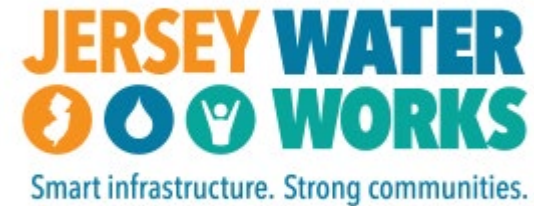


Green Infrastructure Champions Program

This program is partially funded by the Rutgers New Jersey Agricultural Experiment Station, Geraldine R. Dodge Foundation, NJ Sea Grant Consortium, and William Penn Foundation and is a collaboration of the Rutgers Cooperative Extension Water Resources Program and the Green Infrastructure Subcommittee of Jersey Water Works.



**Please enter your full name
and affiliation in the chat.
This is how will take
attendance.**



Green Infrastructure Champion Training: Part 4

“Stormwater management regulations, policies, and ordinances”

February 24, 2023
Virtual Class



RUTGERS
New Jersey Agricultural
Experiment Station



- 1972 Federal Clean Water Act
- Surface Water Quality Standards (N.J.A.C. 7:9B)
- Municipal “Phase II” NJPDES Stormwater Regulations (N.J.A.C. 7:14a)
- Stormwater Management Regulations (N.J.A.C. 7:8)
- NJ Soil Erosion and Sediment Control Act (N.J.S.A. 4:24-39 et seq)



Silent Spring by Rachel Carson (1962)

- The book that give birth to the environmental movement
- Serialized in three parts in *The New Yorker*, where President John F. Kennedy read it in the summer of 1962

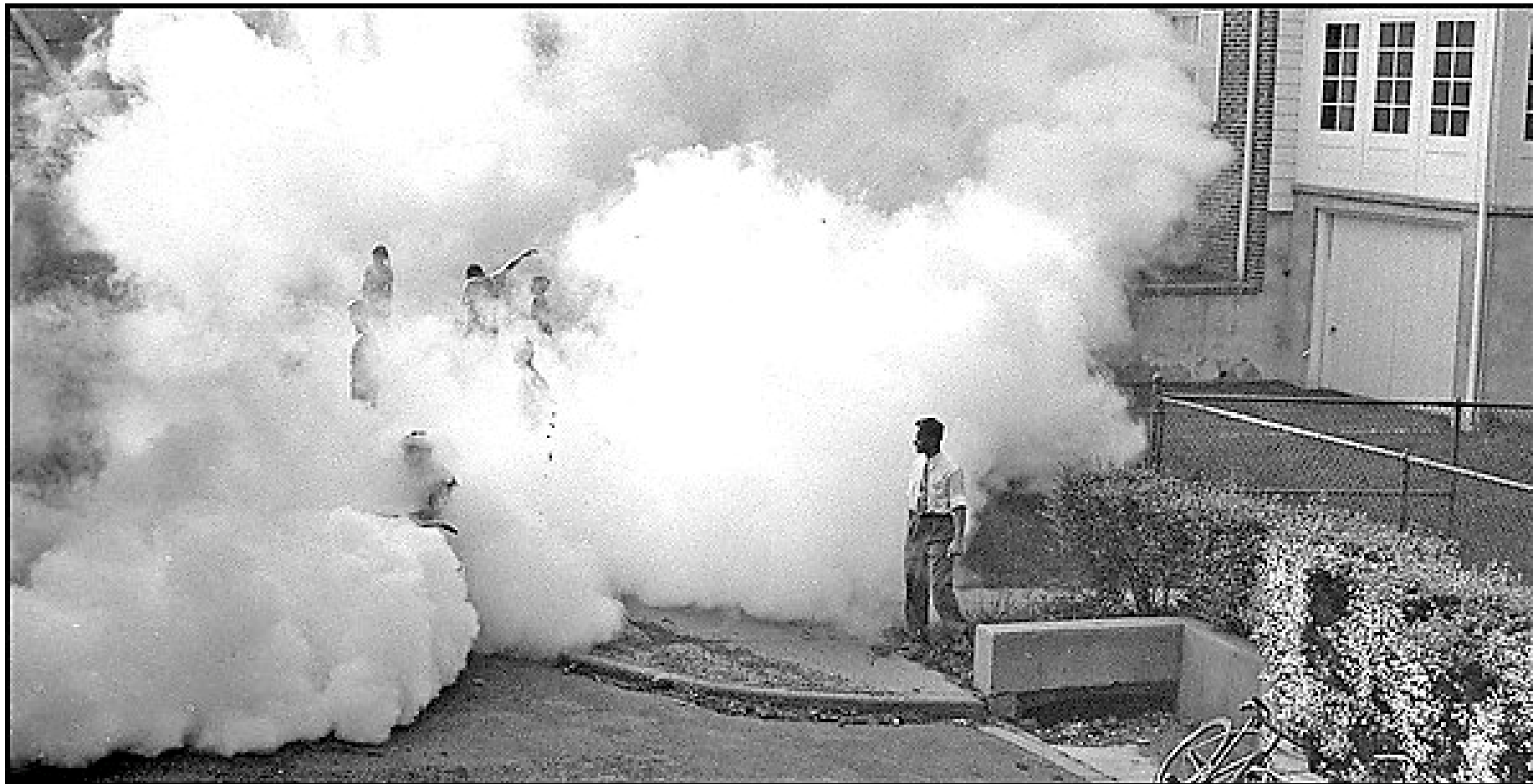


- The pesticide DDT thinned the eggshells of birds and made the eggs unable to withstand incubation.
- DDT had caused damage to wildlife, birds, bees, agricultural animals, domestic pets, and even humans.

<https://youtu.be/X4nTCGUjfGA>



Children Play in DDT Haze After Mosquito Spraying, Camden NJ (1960s)



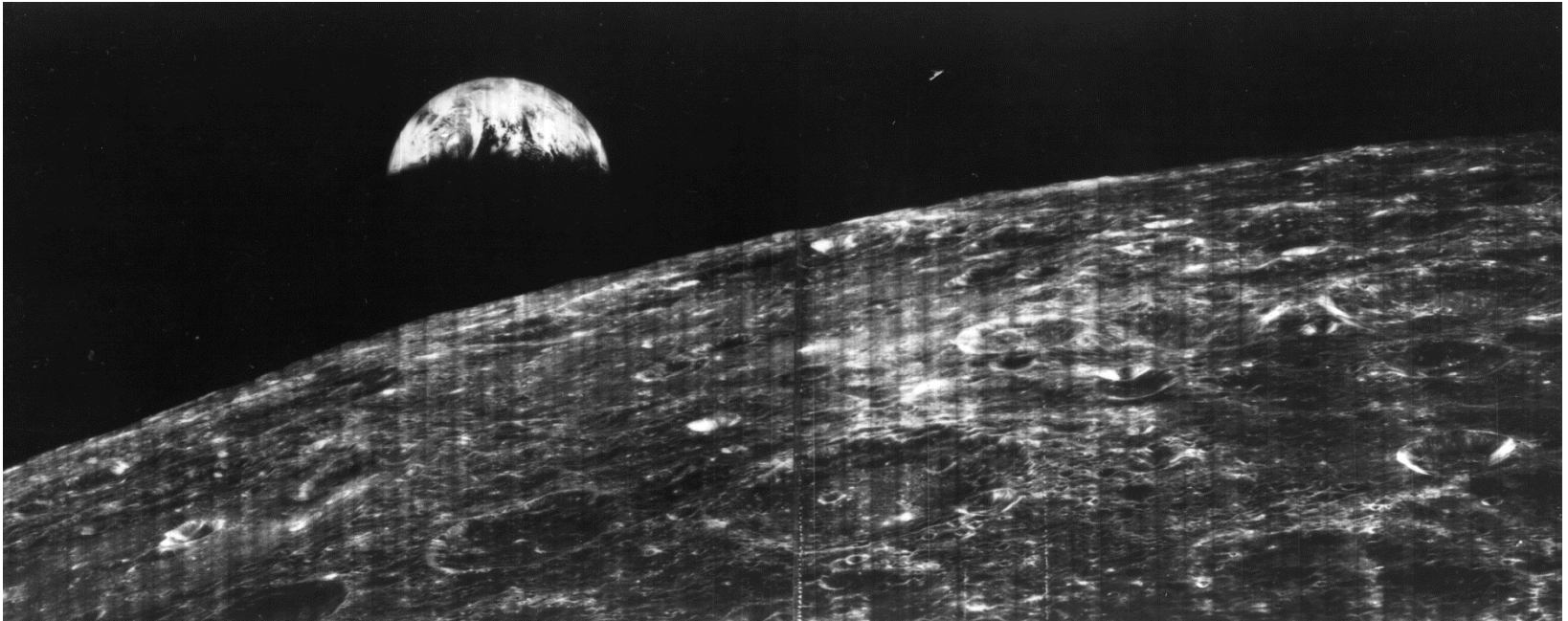
The bald eagle is a shining example of recovery in New Jersey.

In 1973, when the Endangered and Nongame Species Conservation Act was passed, there was just one nesting pair in a remote forest in Cumberland County.

Today there are more than 220 nesting pairs of **bald eagles** in the state. ([NJDEP Division of Fish & Wildlife - Raptors in New Jersey](#))



