Protecting Communities, Improving Water Quality Through Your MS4 Permit

ANJEC Webinar
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Christopher C. Obropta, Ph.D., P.E.
Obropta@rutgers.edu

RUTGERS
New Jersey Agricultural Experiment Station

www.water.rutgers.edu

Each Municipality has a permit for their MS4

(Municipal Separate Storm Sewer System = MS4)

A primary objective of the MS4 stormwater program shall be to implement best management practices and other measures that are designed to reduce the discharge of pollutants from the permittee's MS4, municipal maintenance yards and other ancillary operations to the maximum extent practicable pursuant to N.J.A.C. 7:14A-25.6(a)1 and 40 CFR 122.34(a), to protect water quality, and to satisfy the applicable water quality requirements of the Clean Water Act.

What are some of the important requirements of the MS4 that will improve water quality?

Must Develop a Municipal Stormwater Webpage

- Stormwater Pollution Prevention Plan (SPPP) (excluding inspection logs and other recordkeeping documents)
- Municipal Stormwater Management Plan (MSWMP)
- Stormwater Control Ordinance (SCO)
- Pet Waste Ordinance
- Wildlife Feeding Ordinance
- Litter Control Ordinance
- Improper Disposal of Waste Ordinance
- Containerized Yard Waste/Yard Waste Collection Program Ordinances
- Private Storm Drain Inlet Retrofitting Ordinance
- Illicit Connection Ordinance
- Tree Removal/Replacement Ordinance
- Privately-Owned Salt Storage Ordinance
- MS4 Outfall Pipe Map
- MS4 Infrastructure Map
- Watershed Improvement Plan

What is stormwater?

Human activity is largely responsible for stormwater pollution. Everything that we put on the ground or into the storm drain can end up in our water. Each of us has a responsibility to make sure these contaminants stay out of our water. Whether we have clean water is up to you.

The official definition of stormwater under the New Jersey Pollutant Discharge Elimination System(NJPDES) regulations at N.J.A.C. 7:14A is as follows:

> *'Stormwater' means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.*

Stormwater Program Coordinator (SPC) Contact Information

If you have any questions about our stormwater program or would like additional information, please contact:

insert contact information here

Stormwater Links






Stormwater Pollution Prevention Plan (SPPP)

The SPPP was last updated on insert date here and describes how we implement the stormwater program in order to meet the requirements of our NJPDES Municipal Separate Storm Sewer System (MS4) permit.

- Check out the SPPP here Insert your own SPPP here

Municipal Stormwater Management Plan (MSWMP)

- Check out the Municipal Stormwater Management Plan Here Insert your own MSWMP here

MS4 Outfall Pipe Map

Watershed Improvement Plan (WIP)

The purpose of the WIP is to identify opportunities to improve water quality, reduce MS4 contribution of pollutants to waterbodies with impairments and Total Maximum Daily Load(TMDLs), and to address stormwater flooding to protect human health and safety, and the environment.

- Watershed Inventory Report
- Watershed Assessment Report
- Watershed Improvement Plan Report

Stormwater Resources

Click on the links below to learn more about stormwater and get access to educational resources.

- Rutgers Cooperative Research & Extension
- Clean Water NJ
- NJ Stormwater

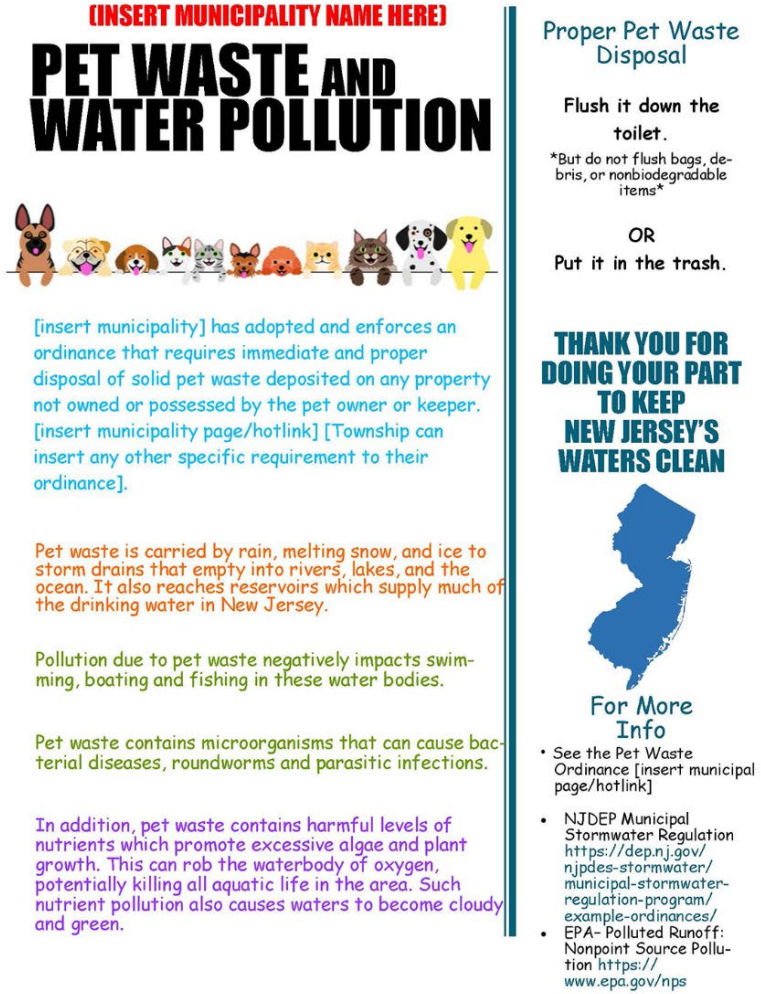
Stormwater Ordinances/Regulatory Mechanisms

Click on our adopted stormwater ordinances below.

- Stormwater Control Ordinance
- Pet Waste Ordinance
- Wildlife Feeding Ordinance
- Litter Control Ordinance
- Improper Disposal of Waste Ordinance
- Containerized Yard Waste Ordinance
- Yard Waste Collection Program Ordinance
- Private Storm Drain Inlet Retrofitting Ordinance
- Illicit Connection Ordinance
- Tree Removal/Replacement Ordinance
- Privately-Owned Salt Storage Ordinance
- (Optional) Privately-Owned Refuse

Brochures and Handouts

Check out the following handouts for more information on stormwater.


(INSERT MUNICIPALITY NAME HERE)

PET WASTE AND WATER POLLUTION

[insert municipality] has adopted and enforces an ordinance that requires immediate and proper disposal of solid pet waste deposited on any property not owned or possessed by the pet owner or keeper. [insert municipality page/hotlink] [Township can insert any other specific requirement to their ordinance].

Pet waste is carried by rain, melting snow, and ice to storm drains that empty into rivers, lakes, and the ocean. It also reaches reservoirs which supply much of the drinking water in New Jersey.

Pollution due to pet waste negatively impacts swimming, boating and fishing in these water bodies.

Pet waste contains microorganisms that can cause bacterial diseases, roundworms and parasitic infections.

In addition, pet waste contains harmful levels of nutrients which promote excessive algae and plant growth. This can rob the waterbody of oxygen, potentially killing all aquatic life in the area. Such nutrient pollution also causes waters to become cloudy and green.

Proper Pet Waste Disposal

Flush it down the toilet.

But do not flush bags, debris, or nonbiodegradable items

OR

Put it in the trash.

