Middlesex Township
MS4 Permit Staff Training

May 23, 2023

SKELLY AND LOY
A Terracon Company

Today's Topics

- Stormwater
- MS4 Permit
  - Context
  - Purpose
  - Components
- Roles and Responsibilities
- Middlesex Achievements
- Next Steps
- Q&A

SKELLY AND LOY
A Terracon Company

Explore with us

This the introduction to the Middlesex Township Stormwater Management Program that responds to the Township's MS4 Permit. We will be covering the listed topics. Some are basic and you are already familiar with the topic. Others might be head scratchers. So, feel free to ask questions as they arise.

Let's check the basics. What does this audience already know?

Have Eileen count hands for each question
Sequence:
Request a hand raise

How many don't know?
Who does know?
How many agree?

Stormwater

SKELLY AND LOY
A ferracon Company

Explore with us

What is Stormwater?

Rain & Snow melt

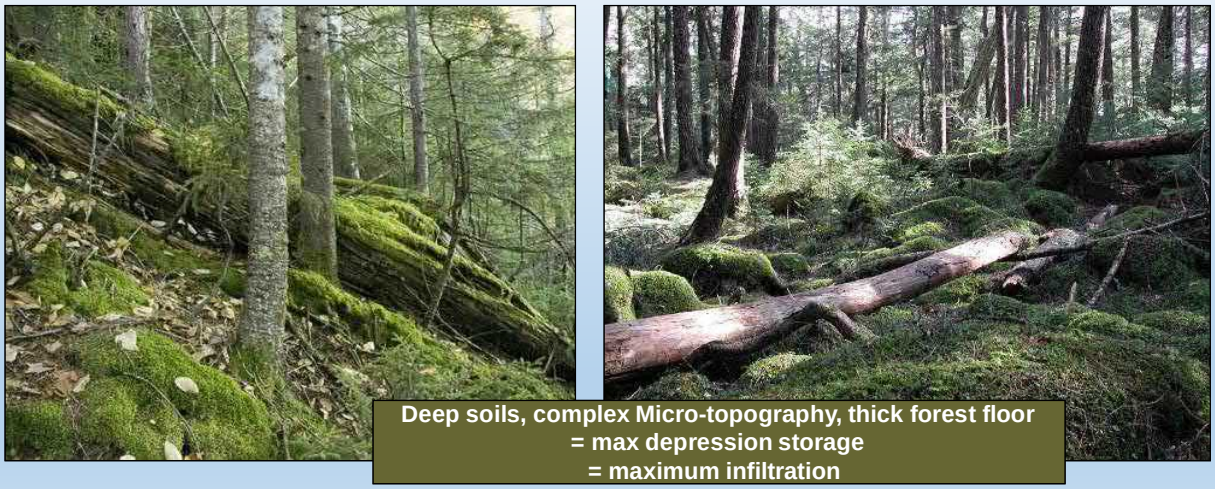
https://blog.weatherops.com/hubfs/Brandon+snowmelt+flooding.jpg

SKELLY AND LOY
A Ferracon Company

Explore with us

(Wait and then click) No trick questions here…rain and snow melt.

So...What is Stormwater Runoff?

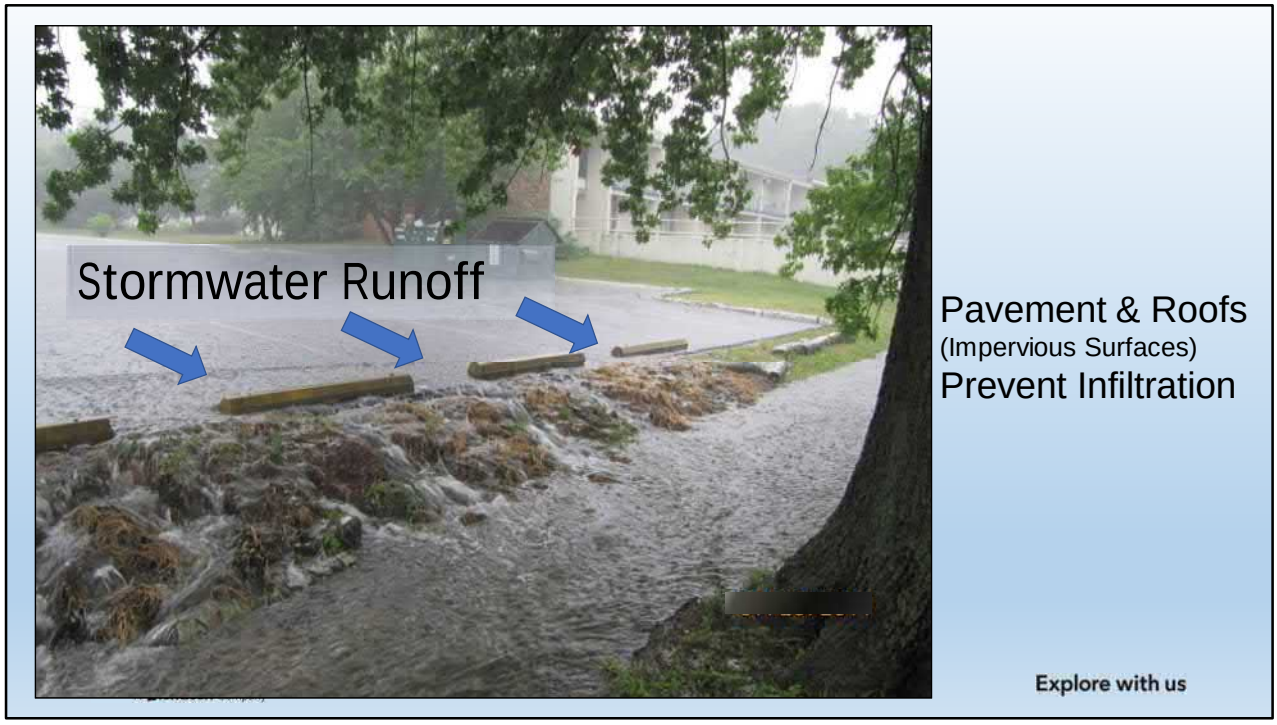


Deep soils, complex Micro-topography, thick forest floor
= max depression storage
= maximum infiltration

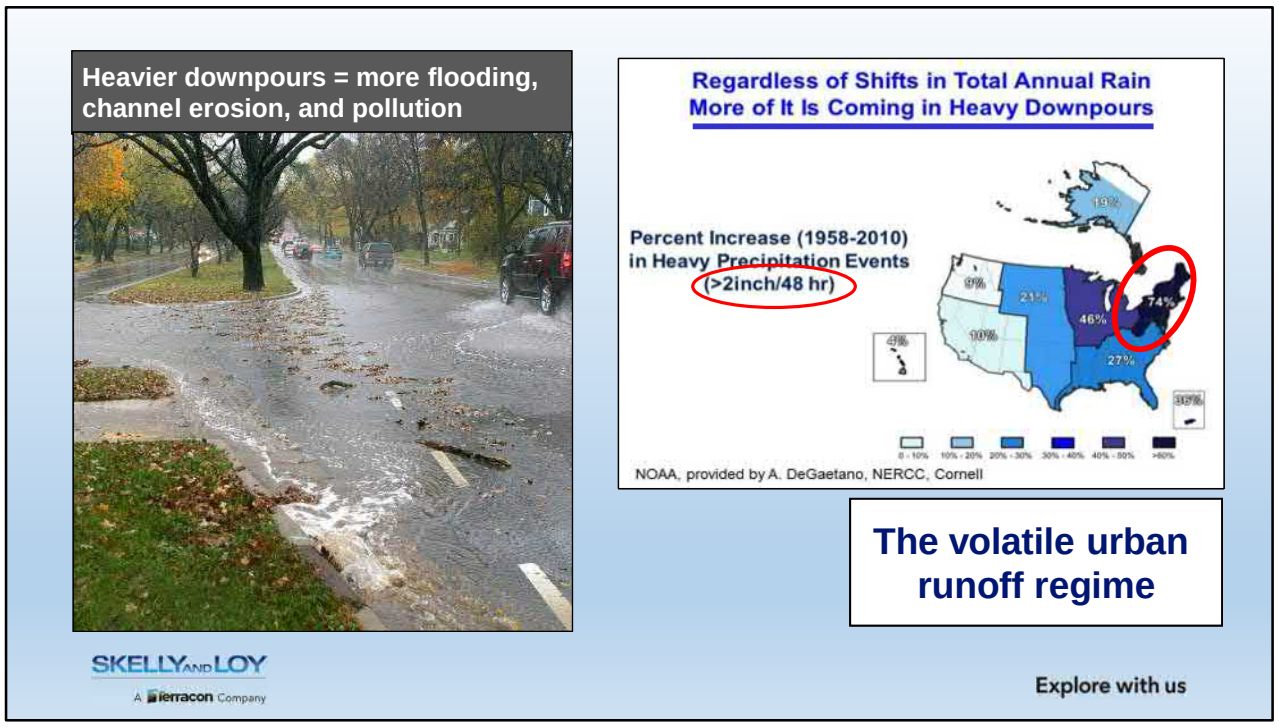
SKELLY AND LOY
A Terracon Company

Explore with us

Surface runoff is minimal in undisturbed forests. Look at all the depressions and water-holding features caused by boulders, fallen trees, and depressions caused by fallen trees. In addition, the decaying leaves and soft ground soak up water, even on hillsides.



Pavement prevents stormwater from soaking in…it RUNS OFF



A study by NOAA suggests that storm events are intensifying. While the region might still receive an average of 40 inches per year, more rain is occurring in heavy down pours. Stormwater cannot soak into the ground when it arrives too fast. Think of a bathtub drain. If the same volume of water is delivered to it in buckets instead of a trickle, the water cannot get into the drain. So, in areas where there is no or limited stormwater storage…stormwater basins, wetlands, floodplains and similar… these intensified storms increase the amount of rainwater that runs off.

What Else?

Built Environments

- Increase runoff rates
- Increase runoff quantities
- Increase pollutant discharges
- Increases water temperature

Results In

- Flooding
- Erosion
- Stream instability

SKELLY AND LOY
A Ferracon Company

Explore with us

As shown on the slide water running over pavement moves faster than when it drains across grass or other vegetation. It picks up more dirt, debris and other pollutants; gets hotter; and doesn't soak into the ground. That's why the MS4 permit focuses on intensely developed areas.

When stormwater arrives at the stream, the water velocity or speed of runoff is faster than if it oozes out of the ground. The fast and concentrated water hits the stream banks like water from a firehose and causes the banks to erode and collapse. The end result is more sediment.

Some sediment is necessary and healthy. Too much of the fine sediment can coat and destroy aquatic habitat; Heavy coating of fine sediment kills the macroinvertebrates (or bugs, crustaceans and worms) which is the food supply for aquatic wildlife and so on, ultimately making the stream unhealthy.

Where does Stormwater Runoff Go?

- Stormwater runoff travels over the ground, and pavement
- And through stormwater systems
  - pipes, gutters, swales, and ditches
- Transporting pollution

DISCHARGES TO:

STREAMS RIVERS AND LAKES

http://www.bunnellcity.us/infr-sw.aspx

SKELLY AND LOY
A Ferracon Company

Explore with us

Where does stormwater go when it is captured in a stormwater inlet? The water and all the pollution are conveyed to area waterways …usually untreated.

Runoff Transports Pollution

SKELLY AND LOY
A Terracon Company

Explore with us

These pollutants are suspended and conveyed with the stormwater.

Sediment, pollutants and trash are discharged from impervious surfaces

SKELLY AND LOY
A Ferracon Company

Explore with us

Here is another example of water pollution.

MS4 Permit

SKELLY AND LOY
A ferracon Company

Explore with us

It stands for the
One M and
Four S's
At the beginning of each word.

MS4 is all about

CLEAN WATER
STORM WATER
URBAN WATER

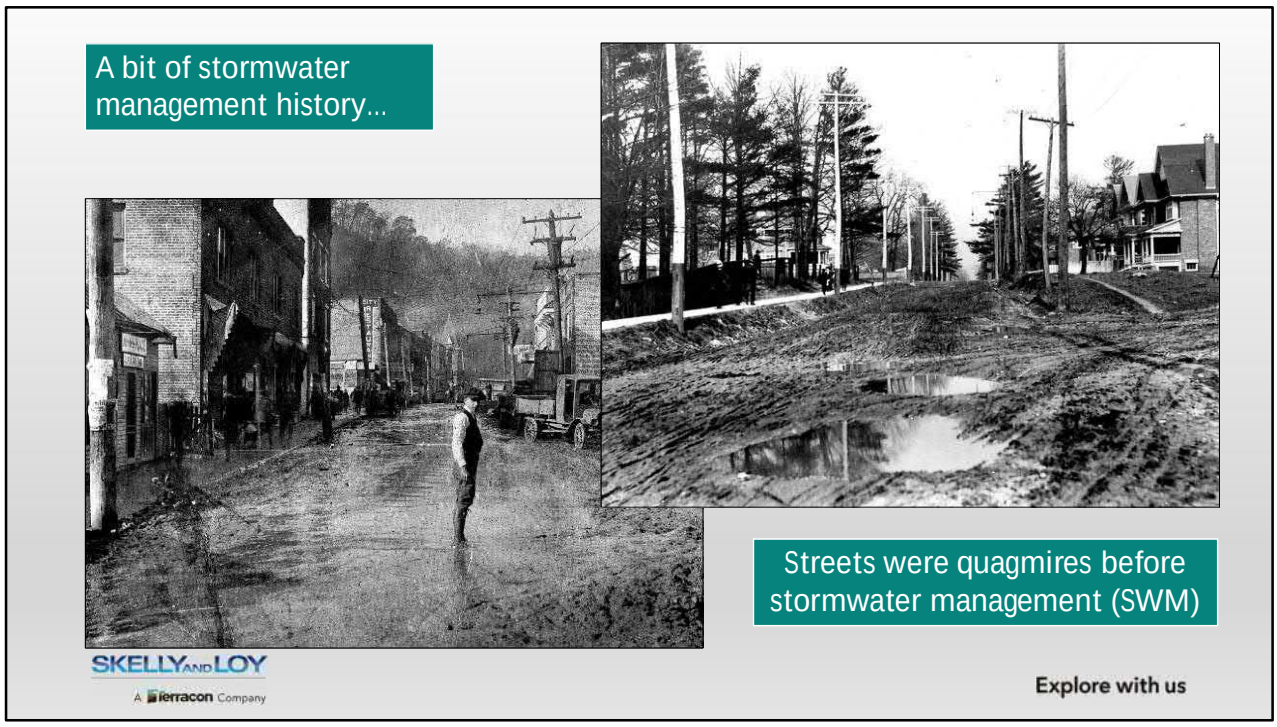
https://innovative-results.com/millions-in-u-s-drink-dirty-water/

SKELLY AND LOY
A Terracon Company

Explore with us

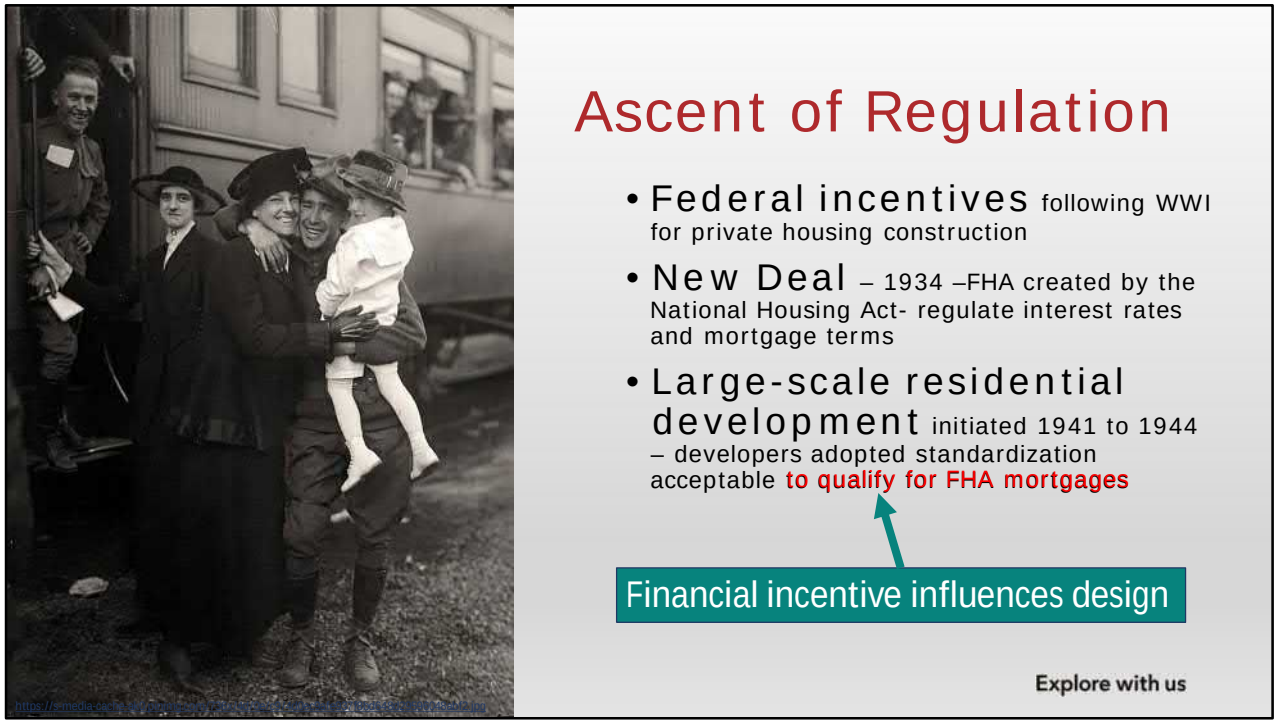
(*Read slide*)
MS4 is a Federal permit emanating from the Clean Water Act of 1972 and amended in 1987. Its focus is water QUALITY, not flooding.

While most of us rail against too much regulation, it appears that when regulation is about managing pollution, we need some guidance.



Let's look at a bit of history to give context to how and what led to current stormwater management regulations. As you can see in the pictures…getting around town could be a challenge when rain and snow melt turned streets into muddy, mucky messes.

Paving the streets made getting around town easier, but as we noted earlier…it also increased runoff.



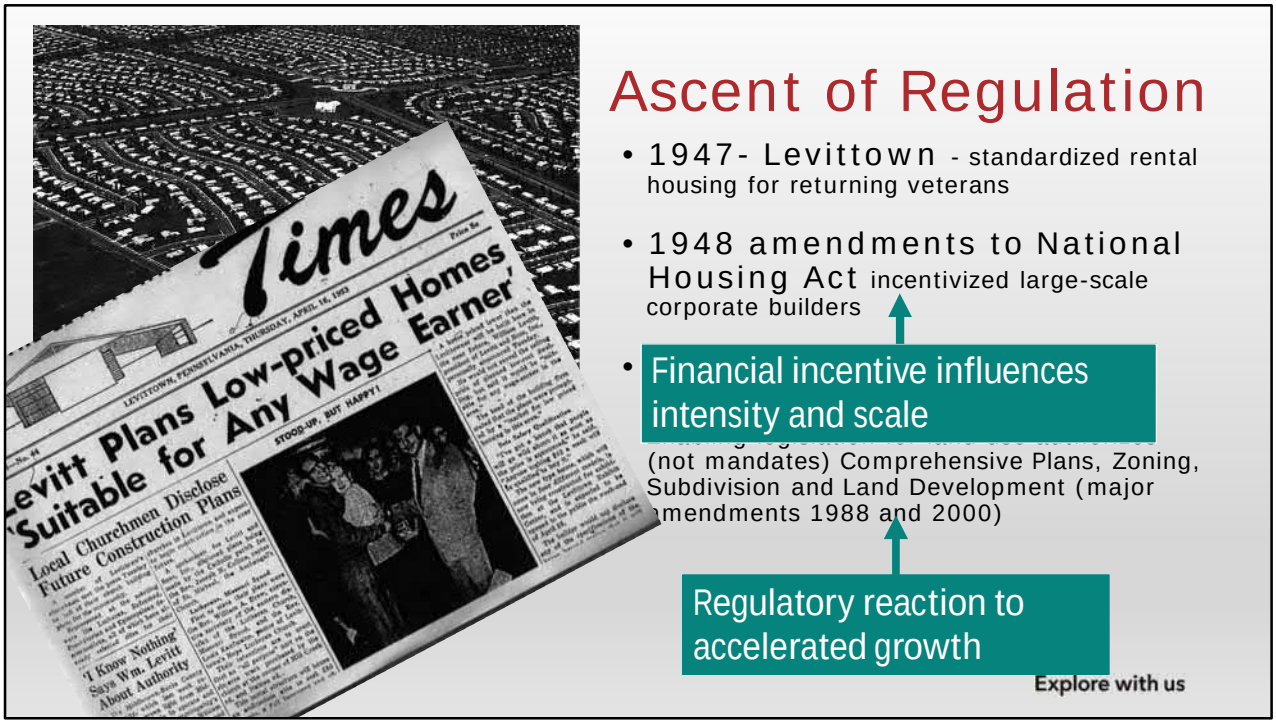
How many people have heard of a game "Six degrees of Kevin Bacon?" Its premise is that any person is related to every other person in as few as six relationships…even if at first impression they are totally unrelated. This is how it is with regulation as well.

