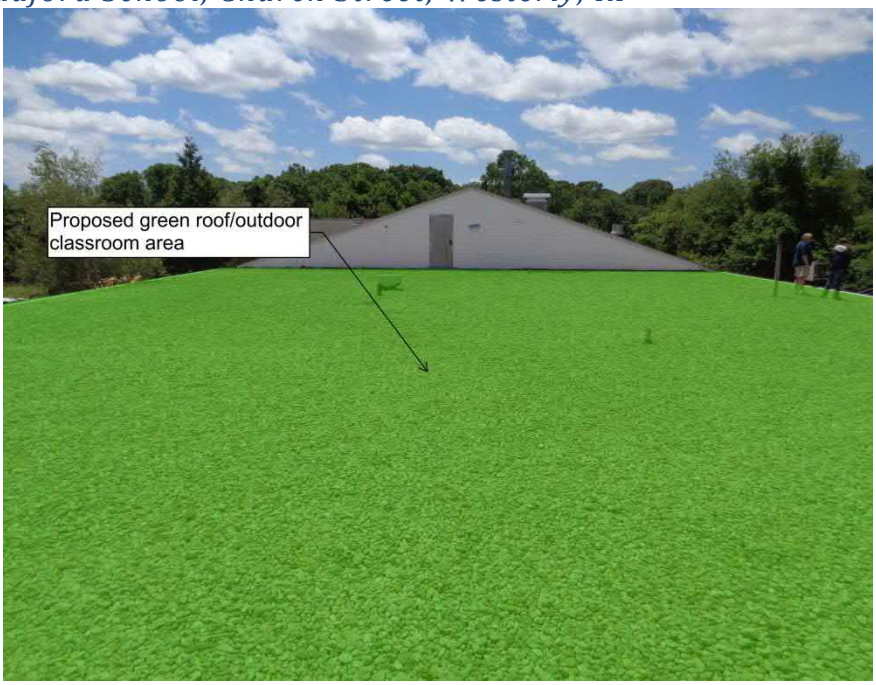


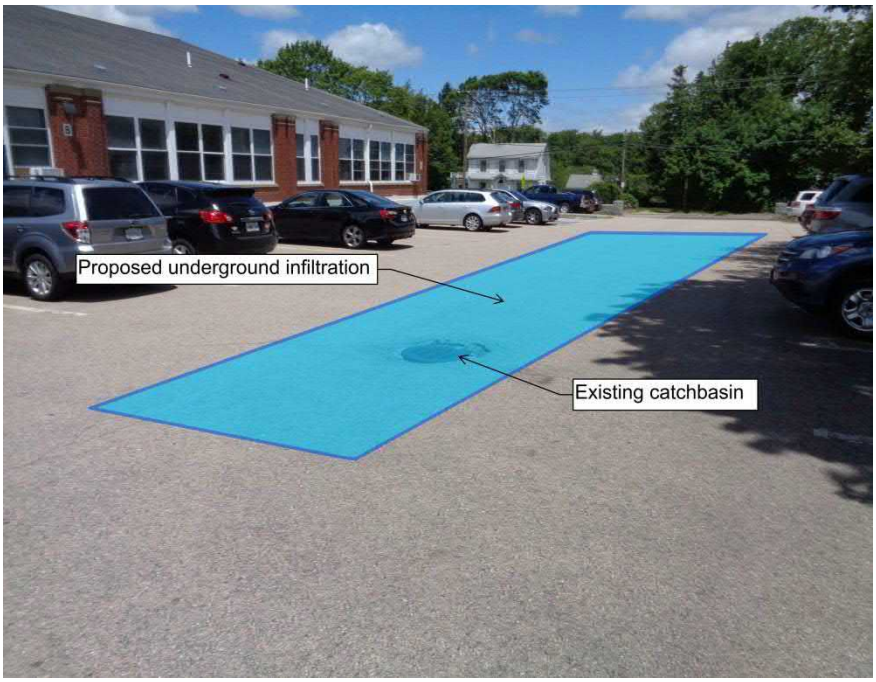
Site 73: Exeter Town Animal Shelter, South County Trail, Exeter, RI

Site 93: US Post Office (Westerly, RI), Tom Harvey Road, Westerly, RI

Site 102: Grace United Methodist Church, Spruce Street, Westerly, RI

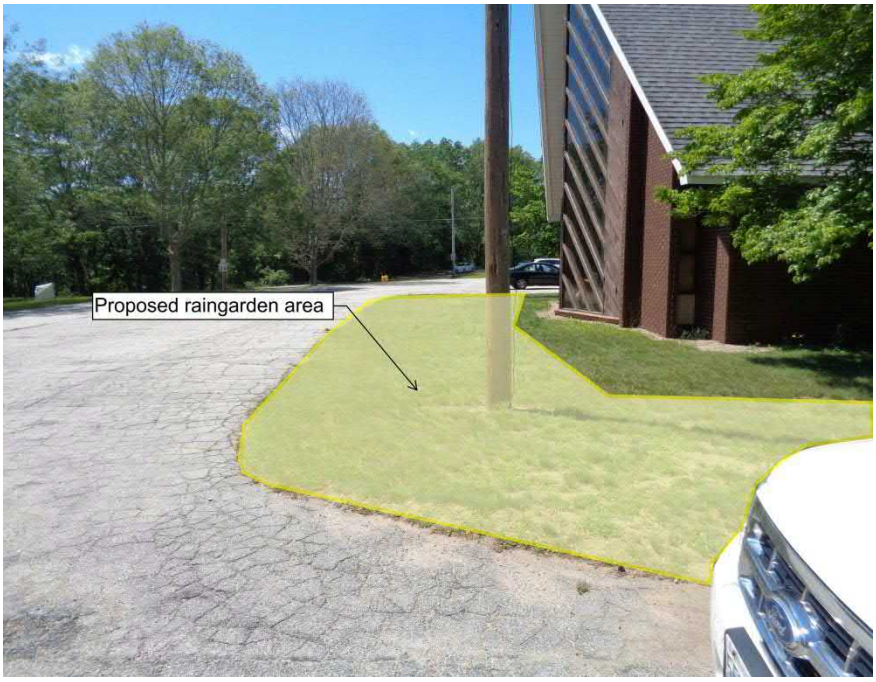
Site 108: Bradford School, Church Street, Westerly, RI





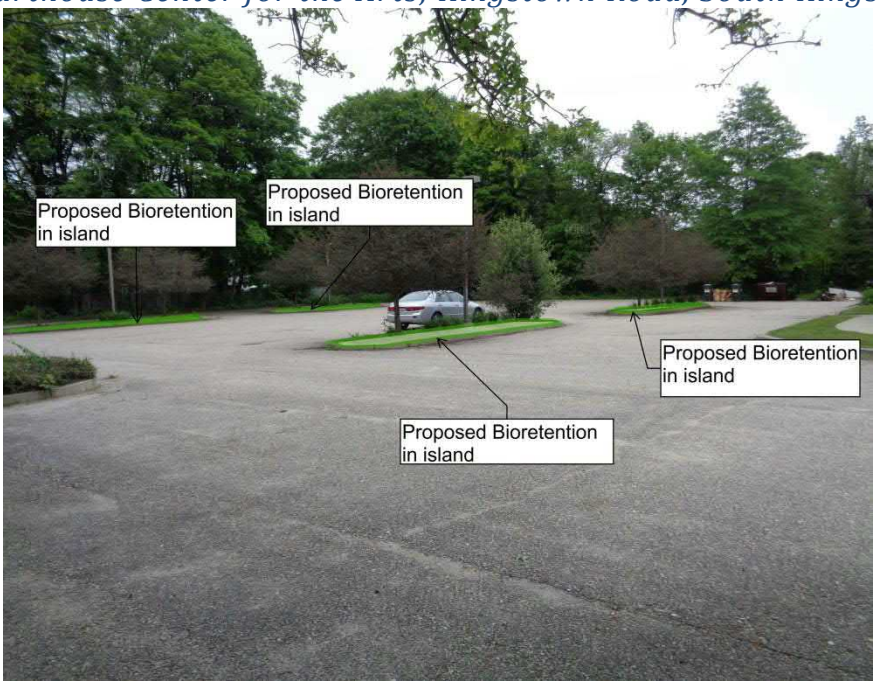
Site 114: US Post Office (Ashaway/Hopkinton, RI), Main Street, Ashaway, RI

Site 125: Trinity Lutheran Church, High Street, Hopkinton, RI

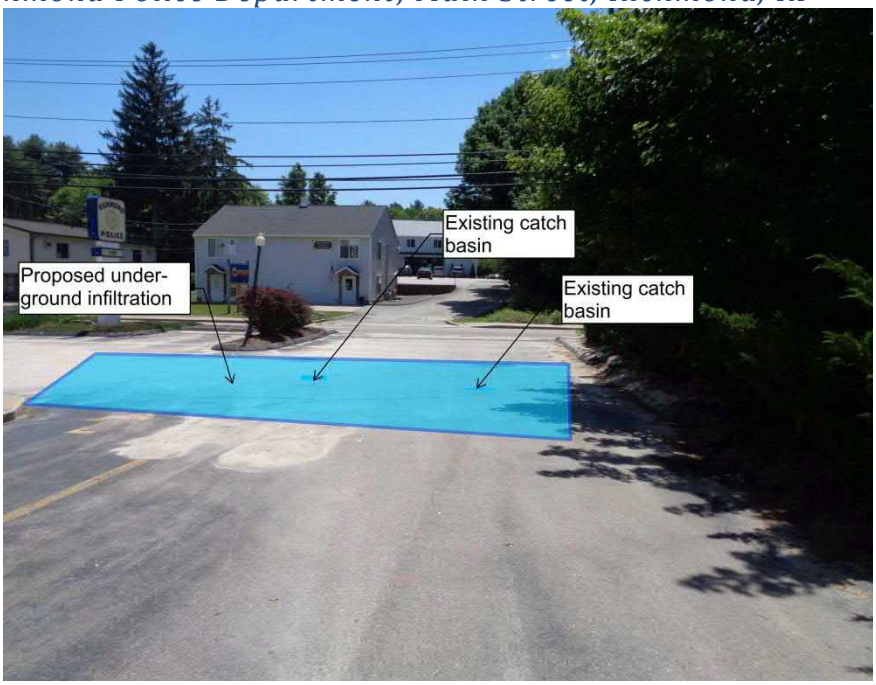


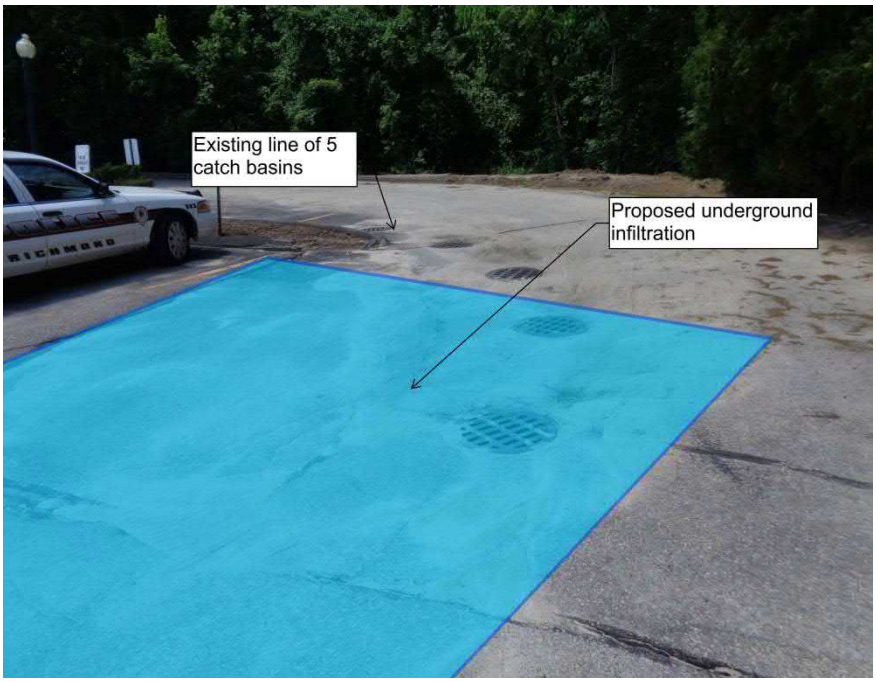
Site 129: St. Mary's Catholic Church, Carolina Back Road, Charlestown, RI

Site 139: Courthouse Center for the Arts, Kingstown Road, South Kingstown, RI

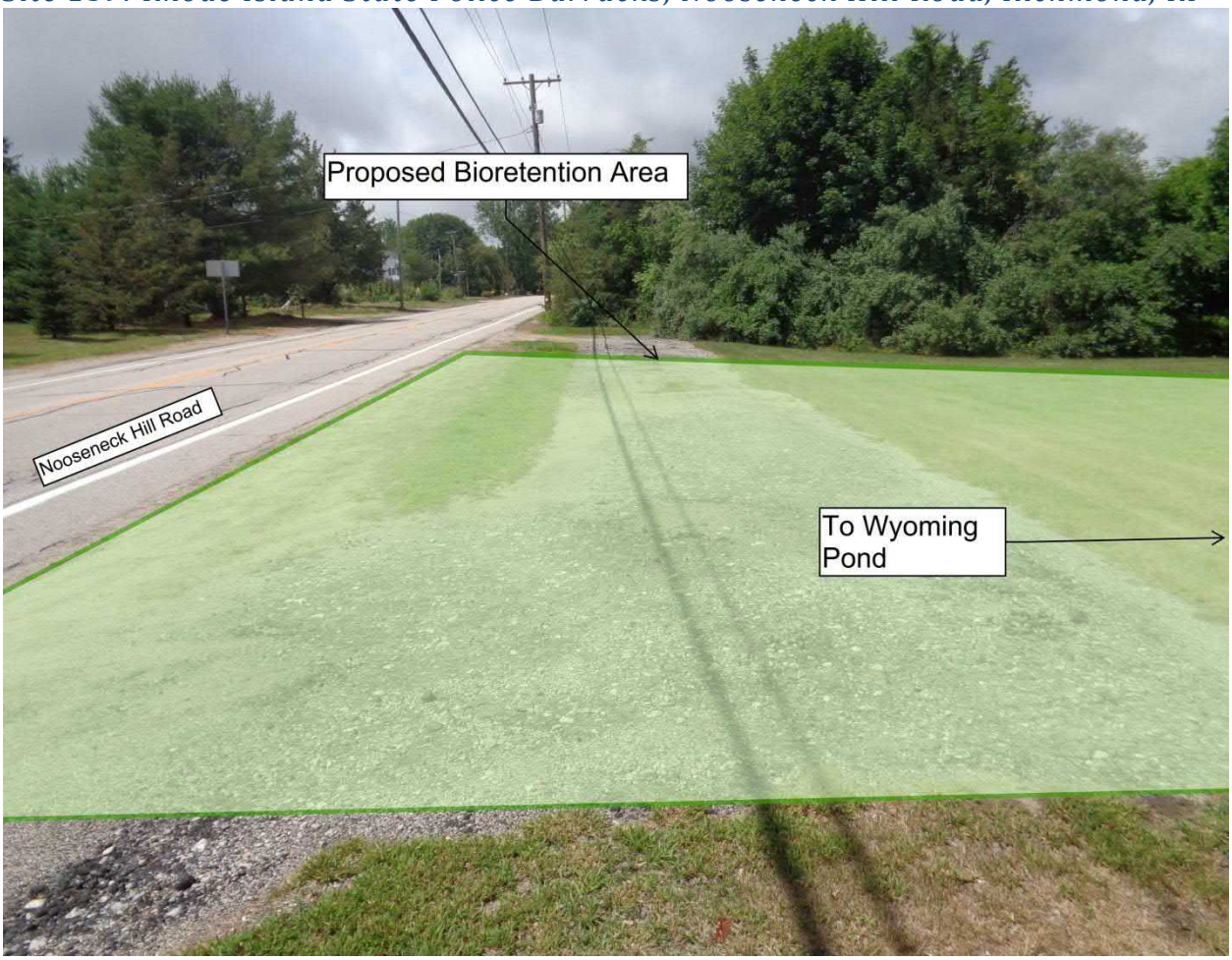


Site 157: Richmond Police Department, Main Street, Richmond, RI





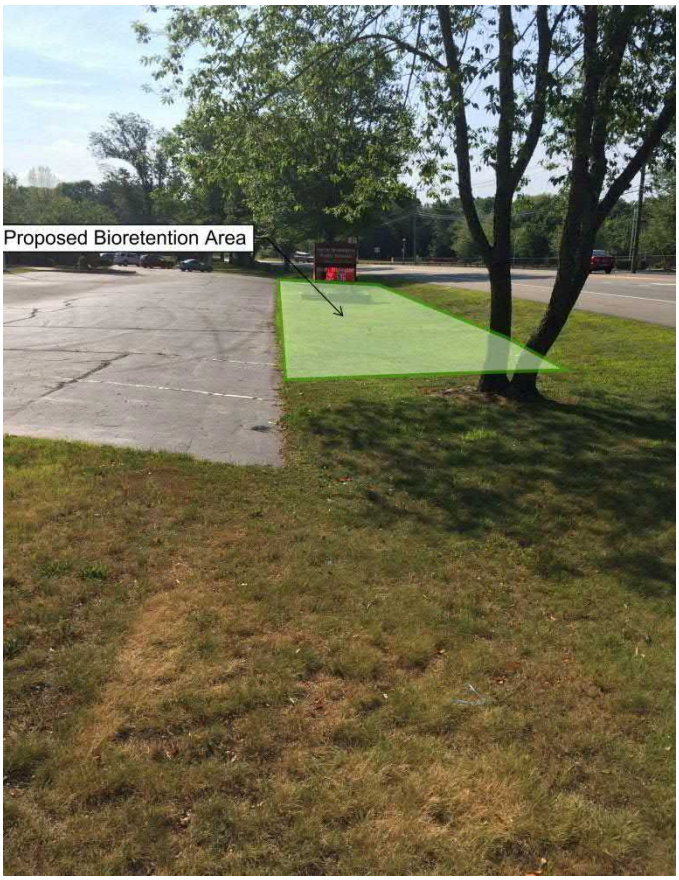
Site 159: Rhode Island State Police Barracks, Nooseneck Hill Road, Richmond, RI



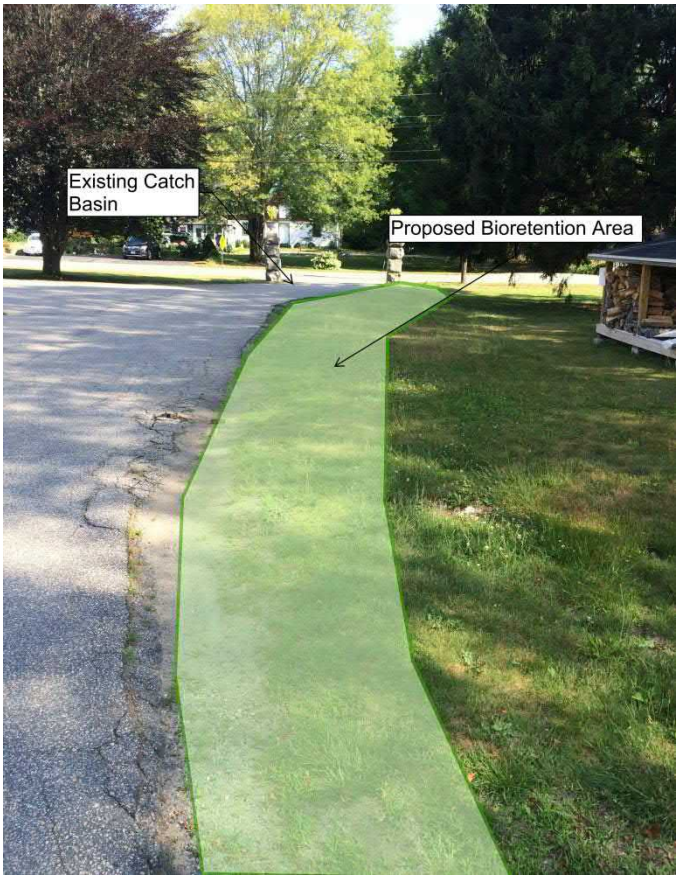
Site 173: Exeter Town Hall, Ten Rod Road, Exeter, RI

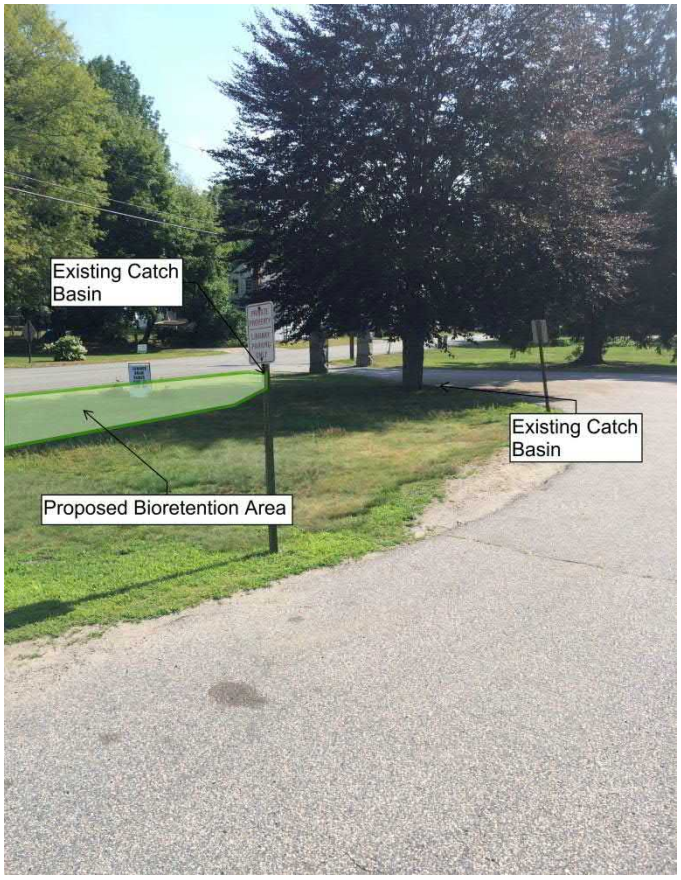

Proposed bioretention area

Site 185: Wheeler High School, North Westerly Road, North Stonington, CT



Site 185A: Wheeler Library, Main Street, North Stonington, CT





Site 191: West Vine Street School, West Vine Street, Stonington, CT

Site 194: North Stonington Elementary and Administration Building, North Westerly Road, North Stonington, CT

Site 206: Browning Mill Pond Parking Access, Arcadia Road, Exeter, RI

Site 227: Hopkinton Recreation Department, Nooseneck Hill Road, Hopkinton, RI

Site 229: Tuckertown Park, Tuckertown Road, South Kingstown, RI

Site 252: Chariho Little League, Nooseneck Hill Road, Hope Valley, RI

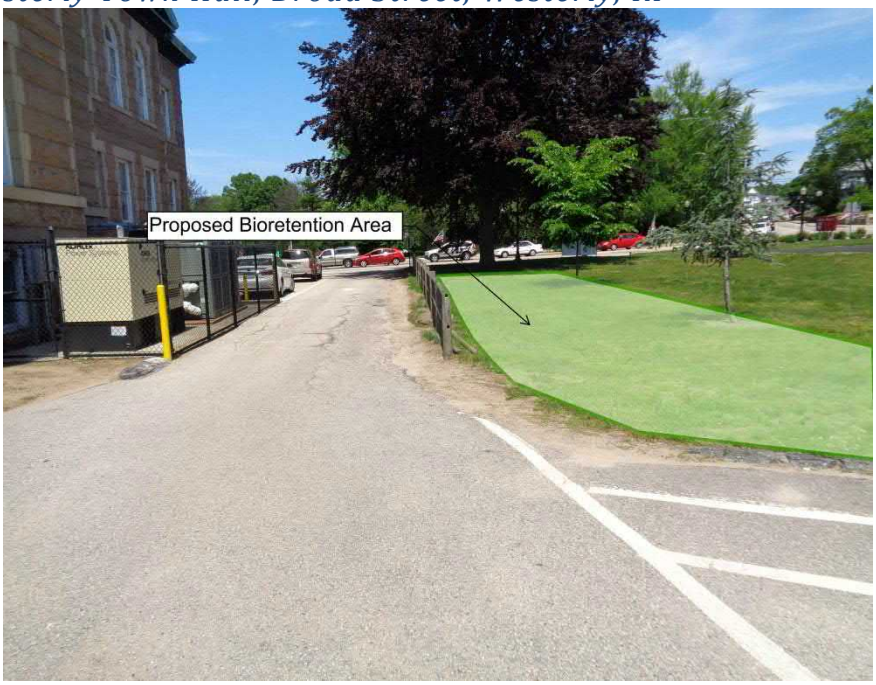

Proposed Raingarden
WEST'S
BAKERY
(401) 539-2451
OIL
401-295-4747

Site 272: State Street School, State Street, Westerly, RI

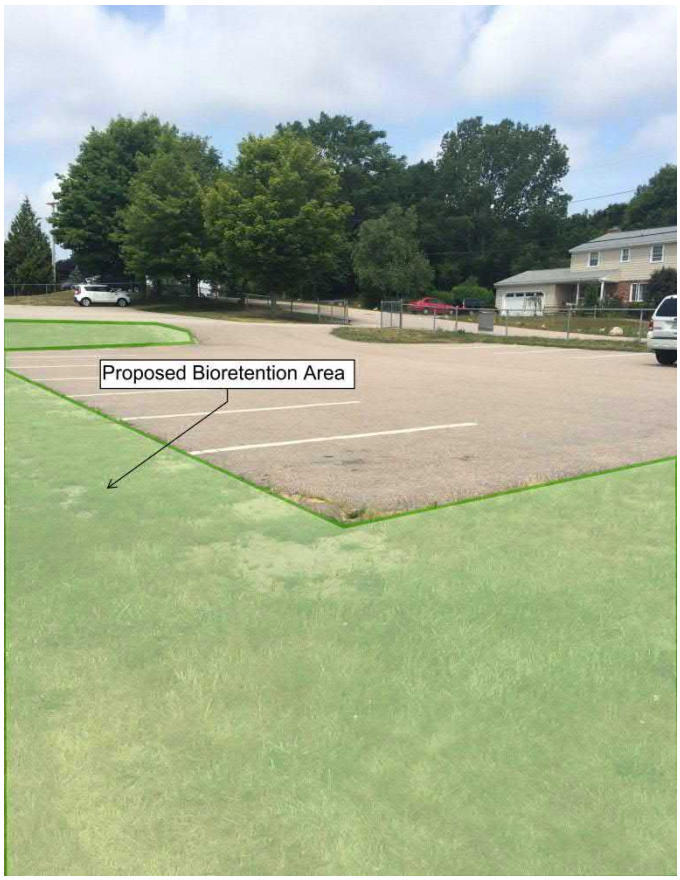
Site 272A: Westerly Senior Center, State Street, Westerly, RI