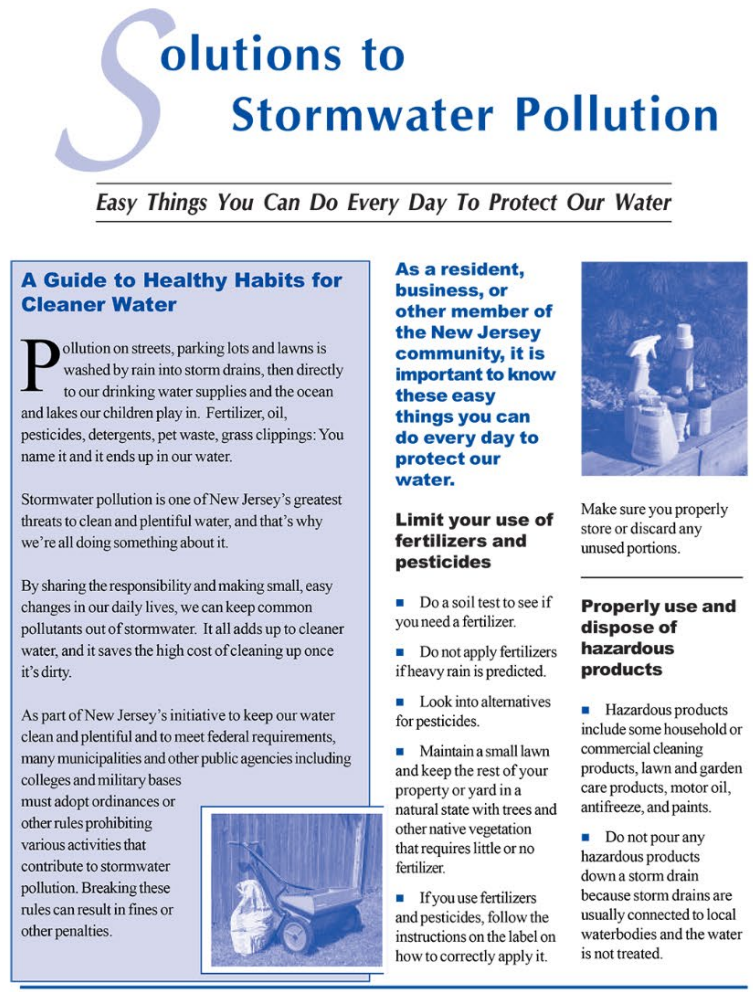
THANK YOU FOR DOING YOUR PART TO KEEP NEW JERSEY'S WATERS CLEAN

For More Info

- See the Pet Waste Ordinance [insert municipal page/hotlink]
- NJDEP Municipal Stormwater Regulation https://dep.nj.gov/njpdes-stormwater/municipal-stormwater-regulation-program/example-ordinances/
- EPA- Polluted Runoff: Nonpoint Source Pollution https://www.epa.gov/nps

Pet Waste Flyer

DOWNLOAD PET WASTE FLYER >


Solutions to Stormwater Pollution

Easy Things You Can Do Every Day To Protect Our Water

A Guide to Healthy Habits for Cleaner Water

Pollution on streets, parking lots and lawns is washed by rain into storm drains, then directly to our drinking water supplies and the ocean and lakes our children play in. Fertilizer, oil, pesticides, detergents, pet waste, grass clippings: You name it and it ends up in our water.

Stormwater pollution is one of New Jersey's greatest threats to clean and plentiful water, and that's why we're all doing something about it.

By sharing the responsibility and making small, easy changes in our daily lives, we can keep common pollutants out of stormwater. It all adds up to cleaner water, and it saves the high cost of cleaning up once it's dirty.

As part of New Jersey's initiative to keep our water clean and plentiful and to meet federal requirements, many municipalities and other public agencies including colleges and military bases must adopt ordinances or other rules prohibiting various activities that contribute to stormwater pollution. Breaking these rules can result in fines or other penalties.

As a resident, business, or other member of the New Jersey community, it is important to know these easy things you can do every day to protect our water.

Limit your use of fertilizers and pesticides

- Do a soil test to see if you need a fertilizer.
- Do not apply fertilizers if heavy rain is predicted.
- Look into alternatives for pesticides.
- Maintain a small lawn and keep the rest of your property or yard in a natural state with trees and other native vegetation that requires little or no fertilizer.
- If you use fertilizers and pesticides, follow the instructions on the label on how to correctly apply it.

Make sure you properly store or discard any unused portions.

Properly use and dispose of hazardous products

- Hazardous products include some household or commercial cleaning products, lawn and garden care products, motor oil, antifreeze, and paints.
- Do not pour any hazardous products down a storm drain because storm drains are usually connected to local waterbodies and the water is not treated.

Stormwater Education Brochure

DOWNLOAD BROCHURE >


STORMWATER POLLUTION: WHAT DO YOU THINK?

- You may think littering is no big deal (it is).
- You may think that whatever runs into the storm drains gets treated before it reaches local rivers and streams (it isn't).
- You may think motor oil and other hazardous materials doesn't harm the water very much (it does).

Pollution seeps into the ground and is carried by stormwater (rain and snow) directly to our drinking water, streams, lakes and oceans. Contaminated stormwater is the #1 cause of water pollution in New Jersey. Simple things, like proper clean-up after oneself and careful use of chemicals in the home, office and yard, are helpful ways for businesses and residents to protect the water.

[Insert Munipality Name] has ordinances aimed at reducing pollution from litter, fertilizer, oil, pesticides, detergents, animal waste, grass clippings and other debris. For details, see [Insert Municipal Ordinance Website Link] . Thank you for keeping them in mind and doing your share.

Clean Water NJ



NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION

https://dep.nj.gov/njpdes-stormwater/

www.cleanwaternj.org

Stormwater Education Handout

DOWNLOAD BROCHURE >

Must Implement a Public Education and Outreach Program

- Earn 12+ points each year – at least three different activities
- A minimum of one activity must involve educating businesses, which discharge to the MS4, and the general public of hazards associated with illicit connections and improper disposal of waste







Points system for public education and outreach activities

Category 1: General Public Outreach

- Social Media (3)
- Newspaper Ad (1)
- Radio/Television (2)
- Green Infrastructure Signage (5)
- Mural (2)
- Billboard/Sign (2)
- Stormwater Facility Signage (5)

Category 2: Targeted Audiences Outreach

- Stormwater Display (1)
- Promotional Item (2)
- Private Stormwater Facilities Education (3)
- Mailing or e-mailing Campaign (2)
- Ordinance Education (3)

Category 3: School/Youth Education and Activities

- School Presentations (5)
- Water Education Workshops (2)
- Storm Drain Labeling (3)
- Educational Contest for Schools (3)
- AmeriCorps Event (4)
- Clean-up (3)

Category 4: Watershed/Regional Collaboration

- Regional Stormwater Collaboration (3)
- Green Infrastructure Workshop (3)
- Community Activity (3)

Category 5: Community Involvement Activities

- Volunteer Stormwater Assessment or Stream Monitoring (3)
- Rain Barrel Workshop (3)
- Rain Garden Workshop (3)
- Community Event (3)

Must enforce the NJ Stormwater Management Requirements for Major Development

Requires all major development to:

1. Manage Peak Flows (Water Quantity Requirement)
2. Maintain annual average groundwater recharge
3. Remove 80% of the total suspended solids (Water Quality Requirement)
4. Achieve retention of the water quality design storm

Must use green infrastructure to satisfy these requirements.

Must pass community-wide ordinances

- Pet Waste
- Wildlife Feeding
- Litter Control
- Improper Waste Disposal
- Yard Waste
- Private Inlet Retrofitting
- Privately-Owned Salt Storage
- Tree Removal/Replacement







