GREEN INFRASTRUCTURE FEASIBILITY STUDY

SADDLE BROOK

RUTGERS
New Jersey Agricultural Experiment Station

PASSAIC VALLEY SEWERAGE COMMISSION
"Protecting Public Health and the Environment"

ACKNOWLEDGEMENTS

Designed to highlight green infrastructure opportunities within the Township of Saddle Brook, this document has been prepared by the Rutgers Cooperative Extension Water Resources Program with funding and direction by the Passaic Valley Sewerage Commission and the New Jersey Agricultural Experiment Station.

We would like to thank the Passaic Valley Sewerage Commission, the New Jersey Agricultural Experiment Station, and the Township of Saddle Brook for their input and support in creating this document.

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"Protecting Public Health and the Environment"

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INTRODUCTION

In 2013 the Passaic Valley Sewerage Commission (PVSC) began a new initiative to assist the 48 municipalities across the five counties served by the PVSC with managing flooding and eliminating combined sewer overflows. PVSC is dedicated to leading efforts throughout the PVSC Sewerage District by using green infrastructure to intercept stormwater runoff, reduce combined sewer overflows (CSOs), manage existing water infrastructure, and minimize frequent flooding events. To help with this effort, PVSC has entered into a partnership with the Rutgers Cooperative Extension (RCE) Water Resources Program.

Saddle Brook is a community with a municipal separate storm sewer system (MS4), meaning stormwater and wastewater are managed in two separate sets of piping and infrastructure. When it rains, stormwater runoff causes localized flooding and contributes to downstream flooding and negative water quality impacts. By using cost-effective green infrastructure practices, Saddle Brook can begin to reduce the negative impacts of stormwater runoff, reduce pressures on the local infrastructure and protect the health of our waterways.

This feasibility study is intended to be used as a guide for the community of Saddle Brook to begin implementing green infrastructure practices and demonstrate to residents and local leaders the benefits of and opportunities for better managing stormwater runoff.

Rutgers University professor, Tobiah Horton, reviews a rain garden design with a homeowner.

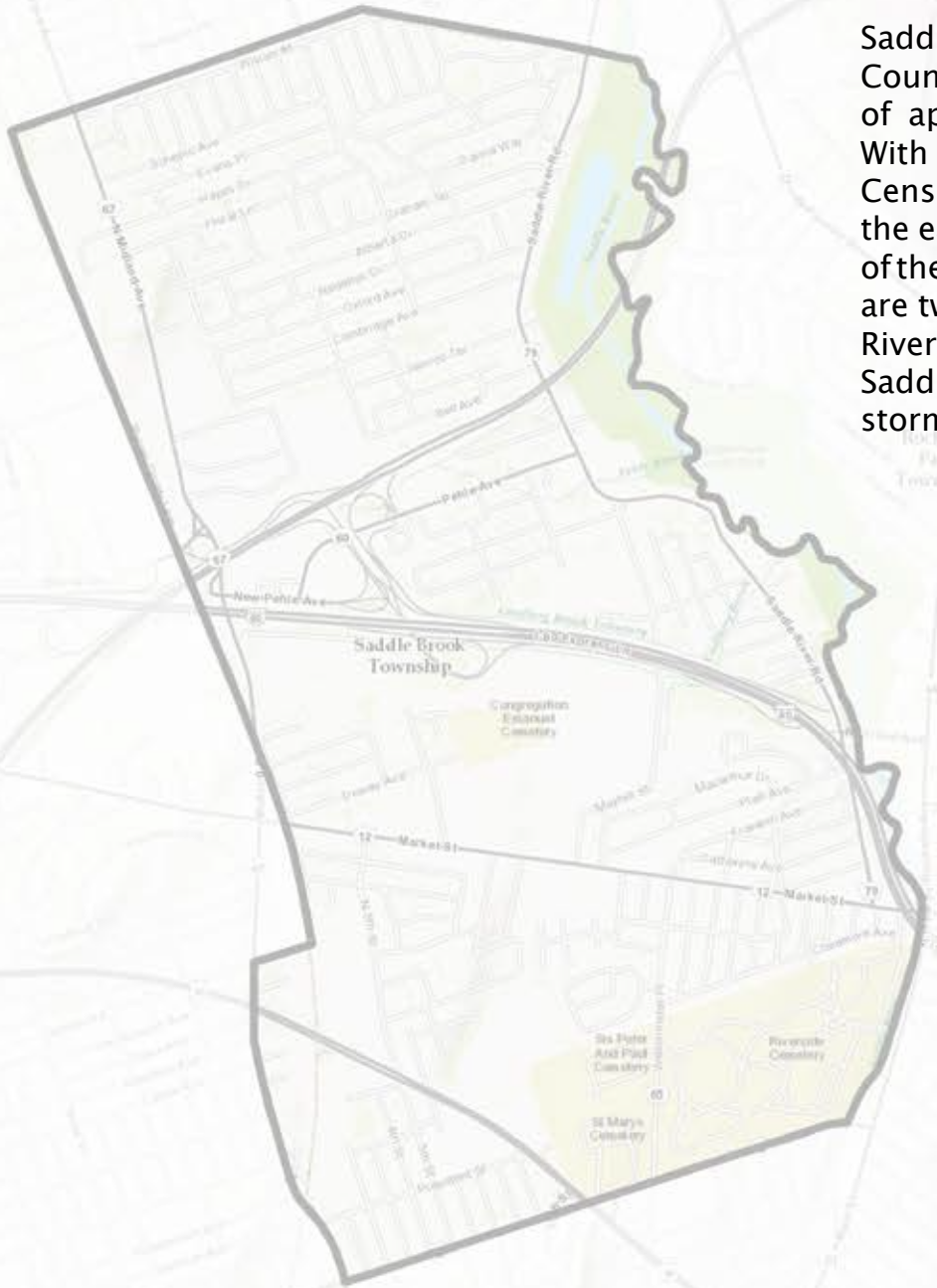
Source: saddlebrooknj


Source: panaromio


Source: northjersey.com

SADDLE BROOK

Saddle Brook is located in Bergen County municipality and covers an area of approximately three square miles. With a population of 13,659 (2010 US Census). The township is bordered on the east by the Saddle River, a tributary of the Passaic River. Within the township are two tributary streams of the Saddle River, Pehle Brook and Coalberg Brook. Saddle Brook has a municipal separate storm sewer system (MS4).



WHAT IS STORMWATER?

When rainfall hits the ground, it can soak into the ground or drain from the surface. When rainfall drains from a surface, it is called "stormwater" runoff. Pervious surfaces allow stormwater to readily soak into the soil and recharge groundwater. An impervious surface can be any material that has been placed over soil that prevents water from soaking into the ground. Impervious surfaces include paved roadways, parking lots, sidewalks, and rooftops. As impervious areas increase, so does the amount of stormwater runoff. New Jersey has many problems due to stormwater runoff from impervious surfaces, including:

- POLLUTION: According to the 2010 New Jersey Water Quality Assessment Report, 90% of the assessed waters in New Jersey are impaired. Urban-related stormwater runoff is listed as the most probable source of impairment (USEPA, 2013). As stormwater flows over the ground, it picks up pollutants, including animal waste, excess fertilizers, pesticides and other toxic substances. These pollutants are carried to waterways.
- FLOODING: Over the past decade, the state has seen an increase in flooding. Communities around the state have been affected by these floods. The amount of damage caused also has increased greatly with this trend, costing billions of dollars over this time span.
- EROSION: Increased stormwater runoff causes an increase in stream velocity. The increased velocity after storm events erodes stream banks and shorelines, degrading water quality. This erosion can damage local roads and bridges and cause harm to wildlife.

local reservoir


purple cone flower


pervious pavers

To protect and repair our waterways, reduce flooding, and stop erosion, stormwater runoff has to be better managed. Impervious surfaces need to be disconnected with green infrastructure to prevent stormwater runoff from flowing directly into New Jersey's waterways. Disconnection redirects runoff from paving and rooftops to pervious areas in the landscape.

A community garden that harvests and recycles rainwater

Rain barrel workshop participants

A rain garden after planting

WHAT IS GREEN INFRASTRUCTURE?

Green infrastructure is an approach to stormwater management that is cost-effective, sustainable, and environmentally friendly. Green infrastructure projects capture, filter, absorb, and reuse stormwater to maintain or mimic natural systems and to treat runoff as a resource. As a general principal, green infrastructure practices use soil and vegetation to recycle stormwater runoff through infiltration and evapotranspiration. When used as components of a stormwater management system, green infrastructure practices such as bioretention, green roofs, porous pavement, rain gardens, and vegetated swales can produce a variety of environmental benefits. In addition to effectively retaining and infiltrating rainfall, these technologies can simultaneously help filter air pollutants, reduce energy demands, mitigate urban heat islands, and sequester carbon while also providing communities with aesthetic and natural resource benefits (USEPA, 2013).

GLOSSARY OF GREEN INFRASTRUCTURE TERMINOLOGY

A ***DISCONNECTED:***

Disconnected refers to channeling water from gutters and pipes that collect runoff to somewhere other than a sewer drain where it can be filtered.

B ***DEPAVING:***

Depaving is the process of removing hardscape such as asphalt or concrete.

C ***INFILTRATION:***

Infiltration occurs when water on the ground's surface is absorbed into the soil below. Plants promote infiltration.