Spaceship Earth

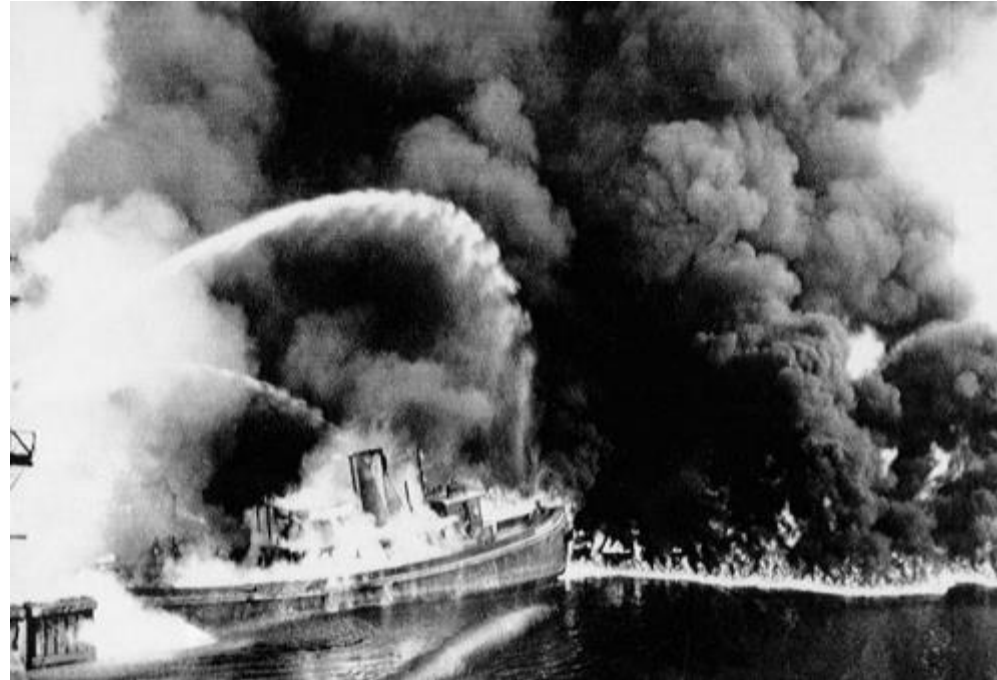


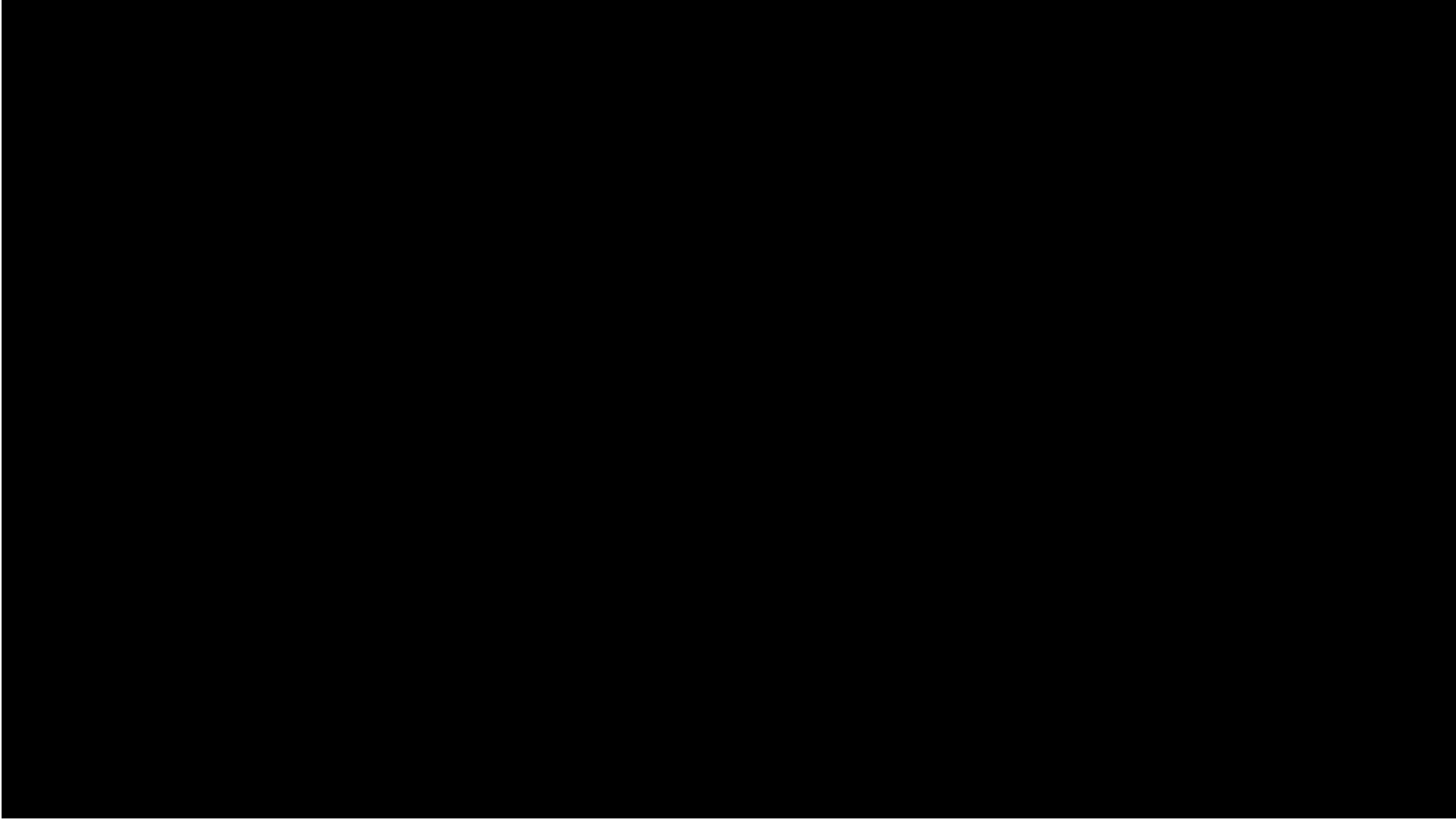
On August 23, 1966, a NASA lunar orbiter transmitted the first image of Earth from the Moon. The grainy black & white image provided little detail, but much psychological impact. Humans got their first glimpse of “home” from the perspective of the universe, and what they saw was unsettling.



The Environmental Revolution

There were, as always, threshold moments. In the summer of 1969, the grossly polluted Cuyahoga River burst into flames as it passed through the city of Cleveland. Spurred by such outrages, millions observed the first Earth Day in April of 1970. This seminal event served to focus the energies of the nation's youth – and eventually lawmakers – on the problems facing our environment.





Cuyahoga River

<https://clevelandhistorical.org/items/show/63#.WPemGvnyuUk>



The Environmental Revolution



As the turbulent 1960s ran their course, the environmental movement took its place alongside civil rights, women's rights, and war protests as a hot button topic and agent for societal change.

America suddenly awoke to the realization that the planet did and always had nurtured us and that Mother Earth was in dire trouble.





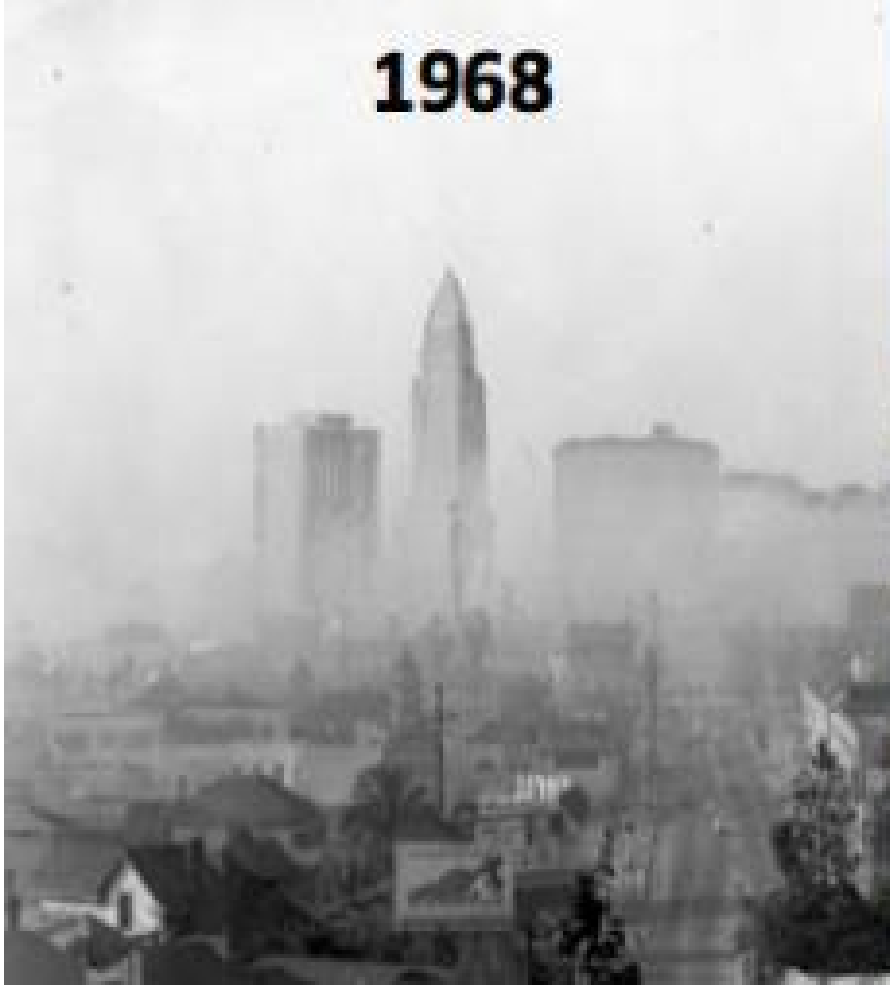
1970: The first Earth Day in Philadelphia

Spaceship Earth

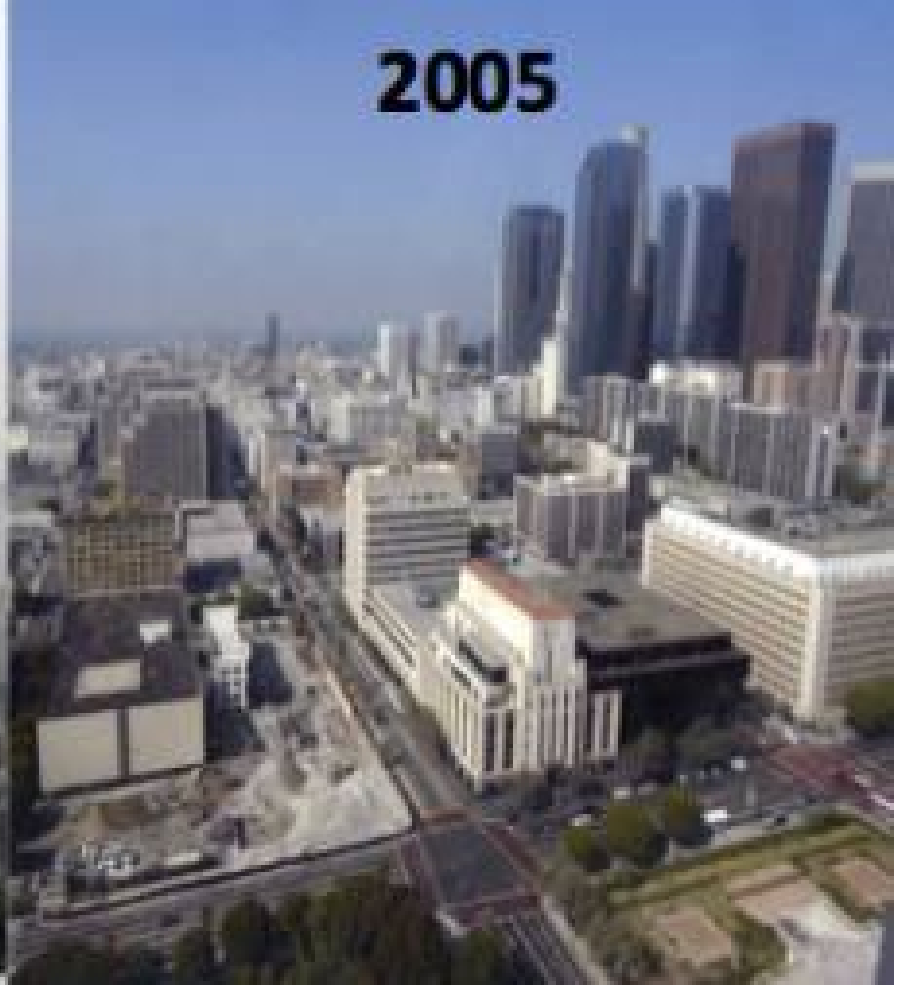


The “Blue Marble” was small, fragile, and vulnerable.
There was no question who its caretaker must be.

1968



2005



Not everything was better “back in the day.” The quality of our water and our air has improved markedly in the past 40 years thanks to some far-sighted legislation passed by Congress during the heyday of the green movement.

Why did we need a Clean Water Act?

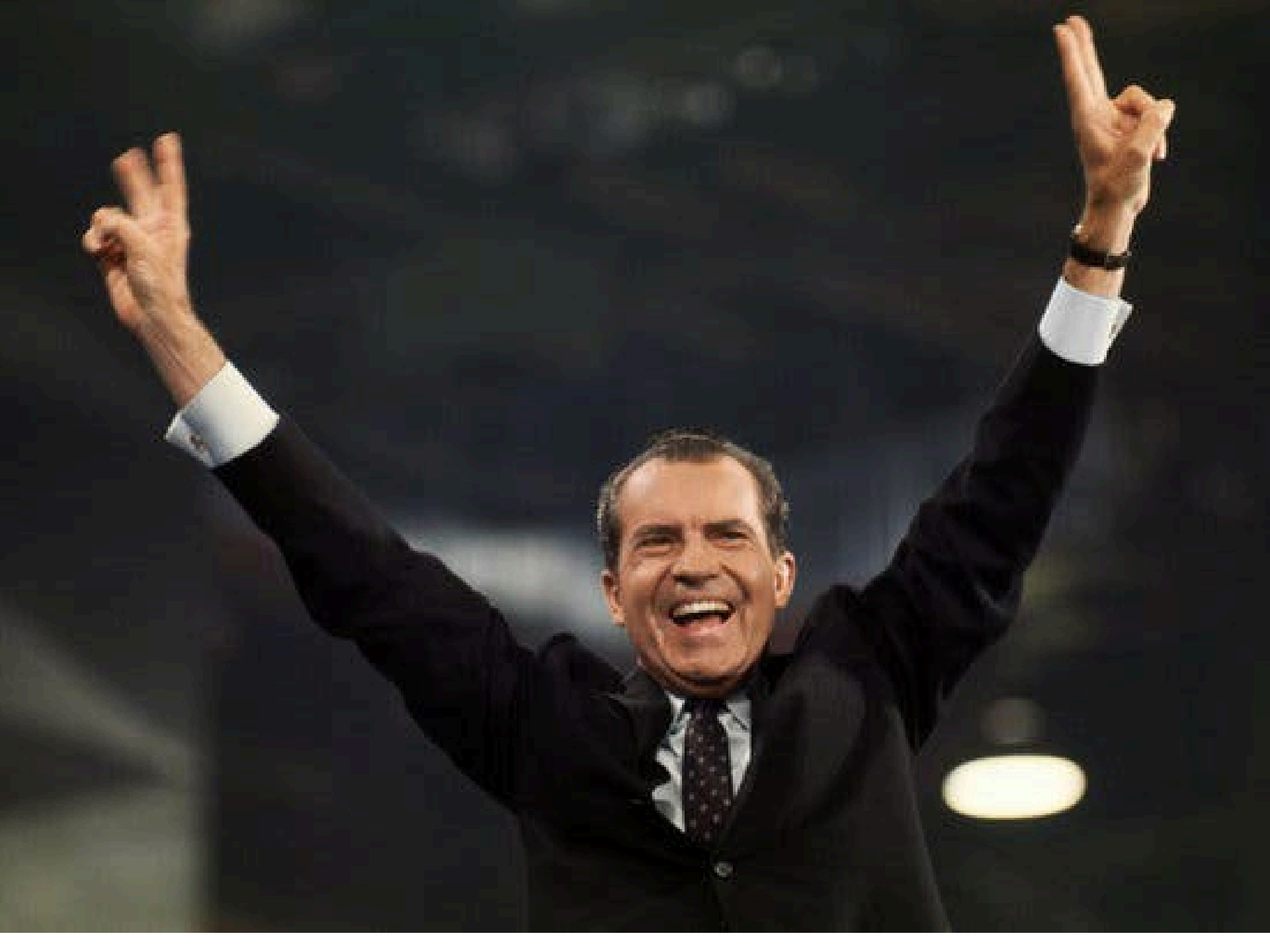
- 60% of waterways in the US were not “fishable or swimmable”
- The Cuyahoga River in Cleveland was so polluted that it caught fire