Must sweep the streets











Must Inspect and Clean the Inlets and Retrofit Hoods

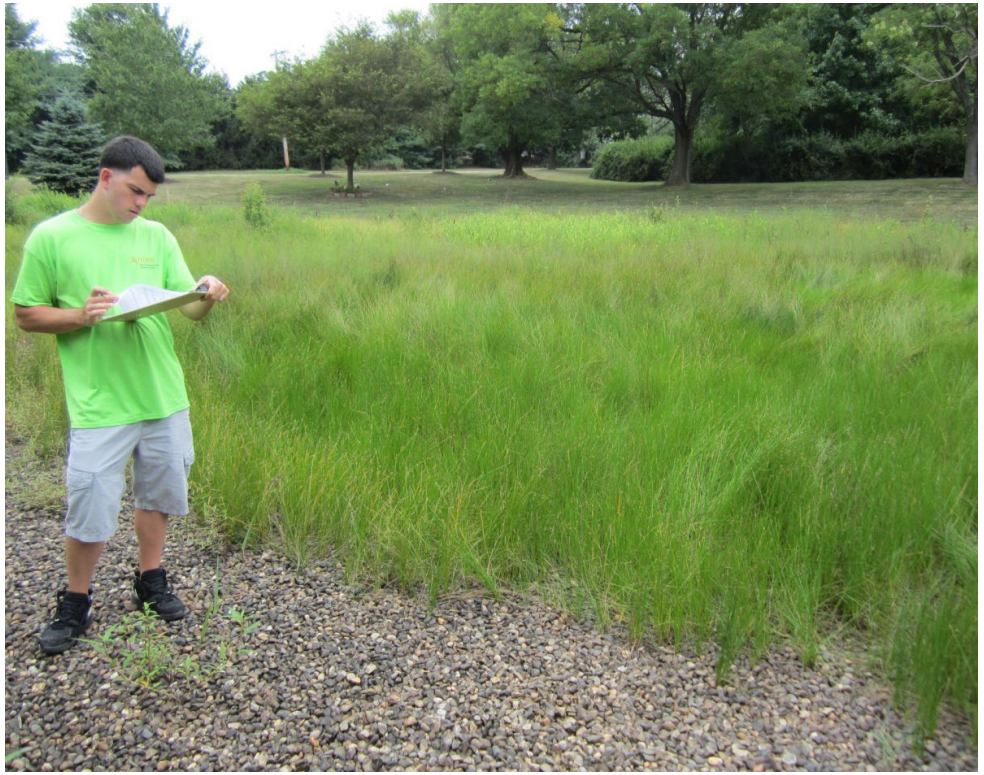




Must Inspect and Clean Catch Basins



Must Inspect and Maintain Stormwater Facilities





Must ensure privately owned stormwater facilities are being maintained too!





Must Inspect and Maintain Stormwater Outfalls





Must Ensure No Illicit Discharges from Outfalls







Must Inspect Municipal Maintenance Yards

- Monthly Site Inspections
- Maintain Inventory List
- Label all Containers
- Spill Kits
- Bulk Liquid Storage
- Fueling Operations
- Discharge of Stormwater from Secondary Containment
- Vehicle/Equipment Maintenance and/or Repair
- Wash Wastewater Containment
- Salt and Other Granular De-icing Material Storage and Handling
- Aggregate Material, Wood Chips, and Finished Leaf Compost Storage
- Cold Patch Asphalt Storage
- Street Sweepings and Storm Sewer Clean-out Material Storage
- Construction and Demolition Waste, Wood Waste, and Yard Trimmings Storage
- Scrap Tires
- Inoperable Vehicles or Equipment
- Outdoor Refuse Containers and Dumpsters

Must Manage Road Salt



Municipal Yard



Private Facility

Must Map All MS4 Infrastructure

- MS4 outfalls
- MS4 groundwater discharge points
- MS4 interconnections
- Storm drain inlets
- MS4 manholes
- MS4 conveyance
- MS4 pump stations
- Stormwater facilities
- Property boundaries of maintenance yards

Must Map Non-Municipally Owned or Operated Stormwater Facilities

Detailed information for these facilities must be included in the Watershed Inventory Report including type, quantity, block and lot, and owner of the infrastructure (outfall, stormwater management measure, etc.) within each subwatershed. Include a PDF map of all privately owned infrastructure within the permittee's jurisdiction.

Bioretention Systems (large-scale)	Sand Filters (large-scale)
Blue Roofs	Small-scale Bioretention Systems
Cisterns	Small-scale Infiltration Basins
Dry Wells	Small-scale Sand Filters
Extended Detention Basins	Standard Constructed Wetlands
Grass Swales	Stormwater Outfalls
Green Roofs	Subsurface Gravel Wetlands
Infiltration Basins (large-scale)	Vegetative Filter Strips
Manufactured Treatment Devices (MTDs)	Wet Ponds
Pervious Paving Systems	

Must Develop a Watershed Improvement Plan

- Designed to improve water quality problems
- Focused on reducing the MS4 contribution of pollutants to waterbodies with listed impairments and TMDLs
- Reducing or eliminating flooding with priority given based on human health and safety, environmental impacts, and frequency of occurrence
- Plan shall be developed with input from residents, businesses, neighboring towns, other dischargers

Phases of a Watershed Improvement Plan

Phase 1 – Prepare and submit the Watershed Inventory Report; conduct outreach (January 1, 2026)

- Summarize/map required information, some is available from the Department's GIS database

Phase 2 – Prepare and submit the Watershed Assessment Report; conduct outreach (January 1, 2027)

- Assess potential projects with estimates of the reduction in pollutant loading & funding need

Phase 3 – Prepare and submit the Watershed Improvement Plan Report; conduct outreach (December 1, 2027)

- Summarize proposed projects with improvement expected, comments received, costs, coordination with other regulatory programs, and implementation schedule

Contents of a Watershed Improvement Plan

- Land Use Analysis
- Impervious Cover Analysis
- Identification of Pollution Sources
- Identification of TMDLs and Water Quality Impairments
- Identification of Flooding
- Identification of Projects to Reduce Flooding and Improve Water Quality

Where Do We Start?

1. Look for sites where green infrastructure can be added to capture, treat, and infiltration/retain stormwater runoff

SITE SELECTION

WE LOOK HERE FIRST:

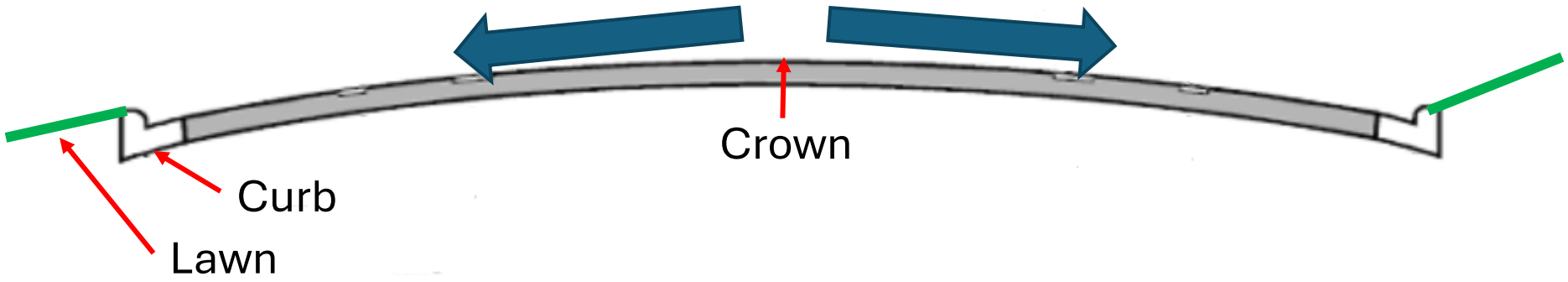
- ✓Schools
- ✓Places of Worship
- ✓Libraries
- ✓Municipal Buildings
- ✓Public Works
- ✓Firehouses
- ✓Post Offices
- ✓Elks or Moose Lodge
- ✓Parks/ Recreational Fields