D ***IMPERVIOUS SURFACE:***

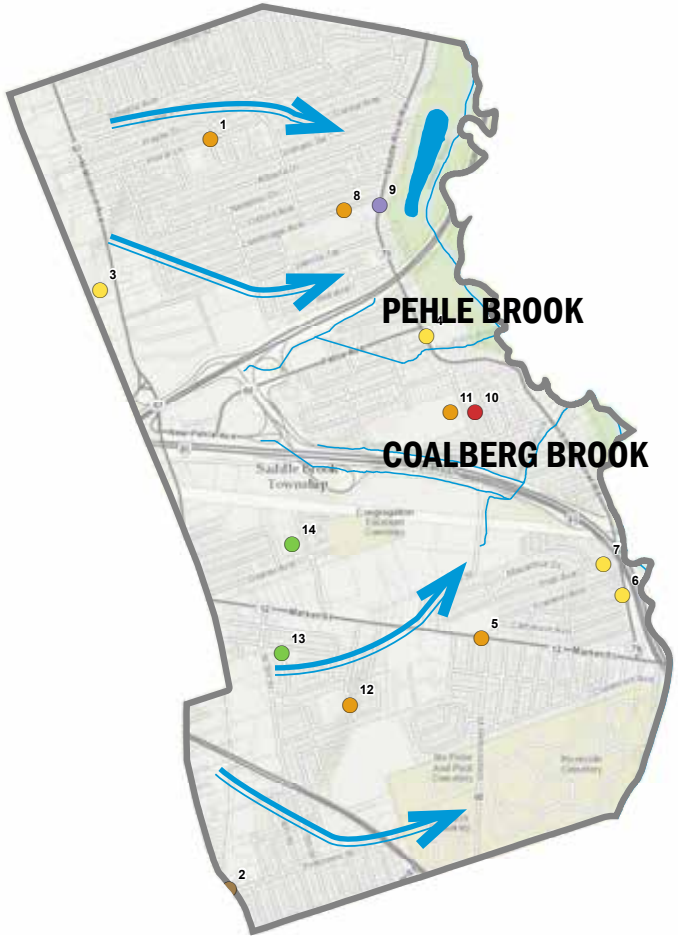
An impervious surface is one that water cannot penetrate.

E ***RUNOFF:***

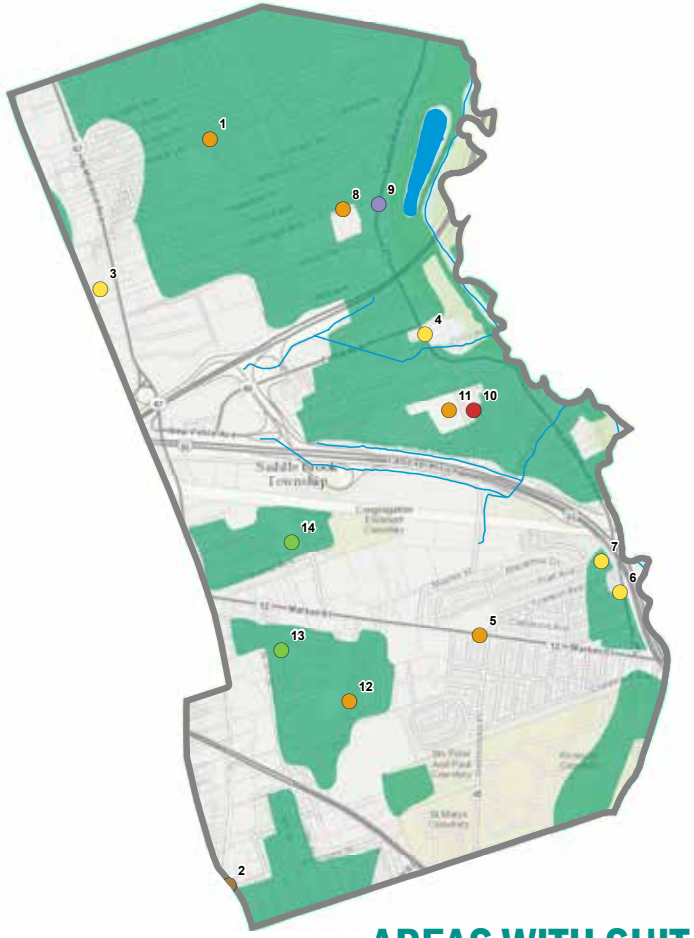
Runoff is water from precipitation that flows across land and paved surfaces before entering local waterways or sewer systems.