Site 274: Westerly High School, Park Avenue, Westerly, RI

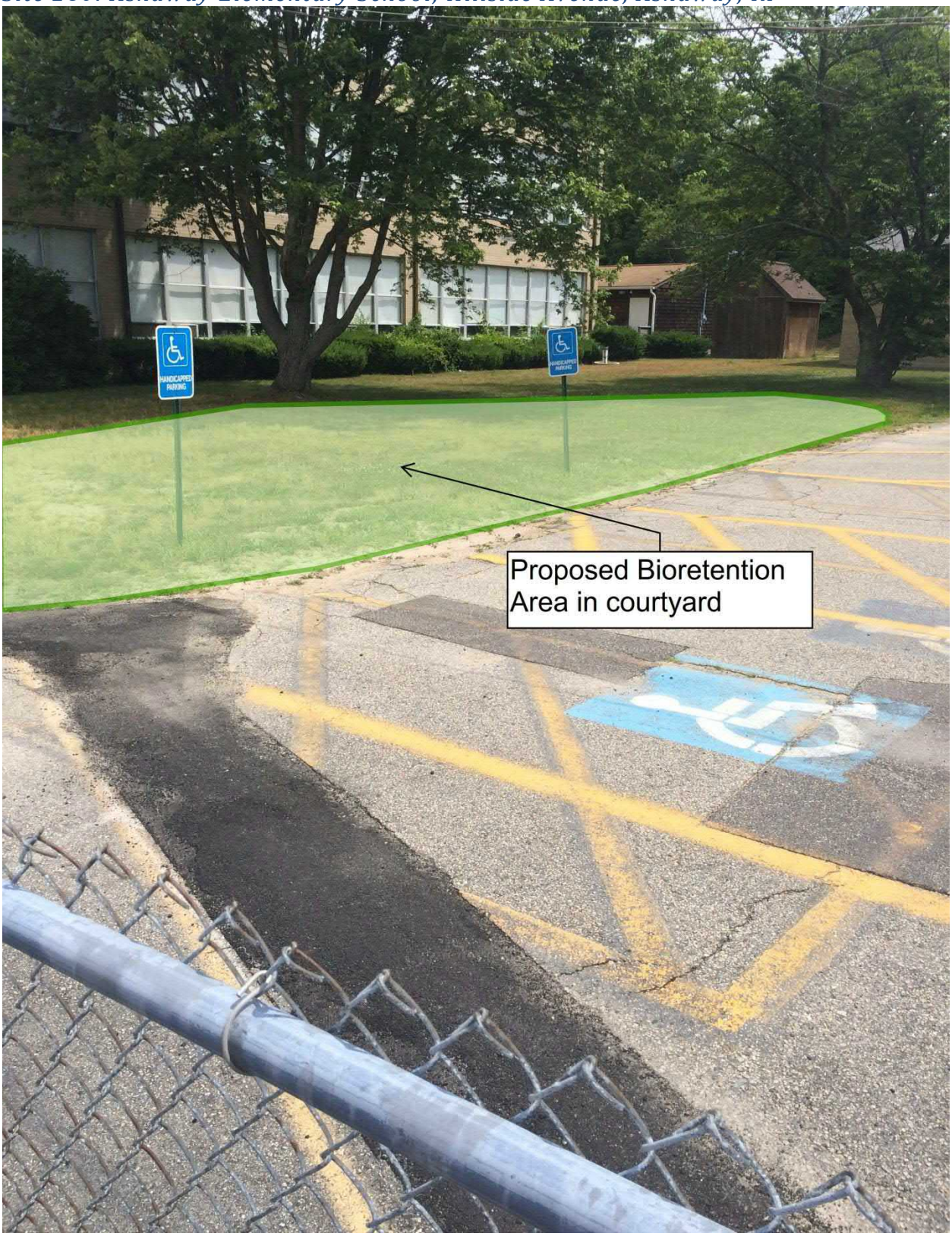
Site 275: Westerly Town Hall, Broad Street, Westerly, RI



Site 276: Tower Street School and Community Center, Tower Street, Westerly, RI

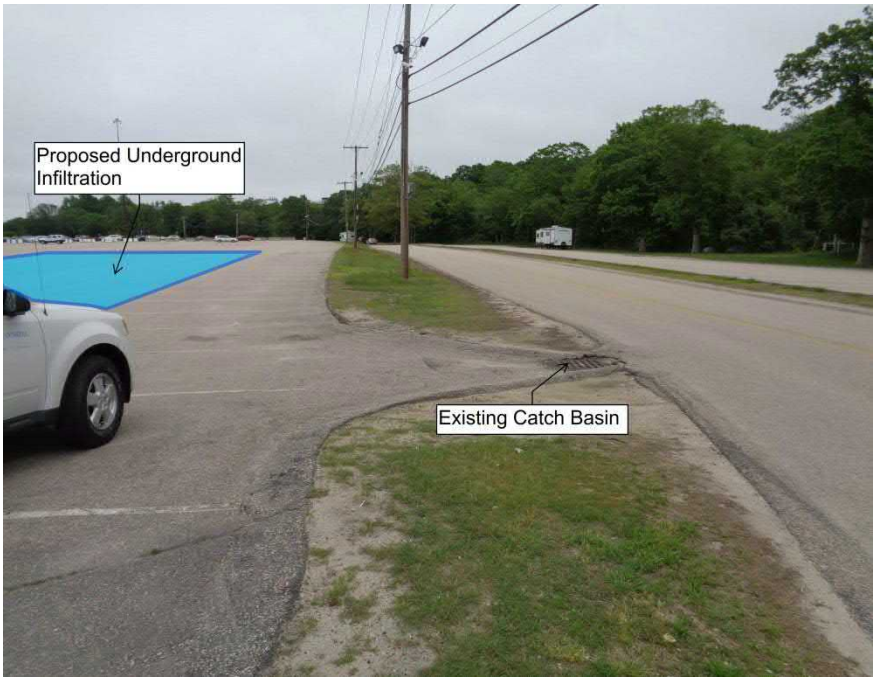


Site 280: Ashaway Elementary School, Hillside Avenue, Ashaway, RI

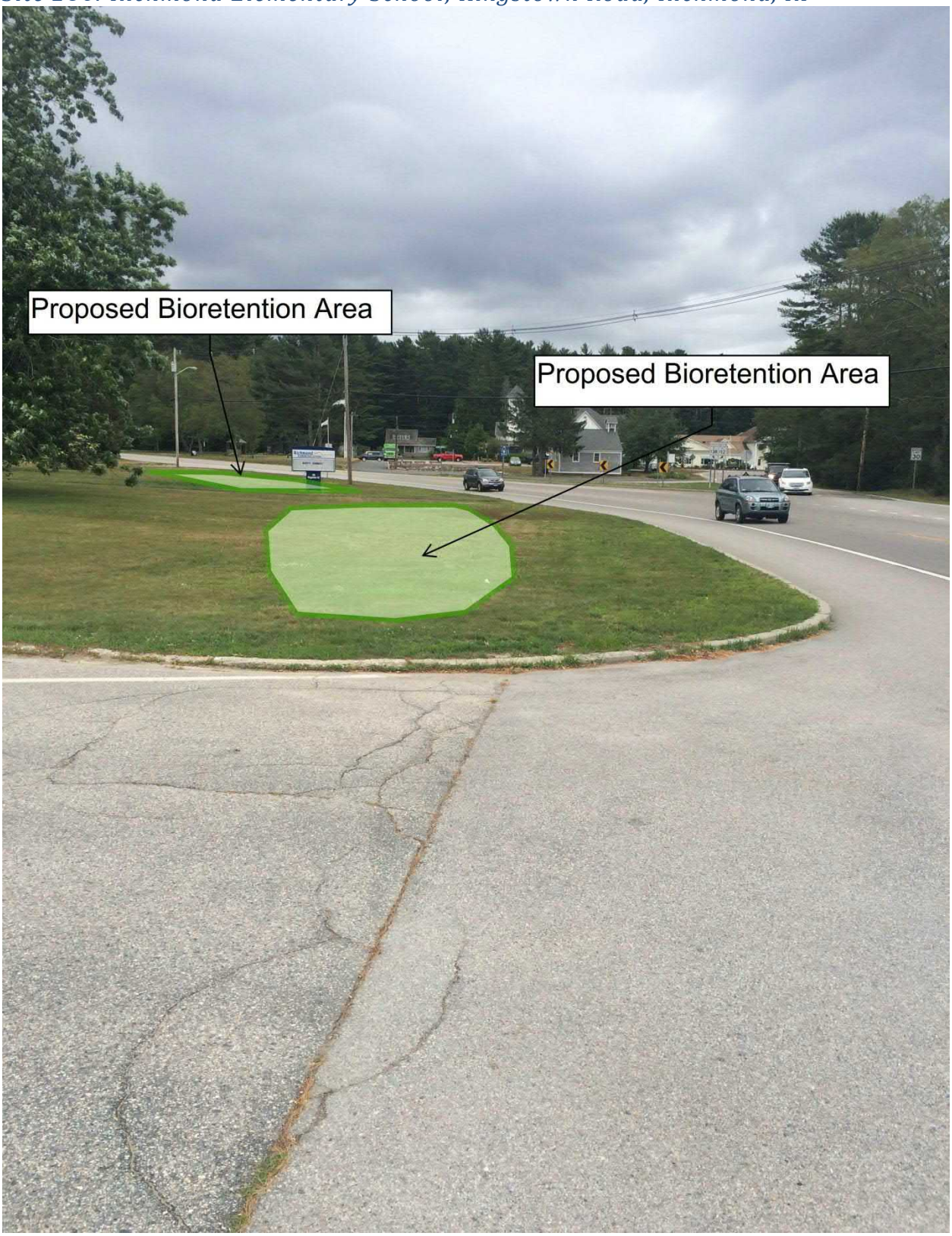


Site 283: West Kingstown Elementary School, Ministerial Road, South Kingstown, RI

Site 284: URI Parking Lot at Boss Arena, Keaney Road, Kingstown, RI



Site 286: Richmond Elementary School, Kingstown Road, Richmond, RI



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Attachment 8

Retrofit Conceptual Designs

Retrofit Site 21 – Vin Gormley Trailhead Parking Bioretention and Underground Infiltration

Sanctuary Road, Charlestown, Rhode Island

Site Description

The proposed retrofit concept is located at the Vin Gormley Trailhead parking area on the eastern shore of Watchaug Pond in Charlestown, RI. The site consists of an asphalt parking area with an access road and a pavilion closer to the pond. Runoff from the site is collected in catch basins located in the center and western end of the parking lot and discharges to Watchaug Pond via an outlet from the western-most catch basin. The current outfall is located at the catch basin at the western end of the lot. Erosion is evident where the piped conveyance has been exposed and dislodged from the catch basin.

Proposed Concept

Install an underground infiltration system beneath the parking area to infiltrate and treat the water quality volume. This will drastically improve infiltration and reduce erosion and scour observed at the outfall leading from the parking lot. A bioretention area could also be installed as a secondary, stand-alone, practice or incorporated into a treatment train if desired. The bioretention area would overflow to the infiltration system.

Image 1: Typical installation of underground infiltration system below an existing parking lot. (Image source: stormtech.com)

Image 2: View of current outlet exiting parking area. Note erosion along embankment.

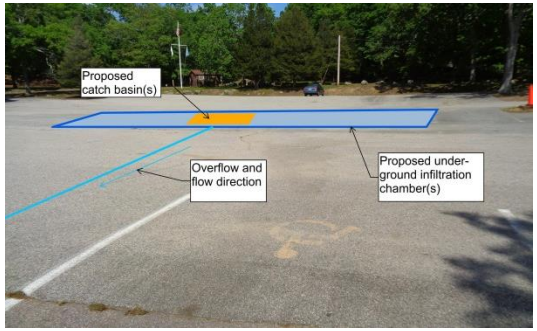


Image 3: View of parking area and location of proposed green infrastructure.

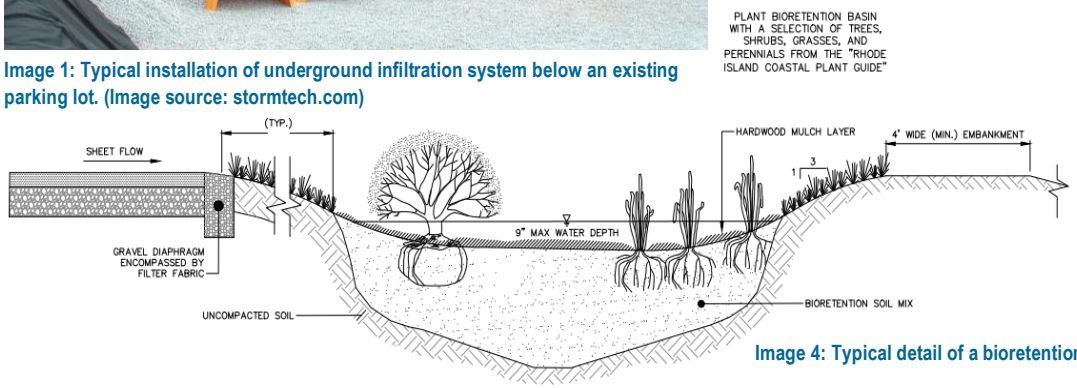


Image 4: Typical detail of a bioretention area.

Retrofit Concept Summary

Total Drainage Area: 11.5 acres
Total Impervious Area: 1.9 acres
Treated Water Quality Volume: 6,847.7 ft^3
Recharge Volume: 2,396.69 ft^3

Estimated Pollutant Removal

Underground Infiltration
Total Phosphorus ≈ **2.5 lbs/year**
Total Nitrogen ≈ **31.5 lbs/year**
Total Suspended Solids ≈ **1,074.7 lbs/year**
Bacteria (FC) ≈ **505.4 billion colonies/year**

Bioretention Area
Total Phosphorus ≈ **0.4 lbs/year**
Total Nitrogen ≈ **8.5 lbs/year**
Total Suspended Solids ≈ **349.2 lbs/year**
Bacteria (FC) ≈ **61.7 billion colonies/year**

Estimated Cost

Underground Infiltration: $98,244
Bioretention Area: $24,494

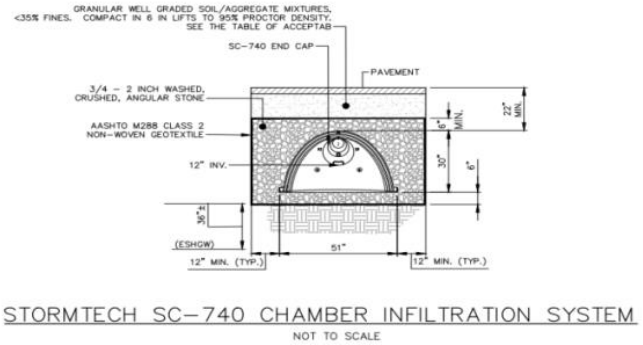
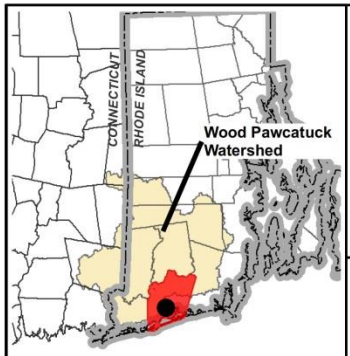


Image 5: Typical detail of an underground infiltration chamber.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 50 100 200 Feet

N W E S

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoratative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warrantee, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Vin Gormley Trailhead Parking

Retrofit Site No. 21

Charlestown Rhode Island

FUSS & O'NEILL
317 Iron Horse Way, Suite 204
Providence, RI 02908
401.861.3070 | www.fando.com

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Retrofit Site 41 – Tennis Courts at Boss Arena, URI Campus
Rain Gardens
Kingstown Road, South Kingstown, Rhode Island

Site Description
The proposed retrofit concept is located in the space between the tennis courts and Boss Arena at the University of Rhode Island, South Kingstown, RI. The site consists of an unused grassed area located between the arena and the tennis courts. The site would be a good candidate for a smaller demonstration project type practice such as a rain garden that would treat runoff from at least half of the arena roof and/or the adjacent tennis courts. At present, gutters and roof leaders discharge to an unknown location. Leaders may be currently connected to dry wells or may be connected to stormwater infrastructure in the adjacent parking lots that discharges directly to a tributary of White Horn Brook.

Proposed Concept
Install rain gardens in the lawn area between the arena and the tennis courts. Rain gardens could be designed to accept just roof runoff or possibly retrofitted to accept some drainage from nearby parking areas. Rain gardens would make an excellent demonstration project at this location and could incorporate educational signage explaining not only the benefits of this practice but also additional BMPs located throughout the campus.

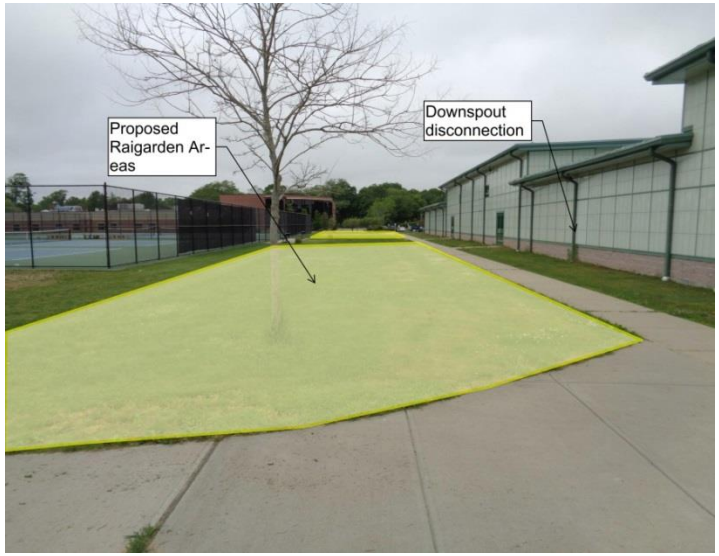


Image 3: View of proposed raingarden area between Boss Arena and tennis courts.

Images 1&2: Before and after rain garden construction, Portland, ME. (Image source: http://www.portlandmaine.gov/1491/Back-Cove-Rain-Garden).

Retrofit Concept Summary
Total Drainage Area: 1.1 acres
Total Impervious Area: 0.9 acres
Total Water Quality Volume: 3,280.5 ft^3
Recharge Volume: 1,148.2 ft^3

Estimated Pollutant Removal
Raingardens
Total Phosphorus ≈ **0.4 lbs/year**
Total Nitrogen ≈ **9.2 lbs/year**
Total Suspended Solids ≈ **356.3 lbs/year**
Bacteria (FC) ≈ **266.6 billion colonies/year**

Estimated Cost
Rain Garden Area: $44,124

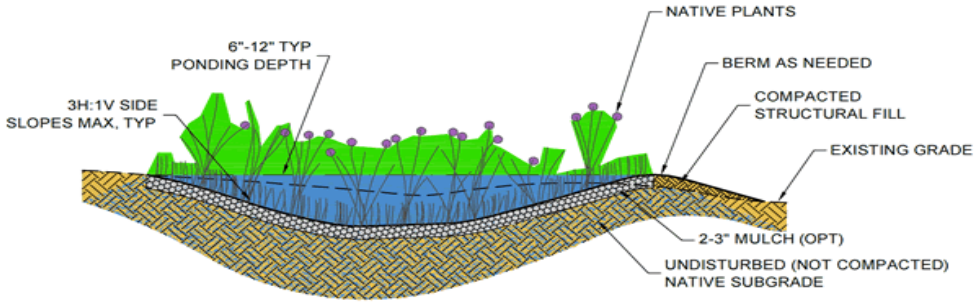
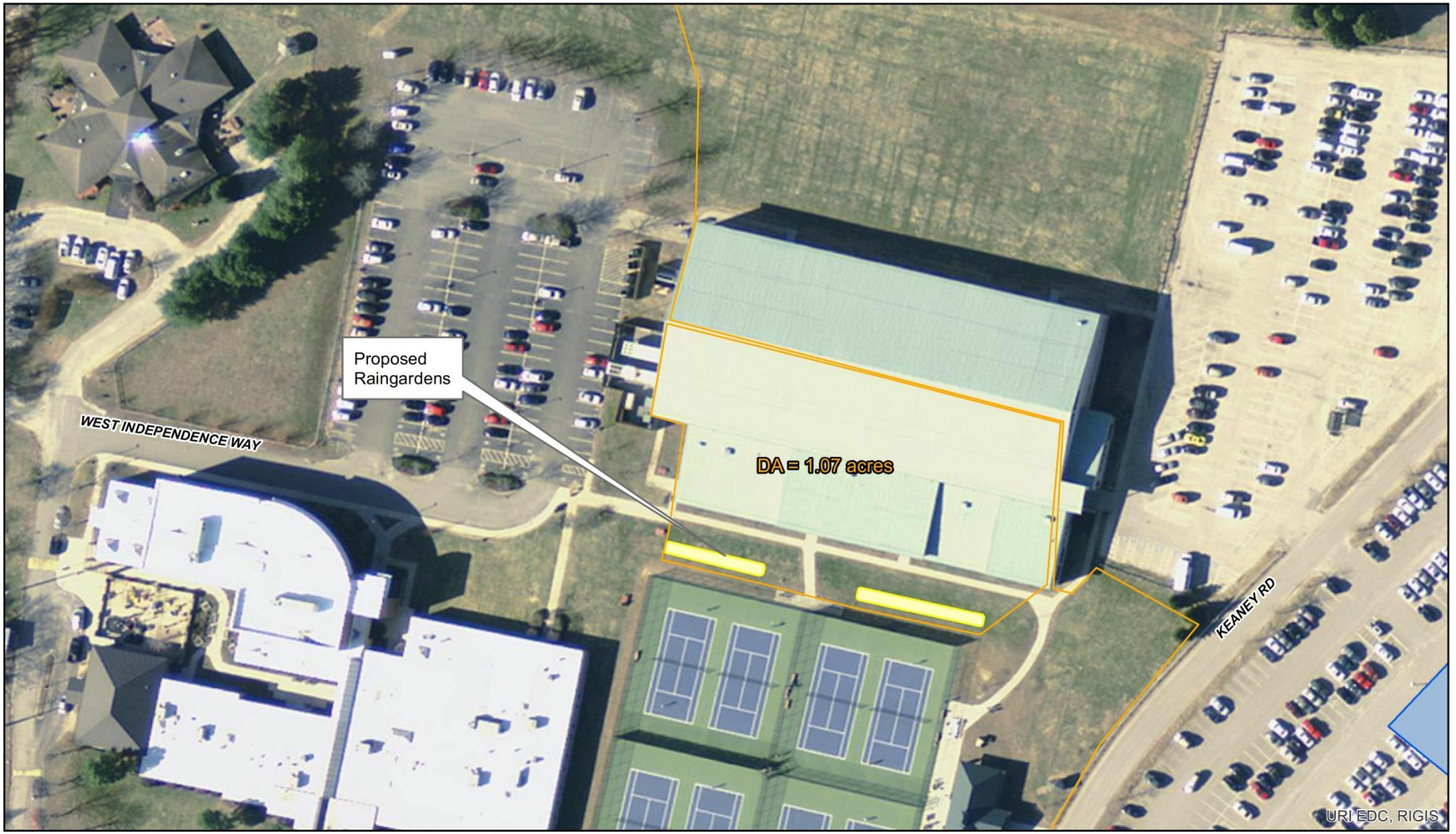
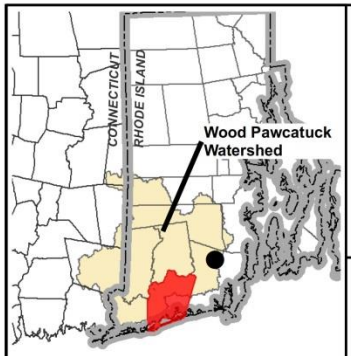


Image 4: Typical detail of an infiltrating rain garden (Image source: http://www.5counties.org/docs/lu_planning/04_rain_garden.pdf).





Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 40 80 160 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Tennis Courts at URI

Retrofit Site No. 41

South Kingstown Rhode Island

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Retrofit Site 50 – Wyoming Dam Fishing Access
Bioretention and Pervious Pavers
Nooseneck Hill Road, Wyoming, Rhode Island

Site Description

The proposed retrofit concept is located at the Wyoming Dam fishing access area located along the shore of the Wood River in Wyoming, RI. The site consists of an unimproved parking area and small car-top boat launch that leads to the water. Stormwater currently flows across the unimproved parking area, transporting sediment and pollutants to the river via the sloped boat ramp. Some erosion was observed along the ramp slope leading to the water.

Proposed Concept

Install a bioretention area along the southern end of the parking area that wraps around the parking area and overflows or discharges to a catch basin located near the entrance on Bridge St. A curb cut would be needed to accept water from a portion of Nooseneck Hill Road and possibly the adjacent parking area to the east as well. Pervious pavers could also be installed in the parking area to promote infiltration and prevent erosion. Finally, it is recommended that the ramp access be modified with articulating concrete mats to prevent further erosion and sediment transport to the river.

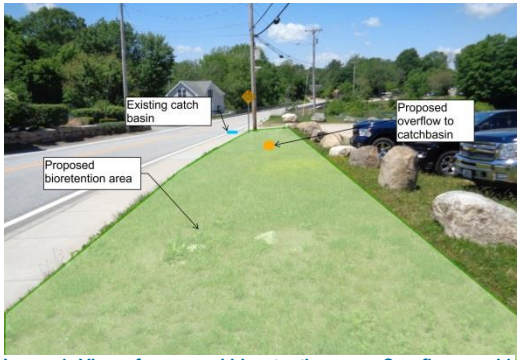


Image 1: View of proposed bioretention area. Overflow would be to existing catch basin on Bridge St.

Image 2: View of parking area and location of proposed pervious pavers.

Retrofit Concept Summary
Total Drainage Area: 0.8 acres
Total Impervious Area: 0.7 acres
Total Water Quality Volume: 2,597.0 ft^3
Recharge Volume: 909.0 ft^3

Estimated Pollutant Removal
Bioretention Area
Total Phosphorus ≈ **0.2 lbs/year**
Total Nitrogen ≈ **4.2 lbs/year**
Total Suspended Solids ≈ **180.0 lbs/year**
Bacteria (FC) ≈ **117.8 billion colonies/year**

Pervious Pavers
Total Phosphorus ≈ **0.3 lbs/year**
Total Nitrogen ≈ **6.1 lbs/year**
Total Suspended Solids ≈ **109.7 lbs/year**
Bacteria (FC) ≈ **95.5 billion colonies/year**

Estimated Cost
Bioretention Area: $20,001
Pervious Pavers: $111,283
Articulated Concrete Matting: $29,428

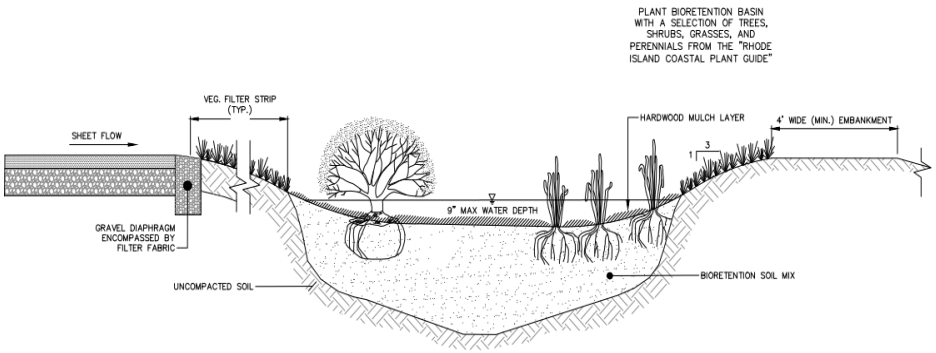


Image 3: Typical detail of a bioretention area.

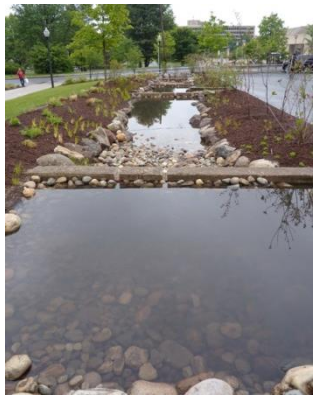
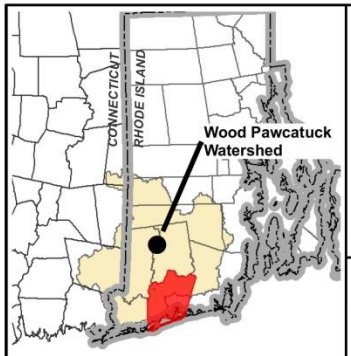


Image 4: View of tiered bioretention area (Image source: UMASS).

Image 5: View of a typical porous paver profile. (Image source: http://therubbercompany.com)



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Wyoming Dam Fishing Access

Retrofit Site No. 50

Hopkinton Rhode Island

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Retrofit Site 73 – Exeter Town Animal Shelter Bioretention

South County Trail, Exeter, Rhode Island

Site Description

The proposed retrofit concept is located along the roadside of South County Trail adjacent to the Exeter Animal Shelter in Exeter, RI. The site consists of a paved asphalt road with no formal drainage that discharges to Queens Fort Brook via an overgrown asphalt channel west of the Exeter DPW entrance.