- 20 to 40 sites are entered into a PowerPoint
- Site visits are conducted

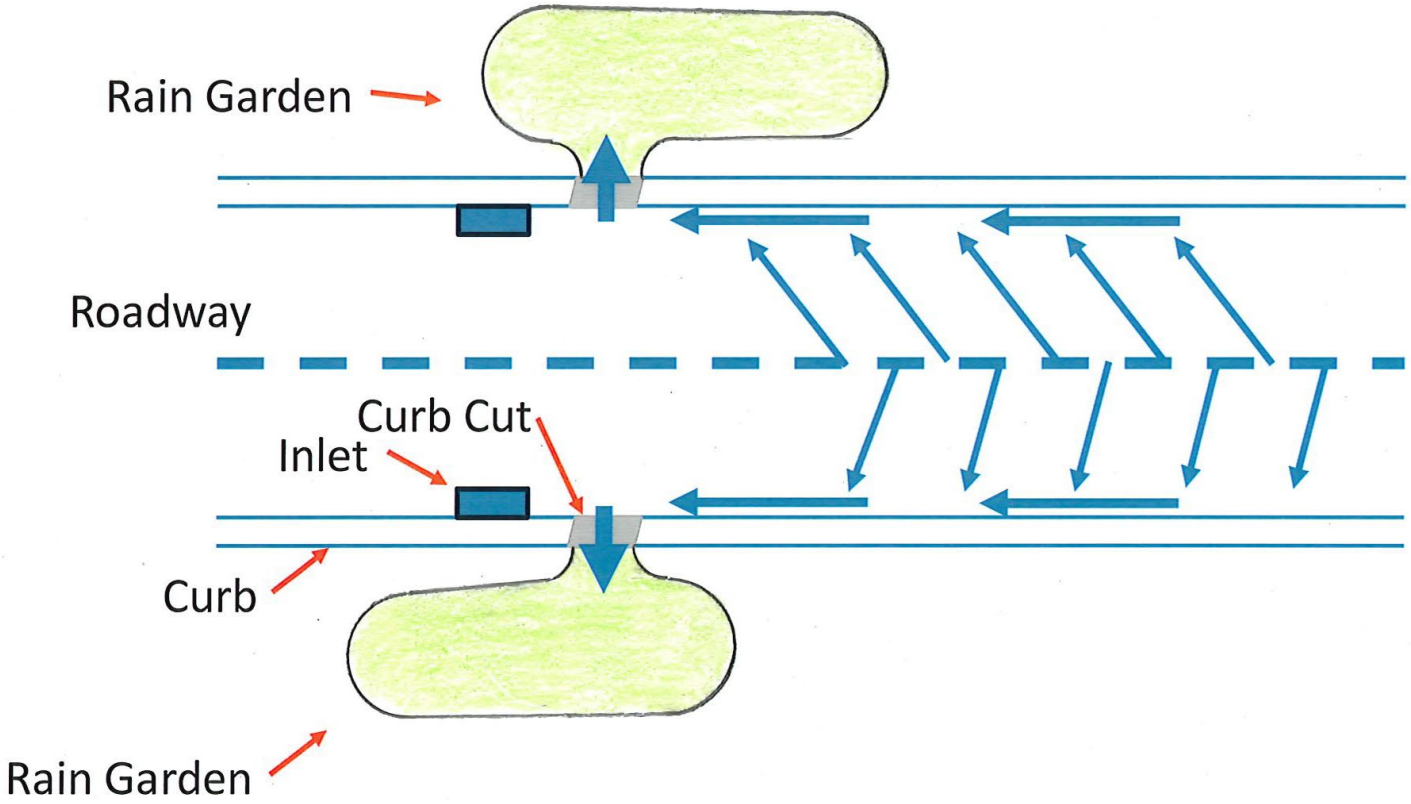
Basic Concepts to Consider for Runoff from Impervious Surfaces

- Typical Road Cross-Section
- Typical Roadside Rain Garden Location
- Roadside Rain Garden Excavation

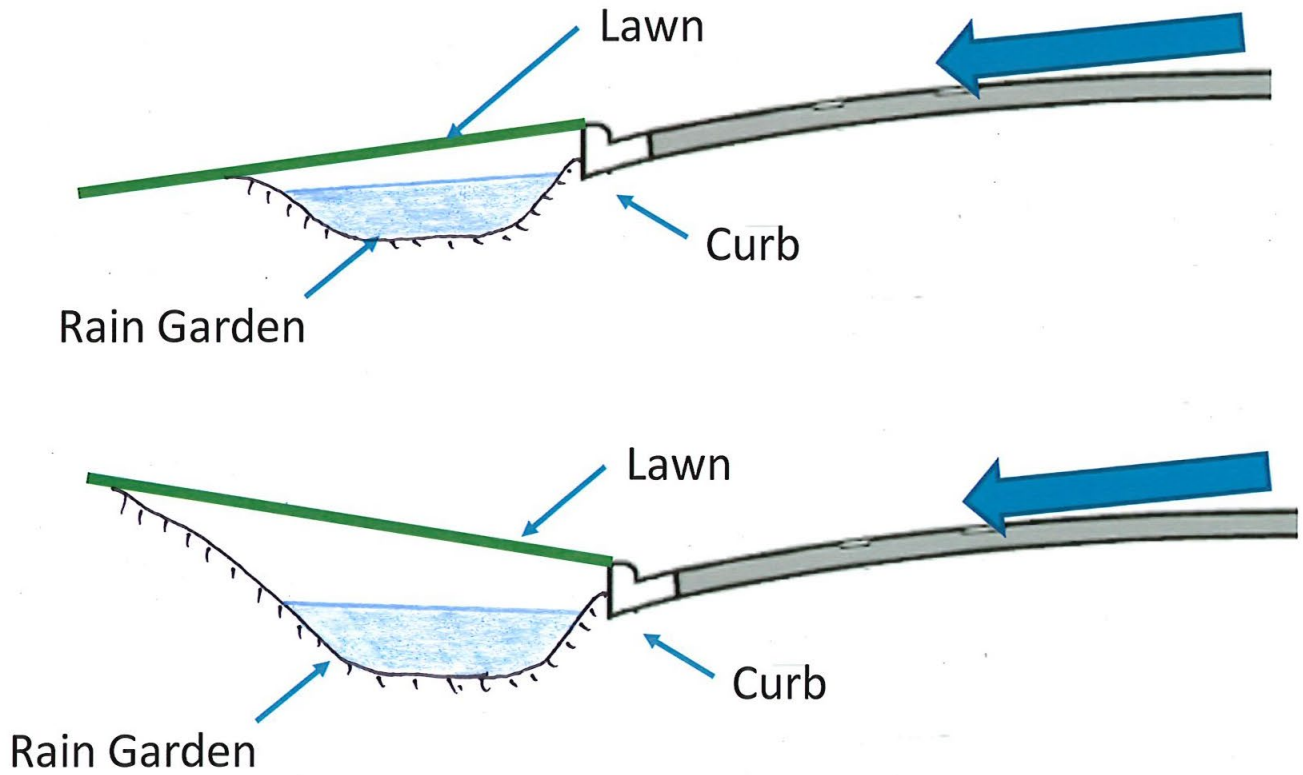
Typical Road Cross-Section



Typical Roadside Rain Garden Location



Roadside Rain Garden Excavation



What are we looking for during our site visit?

1. What are sources of stormwater and where does it flow?
2. What is the direction and relative slope of the site?
3. Where are impervious surfaces on the site?
4. What is the condition of the paved areas?
5. Are impervious surfaces directly connected?
6. Are there opportunities to disconnect?
7. Are there stormwater catch basins?
8. Is there evidence of ponding water on the site?
9. Where are the utilities on the site?
10. Are there pedestrian safety issues?

Other Questions:

- Do the soils infiltrate?
- Who owns the property? Will they be open to installing stormwater management measures?
- Are there potential partners to help with the project?
- Do we need permits for altering this site with stormwater best management practices?
- Does the building have a basement?
- Can we lose parking spaces?
- Who will maintain the green infrastructure practices?
- Is the project a high priority?