A
B
C
Rain Garden
D
E

SADDLE BROOK
GREEN INFRASTRUCTURE FEASIBILITY STUDY

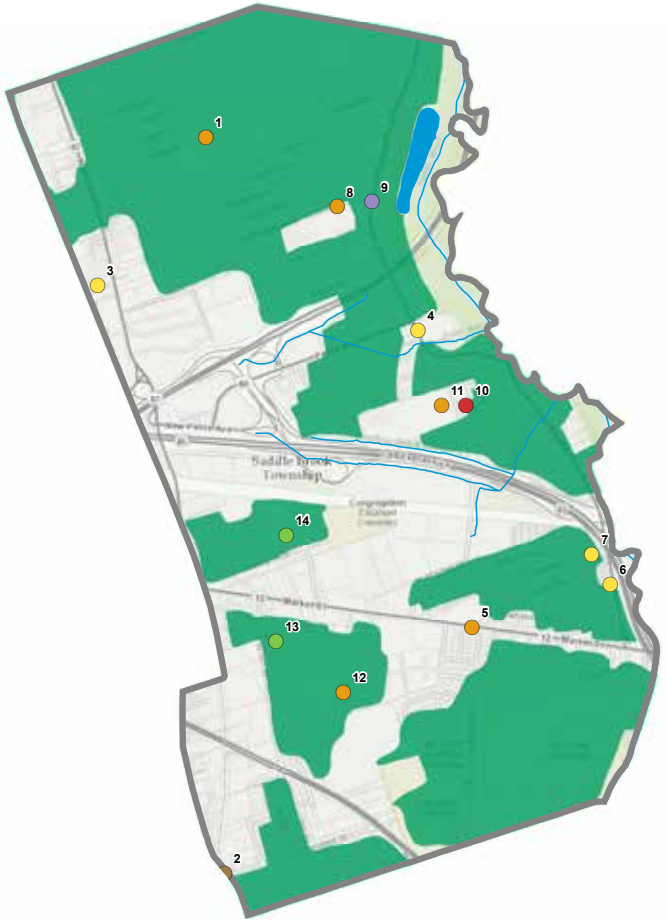


HYDROLOGY

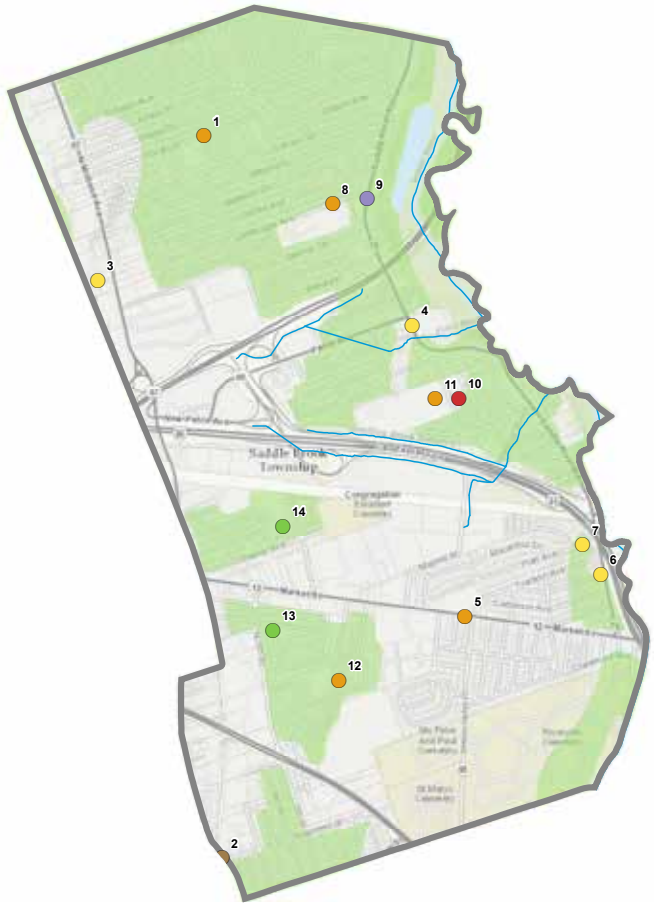


AREAS WITH SUITABLE WATER TABLE DEPTH

SADDLE BROOK
GREEN INFRASTRUCTURE FEASIBILITY STUDY



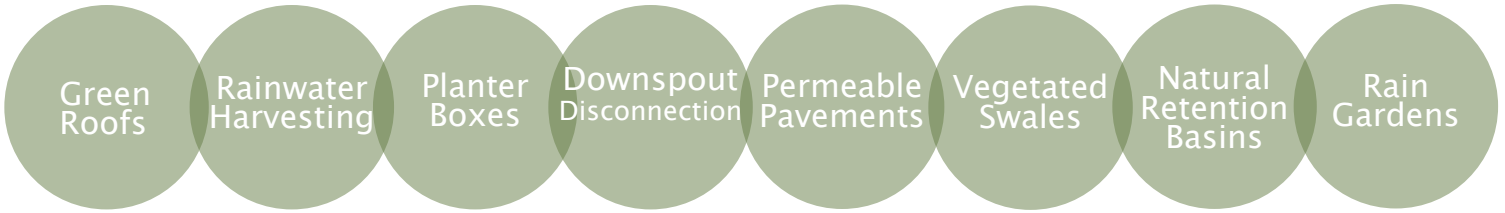
AREAS WITH SUITABLE
BEDROCK DEPTH



AREAS WITH SUITABLE
SOIL DRAINAGE

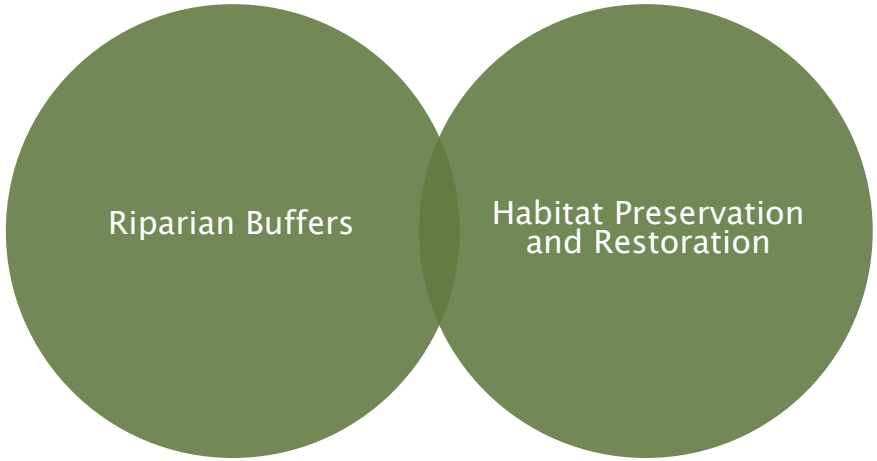
GREEN INFRASTRUCTURE STRATEGIES

SITE



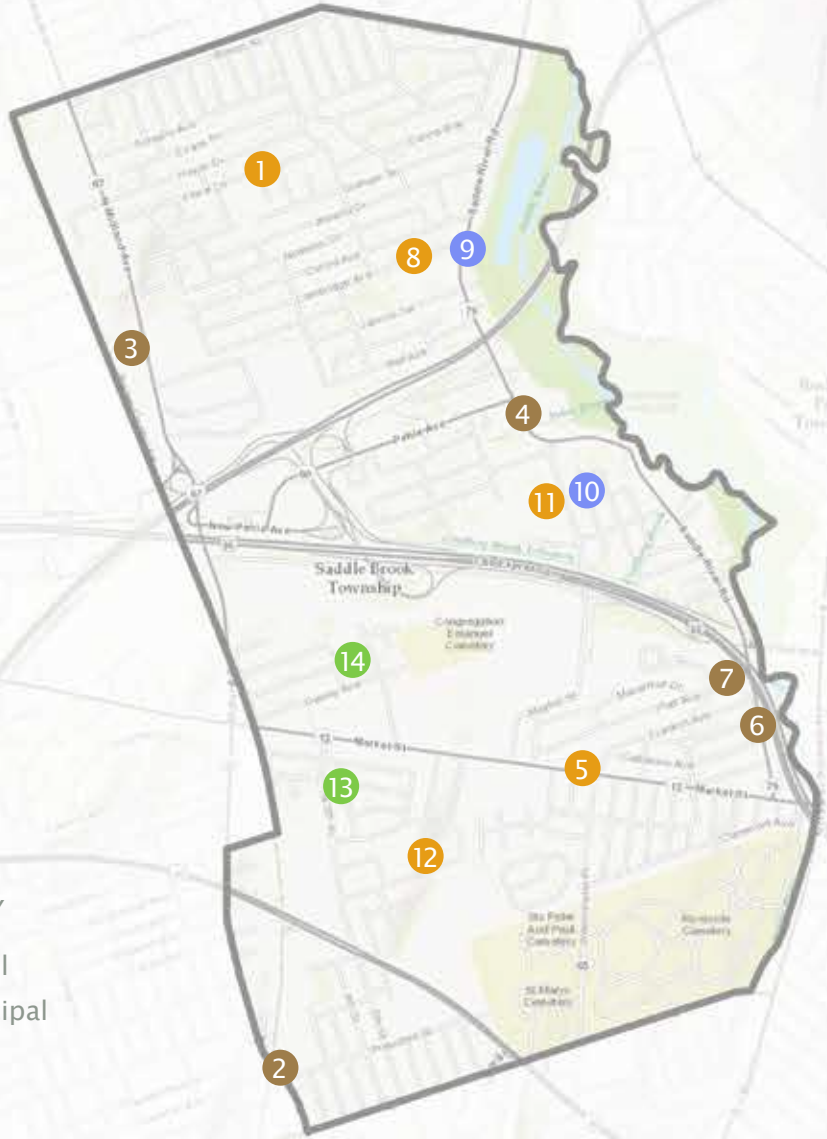
NEIGHBORHOOD

WATERSHED



POTENTIAL PROJECT SITES

1. LONG MEMORIAL ELEMENTARY SCHOOL
2. AMERICAN LEGION
3. METRO CHURCH
4. ST. PHILIP THE APOSTLE SCHOOL AND CHURCH
5. WASHINGTON ELEMENTARY SCHOOL
6. FIRST REFORMED CHURCH
7. HOLY APOSTLES EASTERN ORTHODOX CHURCH
8. HELEN I. SMITH ELEMENTARY SCHOOL
9. SADDLE BROOK FIRE HOUSE
10. THE SADDLE BROOK FREE PUBLIC LIBRARY
11. SADDLE BROOK MIDDLE / HIGH SCHOOL
12. FRANKLIN SCHOOL
13. VICTOR FIELD
14. VETERANS FIELD

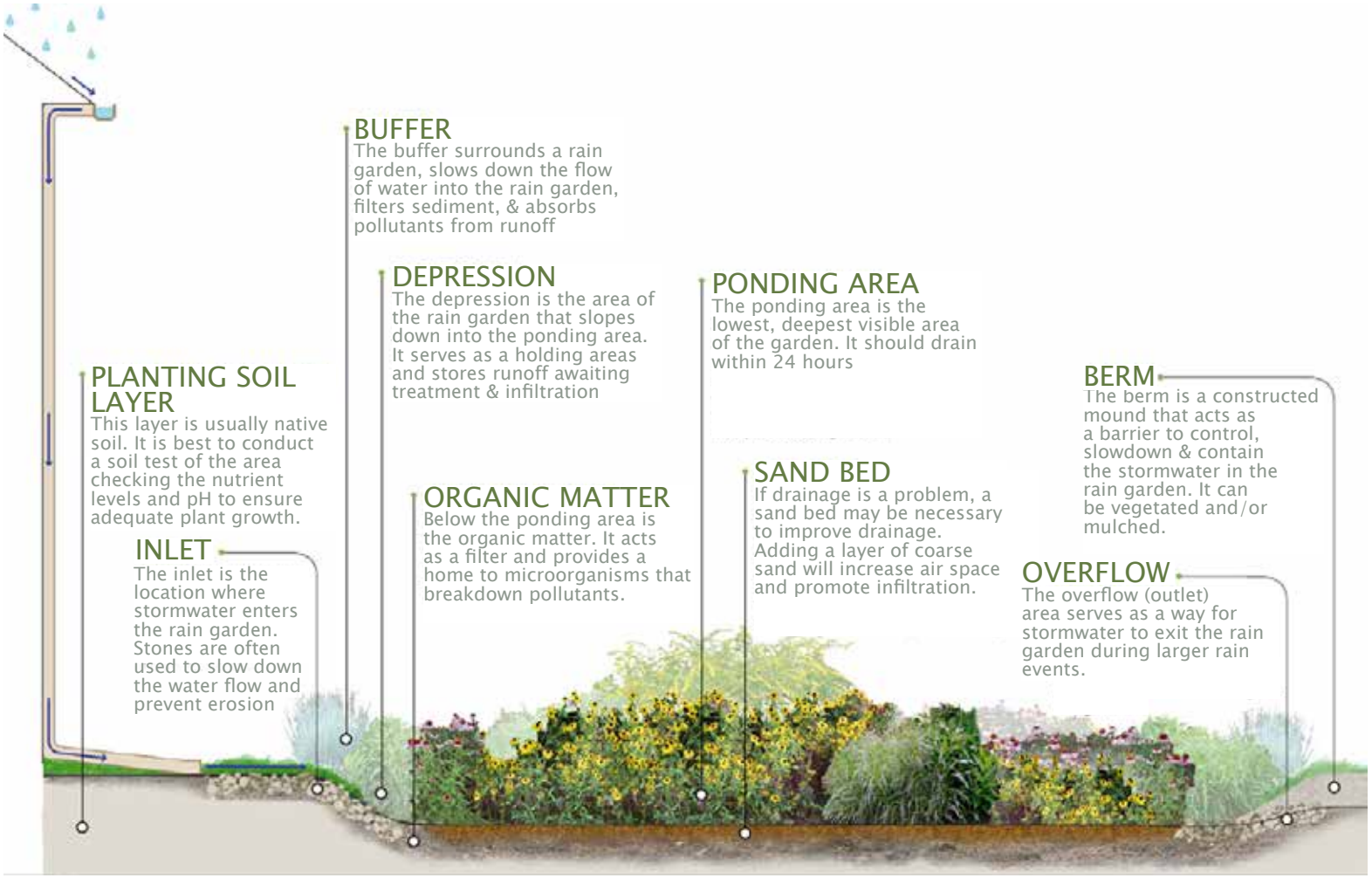



STATE OF
NEW JERSEY
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION

GREEN INFRASTRUCTURE SYSTEMS

VEGETATED SYSTEMS

Vegetative systems primarily focus on reducing water quality impacts and less on reducing flooding. These systems are typically located close to the sources of runoff and can manage the smaller storms of several inches. The main treatment mechanisms are infiltration, filtration, and evapotranspiration. These systems do an excellent job at removing total suspended solids, nutrients and pathogens. Construction costs for vegetated systems are typically low to moderate when compared to other green infrastructure practices. Since these systems often can be incorporated in existing landscapes and enhance aesthetics, the community acceptance of vegetative systems is high.