You will see that regulation in general is cyclical. First government incentivizes to encourage some behavior then it regulates to dampen unintended consequences of success. So let's see how the desire to ensure a basic need like housing is related to stormwater management.

Following WWI, the federal government created a number of incentives to expand the inventory of housing especially to accommodate returning soldiers and their families.

(Click) Roosevelt's New Deal included creation of the National Housing Act to regulate interest rates and make sure mortgages were affordable.

(Click) The FHA mortgage requirements made it most profitable for housing builders to standardize housing construction so their customers would qualify for loans. *(Click)*



(Click) (Click) Standardization spawned housing developments like Levittown (the epitome of cookie-cutter one-size-fits-all development).

(Click) The next set of amendments to the National Housing Act ushered in housing construction as big business. More and larger developments were created.

(Click) The impacts of fast growth was felt. Land use regulations were born. *(Click)*

Shopping Malls Serve Suburbia

Park City Shopping Mall Concept Rendering
Lancaster, PA - Constructed 1971

https://s-media-cache-ak0.pinimg.com/600x315/36/cb/13/36cb130e2db88e8068c71a2cd3a3b6cf.jpg

SKELLY AND LOY
A Ferracon Company

Explore with us

All the people that moved to the suburbs needed places to shop.

The picture on the screen shows a rendering of Park City shopping mall. In 1971 when it opened, it was one of the largest, if not THE largest shopping mall.

Do you see the correlation….more and more impervious surfaces.

*(click) So….w*here is the stormwater management?

Early stormwater management consisted of directing stormwater to pipes and conveying it to waterways directly. There was no treatment or attention to possible repercussions.

Late 1960's and early 1970's –

Momentum for controlling pollution swells nationally

SKELLY AND LOY
A Terracon Company

Explore with us

This picture shows what was also happening at the time. Rivers aren't supposed to burn…but that is exactly what happened. The picture is the Cuyahoga River that flows through downtown Cleveland. The Time Magazine photographer who snapped the picture just happened to be in town to cover a nasty political campaign.

Fires on the Cuyahoga were commonplace and there are other pictures dating back into the 1950's…this one is just famous as being the catalyst to environmental regulation.

Cuyahoga River 1969

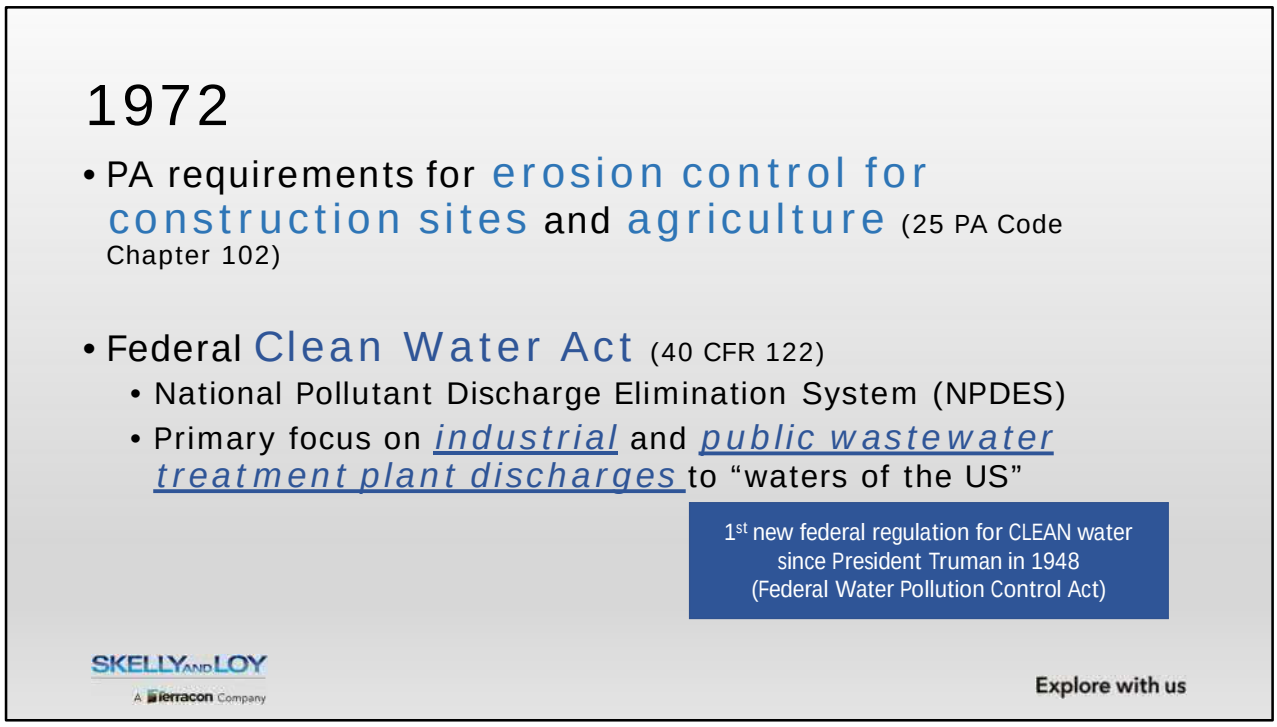
www.cleveland.com

SKELLY AND LOY
A Ferracon Company

Explore with us

This picture shows what was also happening at the time. Rivers aren't supposed to burn…but that is exactly what happened. The picture is the Cuyahoga River that flows through downtown Cleveland. The Time Magazine photographer who snapped the picture just happened to be in town to cover a nasty political campaign.

Fires on the Cuyahoga were commonplace and there are other pictures dating back into the 1950's…this one is just famous as being the catalyst to environmental regulation.

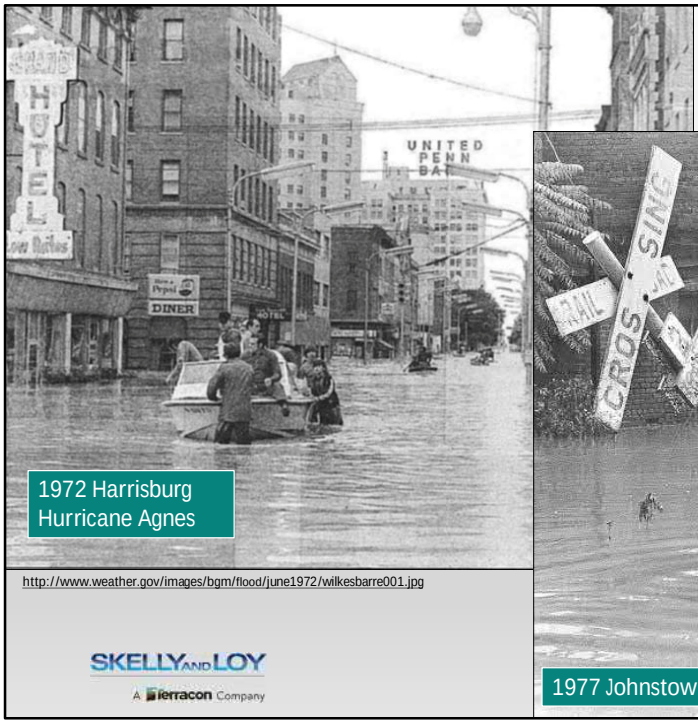


1972

Here in Pennsylvania, first efforts to clean up storm water focused on erosion control for construction sites and agriculture (25 PA Code Chapter 102)

The Federal Clean Water Act concentrated on *industrial* and *public wastewater treatment plant discharges* to "waters of the US".

Floods!



1972 Harrisburg
Hurricane Agnes

http://www.weather.gov/images/bgm/flood/june1972/wilkesbarre001.jpg

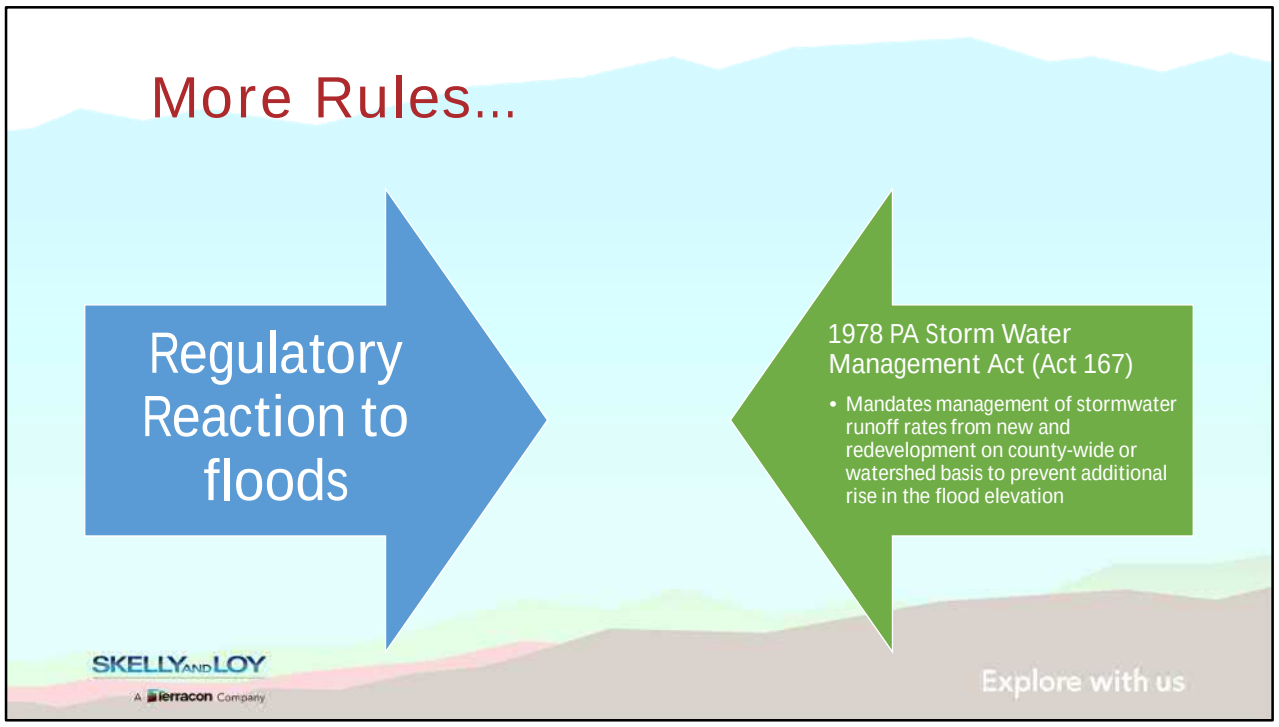
SKELLY AND LOY
A Ferracon Company

10 inches in 12 hours!
6 dam failures
84 deaths

1977 Johnstown

http://www.weather.gov/images/bgm/flood/june1972/wilkesbarre001.jpg

Next came the decade of big floods. 1972 was Hurricane Agnes. Five years later an intense rainstorm dumped 10 inches in 12 hours near Johnstown.



Pennsylvania passed legislation requiring that county-wide plans be developed to prevent additional rise in flood elevations associated with development and re-development activities.

Stormwater detention basins appeared at all newly constructed projects.

Increased Regulation = Increased Cost of Stormwater Management

- Cost of design
- Cost of permitting
- Cost of piping and appurtenances
- Cost of excavation
- Cost of maintenance
- Loss of revenue producing property

https://creazilla.com/nodes/1688485-flood-clipart

...to manage flooding

SKELLY AND LOY
A Terracon Company

Explore with us

The new requirements drove costs up as shown on the slide. All of this to address flooding.

Stormwater/Pollutant Transmission Link

1987

- Amendments to the Clean Water Act (federal)
- National Pollution Discha… Elimination System Permit…
  - Earth disturbance
  - Municipal Stormwater

MS4!

SKELLY AND LOY
A Ferracon Company

1987

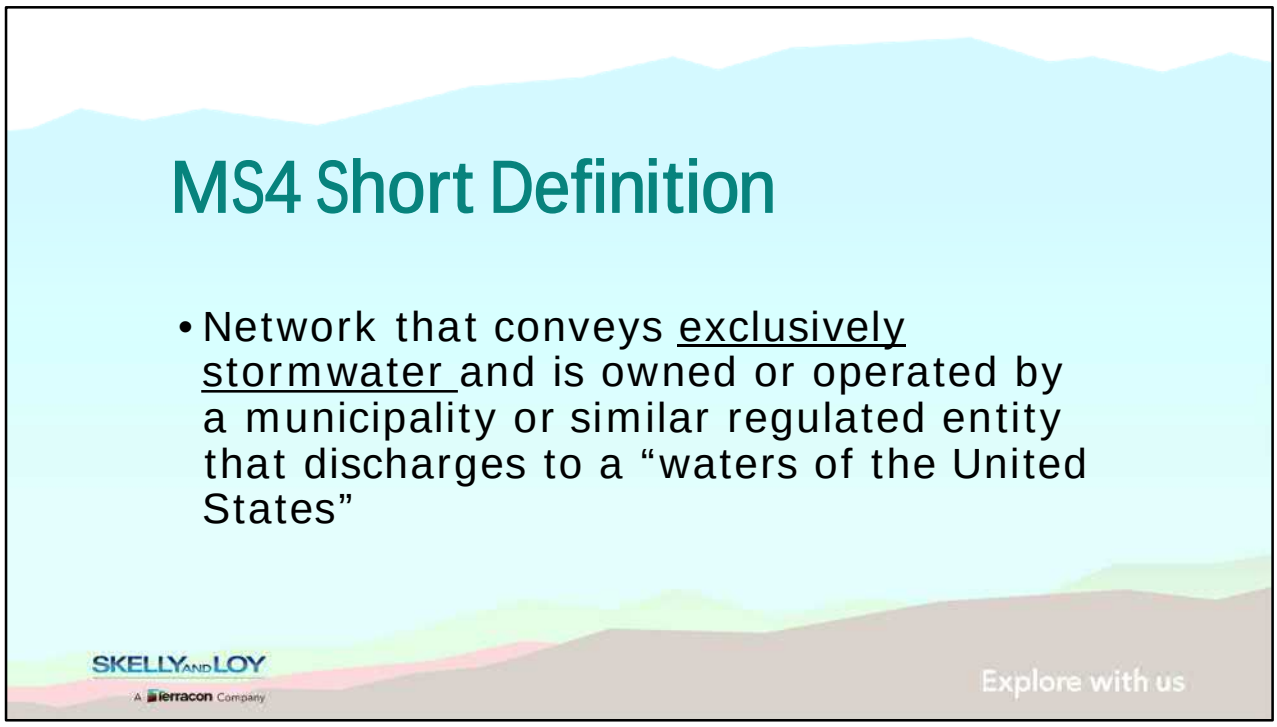
Remember the Clean Water Act focused on industrial wastewater and sanitary wastewater clean-up. Amendments to the Clean Water Act (federal) were a response to an environmental suit that required stormwater to be clean, too. *(Click)*

There was a phased implementation of the National Pollution Discharge Elimination System Permits abbreviated NPDES

NPDES required for earth disturbance
- Phase 1 > 5 acres
- Phase 2 > 1 acre

Beginning of MS4 (the municipal version)
- Phase 1 >100,000
- Phase 2 <100,000

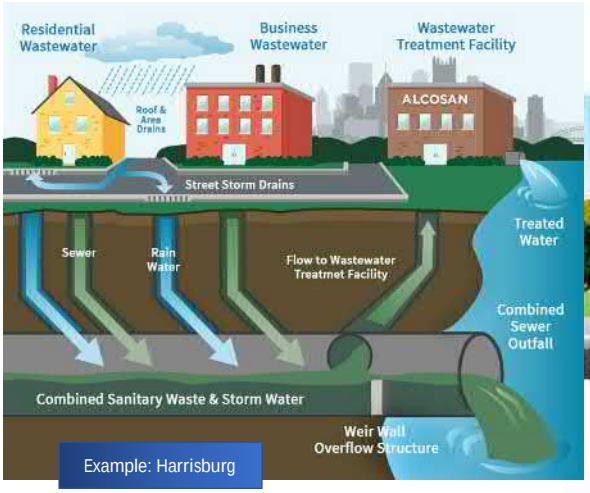
It stands for the
One M and
Four S's
At the beginning of each word.



The basic definition is:

A network that conveys exclusively stormwater and is owned or operated by a municipality or similar regulated entity that discharges to a “waters of the United States”.

Combined vs. Separate



SKELLY AND LOY
A Ferracon Company

...a Combined Sewer Overflow (CSO) is not possible from a Separate Storm Sewer System

http://www.boondockequipmentwest.ca/tag/drainage-systems/

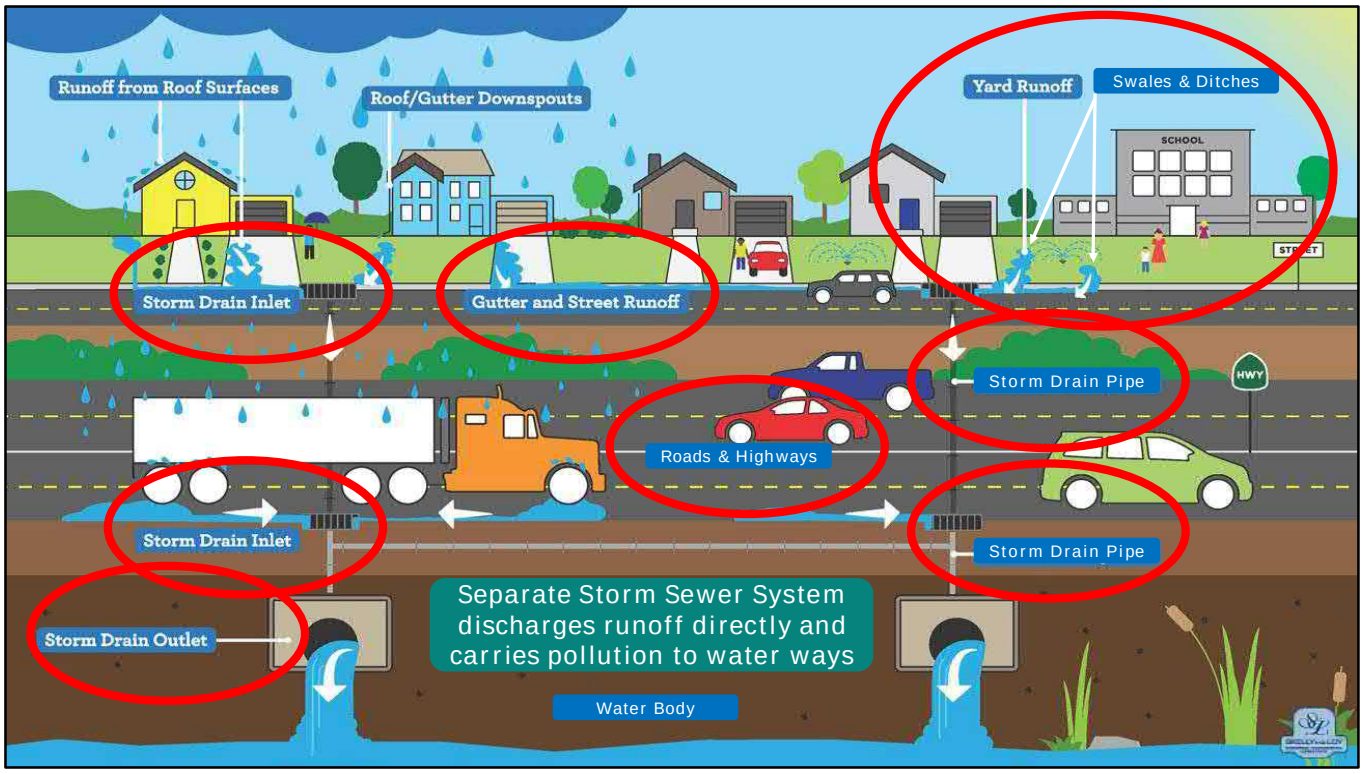
There are two types of storm sewer systems. The picture on the left shows a Combined System. Stormwater and sanitary wastewater flow through the same pipes. Many older towns have this type of system. As you saw on the pictures of the Cuyahoga, rivers and streams were the early sewers. Waste was dumped into them. The streams were simply enclosed and both types of water were conveyed to the next larger watercourse. Wastewater treatment plants then started to treat the water.