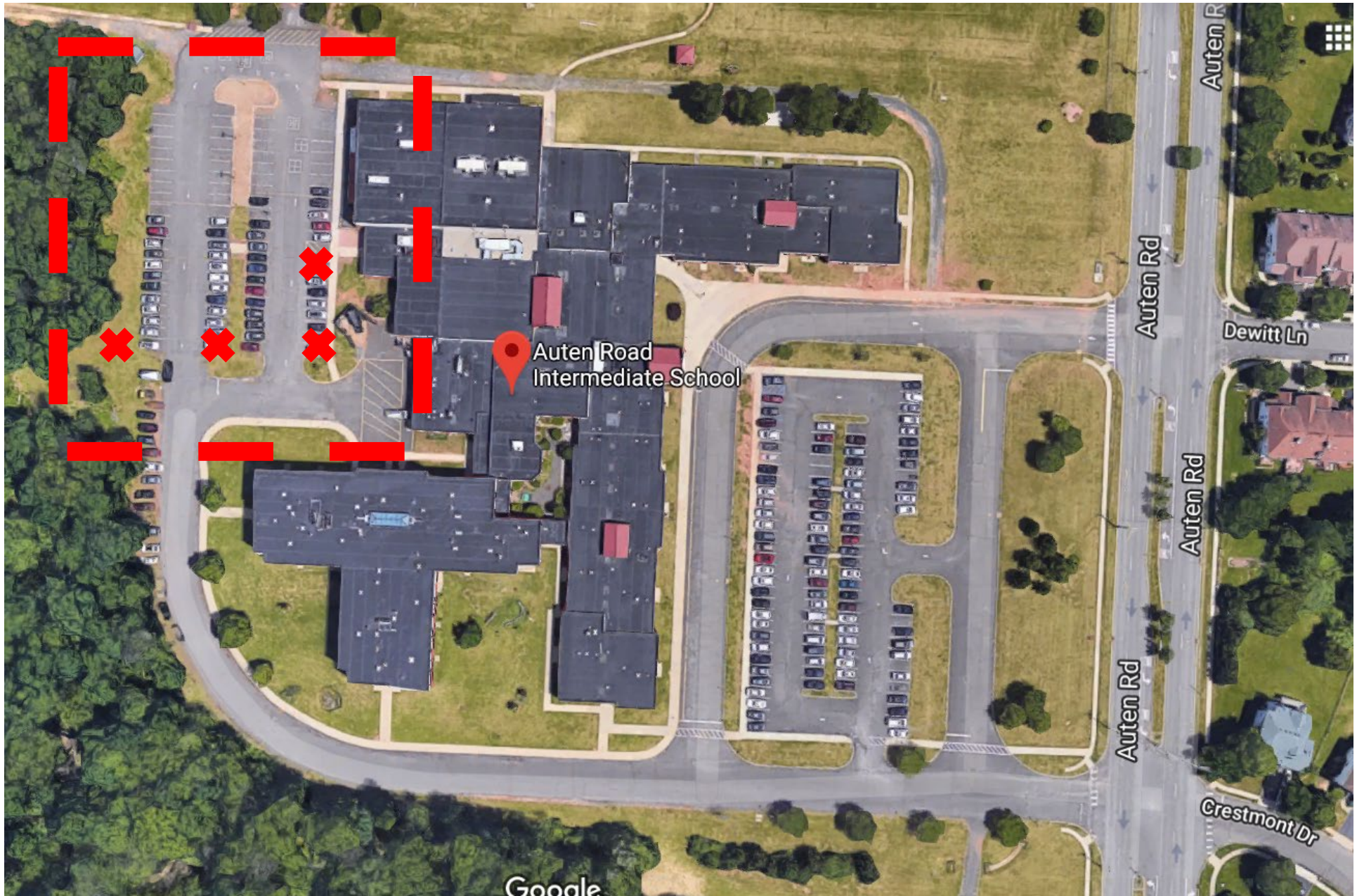
Example: Auten Road School in Hillsborough, NJ



Auten Road School in Hillsborough, NJ
281 Auten Rd, Hillsborough Township, NJ 08844



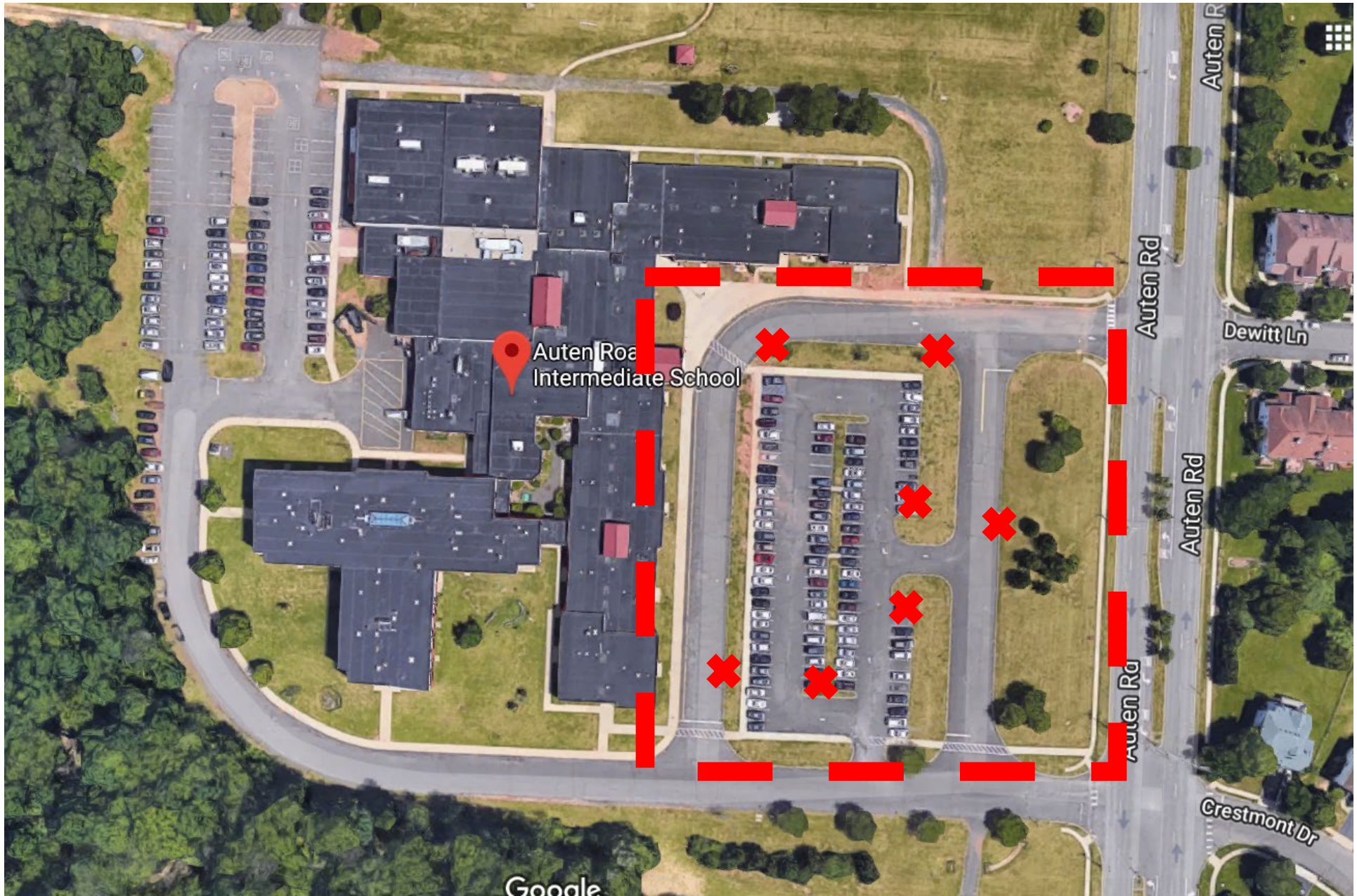
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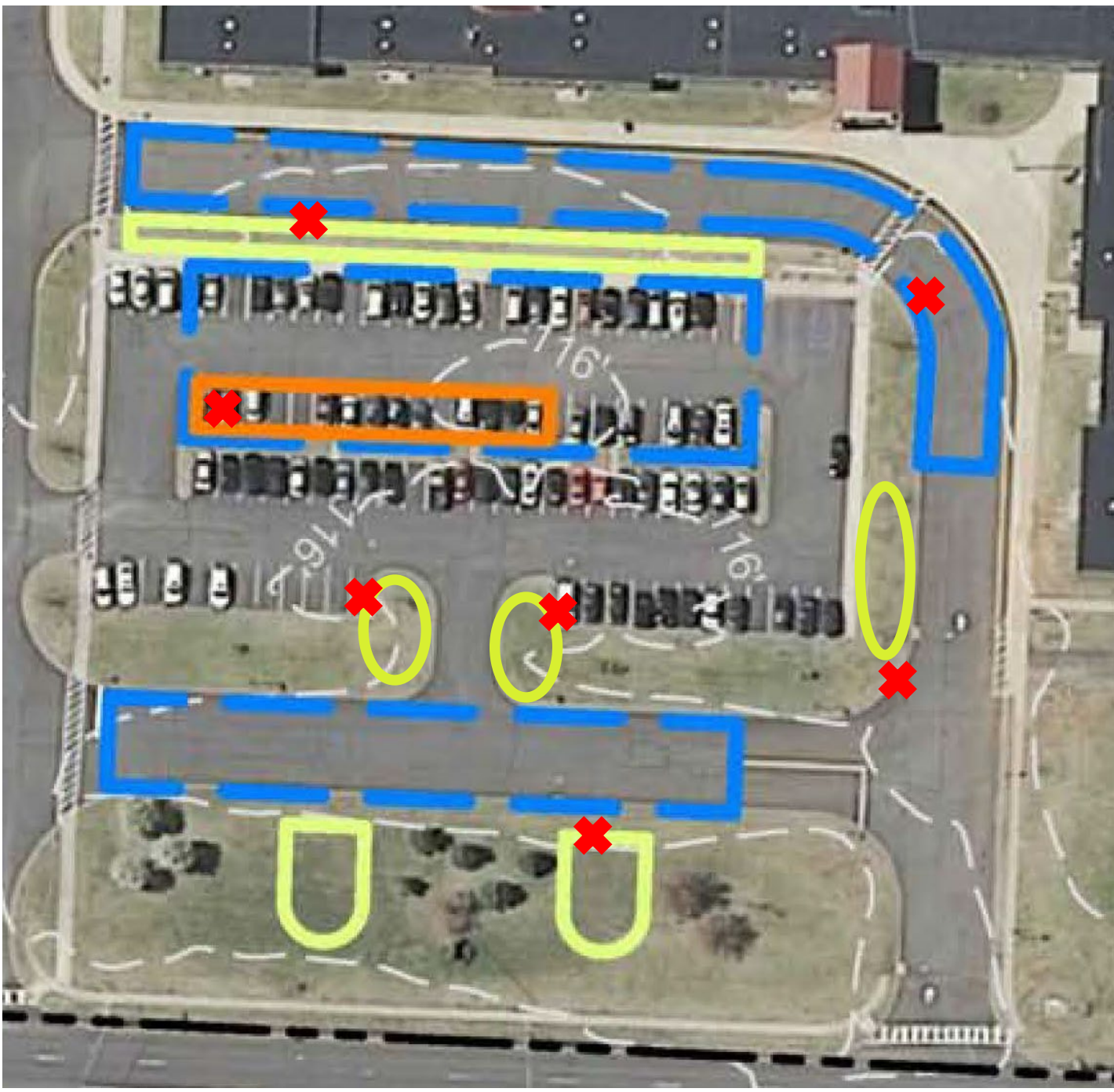