Proposed Concept

Install a bioretention/infiltration basin system along the northern roadside to collect and infiltrate runoff from South County Trail. The retrofit could potentially treat approximately one quarter mile of roadway. The retrofit could be designed to overflow to Queens Fort Brook.

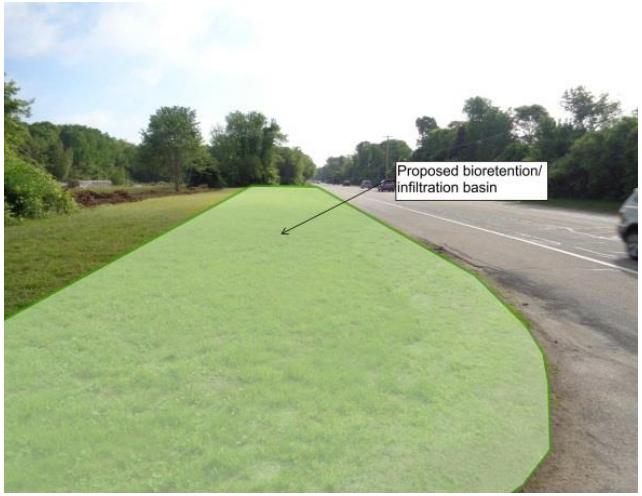


Image 1: View of proposed bioretention/infiltration area alongside South County Trail in Exeter, RI.

Retrofit Concept Summary

Total Drainage Area: 4.4 acres
Total Impervious Area: 2.2 acres
Total Water Quality Volume: 7,961.4 ft^3
Recharge Volume: 2,786.5 ft^3

Estimated Pollutant Removal

Underground Infiltration
Total Phosphorus ≈ **2.7 lbs/year**
Total Nitrogen ≈ **33.1 lbs/year**
Total Suspended Solids ≈ **2,703.9 lbs/year**
Bacteria (FC) ≈ **117.8 billion colonies/year**

Estimated Cost

Bioretention Area: $107,084

Image 2: Example of a roadside bioretention/infiltration basin. (Image source: www.ermsteed.com)

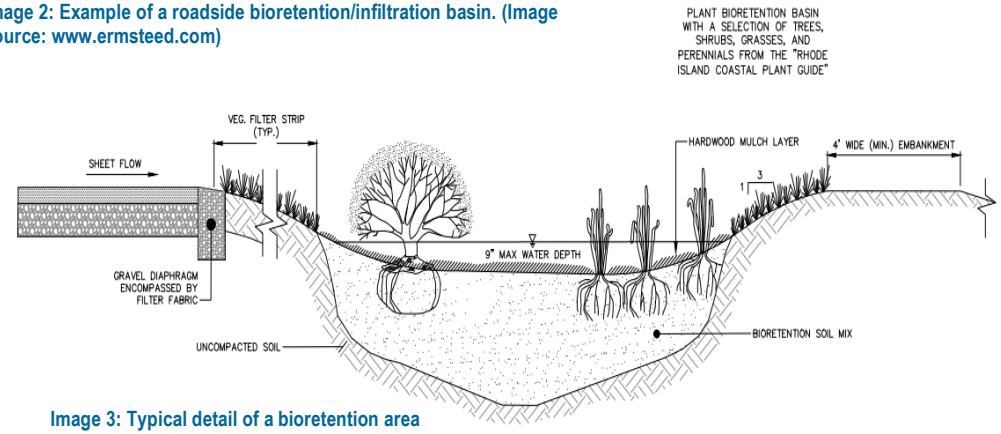
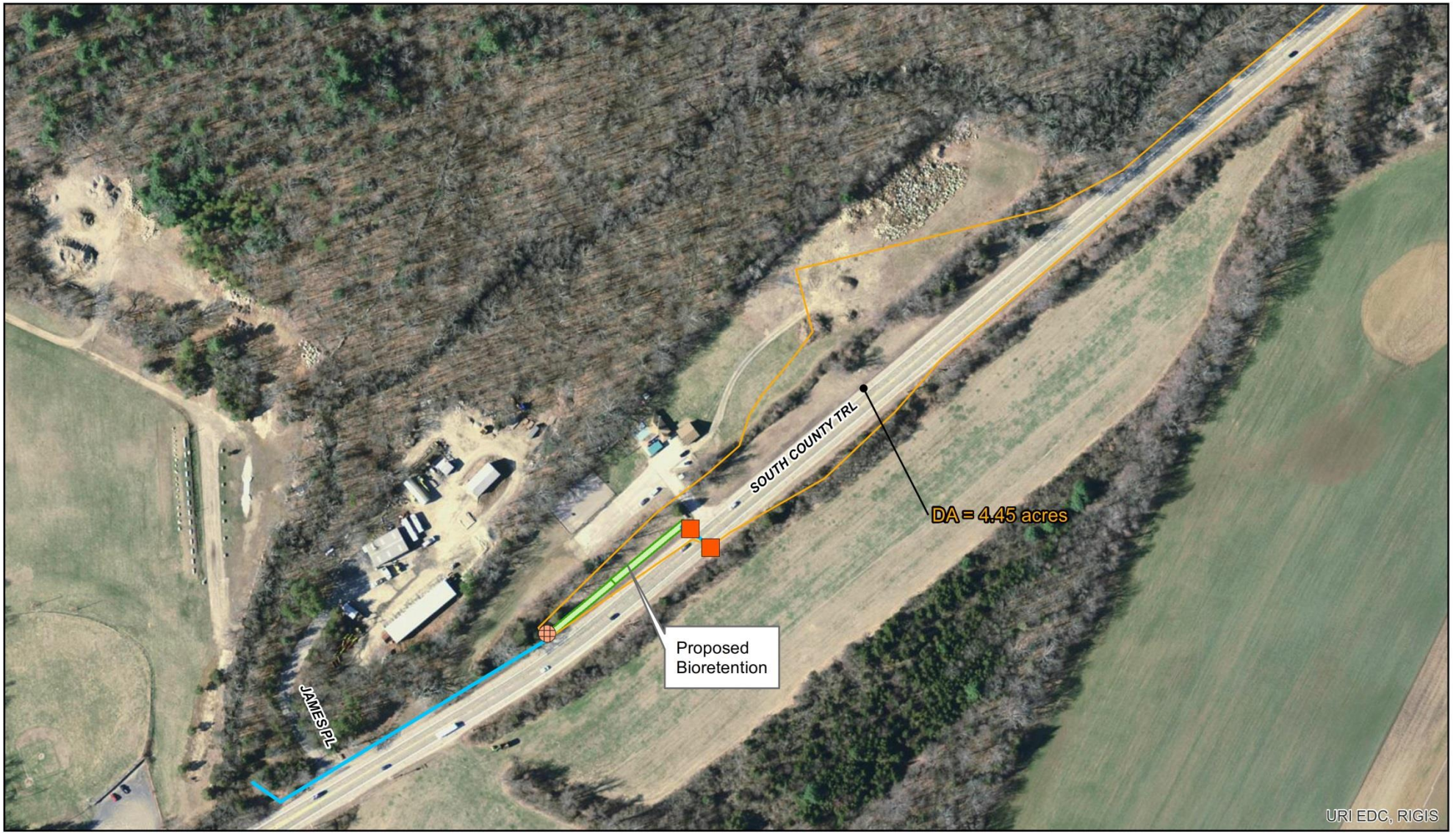
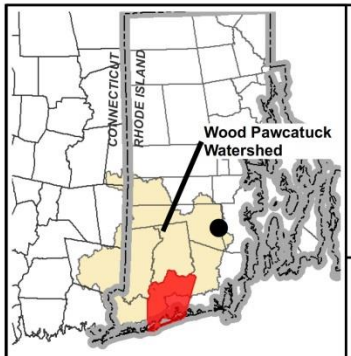


Image 3: Typical detail of a bioretention area

Image 4: Additional space for bioretention/infiltration basin adjacent to Exeter Animal Shelter.





Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 90 180 360 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Exeter Town Animal Shelter

Retrofit Site No. 73

Exeter Rhode Island

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Retrofit Site 93 – U.S. Post Office (Westerly)
Bioretention
Tom Harvey Road, Westerly, Rhode Island

Site Description
The proposed retrofit concept is located at the United States Post Office located on Tom Harvey Road in Westerly, RI. This location has several catch basins throughout both parking areas and adjacent lawn areas that have unknown connectivity and an unknown discharge location. The site is comprised of several parking lot islands in the main parking area and accepts upgradient drainage from Tom Harvey Road.

Proposed Concept
Install bioretention and infiltration systems in parking lot islands. Install additional bioretention/infiltration adjacent to the post office on the south side of the building to treat runoff from the parking lot and Tom Harvey Road. Multiple practices could be combined to treat the 1" Water Quality Volume. The system of BMPs could be designed to overflow to existing drainage infrastructure.

Image 1: View of proposed bioretention area along the south side of the main post office building.

Retrofit Concept Summary
Total Drainage Area: 5.2 acres
Total Impervious Area: 1.5 acres
Total Quality Volume: 5,321.6 ft^3
Recharge Volume: 3,193.0 ft^3

Estimated Pollutant Removal
Bioretention Areas
Total Phosphorus ≈ **1.2 lbs/year**
Total Nitrogen ≈ **20.6 lbs/year**
Total Suspended Solids ≈ **999.7 lbs/year**
Bacteria (FC) ≈ **269.8 billion colonies/year**

Estimated Cost
Bioretention Areas: $71,578

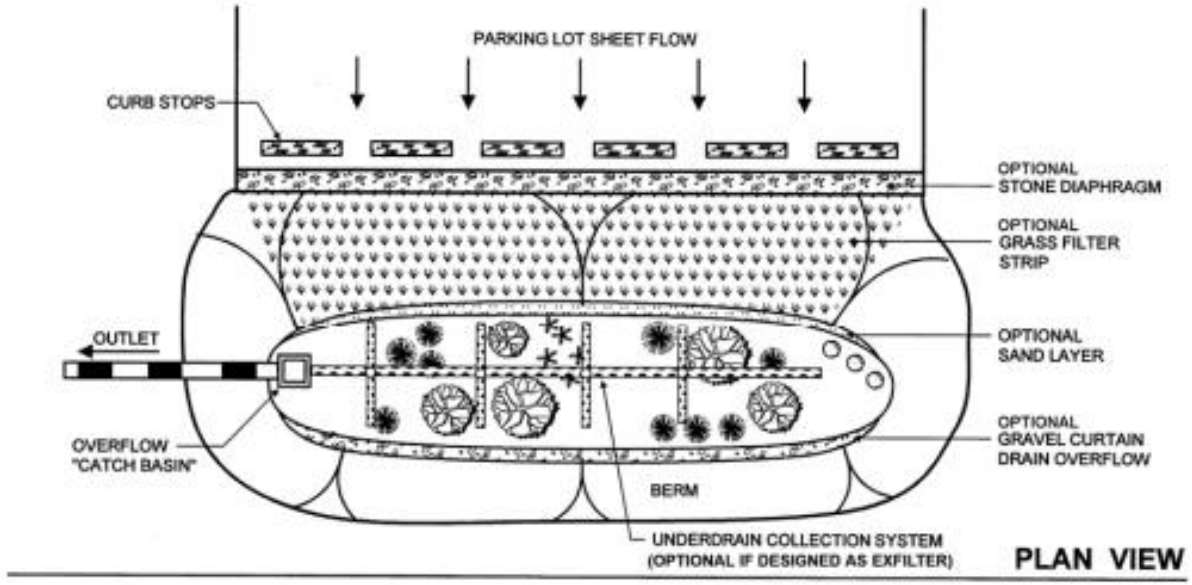
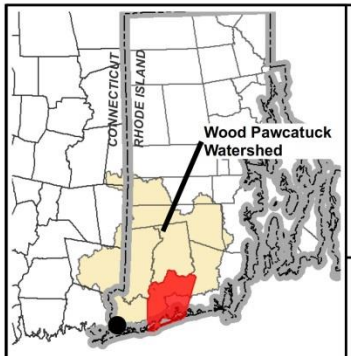


Image 2: Typical detail of a bioretention area. (Image source: RI Stormwater Manual)

Image 3: View of proposed bioretention area along Tom Harvey Road on the eastern side of the main post office building.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoratative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warrantee, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

US Post Office (Westerly)

Retrofit Site No. 93

Westerly Rhode Island

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Retrofit Site 102 – Grace United Methodist Church Bioretention

Spruce Street, Westerly, Rhode Island

Site Description

The proposed retrofit concept is located at the Grace United Methodist Church parking area off of Spruce Street in Westerly, RI. Retrofit opportunities consist primarily of drainage from the church parking lot, although management of runoff from the church roof and portions of the adjacent Spruce Street is possible.

Proposed Concept

Install a bioretention cell in the eastern grassed area adjacent to the main church parking lot. Additional drainage from Spruce Street could be incorporated into the retrofit if desired. A bioretention basin at this location might help alleviate drainage issues observed to be impacting adjacent properties. The bioretention cell could outlet to existing drainage infrastructure along Park Avenue if needed.

Image 1: View of typical bioretention area or raingarden with mature plantings. (Image source: http://www.installitdirect.com/wp-content/uploads/2015/01/how-to-build-a-rain-garden.jpg)

Retrofit Concept Summary

Total Drainage Area: 1.4 acres
Total Impervious Area: 0.7 acres
Total Water Quality Volume: 2,700.7 ft^3
Recharge Volume: 945.3 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **1.1 lbs/year**
Total Nitrogen ≈ **13.5 lbs/year**
Total Suspended Solids ≈ **578.7 lbs/year**
Bacteria (FC) ≈ **355.6 billion colonies/year**

Estimated Cost

Bioretention Area: $36,326

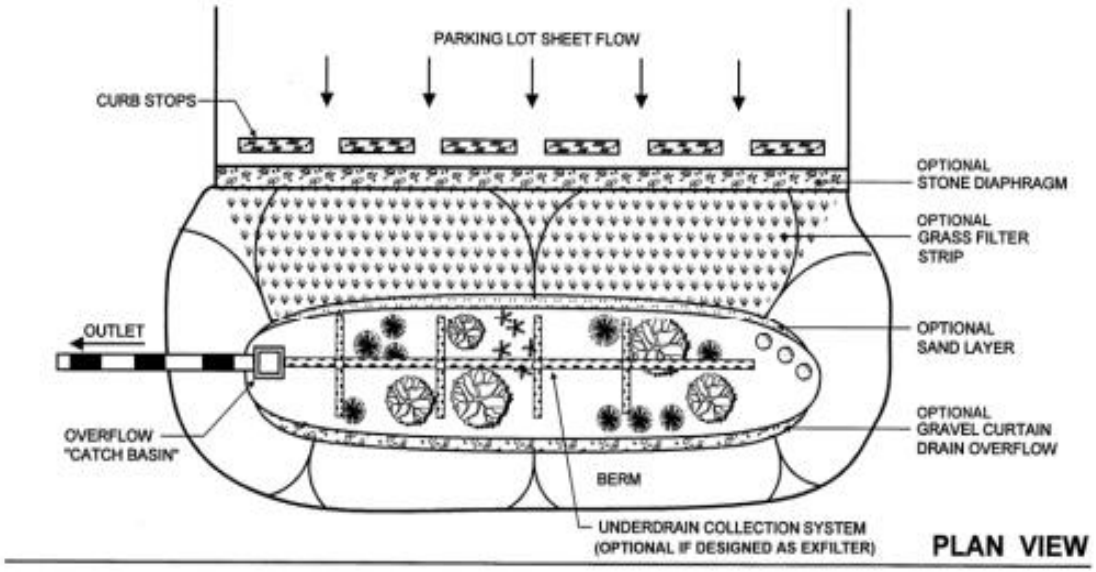
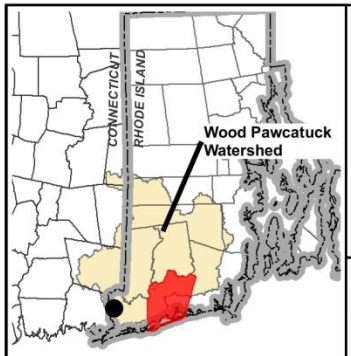


Image 2: Typical detail of a bioretention area. (Image source: RI Stormwater Manual)

Image 3: View of proposed bioretention area along eastern edge of church parking lot.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 40 80 160 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

United Methodist Church

Retrofit Site No. 102

Westerly Rhode Island

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Retrofit Site 108 – Bradford School
Underground Infiltration and Green Roof Demonstration Project
Church Street, Westerly, Rhode Island

Site Description

The proposed retrofit concept is located at the Bradford Elementary School in Westerly, RI. At this location stormwater flows across the parking area and bus loop and drains to Church Street where it enters a closed conveyance system. There is one catch basin in the parking lot that has unknown connectivity but is presumed to discharge to the drainage system in the adjacent street. The central portion of the school building has a flat roof. This area also has easy stairwell access. According to facilities personnel, this section of roof often drains poorly causing leaks within the school.

Proposed Concept

Install an underground infiltration system beneath the parking area and bus loop to capture and treat stormwater prior to discharging to the in-street conveyance system. Additionally, install a green roof over a portion of the flat, central portion of the building roof. The green roof could be designed as an outdoor classroom and demonstration project while also improving roof drainage.

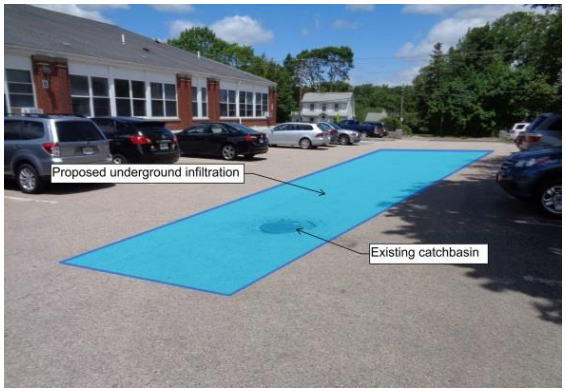


Image 1: View of proposed underground infiltration location beneath parking area.

Image 2: View of proposed green roof/outdoor classroom space.

Retrofit Concept Summary
Total Drainage Area: 1.3 acres
Total Impervious Area: 1.2 acres
Total Water Quality Volume: 4,326.1 ft^3
Recharge Volume: 1,514.1 ft^3

Estimated Pollutant Removal
Underground Infiltration
Total Phosphorus ≈ **1.0 lbs/year**
Total Nitrogen ≈ **12.8 lbs/year**
Total Suspended Solids ≈ **422.8 lbs/year**
Bacteria (FC) ≈ **430.2 billion colonies/year**

Green Roof
Total Phosphorus ≈ **0.05 lbs/year**
Total Nitrogen ≈ **1.8 lbs/year**
Total Suspended Solids ≈ **26.8 lbs/year**
Bacteria (FC) ≈ **26.8 billion colonies/year**

Estimated Cost
Underground Infiltration: $56,299
Green Roof: $162,623

Green roof cost estimated based on conservative cost per ft^2 from: http://stormwater.pca.state.mn.us/index.php/Cost-benefit_considerations_for_green_roofs

Image 3: View of green roof and outdoor class space. (Image source: National Wildlife Federation Blog)

Image 4: Typical installation of underground infiltration system below an existing parking lot. (Image source: stormtech.com)

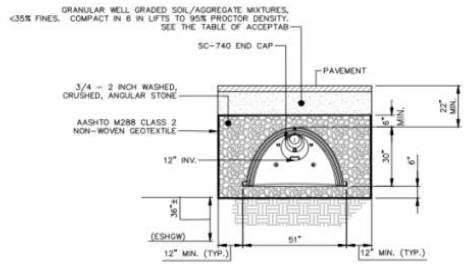
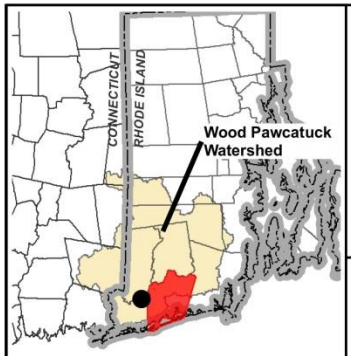


Image 5: Typical detail of an underground infiltration chamber



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Bradford School

Retrofit Site No. 108

Westerly Rhode Island

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Retrofit Site 114 – U.S. Post Office (Ashaway, RI)
Underground Infiltration
Main Street, Ashaway, Rhode Island

Site Description
The proposed retrofit concept is located at the intersection adjacent to the United States Post Office located on Main Street in Ashaway, RI. Stormwater infrastructure consisting of several catch basins was observed on Maxson Street, Oak Street and Main Street. The connectivity of these structures is unknown, although the catch basins are believed to be connected to the drainage system infrastructure in the area and therefore provides a good retrofit candidate. At least one catch basin in the area was observed to be completely full of sediment, indicating a heavy sediment load and need for additional controls or increased maintenance at this location.

Proposed Concept
Install underground infiltration systems beneath sections of Maxson Street, Oak Street and Main Street depending on available space, utility conflicts and pipe connectivity. It is recommended that the underground systems be designed as linear systems in order to take advantage of the existing footprint of drainage infrastructure and limit potential conflicts with other utilities both now and in the future.

Image 1: Typical installation of underground infiltration chambers beneath a roadway. (Image source: http://capecodwatershed.blogspot.com/)

Retrofit Concept Summary
Total Drainage Area: 22.6 acres
Total Impervious Area: 5.4 acres
Total Quality Volume: 11,111.4 ft^3
Recharge Volume: 1,111.1 ft^3*

Estimated Pollutant Removal
Underground Infiltration
Total Phosphorus ≈ **8.6 lbs/year**
Total Nitrogen ≈ **75.3 lbs/year**
Total Suspended Solids ≈ **1,659.3 lbs/year**
Bacteria (FC) ≈ **1,642.3 billion colonies/year**

Estimated Cost
Underground Infiltration: $281,863

*Practice modified to treat 0.5" WQv for larger Drainage Area due to size and cost considerations

Image 2: View of proposed underground infiltration chamber location on Maxson Street, Ashaway, RI.

Image 3: View of proposed underground infiltration chamber system located along Main Street in Ashaway, RI. System to be designed to overflow to existing drainage network if possible.

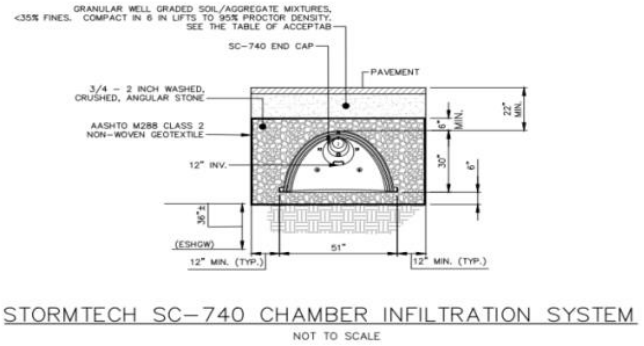
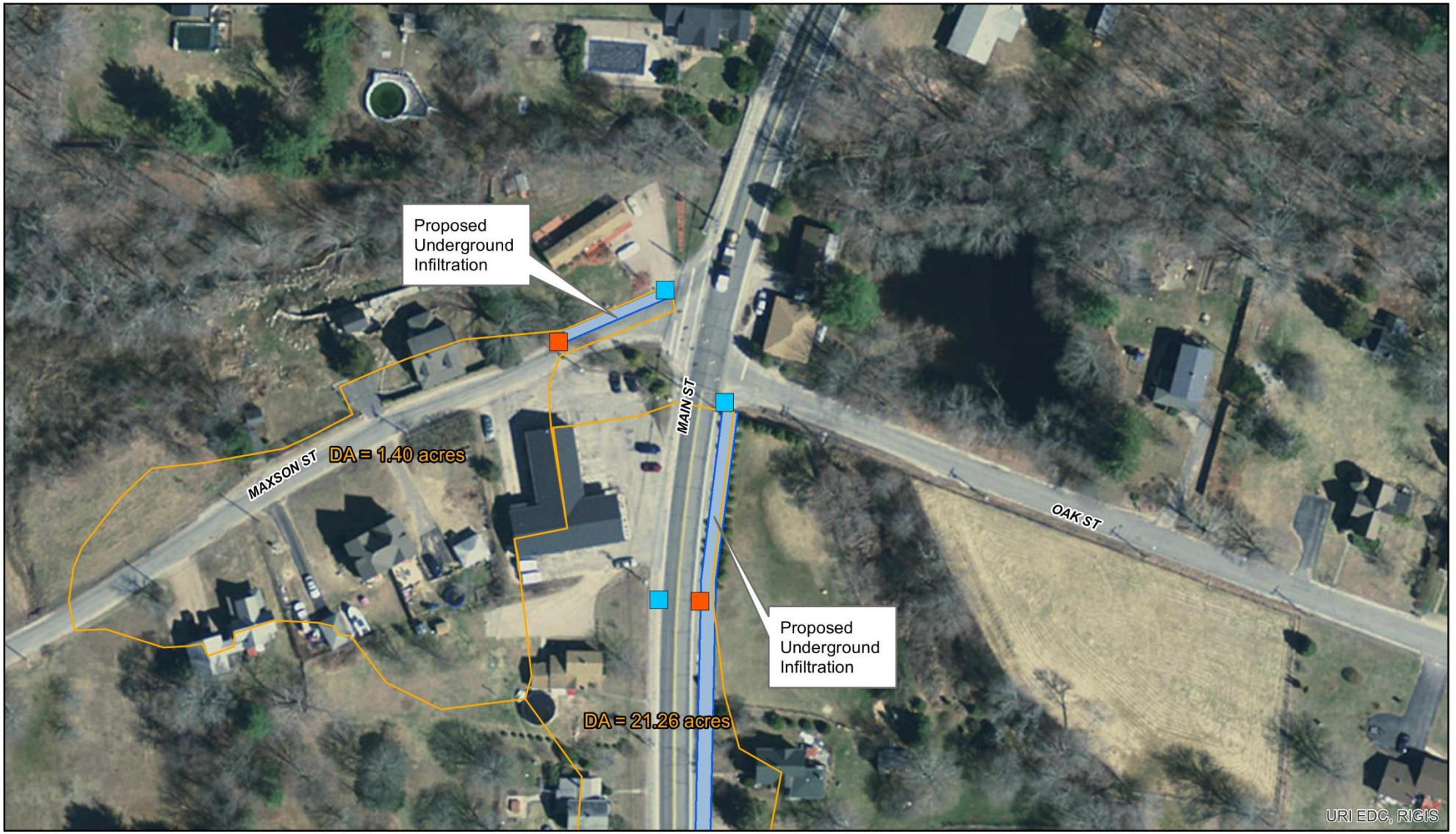
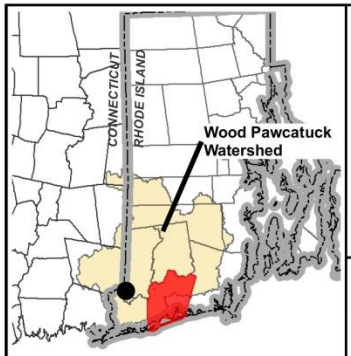


Image 4: Typical detail of an underground infiltration chamber.





Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 40 80 160 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

US Post Office (Ashaway/Hopkinton)

Retrofit Site No. 114

Hopkinton Rhode Island

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Retrofit Site 125 – Trinity Lutheran Church
Bioretention and Rain Gardens
High Street, Hopkinton, Rhode Island

Site Description
The proposed retrofit concept is located at the Trinity Lutheran Church located off of High Street in Hopkinton, RI. The site is characterized by a large asphalt parking lot adjacent to a public road. There are no drainage structures within the parking lot or road right-of-way.