You can see the problem...more development increases runoff and when it rains, there is simply not enough capacity at the treatment plant. When that happens, untreated sewage is diverted away from the plant and discharge directly to receiving streams and rivers. The discharge is called a Combined Sewer Overflow or CSO.

(Click) Harrisburg is a local example.

The other kind is a separate storm sewer system. This is where sanitary and stormwater are piped separately. Historically, there has been no treatment to remove pollution associated with storm-water-only systems.

(Click) Middlesex Township is an example.



The Separate Storm Sewer System is the collection of all structures that gather stormwater and discharge it into local waterways. The MS4 system includes *(click)* Inlets, *(click)* Curbs and Gutters, *(click)* Ditches and Swales, *(click)* Storm Pipes, *(click)* Storm Outlets and *(click)* Roads.

Why MS4 matters…

My Clean Water Act

Explore with us

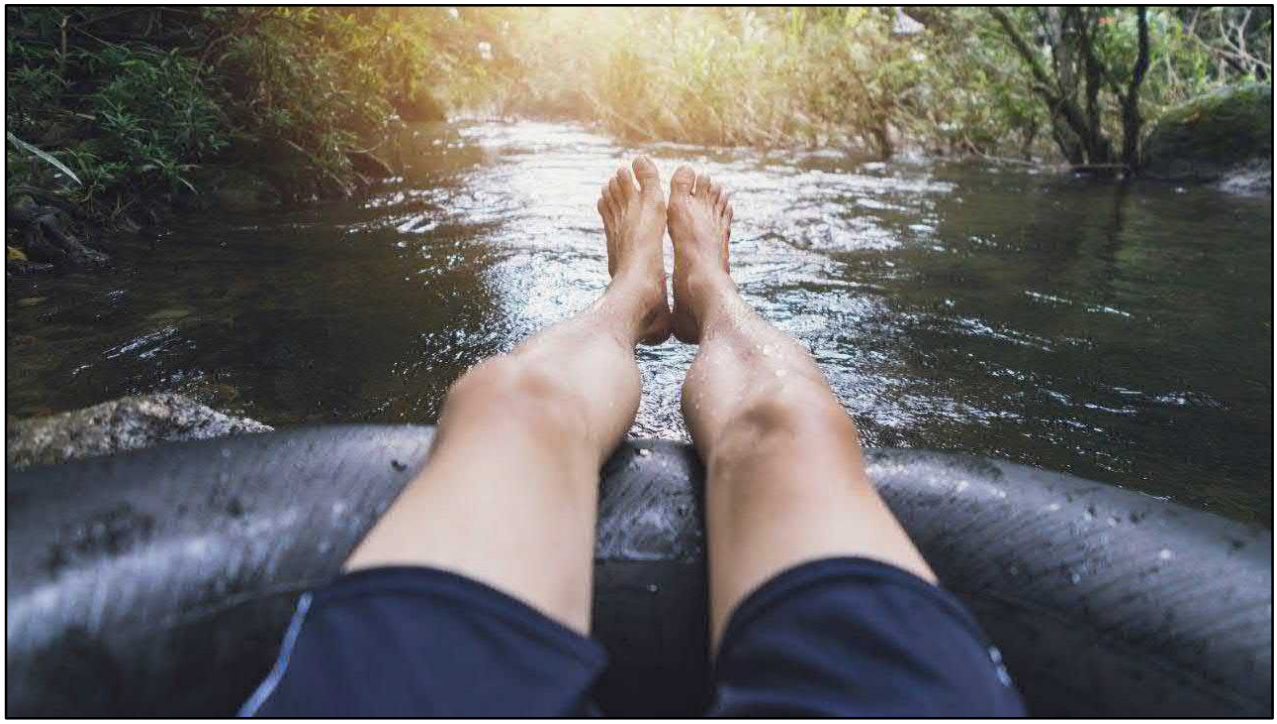
SKELLY AND LOY
A Ferracon Company

Clean water is the purpose of the MS4 permit. The Federal Clean Water Act and Pennsylvania Clean Water laws are based on the premise that our waterways should be safe for recreation, fishing and water supply. In other words, our waters should be swimmable, fishable, and drinkable.

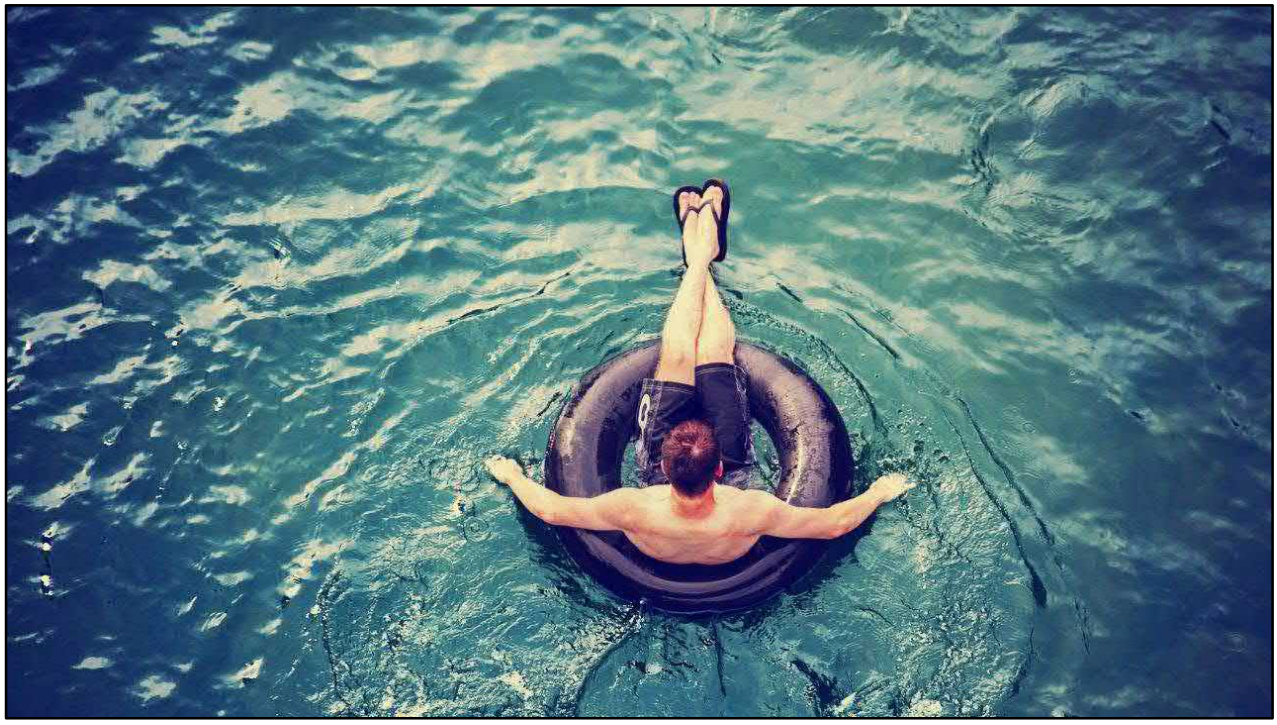
As a refresher, MS4 stands for Municipal Separate Storm Sewer System. The permit provides the regulatory vehicle to ensure that municipalities that have US Census recognized Urbanized Areas are proactively preventing and reducing pollution discharges conveyed by stormwater.


WATER...

(Sound in background: Wind rustling in the trees; birds chirping)



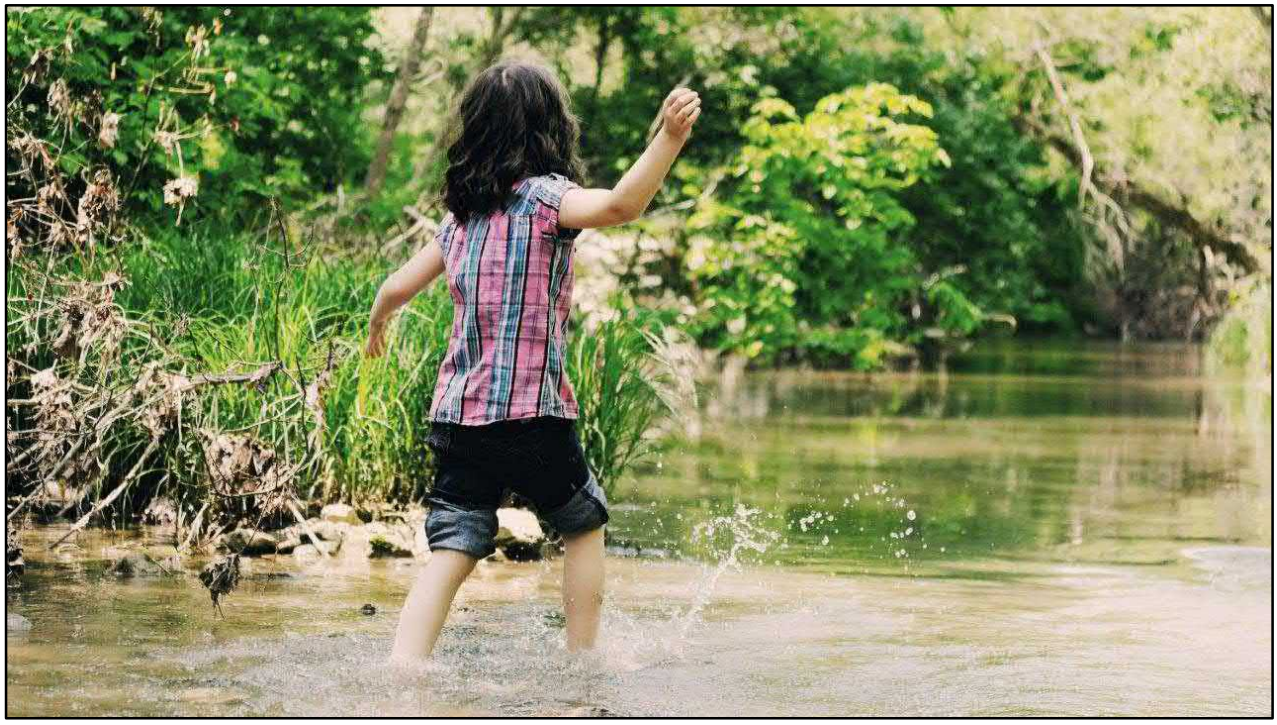
(Sound in background: Wind rustling in the trees; birds chirping)



(Sound in background: Wind rustling in the trees; birds chirping)

Exploration Worthy

(Sound in background: footsteps in water)



(Sound in background: footsteps in water)

Refreshing

(Sound in background: babbling brook)

(Sound in background: babbling brook)

FUN!!!

(Sound in background: fast flowing water)

(Sound in background: fast flowing water transitioning to roaring water)

(Sound in background: roaring water)

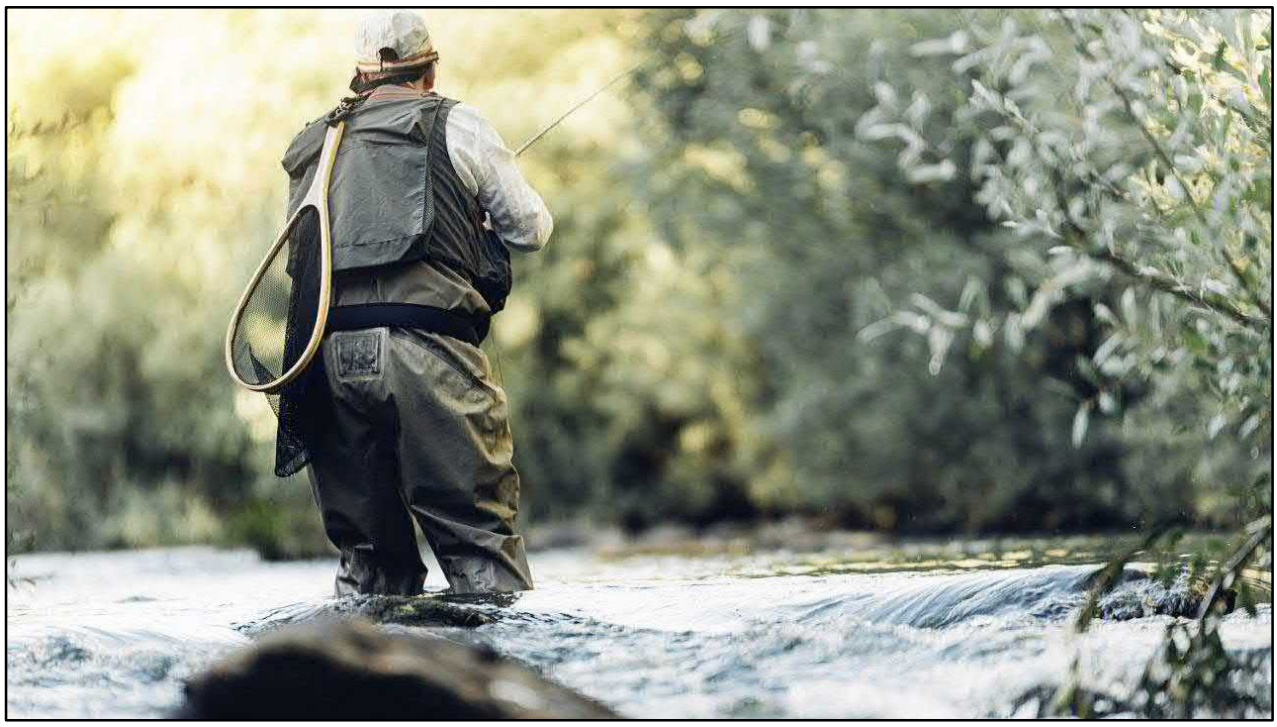
(Sound in background: child's voice "Yay!" over water sounds)

(Sound in background: lapping water and man's voice "Yes!")

(Sound in background: splashing water)

(Sound in background: motorboat)

(Sound in background: wind)



(Sound in background: flowing water)

(Sound in background: flowing water with air bubbles overlaid)

…Would you go in if you'd end up like this?

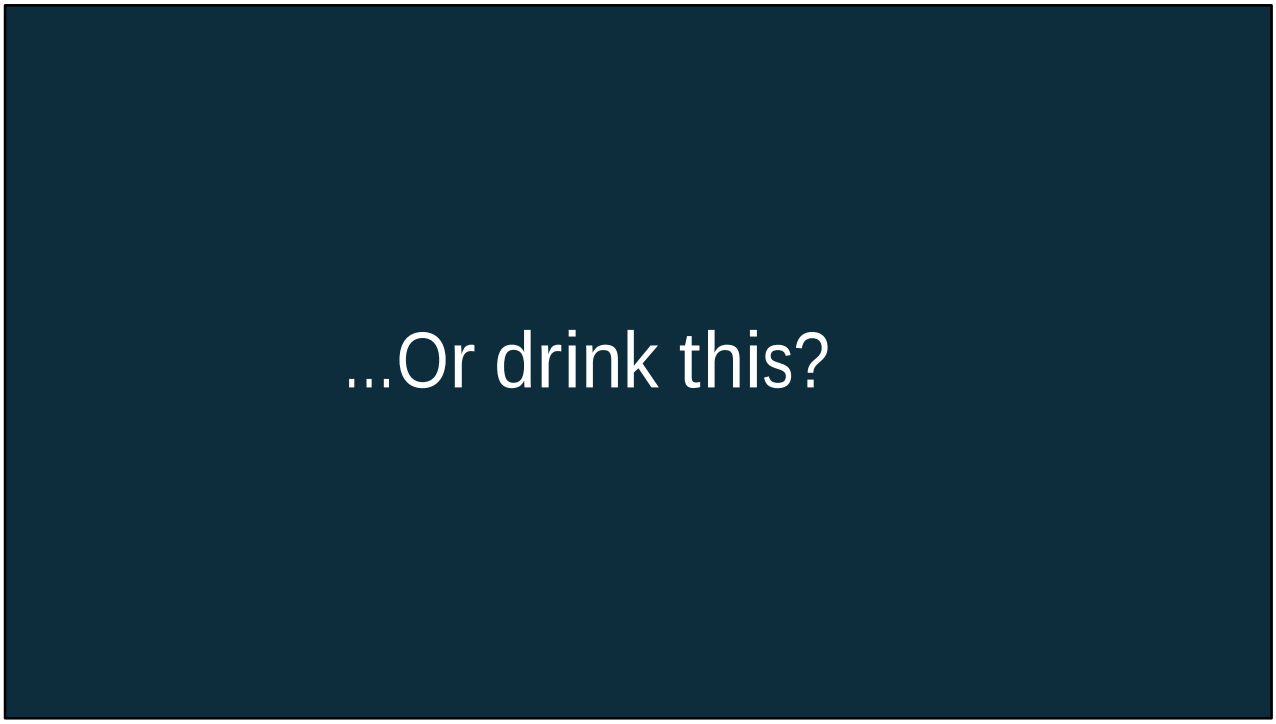
(Sound in background: transition to ominous beating heart)

(Sound in background: ominous beating heart increasing volume)

…Would you fish here?

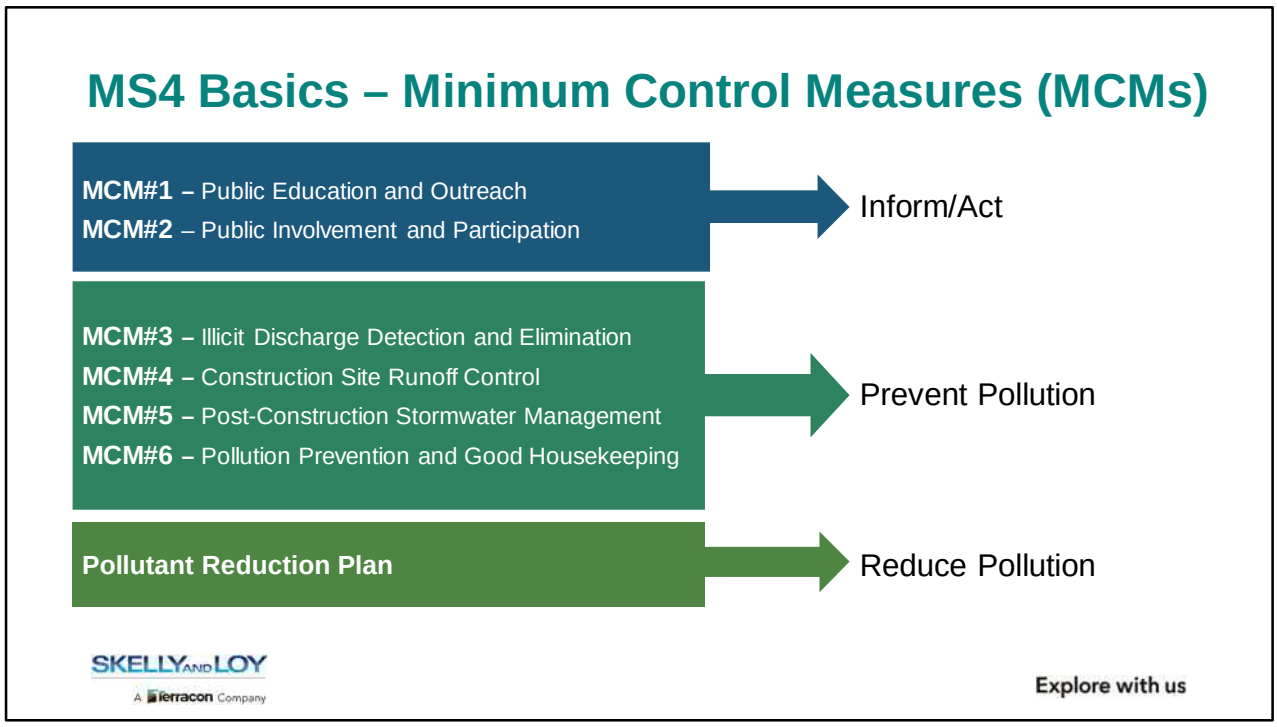
(Sound in background: ominous beating heart increasing volume)

(Sound in background: ominous beating heart increasing volume)



(Sound in background: ominous beating heart increasing volume)

(Sound in background: ominous beating heart increasing volume)



The Permit has six components called Minimum Control Measures (MCMs) plus a requirement to plan projects to prevent pollution. The MCMs and Pollution Reduction Plan fulfill three major objectives

- Inform and Act
- Prevent Pollution
- Reduce Pollution that cannot be prevented

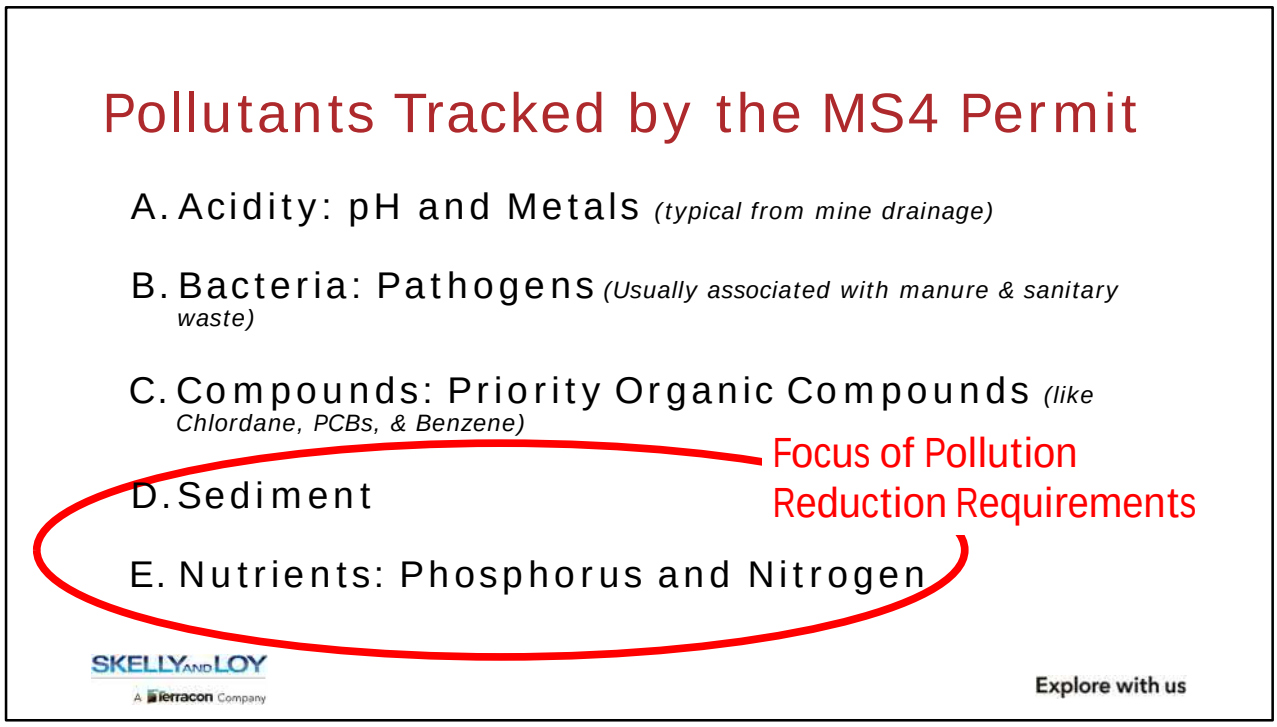
The first two MCMs are like a marketing plan; they inform and invite action. The goal of MCM #1, Public Education and Outreach, is to educate a target audience about the negative impacts of stormwater pollution, causes of pollution, and beneficial pollution prevention practices. MCM #2, Public Involvement and Participation, is the invitation to the target audience to personally act to prevent and/or reduce pollution.