Federal Clean Water Act (CWA) of 1972

**Primary objective of CWA is to
restore and maintain the integrity
of the nation's waters**





Two Fundamental National Goals of the CWA:

1. To eliminate the discharge of pollutants into the nation's waters (zero discharge of pollutants by 1985)
2. To achieve water quality levels that are fishable and swimmable by mid-1983



Two Major Parts of the CWA:

1. Authorizes federal financial assistance for municipal sewage treatment plant construction
2. Creates regulatory requirements that apply to industrial and municipal dischargers



Municipal Wastewater Treatment Plants

1. Must meet secondary treatment standards by July 1, 1977
2. Case-by-case extension up to July 1, 1988
3. By 1988, 86% of all cities met the 1988 deadline



Industrial Discharges

1. Must install “best practicable control technology” (BPT) by July 1, 1977
2. BPT focused on conventional pollutants (suspended solids, biochemical oxygen demanding materials, fecal coliform, pH)
3. By March 31, 1989, industry is required to use “best available technology” (BAT) that is economically achievable
4. BATs focused on toxic substances



Technology-based Effluent Limitations

- Specific numerical limitations established by EPA and placed on certain pollutants from certain sources
- Applied to municipal and industrial discharges through numerical limitations in discharge permits



Water Quality Standards

- Standard for overall quality of water
- Consists of designated beneficial use or uses of waterbody (recreation, water supply, industrial or other)
- Plus a numerical or narrative statement identifying maximum concentrations of various pollutants that would not interfere with the designated uses
- Each state must establish water quality standards for all bodies of water in the state



Impaired Waterways

- States must identify waterways that are not meeting water quality standards (Integrated Water Quality Assessment Report)



Total Maximum Daily Loads (TMDLs)

- In waterways where water quality standards are not being met, states must set a TMDL of pollutants at a level to ensure that water quality standards are attained and maintained
- EPA estimates 40,000 U.S. Waters are impaired and require a TMDL



Nonpoint Source Pollution (Section 319)

- Directs states to develop and implement nonpoint pollution management programs
- Encouraged to pursue groundwater protection activities
- Federal financial assistance covers up to 60% of the program implementation costs



Federal and State Responsibilities

- Federal-state partnership
- Federal government sets the agenda and standards for pollution abatement
- States carry out day-to-day activities of implementation and enforcement
- 46 states have been authorized by EPA to issue/administer permit program



National Pollutant Discharge Elimination System (NPDES)

- Created in 1972 by the Clean Water Act, the NPDES permit program is authorized to state governments by EPA to perform many permitting, administrative, and enforcement aspects of the program
- New Jersey has the “NJPDES” program



N.J.A.C. 7:9B - Surface Water Quality Standards

- Protection and enhancement of surface water resources
- Class definitions and quality criteria
- Use designation and quality criteria for the mainstem of the Delaware River including the Delaware Bay
- Classification of surface waters of the state
- Procedures for establishing water quality-based effluent limitations



Designated uses

In all FW1 waters, the designated uses are:

1. Set aside for posterity to represent the natural aquatic environment and its associated biota;
2. Primary and secondary contact recreation;
3. Maintenance, migration and propagation of the natural and established aquatic biota; and
4. Any other reasonable uses.



Designated uses

In all PL waters the designated uses are:

1. Cranberry bog water supply and other agricultural uses;
2. Maintenance, migration, and propagation of the natural and established biota indigenous to this unique ecological system;
3. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection;
4. Primary and secondary contact recreation; and
5. Any other reasonable uses.



Designated uses

In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;
2. Primary and secondary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.



Other Designated uses

- NT: Nontrout waters
- TM: Trout Maintenance
- TP: Trout Production
- C1: Category 1 Waters
- C2: Category 2 Waters
- SE: general surface water classification applied to saline waters of estuaries (SE1, SE2, or SE3)
- SC: general surface water classification applied to coastal saline waters



Substance	Criteria	Classifications
Dissolved Oxygen	i. Not Less than 7.0 mg/l at any time	FW2-TP
	ii. 24-hour average not less than 6.0. Not less than 5.0 at any time	FW2-TM
	iii. 24-hour average not less than 5.0. Not less than 4.0 at any time	FW2-NT, SE1
	iv. Not less than 4.0 at any time	Tidal portions of FW2-NT tribs to DR
	v. Not less than 5.0 at any time	SC
	vii. Not less than 4.0 at any time	SE2
	viii. Not less than 3.0 at any time	SE3

Surface Water Quality Criteria for Toxic Substances

- Criteria for FW2 and SE/SC waters
- Aquatic Life Criteria (Acute or Chronic)
- Human Health Criteria

Toxic Substance	Fresh water (FW2) Criteria			Saline Water (SE&SC) Criteria		
	Aquatic		Human Health	Aquatic		Human Health
	Acute	Chronic		Acute	Chronic	
Arsenic	340(d)(s)	150(d)(s)	0.017(hc)(T)	69(d)(s)	36(d)(s)	0.061(hc)(T)

(d) Criterion is expressed as a function of the Water Effects Ratio (WER)

(hc) Human health carcinogen

(s) Dissolved criterion

(T) Total recoverable criterion



Surface Water Classifications

- Regulations provide classification for each waterway
- Some waterways have different classifications for different sections of the waterways



SOUTH BRANCH RARITAN RIVER

(Mt. Olive) - Source to the dam that is 390 feet upstream of the Flanders-Drakestown Road bridge and the two tributaries which originate north and east of the Budd Lake Airfield

FW2-NT(C1)

(Mt. Olive) - Dam to confluence with Turkey Brook

FW2-TM(C1)

(Middle Valley) - Confluence with Turkey Brook to Rt. 512 bridge

FW2-TP(C1)

(Califon) - Rt. 512 bridge to downstream end of Packers

Island, except segment described separately, below

FW2-TM

(Ken Lockwood Gorge) - River and tributaries within Ken Lockwood Gorge Wildlife Management Area

FW2-TM(C1)

(Neshanic Sta.) - Downstream end of Packers Island to confluence with North Branch, Raritan River

FW2-NT

TRIBUTARIES, SOUTH BRANCH RARITAN RIVER

(Long Valley) - Entire length

FW2-TP(C1)

(High Bridge) - Entire length

FW2-TM

(S. of Hoffmans) - Entire length

FW2-TP(C1)

(S. of Schooley's Mt.) - Entire length

FW2-TP(C1)

MAIN STEM RARITAN RIVER

(Bound Brook) - From confluence of North and South Branches to Landing Lane bridge in New Brunswick and all freshwater tributaries downstream of Landing Lane bridge.

FW2-NT

(Sayreville) - Landing Lane bridge to Raritan Bay and all saline water tributaries

SE1

N.J.A.C. 7:14a - Municipal “Phase II” NJPDES Stormwater Regulations

- Regulates discharges to surface water and groundwater of stormwater from large, medium, and small municipal separate storm sewer systems
- Four general permits:
 1. Tier A Municipalities
 2. ~~Tier B Municipalities~~
 3. Public Complexes
 4. Highway Departments



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.

Components of NJ MS4 Permit

Stormwater pollution prevention plan

Minimum Standards:

1. Public involvement and participation
2. Local public education and outreach
3. Construction site stormwater runoff standards
4. Construction stormwater management in new development and redevelopment
5. Pollution prevention/good housekeeping for municipal operators
6. MS4 mapping, stream scouring, and illicit discharge detection and elimination program

Stormwater Pollution Prevention Plan (SPPP)

- Create/update the SPPP to reflect 2023 permit conditions
- Updated fillable template will be available on MS4 webpage
- Submit electronically to the Department and post on website
- *Due EDPA + 3 mo. for Existing Tier A's, EDPA + 12 mo. for New Tier A's*



Stormwater Pollution Prevention Plan

<< Insert Municipality Name >>

<< Insert County Name >>

<< Insert NJPDES # >>

<< Insert Last Revision Date >>

Municipality Name / County / NJDES # / Date

SPPP Form 1 – SPPP Team Members

All records must be available upon request by NJDEP.

Stormwater Program Coordinator (SPC)	
Print/Type Name and Title	
Office Phone # and eMail	
Signature/Date	
Individual(s) Responsible for Major Development Project Stormwater Management Review	
Print/Type Name and Title	
Print/Type Name and Title	
Print/Type Name and Title	
Print/Type Name and Title	
Print/Type Name and Title	
Other SPPP Team Members	
Print/Type Name and Title	
Print/Type Name and Title	
Print/Type Name and Title	
Print/Type Name and Title	

Municipality Name / County / NJDES # / Date



State of New Jersey
Department of Environmental Protection
Division of Water Quality



New Jersey Pollutant Discharge Elimination System (NJPDES)
Contact Information Update Form

Clear Form

This form is used to update specific contact information of personnel associated with different aspects of your NJPDES permit. Completion of items 1 and 8 are mandatory. Completion of the remaining sections (2-7) are only necessary if a change has occurred.

1. FACILITY/PERMIT INFORMATION

Name of Facility/Site: _____
 Street Address/Location: _____
 City or Town: _____ State: _____ Zip Code: _____
 Municipality: _____ County: _____
 Program Interest (PI) #: _____

NJPDES PERMIT NUMBER(S) (NJ##### or NJG#####)	DISCHARGE CATEGORY CODE(S)

2. PERMITTEE/OPERATING ENTITY CONTACT

Contact Person: _____ Title: _____
 Telephone: _____ Email: _____

3. PROPERTY/LAND OWNER(S) CONTACT

Contact Person: _____ Title: _____
 Telephone: _____ Email: _____

4. FACILITY CONTACT

Associated Program: Surface Water Stormwater Ground Water Pretreatment Residuals
 Contact Person: _____ Title: _____
 Telephone: _____ Email: _____
 Organization Name: _____
 Mailing Address: _____
 City or Town: _____ State: _____ Zip Code: _____

5. ADDITIONAL FACILITY CONTACT (IF APPLICABLE)

Associated Program: Surface Water Stormwater Ground Water Pretreatment Residuals
 Contact Person: _____ Title: _____
 Telephone: _____ Email: _____
 Organization Name: _____
 Mailing Address: _____
 City or Town: _____ State: _____ Zip Code: _____

6. NJPDES PERMIT FEES/INVOICES RECIPIENT

Contact Person: _____ Title: _____
 Telephone: _____ Email: _____
 Organization Name: _____
 Mailing Address: _____
 City or Town: _____ State: _____ Zip Code: _____

7. MONITORING REPORT RECIPIENT (RESIDUAL AND/OR GROUND WATER PERMITS ONLY)

Contact Person: _____ Title: _____
 Telephone: _____ Email: _____
 Organization Name: _____
 Mailing Address: _____
 City or Town: _____ State: _____ Zip Code: _____

8. CERTIFICATION BY APPLICANT

"I certify under penalty of law that this document and any attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for purposely, knowingly, recklessly, or negligently submitting false information."