120'
118'


Auten Rd
Intermediate School
Auten Rd
Auten Rd
Auten Rd
Dewitt Ln
Crestmont Dr
Google

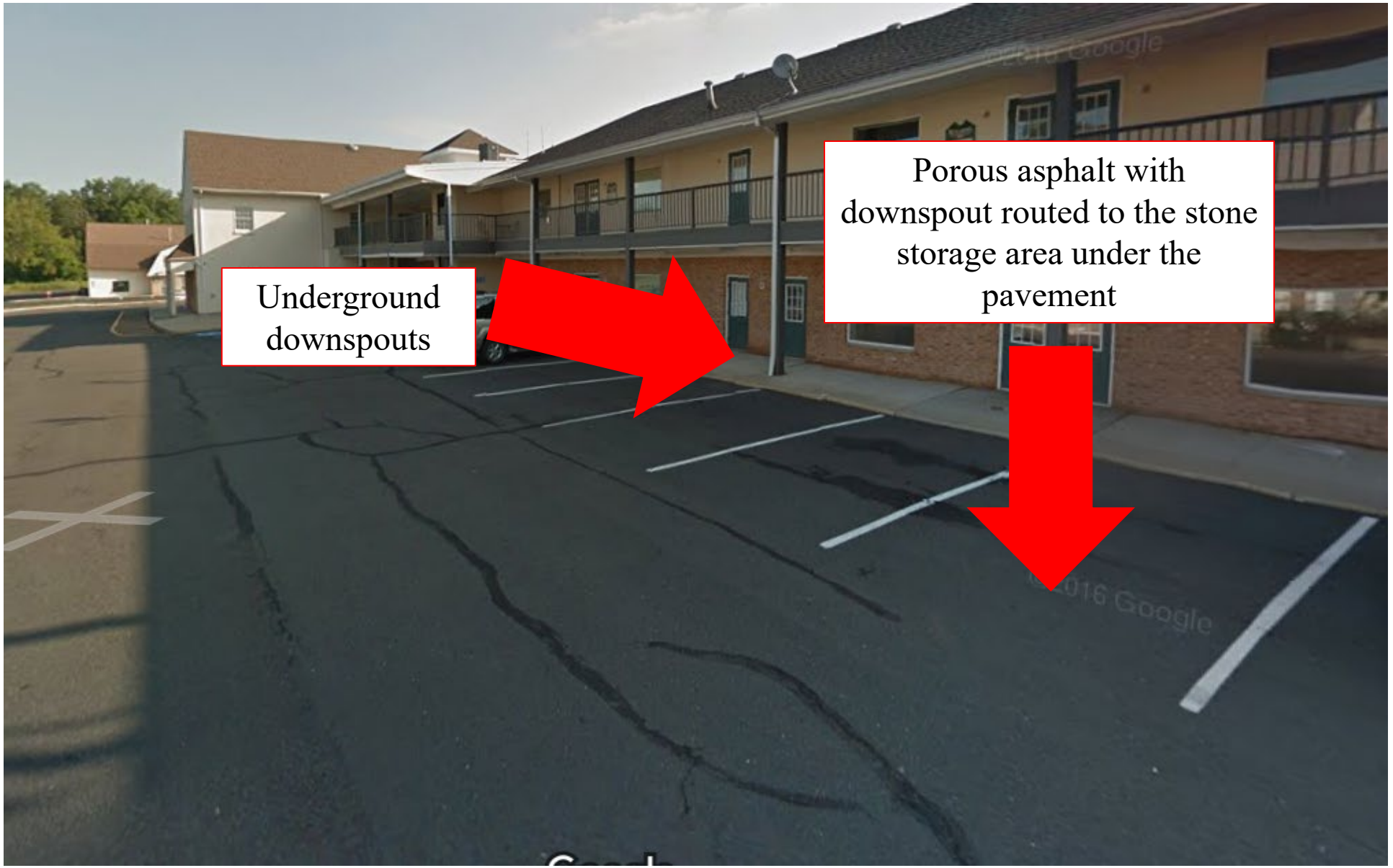





STOP



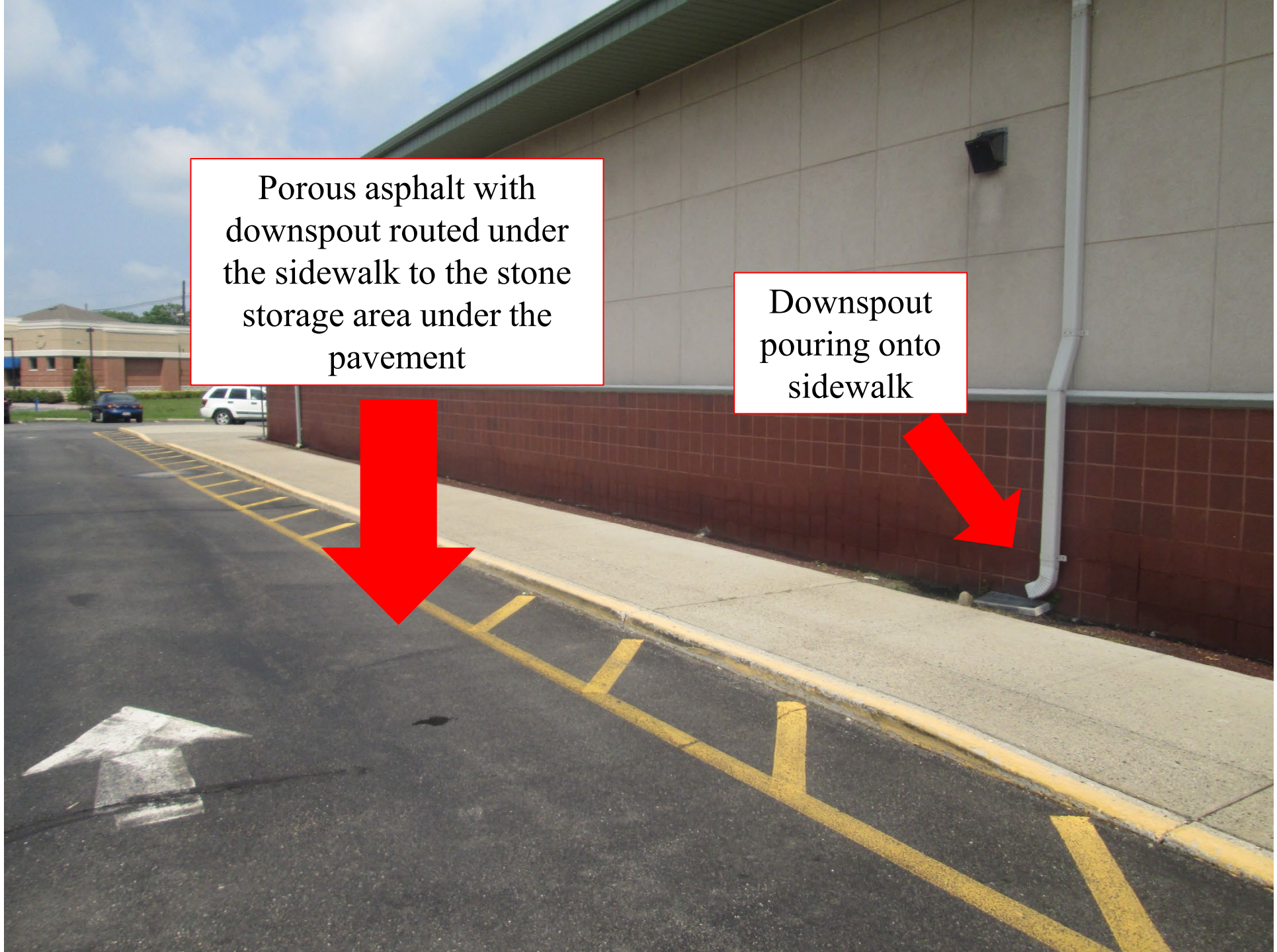
Other things to look for




Great spot for a bioswale

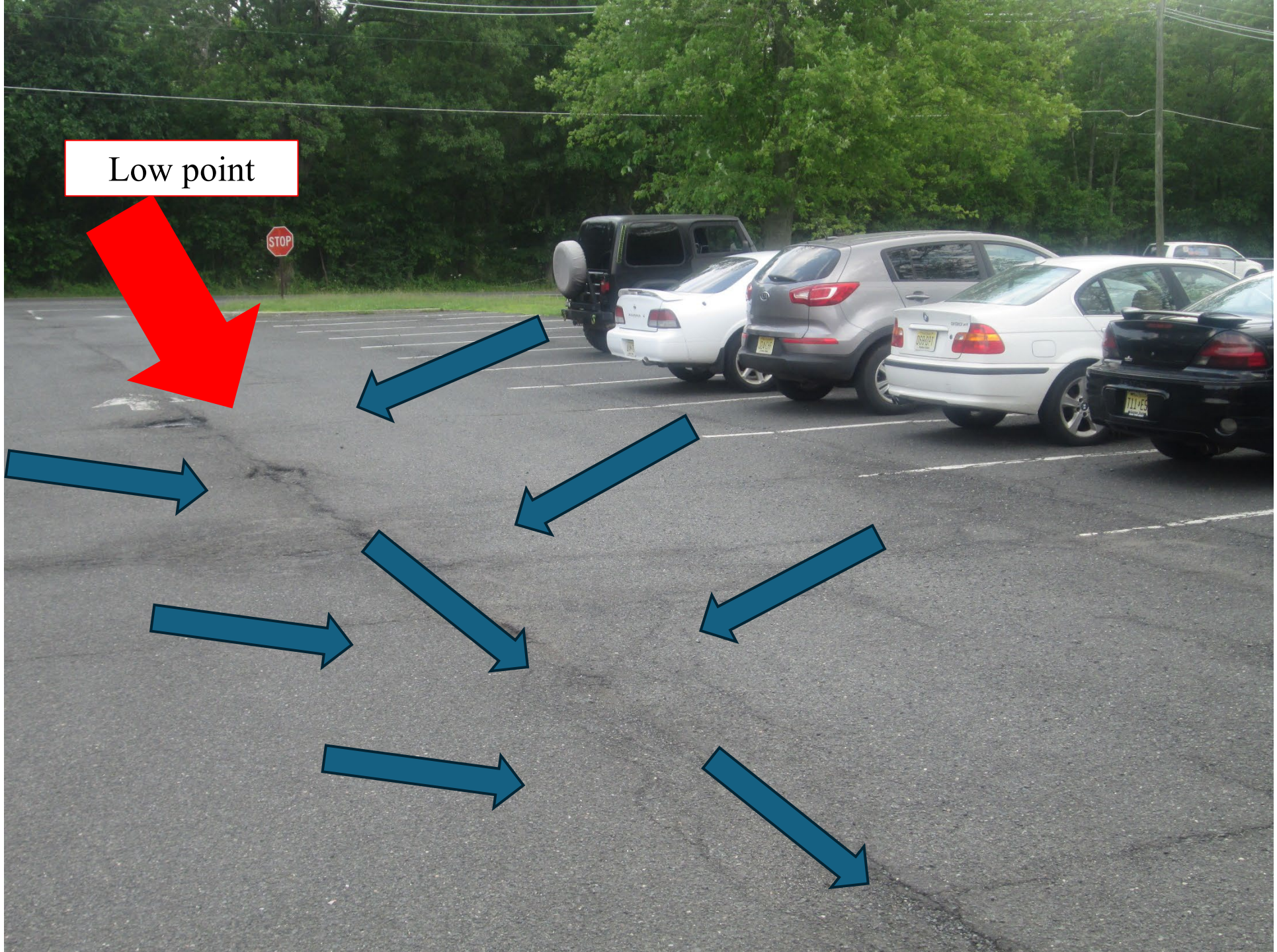

Firehouse
NO.2
ENGINE 37-103
2
1973
IN LOVING MEMORY OF
OUR DEPARTED SISTERS

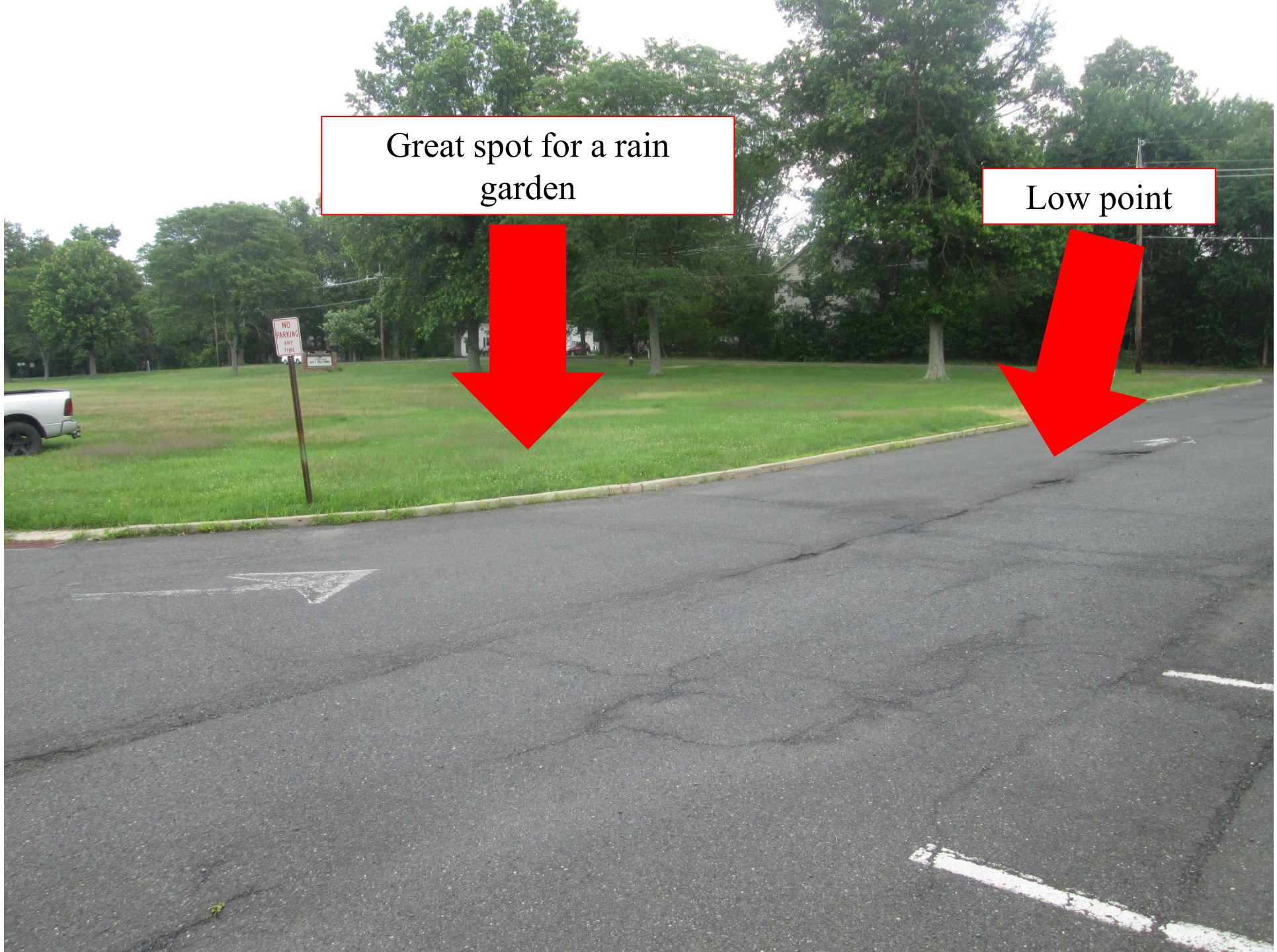

Great spot for a cistern at the firehouse
Pavement is a little beat up – maybe porous pavement


Porous asphalt with downspout routed under the sidewalk to the stone storage area under the pavement
Downspout pouring onto sidewalk