MCM #3 requires monitoring to identify and halt non-water discharges from the storm sewer system.

MCM #4 focuses on prevention of escaping mud or construction-related discharges from construction sites, while MCM #5 focuses on ensuring that stormwater control measures that sequester and treat pollution are well maintained and functional.

MCM #6 provides the framework to make sure staff understands the importance of pollution prevention; their roles in the MS4 program; and performs and documents their activities supporting pollution reduction and prevention.

The Pollution Reduction Plan is the roadmap for installing projects to capture and treat pollution from public property in the regulated parts of the Township.



These pollutants are tracked by the MS4 Permit.

(click) Sediment and Nutrients are the focus of pollution reduction. This is because these two categories of pollution can be reduced through stormwater management. The others require additional mitigation strategies.

How Does Polluted Stormwater Happen?

- As stormwater travels it picks up pollutants from…
  - Lawns
  - Parking lots
  - Any other surface it crosses
- Examples of pollutants
  - Motor vehicle fluid
  - Bacteria from pet waste
  - Road salt
- Pollution is transported directly into streams, rivers and lakes

https://fnfsr.org/harrisonburg-stormwater-utility-fee/

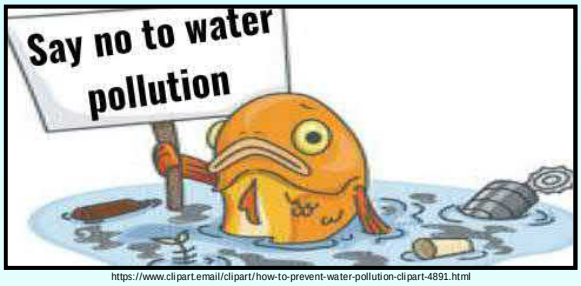
SKELLY AND LOY
A Terracon Company

Explore with us

As stormwater flows across surfaces, it lifts and suspends pollutants. Some examples are listed on the slide. The stormwater also picks up other materials like sediment, fertilizers, pesticides, detergents and trash.

Why Should I Care?

- Health Threat
  - Polluted water is harmful to
    - People
    - Aquatic life
    - Wildlife
    - Plants
  - It can kill or sicken fish, wildlife, and vegetation
  - Contaminate our drinking water
  - Cause people to get sick from eating fish or drinking water



https://www.clipart.email/clipart/how-to-prevent-water-pollution-clipart-4891.html

SKELLY AND LOY
A Ferracon Company

Explore with us

These non-water ingredients don't sound appetizing and they're not. In fact, they can be outright harmful to people and animals. They can also cause degradation to the environment and habitat.

Why Should I Care?

- Expense
  - Preventing pollution is cheaper than removing the contaminates
- Economic benefits
  - Higher residential property values
  - Protection of natural tourism and recreation industries

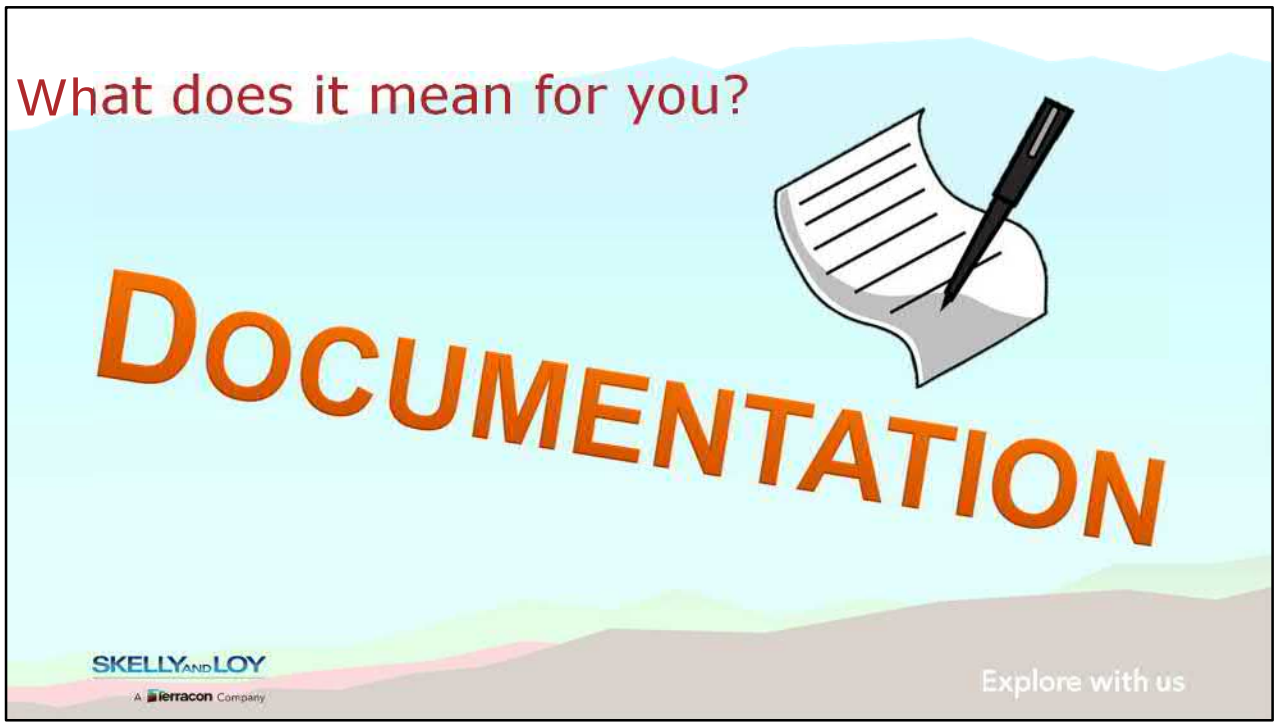
SKELLY AND LOY
A Terracon Company

Explore with us

There are other reasons to care about the quality of our waterways. It is less expensive to prevent pollution from entering waterways than to remove it after it has spread. For example, consider an oil tanker spill in the ocean. It is cheaper to make sure the tanker doesn't leak than to clean up afterward.

There are also economic benefits. In the Carlisle region, the Letort Spring Run, a nationally known Class A Trout stream, generates auxiliary businesses…tourism, fishing gear sales, and eateries serve the angler community. Likewise the adjacent trails attract hikers and bikers. And water is a people magnet. The natural beauty of the Condoguinet and its tributaries like the Letort, attract residents to pay a premium to be within line of sight to the streams.

So protection of the waterways are economically and environmentally important.

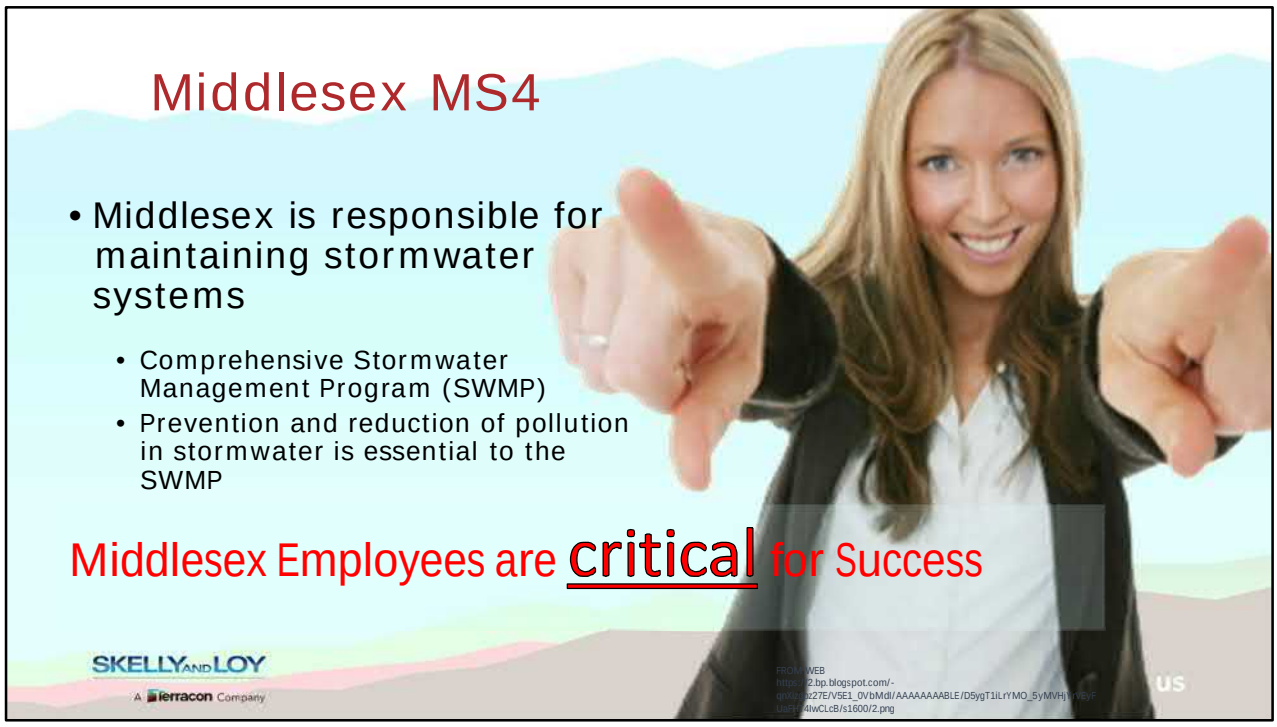


You all already do much of the work required by this permit. However, like all permits, activity must be documented. For the Township to prove compliance, the biggest change most of you will encounter is new documentation production, filing and retrieval.

Roles and Responsibilities

SKELLY AND LOY
A ferracon Company

Explore with us



Middlesex is responsible for maintaining stormwater systems.

Challenges
- Roads can convey polluted runoff
- Stormwater systems convey pollutants

Solution
- Management of the stormwater systems
- Develop/Implement comprehensive stormwater program to reduce pollution during run-off events

Middlesex staff will play a critical role in educating the public, identifying pollution, preventing pollution and/or reducing pollution.

The next slides will explain how you can help the Township comply with minimum control measures 3, 4 ,5 and 6.

MCM#3
What is an Illicit Discharge?

In addition to pipes, swales and basins, Stormwater System includes the Roadway itself & Eroded Ditches!!!

SKELLY AND LOY
A Ferracon Company

Explore with us

An illicit discharge is any discharge to the Middlesex's stormwater system that is not composed entirely of stormwater (click), except those discharges already authorized under the specific permits, which we will discuss later.

MCM3- Illicit Discharge Detection & Elimination (IDD&E) Overview

- Develop, implement and enforce a program to detect and eliminate illicit discharges
- Includes MS4 permitting area only
- Middlesex Township program:
  - outfall inspections
  - illicit discharge reporting
  - illicit discharge elimination
  - documentation

SKELLY AND LOY
A Ferracon Company

Explore with us

MS4 permit requirements include the development of an Illicit Discharge Detection and Elimination Program, often abbreviated as IDD&E. An outfall inspection is when an inspector goes to an outfall (location where the stormwater system enters a waterway, such as a stream) to determine the presence of an illicit discharge. Outfall inspections will be conducted twice during the five-year permit term. If you observe a potential illicit discharge, report it to your supervisor.

Discharges that ARE Potential Illicit Discharges

- Nonresidential Vehicle Wash Water
- Accidental Spills (Hazardous and non-hazardous materials)
- Direct Discharge of Agricultural Wastes
- Cooking Oil and Grease
- Sanitary wastewater from showers, sinks, etc.
- Unauthorized Connections
- Concrete Washout Water
- Solid Waste Dumping
- Sewer Discharges
- Fertilizer, Pesticides and Herbicides – Misapplied or Over applied
- Septic/Sanitary Sewer Discharges
- Improper disposal of fluids (oil, gas, solvents, etc.)

SKELLY AND LOY
A Ferracon Company

(*Read Slide*) These discharges are NOT acceptable and should be reported to your supervisor.

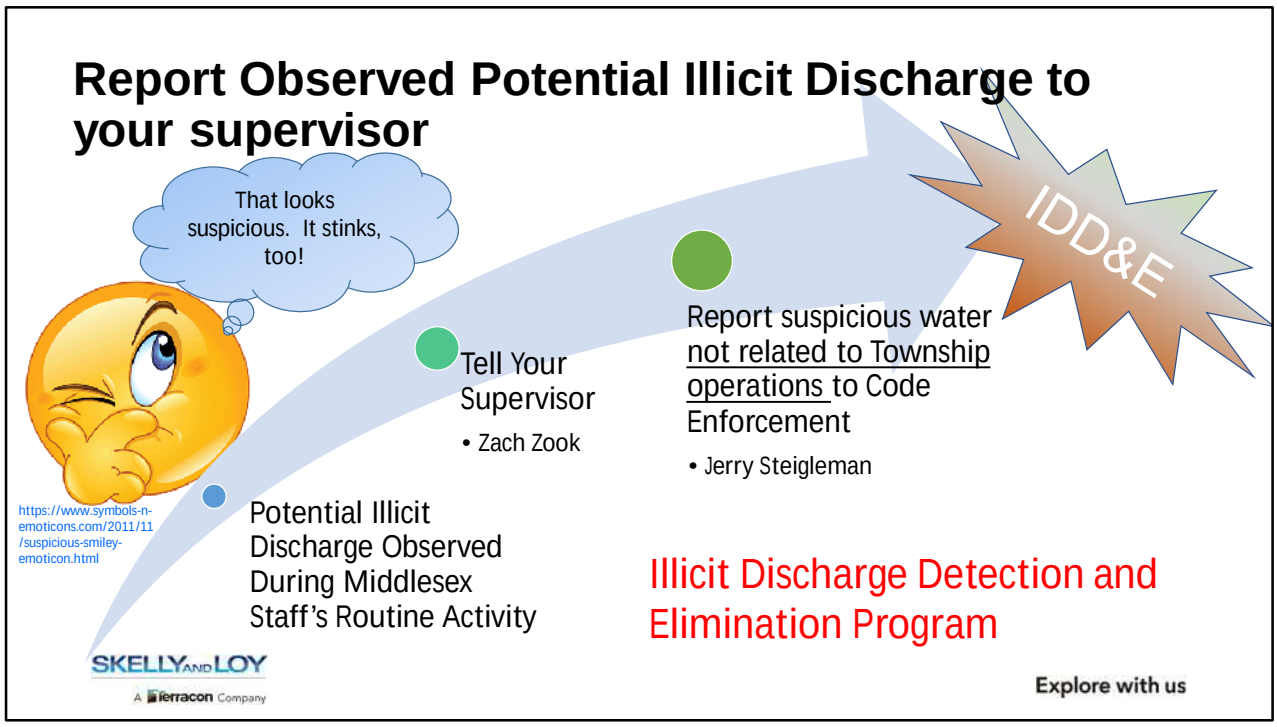
Discharges that are NOT Potential Illicit Discharges

- Fire-fighting activity
- Accident Clean up
- Potable water sources
- Irrigation drainage
- Lawn watering
- Individual car washing
- Building wash down (water only) Pavement washing (water only)
- Air conditioner condensate
- Riparian habitat/wetlands
- Uncontaminated groundwater (springs, crawl space pumps, foundation/footing drains)
- Waterline flushing

SKELLY AND LOY
A Terracon Company

Explore with us

These discharges are OK.



(Click) The MS4 permit requires development of an IDD&E program.

(Click) An outfall is where we first look for evidence that material other than water is being discharged to the stream. Remember, an outfall is where the stormwater system, usually a pipe or swale, joins the waterway.

Skelly and Loy will begin inspecting outfalls very soon, but you are out and about the Township routinely and might encounter suspicious situations. We want you to be informed so you can report your findings to your supervisor.

Identification of Potential Illicit Discharge

Potential Illicit Discharge Characteristics:

1. Flow
2. Odor
3. Clarity/Turbidity
4. Color
5. Solids/Floatables
6. Vegetation
7. Deposits or Staining

SKELLY AND LOY
A Terracon Company

Explore with us

7 potential illicit discharge indicators are listed on the slide. These characteristics can be observed using our senses. No special equipment is needed, and no special testing is required. The seven indicators can predict an illicit discharge but need to be reported and investigated further.

While Skelly and Loy will be performing the 1st-year outfall screening, if any of you observe discharge with these characteristics, report it to your supervisor. We are developing …you go it!...more forms and procedures for documentation. And that will be provided in upcoming sessions. For now, Eileen Gault, Barry Sherman and Rory Morrison will be gatekeepers. They know what to do and will either follow up personally or contact Skelly and Loy.

Let's now discuss each of these indicators.

Identification of Potential Illicit Discharge

- **Flow** – fluid discharge during dry weather.

Normal stormwater vs illicit discharge

- Has it rained in the past 3 days?
  - Yes → stormwater
  - No → might be an illicit discharge

Report to your immediate supervisor

SKELLY AND LOY
A Terracon Company

Explore with us

Discharge from a stormwater pipe during extended periods of dry weather (greater than 72 hours, 3 full days) should raise some alarm that it may not be stormwater. This may be an indication of a Potential Illicit Discharge and should be reported to your supervisor.

Identification of Potential Illicit Discharge

- **Odor** - Musty, Sulfur, Rancid/Sour Milk, Sewage, Gas/Petroleum, Cooking Oil.

Is the discharge the **SOURCE** of the odor?