RAIN GARDEN DIAGRAM

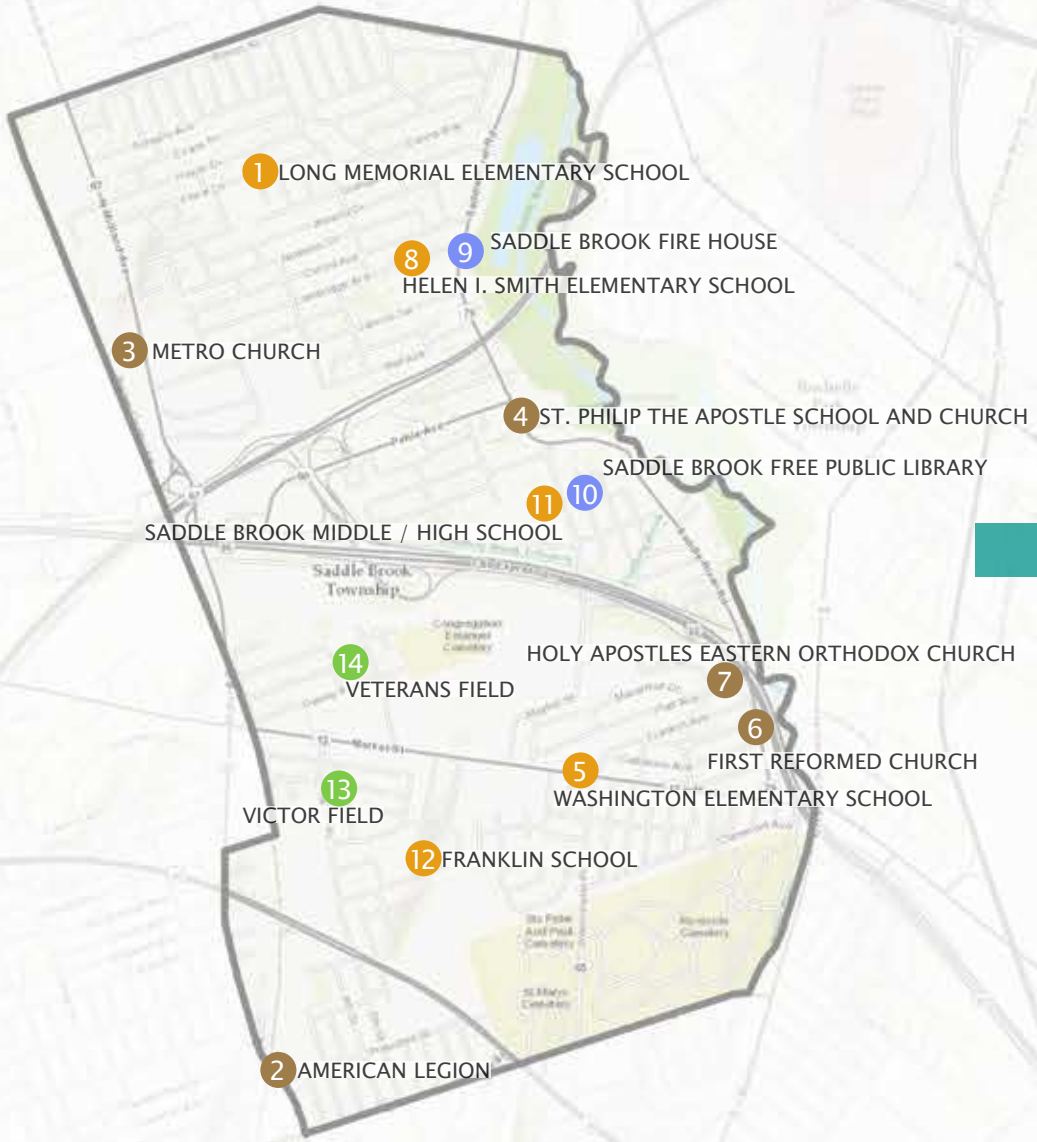
VEGETATED SYSTEM SUITABILITY

Rain gardens are shallow landscaped depressions designed to capture, treat, and infiltrate stormwater runoff. Rain gardens can be readily installed throughout a community to begin re-establishing the natural processes of the landscape. Rain gardens:

- Capture stormwater runoff, reducing soil erosion and sedimentation and the amount of water that flows to our streams and waterways during rain storms
- Protect water quality by filtering out and breaking down pollutants
- Infiltrate runoff and recharge groundwater supplies providing base flow to nearby streams and waterways
- Enhance and increase green space and vegetated cover

Rain gardens are a simple way communities can begin to reduce stormwater runoff, manage flows to sewer systems, and protect water resources. Rain gardens can be placed in strategic locations to capture runoff from rooftops and paved areas, including:

- Homes
- Schools
- Churches
- Parking areas
- Community gardens



VEGETATED SYSTEM SUITABILITY: EXAMPLE PROJECT SITE

LONG MEMORIAL ELEMENTARY SCHOOL

260 Floral Lane
Saddle Brook NJ, 07458

VEGETATED SYSTEM SUITABILITY: EXAMPLE PROJECT SITE

The site is Long Memorial Elementary School located at 260 Floral Lane. A single downspout of the building discharges to the front lawn where a rain garden could be constructed. There are no storm drains in the front of the building, and all runoff drains to the street. The parking lot in the rear drains to two areas. A small portion drains to a storm drain while the rest drains to a grassed area near the playground. The smaller area appears to already have a channel that can be retrofitted into a bioswale. Because the site is at a school, there is potential for educational programs.

RAINWATER HARVESTING SYSTEMS

Rainwater harvesting systems focus on conservation, capture, storage and reuse of rain water. These systems are located close to residential and commercial buildings. Construction costs are low to moderate, depending on the size of the system, compared to other green infrastructure practices. Since these systems can be easily incorporated into the built landscape, the community acceptance of rainwater harvesting systems is moderate to high. Rain water harvesting systems include rain barrels and cisterns.

RAIN BARREL DIAGRAM

INLET
Rainwater collected in gutters is released into the barrel here

OVERFLOW OUTLET
Releases water when the rain barrel reaches capactiy

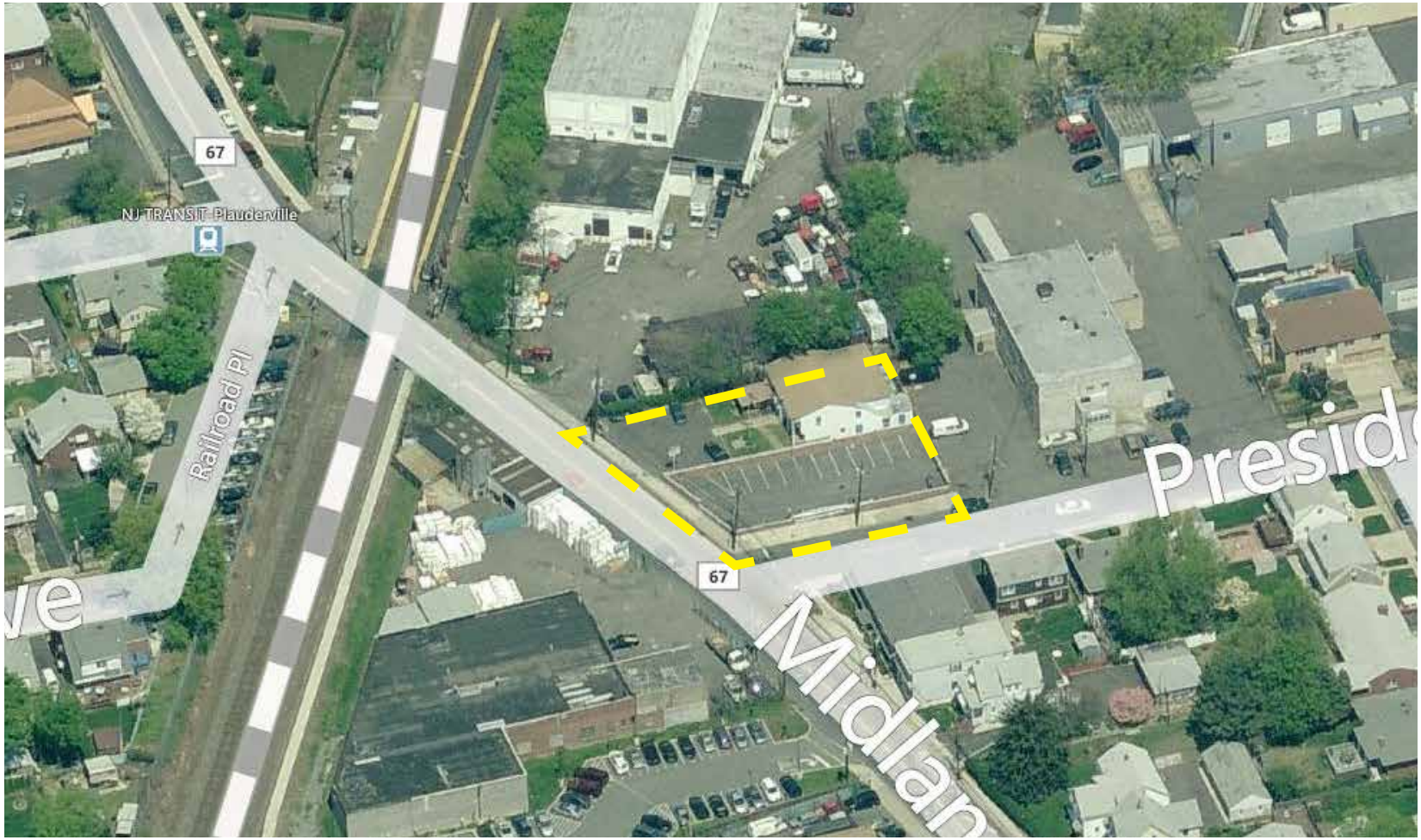
SPIGOT
Valve that opens and closes barrel's water flow

RAINWATER HARVESTING SYSTEMS SUITABILITY

Typical rainwater harvesting systems can store up to 5,000 gallons of water. Harvesting during rainy months in spring and summer provides a source of water during hot, dry periods between rain storms. Instead of using potable water, residents can save money using the rainwater stored in a rain barrel or cistern. This also reduces demand on drinking water supplies and related infrastructure.

Rain barrels and cisterns are an effective rainwater harvesting tool and can be an important element in a community-wide green infrastructure program. For every inch of rain that falls on an eight hundred square foot roof (20' x 40'), nearly 500 gallons of water can be collected. Over an entire year, water running off of this rooftop will total over 20,000 gallons. This sustainable practice reduces the impact a building has on the environment by harvesting stormwater runoff from rooftops, decreasing flow to sewer systems. Rain barrels and cisterns provide an alternative source of water for gardens, lawns, and landscaping reducing the use of potable water supplies.