Sediment accumulating – low spot


Lots of downspouts
Great spot for a rain garden
ANY TIME
NO IDLING ZONE
IT'S THE LAW


Low point
STOP


Great spot for a rain garden
Low point
NO PARKING ANY TIME


Great spot for a rain garden


Great spot for a rain garden – put in curb cut upslope of the inlet


Great spot for a rain garden and maybe some picnic tables for the employees



"Protecting Public Health and the Environment"

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"Protecting Public Health and the Environment"

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CURRENT CONDITION

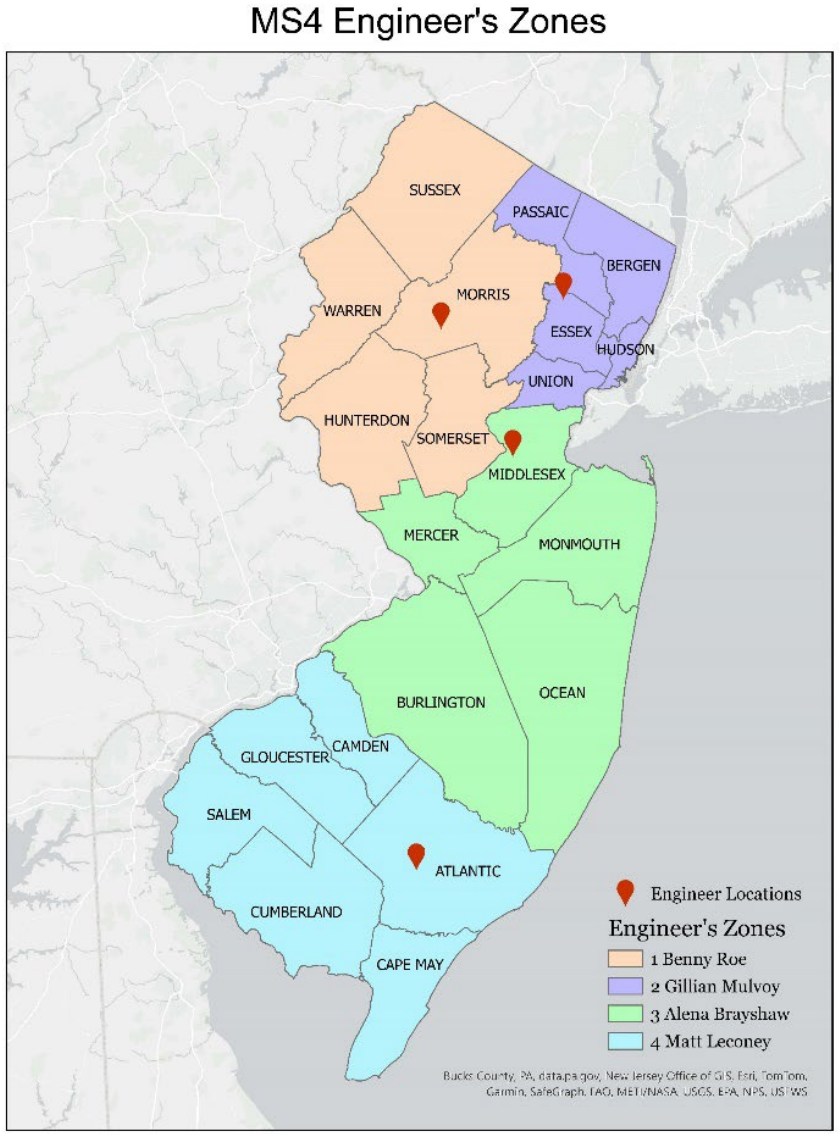