Signature: _____ Date: _____ Telephone: _____
 Print or Type Name: _____ Print or Type Position: _____

Minimum standards for public involvement and participation

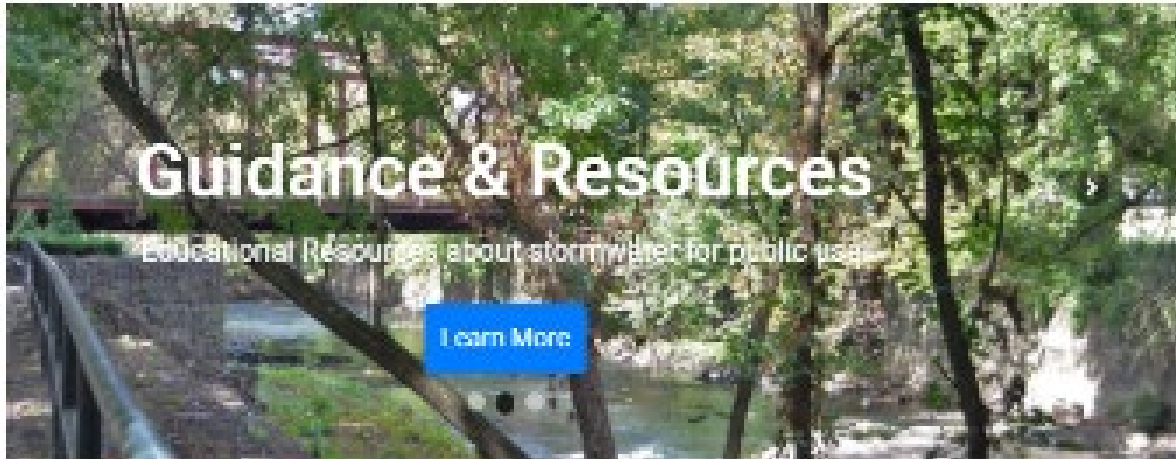
- Comply with applicable state and local public notice requirements
(Due EDPA for Existing & New Tier A's)
- Develop a municipal stormwater webpage
(Due EDPA +3 months for Existing and EDPA +12 for New Tier A's)

- 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

Example stormwater webpage is available from NJDEP

https://www.nj.gov/dep/dwq/msrp_ou_treach_material.htm

Stormwater Page Home



What is stormwater?

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

inition of stormwater under the N.J.A.C. 7:14A rules is as follows:

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

Stormwater Coordinator Contact

For more information and questions on stormwater program please contact:

[insert contact information here](#)

Minimum standards for local public education and outreach

- Implement a Public Education and Outreach Program
 - Earn 12+ points each year from three of the five categories
- *Due EDPA for Existing & New Tier A's*



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)
- Community Involvement (5)

Minimum standards for construction site stormwater runoff

- Obtain a Construction Activity NJPDES Stormwater General Permit (5G3) or Individual Permit for construction site stormwater runoff activities

<https://nj.gov/dep/dwq/5g3.htm>

- *Due EDPA for Existing & New Tier A's*



Minimum standards for post construction stormwater management in new development and redevelopment

- Require development to comply with NJ Stormwater Management Regulations for water quality, water quantity, and groundwater recharge
- *Due EDPA for Existing & New Tier A's*



Key points for post construction minimum standards

- Applies to all major development
- Requires municipal stormwater management plans
- Requires municipal stormwater control ordinances
- Requires mitigation plan to grant variances
- Clarifies that the same individual(s) cannot design AND approve the stormwater management designs for major development projects
- Review engineer must complete stormwater management rule amendment training and stormwater management training design review course

Minimum standards for pollution prevention/ good housekeeping for municipal operators

Community-wide Ordinance

- Pet waste ordinance
- Wildlife feeding ordinance
- Litter control ordinance
- Improper disposal of waste ordinance
- Yard waste ordinance
- Private storm drain inlet retrofitting ordinance
- Privately-owned salt storage ordinance (new EDPA+12 months)
- Tree removal/replacement ordinance (new EDPA+12 months)



Minimum standards for pollution prevention/good housekeeping for municipal operators

Community-wide Measures

- Triannual street sweeping (w/ storm drain inlets)
- Annual street sweeping (w/o storm drain inlets)
- Storm drain inlet labeling
- Storm drain inlet retrofitting
- Storm drain installation
- Herbicide application management
- Excess de-icing material management
- Roadside vegetation waste management
- Roadside erosion control



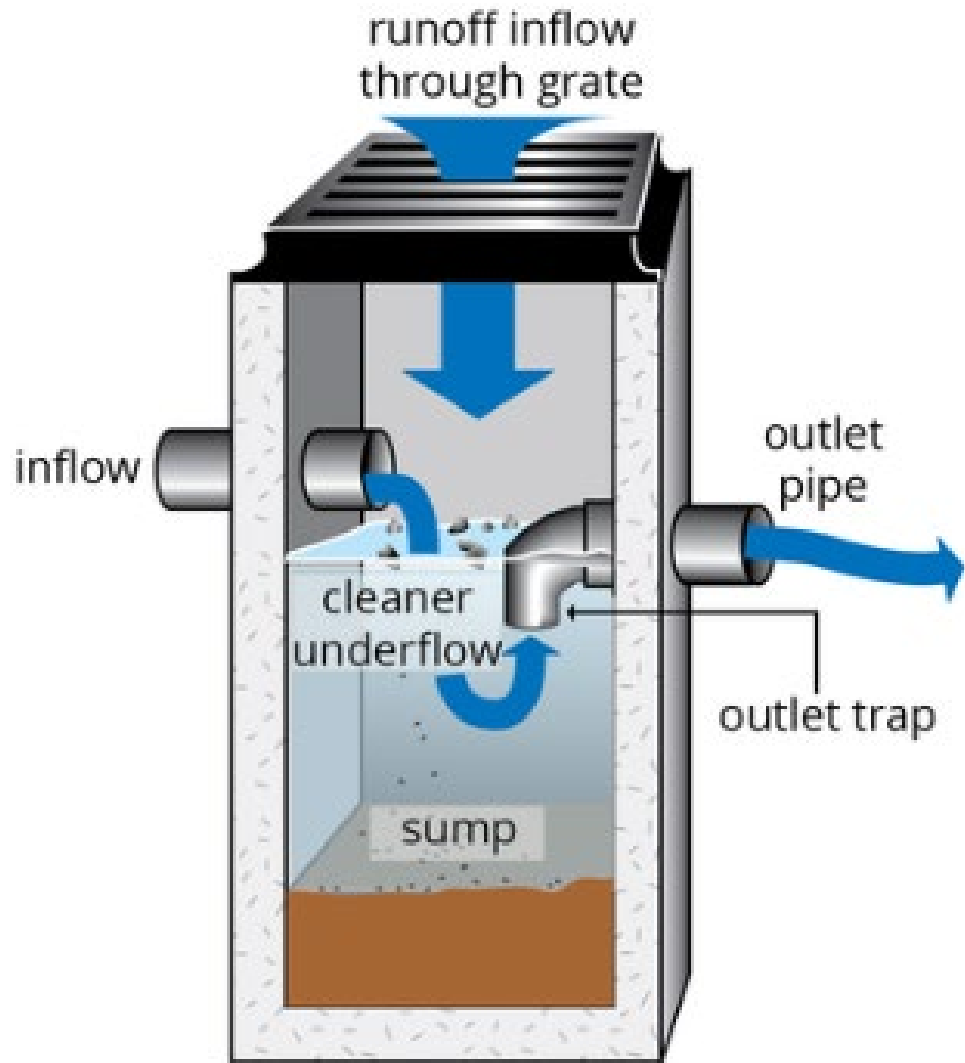
Storm drain inlet inspection and cleaning

- Inspect a minimum of once per year
- Cleaning and maintenance shall be conducted, at a minimum, as frequently as necessary to ensure that sediment, trash, or other debris is removed as necessary to restrict it from entering the waters of the state; to eliminate recurring problems; and maintain proper function



Catch basin inspection and cleaning

- Up to 1,000 municipal catch basins, inspect ALL every year
- 1,000+ catch basins, inspect 20% of the total every year on rotation



MS4 conveyance inspection and cleaning

- Identify all stormwater conveyance features, e.g., ditches and pipes
- Inspect, clean, and maintain as needed



Stormwater facility inspection and maintenance

- If there is no approved maintenance plan, the permittee shall inspect that infrastructure at least 4 times annually, and after each rainstorm exceeding one (1) inch of total rainfall
- If stormwater facilities are found not to be functioning properly, corrective maintenance and repairs shall be completed as soon as practicable, but no later than 90 days from discovery



Stormwater facilities not owned or operated by the municipality

- Ensure adequate long-term cleaning, operation, and maintenance of stormwater facilities not owned or operated by the permittee
- At least annual inspections are required
- Describe proper maintenance to include removal of solid and floatable materials, e.g., trash, litter, excess leaves, branches, excess growth, etc. that could impede proper function causing flooding, etc.



Municipal maintenance yards and other ancillary operations

- Document all best management practices at these facilities
- Conduct monthly inspections
- Maintain inventory list of all materials and machinery that could be a pollutant source
- Label all containers
- Conduct cleanup of spills of liquids and dry materials immediately after discovery
- Install secondary containment for all aboveground storage tanks
- Establish standard operating procedures for fueling operations
- Proper discharge of stormwater from secondary containment areas
- Conduct vehicle/equipment repair to prevent exposure of pollutant to stormwater

Municipal maintenance yards and other ancillary operations

- Maintain wash wastewater containment
- Proper handling and storage of salt and other de-icing material
- Proper storage of aggregate material, wood chips, and finished leaf compost
- Store cold patch asphalt material in permanent structure or on impervious surface covered with waterproof material
- Proper storage of street sweeping and storm sewer cleanout material
- Proper storage of construction and demolition waste, wood waste, and yard trimmings
- Proper storage of scrap tires
- Eliminate fluids from inoperable vehicles or equipment from entering stormwater
- Cover outdoor refuse containers and dumpsters

Training

- Stormwater Program Coordinator Training (once per permit cycle)
- Annual Employee Training
- Stormwater Management Design Review Training (once per permit cycle)
- Stormwater Management Rule Amendment Training (within one year)
- Municipal Board and Governing Body Member Training (once per term)



MS4 Mapping *(Due EDPA+36 months)*

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



Stream Scouring

- **Inspect all MS4 outfalls at least once every 5 years**
 - Up to 100 municipal outfalls, inspect ALL every year
 - 100+ municipal outfalls, inspect 20% of the total every year on rotation
- **Inspect new or newly identified outfalls within 30 days**
- **Investigate complaints and reports of scouring within 30 days and remediate within 12 months**
- *Due EDPA for Existing Tier A's, EDPA + 12 mo. for New Tier A's*



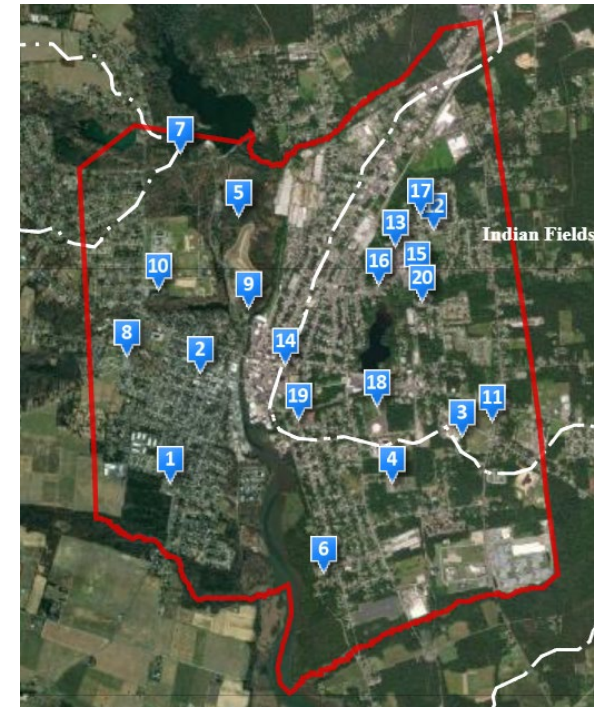
Illicit discharge detection and elimination

- **Conduct dry weather inspection of all MS4 outfalls at least once every 5 years**
 - Up to 100 municipal outfalls, inspect ALL every year
 - 100+ municipal outfalls, inspect 20% of the total every year on rotation
- **Inspect new or newly identified outfalls within 30 days**
- **Investigate dry weather flows within 30 days**
- **Remediate within 12 months OR request an extension from the Department by month 11**
- *Due EDPA for Existing Tier A's, EDPA + 12 mo. for New Tier A's*

Components of NJ MS4 Permit

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



Three phases of watershed improvement plans

Phase 1 – Prepare and submit the Watershed Inventory Report; conduct outreach (*EDPA + 36 mo. for Existing & New Tier A's*)

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

Phase 2 – Prepare and submit the Watershed Assessment Report; conduct outreach (*EDPA + 48 mo. for Existing & New Tier A's*)

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

Phase 3 – Prepare and submit the Watershed Improvement Plan Report; conduct outreach (*EDPA + 59 mo. for Existing & New Tier A's*)

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



IMMEDIATE RELEASE

February 17, 2023

MURPHY ADMINISTRATION OFFERING \$19 MILLION IN GRANTS TO ASSIST MUNICIPALITIES WITH NEW STORMWATER PERMITTING REQUIREMENTS

NOTICE OF FUNDING AVAILABILITY WILL BE POSTED BY MARCH 3

TRENTON – The Murphy Administration today announced the availability of \$19 million in grants to help municipalities with the transition to new municipal stormwater permitting system requirements designed to better protect New Jersey’s waterways from pollutants in stormwater. These permitting changes will also help mitigate localized flooding that is increasing due to climate change.