Proposed Concept
Install a series of bioretention areas along the road edge on Wellstown Road. These bioretention areas would capture and treat the 1" Water Quality Volume. Since there are no drainage structures in the road right-of-way, the proposed bioretention areas would be designed to overflow back to the street during large precipitation events. Additionally, rain gardens are proposed along the western perimeter of the church building itself. Rain gardens could be designed to capture and treat runoff from the church roof and possibly portions of the parking area as well depending on sizing requirements, cost, and acceptability by the church.

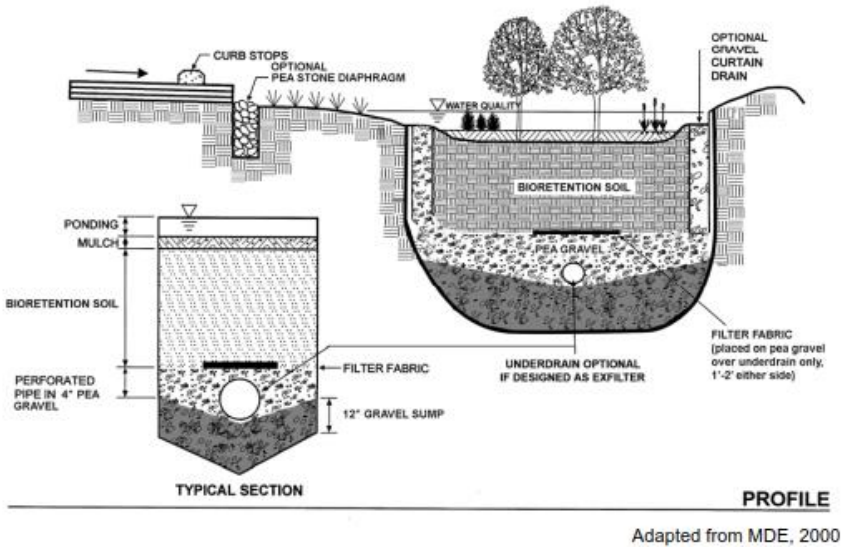


Image 2: Typical profile view of a bioretention area. (Image source: RI Stormwater Manual)

Image 1: View of proposed bioretention area along Wellstown Road.

Image 3: View of proposed rain garden area adjacent to church.

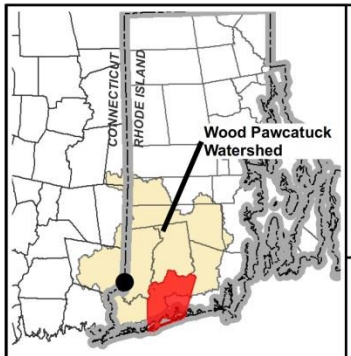
Retrofit Concept Summary
Total Drainage Area: 2.9 acres
Total Impervious Area: 1.2 acres
Total Water Quality Volume: 4,518.7 ft^3
Recharge Volume: 2,711.2 ft^3

Estimated Pollutant Removal
Bioretention Area(s)
Total Phosphorus ≈ **1.1 lbs/year**
Total Nitrogen ≈ **18.8 lbs/year**
Total Suspended Solids ≈ **786.0 lbs/year**
Bacteria (FC) ≈ **233.1 billion colonies/year**

Raingarden(s)
Total Phosphorus ≈ **0.1 lbs/year**
Total Nitrogen ≈ **1.7 lbs/year**
Total Suspended Solids ≈ **67.9 lbs/year**
Bacteria (FC) ≈ **233.1 billion colonies/year**

Estimated Cost
Bioretention Area(s): $52,252
Raingarden(s): $8,527

Image 4: Typical view of mature plantings in rain garden or bioretention area.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Trinity Lutheran Church

Retrofit Site No. 125

Hopkinton Rhode Island

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Retrofit Site 129 – St. Mary's Catholic Church Bioretention

Carolina Back Road, Charlestown, Rhode Island

Site Description

The proposed retrofit concept is located adjacent to St. Mary's Church on Carolina Back Road in Charlestown, RI. The site includes the roadway and intersection of Carolina Back Road and Old Carolina Back Road across the street from the church and rectory buildings. No structural drainage infrastructure was observed in the roadway at the time of inspection. The church parking lot appears to drain to Carolina Back Road, providing an opportunity to capture runoff from the parking lot and the roadway right-of-way.

Proposed Concept

Install a bioretention/infiltration practice in the grassed island at the Carolina Back Road and Old Carolina Back Road intersection. Road runoff drains to this area and has begun to erode the edge of the roadway and portions of the lawn in the island.

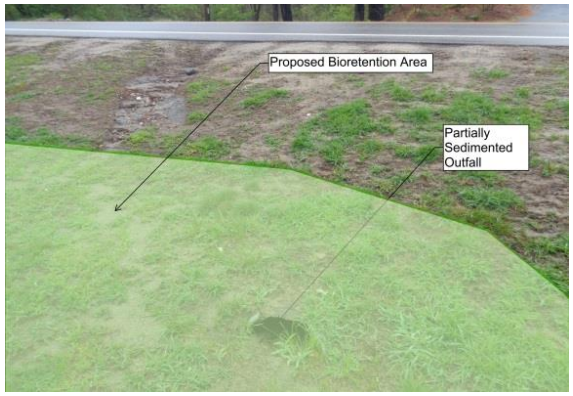


Image 1: View of proposed bioretention area and location of outfall partially filled-in with sediment located in a traffic island adjacent to Carolina Back Road, Charlestown, RI.

Image 2: View of proposed location for bioretention area along Carolina Back Road in Charlestown, RI.

Image 3: View of typical bioretention area functioning during rain event. (Image source: http://www.portlandmaine.gov/1491/Back-Cove-Rain-Garden)

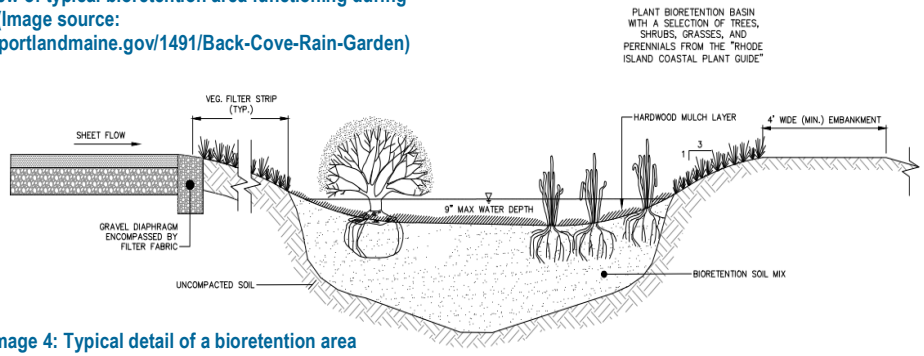


Image 4: Typical detail of a bioretention area

Retrofit Concept Summary

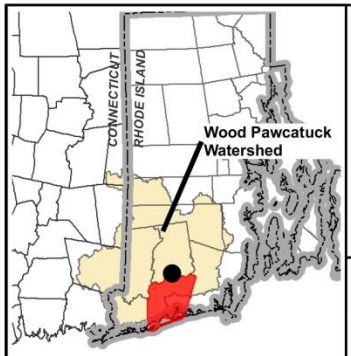
Total Drainage Area: 1.6 acres
Total Impervious Area: 0.9 acres
Total Water Quality Volume: 3,216.0 ft^3
Recharge Volume: 1,930.0 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **0.8 lbs/year**
Total Nitrogen ≈ **12.2 lbs/year**
Total Suspended Solids ≈ **608.9 lbs/year**
Bacteria (FC) ≈ **210.1 billion colonies/year**

Estimated Cost

Bioretention Area: $43,257



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 40 80 160 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

St. Mary's Catholic Church

Retrofit Site No. 129

Charlestown Rhode Island

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Retrofit Site 139 – Courthouse Center for the Arts Bioretention

Kingstown Road, South Kingstown, Rhode Island

Site Description

The proposed retrofit concept is located at the Courthouse Center for the Arts and adjacent areas along Kingstown Road in South Kingstown, RI. The rear parking lot has no structural drainage or stormwater treatment. Roof leaders appear to be tied into the drainage system, but there is no obvious outlet other than the catch basin in front of the building. The road drainage is primarily gutter flow that discharges to a swale and catch basin in the area directly in front of the Center for the Arts. The catch basin and storm drain network have unknown connectivity in this area.

Proposed Concept

Retrofit the existing swale and catch basin to create a bioretention system, using the existing catch basin or catch basin foot print as an overflow structure. The proposed BMP would be capable of treating 47% of the 1" WQv. Additional treatment may be needed to meet RI stormwater retrofit standards. Additional bioretention or underground infiltration could be combined with the swale retrofit to meet these requirements. The parking lot islands at the rear of the building could be retrofitted to function as bioretention areas, with sufficient space to treat the 1" WQv.

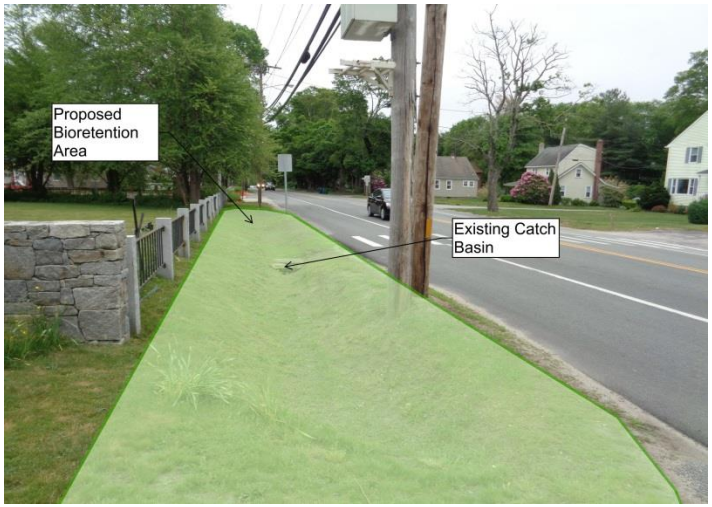


Image 3: View of proposed bioretention area to be located on Kingstown Road, in front of the Courhouse Center for the Arts in South Kingstown, RI.

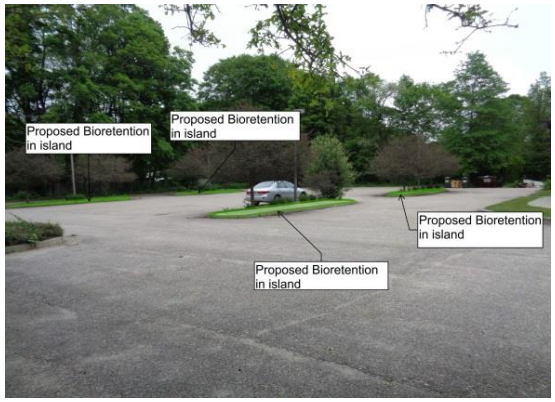


Image 2: View of proposed bioretention areas located within parking lot islands at the Courthouse Center for the Arts.

Image 1: View of typical bioretention area with mature plantings. (Image source: http://www.installitdirect.com/wp-content/uploads/2015/01/how-to-build-a-rain-garden.jpg)

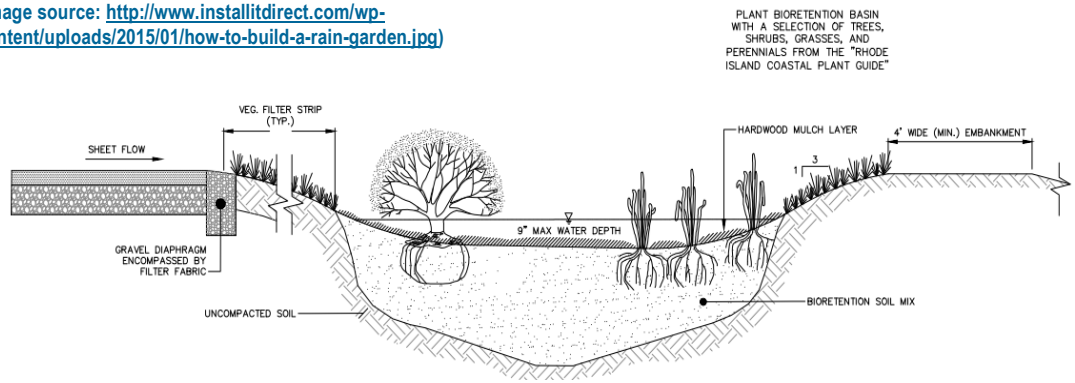


Image 4: Typical detail of a bioretention area.

Retrofit Concept Summary

Total Drainage Area: 4.4 acres
Total Impervious Area: 2.5 acres
*Total Water Quality Volume: 5,390.7 ft^3
Runoff Reduction Volume: 2,692 ft^3

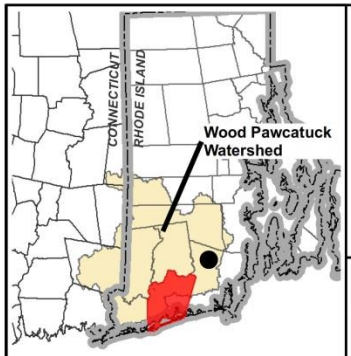
Estimated Pollutant Removal

Bioretention Areas
Total Phosphorus ≈ **1.6 lbs/year**
Total Nitrogen ≈ **22.6 lbs/year**
Total Suspended Solids ≈ **922.4 lbs/year**
Bacteria (FC) ≈ **602.6 billion colonies/year**

Estimated Cost

Bioretention Areas: $121,381

*Pollutant removal calculated for combined bioretention areas. The practice in front of the Courthouse Center for the Arts sized to treat 47% of the 1" WQv.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoratative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warrantee, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Center for the Arts

Retrofit Site No. 139

South Kingstown Rhode Island

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Retrofit Site 157 – Richmond Police Department
Underground Infiltration
Main Street, Richmond, Rhode Island

Site Description

The proposed retrofit concept is located at the Town of Richmond Police Department headquarters located on Main Street in Richmond, RI. Several catch basins are located throughout the parking lot and paved areas surrounding the main building. Four catch basins are located in front of the building, while there are 5 catch basins located in close proximity to one another at the back corner of the site. The connectivity of these structures is unknown.

Proposed Concept

Install an underground infiltration system beneath the parking area in both the front and rear of the building. Alternatively, install an underground infiltration system along the northwestern section of the parking lot. An underground infiltration system may already exist at the rear of the building, but on-site investigations at the time of the site visit could not confirm this. There is sufficient space to treat the 1" WQv in either recommended location. Additional runoff could be treated on-site depending on connectivity of the catch basins.

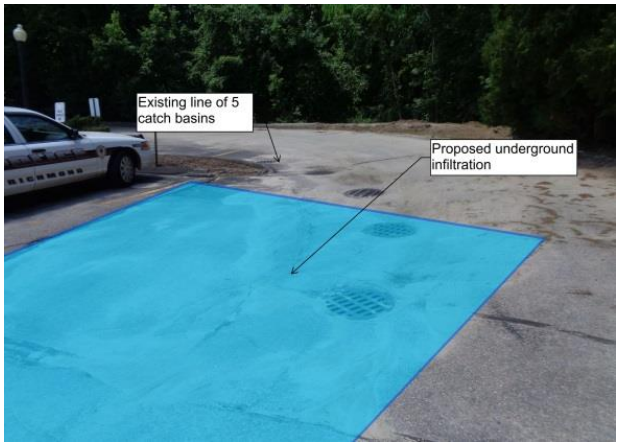


Image 1: View of proposed underground infiltration area and existing catch basins adjacent to Main Street and the front of the police station.

Retrofit Concept Summary
Total Drainage Area: 0.8 acres
Total Impervious Area: 0.8 acres
Total Water Quality Volume: 2,857.0 ft^3
Recharge Volume: 1,714.2 ft^3

Estimated Pollutant Removal
Underground Infiltration
Total Phosphorus ≈ **0.8 lbs/year**
Total Nitrogen ≈ **9.4 lbs/year**
Total Suspended Solids ≈ **307.8 lbs/year**
Bacteria (FC) ≈ **313.2 billion colonies/year**

Estimated Cost
Underground Infiltration: $40,990

Image 2: Typical installation of underground infiltration system below an existing parking lot. (Image source: stormtech.com)

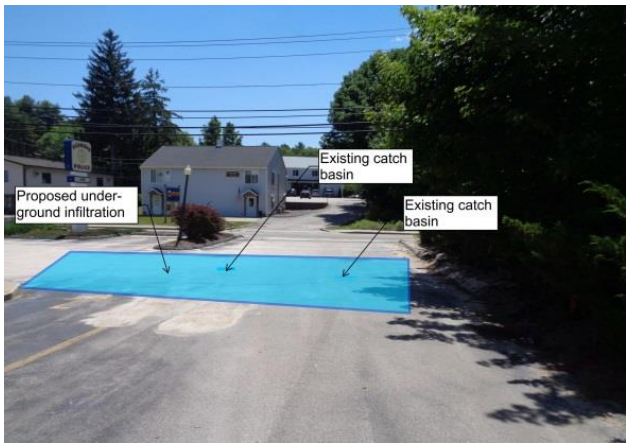


Image 1: View of proposed underground infiltration area and existing line of catch basins located at the rear of the police station.

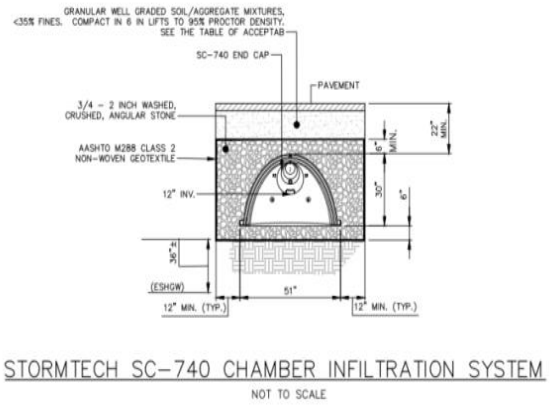
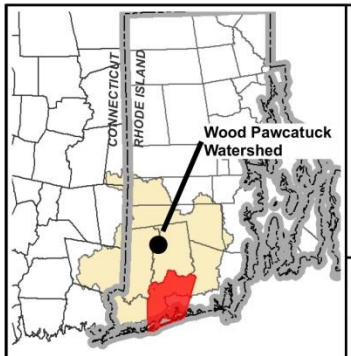


Image 4: Typical detail of an underground infiltration chamber.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 40 80 160 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Richmond Police Department

Retrofit Site No. 157

Richmond Rhode Island

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Retrofit Site 159 – Rhode Island State Police Barracks Bioretention

Nooseneck Hill Road, Richmond, Rhode Island

Site Description

The proposed retrofit concept is located at the Rhode Island State Police Barracks on Nooseneck Hill Road in Richmond, RI. Currently there is no structural drainage infrastructure along the road. Sheetflow runoff from the road discharges to a tributary of Wyoming Pond to the northeast. This retrofit opportunity would serve an approximately 1.4-acre drainage that includes portions of Nooseneck Hill Road and some residential properties on the south side of the road.

Proposed Concept

Install a bioretention/infiltration practice southwest of the driveway and barracks. The site has enough available space to treat over 5 times the 1" WQv. The design should include an overflow and discharge outlet to convey higher flows to nearby Wyoming Pond. Construction of new drainage infrastructure could expand the area served by the proposed bioretention/infiltration system to create a larger, regional stormwater practice.

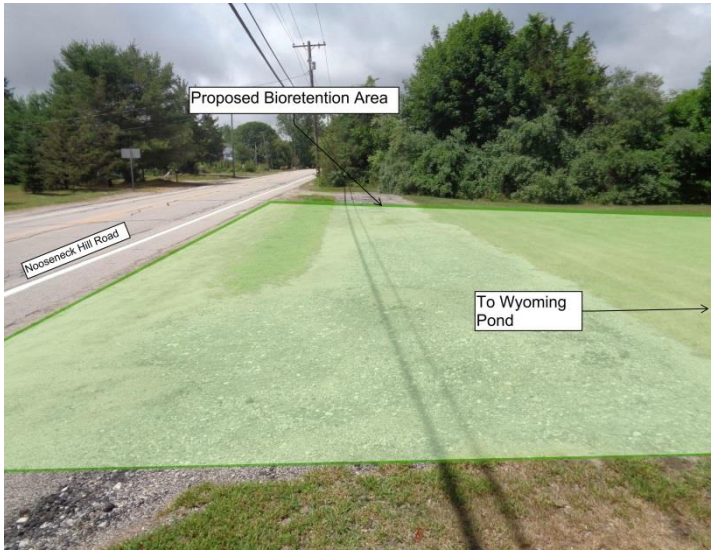


Figure 3: proposed location of bioretention area along Nooseneck Hill Road in Richmond, RI, at the State Police Barracks.

Images 1 & 2: Before and after views of a bioretention area. First image shows installation and planting. Second image shows a functioning practice and overflow structure.

Retrofit Concept Summary

Total Drainage Area: 1.4 acres
Total Impervious Area: 0.8 acres
Total Water Quality Volume: 2,890.1 ft^3
Recharge Volume: 1,714.0 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **1.3 lbs/year**
Total Nitrogen ≈ **14.8 lbs/year**
Total Suspended Solids ≈ **877.9 lbs/year**
Bacteria (FC) ≈ **248.8 billion colonies/year**

Estimated Cost

Bioretention Area: $38,872

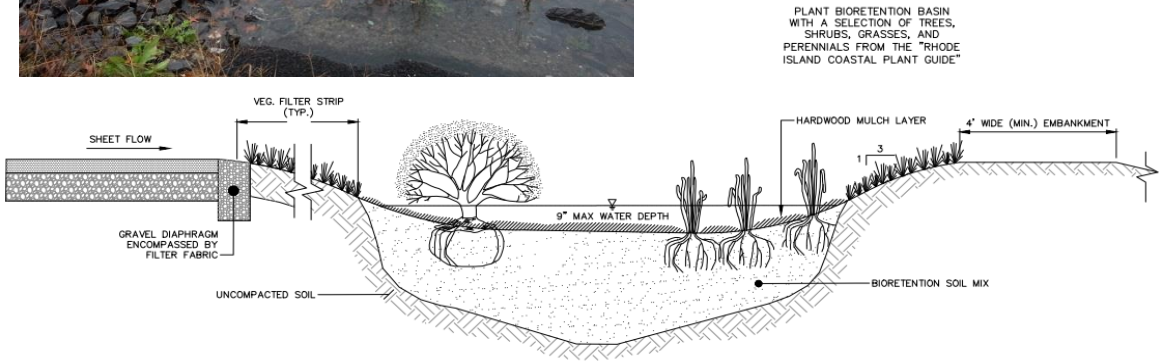
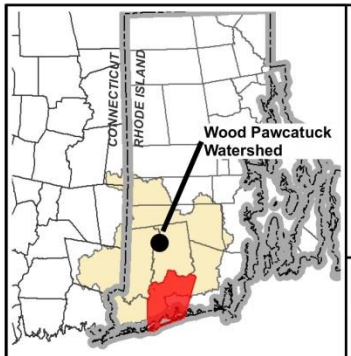


Figure 4: Typical detail of a bioretention area.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 55 110 220 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

RI State Police

Retrofit Site No. 159

Richmond Rhode Island

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Retrofit Site 173 – Exeter Town Hall Bioretention and Rain Garden

Ten Rod Road, Exeter, Rhode Island

Site Description

The proposed retrofit concept is located at the Exeter Town Hall on Ten Rod Road in Exeter, RI. The site is comprised of two adjacent properties. One is the Town Hall and the other is the fire station located next door. At present, stormwater runs across the recently repaved parking lot of the Town Hall and discharges to Ten Road Road and flows east in the gutter before ultimately discharging to Fisherville Brook. There is no piped drainage system located in this area, and sediment deposition is prevalent in the gutter area from the site all the way to the discharge point at the brook.

Proposed Concept

Install a rain garden at the Town Hall parking lot to partially treat sheet flow from the parking area, and a bioretention/infiltration system installed along Ten Rod Road in front of both Town Hall and the adjacent fire station. Stormwater retrofits at these sites would make good demonstration projects given the high public visibility of both sites. Due to the condition of the gutter in front of Town Hall it is also recommended that a longer strip of rip rap swale be installed as pretreatment and erosion protection of the roadside.

Image 3: View of typical bioretnention area with rendering of plantings. (Image source: Johnson County Soil and Water District)

Image 1: View of initial portion of bioretention area. This area could be designed as a pretreatment cell for the larger bioretention area.

Image 2: View of larger proposed bioretention area in front of the fire station. This section should have some pretreatment for sediment.

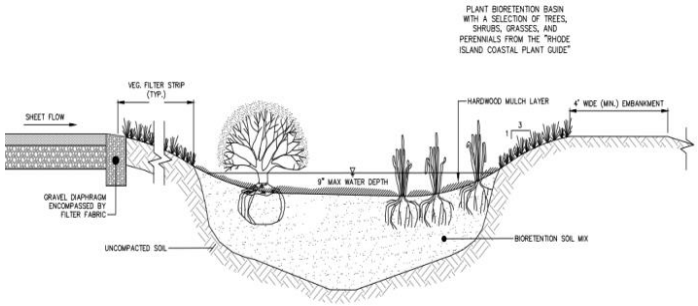


Image 4: Typical detail of a bioretention area.

Retrofit Concept Summary

Total Drainage Area: 4.6 acres
Total Impervious Area: 2.1 acres
*Total Water Quality Volume: 7,416.6 ft^3
Recharge Volume: 2,571.7 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **1.4 lbs/year**
Total Nitrogen ≈ **21.0 lbs/year**
Total Suspended Solids ≈ **1,197.2 lbs/year**
Bacteria (FC) ≈ **306.5 billion colonies/year**

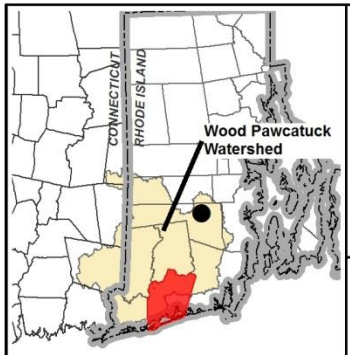
Raingarden Area
Total Phosphorus ≈ **0.2 lbs/year**
Total Nitrogen ≈ **5.5 lbs/year**
Total Suspended Solids ≈ **173.6 lbs/year**
Bacteria (FC) ≈ **74.9 billion colonies/year**

Estimated Cost

Bioretention Area: $79,589
Raingarden Area: $23,181

*Rain garden sized to treat 83% of the 1" WQv due to space limitations of the site.

Image 5: View looking upgradient of proposed bioretention area in front of fire station.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 62.5 125 250 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Exeter Town Hall

Retrofit Site No. 173

Exeter Rhode Island

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Retrofit Site 185 – Wheeler High School Bioretention

North Westerly Road, North Stonington, Connecticut

Site Description

The proposed retrofit concept is located at Wheeler High School off of North Westerly Road in North Stonington, CI. The site consists of a main school building with a parking and bus loop in front. The front of the building drains to a drainage network that travels beneath North Westerly Road and connects to drainage infrastructure at the North Stonington School Administration building lot across the street.

Proposed Concept

Install bioretention/infiltration areas in two locations at the front of the building to treat stormwater on site and decrease the amount of stormwater leaving the site. The first bioretention area would be installed along the western parking lot between the parking area and North Westerly Road. This bioretention area would likely need additional catch basins and piping to connect as much impervious surface as possible to the treatment area. The second bioretention/inifiltration area would be installed within the open area at the southeastern portion of the property, directly in front of the front doors of the school. At present there is a catch basin and shallow drainage pipe that runs from east to west across the grassed area. There is potential to build the bioretention area and use the ends of the existing piped infrastructure as inflow and overflow structures.