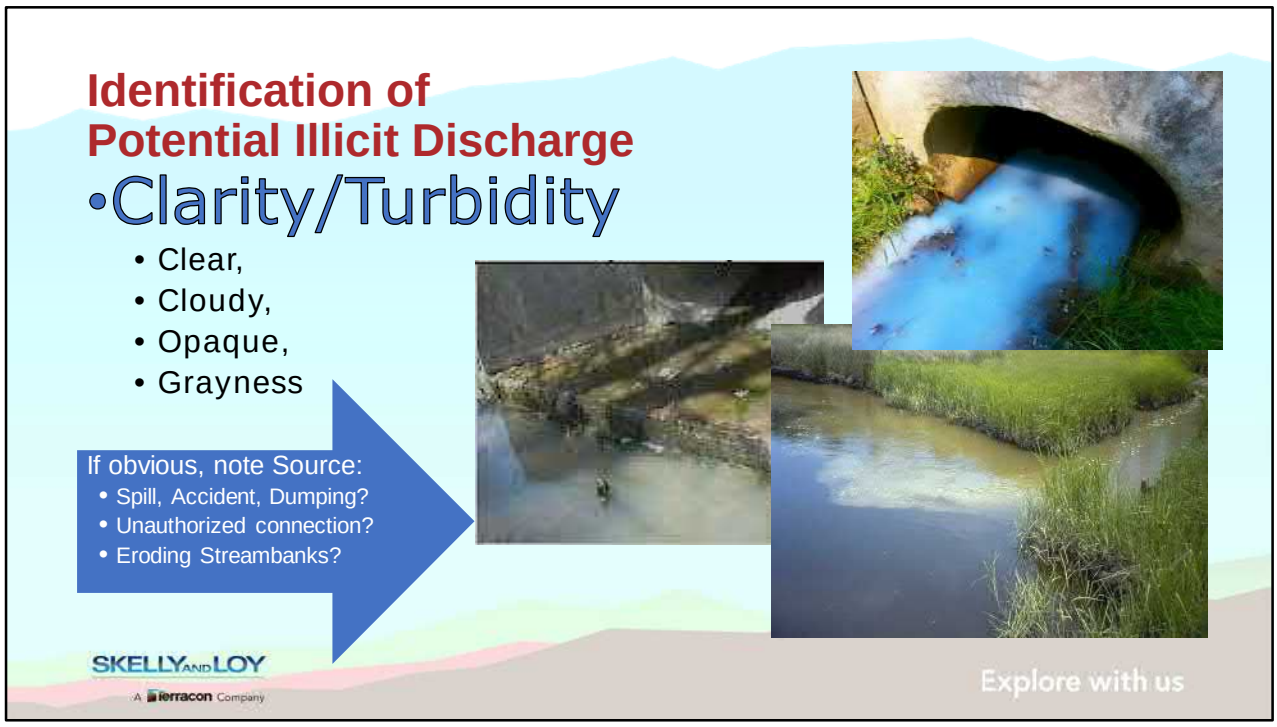
Under NO circumstance should Middlesex personnel intentionally smell an open source.
DON'T PUT YOU'RE FACE IN IT TO GET A BETTER WHIFF

FROM WEB:
http://www.i2symbol.com/pictures/emojis/1/b/c/8/1bc851fb837a9caa815462a80c714a8e_256.png

SKELLY AND LOY
A Terracon Company

Explore with us

Establish what type of odor is being smelled. Is it musty, a sulfurous or sewage smell, or is it similar to gas or petroleum? Try to determine the source of the odor to make sure the odor is coming from the potential illicit discharge. In some situations the source of the odor can be misleading; it may actually be shrubs, trash, carrion or animal waste. Never get too close to a strange discharge - they can be dangerous! Never inhale the air directly off an open source as many potential contaminants are harmful to nasal membranes and lung tissue.



Continuing, Clarity/Turbidity is the next characteristic.

Turbidity is a measurement of the cloudiness of water, and it is caused by particles that are suspended in the water.
Clarity gives us an idea how far light can penetrate into the water.

Characteristics of these two include:
Clear, Cloudy, Opaque, and Grayness.

Is the water murky? If so, a Potential Illicit Discharge may be present.
If obvious, note the source.

Identification of Potential Illicit Discharge

- Color –
  - Clear,
  - Slightly Tinted,
  - Visible Colorations (e.g. Red, Green, Blue, other).

Note: Water depth, substrate composition, aquatic plants, and sky conditions can all influence your perception of the color of water.

SKELLY AND LOY
A Ferracon Company

Unnatural color of water can also indicate an illicit discharge. Do not try to assess the color of water by looking directly into the waterway. Water depth, substrate composition, aquatic plants, and sky conditions can all influence your perception of color.

But certainly the obvious, such as that shown in the pictures on the right, can be easily identified.

Identification of Potential Illicit Discharge

- **Solids/Floatables** Garbage, Sewage, Oily Sheens, or Suds

Petroleum Sheen – swirls and re-adheres if mixed

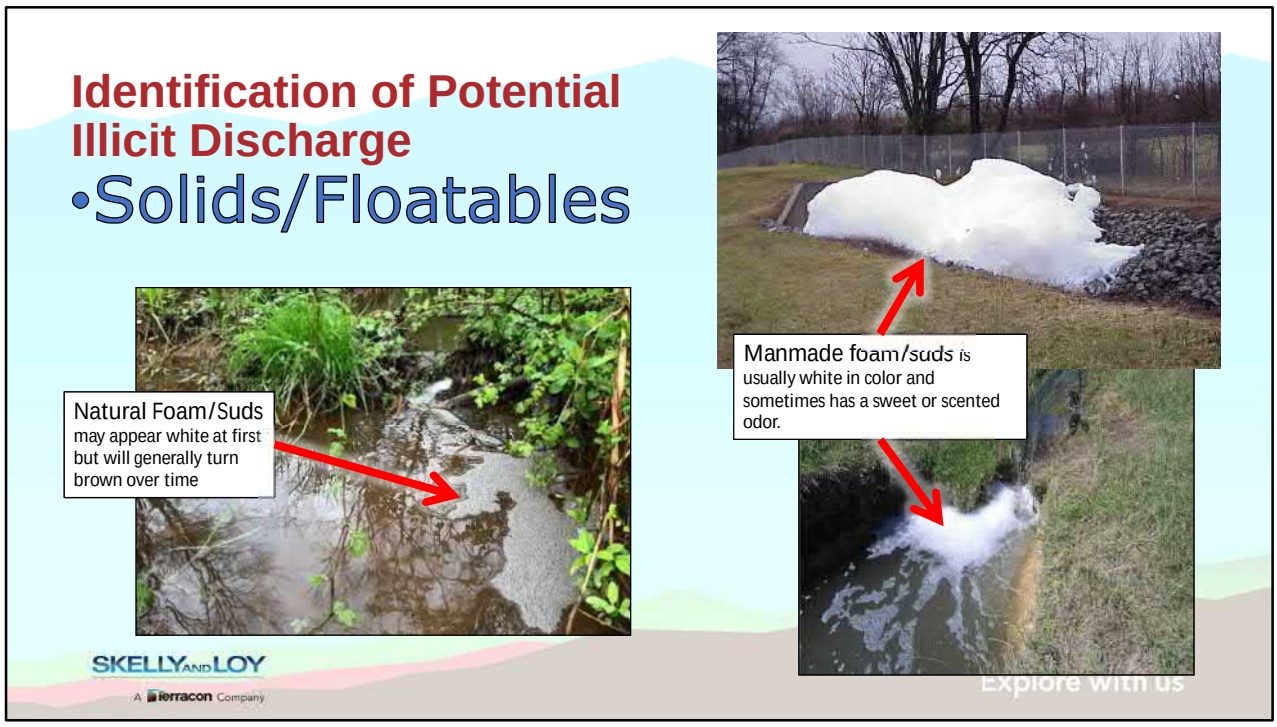
Nonpetroleum Sheen – breaks apart into clumps with jagged edges

SKELLY AND LOY
A Terracon Company

Explore with us

Solids and floatables in a water stream or body is also a sign of a Potential Illicit Discharge. A visual observation can usually be seen from a distance making it more noticeable than other indicators. This may include Garbage, Sewage, Oily Sheens, or Suds.

Both pictures show examples of an oily sheen. Such a condition can be natural and not indicative of petroleum. You can use a stick to stir the water to determine whether it's a naturally occurring sheen or petroleum-based sheen. Petroleum sheens will swirl and re-adhere quickly while naturally occurring sheens will separate into clumps with jagged edges.



Foam or suds can also be either natural or manmade. Naturally occurring suds will break up quickly and are generally clear or white but will turn brown over time. Manmade foam or suds are white and can have a sweet or scented odor. Naturally occurring floatables should NOT be reported as potentially illicit.

Identification of Potential Illicit Discharge

- Vegetation -
  - Excessive growth
  - Algae plumes
  - Stressed
  - Damaged
  - Dead

FROM WEB: https://www.mylondinc.com/septic-tank-failure-Vancouver-washington/clark-county-wa

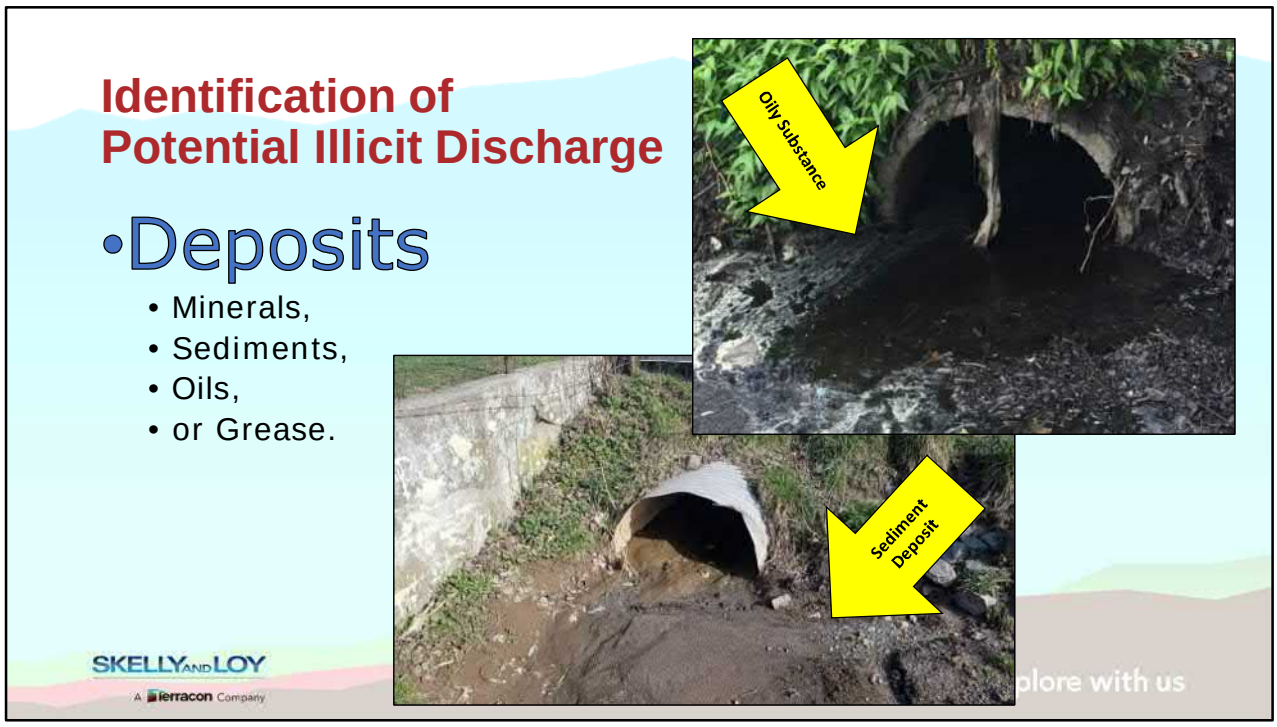
FROM WEB: https://dnr.mo.gov/env/swcp/ops/images/slideshow/algal-blooms.jpg

SKELLY AND LOY
A Terracon Company

Vegetation can also indicate an illicit discharge. Some pollutants may kill vegetation while others may promote excessive growth of algae or other vegetation.

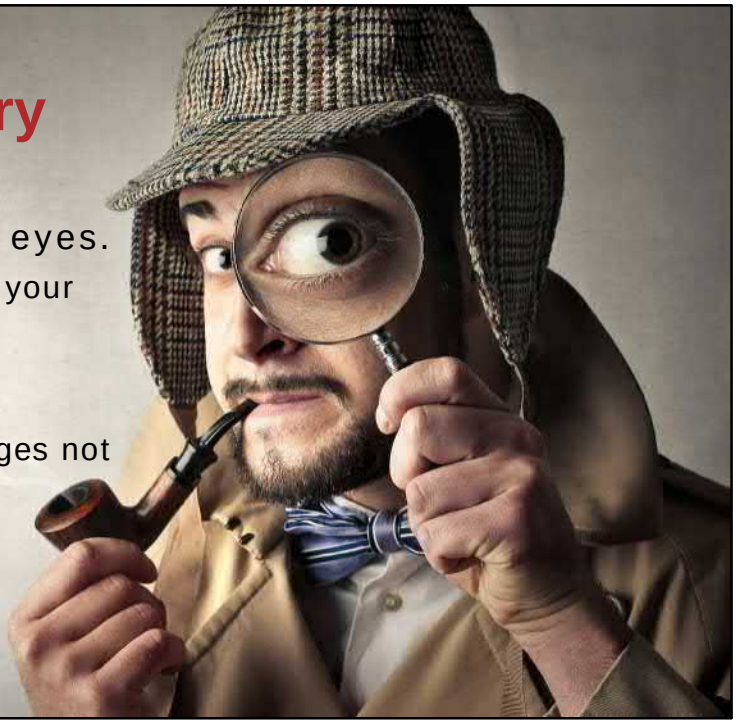
Illicit discharge may cause staining. Sewage may be present if there is black staining inside the drainage pipe; visible evidence of sanitary waste, such as toilet paper or opaque or gray water. Certainly, there also may be an odor.

Do not report a rusty pipe as a Potential Illicit discharge! Do report it if there is an indication that something else caused premature rust or that the rust originated from upstream.



Deposits are sometimes indicators too. For example, gray-white deposits can be from illegal dumping of concrete truck washouts and crystalline powder can indicate the discharge of fertilizer wastes.

MCM#3 Summary



You are the Township's eyes.

- Report suspicious water to your supervisor
  - Zach Zook
- He will report illicit discharges not coming from a Township operation to the Code Enforcement Officer
  - Jerry Steigleman

MCM #4:
Construction Site Runoff

- Goal: Prevent pollutants from reaching waterways during earth disturbance activity.
- Priority is erosion and sedimentation (E&S) control
  - Coordinate with Cumberland County Conservation District
  - Inspections
  - Enforcement
  - Training

Self-inspection and corrective action
Skelly & Loy (Bud Grove)

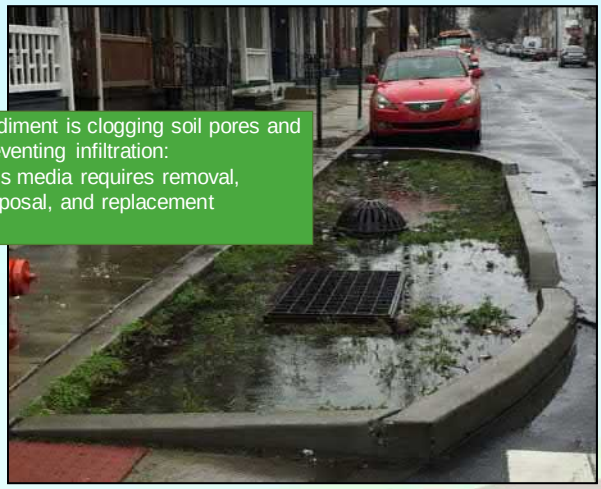
http://www.bluewaterbaltimore.org/the-waterkeeper/programs/stormwater-pollution/

SKELLY AND LOY
A Ferracon Company

Explore with us

Mark Carpenter provides documentation each year about new construction projects that require NPDES permits. Middlesex largely relies on the County Conservation District and the Township Engineer, Bud Grove (Skelly and Loy) to monitor discharges from construction sites. During Township construction staff should be self-monitoring and correcting active erosion and sediment that escapes of E&S controls like silt sock. Do you end the construction day with clean up time? Do the police do a drive by to check active construction sites if it rains over the weekend? Who do they call if there is a discharge?

MCM#5
Post Construction Stormwater Management (PCSM)



- Goal: Ensure stormwater management facilities are functioning and maintained
  - Stormwater Management Ordinance
  - Standard Operating Procedures (SOPs)
  - Inspections
  - Deficiency correction

SKELLY AND LOY
A Ferracon Company

Explore with us

The Township will be intensifying monitoring the functionality of Stormwater Management facilities.

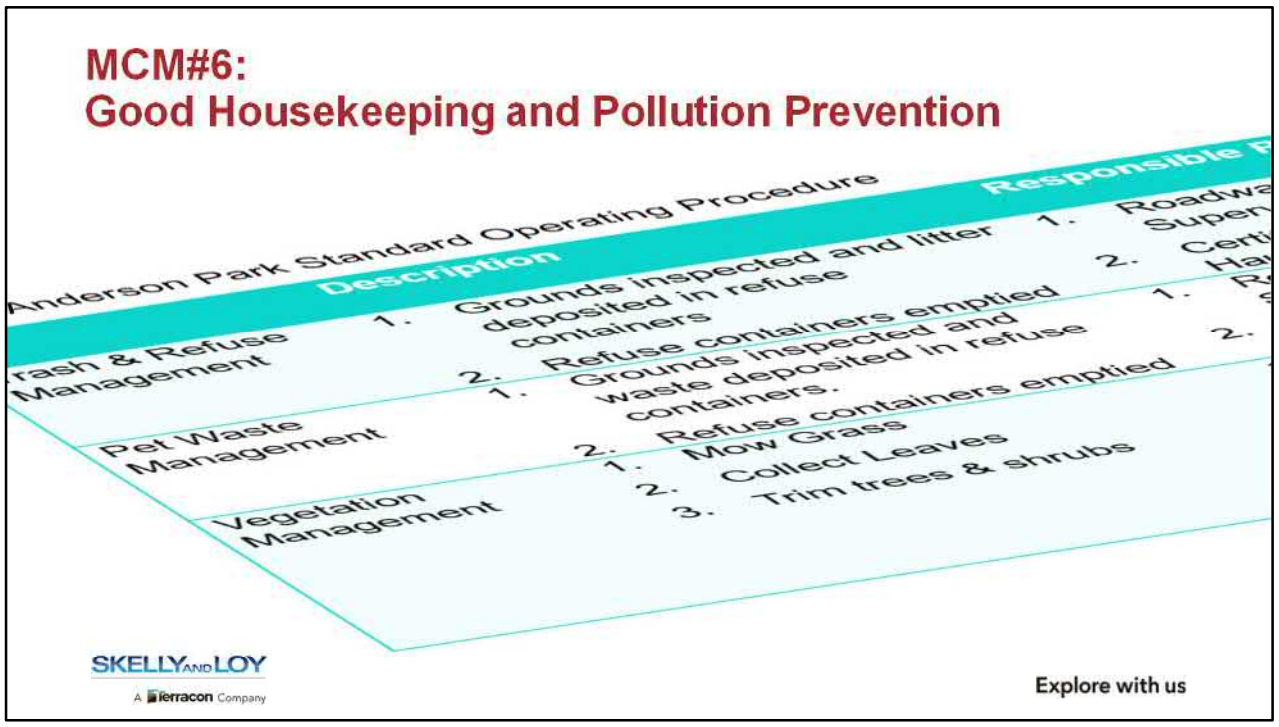
Maintenance is required to make sure facilities perform as designed.

(Click) The Township, homeowners' associations, or private landowners are responsible to operate and maintain stormwater facilities. It depends on who constructed the facilities and who accepted ongoing maintenance responsibility.

Currently, the Township relies on the County Conservation District; the Township Engineer , Bud Grove; and the Code Enforcement Officer, Jerry Steigleman for enforcement. But all of you are front-line scouts. Report stormwater facilities that don't look right to your supervisor.

These are examples of functional stormwater facilities.

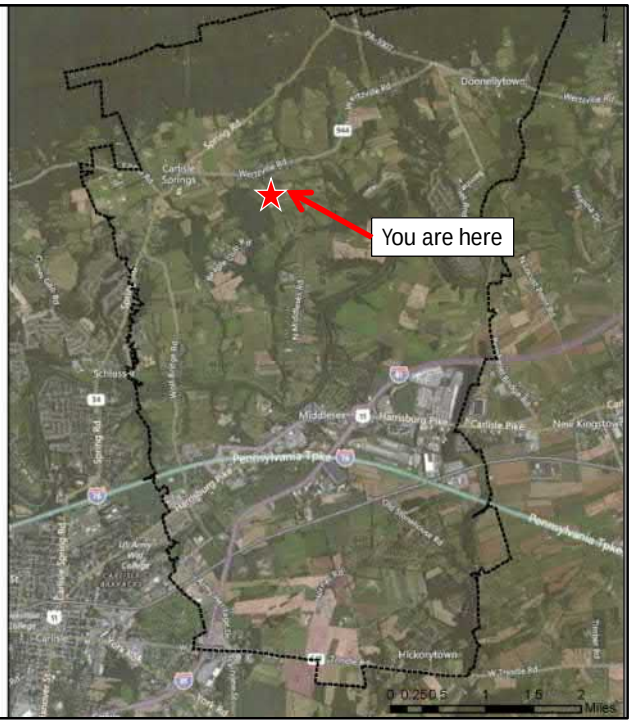
Here is a facility that needs repair.