The 101 newly designated Tier A municipalities may apply for \$75,000 in grants.

The already existing Tier A municipalities may apply for \$25,000 in aid to assist them with implementing enhanced requirements.

Grant money may be used for adoption of stormwater-related ordinances, implementation of a street sweeping program, implementation of municipal maintenance yard, development of best management practices, completion of an MS4 infrastructure map, implementation of an illicit discharge detection and elimination program, required employee training, and completion of watershed improvement plans.

N.J.A.C. 7:8 - Stormwater Management Regulations

- Use nonstructural management strategies
- Protect communities from increases in stormwater volume and peak flows as a result of new development
- Maintain groundwater recharge
- Protect waterways from pollution carried in stormwater runoff



New Jersey Stormwater Management Rules

- Rules apply to any “Major Development” defined as a project disturbing more than 1 acre or increasing impervious surfaces by $\frac{1}{4}$ acre or more
- Design and Performance Standards established in NJAC 7:8-5, for:
 - Nonstructural Stormwater Management Strategies
 - Stormwater Quantity
 - Groundwater Recharge
 - Stormwater Quality
 - Stormwater Maintenance Plan



Nonstructural Strategies

- Plan the project using Low Impact Development (LID) Principles
- Collect, infiltrate, and where possible reuse stormwater near its source
- Capture runoff from small storm events in vegetated systems to protect water quality and promote recharge
- Minimize and disconnect impervious surfaces



Water Quantity Performance Standards

- Demonstrate that post-development 2, 10, and 100-year storm event hydrographs do not exceed pre-development hydrographs

or

- Demonstrate that hydrograph peaks will not increase and that increase in volume or change in timing won't increase flood damage downstream

or

- Design BMPs so that 2, 10, and 100-year pre-development hydrographs are reduced to 50%, 75%, and 80%, respectively
 - 2-year rainfall (3.3 inches)
 - 10-year rainfall (5.0 inches)
 - 100-year rainfall (8.3 inches)



Groundwater Recharge Performance Standards

- Maintain 100% of average annual groundwater recharge volume

or

- Infiltrate increase in the post development runoff volume for the 2-year storm



Water Quality Performance Standards

- Install BMPs to reduce at least 80% of total suspended solids (TSS) loads
- Install BMPs to provide nutrient removal to maximum extent feasible

<u>BMP</u>	<u>TSS Removal Rate</u>
Bioretention	90%
Constructed Wetlands	90%
Forested Buffers	70%
Extended Detention Basin	40-60%
Infiltration Structure	80%
Sand Filter	80%
Vegetative Filter Strip	50%
Wet Pond	60-90%

SOURCE: NJ Stormwater Management Rules
and BMP Manual



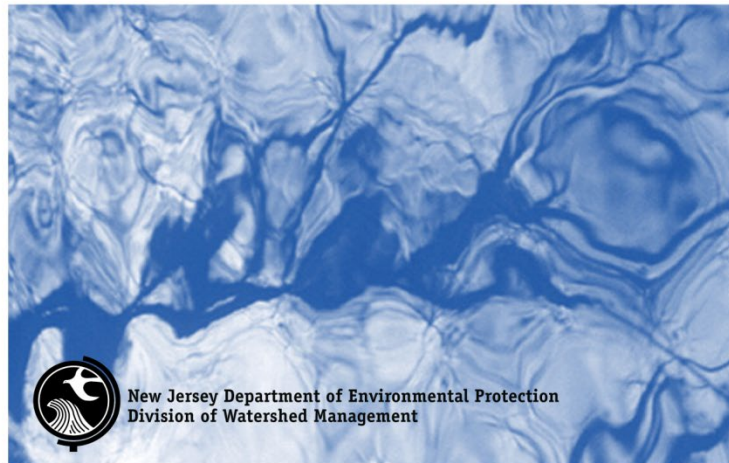
NJ Stormwater Guidance



New Jersey

Stormwater

Best Management Practices Manual



New Jersey Department of Environmental Protection
Division of Watershed Management

2019 Revisions

1. The current requirement that major developments incorporate nonstructural stormwater management strategies to the “maximum extent practical” to meet groundwater recharge standards, stormwater runoff quantity standards, and stormwater runoff quality standards, with a requirement that green infrastructure be utilized to meet these same standards.
2. Total suspended solids (TSS) removal only applies to runoff from motor vehicle surfaces



NJDEP Green Infrastructure Definition

A stormwater management measure that manages stormwater close to its source by:

1. Treating stormwater runoff through infiltration into subsoil
2. Treating stormwater runoff through filtration by vegetation or soil
3. Storing stormwater runoff for reuse



Green Infrastructure Standard

- Green infrastructure best management practices (BMP) must be used to satisfy recharge, quantity, and quality
- Three tables identifying the performance of each BMP in meeting the three standards
 - Water Quality & Recharge – BMPs in Table 1
 - Quantity – BMPs in Table 1 or Table 2
 - If received a variance – BMPs in Table 1, Table 2, or Table 3
- Maintain existing ability to propose an alternative stormwater design
 - Alternative design must meet green infrastructure definition and must meet drainage area limitation if similar to BMP with limit

Table 1

Best Management Practice	Quality TSS removal rate (%)	Quantity	Recharge	Minimum separation from seasonal high-water table (ft)
Bioretention Systems	80 or 90	Yes	Yes	2
			No	1
Cisterns	0	Yes	No	-
Dry Wells	0	No	Yes	2
Grass Swales	50 or less	No	No	2
Green Roofs	0	Yes	No	-
Infiltration Basins	80	Yes	Yes	2
Manufactured Treatment Device	50 or 80	No	No	Dependent upon the device
Pervious Paving Systems	80	Yes	Yes	2
			No	1
Sand Filters	80	Yes	Yes	2
Vegetative Filter Strips	60-80	No	No	-

- Table 1 BMPs shall be used for recharge, quantity, and quality
- Drainage area limitation applies to bioretention basins, dry wells, infiltration basins, manufactured treatment devices, and sand filters

Table 2

Best Management Practice	Quality TSS removal rate (%)	Quantity	Recharge	Minimum separation from seasonal high water table (ft)
Bioretention Systems	80 or 90	Yes	Yes	2
			No	1
Infiltration Basins	80	Yes	Yes	2
Standard Constructed Wetlands	90	Yes	No	N/A
Wet Ponds	50-90	Yes	No	N/A

Table 2 BMPs may only be used for quantity

Table 3

Best Management Practice	Quality TSS removal rate (%)	Quantity	Recharge	Minimum separation from seasonal high water table (ft)
Blue Roofs	0	Yes	No	N/A
Extended Detention Basins	40-60	Yes	No	1
Manufactured Treatment Device	50 or 80	No	No	Dependent upon the device
Sand Filters	80	Yes	No	1
Subsurface Gravel Wetlands	90	No	No	1
Wet ponds	50-90	Yes	No	N/A

Table 3 BMPs may only be used if a variance is granted

Let's talk about the practicality of these new regulations



Table 1
Water Resources Program

Best Management Practice	Quality TSS removal rate (%)	Quantity	Recharge	Minimum separation from seasonal high-water table (ft)
Bioretention Systems	80 or 90	Yes	Yes	2
			No	1
Cisterns	0	Yes	No	-
Dry Wells	0	No	Yes	2
Grass Swales	50 or less	No	No	2
Green Roofs	0	Yes	No	-
Infiltration Basins	80	Yes	Yes	2
Manufactured Treatment Device	50 or 80	No	No	Dependent upon the device
Pervious Paving Systems	80	Yes	Yes	2
			No	1
Sand Filters	80	Yes	Yes	2
Vegetative Filter Strips	60-80	No	No	-

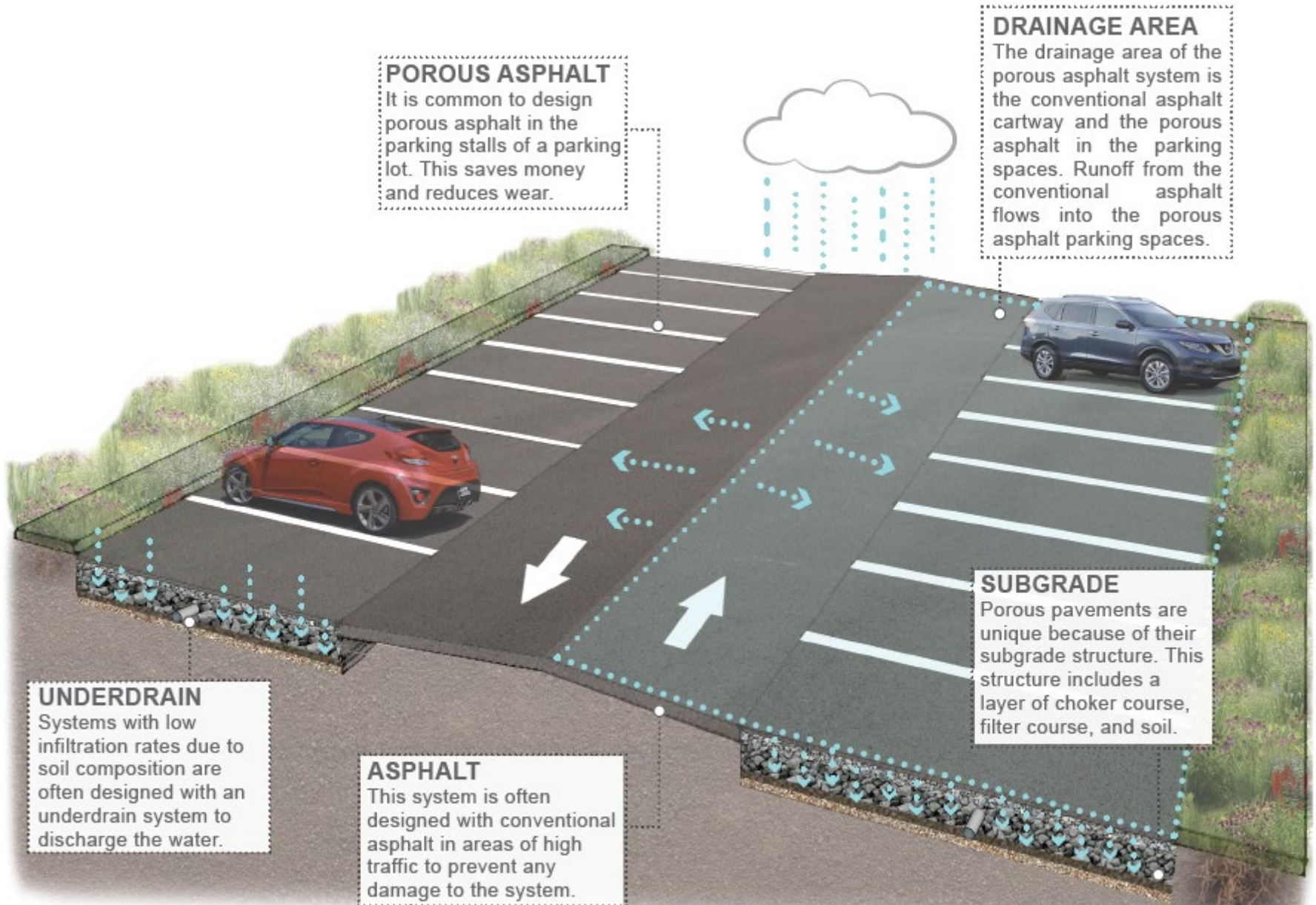
Pervious Paving Systems

POROUS ASPHALT

It is common to design porous asphalt in the parking stalls of a parking lot. This saves money and reduces wear.

DRAINAGE AREA

The drainage area of the porous asphalt system is the conventional asphalt cartway and the porous asphalt in the parking spaces. Runoff from the conventional asphalt flows into the porous asphalt parking spaces.



UNDERDRAIN

Systems with low infiltration rates due to soil composition are often designed with an underdrain system to discharge the water.

ASPHALT

This system is often designed with conventional asphalt in areas of high traffic to prevent any damage to the system.

SUBGRADE

Porous pavements are unique because of their subgrade structure. This structure includes a layer of choker course, filter course, and soil.