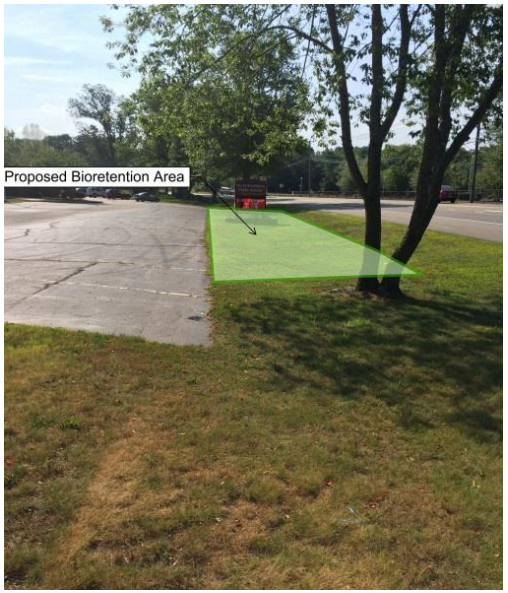


Image 1: View of proposed western bioretention area between parking lot and North Westerly Road.

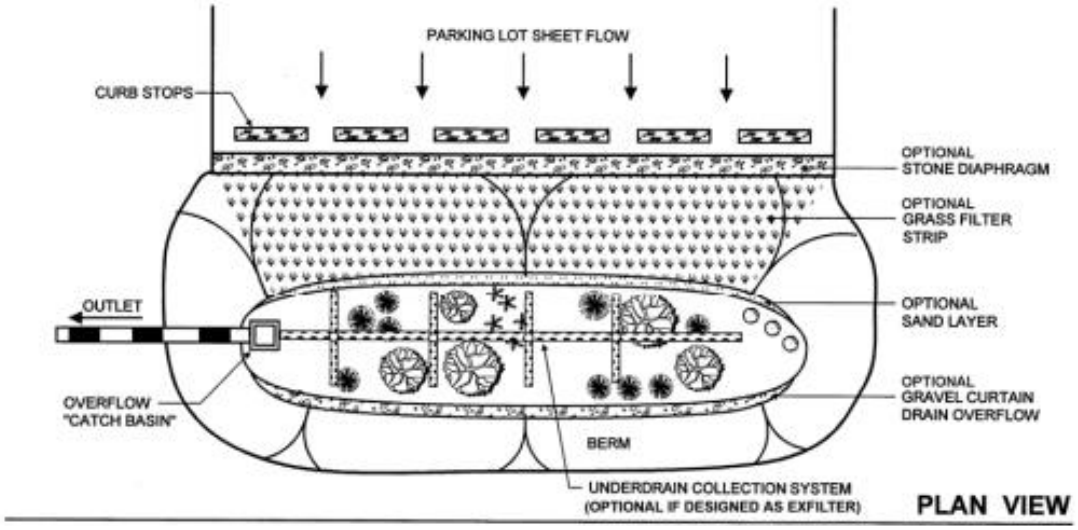


Image 2: Typical detail of a bioretention area. (Image source: RI Stormwater Manual, 2010)

Retrofit Concept Summary

Total Drainage Area: 2.4 acres
Total Impervious Area: 1.7 acres
Total Water Quality Volume: 3,006.9 ft^3
Recharge Volume: 2,104.8 ft^3

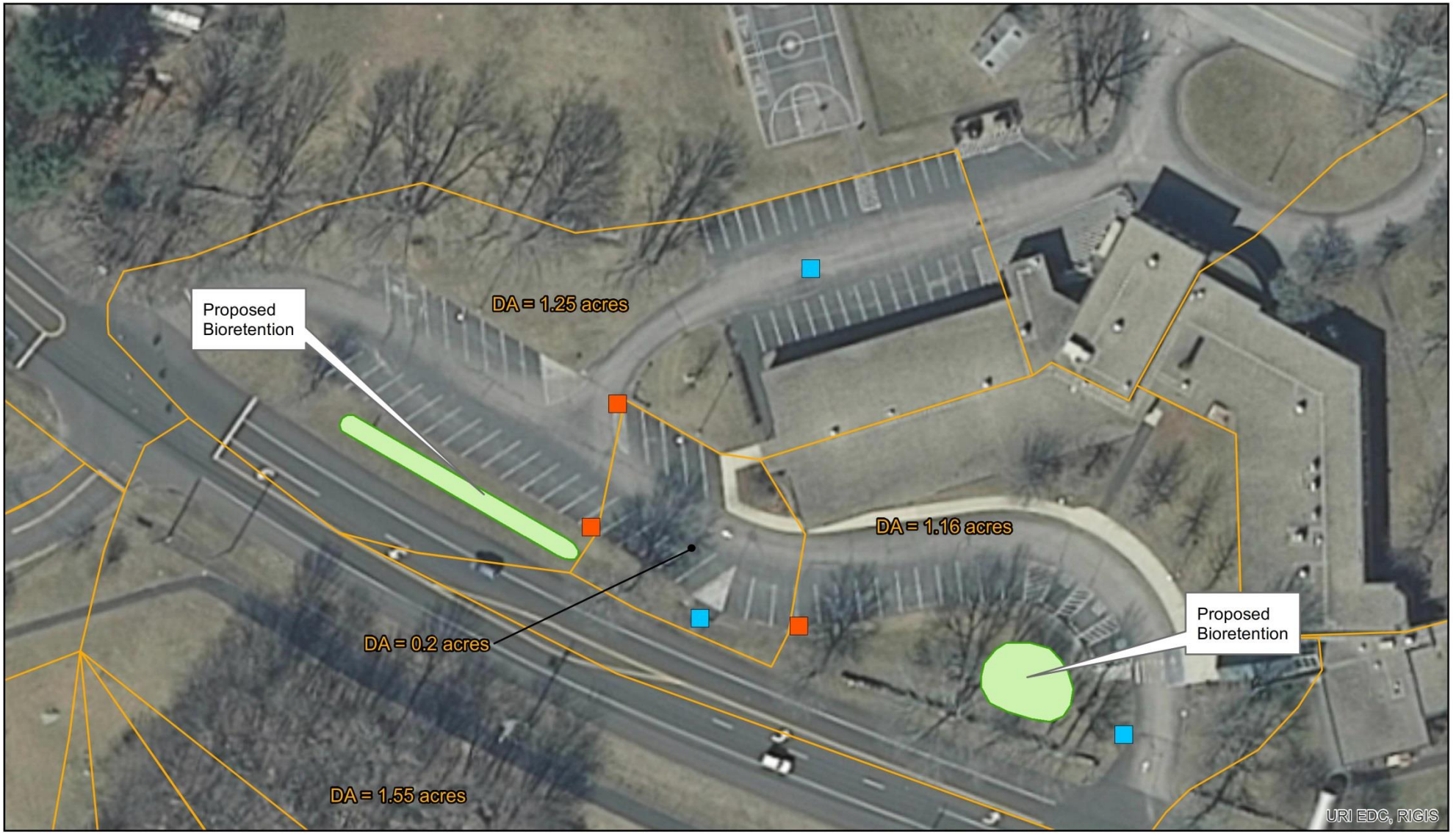
Estimated Pollutant Removal

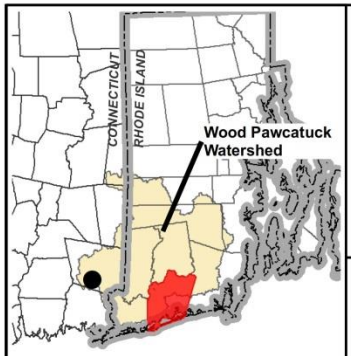
Bioretention Area
Total Phosphorus ≈ **0.8 lbs/year**
Total Nitrogen ≈ **12.2 lbs/year**
Total Suspended Solids ≈ **717.9 lbs/year**
Bacteria (FC) ≈ **216.7 billions of colonies/year**

Estimated Cost

Bioretention Area: $88,887

Image 3: View of proposed bioretention area to be located in front of school. Image looking east.





Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 25 50 100 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Wheeler High/Middle School

Retrofit Site No. 185

North Stonington Connecticut

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Retrofit Site 185A – Wheeler Library Bioretention

Main Street, North Stonington, Connecticut

Site Description

The proposed retrofit concept is located at the Wheeler Library on Main Street in North Stonington, CT. The site consists of a main building and front driveway loop and another driveway that goes to the rear of the building to access a paved parking area. There were several catch basins observed both on and off of the property. This infrastructure has unknown connectivity but presumably drains east to the Shunnock River.

Proposed Concept

Install two separate bioretention areas at the Wheeler Library. The first would accept stormwater from the parking area at the rear of the building and part of the driveway. This practice could be sized to treat the 1" WQv and could also be outlet to an existing catch basin located at the eastern entrance to the property. The second bioretention area would accept stormwater from the front of the building and driveway and also part of Main Street. This practice would also be sized to treat the 1" WQv. This second practice could also be outlet to an existing catch basin.

Image 1: View of typical bioretention area with rendering of plantings. (Image source: Johnson County Soil and Water District.)

Retrofit Concept Summary

Total Drainage Area: 2.5 acres
Total Impervious Area: 1.1 acres
Total Water Quality Volume: 3,971.1 ft^3
Recharge Volume: 1,389.9 ft^3

Estimated Pollutant Removal

Bioretention Areas
Total Phosphorus ≈ **0.5 lbs/year**
Total Nitrogen ≈ **11.7 lbs/year**
Total Suspended Solids ≈ **455.2 lbs/year**
Bacteria (FC) ≈ **341.3 billions of colonies/year**

Estimated Cost

Bioretention Area: $53,412

Image 2: View of proposed bioretention area to be placed along eastern edge of driveway.

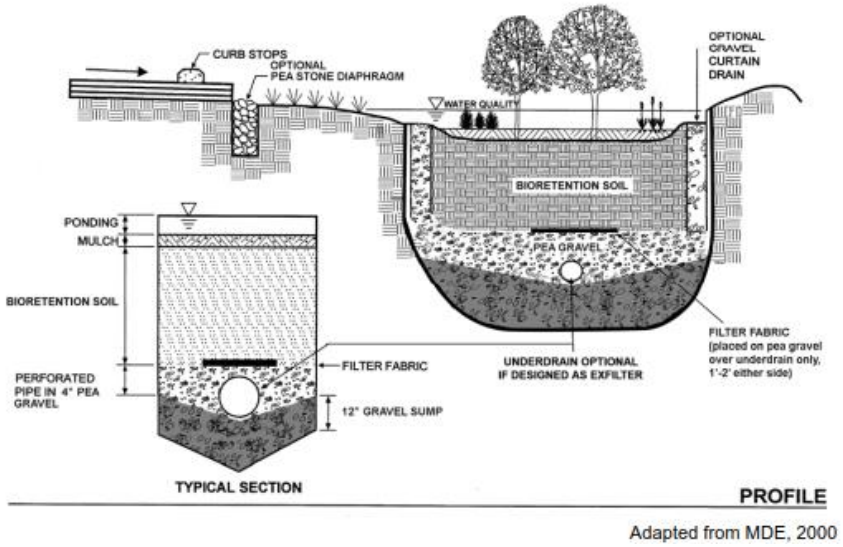


Image 3: Profile view of a typical bioretention practice. (Image source: RI Stormwater Manual, 2010)

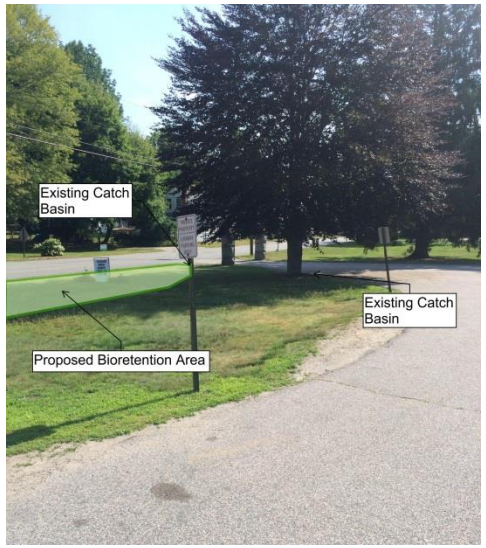
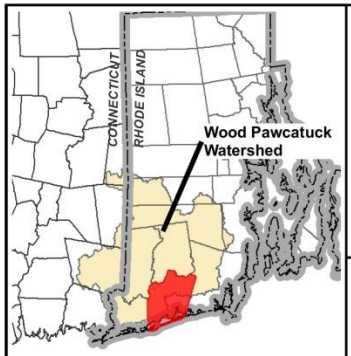


Image 4: View of proposed bioretention area to be located along Main Street in front of the library.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 25 50 100 Feet

N W E S

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Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Wheeler Library (185 A)

Retrofit Site No. 185

North Stonington Connecticut

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Retrofit Site 191 – West Vine Street School Rain Gardens

West Vine Street, Stonington, Connecticut

Site Description

The proposed retrofit concept is located at the West Vine Street Elementary School in Stonington, CT. The site includes a paved bus loop in front of the school and two small parking lots. Runoff from the site drains to West Vine Street where it travels southwest and is discharged to a small ponded area. The ponded area is heavily colonized by cattails with little open water. The small pond ultimately drains to the Pawcatuck River which is less than half mile away.

Proposed Concept

Install multiple rain gardens near the school building and around the bus loop. These rain gardens would be excellent demonstration projects as well as teaching opportunities for the school. There is already a well maintained garden area located on-site, suggesting that maintenance of one or several rain gardens could be performed by on-site staff and possibly incorporated into the curriculum.

Image 1: View of typical raingarden with mature plantings. (Image source: http://www.installitdirect.com/wp-content/uploads/2015/01/how-to-build-a-rain-garden.jpg)

Retrofit Concept Summary

Total Drainage Area: 0.6 acres
Total Impervious Area: 0.5 acres
Total Water Quality Volume: 1,641.5 ft^3
Recharge Volume: 574.5 ft^3

Estimated Pollutant Removal

Raingarden(s)
Total Phosphorus ≈ **0.2 lbs/year**
Total Nitrogen ≈ **4.6 lbs/year**
Total Suspended Solids ≈ **178.2 lbs/year**
Bacteria (FC) ≈ **133.6 billion colonies/year**

Estimated Cost

Rain Gardens: $22,079

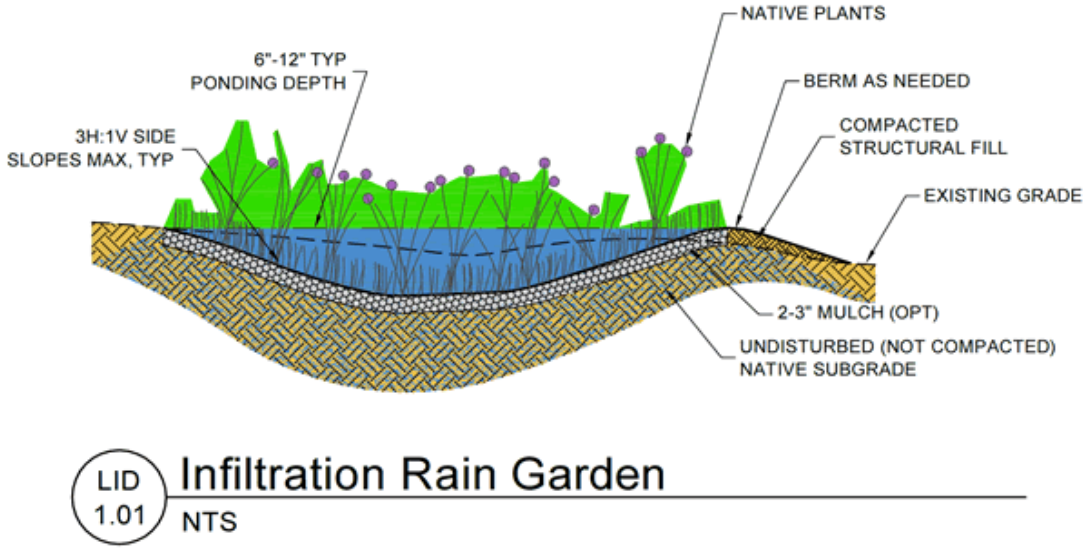
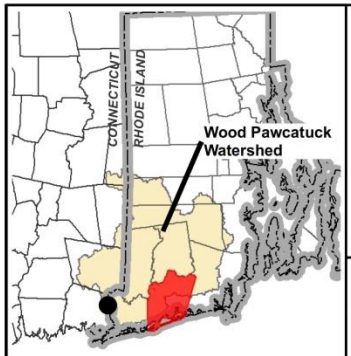


Image 2: View of typical raingarden detail. (Image source: http://www.5counties.org/docs/lu_planning/04_rain_garden.pdf)

Image 3: View of area for proposed rain garden at entrance to West Vine Street Elementary School, Stonington, CT.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 30 60 120 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

West Vine Street School

Retrofit Site No. 191

Stonington Connecticut

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Retrofit Site 194 – North Stonington Elementary and Administration Bioretention

North Westerly Road, North Stonington, Connecticut

Site Description

The proposed retrofit concept is located at the North Stonington Elementary School and Administration building complex located off of North Westerly Road in North Stonington, CT. The site consists of two main buildings and is connected via parking areas and paved driveways. There are several parking lot islands located in each of the main parking areas. There is stormwater drainage infrastructure located in both lots. The connectivity of this network is not entirely known. There is some transfer of stromwater from the Wheeler High School site located across North Westerly Road. It is presumed that the piped storm drain system ultimately discharges to Assekonk Brook.

Proposed Concept

Install multiple bioretention areas within the parking lot islands in each of the two main parking areas. Additionally, install a bioretention area north of the administration (eastern) building that would accept stormwater from both this site and from a portion of the Wheeler High School lot across the street. This bioretention area would be located on the north eastern portion of the site between the parking area and North Westerly Road. The various parking lot islands could be retrofitted to function as bioretention areas and outlet to existing infrastructure on site where appropriate. The north eastern bioretention area that would accept water from both this site and the high school site could be outlet to the existing infrastructure as well.

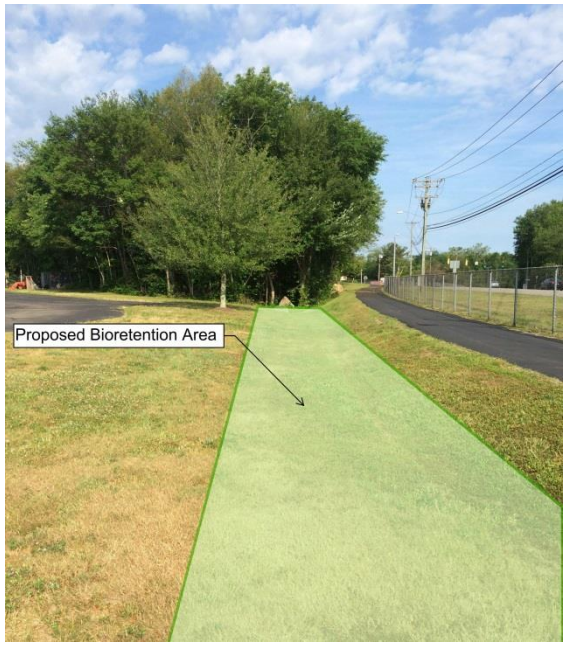


Image 1: View of proposed catch basin on north eastern portion of the site. This area could potentially accept stormwater flows from the Wheeler High School lot as well.

Retrofit Concept Summary

Total Drainage Area: 7.9 acres
Total Impervious Area: 5.0 acres
*Total Water Quality Volume: 18,331.5 ft^3
Recharge Volume: 5,524.6 ft^3

Estimated Pollutant Removal

Bioretention Areas
Total Phosphorus ≈ **2.8 lbs/year**
Total Nitrogen ≈ **54.6 lbs/year**
Total Suspended Solids ≈ **2,508.5 lbs/year**
Bacteria (FC) ≈ **1,362.5 billions of colonies/year**

Estimated Cost

Bioretention Areas: $212,308

*includes portion of drainage area from Wheeler High School parking lot

Image 2: Typical detail of a bioretention area

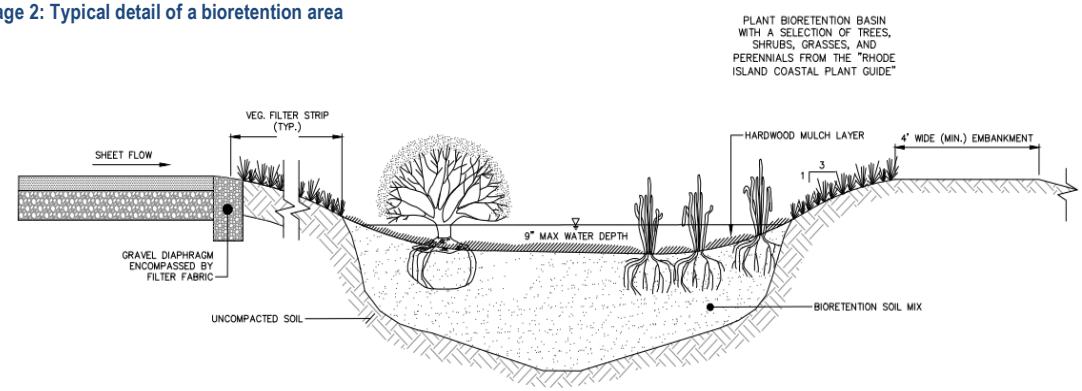
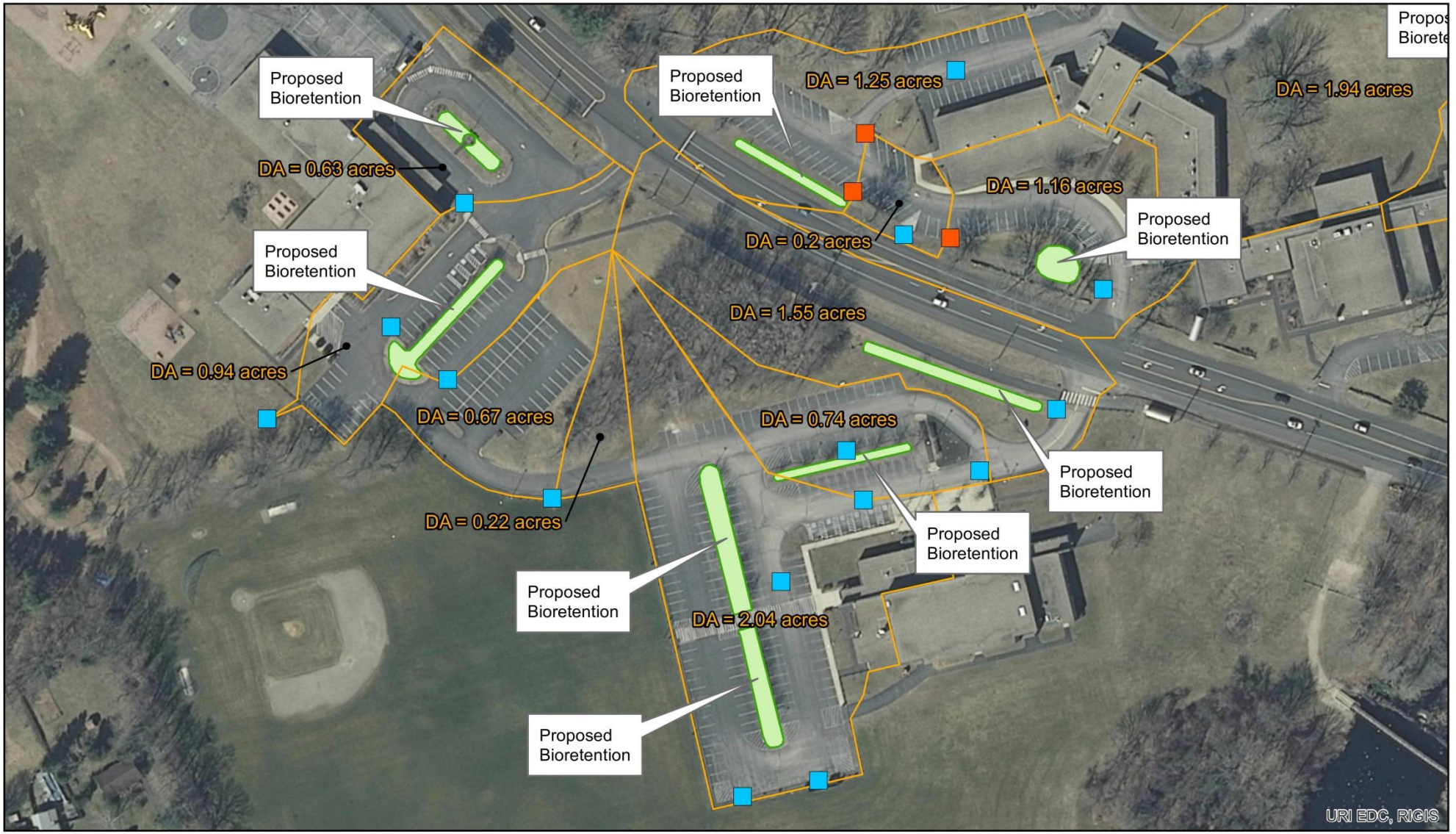
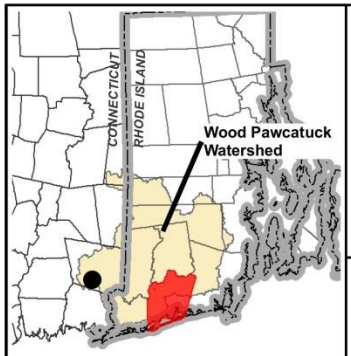


Image 3: View of proposed bioretention area located within parking lot island in the bus loop in front of the elementary school building.





Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 55 110 220 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

North Stonington Elementary School

Retrofit Site No. 194

North Stonington Connecticut

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Retrofit Site 206 – Browning Mill Pond Parking Access Bioretention and Forested Buffer

Arcadia Road, Exeter, Rhode Island

Site Description

The proposed retrofit concept is located at the Browning Mill Pond Parking area located off of Arcadia Road in Exeter, RI. The site consists of an unimproved parking lot adjacent to Browning Mill Pond. The site receives runoff from the on-site parking lot and from Arcadia Road. The parking area, while unimproved, had several areas of standing water at the time of the site inspection, suggesting reduced infiltration capacity of the gravel parking lot. There was also evidence of erosion around the northern perimeter of the parking area leading to several trailheads and to the pond.

Proposed Concept

Install a bioretention area adjacent to the parking lot entrance that would treat runoff from a portion of Arcadia Road and the paved entrance. This bioretention area could also be sized to treat runoff from the parking area if it were to be regraded. At present the parking area is unimproved but due to compaction is likely functioning as an impervious surface. Regrading the lot, along with tilling would help alleviate some erosional issues as well as improve infiltration. Additionally, the northern portion of the parking lot could be reverted to forested buffer. This northern section of the parking area is within 100' of the pond so reforesting this area would help alleviate erosion and decrease sediment loading to the pond from the parking area.

Image 1: View of proposed bioretention/infiltration practice.