CONCEPT DESIGN



MS4 Technical Assistance Program

- Three-year agreement w/ NJDEP to support MS4 communities statewide
- Four Regional Engineers
- Provide technical support to all municipalities
- Focus on former Tier B municipalities
- Expand to existing Tier A as capacity is available

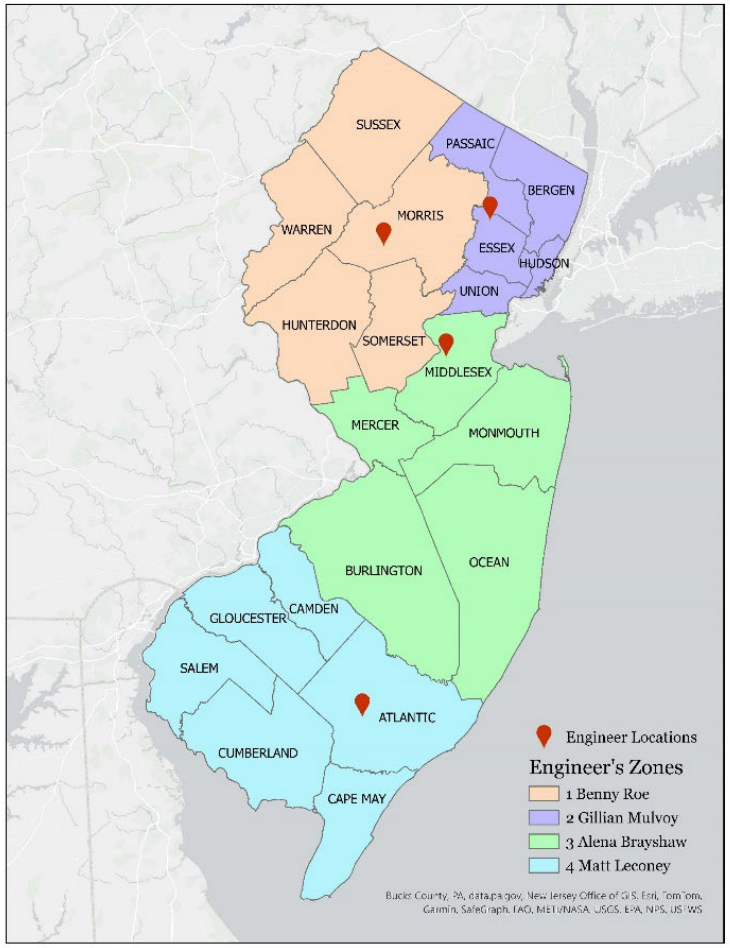


MS4 Technical Assistance Program

Contact us!

- Northwest – Benny Roe
  - benny.roe@rutgers.edu
- Northeast – Gillian Mulvoy
  - gillian.mulvoy@rutgers.edu
- Central – Alena Brayshaw
  - alena.brayshaw@rutgers.edu
- South – Matthew Leconey
  - matthew.leconey@rutgets.edu

MS4 Engineer's Zones




Questions?