Permeable Pavements

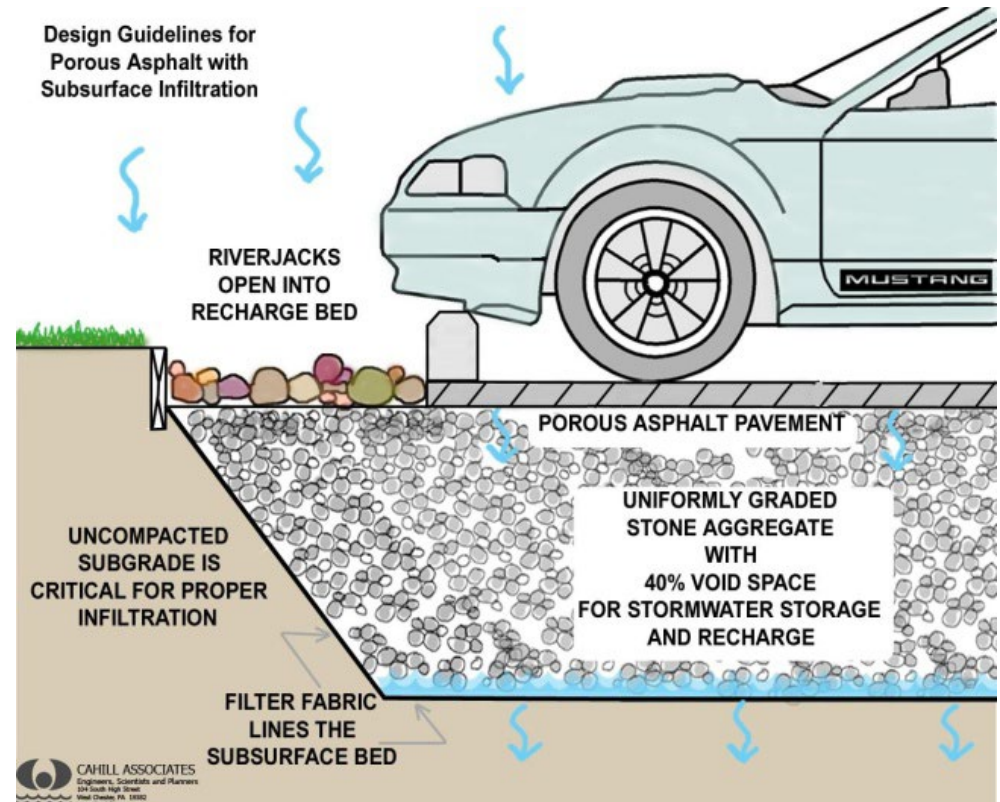
- Underlying stone reservoir
- Porous asphalt and pervious concrete are manufactured without "fine" materials to allow infiltration
- Grass pavers are concrete interlocking blocks with open areas to allow grass to grow
- Ideal application for porous pavement is to treat a low traffic or overflow parking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



ADVANTAGES

- Manage stormwater runoff
- Minimize site disturbance
- Promote groundwater recharge
- Low life cycle costs, alternative to costly traditional stormwater management methods
- Mitigation of urban heat island effect
- Contaminant removal as water moves through layers of the system