Image 2: View of area of proposed forested buffer

Retrofit Concept Summary

Total Drainage Area: 1.2 acres
Total Impervious Area: 0.8 acres
Total Water Quality Volume: 2,854.8 ft^3
Recharge Volume: 1,712.9 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **0.2 lbs/year**
Total Nitrogen ≈ **3.3 lbs/year**
Total Suspended Solids ≈ **236.1 lbs/year**
Bacteria (FC) ≈ **21.4 billions of colonies/year**

Forested Buffer
Total Phosphorus ≈ **NA**
Total Nitrogen ≈ **0.3 lbs/year**
Total Suspended Solids ≈ **176.1 lbs/year**
Bacteria (FC) ≈ **NA**

Estimated Cost

Bioretention Area: $12,767
Forested Buffer: $18,796

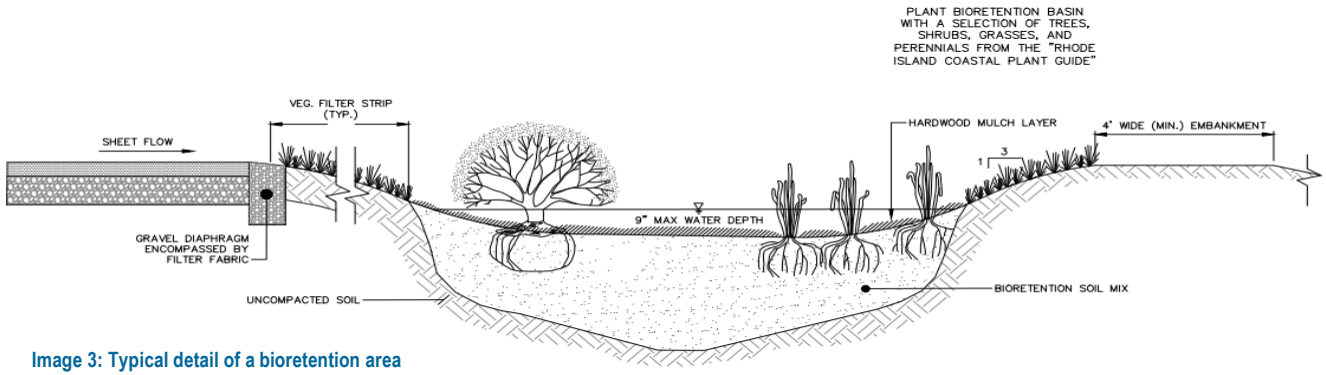
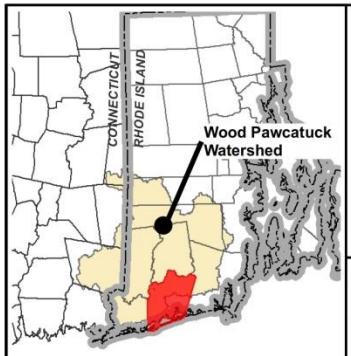


Image 3: Typical detail of a bioretention area

Image 4: View of trail leading from parking area to the pond. Note the evidence of erosion along the trail sides.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 40 80 160 Feet

N W E S

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Stormwater Retrofit Concept

Browning Mill Parking Access

Retrofit Site No. 206

Exeter Rhode Island

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Retrofit Site 227 – Hopkinton Recreation Department Bioretention

Nooseneck Hill Road, Hopkinton, Rhode Island

Site Description

The proposed retrofit concept is located at the Town of Hopkinton Recreation Department property on Nooseneck Hill Road in Hopkinton, RI. The site consists of a large grassed area, a recreation department building and a small parking area, half of which is unimproved. A structural drainage system exists along Nooseneck Hill Road and some of the adjacent side streets.

Proposed Concept

Install a linear bioretention/infiltration practice in the existing grass area along Nooseneck Hill Road to capture, treat, and infiltrate road runoff. The catch basin located immediately adjacent to the proposed retrofit was nearly full of sediment at the time of inspection, suggesting a need for stormwater treatment and regular maintenance of the treatment practice at this location. The connectivity of the existing drainage system is unconfirmed, but there is significant available space, which provides flexibility for increasing the retrofit drainage area.

Image 1: View of catch basin located along roadside where proposed BMP would be located. Note the sediment loading and need for maintenance.

Retrofit Concept Summary

Total Drainage Area: 4.9 acres
Total Impervious Area: 1.5 acres
Total Water Quality Volume: 5,361.4 ft^3
Recharge Volume: 536.1 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **2.3 lbs/year**
Total Nitrogen ≈ **32.3 lbs/year**
Total Suspended Solids ≈ **1,217.4 lbs/year**
Bacteria (FC) ≈ **623.0 billion colonies/year**

Estimated Cost

Bioretention Area: $72,113

Image 3: View looking southwest down Nooseneck Hill Road where a proposed bioretention area could be located along the roadside.

Image 2: View of typical bioretention cell with mature plantings. (Image source: http://www.installitdirect.com/wp-content/uploads/2015/01/how-to-build-a-rain-garden.jpg)

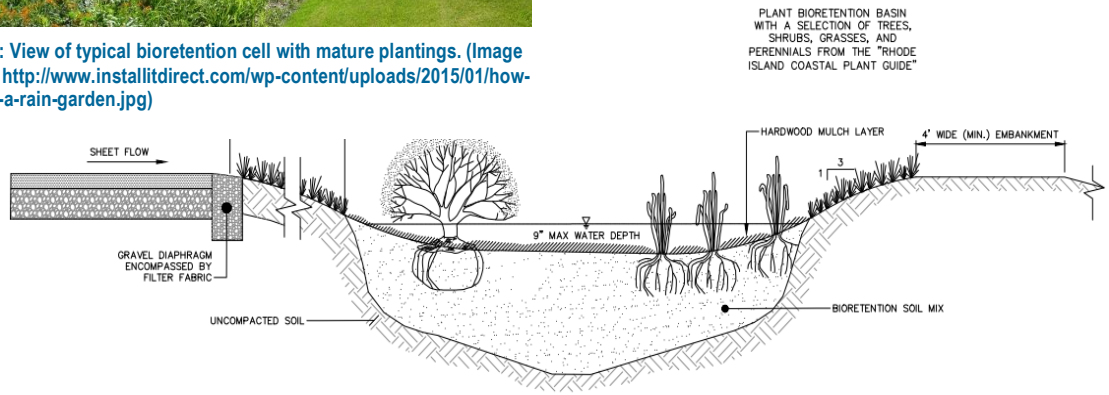
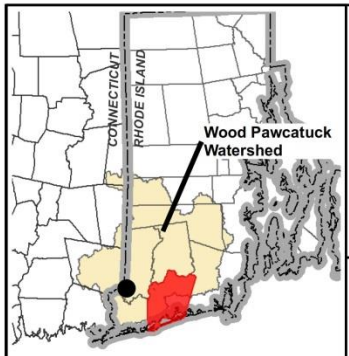


Image 4: Typical detail of a bioretention area.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 62.5 125 250 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Hopkinton Recreation Department

Retrofit Site No. 227

Hopkinton Rhode Island

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Retrofit Site 229 – Tuckertown Park Bioretention

Tuckertown Road, South Kingstown, Rhode Island

Site Description

The proposed retrofit concept is located at the Tuckertown Park Soccer Fields off of Tuckertown Road in South Kingstown, RI. The site consists of an approximately 1,000-foot segment of Tuckertown Road along the adjacent soccer complex. Catch basins are located at the end of Brookwood Road and on Tuckertown Road. The catch basins are believed to connect to a large catch basin on the north side of the fields and then to a catch basin in a grassed area of the park on the south side of the fields south of the driveway. The drainage system then discharges directly to Alewife Brook further to the south.

Proposed Concept

Install multiple conveyances from Tuckertown Road through the narrow wooded area lining the roadway to convey road runoff into a new linear bioretention/infiltration feature on the north side of the fields. This practice would treat runoff from Tuckertown Road and a portion of Brookwood Road where there is currently no treatment, helping to reduce nutrient and sediment loads to Alewife Brook and Tucker Pond.

Image 2: View of lone catch basin near the south of access road and parking in Tuckertown Park.

Retrofit Concept Summary

Total Drainage Area: 13.7 acres
Total Impervious Area: 3.4 acres
Total Water Quality Volume: 5,361.4 ft^3
Recharge Volume: 7,524.2 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **4.8 lbs/year**
Total Nitrogen ≈ **65.2 lbs/year**
Total Suspended Solids ≈ **2,761.1 lbs/year**
Bacteria (FC) ≈ **1,426.8 billion colonies/year**

Estimated Cost

Bioretention Area: $168,673

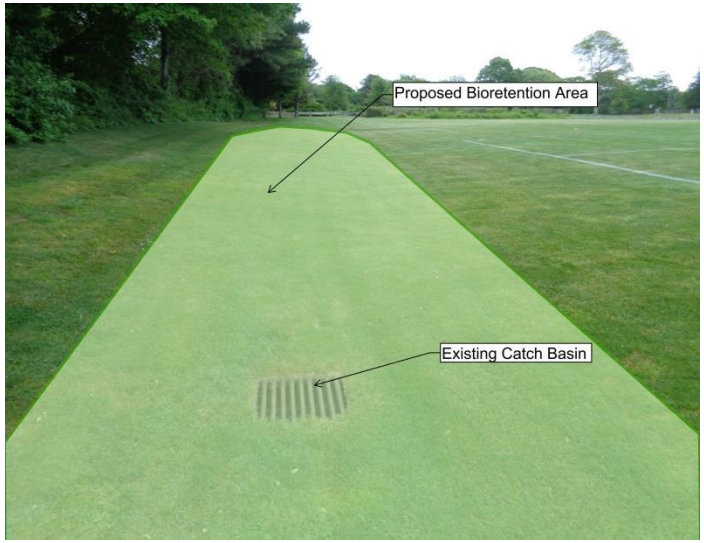


Image 3: Location of proposed bioretention area located adjacent to soccer fields at Tuckertown Park, South Kingstown, RI.

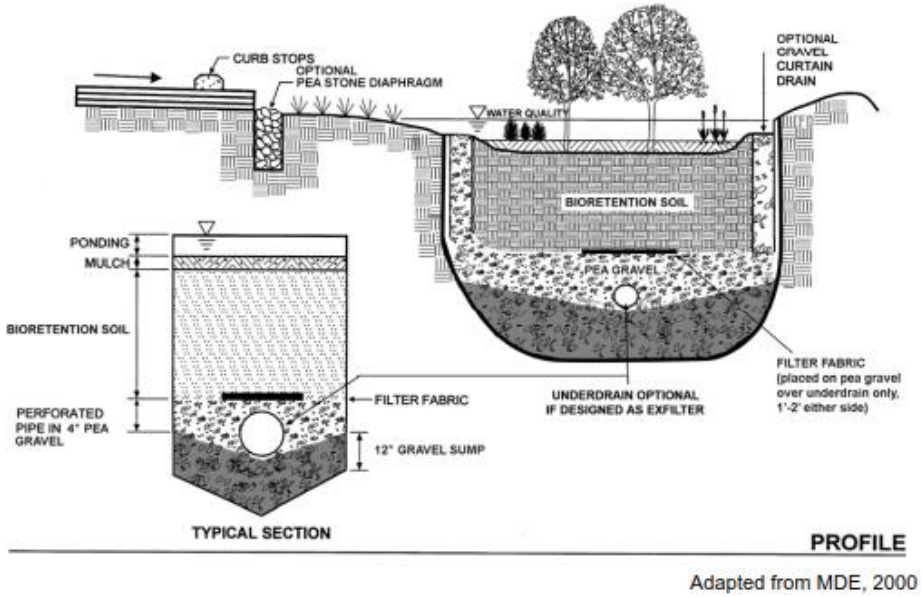
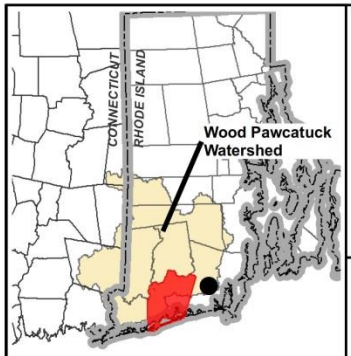


Image 1: Profile view of a typical bioretention practice. (Image source: RI Stormwater Manual, 2010)



Legend

- Existing Catch Basin
- Proposed Catch Basin
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- BMP Drainage Area Boundary
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- Forested Buffer
- Articulating Concrete Matting

0 80 160 320 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Tuckertown Park

Retrofit Site No. 229

South Kingstown Rhode Island

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Retrofit Site 252 – Chariho Little League Rain Gardens

Nooseneck Hill Road, Hope Valley, Rhode Island

Site Description

The proposed retrofit concept is located at the Chariho Little League complex off of Nooseneck Hill Road in Hope Valley, RI. The site consists of several baseball/softball diamonds with three main parking areas. The southern-most parking area is situated within the 100-year and 500-year floodplain, so it was ruled out as a feasible retrofit opportunity given the potential for inundation during significant flooding. The other two parking areas are both unimproved lots.

Proposed Concept

Install rain gardens along the two parking areas that are outside of the 100-year and 500-year floodplains. Rain gardens could be installed at two locations in the eastern parking area. The eastern-most rain garden would run along the far eastern edge of the parking area and could be incorporate walking path cut outs between the bleacher sections. The second rain garden in the eastern lot would run along the fence of the largest baseball field in the complex. The rain garden for the western lot would extend along the edge of the largest ball field on the third base side, leaving room for spectators to line the fence to watch ballgames. The designs would need to include physical barriers or other methods to separate the rain gardens from spectators and parked vehicles. In addition to the water quality benefits, the proposed retrofits could provide aesthetic enhancements to an already well-maintained recreational complex.

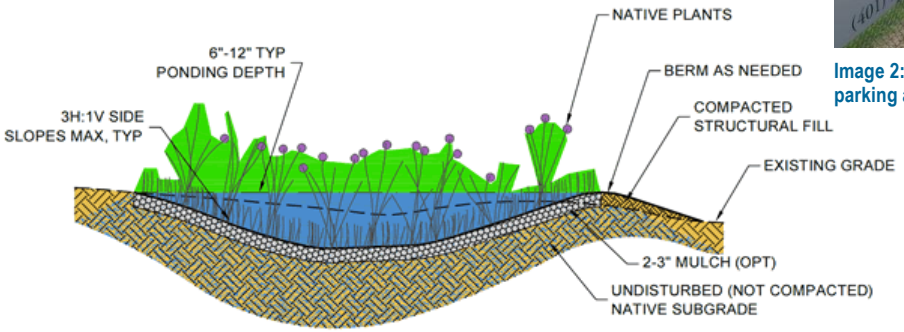


Image 2: Cross-sectional view of a typical rain garden detail. (Image source: http://www.5counties.org/docs/lu_planning/04_rain_garden.pdf

Image 1: View of proposed location of rain garden adjacent to easternmost parking area.

Image 2: View of location of proposed rain garden at western parking area.

Retrofit Concept Summary

Total Drainage Area: 1.0 acres
Total Impervious Area: 0.8 acres
*Total Water Quality Volume: 2,289.6 ft^3
Recharge Volume: 1,373.8 ft^3

Estimated Pollutant Removal

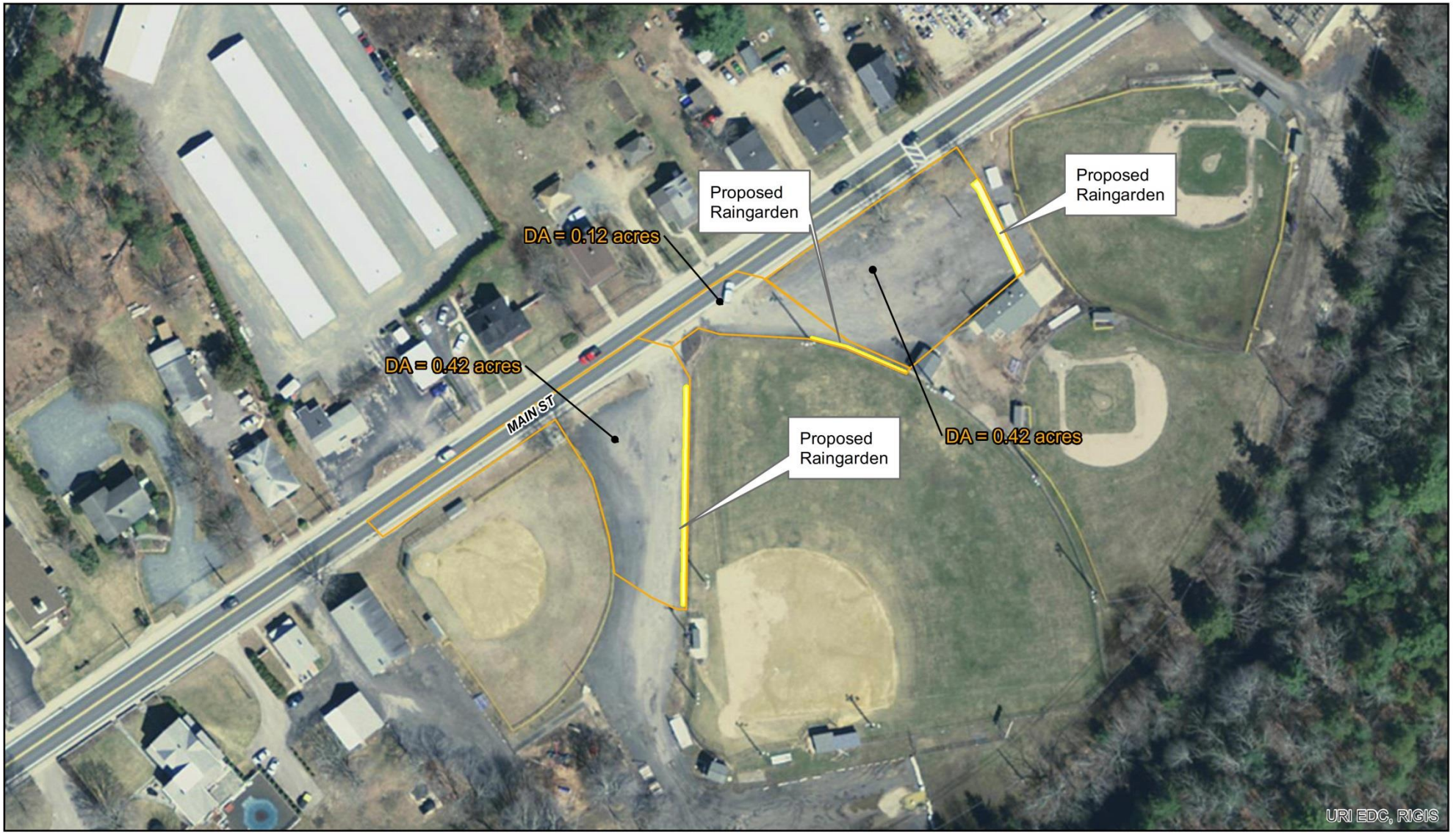
Raingardens
Total Phosphorus ≈ **0.3 lbs/year**
Total Nitrogen ≈ **6.4 lbs/year**
Total Suspended Solids ≈ **299.6 lbs/year**
Bacteria (FC) ≈ **121.2 billion colonies/year**

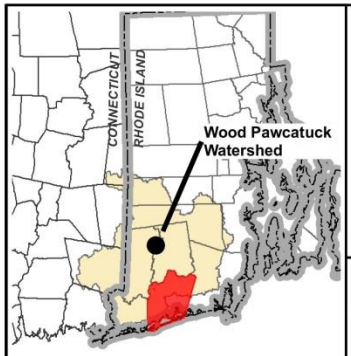
Estimated Cost

Raingardens: $38,792

*Drainage area to western raingarden sized for 0.5" WQv due to space limitations.

Image 4: View of mature plantings in a rain garden or bioretention area. (Image source: http://www.installitdirect.com/wp-content/uploads/2015/01/how-to-build-a-rain-garden.jpg)





Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

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Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Chariho Little League

Retrofit Site No. 252

Hopkinton Rhode Island

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Retrofit Site 272 – State Street School Bioretention and Rain Gardens

State Street, Westerly, Rhode Island

Site Description

The proposed retrofit concept is located at the State Street School on State Street in Westerly, RI. The site includes a single-story school building with a paved parking lot on the eastern side of the building. A structural storm drainage system exists in the school parking lot and in State Street and Hollis Street. Erosion was observed at the time of the inspection in the area of the playground located on the northern portion of the site where the bioretention practice is proposed. Roof drainage on the northern side of the building is directed to various pervious and impervious areas via gutters and downspouts.

Proposed Concept

Install a bioretention/infiltration system at the northwestern corner of the main parking lot. The connectivity of the parking lot catch basins would need to be confirmed to determine if the catch basins could be rerouted to the new bioretention area. Sufficient space exists for a bioretention basin sized to accommodate areas currently draining to these catch basins. A bioretention cell in this location would also help reduce erosion at this location. Additionally, rain gardens could be constructed in one or more areas on the northern side of the building to capture and infiltrate runoff from the roof. These rain gardens would provide demonstration value and teaching opportunities.

Image 1: View of proposed bioretention area looking north. Note area of observed erosion.

Image 1: View of proposed bioretention area looking east. Note area of observed erosion.

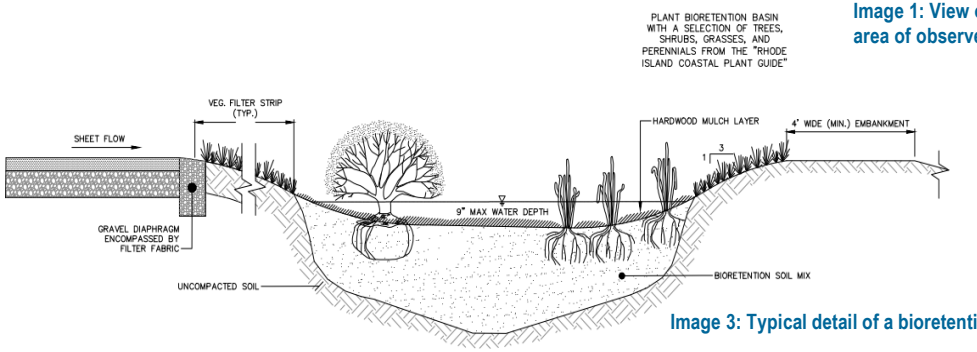


Image 3: Typical detail of a bioretention area.

Retrofit Concept Summary

Total Drainage Area: 2.1 acres
Total Impervious Area: 1.7 acres
Total Water Quality Volume: 6,193.3 ft^3
Recharge Volume: 619.3 ft^3

Estimated Pollutant Removal

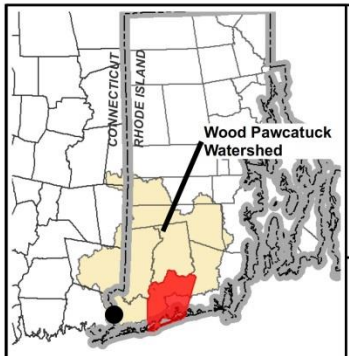
Bioretention Area
Total Phosphorus ≈ **0.7 lbs/year**
Total Nitrogen ≈ **14.6 lbs/year**
Total Suspended Solids ≈ **570.4 lbs/year**
Bacteria (FC) ≈ **422.5 billion colonies/year**

Raingarden Area
Total Phosphorus **≈ 0.1 lbs/year**
Total Nitrogen ≈ **3.1 lbs/year**
Total Suspended Solids ≈ **121.5 lbs/year**
Bacteria (FC) ≈ **91.1 billion colonies/year**

Estimated Cost

Bioretention Area: $68,204
Raingarden Area: $15,099

Image 4: View of typical bioretention practice, post construction.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 30 60 120 Feet

N W E S

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Stormwater Retrofit Concept

State Street School

Retrofit Site No. 272

Westerly Rhode Island

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Retrofit Site 272A – Westerly Senior Center Bioretention

State Street, Westerly, Rhode Island

Site Description

The proposed retrofit concept is located at the Westerly Senior Center near the intersection of Westminster and State Streets in Westerly, RI. The site consists of an asphalt parking lot divided into multiple parking areas. There is a swale located between two sections of the parking lot, and some runoff is directed to the swale but no overflow or formal BMP exists, nor does the swale capture all of the runoff that could be directed to it.

Proposed Concept

Retrofit the current swale as a bioretention/infiltration practice. The practice would be designed to accept runoff from the surrounding parking lot and additional areas of the site and parking lot. If desired, an overflow structure could be incorporated into the design and connected to current stormwater drainage infrastructure located on Westminster Street.

Image 1: Close-up view of proposed bioretention/infiltration area.

Retrofit Concept Summary

Total Drainage Area: 1.2 acres
Total Impervious Area: 1.0 acres
Total Water Quality Volume: 3,794.0 ft^3
Recharge Volume: 379.4 ft^3

Estimated Pollutant Removal

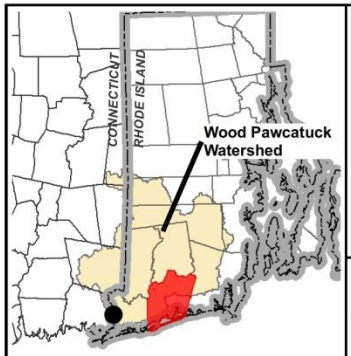
Bioretention Area
Total Phosphorus ≈ **0.5 lbs/year**
Total Nitrogen ≈ **10.5 lbs/year**
Total Suspended Solids ≈ **410.2 lbs/year**
Bacteria (FC) ≈ **307.5 billion colonies/year**

Estimated Cost

Bioretention Area: $51,032

Image 2: Rendering of a typical bioretention area. (Image source: Johnson County Soil and Water District)

Image 3: View of proposed bioretention/infiltration area and some of the parking area that would drain to it.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Westerly Senior Center (272 A)

Retrofit Site No. 272

Westerly Rhode Island

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Retrofit Site 274 – Westerly High School
Underground Infiltration
Park Avenue, Westerly, Rhode Island

Site Description

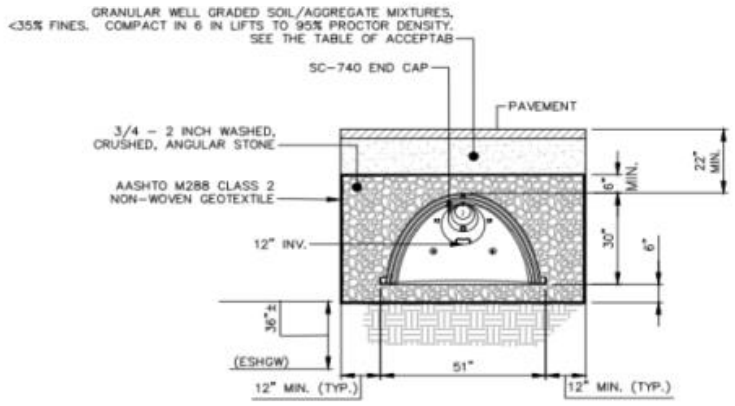
The proposed retrofit concept is located at the Westerly High School property located on Park Avenue in Westerly, RI. The site consists of a main school buildings and associated grounds with several parking areas and hardscaped areas throughout the campus. The proposed site is one small part of the campus located along Park Avenue. According to the facilities manager, this area receives no stormwater treatment and is likely connected to the original stormwater infrastructure along Park Avenue. There are nearby infiltrating catch basins installed in a parking lot to the east that the facilities manager indicates are extremely effective.

Proposed Concept

Install an underground infiltration system beneath the parking area along the former alignment of Park Avenue. The underground system could be sized to infiltrate runoff from the parking lot only or sized to infiltrate additional runoff from current infrastructure along the up-gradient end of Park Avenue, pending confirmation of the connectivity of the existing drainage system.

Image 1: Typical installation of underground infiltration system below an existing parking lot. (Image source: stormtech.com)

Image 2: View of typical linear infiltration chamber installation beneath a road, Mashpee, MA. (Image source: http://capecodwatershed.blogspot.com/)



STORMTECH SC-740 CHAMBER INFILTRATION SYSTEM

NOT TO SCALE

Image 3: Typical detail of an underground infiltration chamber.

Retrofit Concept Summary

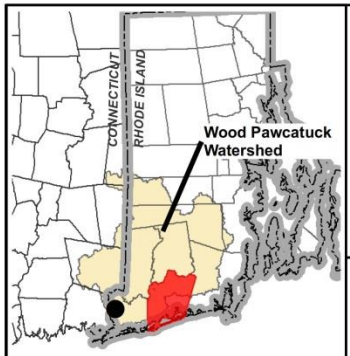
Total Drainage Area: 0.8 acres
Total Impervious Area: 0.6 acres
Total Water Quality Volume: 2,047.7 ft^3
Recharge Volume: 716.7 ft^3

Estimated Pollutant Removal

Underground Infiltration
Total Phosphorus ≈ **0.55 lbs/year**
Total Nitrogen ≈ **6.82 lbs/year**
Total Suspended Solids ≈ **224.5 lbs/year**
Bacteria (FC) ≈ **228.4 billion colonies/year**

Estimated Cost

Underground Infiltration: $29,379



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 45 90 180 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Westerly High School

Retrofit Site No. 274

Westerly Rhode Island

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Retrofit Site 275 – Westerly Town Hall Bioretention

Broad Street, Westerly, Rhode Island

Site Description

The proposed retrofit concept is located at the Westerly Town Hall on Broad Street in Westerly, RI. The site consists of a parking area and driveway to the rear of the Town Hall located between Christ Episcopal Church and Town Hall. At present stormwater flows across the parking area and enters two catch basins with unknown connectivity. Runoff also leaves the site and discharges to Broad Street via sheet flow.