RAINWATER HARVESTING SYSTEM SUITABILITY: EXAMPLE PROJECT SITE



RAINWATER HARVESTING SYSTEM SUITABILITY: EXAMPLE PROJECT SITE



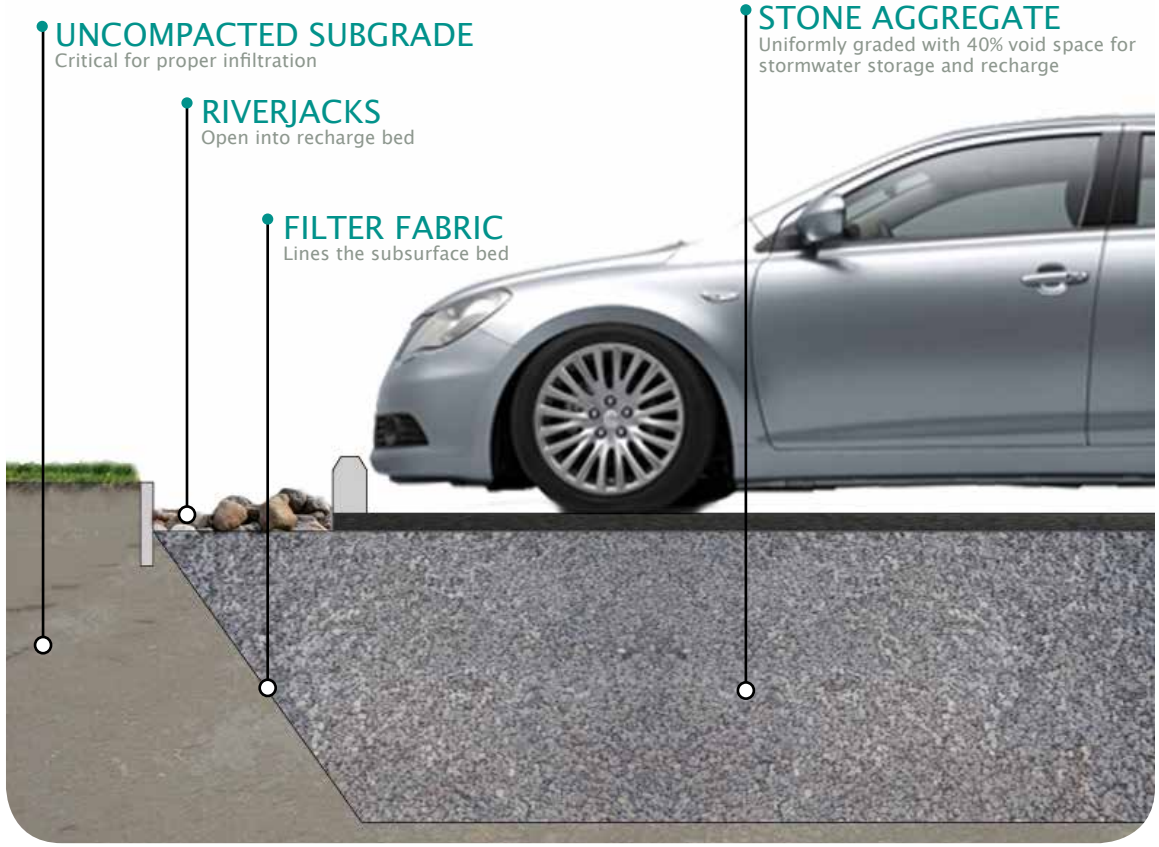
The site is the American Legion located at 302 Midland Avenue. The site is relatively small. There is a downspout located at the northwest side of the building that is disconnected; the site is potentially suitable for a rain garden. There is also a downspout on the northeast side of the building that discharges onto a concrete patio and sidewalk that is covered in sediment and debris; it would be ideal to convert this patio and sidewalk into pervious pavement. The rainwater from the gutter can also be collected in a rain barrel to irrigate the plants in the rain garden.

STORAGE, QUANTITY, & INFILTRATION SYSTEMS

Storage, quantity, and infiltration systems primarily focus on storage. These systems are typically located close to runoff sources within residential, commercial and industrial landscapes. The main treatment mechanism is reducing peak flows of stormwater by storing it before it becomes runoff. Construction costs for storage, quantity, and infiltration are moderate to high when compared to other green infrastructure practices because they require more space and infrastructure and are more laborious to install. Since these systems can be seamlessly incorporated into the built environment and can manage a large quantity of water, the community acceptance of storage, quantity, and infiltration systems is high.

PERMEABLE PAVEMENT

- Underlying stone reservoir
- Porous asphalt and pervious concrete are manufactured without “fine” materials to allow infiltration
- Grass pavers are concrete interlocking blocks with open areas to allow grass to grow
- Ideal application for porous pavement is to treat a low traffic or overflow parking area



PERMEABLE PAVEMENT DIAGRAM

STORAGE, QUANTITY, & INFILTRATION SYSTEM SUITABILITY

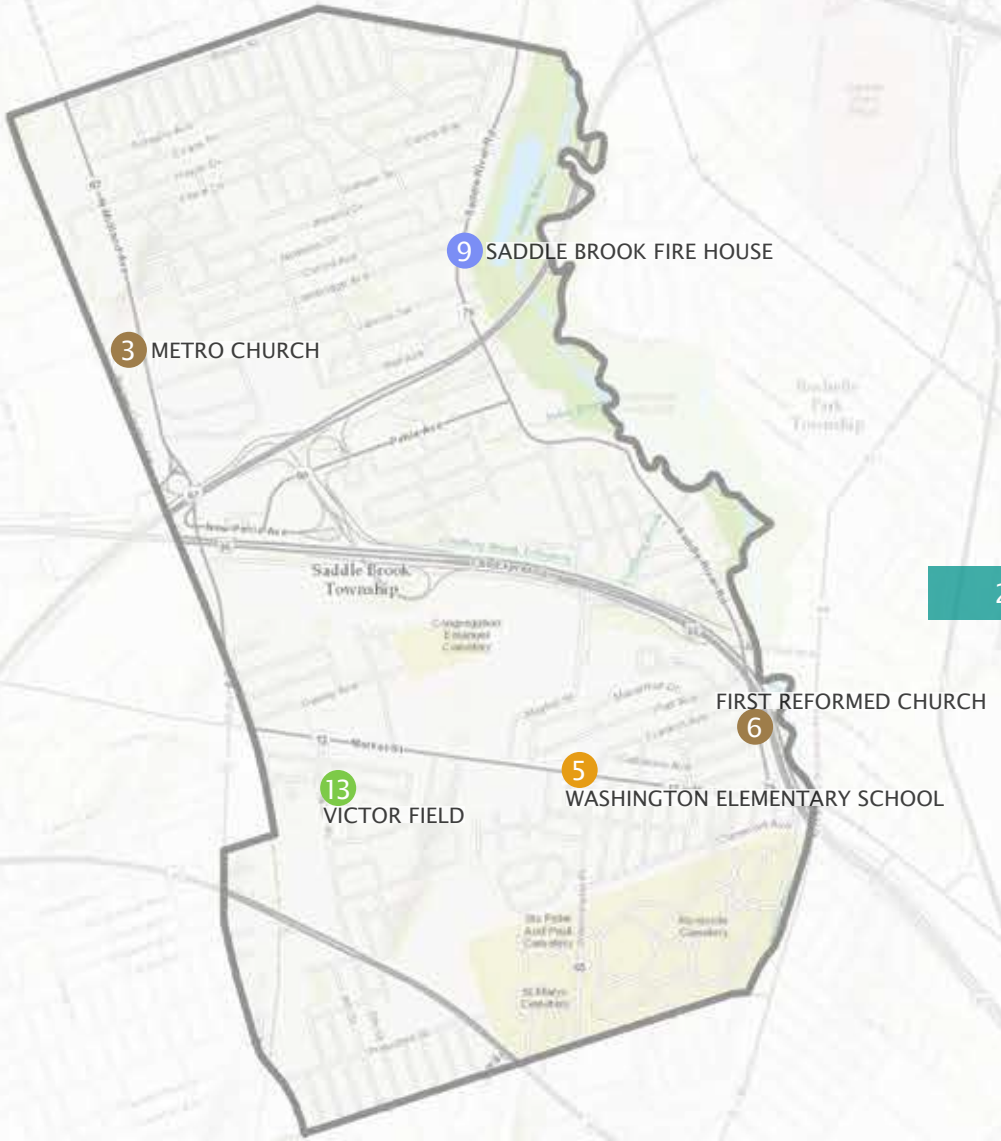
Pervious paving systems are paved areas that produce less stormwater runoff than areas paved with conventional paving. These systems include:

- Permeable pavers
- Porous asphalt
- Pervious concrete

The paving material is placed over a bed of uniformly graded stone. The paving materials allow water to pass through and then infiltrate into the pore spaces of the underlying stone bed. The stored runoff then infiltrates over time into the uncompacted subgrade soils.

Stormwater planters are small, contained vegetated systems that collect and treat stormwater using a prepared soil media and mulch. These systems serve as small bioretention facilities filtering stormwater through layers of mulch, soil and plant root systems.

Treated stormwater can then be infiltrated into existing surrounding soils as groundwater (infiltration p lanter) or, if infiltration is not appropriate, drainage pipes can discharge filtered stormwater into traditional storm sewer infrastructure (flow-through planter).



STORAGE, QUANTITY, & INFILTRATION SYSTEM SUITABILITY: EXAMPLE PROJECT SITE

STORAGE, QUANTITY, & INFILTRATION SYSTEM SUITABILITY: EXAMPLE PROJECT SITE



The site is the Metro Church located at 381 North Midland Avenue. It appears that stormwater is running from the roadway into the property towards the building. This runoff is causing the buildup of sediment. It is recommended that a bioswale or rain garden be created with curb cuts to allow for infiltration. The parking lot is deteriorated and could be replaced with pervious pavement.


TREE
PLANTING

COMMUNITY ENGAGEMENT & EDUCATION

“BUILD-A-RAIN BARREL” WORKSHOP

With the Build-a-Barrel Workshop, community members participate in a short presentation on stormwater management and water conservation, and then learn how to build their own rain barrel. Workshop participants work with trained experts to convert 55 gallon plastic food-grade drums into rain barrels. They are quickly able to take an active role in recycling rainwater by installing a rain barrel at their house! Harvesting rainwater has many benefits including saving water, saving money, and preventing basement flooding. By collecting rainwater, homeowners are helping to reduce flooding and pollution in local waterways. When rainwater drains from hard surfaces like rooftops, driveways, roadways, parking lots, and compacted lawns, it carries pollution to our local waterways. Harvesting the rain water in a rain barrel is just one of the ways homeowners can reduce rain water from draining from their property and help reduce neighborhood flooding problems.

"STORMWATER MANAGEMENT IN YOUR SCHOOLYARD"

The Stormwater Management in Your Schoolyard program provides educational lectures, hands-on activities, and community-level outreach for students on the topics of water quality issues and stormwater management practices such as rain gardens and rain barrels. Program objectives include the exploration of various aspects of the natural environment on school grounds, the detailed documentation of findings related to these explorations, and the communication of these findings to the school community. As part of this program, several New Jersey State Core Curriculum Content Standards for science (5.1, 5.3, and 5.4), 21st century life and careers (9.1, 9.3, and 9.4), and social studies (6.3) are addressed. Every school is unique in its need for stormwater management, so each school's *Stormwater Management in Your Schoolyard* program can be delivered in a variety of ways. This program can be tailored for grades K-8 or 9-12 and can be offeredto meet a variety of schedules.