COMPONENTS



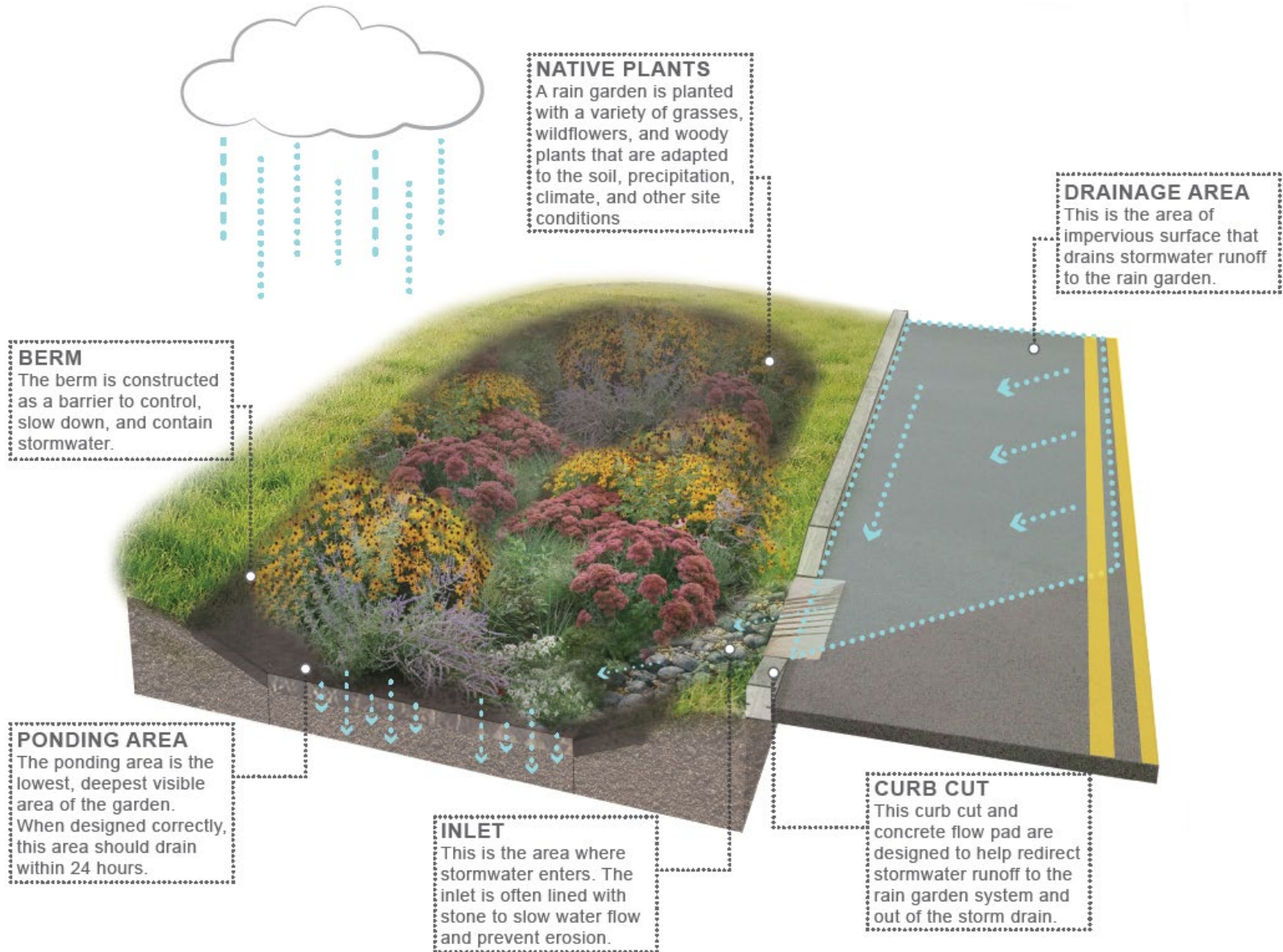
Porous Asphalt



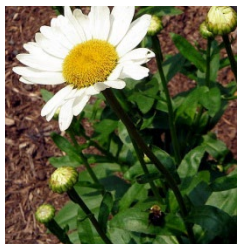
Grass Pavers



Bioretention Systems



Lots of Bioretention Systems

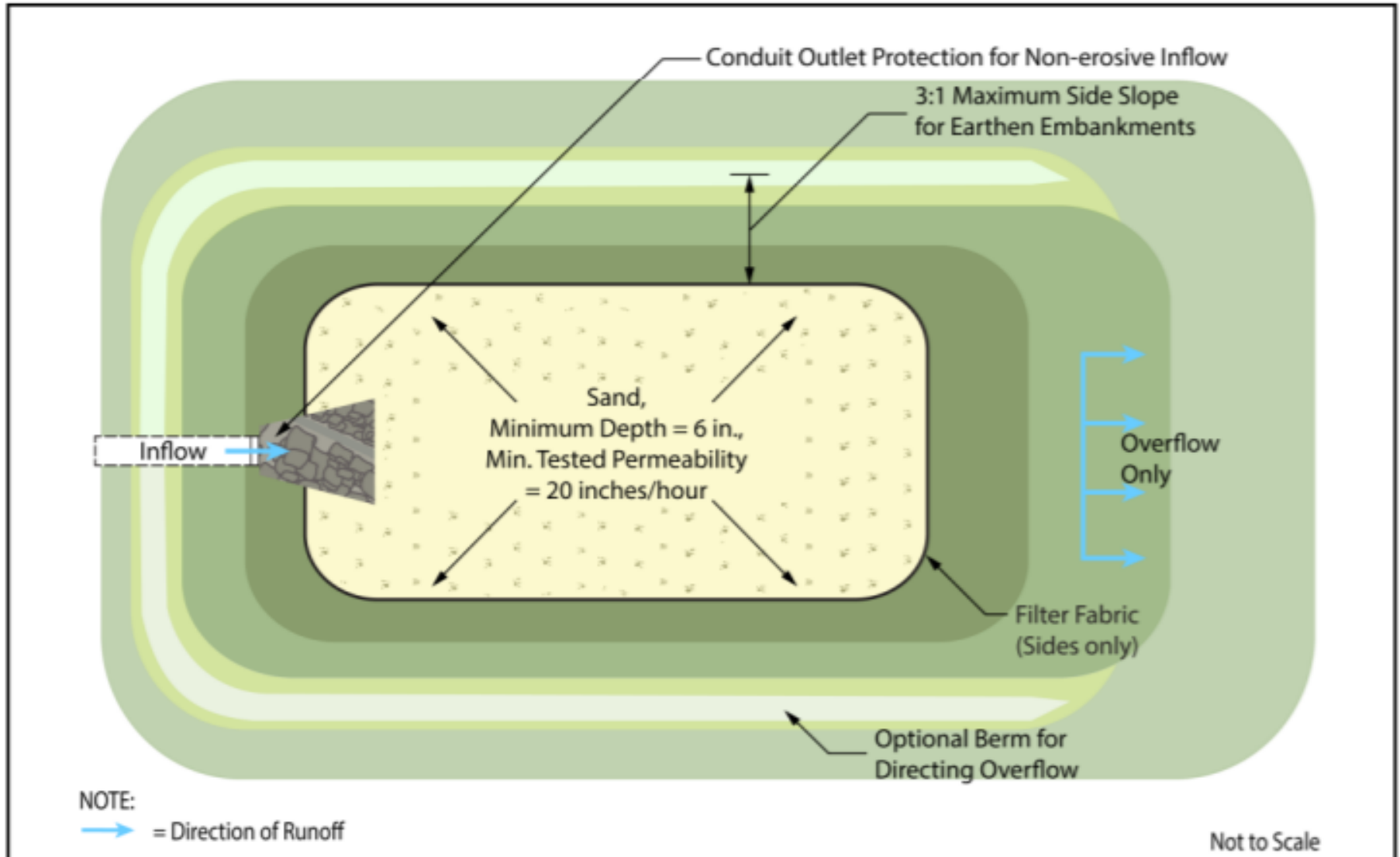




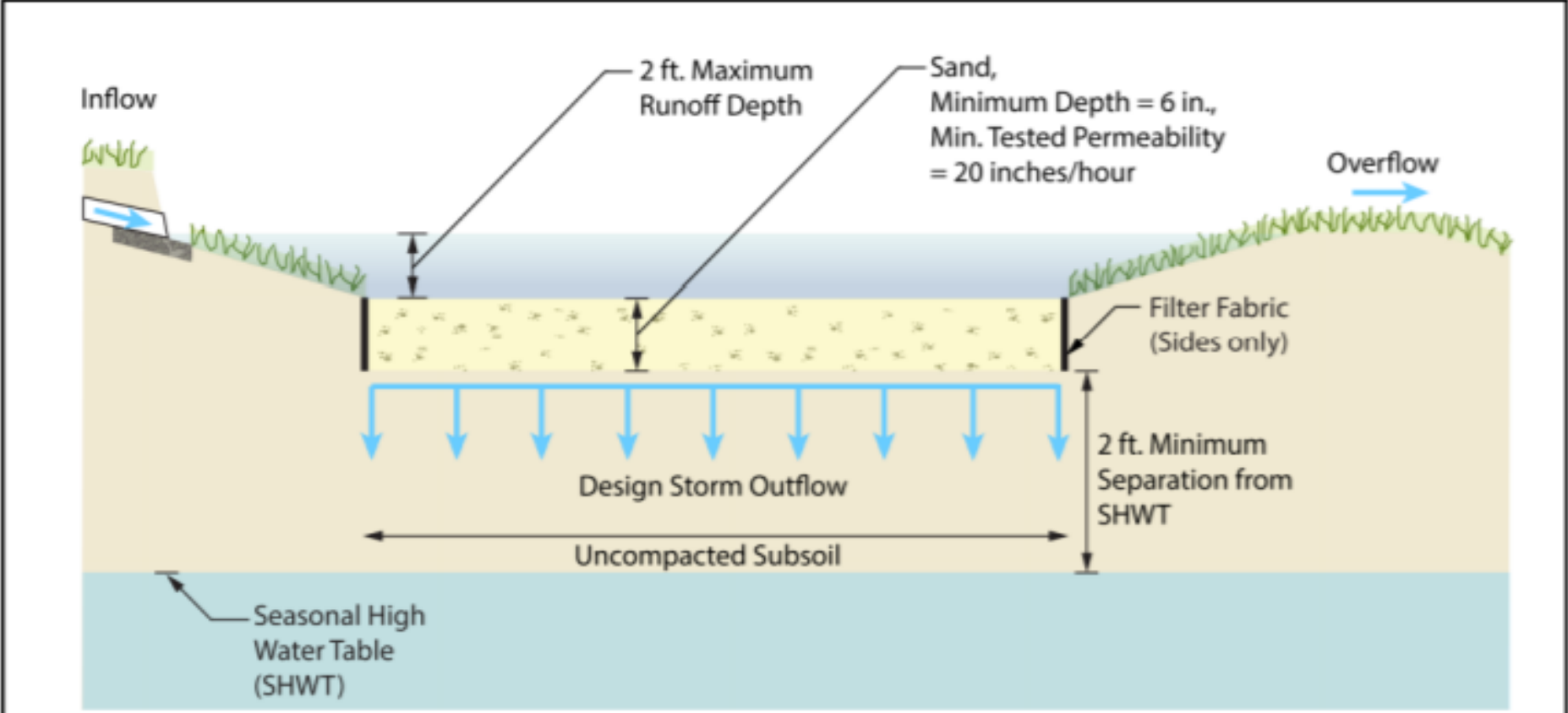


Infiltration Systems

Surface Infiltration Basin – Plan View



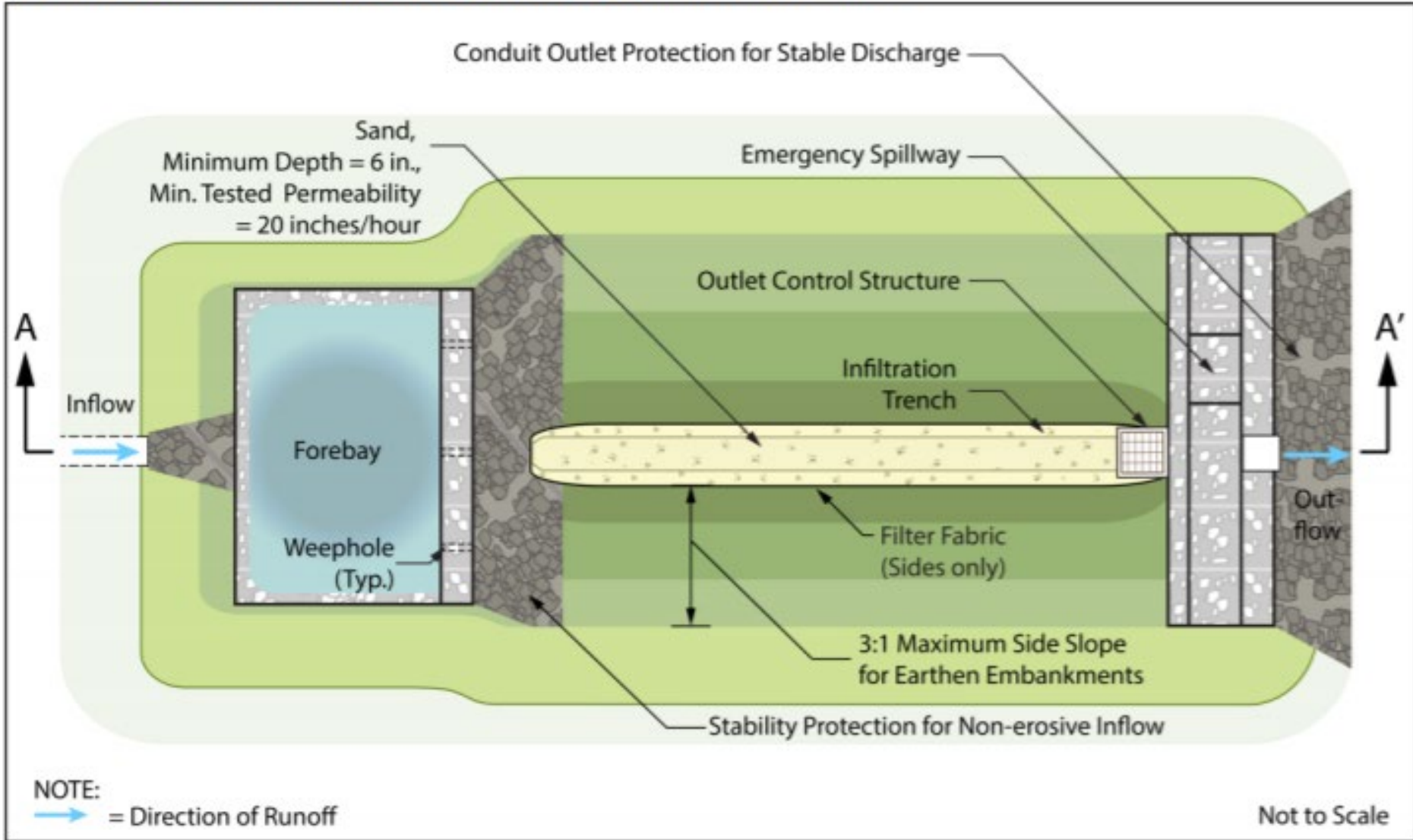
Surface Infiltration Basin – Profile View