Proposed Concept

Retrofit the existing catch basins and install a bioretention cell in the lawn area between the Town Hall and Christ Episcopal Church. This practice would have the potential to treat runoff from the parking area and possibly some of the roof areas as well. This site is a highly trafficked location in the center of town making it an excellent demonstration project opportunity.

Image 1: View of proposed bioretention area location in between Christ Episcopal Church and Westerly Town Hall, looking southwest.

Retrofit Concept Summary
Total Drainage Area: 0.5 acres
Total Impervious Area: 0.4 acres
Total Water Quality Volume: 1337.4 ft^3
Recharge Volume: 802.5 ft^3

Estimated Pollutant Removal
Bioretention Area
Total Phosphorus ≈ **0.1 lbs/year**
Total Nitrogen ≈ **3.5 lbs/year**
Total Suspended Solids ≈ **169.4 lbs/year**
Bacteria (FC) ≈ **109.6 billion colonies/year**

Estimated Cost
Bioretention Area: $17,989

Image 2: View of proposed bioretention area between Westerly Town Hall and Christ Episcopal Church looking north, Westerly, RI.

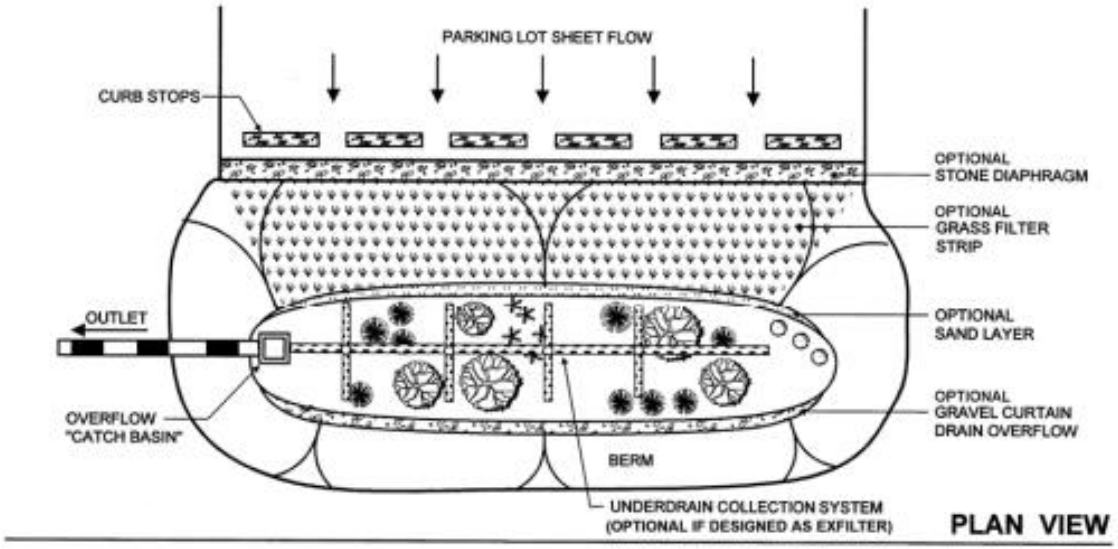
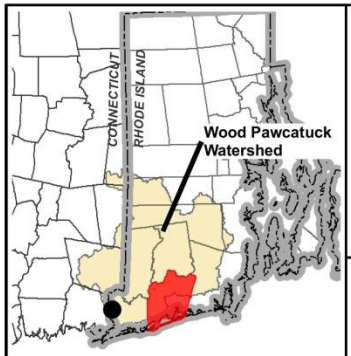


Image 3: Typical detail of a bioretention cell. (Image source: RI Stormwater Manual, 2010)



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 25 50 100 Feet

N W E S

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Stormwater Retrofit Concept

Westerly Town Hall

Retrofit Site No. 275

Westerly Rhode Island

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Retrofit Site 276 – Tower Street School and Community Center Bioretention

Tower Street, Westerly, Rhode Island

Site Description

The proposed retrofit concept is located at the Tower Street School and Community Center located on Tower Street in Westerly, RI. The site consists of two main parking areas to the east of the main building. Two catch basins and associated drainage infrastructure are located on Narragansett Avenue Extension. These catch basins are upgradient of the proposed retrofit and have unknown connectivity.

Proposed Concept

Install a bioretention/infiltration system along the perimeter of the eastern-most parking area. This practice would accept runoff from the parking areas but could also be designed to accept stormwater flows from the catch basins located on Narragansett Avenue Extension.

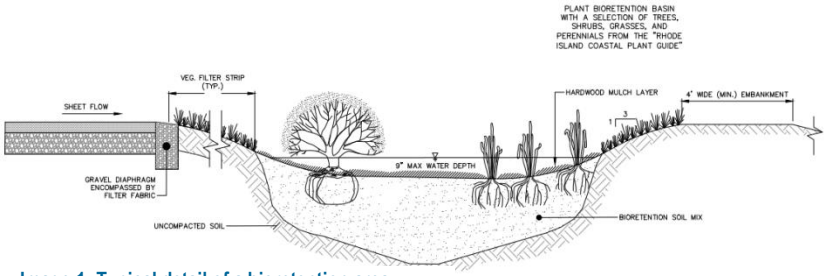


Image 1: Typical detail of a bioretention area.

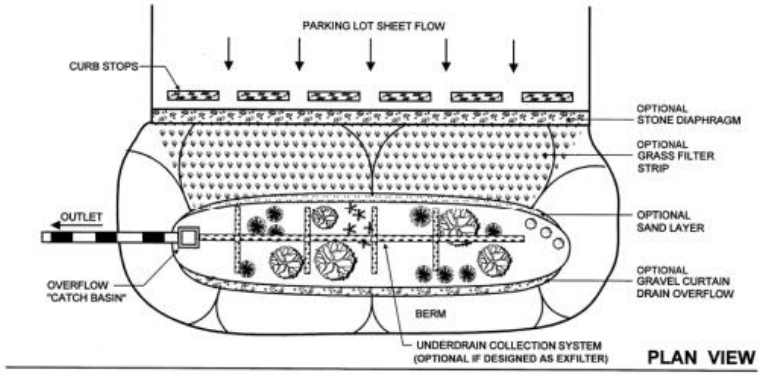


Image 2: Typical plan view of a bioretention area. (Image source: Rhode Island Stormwater manual, 2010)

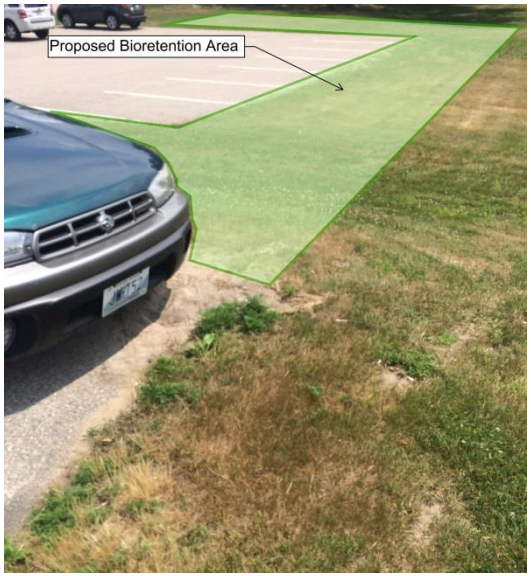


Image 3: View of proposed bioretention area adjacent to parking lot at Tower Street School and Community Center. Direction of photo is looking northeast.

Image 4: View of typical bioretention cell with established plantings. (Image source: http://www.installitdirect.com/wp-content/uploads/2015/01/how-to-build-a-rain-garden.jpg)

Retrofit Concept Summary

Total Drainage Area: 2.2 acres
Total Impervious Area: 0.7 acres
Total Water Quality Volume: 2,459.7 ft^3
Recharge Volume: 860.9 ft^3

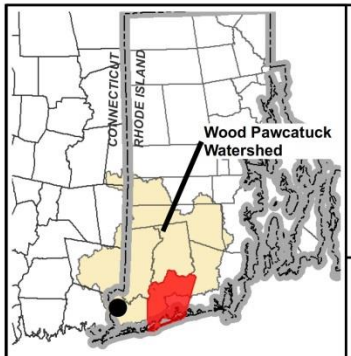
Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **1.1 lbs/year**
Total Nitrogen ≈ **13.1 lbs/year**
Total Suspended Solids ≈ **563.2 lbs/year**
Bacteria (FC) ≈ **336.9 billion colonies/year**

Estimated Cost

Bioretention Area: $33,084

Image 5: View of proposed bioretention area looking northwest.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 30 60 120 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Tower Street School and Community Center

Retrofit Site No. 276

Westerly Rhode Island

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Retrofit Site 280 – Ashaway Elementary School
Underground Infiltration and Bioretention
Hillside Avenue, Ashaway, Rhode Island

Site Description

The proposed retrofit concept is located at the Ashaway Elementary School on Hillside Avenue in Ashaway, RI. The site consists of three school buildings with a courtyard area separating the two main buildings. There is scattered parking and a bus loop on the southwestern portion of the property. The bus loop also appears to serve as a recess and play area. Presently, stormwater runoff from the building roof and parking areas flows to Hillside Avenue. Stormwater then flows to a small ponded area between Hillside Avenue and Laurel Street or, during larger storms, likely discharges to Laurel Street and ultimately the Ashaway River.

Proposed Concept

Install an underground infiltration system beneath the road surface along Hillside Avenue. While there is a large paved parking/recess area to the southwest of the school, a site inspection revealed multiple utility conflicts. There were no such conflicts observed along Hillside Avenue. Placing the infiltration system within the road also offers the opportunity to collect stormwater from a larger drainage area and treat runoff from additional impervious surfaces. In addition to the infiltration system, a separate bioretention area could also be constructed to manage roof runoff and some parking lot runoff. This practice would be located in the courtyard area between the two main buildings and serve as an excellent demonstration project and teaching aid.

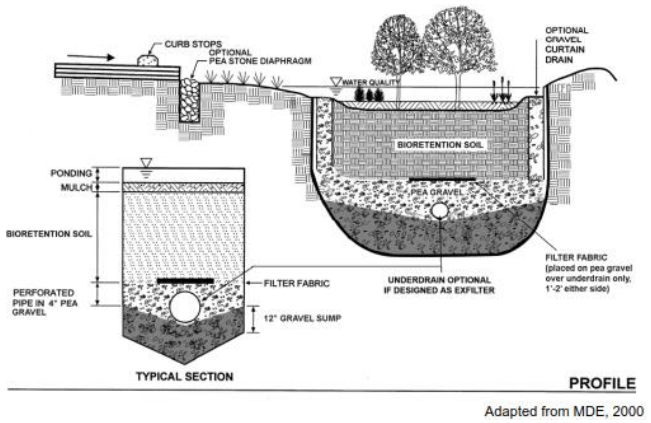


Figure 2: Profile view of a typical bioretention practice. (Image source: RI Stormwater Manual, 2010)

Figure 1: View of typical linear infiltration chamber installation beneath a road, Mashpee, MA. (Image source: http://capecodwatershed.blogspot.com/)

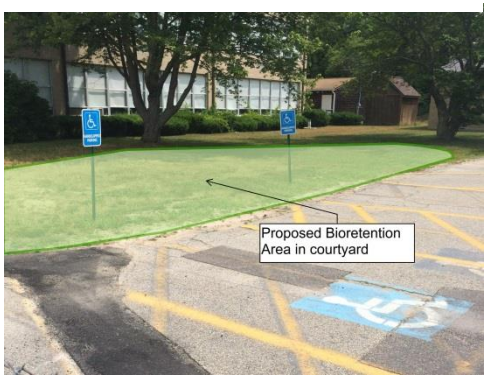


Figure 3: Proposed location for bioretention practice located within courtyard at Ashaway Elementary School, Ashaway, RI.

Retrofit Concept Summary
Total Drainage Area: 11.5 acres
Total Impervious Area: 4.0 acres
*Total Water Quality Volume: 8,797.8 ft^3
Recharge Volume: 5278.7 ft^3

Estimated Pollutant Removal
Underground Infiltration
Total Phosphorus ≈ **2.7 lbs/year**
Total Nitrogen ≈ **31.8 lbs/year**
Total Suspended Solids ≈ **962.1 lbs/year**
Bacteria (FC) ≈ **874.6 billion colonies/year**

Bioretention Area
Total Phosphorus ≈ **0.2 lbs/year**
Total Nitrogen ≈ **4.5 lbs/year**
Total Suspended Solids ≈ **173.9 lbs/year**
Bacteria (FC) ≈ **130.3 billion colonies/year**

Estimated Cost
Underground Infiltration: $206,813
Bioretention Area: $21,390

*Underground infiltration conceptually designed to treat 0.5" WQv due to size, space and cost considerations.

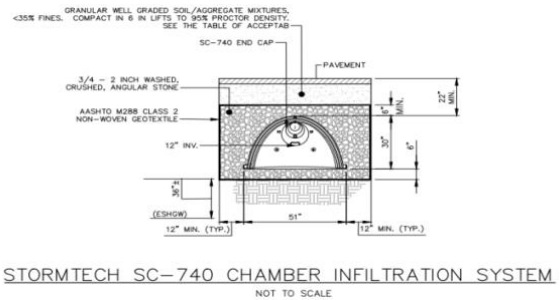
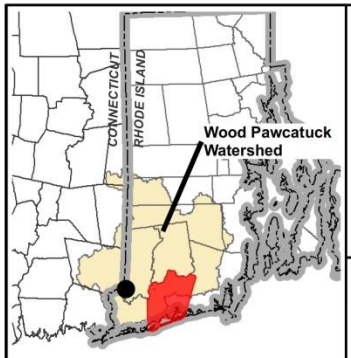


Figure 4: Typical detail of an underground infiltration chamber.



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 50 100 200 Feet

N W E S

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

Ashaway Elementary School

Retrofit Site No. 280

Hopkinton Rhode Island

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Providence, RI 02908
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Retrofit Site 283 – West Kingston Elementary School
Underground Infiltration and Bioretention
Ministerial Road, South Kingstown, Rhode Island

Site Description

The proposed retrofit concept is located at the West Kingston Elementary School on Ministerial Road in West Kingston, RI. The site consists of a large parking lot adjacent to an elementary school building. There is a semi-circular traffic pattern on the site. Two separate driveways lead from Ministerial Road to the main parking area. There are two catch basins located in the main parking area, which collect runoff from the parking area. Additional catch basins are located near the entrance/exit driveways. It is presumed that all drainage structures on the site are interconnected and ultimately discharge to the Chipuxet River, west of Ministerial Road.

Proposed Concept

Install an underground infiltration system beneath the parking area to infiltrate and treat the water quality volume. The existing drainage infrastructure could potentially be modified to convey stormwater to the retrofit and serve as an overflow mechanism. Additionally, a bioretention/infiltration swale is recommended along the northern entrance/exit driveway. While this particular location has relatively steep slopes, the design could incorporate check dams or a tiered approach to optimize the efficiency of the proposed practice.

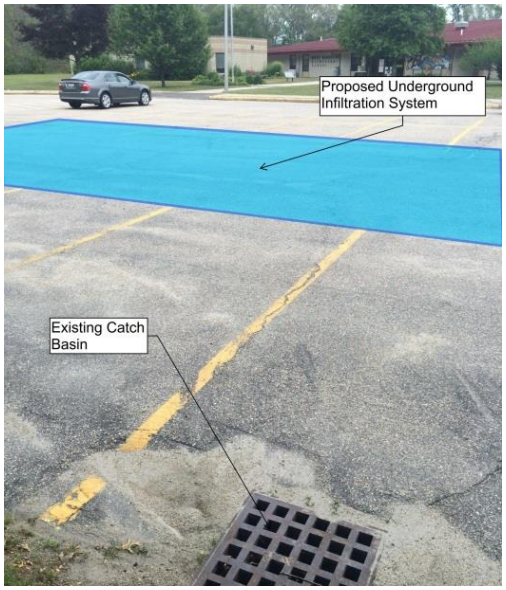


Image 1: Location of proposed underground infiltration system in parking lot of Ashaway Elementary School, West Kingston, RI.

Retrofit Concept Summary
Total Drainage Area: 6.1 acres
Total Impervious Area: 2.4 acres
Total Water Quality Volume: 8,763.5 ft^3
Recharge Volume: 3,067.2 ft^3

Estimated Pollutant Removal
Underground Infiltration
Total Phosphorus ≈ **1.3 lbs/year**
Total Nitrogen ≈ **15.6 lbs/year**
Total Suspended Solids ≈ **516.3 lbs/year**
Bacteria (FC) ≈ **519.4 billion colonies/year**

Bioretention Area
Total Phosphorus ≈ **0.6 lbs/year**
Total Nitrogen ≈ **12.8 lbs/year**
Total Suspended Solids ≈ **513.3 lbs/year**
Bacteria (FC) ≈ **330.5 billion colonies/year**

Estimated Cost
Underground Infiltration: $66,988
Bioretention Area: $55,072

Image 2: Proposed location for linear bioretention swale along driveway entrance/exit at Ashaway Elementary School.

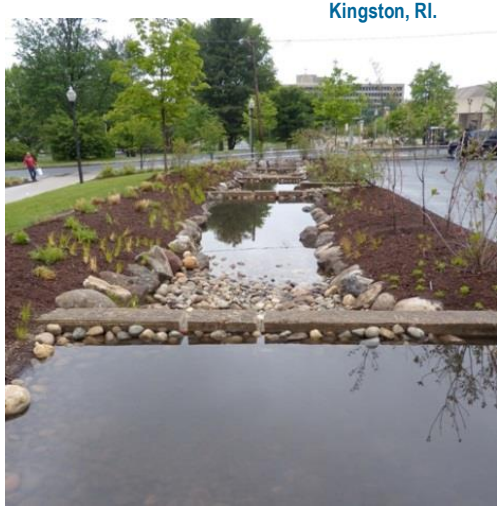
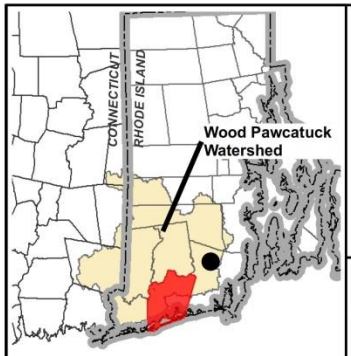


Image 3: View of tiered bioretention area (Image source: UMASS)

Image 4: Typical installation of underground infiltration system below an existing parking lot. (Image source: stormtech.com)



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 55 110 220 Feet

N W E S

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoratative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warrantee, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

West Kingston Elementary School

Retrofit Site No. 283

South Kingstown Rhode Island

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Retrofit Site 284 – Parking Lot at Boss Arena, URI
Underground Infiltration
Keaney Road, Kingston, Rhode Island

Site Description

The proposed retrofit concept is located at the parking lot associated with Boss Arena on the University of Rhode Island campus in Kingston, RI. This location consists of a large asphalt parking lot that slopes gradually eastward toward a tributary of White Horn Brook. No catch basins were observed within the main parking lot. Sheet flow from the parking lot meets a grass divider along the eastern side of the lot where there are several stone-lined channels for stormwater to leave the lot and discharge to the eastern end of Keaney Road. Some storm drainage infrastructure exists along this portion of the road. The drainage infrastructure associated with the parking lot and roadway is assumed to discharge to the tributary to the east.

Proposed Concept

Install an underground infiltration system beneath the parking area to infiltrate and treat the water quality volume. At present, there does not appear to be any stormwater treatment at this location. There are many stormwater practices located adjacent to and within some of the other University-owned parking lots to the north, which have been installed as part of the University's commitment to LID and green infrastructure practices on the URI campus.

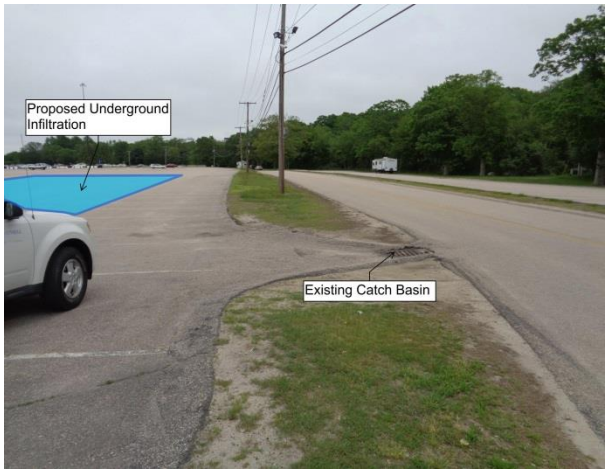


Image 1: Proposed location of underground infiltration system. Note existing catch basin that could be used for overflow.

Retrofit Concept Summary
Drainage Area: 36.5 acres
Impervious Area: 10.7 acres
Water Quality Volume: 38,847.2 ft^3
Recharge Volume: 3,884.7 ft^3

Estimated Pollutant Removal
Underground Infiltration
Total Phosphorus ≈ **10.38 lbs/year**
Total Nitrogen ≈ **139.6 lbs/year**
Total Suspended Solids ≈ **5,001.4 lbs/year**
Bacteria (FC) ≈ **3,919.3 billion colonies/year**

Estimated Cost
Underground Infiltration: $557,345

Image 2: Proposed location of underground infiltration system located within parking area for Boss Arena on the University of Rhode Island campus, South Kingstown, RI.

Image 3: View of typical underground infiltration system beneath a parking lot. (Image source: www.kitchener.ca)

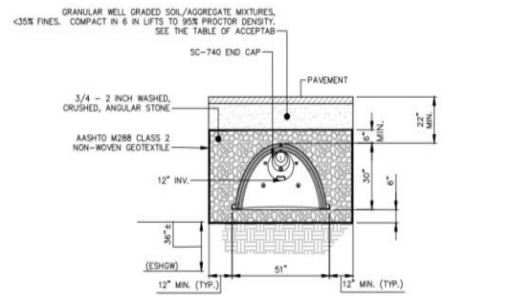
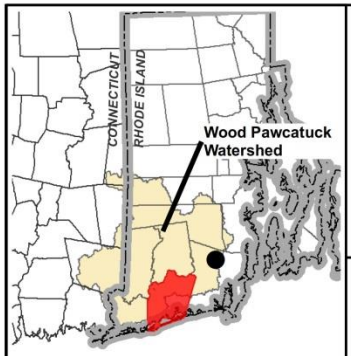


Image 4: Typical detail of an underground infiltration chamber



Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
- Articulating Concrete Matting

0 62.5 125 250 Feet

N W E S

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Data Source(s): Drainage Areas by Fuss & O'Neill, 2016; Aerial Photography; April 2014 USGS 0.3 m multispectral ortho imagery, downloaded from ArcGIS Online; Contour Lines from Northeast LiDAR Project 2011, RIGIS

Stormwater Retrofit Concept

URI Lot at Boss Arena

Retrofit Site No. 284

South Kingstown Rhode Island

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Retrofit Site 286 – Richmond Elementary School Bioretention

Kingstown Road, Richmond, Rhode Island

Site Description

The proposed retrofit concept is located at the Richmond Elementary School located on Kingstown Road in Richmond, RI. The site consists of two large drainage areas that run east/west along Kingstown Road, centered at the intersection of Kingstown Road and Richmond Townhouse Road. Catch basins located along the roadside in several locations. The connectivity and outlet location of the drainage infrastructure is currently unknown.

Proposed Concept

Install bioretention/infiltration basins in the lawn area near the school entrance and driveway/bus loop. An additional bioretention/infiltration system could be installed in the triangular traffic island bordered by Richmond Townhouse Road and Kingstown Road. These bioretention areas would be sized to infiltrate the 1" water quality volume and outlet/overflow to existing infrastructure where possible. It should be noted that a large infiltration practice exists across the street at the Richmond Town Hall property. The effectiveness of this practice and treatment area should be evaluated prior to final design of the proposed retrofit at the Richmond Elementary School.

Image 1: Location of proposed bioretention basins in front of Richmond Elementary School, Richmond, RI.

Retrofit Concept Summary

Total Drainage Area: 16.0 acres
Total Impervious Area: 3.9 acres
Total Water Quality Volume: 13,999.4 ft^3
Recharge Volume: 5,557.4 ft^3

Estimated Pollutant Removal

Bioretention Area
Total Phosphorus ≈ **3.9 lbs/year**
Total Nitrogen ≈ **58.8 lbs/year**
Total Suspended Solids ≈ **3,629.0 lbs/year**
Bacteria (FC) ≈ **504.9 billion colonies/year**

Estimated Cost

Bioretention Area: $188,298

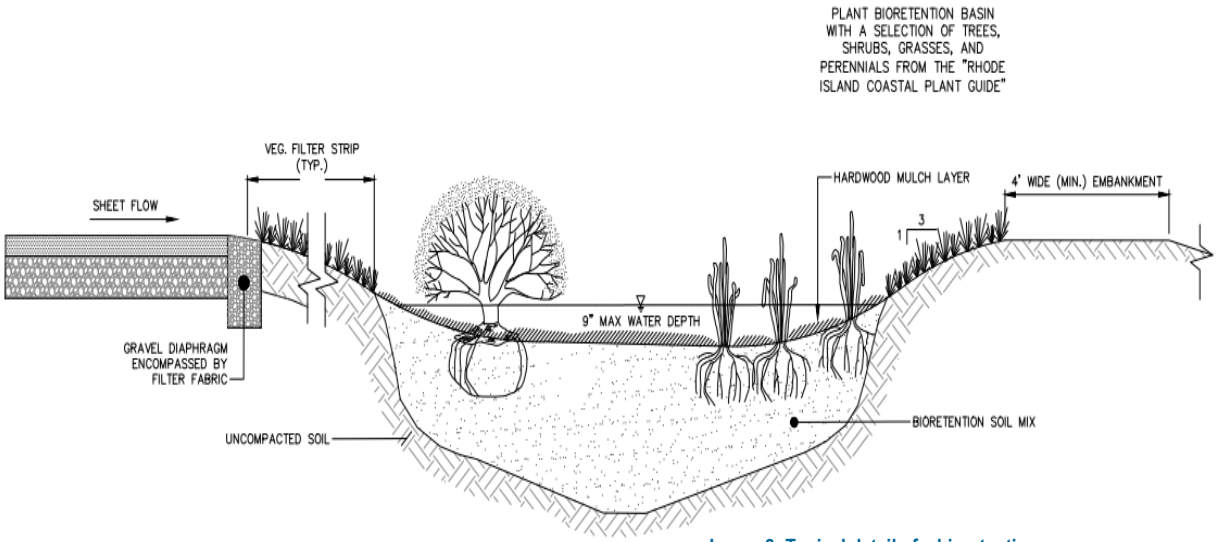
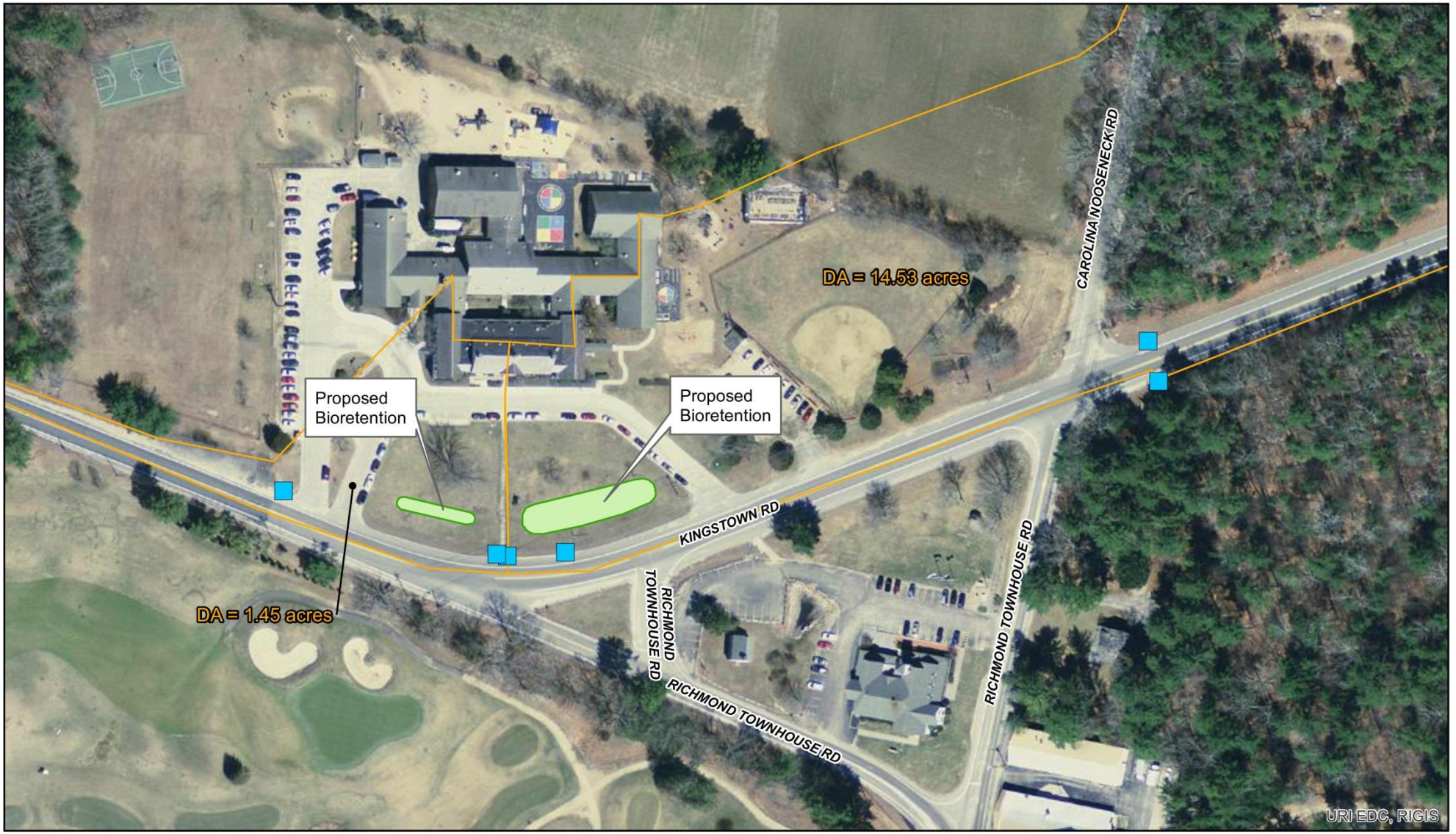
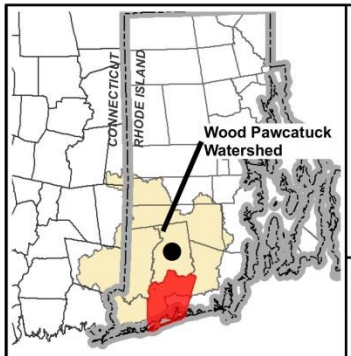


Image 2: Typical detail of a bioretention area.