MCM#6 focuses on the Township's operations and procedures to prevent and reduce pollution emanating from Township-owned property. To date, focus of pollution prevention has been exclusive of streets and roads.

Middlesex Township Urbanized Area

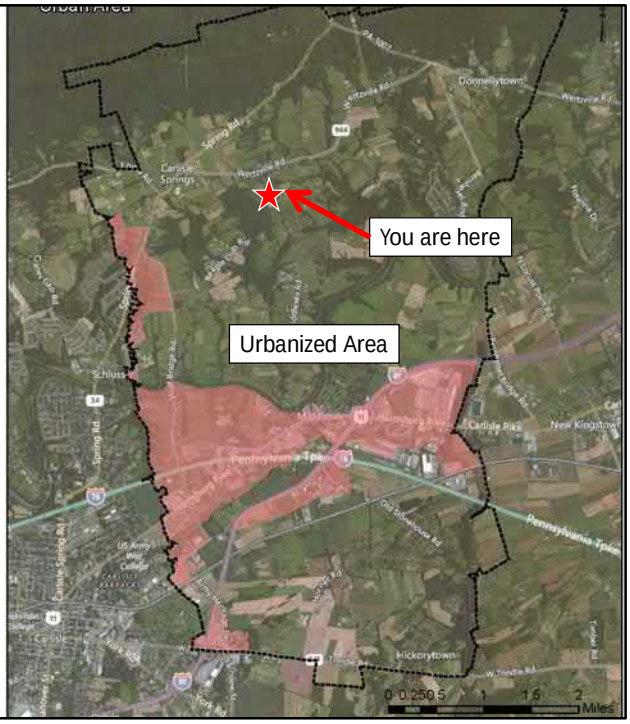
SKELLY AND LOY
A Ferracon Company



Remember at the beginning we said MS4 is all about Clean Water, Stormwater, Urban Water? The Urbanized areas regulated by the MS4 permit are delineated by the US Census Bureau in the latest 10-year Census. The designation is largely based on population density, but the US Census Bureau has incorporated a couple other criteria related to impervious surface.

Middlesex Township Urbanized Area

SKELLY AND LOY
A Ferracon Company

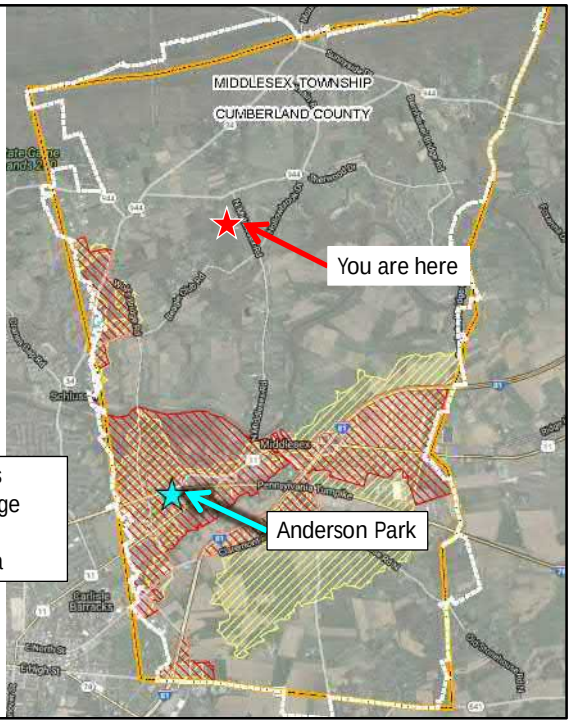


Remember at the beginning we said MS4 is all about Clean Water, Stormwater, Urban Water? The Urbanized areas regulated by the MS4 permit are delineated by the US Census Bureau in the latest 10-year Census. The designation is largely based on population density, but the US Census Bureau has incorporated a couple other criteria related to impervious surface.

Middlesex Township Regulated MS4

Urbanized Area
+ Contributory Drainage

Regulated MS4



Yellow Hatch Area is Contributing Drainage and expands the Regulated MS4 Area

SKELLY AND LOY
A Ferracon Company

The regulated area also includes adjacent land that flows into the urban area before reaching a stream, shown in yellow. Anderson Park is the only Township-owned property that is in the regulated MS4.

Good Housekeeping Activities

- Manage litter
- Collect pet waste
- Close refuse and recycling container lids
- Manage Vegetation;
  - Mowing
  - Leaf and Debris Clean up

SKELLY AND LOY
A ferracon Company

Explore with us

Anderson Park is the only site that is REGULATED. However, the Township wants all Township-owned properties to be kept ship-shape and clean, including the Township building with its maintenance and police operations.

So what does the SOP, say to Middlesex Maintenance Crew?

1. Zach Zook, as the Roadmaster, has the responsibility to make sure you do the jobs listed on the slide.
2. The SOP lists the MINIMUM frequency for completion of jobs.
3. Examples:
   A. Collect and deposit trash and pet waste in trash bins 1x month…year round
   B. Mowing 1x week…during the growing season
   C. Leaf collection 2x in November
   D. Trimming Trees and pick up debris, as needed
4. It provides other direction. For example, when you mow, you will direct clippings away from stormwater conveyance. So that means don't put clippings in gutters or inlets. If you do…you will need to sweep up, collect and dispose of the clippings because clippings are not pure water, so they are considered a pollutant. And of course they can cause other problems too, like blocking inlets

and causing ponding water on roadways.

5. The SOP states that trash will be emptied and disposed by a certified hauler.

Middlesex Achievements

SKELLY AND LOY
A Ferracon Company

Explore with us

MCM1-2: Public Education, Outreach & Participation

Middlesex Connections
Spring 2022

- Routine updates and Practices
  - Review and Update Combined Public Education and Outreach Program (PEOP) and Public Involvement and Participation Program
  - Continue Public Outreach via Township News Letter

SKELLY AND LOY
A Ferracon Company

Middlesex Township/ North Middleton Township Joint Composting Site

Dates and Hours of Operation:
March 2—October 15 (Will not be open if snow covered)
Mondays, 8am—12noon
Wednesdays, 2pm-7pm
Saturdays, 8am—12noon
*Closed holidays

Acceptable Items: leaves, shrubs (no roots), shrubbery clippings, branches cut into 6 foot lengths and no larger than 12 inches in diameter. There should be NO FRUIT on the branches.

Not Acceptable Items: stumps, bamboo, grass clippings, ornamental grasses, rose bushes, flowers & bulbs, vines, roots of any kind, garbage, bulk items, dirt, stones, bricks, construction debris, concrete, hazardous materials, charcoal, fruits and/or vegetables, bags or containers.
**Don't forget- Identification is required
Please see our website www.middlesextwp.com for more information

Leaf Collection in May

Waste Management will offer curbside leaf collection for township residents. If your normal trash day is Thursday, your leaves will be collected Thursday, May 5. If your normal trash day is Friday, your leaves will be collected on Friday, May 6.
Leaves MUST be in open containers (no lids) and easily identified as leaf waste or leaves can be place din PAPER leaf bags. No garbage, sticks, twigs, animal waste or paper should be included. Please do not place unacceptable items under the leaves. If any of theses items are included, your container will be refused, and you will be responsible to dispose of them yourself. Remember Township Ordinance 13-2007 prohibits the burning of leaves. If you have any questions, please call the township office at 717-249-4409 or Waste Management at 800-633-9096.

Fertilize Lawn with Grass Clippings

Lawn clipping are an important nutrient and organic matter source which can enhance the health of your soil and your lawn. Using a composting lawn mower to keep the clippings on your lawn adds about one pound of nutrient per 1000 square feet of natural (and free) fertilizer to your lawn each year.

Please keep clippings and mulched leaves on the lawn and keep them out of the streets and storm drains.

The Township has an ordinance that prohibits lawn clippings to be deposited onto the streets in the Township. The clippings are a safety hazard for joggers and bicycles who use the shoulders of the roadway.

Other Tips for Lawn Fertilizing

- Apply fertilizers only when necessary and at the recommended amount.
- Don't apply fertilizer before windy or rainy days.
- Apply fertilizer as close as possible to the period of maximum uptake and growth for grass and other plants, which is usually spring and fall in cool climate, and early and late summer in warm climates.
- Avoid applying fertilizer close to waterways.
- Do not overwater lawns and gardens; use a soaker hose, a porous hose that releases water directly to the ground, which can reduce overwatering that carries away fertilizers that would otherwise enrich lawns and gardens.
- Fill fertilizer spreaders on a hard surface so that any spills can be easily cleaned up.
- Properly store unused fertilizers and properly dispose of empty containers.

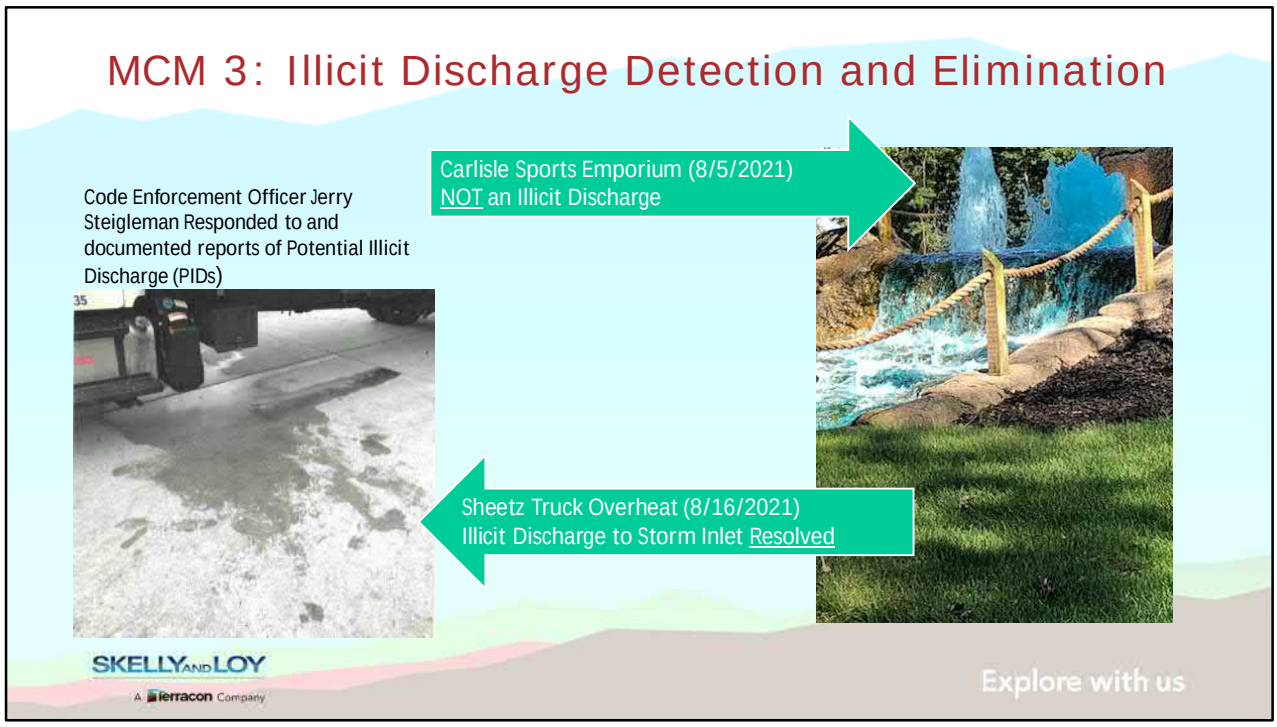
Maintain your lawn mowers, snow blowers, chain saws, leaf vacuums and similar outdoor power equipment to reduce nitrogen oxide emissions.

Eagle Scout Projects Completed

Thank you to Eagle Scouts Vincent Rohland and Jonathan Filipovich for completing Eagle Scout projects that benefited the Township Park at 50 Beagle Club Road. Vincent's project added a 10 station Fitness Trail surrounding the paved path by the ballfields. Jonathan lead the effort to construct the Ashley M. Pyers Memorial which is located near the pavilion. We appreciate the efforts of the Scouts and their friends and family. They brought honor to themselves and their community.

Middlesex Township features pollution prevention tips in the Township Newsletters that are distributed to residents quarterly.

A flyer was developed to encourage Township residents to become a "Pollution Solution". The flyer is available at the Township building; it will be placed on the Township MS4 page for download; and can be used at municipal events.

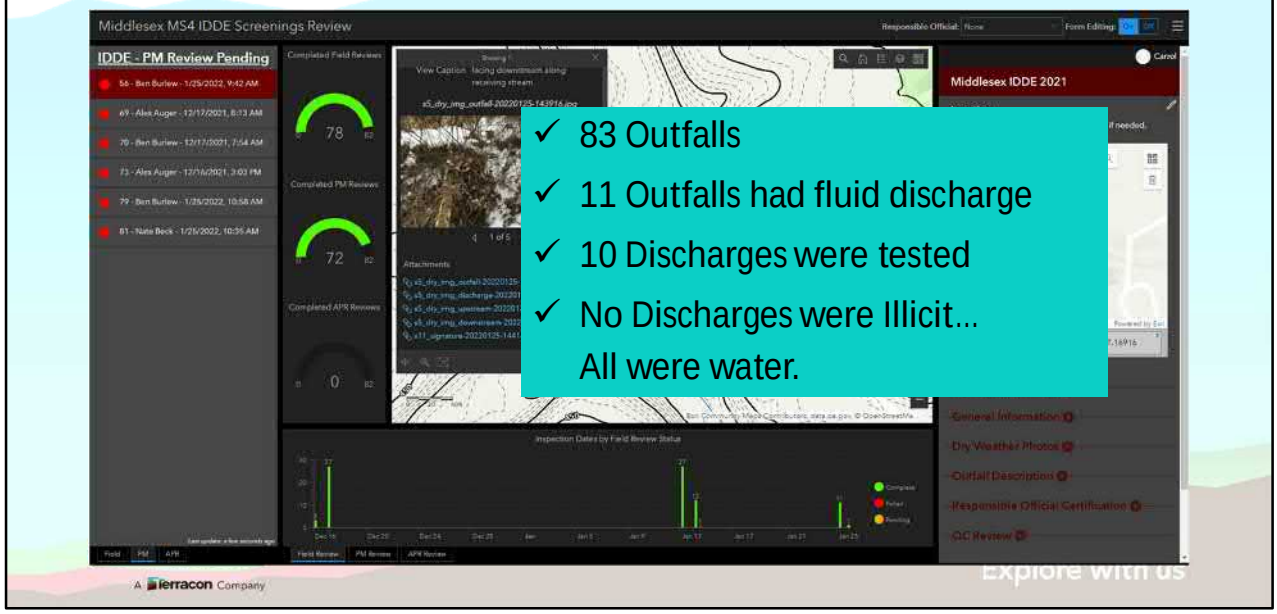


Last reporting period, which was from July 1, 2021 to June 30, 2022, there were two reported suspicious discharges.

The first Potential Illicit Discharge (PID) report was from a concerned citizen relating to the odd color of the water at the Carlisle Sports Emporium. Code Enforcement Officer, Jerry Steigleman, followed up. The color is a non-toxic dye used to prevent algae formation in the Emporium's water features. It is not discharged to the stream.

The second was an antifreeze discharge into a stormwater inlet at Sheetz. A combination of Middlesex Township Police and the Code Enforcement Officer responded. The driver was issued a citation and Lewis Environmental Group was dispatched to the site to perform environmental cleanup.

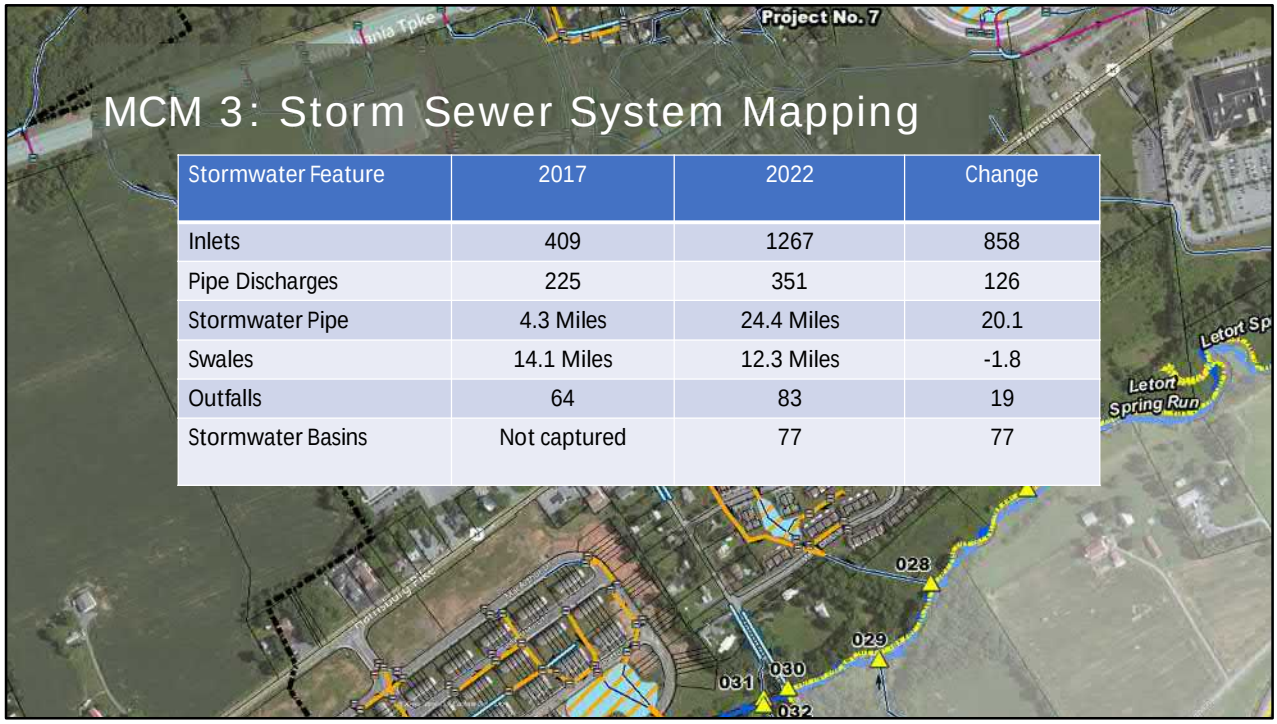
MCM 3: Illicit Discharge Detection and Elimination



The Township's 83 Outfalls were screened during dry weather to determine if (1) there were any fluid discharges from the stormwater system entering the municipality's waterways and (2) if the discharges were comprised of anything illicit (not solely water).

Outfalls are the locations where concentrated flow from the storm sewer system enters a stream, lake, pond, or wetland. The concentrated flow can be from the end of a pipe, a swale, or even an eroded ditch connecting a roadway to a stream. As shown on the slide, 11 outfalls had fluid discharges and no discharges were illicit.

The image behind the statistics shows the GIS "Dashboard" that allows viewing and analysis of the inspection results that were collected using a new customized mobile data collector that can generate the results into a form matching the PA DEP reporting forms for the annual report.



MCM 3: Storm Sewer System Mapping

Stormwater Feature	2017	2022	Change
Inlets	409	1267	858
Pipe Discharges	225	351	126
Stormwater Pipe	4.3 Miles	24.4 Miles	20.1
Swales	14.1 Miles	12.3 Miles	-1.8
Outfalls	64	83	19
Stormwater Basins	Not captured	77	77

The Township also expanded the storm sewer system mapping. Errors and duplicate records in the original mapping and underlying data were corrected, and recorded land development plans were used as the basis to add inlets, pipes, swales, and basins. The table reports the change in metrics.

MCM 4, 5 & 6

Types of Documentation: Reporting Period Summaries

MCM 4

- Township Building Permit Summary Report
- Municipal Notices to Cumberland County Conservation District
- Township Engineer's Summary of Construction Stormwater Inspections

MCM 5

- Township Engineer's Report for NPDES Permitted Post-construction Stormwater Management Inspections
- Sample Operations and Management Agreement

MCM 6

- List Good Housekeeping Activities like street sweeping and Inlet cleaning
- List Training Completion

SKELLY AND LOY
A Ferracon Company

CUMBERLAND COUNTY CONSERVATION DISTRICT

Conserving Natural Resources for Our Future

Middlesex Township building permit no. 22-5 issued 01-20-2022 for 3385 sq. ft. Burger King Carlisle North restaurant at 1207 Harrisburg Pike, Carlisle, PA on County tax PIN 21-18-1357-001

Municipal Notice to Conservation District for Earth Disturbance/Building Permit

Please fill out or have the applicant fill out the information below to determine the need for an erosion control plan or NPDES permit for earth disturbance projects. As per DEP regulations, the municipality shall notify the District of any projects that disturb one acre or more. You may FAX or e-mail the completed form to the District. The District may contact the applicant based on information provided.