MAINTENANCE PROCEDURES

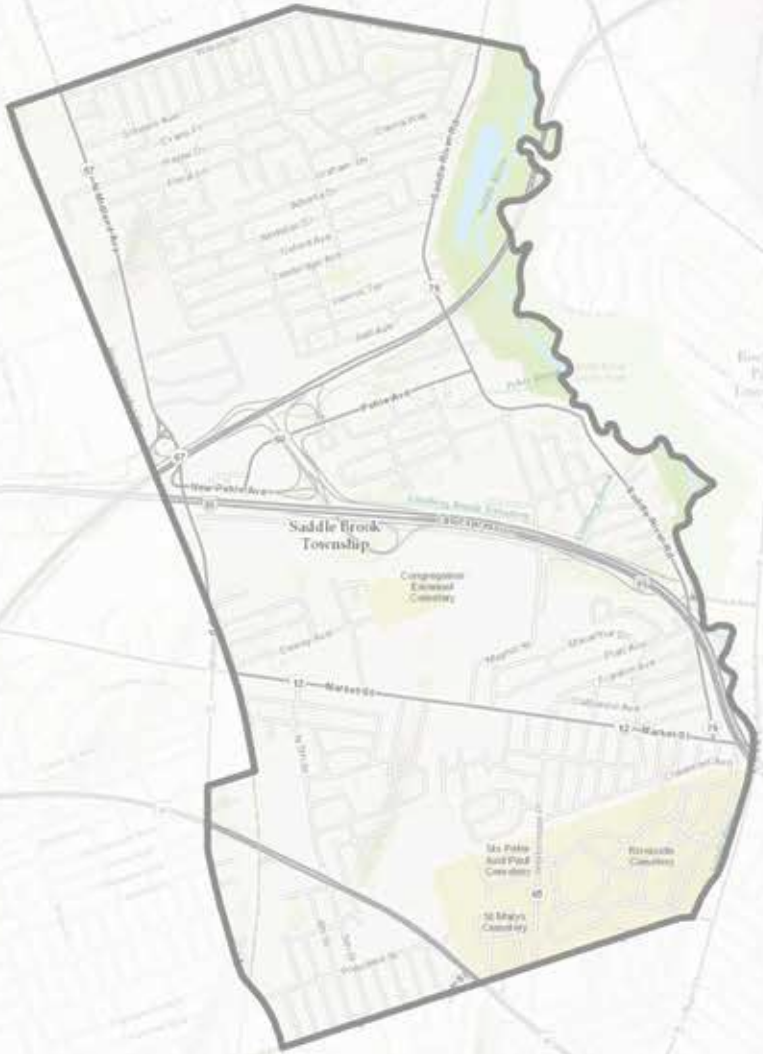
MAINTAINING SADDLE BROOK'S GREEN INFRASTRUCTURE SYSTEMS

1. VEGETATED SYSTEMS
   - Rain Gardens
   - Stormwater Planters
   - Bioswales

2. RAINWATER HARVESTING
   - Rain Barrels
   - Cisterns

3. STORAGE, QUANTITY, AND INFILTRATION
   - Pervious Pavements

4. COMBINATION OF STRATEGY TYPES



VEGETATED SYSTEM MAINTENANCE

RAIN GARDEN:

Weekly

- Watering
- Weeding
- Inspecting for invasive plants, plant health, excessive sediment, and movement of sediment within the rain garden
- Observing the rain garden during rain events and note any successes (Example of success: Stormwater runoff picks up oil and grease from the parking lot, flows through a curb cut, and into a rain garden. The rain garden traps the nonpoint source pollutants before they reach the nearby waterway.)

Annually

- Mulching in the spring to retain a 3 inch mulch layer in the garden
- Pruning during dormant season to improve plant health
- Removing sediment
- Planting
- Soil testing (every 3 years)
- Harvesting plants to use in other parts of the landscape
- Cleaning debris from gutters connected to rain garden
- Replacing materials (such as river rock and landscape fabric) where needed

BIOSWALE:

Very similar maintenance regime to rain gardens

RAINWATER HARVESTING SYSTEM MAINTENANCE

RAIN BARREL:

- Keep screen on top and a garden hose attached to the overflow to prevent mosquitoes- change screen every two years
- Remove debris from screen after storms
- Disconnect the barrel in winter- store inside or outside with a cover
- Clean out with long brush and water/dilute bleach solution (~3%)

CISTERN:

- In the fall, prepare your cistern for the winter by diverting flow so no water can enter and freeze within the barrel
- Weekly check: Check for leaks, clogs and other obstructions, for holes and vent openings where animals, insects and rodents may enter, repair leaks with sealant, and rain the first flush diverter/ roof washer after every rainfall event
- Monthly check: Check roof and roof catchments to make sure no debris is entering the gutter and downspout directed into the cistern, keep the roof, gutters and leader inlets clear of leaves, inspect the first flush filter and all of its attachments, make any necessary replacements, inspect cistern cover, screen, overflow pipe, sediment trap and other accessories. Make any necessary replacements

STORAGE, QUANTITY, & INFILTRATION SYSTEM MAINTENANCE

POROUS ASPHALT & CONCRETE:

- Materials cost is ~20-25% more than traditional asphalt or concrete
- Long-term maintenance is required by routine quarterly vacuum sweeping
- Sweeping cost may be off-set by reduced deicing costs
- Asphalt repairs can be made with standard asphalt not to exceed 10% of surface area
- Concrete Repairs can be made with standard concrete not to exceed 10% of the surface area

UNDERGROUND DETENTION:

- Periodic inspections of the inlet and outlet areas to ensure correct operation of system
- Clean materials trapped on grates protecting catch basins and inlet area monthly
- Primary maintenance concerns are removal of floatables that become trapped and removal of accumulating sediments within the system; this should be done at least on an annual basis
- Proprietary traps and filters associated with stormwater storage units should be maintained as recommended by the manufacturer
- Any structural repairs required to inlet and outlet areas should be addressed in a timely manner on an as needed basis
- Local authorities may require annual inspection or require that they carry out inspections and maintenance




POTENTIAL PROJECT SITES


Riverview Ave
Dyer Pl
79
Saddle River Rd
79
Saddle River Rd



The site is St. Phillip the Apostle School and Church located at 488 Saddle River Road. The building has connected downspouts. There is an area on the front right side of the building that has the potential to disconnect the downspout and create a rain garden. The parking lot slopes towards the east where there is a grassy lawn with many storm drains that intercept stormwater. In the center of the lawn there is a section of disturbed and eroded land. A bioswale should be added to help prevent stormwater from entering the area in an uncontrolled manner.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [ ] pervious pavement
- [x] bioswales
- [ ] depaving


Platt Ave
Market St
Market St
West St
12
12



The site is Washington Elementary School located at 225 Market Street. On the west side of the building adjacent to Platt Avenue there is erosion near the steps. A rain garden could be installed to manage this issue. On the west side of the parking lot near the field soils are eroded. A bioswale or rain garden could be installed to intercept runoff from the parking lot. There is a driveway that runs between the two buildings which could be converted to porous pavement. On the eastern front of the building there are two downspouts that can be disconnected into a rain garden.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [x] pervious pavement
- [x] bioswales
- [ ] depaving

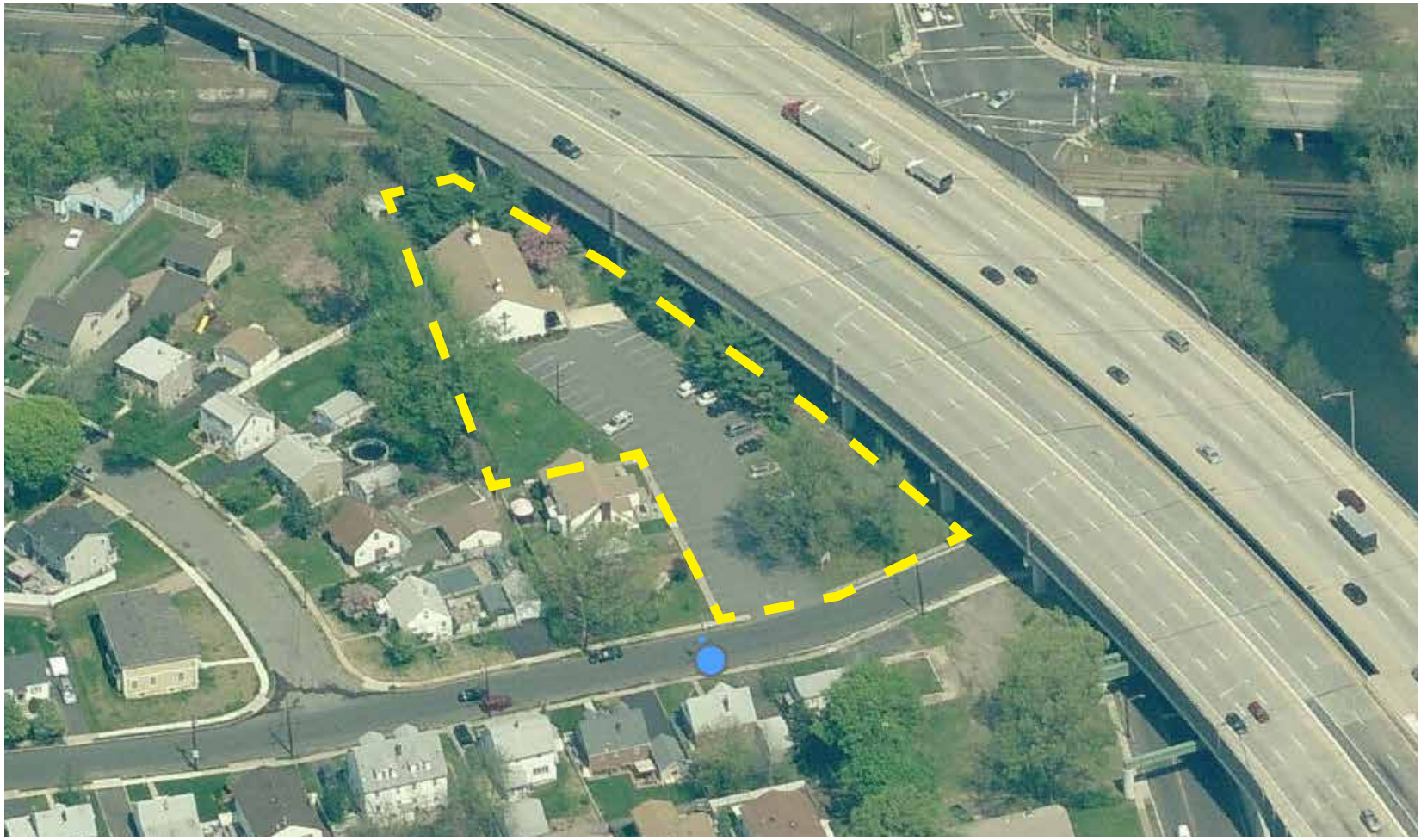

I-80 Expre
Saddle River Rd
79
79



The site is the First Reformed Church located at 5 Ackerman Avenue. The building has downspouts that are disconnected and directly drain to the parking lot which then drains towards the road. A rain garden can be implemented to reduce stormwater runoff draining to the parking lot in the areas where the downspout are located. On the west side of the parking lot there is a concrete wall that appears to allow stormwater to drain onto the lot and subsequently to the road. By replacing areas of the current asphalt to pervious pavement, stormwater runoff flowing to the roadway and storm sewer system could be reduced.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [x] pervious pavement
- [ ] bioswales
- [ ] depaving