Image 3: View of typical bioretention area with mature plantings. (Image source: http://www.installitdirect.com/wp-content/uploads/2015/01/how-to-build-a-rain-garden.jpg)





Legend

- Existing Catch Basin
- Proposed Catch Basin
- Proposed Overflow Structure
- Proposed Level Spreader
- Proposed Storm Drain
- BMP Drainage Area Boundary
- Bioretention
- Raingarden
- Underground Infiltration
- Green Roof
- Pervious Pavers
- Forested Buffer
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0 62.5 125 250 Feet

N W E S

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Stormwater Retrofit Concept

Richmond Elementary School

Retrofit Site No. 286

Richmond Rhode Island

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Attachment 9

Planning Level Cost Estimates

Planning-Level Cost Estimates for Proposed Stormwater Best Management Practices
Wood-Pawcatuck Watershed

BMP Number	BMP Name	BMP Type	Impervious Area Treated (sf)	Impervious Area Treated (Acres)	Cost per Impervious Acre Treated				Cost				
					Total Initial Cost[1]	Initial Cost Annualized Over 20 Years[2]	Average Annual Maintenance Cost[3]	Total Annual Cost	Total Initial Cost[1]	Initial Cost Annualized Over 20 Years[2]	Average Annual Maintenance Cost[3]	Total Annual Cost	Total Cost (Over 20 Years)
21a	Vin Gormley Trailhead Parking	Underground Infiltration	82,172.1	1.9	$ 52,080	$ 3,501	$ 1,767	$ 5,268	$ 98,244.37	$ 6,603.56	$ 3,333.30	$ 9,936.87	$ 198,737.30
21b	Vin Gormley Trailhead Parking	Bioretention	21,853.0	0.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 24,494.34	$ 1,646.40	$ 832.03	$ 2,478.44	$ 49,568.73
	Total								**$ 122,738.70**				**$ 248,306.03**
41	URI Tennis Courts	Raingardens	39,365.5	0.9	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 44,123.57**	$ 2,965.80	$ 1,498.80	$ 4,464.60	**$ 89,292.03**
50a	Wyoming Dam Fishing Access	Pervious Pavers	13,320.1	0.3	$ 363,922	$ 24,461	$ 3,319	$ 27,780	$ 111,282.69	$ 7,479.94	$ 1,014.82	$ 8,494.77	$ 169,895.32
50b	Wyoming Dam Fishing Access	ACM	3,522.4	0.1	$ 363,922	$ 24,461	$ 3,319	$ 27,780	$ 29,428.30	$ 1,978.04	$ 268.37	$ 2,246.41	$ 44,928.20
50c	Wyoming Dam Fishing Access	Bioretention	17,843.8	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 20,000.56	$ 1,344.35	$ 679.39	$ 2,023.74	$ 40,474.76
									$ 160,711.55				**$ 255,298.28**
73	Exeter Town Animal Shelter	Bioretention	95,536.2	2.2	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 107,083.45**	$ 7,197.69	$ 3,637.45	$ 10,835.14	**$ 216,702.77**
93a	US Post Office in Westerly	Bioretention	9,284.5	0.2	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 10,406.65	$ 699.49	$ 353.50	$ 1,052.99	$ 21,059.74
93b	US Post Office in Westerly	Bioretention	11,193.0	0.3	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 12,545.84	$ 843.28	$ 426.16	$ 1,269.44	$ 25,388.79
93c	US Post Office in Westerly	Bioretention	23,133.8	0.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 25,929.89	$ 1,742.90	$ 880.80	$ 2,623.69	$ 52,473.83
93d	US Post Office in Westerly	Bioretention	20,248.5	0.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 22,695.84	$ 1,525.52	$ 770.94	$ 2,296.46	$ 45,929.14
									$ 71,578.22				**$ 144,851.50**
102	United Methodist Church	Bioretention	32,408.8	0.7	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 36,325.97**	$ 2,441.68	$ 1,233.93	$ 3,675.61	**$ 73,512.19**
108a	Bradford School[4]	Green roof	4,823.6	0.1				$ -	$ -	$ -	$ -	$ -	$ -
108b	Bradford School	Underground Infiltration	47,089.0	1.1	$ 52,080	$ 3,501	$ 1,767	$ 5,268	$ 56,299.22	$ 3,784.19	$ 1,910.16	$ 5,694.35	$ 113,887.00
114a	US Post Office in Ashaway/Hopkinton	Underground Infiltration	30,920.9	0.7	$ 52,080	$ 3,501	$ 1,767	$ 5,268	$ 36,968.82	$ 2,484.89	$ 1,254.30	$ 3,739.19	$ 74,783.76
114b	US Post Office in Ashaway/Hopkinton	Underground Infiltration	204,831.1	4.7	$ 52,080	$ 3,501	$ 1,767	$ 5,268	$ 244,894.43	$ 16,460.75	$ 8,308.94	$ 24,769.69	$ 495,393.87
									$ 281,863.24				**$ 570,177.63**
125a	Trinity Lutheran Church	Raingardens	1,144.5	0.0	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 1,282.85	$ 86.23	$ 43.58	$ 129.80	$ 2,596.08
125b	Trinity Lutheran Church	Raingardens	2,543.8	0.1	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 2,851.30	$ 191.65	$ 96.85	$ 288.51	$ 5,770.11
125c	Trinity Lutheran Church	Raingardens	3,918.8	0.1	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 4,392.48	$ 295.24	$ 149.21	$ 444.45	$ 8,888.99
125d	Trinity Lutheran Church	Bioretention	28,798.3	0.7	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 32,279.11	$ 2,169.66	$ 1,096.47	$ 3,266.13	$ 65,322.63
125e	Trinity Lutheran Church	Bioretention	17,818.9	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 19,972.68	$ 1,342.48	$ 678.44	$ 2,020.92	$ 40,418.33
									$ 60,778.42				**$ 122,996.15**
129	St Mary's Catholic Church	Bioretention	38,592.5	0.9	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 43,257.09**	$ 2,907.56	$ 1,469.37	$ 4,376.93	**$ 87,538.56**
139a	Center for the Arts	Bioretention	82,271.8	1.9	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 92,215.77	$ 6,198.35	$ 3,132.42	$ 9,330.77	$ 186,615.33
139b	Center for the Arts	Bioretention	26,020.6	0.6	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 29,165.68	$ 1,960.39	$ 990.71	$ 2,951.10	$ 59,022.05
									$ 121,381.45				**$ 245,637.38**
157	Richmond Police Department	Underground Infiltration	34,284.4	0.8	$ 52,080	$ 3,501	$ 1,767	$ 5,268	**$ 40,990.14**	$ 2,755.18	$ 1,390.74	$ 4,145.92	**$ 82,918.45**
159	RI State Police	Bioretention	34,680.6	0.8	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 38,872.37**	$ 2,612.83	$ 1,320.43	$ 3,933.26	**$ 78,665.29**
173a	Exeter Town Hall	Bioretention	71,006.5	1.6	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 79,588.93	$ 5,349.63	$ 2,703.51	$ 8,053.13	$ 161,062.62
173b	Exeter Town Hall	Raingardens	20,681.3	0.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 23,181.05	$ 1,558.13	$ 787.42	$ 2,345.55	$ 46,911.06
									$ 102,769.98				**$ 207,973.69**

BMP Number	BMP Name	BMP Type	Impervious Area Treated (sf)	Impervious Area Treated (Acres)	Cost per Impervious Acre Treated				Cost				Total Cost (Over 20 Years)
					Total Initial Cost[1]	Initial Cost Annualized Over 20 Years[2]	Average Annual Maintenance Cost[3]	Total Annual Cost	Total Initial Cost[1]	Initial Cost Annualized Over 20 Years[2]	Average Annual Maintenance Cost[3]	Total Annual Cost	
185a	Wheeler High/Middle School	Bioretention	35,280.6	0.8	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 39,544.84	$ 2,658.03	$ 1,343.27	$ 4,001.31	$ 80,026.15
185c	Wheeler High/Middle School	Bioretention	36,884.4	0.8	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 41,342.48	$ 2,778.86	$ 1,404.34	$ 4,183.20	$ 83,664.00
185d	Wheeler High/Middle School	Bioretention	30,587.3	0.7	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 34,284.33	$ 2,304.45	$ 1,164.58	$ 3,469.03	$ 69,380.56
185e	Wheeler High/Middle School	Bioretention	17,065.3	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 19,127.96	$ 1,285.70	$ 649.75	$ 1,935.44	$ 38,708.90
									$ 134,299.61				**$ 271,779.62**
191a	West Vine Street School	Raingardens	10,137.8	0.2	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 11,363.16	$ 763.78	$ 385.99	$ 1,149.77	$ 22,995.41
191b	West Vine Street School	Raingardens	9,560.5	0.2	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 10,716.03	$ 720.29	$ 364.01	$ 1,084.29	$ 21,685.83
									$ 22,079.19				**$ 44,681.24**
194a	North Stonington Elementary and Administration Buildings	Bioretention	19,167.7	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 21,484.44	$ 1,444.09	$ 729.79	$ 2,173.88	$ 43,477.66
194b	North Stonington Elementary and Administration Buildings	Bioretention	31,255.9	0.7	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 35,033.75	$ 2,354.82	$ 1,190.04	$ 3,544.86	$ 70,897.14
194c	North Stonington Elementary and Administration Buildings	Bioretention	17,646.4	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 19,779.28	$ 1,329.48	$ 671.87	$ 2,001.35	$ 40,026.96
194d	North Stonington Elementary and Administration Buildings	Bioretention	25,250.8	0.6	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 28,302.78	$ 1,902.39	$ 961.40	$ 2,863.79	$ 57,275.81
185b	Wheeler High/Middle School	Bioretention	6,320.4	0.1	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 7,084.29	$ 476.18	$ 240.64	$ 716.82	$ 14,336.35
194e	North Stonington Elementary and Administration Buildings	Bioretention	21,060.9	0.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 23,606.50	$ 1,586.73	$ 801.87	$ 2,388.60	$ 47,772.03
194f	North Stonington Elementary and Administration Buildings	Bioretention	66,506.3	1.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 74,544.72	$ 5,010.58	$ 2,532.16	$ 7,542.74	$ 150,854.75
194g	North Stonington Elementary and Administration Buildings	Bioretention	2,205.9	0.1	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 2,472.56	$ 166.19	$ 83.99	$ 250.18	$ 5,003.67
									$ 212,308.32				**$ 429,644.38**
206a	Browning Mill Pond Parking Access	Forest Buffer	15,095.0	0.3	$ 35,805	$ 2,407	$ 1,312	$ 3,719	$ 12,407.66	$ 833.99	$ 454.77	$ 1,288.76	$ 25,775.17
206b	Browning Mill Pond Parking Access	Forest Buffer	7,772.6	0.2	$ 35,805	$ 2,407	$ 1,312	$ 3,719	$ 6,388.82	$ 429.43	$ 234.16	$ 663.59	$ 13,271.87
206d	Browning Mill Pond Parking Access	Bioretention	11,389.9	0.3	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 12,766.61	$ 858.12	$ 433.66	$ 1,291.78	$ 25,835.54
					$ 35,805				**$ 31,563.08**				**$ 64,882.59**
227	Hopkinton Recreation Department	Bioretention	64,336.4	1.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 72,112.59**	$ 4,847.10	$ 2,449.55	$ 7,296.65	**$ 145,932.91**
229	Tuckertown Park	Bioswales	150,484.1	3.5	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 168,672.76**	$ 11,337.46	$ 5,729.54	$ 17,067.00	**$ 341,339.91**
252a	Chariho Little League	Raingardens	15,894.4	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 17,815.48	$ 1,197.48	$ 605.16	$ 1,802.64	$ 36,052.86
252b	Chariho Little League	Raingardens	4,446.8	0.1	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 4,984.23	$ 335.02	$ 169.31	$ 504.32	$ 10,086.49
252c	Chariho Little League	Raingardens	14,267.8	0.3	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 15,992.26	$ 1,074.93	$ 543.23	$ 1,618.16	$ 32,363.24
									$ 38,791.98				**$ 78,502.60**
272a	Westerly Senior Center	Bioretention	45,528.6	1.0	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 51,031.49**	$ 3,430.12	$ 1,733.46	$ 5,163.57	**$ 103,271.47**
272b	State Street School	Raingardens	13,470.9	0.3	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 15,099.10	$ 1,014.90	$ 512.89	$ 1,527.79	$ 30,555.77
272c	State Street School	Bioretention	60,849.1	1.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 68,203.75	$ 4,584.36	$ 2,316.77	$ 6,901.13	$ 138,022.64
									$ 83,302.85				**$ 168,578.42**
274	Westerly High School	underground infiltration	24,572.8	0.6	$ 52,080	$ 3,501	$ 1,767	$ 5,268	**$ 29,379.11**	$ 1,974.74	$ 996.79	$ 2,971.53	**$ 59,430.63**
275	Westerly Town Hall	Bioretention	16,049.2	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 17,989.05**	$ 1,209.15	$ 611.06	$ 1,820.21	**$ 36,404.11**
276	Tower Street School and Community Center	Bioretention	29,516.5	0.7	$ 48,825	$ 3,282	$ 1,659	$ 4,940	**$ 33,084.10**	$ 2,223.77	$ 1,123.81	$ 3,347.58	**$ 66,951.68**
280a	Ashaway Elementary School	Underground Infiltration	172,979.9	4.0	$ 52,080	$ 3,501	$ 1,767	$ 5,268	$ 206,813.42	$ 13,901.11	$ 7,016.90	$ 20,918.01	$ 418,360.29
280b	Ashaway Elementary School	Bioretention	19,083.5	0.4	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 21,390.07	$ 1,437.75	$ 726.59	$ 2,164.33	$ 43,286.69
									$ 228,203.50				**$ 461,646.98**
283a	West Kingstown Elementary	Underground Infiltration	56,028.9	1.3	$ 52,080	$ 3,501	$ 1,767	$ 5,268	$ 66,987.69	$ 4,502.63	$ 2,272.80	$ 6,775.43	$ 135,508.56
283b	West Kingstown Elementary	Bioretention	49,133.2	1.1	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 55,071.80	$ 3,701.69	$ 1,870.70	$ 5,572.39	$ 111,447.77
									$ 122,059.49				**$ 246,956.33**

BMP Number	BMP Name	BMP Type	Impervious Area Treated (sf)	Impervious Area Treated (Acres)	Cost per Impervious Acre Treated				Cost				Total Cost (Over 20 Years)
					Total Initial Cost[1]	Initial Cost Annualized Over 20 Years[2]	Average Annual Maintenance Cost[3]	Total Annual Cost	Total Initial Cost[1]	Initial Cost Annualized Over 20 Years[2]	Average Annual Maintenance Cost[3]	Total Annual Cost	
284	URI Lot at Boss Arena	Underground Infiltration	466,166.7	10.7	$ 52,080	$ 3,501	$ 1,767	$ 5,268	**$ 557,345.36**	$ 37,462.36	$ 18,909.99	$ 56,372.35	**$ 1,127,446.95**
286a	Richmond Elementary School	Bioretention	31,566.9	0.7	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 35,382.32	$ 2,378.25	$ 1,201.88	$ 3,580.13	$ 71,602.55
286b	Richmond Elementary School	Bioretention	136,425.7	3.1	$ 48,825	$ 3,282	$ 1,659	$ 4,940	$ 152,915.19	$ 10,278.30	$ 5,194.28	$ 15,472.58	$ 309,451.62
									$ 188,297.52				**$ 381,054.16**
								Total:	**$ 3,279,293.39**			**Total:**	**$ 6,566,260.90**

NOTES

Inflation Rate- based on the RSMeans Historical Cost Index. January 1, 2016. http://rsmeansonline.com/References/CCI/3-Historical%20Cost%20Indexes/1-Historical%20Cost%20Indexes.PDF
Preconstruction Costs- assumed to be 20% of initial construction costs
Cost estimates- obtained from "Costs of Stormwater Management Practices In Maryland Counties" prepared for Maryland Department of the Environment by Dennis King and Patrick Hagan of the University of Maryland, Center for Environmental Science (UMCES), October 10, 2011.

[1]Total initial cost includes pre-construction costs (design, planning, and permitting) and construction costs (capital, labor, material and overhead costs). Construction costs in 2011 dollars were converted to 2016 dollars using R.S. Means Construction Cost Indexes (equivalent to 1.085% increase).

[2]Initial BMP costs, including preconstruction and construction costs, are amortized over 20 years at 3% to arrive at annualized initial costs.

[3]Combined annual operating, implementation, and maintenance costs.

[4]Green roof cost estimated based on conservative cost per ft2 from: http://stormwater.pca.state.mn.us/index.php/Cost-benefit_considerations_for_green_roofs

FUSS & O'NEILL

Attachment 10

Pollutant Loading and Reduction Calculations

Pollutant Loading and Removal Calculations – Wood-Pawcatuck Watershed

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
Site21	Underground Infiltration	48.51	3.87	1194.08	531.95	0.65	0.65	0.90	0.95	31.5	2.5	1,074.7	505.36
Site 21b	Bioretention	15.51	1.21	387.96	88.17	0.55	0.30	0.90	0.70	8.5	0.4	349.2	61.72

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
41	Raingardens	16.63	1.35	395.89	380.81	0.55	0.30	0.90	0.70	9.15	0.40	356.30	266.57

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
50a	Pervious Pavers	6.78	0.86	274.29	100.51	0.90	0.40	0.40	0.95	6.10	0.34	109.72	95.49
50c	Bioretention	7.70	0.67	200.00	168.26	0.55	0.30	0.90	0.70	4.23	0.20	180.00	117.78

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
73	Bioretention	60.24	9.04	3004.37	101.05	0.55	0.30	0.90	0.70	33.13	2.71	2703.93	70.74

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
93a	Bioretention	3.88	0.31	92.36	89.03	0.55	0.30	0.90	0.70	2.14	0.09	83.12	62.32
93b	Bioretention	4.70	0.38	111.75	107.72	0.55	0.30	0.90	0.70	2.58	0.11	100.58	75.40
93c	Bioretention	15.48	2.13	698.40	51.26	0.55	0.30	0.90	0.70	8.51	0.64	628.56	35.88
93d	Bioretention	13.31	1.10	208.32	137.37	0.55	0.30	0.90	0.70	7.32	0.33	187.49	96.16
									Total	20.55	1.18	999.74	269.76

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
102	Bioretention	24.52	3.73	642.96	507.96	0.55	0.30	0.90	0.70	13.49	1.12	578.66	355.57

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
108a	Green Roof	2.05	0.17	48.66	46.90	0.90	0.30	0.55	0.70	1.84	0.05	26.76	32.83
108b	Underground Infiltration	19.75	1.60	469.79	452.83	0.65	0.65	0.90	0.95	12.84	1.04	422.81	430.19

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
114a	Underground Infiltration	23.00	2.67	404.70	363.06	0.65	0.65	0.90	0.95	14.95	1.73	364.23	344.91
114b	Underground Infiltration	185.76	20.98	2877.92	2731.35	0.65	0.65	0.90	0.95	120.75	13.63	2590.13	2594.79
									Total	75.32	8.55	1659.29	1642.30

Pollutant Loading and Removal Calculations – Wood-Pawcatuck Watershed

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
125a	Raingardens	0.47	0.04	11.27	10.87	0.55	0.30	0.90	0.70	0.26	0.01	10.15	7.61
125b	Raingardens	1.06	0.09	25.15	24.24	0.55	0.30	0.90	0.70	0.58	0.03	22.63	16.97
125c	Raingardens	1.64	0.13	39.02	37.62	0.55	0.30	0.90	0.70	0.90	0.04	35.12	26.33
125d	Bioretention	21.85	1.98	424.87	286.99	0.55	0.30	0.90	0.70	12.02	0.59	382.38	200.89
125e	Bioretention	12.33	1.64	448.50	45.98	0.55	0.30	0.90	0.70	6.78	0.49	403.65	32.18
									Total Raingarden	1.74	0.08	67.90	50.91
									Total Bioretention	18.80	1.09	786.04	233.08

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
129	Bioretention	22.23	2.64	676.56	300.15	0.55	0.30	0.90	0.70	12.23	0.79	608.90	210.11

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
139a	Bioretention	64.20	9.71	1625.40	1296.54	0.55	0.30	0.90	0.70	35.31	2.91	1462.86	907.58
139b	Bioretention	10.97	0.89	260.91	251.42	0.55	0.30	0.90	0.70	6.03	0.27	234.82	175.99
									Total[1]	22.63	1.64	922.36	602.55

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
157	Underground Infiltration	14.38	1.17	341.98	329.64	0.65	0.65	0.90	0.95	9.35	0.76	307.79	313.16

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
159	Bioretention	26.85	4.45	975.47	355.38	0.55	0.30	0.90	0.70	14.77	1.33	877.92	248.76

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
173a	Bioretention	38.12	4.55	1330.18	437.87	0.55	0.30	0.90	0.70	20.96	1.36	1197.16	306.51
173b		12.16	0.96	232.37	128.93	0.55	0.30	0.90	0.70	5.55	0.24	173.58	74.91

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
185a	Bioretention	4.84	0.68	218.79	33.72	0.55	0.30	0.90	0.70	2.66	0.20	196.91	23.60
185c	Bioretention	17.39	1.87	578.89	275.83	0.55	0.30	0.90	0.70	9.57	0.56	521.00	193.08
185d	Bioretention	13.99	1.13	332.76	320.75	0.55	0.30	0.90	0.70	7.70	0.34	299.48	224.53
185e	Bioretention	7.27	0.59	172.99	166.75	0.55	0.30	0.90	0.70	4.00	0.18	155.69	116.72
Site 185 (185a&c)									Total	12.23	0.76	717.91	216.68
Site 185A (185d&e)									Total	11.70	0.52	455.17	341.25

Pollutant Loading and Removal Calculations – Wood-Pawcatuck Watershed

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
191a	Raingardens	4.33	0.35	102.88	99.17	0.55	0.30	0.90	0.70	2.38	0.11	92.59	69.42
191b	Raingardens	4.00	0.32	95.17	91.73	0.55	0.30	0.90	0.70	2.20	0.10	85.65	64.21
									Total	4.58	0.20	178.24	133.63

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
194a	Bioretention	8.25	0.67	196.11	189.04	0.55	0.30	0.90	0.70	4.54	0.20	176.50	132.33
194b	Bioretention	13.30	1.08	316.32	304.90	0.55	0.30	0.90	0.70	7.31	0.32	284.69	213.43
194c	Bioretention	7.60	0.62	180.78	174.26	0.55	0.30	0.90	0.70	4.18	0.18	162.70	121.98
194d	Bioretention	14.20	1.88	600.54	120.80	0.55	0.30	0.90	0.70	7.81	0.56	540.49	84.56
185b	Bioretention	2.70	0.22	64.13	61.81	0.55	0.30	0.90	0.70	1.48	0.07	57.72	43.27
194e	Bioretention	9.06	0.73	215.39	207.62	0.55	0.30	0.90	0.70	4.98	0.22	193.85	145.33
194f	Bioretention	28.31	2.30	673.38	649.08	0.55	0.30	0.90	0.70	15.57	0.69	606.05	454.36
194g	Bioretention	1.09	0.09	25.81	24.88	0.55	0.30	0.90	0.70	0.60	0.03	23.23	17.41
									Total[2]	47.96	2.34	2102.93	1255.95

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
206a	Forested Buffer[3]	6.10	0.39	178.77	74.05		0.50	0.65		-	0.19	116.20	-
206b	Forested Buffer[3]	3.10	0.20	92.20	40.01		0.50	0.65		-	0.10	59.93	-
206d	Bioretention	5.95	0.74	262.38	30.58	0.55	0.30	0.90	0.70	3.27	0.22	236.14	21.41

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
227	Bioretention	58.77	7.67	1352.64	890.03	0.55	0.30	0.90	0.70	32.32	2.30	1217.37	623.02

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
229	Bioretention	118.58	15.91	3067.86	2038.21	0.55	0.30	0.90	0.70	65.22	4.77	2761.07	1426.75

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
252a	Raingardens	6.56	0.47	185.07	99.38	0.55	0.30	0.90	0.70	3.61	0.14	166.56	69.57
252b	Raingardens	2.27	0.24	64.19	36.43	0.55	0.30	0.90	0.70	1.25	0.07	57.77	25.50
252c	Raingardens	5.71	0.36	167.29	74.75	0.55	0.30	0.90	0.70	3.14	0.11	150.56	52.32
									Total	6.42	0.27	299.62	121.23

		Pollutant Load - L (lbs)				Removal Rates - Decimal %				Load Reduction - L (lbs)			Load Reduction FC
Site		TN	TP	TSS	FC	TN	TP	TSS	FC	TN	TP	TSS	(Billion Colonies)
272a	Bioretention	19.16	1.55	455.74	439.30	0.55	0.30	0.90	0.70	10.54	0.47	410.17	307.51
272b	Raingardens	5.68	0.46	135.06	130.19	0.55	0.30	0.90	0.70	3.12	0.14	121.55	91.13
272c	Bioretention	26.48	2.26	633.81	603.60	0.55	0.30	0.90	0.70	14.57	0.68	570.43	422.52