Municipality: Middlesex Township

Applicant: PA Sicklerville LP Restaurants, C/O Andy Glosser

Address: 313 W Liberty St, F, Lancaster, PA 17603-2798

Phone number/email: 717-471-4991 / andy@glosserrealty.com

Type of project: Residential/Commercial/Other: Burger King Carlisle North restaurant

Does your project propose an earth disturbance more than 5000 square feet?
(Please note: the establishment of lawn may constitute earth disturbance. Questions should be directed to the District.)

☑ Yes Please answer next question.
☐ No No further information required, however E&S BMP's may still be necessary on your project.

Does your project propose an earth disturbance of 1 acre or more?

☑ Yes NPDES Permit is required, unless part of a project that already has permit coverage.
☐ No If greater than 5000 square feet, and less than 1 acre, a written erosion control plan is required.

Project name and/or NPDES permit number if already permitted: PAD 210046

Applicant Signature: _____

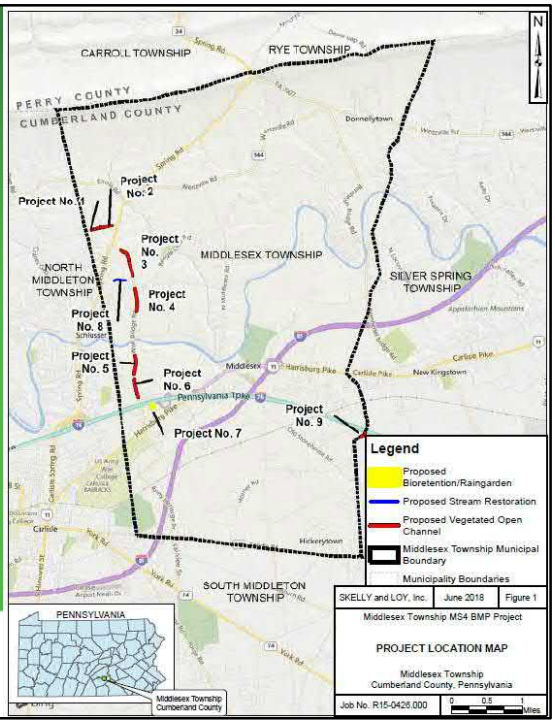
For additional assistance contact:
Cumberland County Conservation District
310 Allen Road, Suite 301
Carlisle, PA 17013

Kim Falvey kfalvey@ccpa.net
Vince McCollum vmccollum@ccpa.net
Matt Stough mstough@ccpa.net

717-240-7812
FAX 717-240-7813

Compliance for Minimum Control Measures (MCMs) 4, 5 and 6 continues and are being documented by Mark Carpenter, Zoning Officer, Bud Grove, Township Consulting Engineer, and Zach Zook, Roadmaster.

Pollution Reduction Plan Projects



SKELLY AND LOY
A ferracon Company

Zach Zook's Maintenance Team constructed several Pollution Reduction Plan (PRP) Projects. Funding for the projects is supplemented via the $631,000 Mariner II Pipeline Grant the Township was awarded in 2018.

PRP: Best Management Practice Projects

PROJECT #	PROJECT TYPE	LOCATION	COMPLETE	IN-PROGRESS	COMMENT
1	VOC	North side of Wagner Rd. west of Shaeffer Rd.	✓		2022
2	VOC	North side of Wagner Rd. east of Shaeffer Rd.	✓		2022
3	VOC	East side of Wolfs Bridge Rd. between Spring Rd. & West Middlesex Rd.	✓		2021
4	VOC	West side of Wolfs Bridge Rd.@ intersection with West Middlesex Rd.		X	2023 - Includes pipe and inlet work
5	VOC	West side of Wolfs Bridge Rd.; south of Conodoguinet Creek, north of Fraternal Order of Eagles (F.O.E.)	✓		2021
6	VOC + RG	East side of Wolf's Bridge Road; north and south of Fraternal Order of Eagles (F.O.E.) continuing south to Gasoline Alley	✓*		2021 – Waterline installation will require reconstruction – Will Raingarden be required?
7	RG	Anderson Park - West of the intersection of Valley Dr. & Hill Dr.		X	2023
8	SR	Zero-order stream channel in wooded ravine NW of Wolfs Bridge & West Middlesex Roads		X	Permits complete. Grant reallocation request in process to fund materials
9	VOC+PP	East side of Appalachian Dr., south of the Pennsylvania Turnpike	✓		2021

VOC: Vegetated Open Channel
RG: Rain Garden
SR: Stream Restoration

SKELLY AND LOY
A Ferracon Company

This is a listing of the PRP project the Township committed to building during their first permit term. The permit term is a 5-year period and Middlesex's term is August 1,2018 to July 31, 2023. So, project construction is a little behind.

PRP: Constructed Best Management

5.1 During Construction

Segment 5.1 along Wolf's Bridge Road is the northernmost part of the project. Township staff replaced a stone verge with a broad parabolic swale.

5.1 During Construction

Matting with straw provided protection for seed to sprout and establish.

5.1 Post-construction

Approximately same view as Photo 2 with established vegetation

Project 5 is along the east side of Wolf's Bridge Road starting about 0.35 miles south of the Conodoguinet Creek and extending south approximately 1500 feet. The following slides illustrate the before, during construction and post construction comparisons.

PRP: Constructed Best Management

5.2 During Construction

Segment 5.2 is the center segment of the channel located where the road curves. Prior to the project this segment had a narrow stone shoulder that was erosion prone. The picture above shows the site shortly after the erosion matting was placed.

5.2 Post-construction

Approximately the same location after vegetation established.

5.2 Post-construction

Note the flattened grass in the bottom of the channel. This picture was taken a few days after a thunderstorm. No erosion was noted.

Project 5

PRP: Constructed Best Management

5.3 Before Construction

Segment 5.3 is the southern end of the project. This before picture is typical of the pre-construction character of the site prior to construction.

5.3 During Construction

The Township changed to jute matting for erosion control which is 100% biodegradable and is not a hazard to wildlife, such as snakes.

5.3 Post-construction

Same view as the photo to the left after vegetation establishment.

Project 5

PRP: Constructed Best Management

6.3 Before Construction

Looking south from F.O.E. Drive. The pre-construction channel only extends as far as the mailboxes. Note the washed gravel and lack of vegetation along the edge of the road.

6.3 During Construction

Looking south from F.O.E. Drive. The channel is now continuous to the top of the hill and vegetated to the edge of the road. Site is still in the vegetation establishment period.

6.3 Post-construction

Looking south near south end of the project. This to the segment at the south end of the project . It conveys runoff for about 25 actress and includes much of a salvage yard (Gasoline Alley).

Project 6 is along the east side of Wolf's Bridge Road, north and south of the Fraternal Order of Eagles picnic grounds driveway.

PRP: Constructed Best Management

6.2 Before Construction

Looking North from F.O.E. Drive. Note the gravel wash and lack of vegetation along the road

6.2 Post-construction

Looking North from F.O.E. Drive. New channel with erosion matting and sprouting grass.

6.2 Post-construction

Looking North ± 60-feet north of F.O.E. Drive.

Project 6

PRP: Constructed Best Management

9.1 Before Construction

Segment 9.1 along Appalachian Drive immediately south of the Pennsylvania Turnpike. Note there is no roadside channel.

9.1 During Construction

The photo shows the channel grading.

9.1 Post-construction

Same view as photo on the left with grass emerging

Project 9 is located along Appalachian Drive immediately south of the Turnpike.

PRP: Constructed Best Management

9.2 Before Construction

Debris and gravel in the inlet pre-construction, and the abrupt edge of pavement indicate active erosion.

9.2 During Construction

Topsoil is part of the channel bed preparation to ensure plant growth.

9.2 Post-construction

Grass cover is achieved in the establishment period.

Project 9

PRP: Constructed Best Management

Discharge Before Construction

Heavily eroded embankment; damaged pipe; and erosion downstream.

Discharge During Construction

Excavation to install the stilling basin.

Discharge Post-construction

Immediately after installation of the stilling basin.

Project 9

PRP: Constructed Best Management

Discharge Before Construction

The photo shows the extent erosion that was a threat to the roadway.

Discharge During Construction

The photo shows the excavation for the stilling basin.

Discharge Post-construction

The photo was taken shortly after a rain event shows the stilling basin is effective in energy dissipation and capture of sediment.

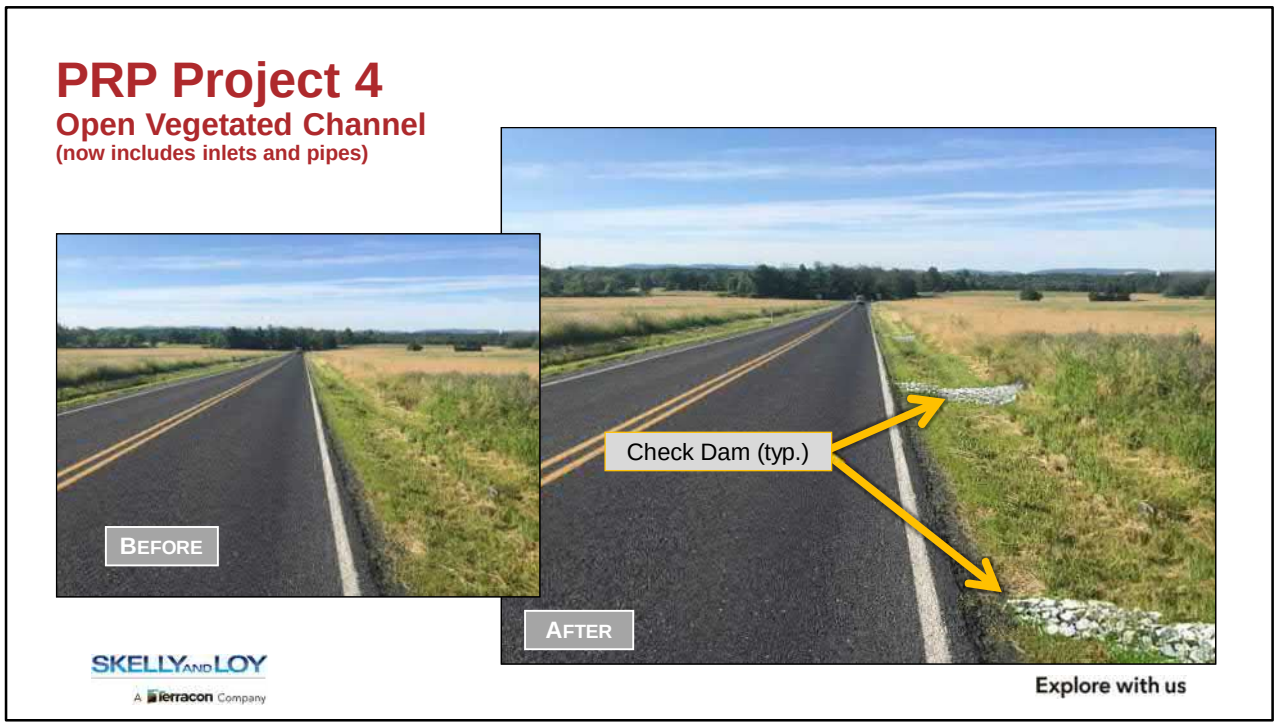
Project 9

In-progress BMPs

Status Updates

SKELLY AND LOY
A ferracon Company

Explore with us

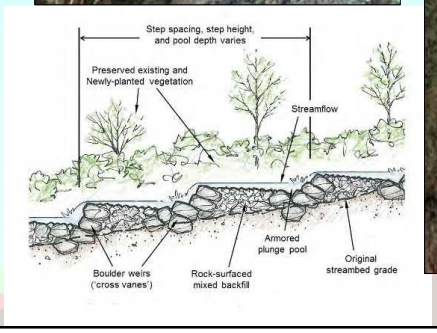


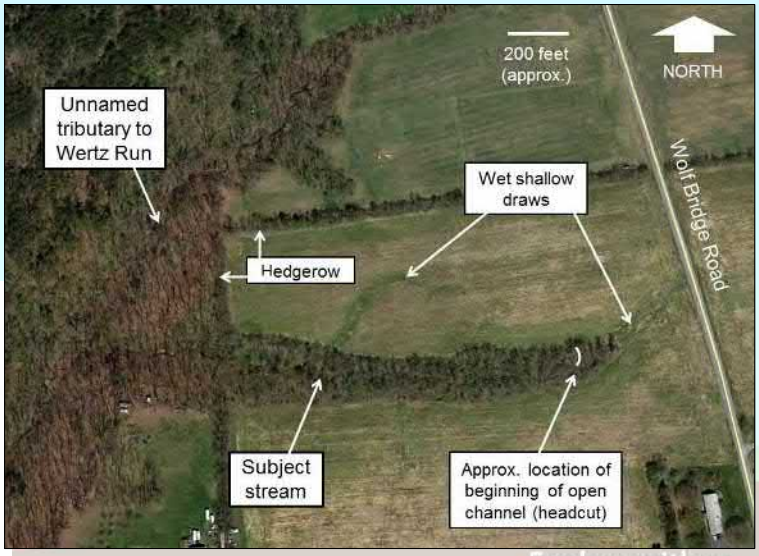
The picture show the originally envision solution. Design calculations showed. That the solution would be inadequate, so now there will be inlets and pipes under the roadside channel. Work is planned this summer.

The illustration shows the originally planned location. After coordinating with Township staff it was determined that the rain garden should be located in the historical location of the swing set and the swings should be relocated close to where the raingarden is shown in the illustration. The switch will result in the rain garden being located at the lowest, wettest part of the park and the swings being set on higher and drier ground.

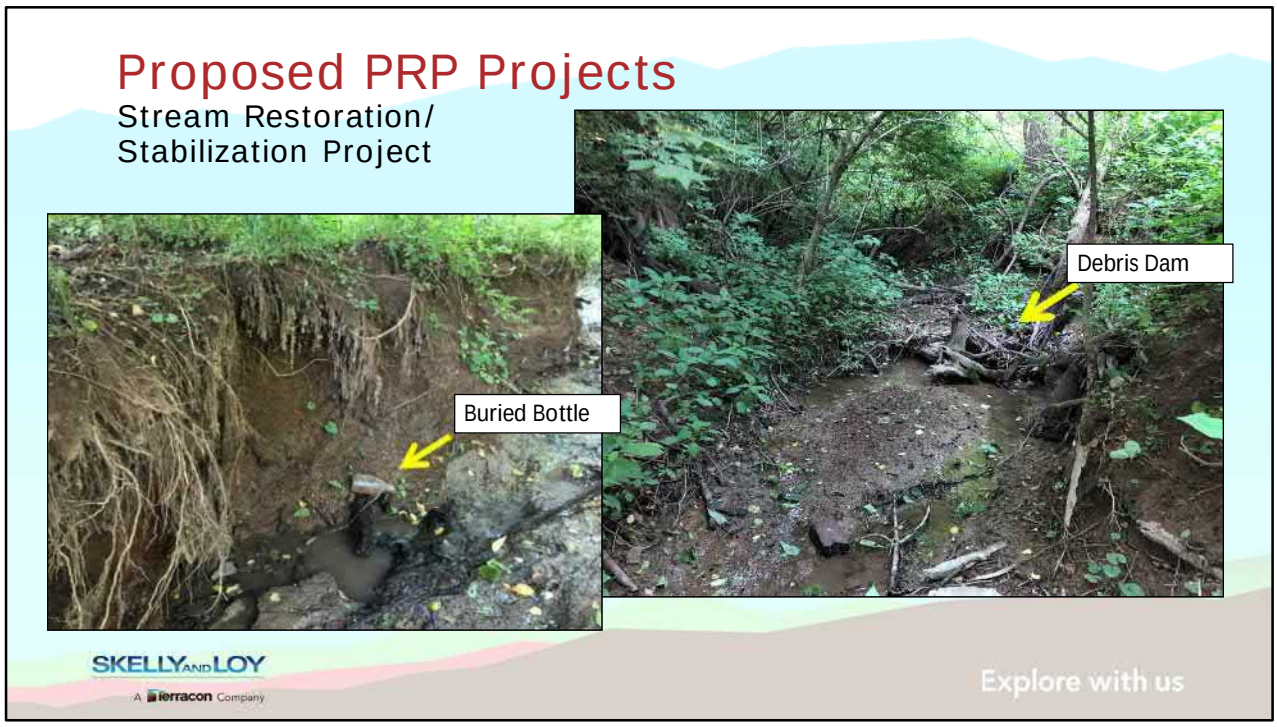
The rain garden will add visual interest to the park, reduce stormwater runoff to the neighborhood roadways, and treat stormwater runoff by removing pollutants through infiltration. The garden will be an enclosed depression with amended soils and native plant materials. The landform will capture the first flush of runoff. The amended soil will act as a sponge to retain the runoff and promote infiltration of the urban runoff, and the plants will utilize the nutrients as part of their growth regimen. While the raingarden will treat runoff from only 1.6 acres of land, the project is valuable due to its high visibility and prominent position in the park that will make it attractive for promotion of the MS4 program and a natural education site.

Project 8: Stream Restoration/ Stabilization Project





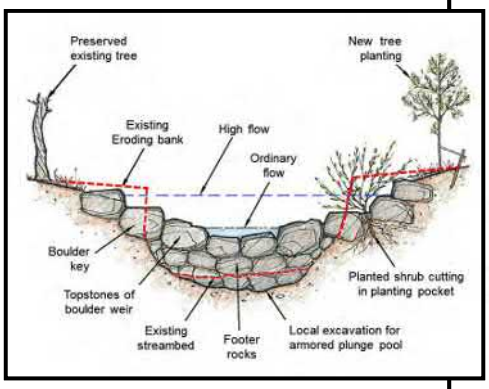
This slide shows the project location on the Frey Phillips Property, existing conditions and an illustration of the proposed restoration. The stream restoration receive permit approval and we are now trying to get grant funding reallocated from other projects to pay for the required construction materials.

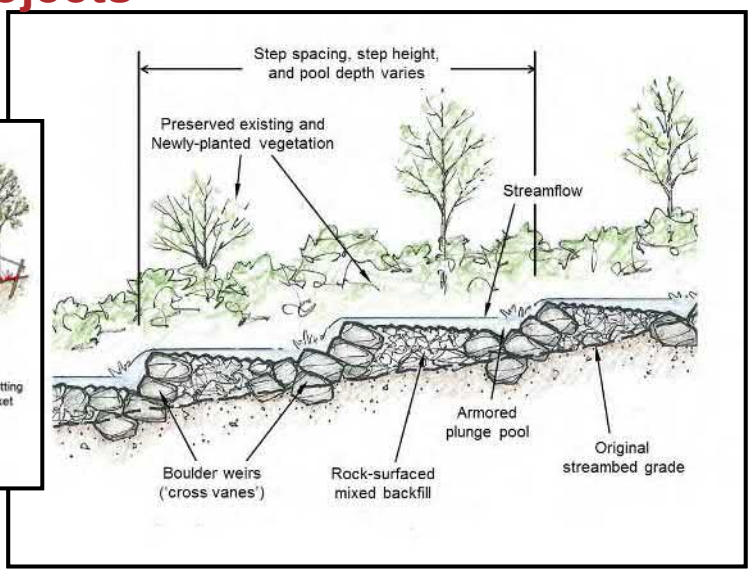


The pictures show what the stream looks like right now. The stream banks are 4 to more than 8-feet deep and highly eroded.

Proposed PRP Projects

Stream Restoration/ Stabilization Project





SKELLY AND LOY
A Terracon Company

Explore with us

The plan is to construct a step-pool channel and use rock to dissipate the stream's erosive energy and stabilize it.