The site is the Holy Apostles Eastern Orthodox Church located at 17 Platt Avenue. All of the downspouts on the southern most building are connected, it is possible to disconnect some of the downspouts to implement several rain gardens. On the northern side of the building all of the downspouts are disconnected and discharge to a grassed area.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving

HELEN I. SMITH ELEMENTARY SCHOOL

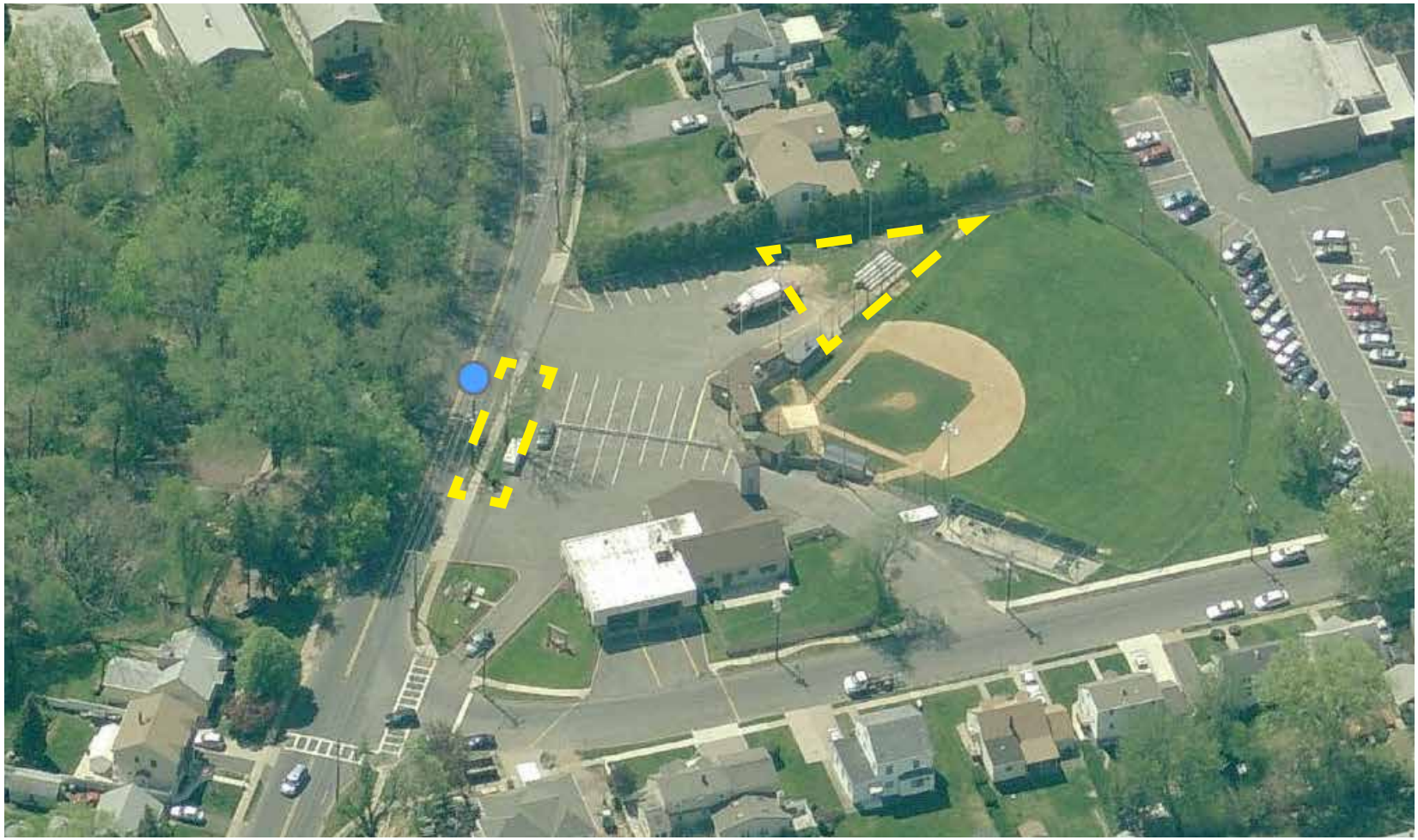
30 Cambridge Avenue
Saddle Brook, NJ 07663



The site is the Helen I. Smith Elementary School located at 30 Cambridge Avenue. Near the entrance and exit to the parking lot via Cambridge Avenue there is heavy erosion. There is additional erosion at the southeast corner of the parking lot where there is an opportunity for a rain garden. At the front of the school, along Cambridge Avenue, there are five downspouts that discharge into the lawn and could serve as an ideal location for a demonstration rain garden project.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving



SADDLE BROOK FIRE HOUSE

639 Saddle River Road
Saddle Brook, NJ 07663



The site is the Saddle Brook Fire House located at 639 Saddle River Road. The south side of the parking lot has heavy erosion. The existing sidewalk could be replaced with pervious pavement. The corner of the parking lot island on the west boundary of the property is also eroded and could use a rain garden or bioswale.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [x] pervious pavement
- [x] bioswales
- [ ] depaving

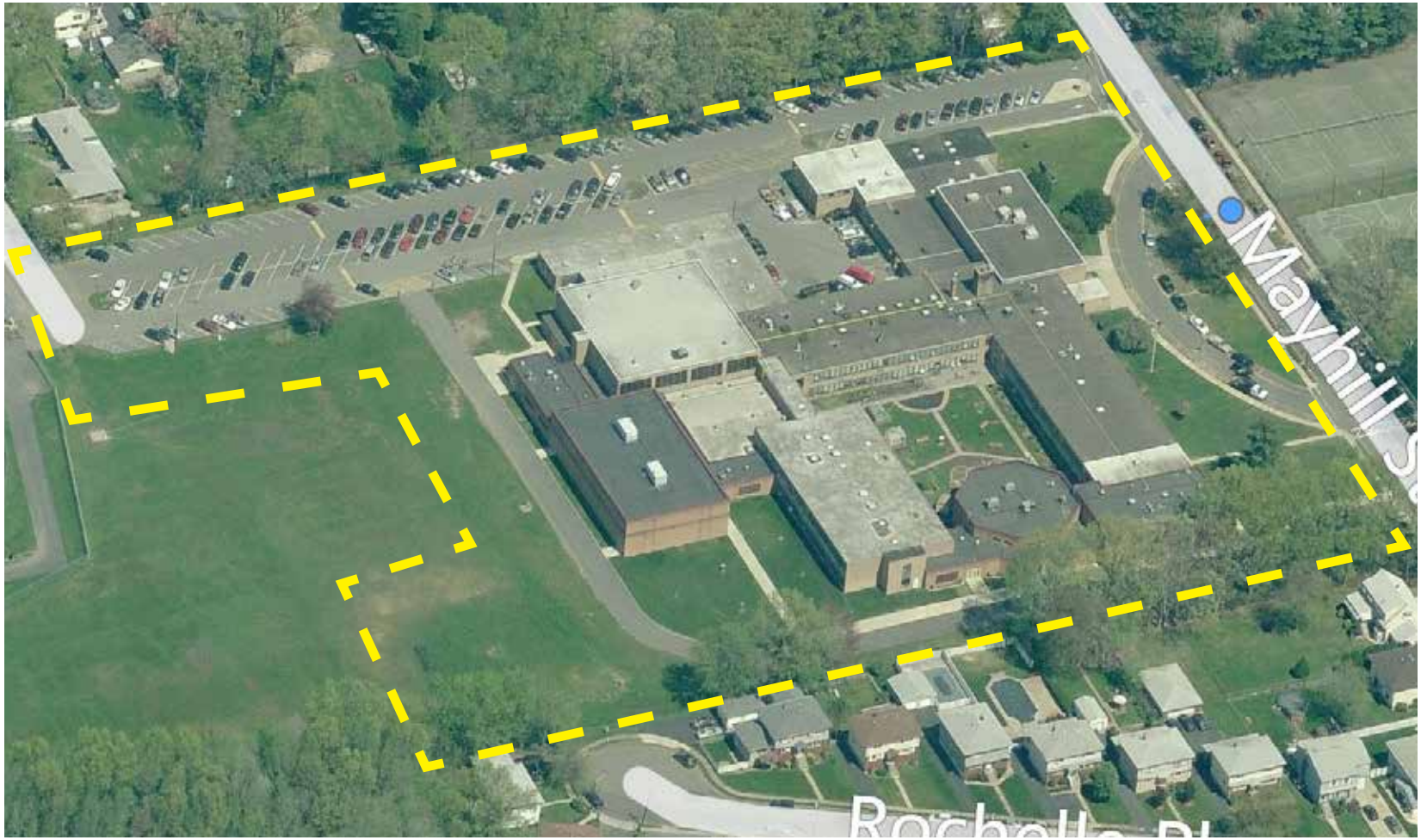
340 Mayhil Street
Saddle Brook, NJ 07663