Left: concept channel cross section view of a boulder weir
Right: Concept profile view of a constructed step-pool stream channel

Proposed PRP Projects

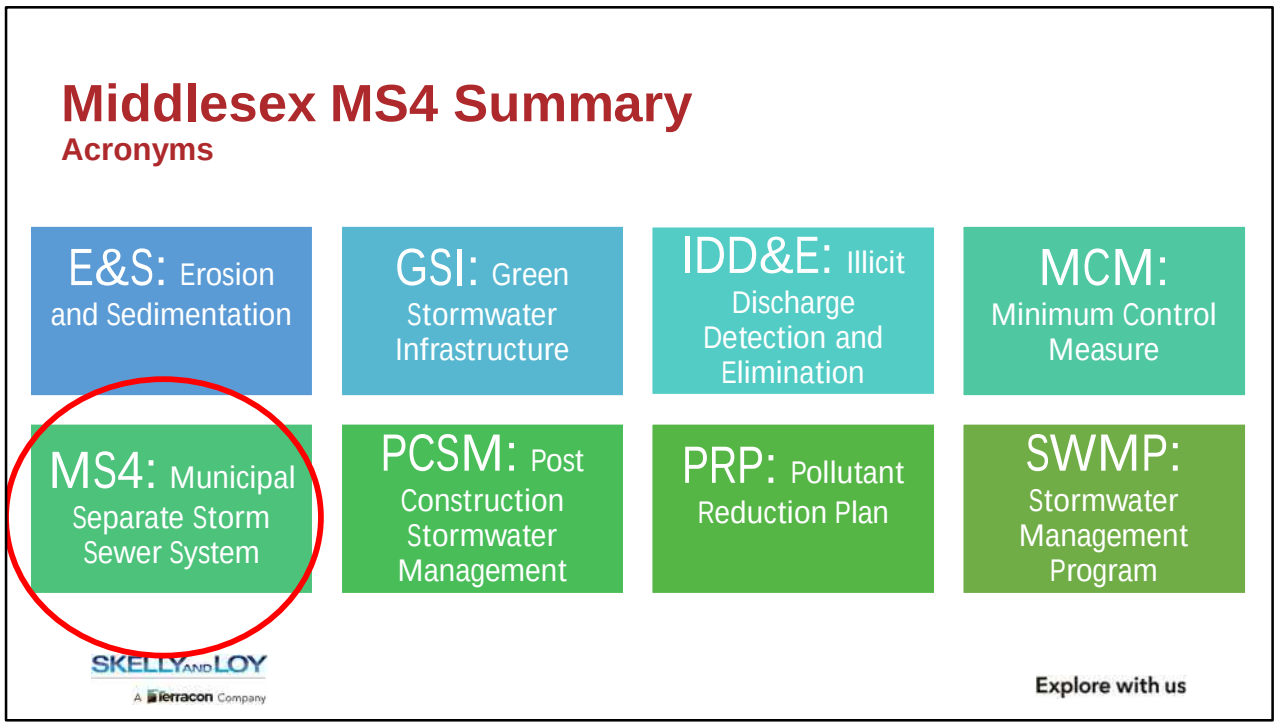
Stream Restoration/ Stabilization Project

SKELLY AND LOY
A Ferracon Company

This is a series of pictures to help you visualize what it will look like in the future.

Photo 1: Similar sized project in Philadelphia *(click)*
Photo 2: After Construction *(click)*
Photo 3: A stream in northwestern PA shortly after the project completion…Larger than the tributary that will be restored…flow in the Middlesex channel will likely be visible in only in wet years and during significant rain events

Township staff will be building this project and Skelly and Loy will provide gideance.



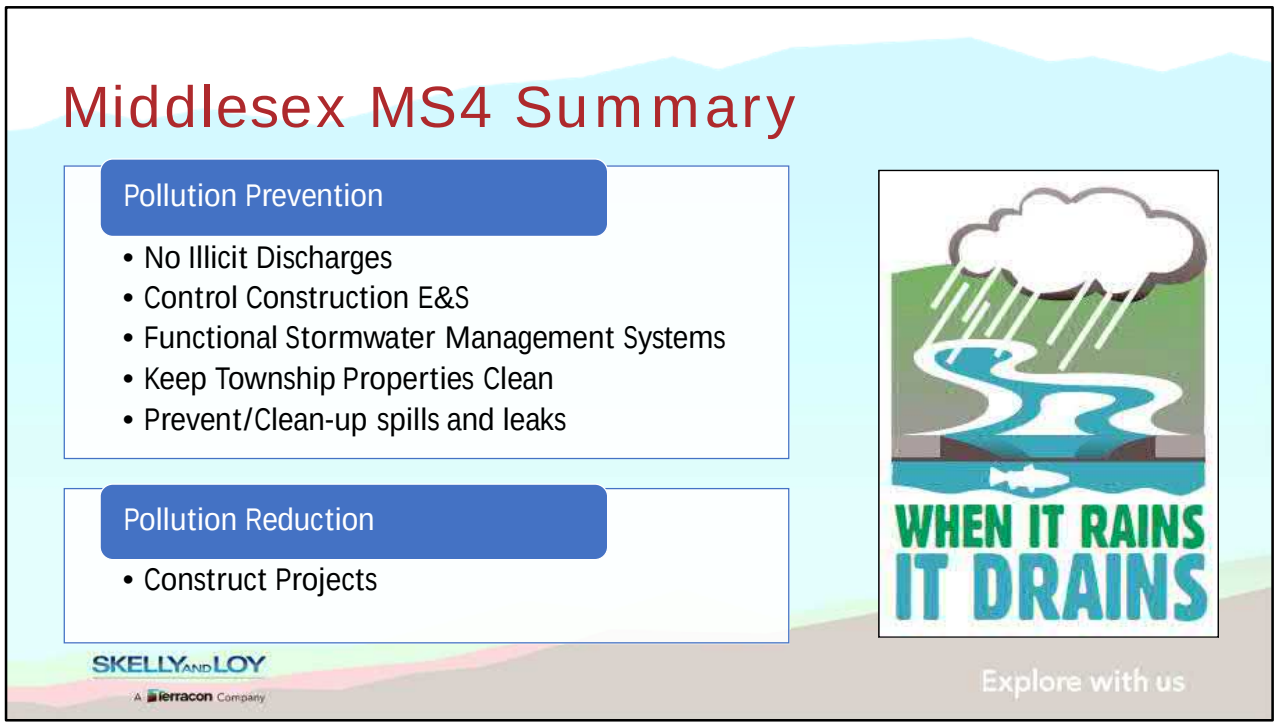
Here is a list of the acronyms we used in the presentation.

(Click) The one you need to remember is MS4.

The others were provided so you become familiar with them… Eventually you too will want to abbreviate some of these long descriptions.

Alphabetical Acronym List

E&S	Erosion and Sedimentation
GSI	Green Stormwater Infrastructure
IDD&E	Illicit Discharge Detection and Elimination
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
PCSM	Post Construction Stormwater Management
PRP	Pollutant Reduction Plan
SWMP	Stormwater Management Program



In summary, pollution prevention includes:

- Eliminating intentional or accidental releases of non-stormwater materials into the stormwater system that feeds the streams
- Preventing loose soil from leaving construction sites
- Ensuring stormwater management facilities designed to slow run-off or

remove water pollution are functioning well

- Keeping Township properties clean
- Preventing pollution releases during Township's operation and maintenance activities

Pollution Reduction includes:

- Constructing projects to reduce pollution

Next Steps

SKELLY AND LOY
A ferracon Company

Explore with us

- **PRP Project Construction**

SKELLY AND LOY
A Ferracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

- PRP Project Construction
- **Dry-weather screenings of outfalls** *(2nd cycle: Consultant and Middlesex Staff)*

SKELLY AND LOY
A Ferracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

- PRP Project Construction
- Dry-weather screenings of outfalls *(2nd cycle: Consultant and Middlesex Staff)*
- **Continued Staff reporting of …**
  - **Potential Illicit Discharges (MCM #3)**

SKELLY AND LOY
A Terracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

- PRP Project Construction
- Dry-weather screenings of outfalls (*2nd cycle: Consultant and Middlesex Staff)*
- Continued Staff reporting of …
  - Potential Illicit Discharges (MCM #3)
  - **Erosion and Sediment Discharges at Construction Sites (MCM #4)**

SKELLY AND LOY
A Terracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

- PRP Project Construction
- Dry-weather screenings of outfalls (*2nd cycle: Consultant and Middlesex Staff)*
- Continued Staff reporting of …
  - Potential Illicit Discharges (MCM #3)
  - Erosion and Sediment Discharges at Construction Sites (MCM #4)
  - **Failing Stormwater Basins, Swales, Inlets, and Discharge Points (MCM #5)**

SKELLY AND LOY
A Terracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

- PRP Project Construction
- Dry-weather screenings of outfalls (*2nd cycle: Consultant and Middlesex Staff)*
- Continued Staff reporting of …
  - Potential Illicit Discharges (MCM #3)
  - Erosion and Sediment Discharges at Construction Sites (MCM #4)
  - Failing Stormwater Basins, Swales, Inlets, and Discharge Points (MCM #5)
- **MCM #6: Continued Good Housekeeping and Prevention of Pollution from Municipal Operations**
  - **Documented Site Maintenance**
    - **Anderson Park**
    - **Municipal Roadways (especially in the Urbanized Area)***

SKELLY AND LOY
A Terracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

- PRP Project Construction
- Dry-weather screenings of outfalls (*2nd cycle: Consultant and Middlesex Staff)*
- Continued Staff reporting of …
  - Potential Illicit Discharges (MCM #3)
  - Erosion and Sediment Discharges at Construction Sites (MCM #4)
  - Failing Stormwater Basins, Swales, Inlets, and Discharge Points (MCM #5)
- MCM #6: Continued Good Housekeeping and Prevention of Pollution from Municipal Operations
  - Documented Site Maintenance
    - Anderson Park
    - Municipal Roadways (especially in the Urbanized Area)*
  - **Creation of Standard Operation Procedures and Self-inspection forms to document Pollution Prevention while performing routine work***

SKELLY AND LOY
A Terracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

- PRP Project Construction
- Dry-weather screenings of outfalls (*2nd cycle: Consultant and Middlesex Staff)*
- Continued Staff reporting of …
  - Potential Illicit Discharges (MCM #3)
  - Erosion and Sediment Discharges at Construction Sites (MCM #4)
  - Failing Stormwater Basins, Swales, Inlets, and Discharge Points (MCM #5)
- MCM #6: Continued Good Housekeeping and Prevention of Pollution from Municipal Operations
  - Documented Site Maintenance
    - Anderson Park
    - Municipal Roadways (especially in the Urbanized Area)*
  - Creation of Standard Operation Procedures and Self-inspection forms to document Pollution Prevention while performing routine work*
  - **Continued Training and Tailgate meetings to improve pollution prevention**

SKELLY AND LOY
A Terracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

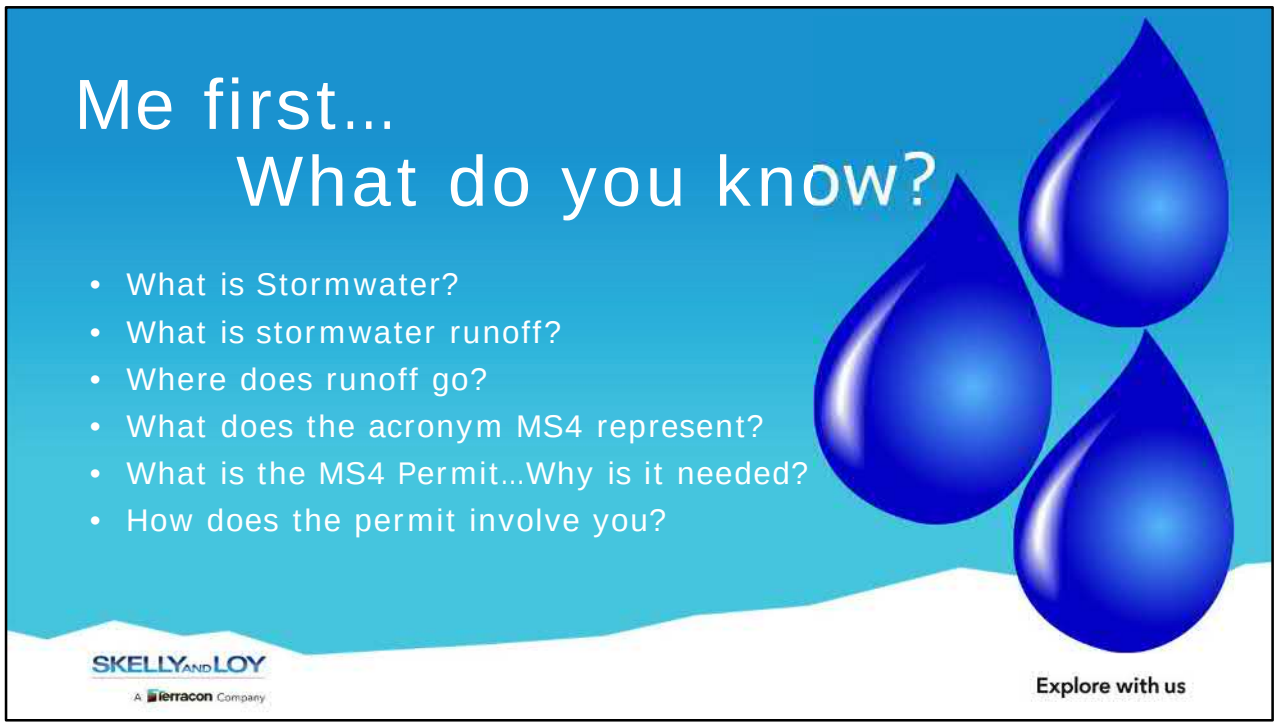
- PRP Project Construction
- Dry-weather screenings of outfalls (*2nd cycle: Consultant and Middlesex Staff)*
- Continued Staff reporting of …
  - Potential Illicit Discharges (MCM #3)
  - Erosion and Sediment Discharges at Construction Sites (MCM #4)
  - Failing Stormwater Basins, Swales, Inlets, and Discharge Points (MCM #5)
- MCM #6: Continued Good Housekeeping and Prevention of Pollution from Municipal Operations
  - Documented Site Maintenance
    - Anderson Park
    - Municipal Roadways (especially in the Urbanized Area)*
  - Creation of Standard Operation Procedures and Self-inspection forms to document Pollution Prevention while performing routine work *
  - Continued Training and Tailgate meetings to improve pollution prevention
- **Review and update to Manuals and Maps (ongoing)**
  - **MCM #1/#2 - PEOP/PIPP**
  - **MCM #3 - IDD&E**
  - **MCM #5 - Mapping**

SKELLY AND LOY
A Terracon Company

Explore with us

You will be seeing more types of forms for documentation
(Click 4 times and read)

Thank you for allowing us to be with you today. Now its time for Questions and Answers…
Me first!

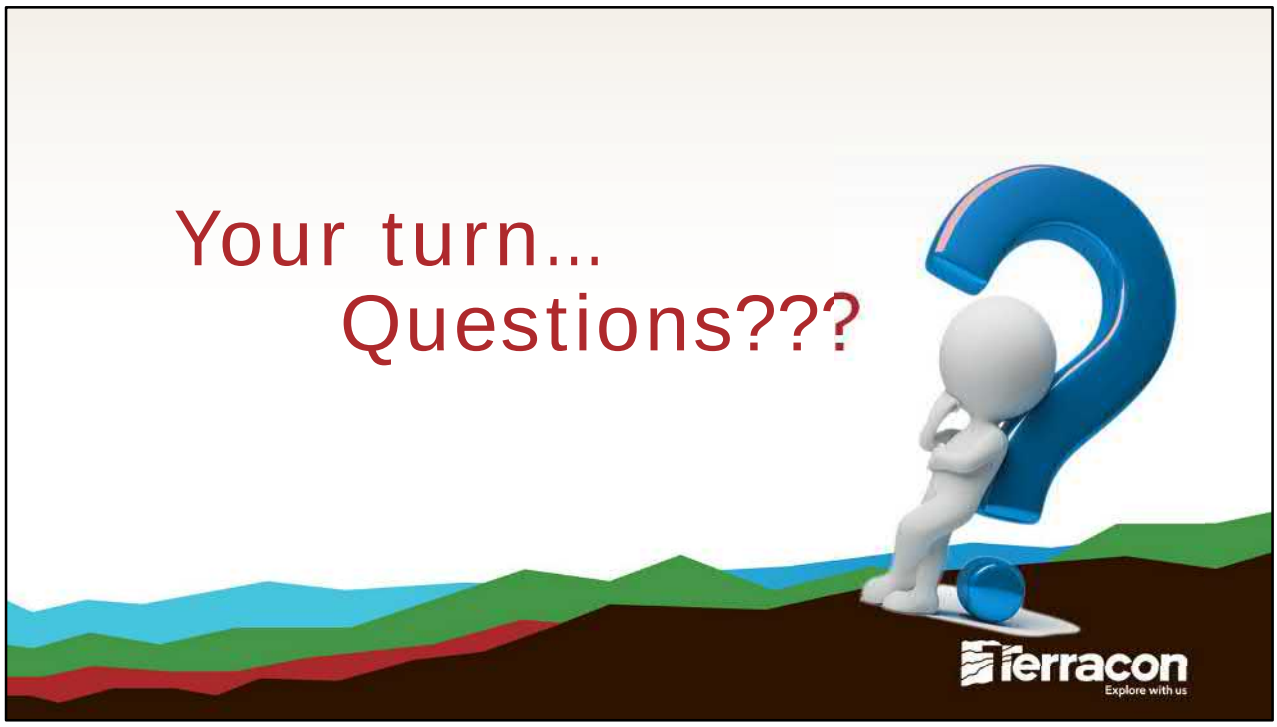


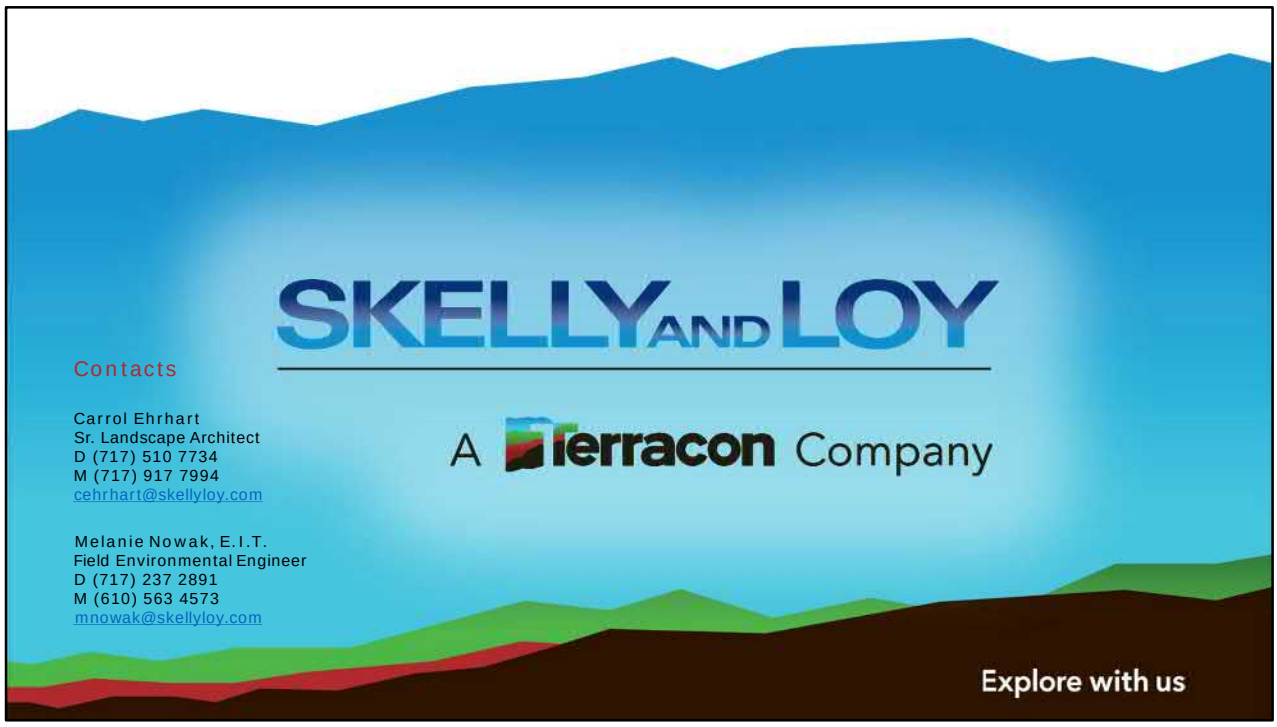
Let's check what you know now?

Have Eileen count hands for each question
Sequence:
Request a hand raise

How many don't know?
Who does know?
How many agree?

Your turn…
Questions???




SKELLY AND LOY
A terracon Company
Contacts
Carrol Ehrhart
Sr. Landscape Architect
D (717) 510 7734
M (717) 917 7994
cehrhart@skellyloy.com
Melanie Nowak, E.I.T.
Field Environmental Engineer
D (717) 237 2891
M (610) 563 4573
mnowak@skellyloy.com
Explore with us