The site is a public library located at 340 Mayhil Street. Several areas of lawn on the property are ideal for rain gardens. Downspouts across the property discharge directly onto the surrounding lawn and can be diverted into rain gardens. A demonstration rain garden installed in a public place will be highly visible and well trafficked by pedestrians. Additionally, a cistern tank or rain barrel can be used to harvest rainwater from the building downspouts. Water harvested from the roof could be used to provide water to landscaping or garden beds.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [x] rain barrels
- [ ] buffers
- [x] cisterns
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving


Mayhill St

The site is the Saddle Brook Middle/High School located at 355 Mayhill Street. In the center of the parking lot is an island that is currently heavily eroded. This area could be converted to a tree planter box or a rain garden to capture runoff from the parking lot. At the northwest corner of the building there is a downspout that can be disconnected into a rain garden. To the west of the building there is an 'emergency vehicle only drive; the lawn next to it already has a depressed area that has an existing drain grate which can be converted to a rain garden or a bioswale to capture runoff from the driveway.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [x] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [ ] pervious pavement
- [x] bioswales
- [ ] depaving

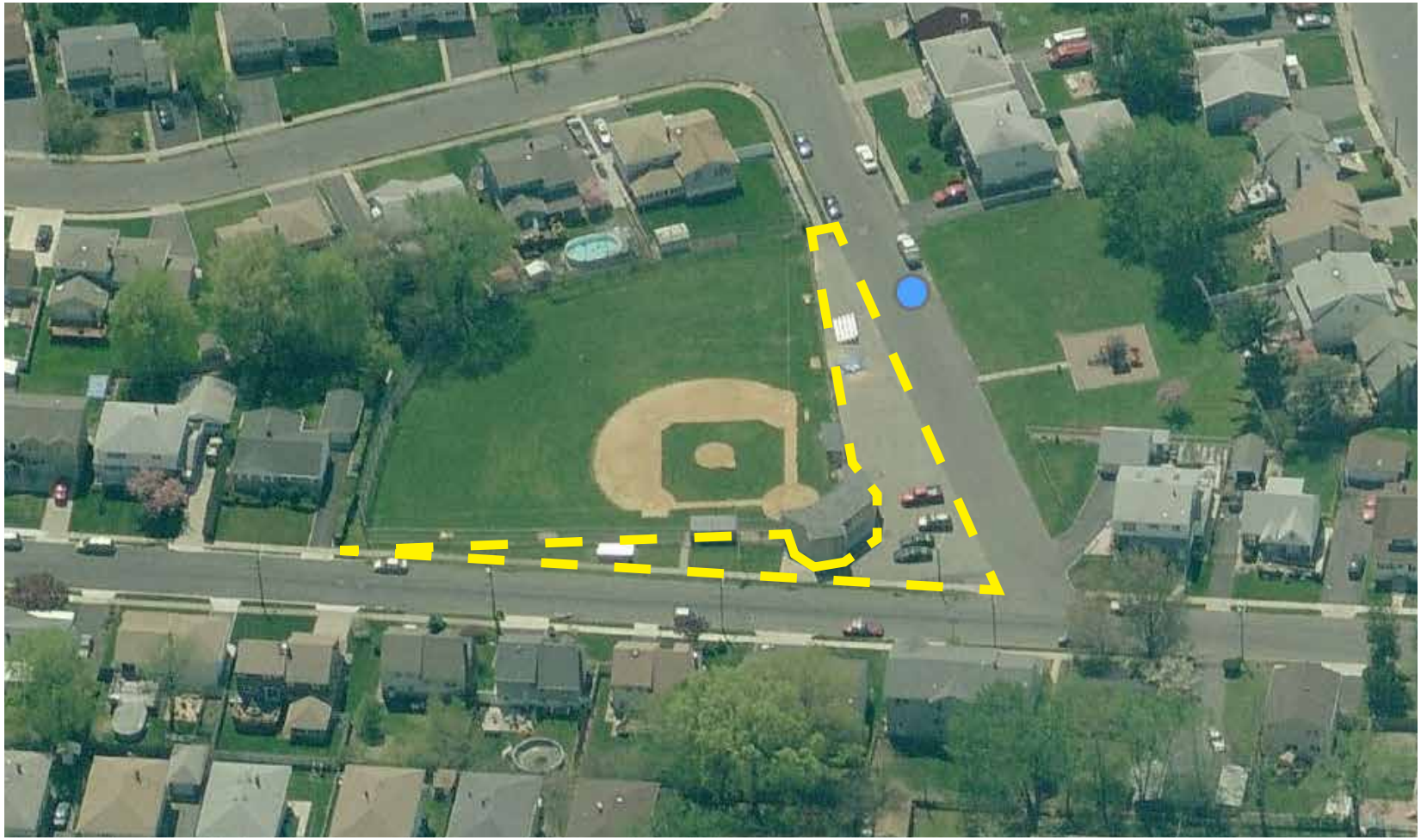

Lanza Ave
N Lanza



The site is Franklin School located at 95 Caldwell Avenue. On the front eastward facing side of the building there are two downspouts which can be disconnected into a rain garden. On the south side of the building there is another downspout which also has potential for a rain garden. This site is ideal for a demonstration rain garden and also can allow for education opportunities.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving



VICTOR FIELD

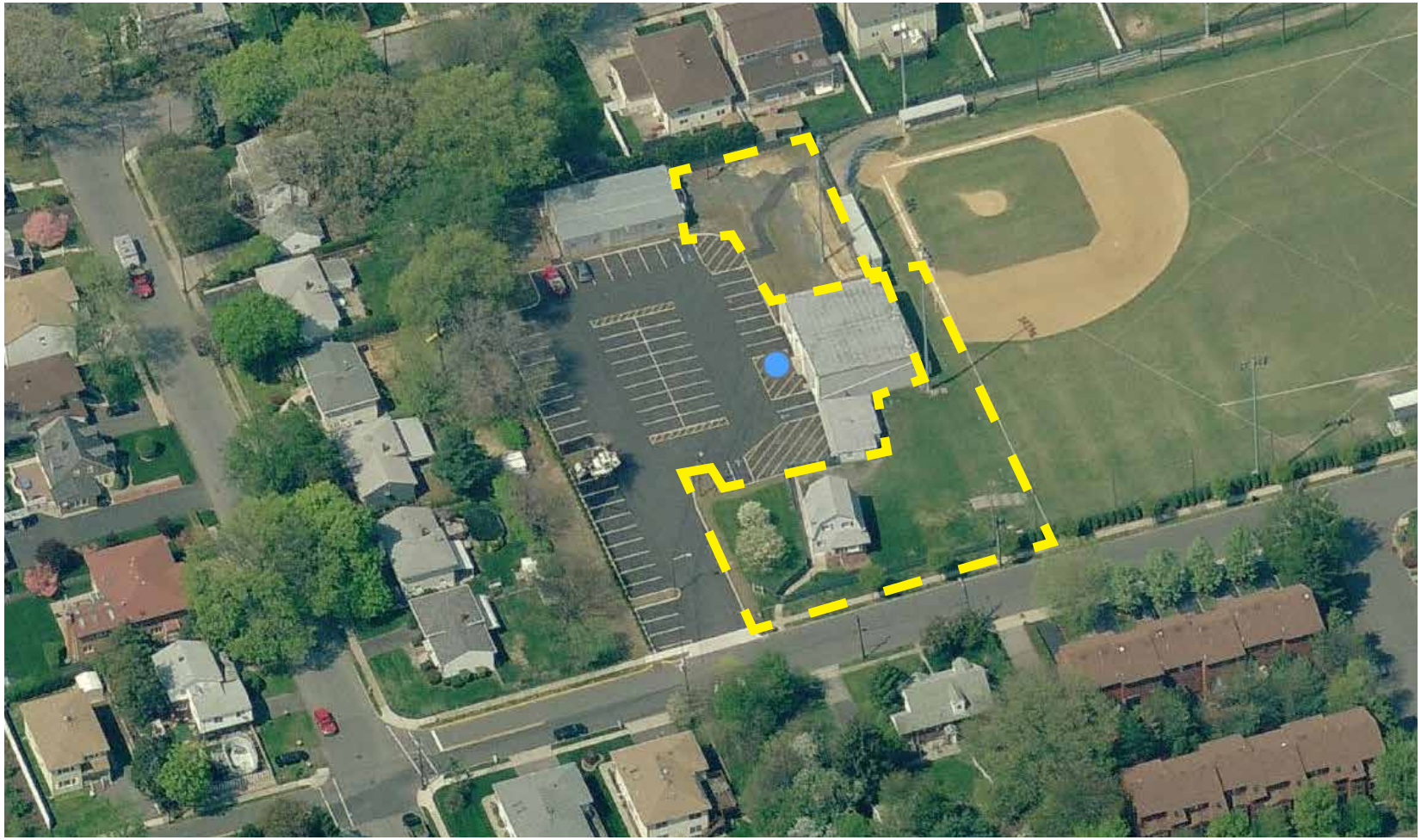
50 Kern Place
Saddle Brook, NJ 07663



The site is Victor Field located at 50 Kern Place. The west facing parking lot drains to a large storm drain in the center of Kern Place. On the north side of the field is a deteriorated sidewalk that can be replaced with pervious pavement. Also, along the sidewalk enhanced tree pits can be planted. On the west side of the field, across the street, is a playground which could also be vegetated.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- ☐ rain gardens
- ☐ rain barrels
- ☑ pervious pavement
- ☐ curb cuts
- ☐ buffers
- ☐ bioswales
- ☑ stormwater planters
- ☐ cisterns
- ☐ depaving



VETERAN'S FIELD

20 Sampson Street
Saddle Brook, NJ 07663


The site is Veteran's Field located at 20 Sampson Street. The house on the east side of the property is ideal for a rain garden. On the northeast side there is a downspout that discharges to the lawn causing erosion. A demonstration rain garden can be installed that is highly visible to the public. Additionally, in the parking lot, there is an island nearest to the house that is also suitable for a rain garden.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] rain barrels
- [ ] buffers
- [ ] cisterns
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving

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PASSAIC VALLEY SEWERAGE COMMISSION

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