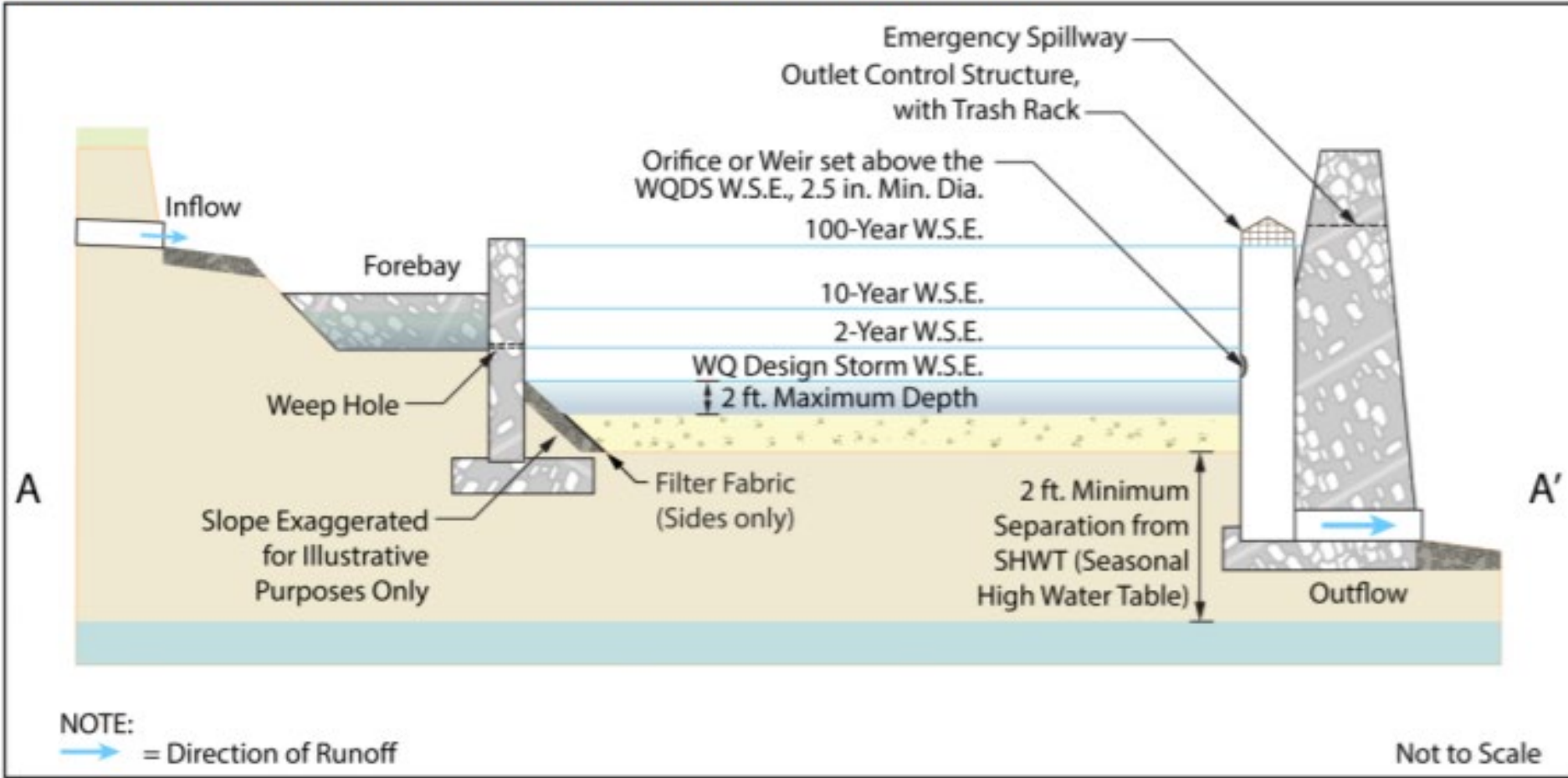
NOTE:
→ = Direction of Runoff

Not to Scale

Infiltration - Extended Detention Basin: Plan View

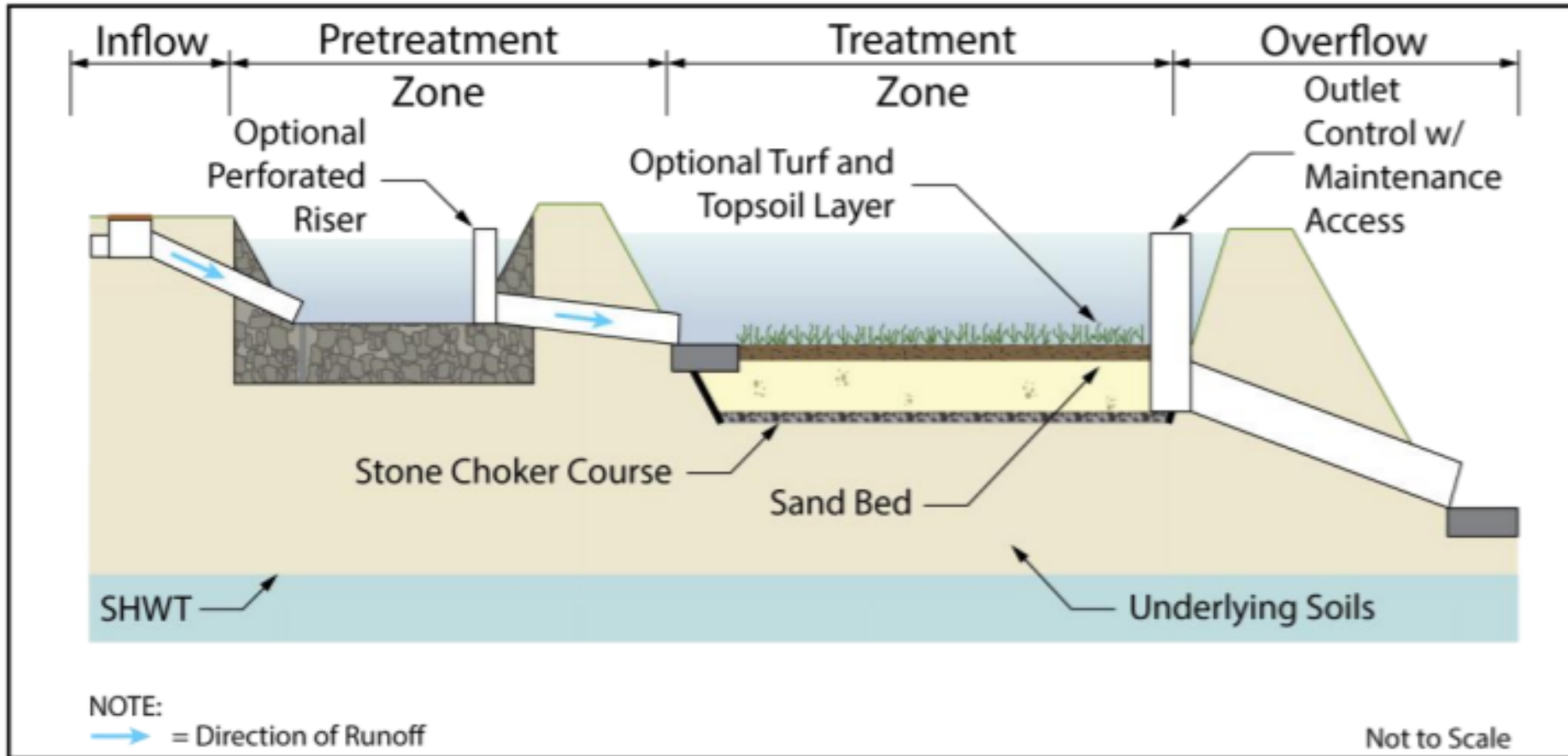


Infiltration – Extended Detention Basin: Profile View

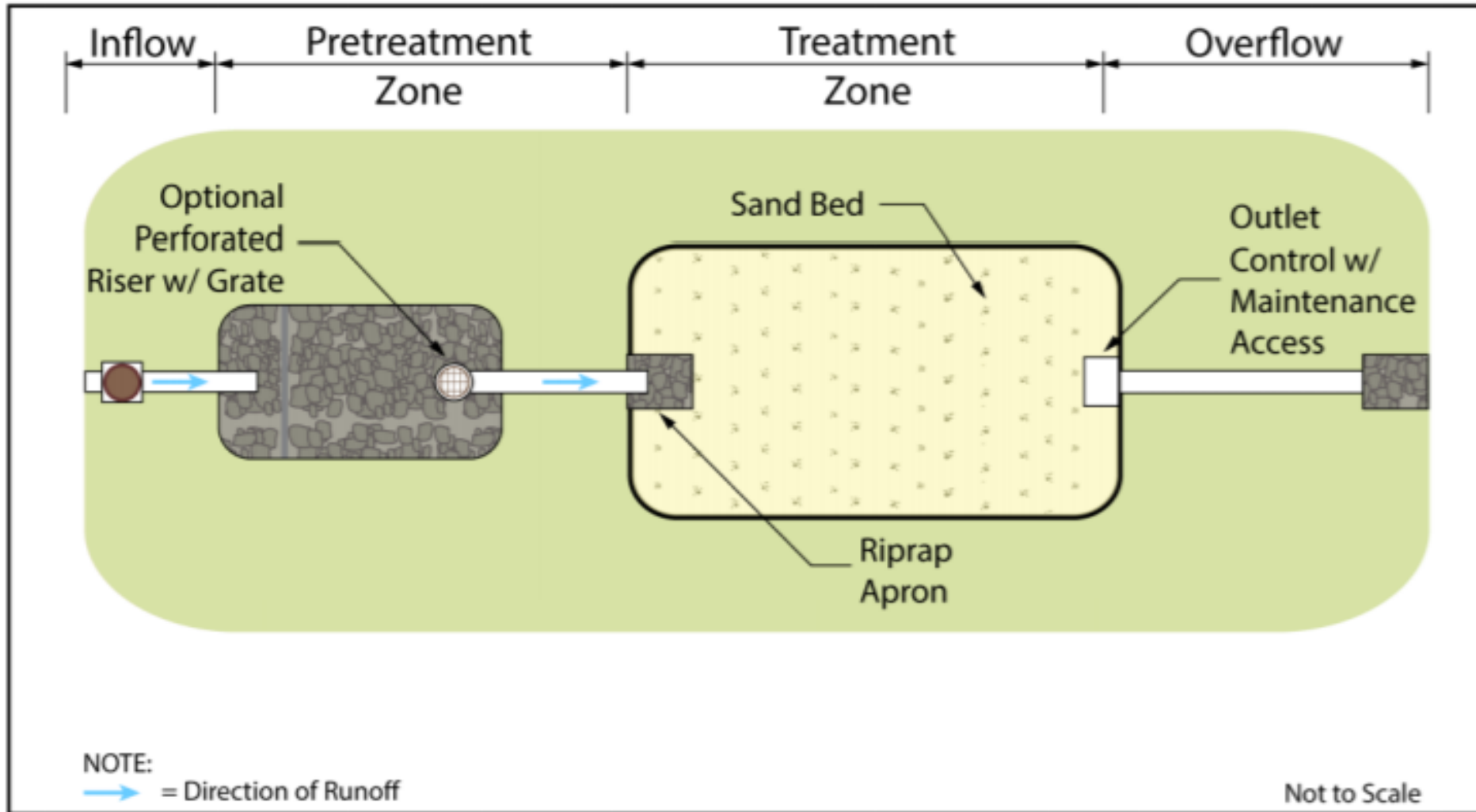


Sand Filter

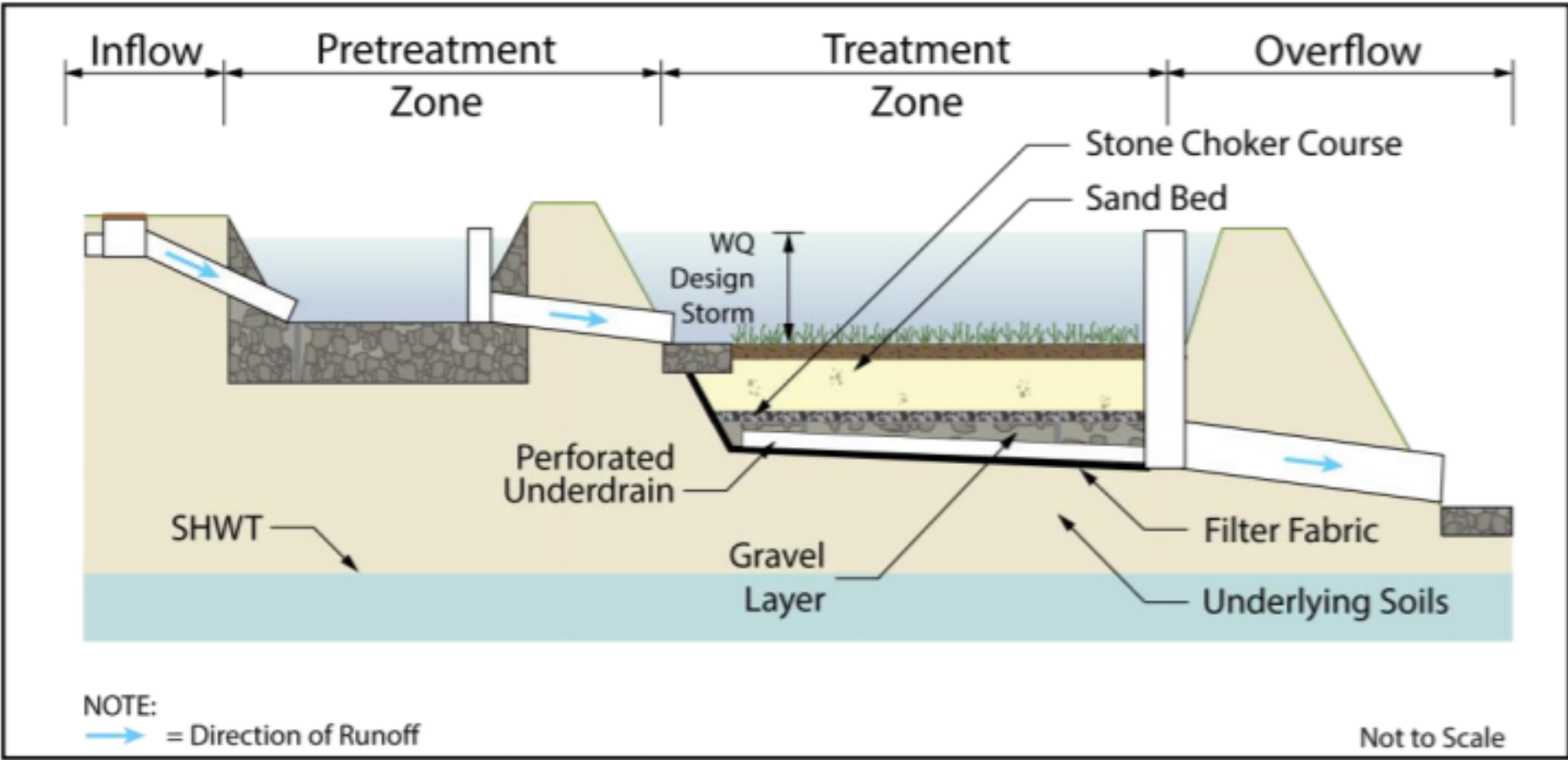
Profile View – Sand Filter Basics



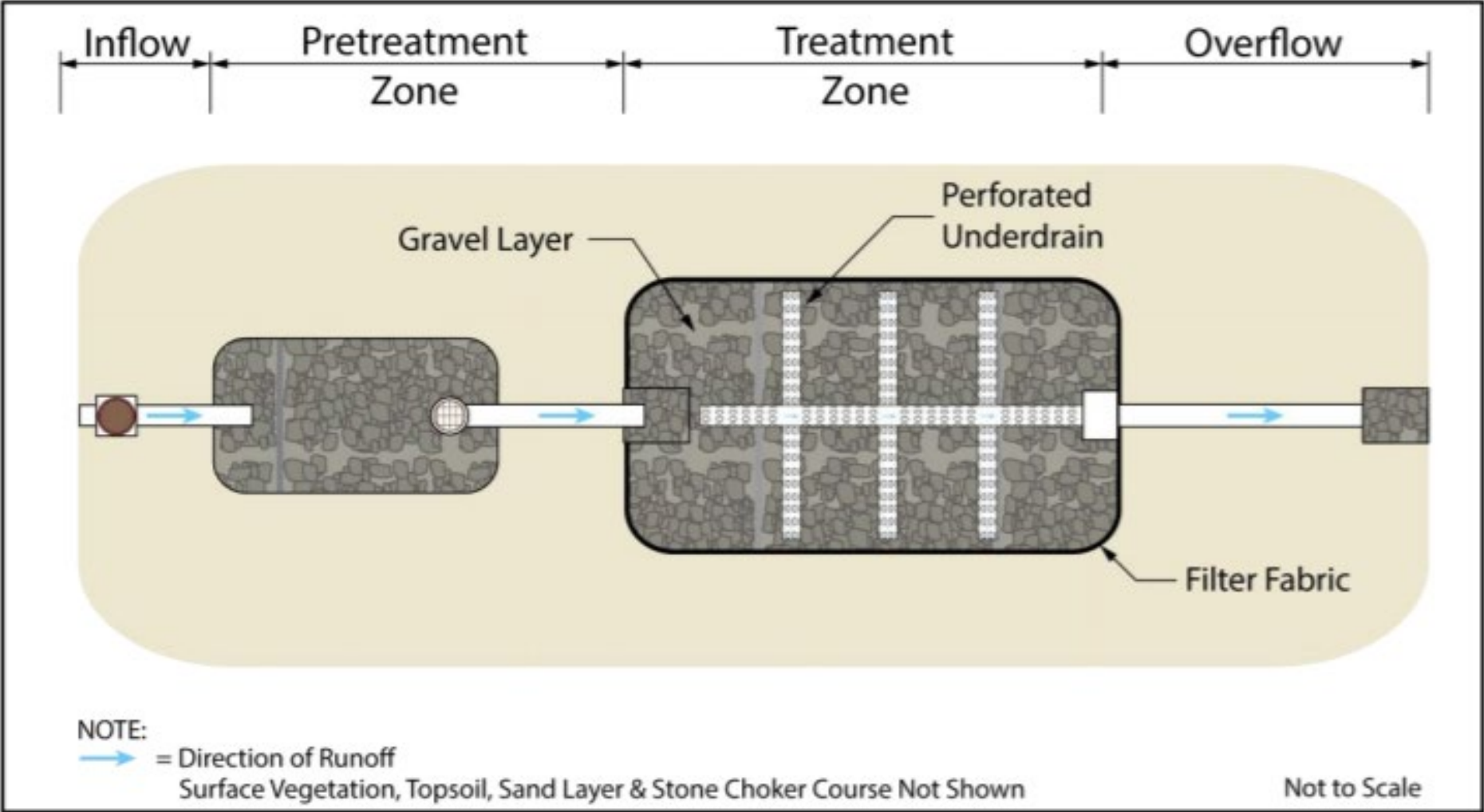
Plan View – Sand Filter Basics



Profile View – Sand Filter with Underdrain



Plan View – Sand Filter with Underdrain



**On December 5, 2022, NJDEP proposed
new
Stormwater Management Rules
Flood Hazard Area Control Act Rules**



2100 Projection

Future Precipitation Change Factors			
County	2-year Design	10-year Design	100-year Design
	Storm	Storm	Storm
Atlantic	1.22	1.24	1.39
Bergen	1.20	1.23	1.37
Burlington	1.17	1.18	1.32
Camden	1.18	1.22	1.39
Cape May	1.21	1.24	1.32
Cumberland	1.20	1.21	1.39
Essex	1.19	1.22	1.33
Gloucester	1.19	1.23	1.41
Hudson	1.19	1.19	1.23
Hunterdon	1.19	1.23	1.42
Mercer	1.16	1.17	1.36

Future Precipitation Change Factors			
County	2-year Design	10-year Design	100-year Design
	Storm	Storm	Storm
Middlesex	1.19	1.21	1.33
Monmouth	1.19	1.19	1.26
Morris	1.23	1.28	1.46
Ocean	1.18	1.19	1.24
Passaic	1.21	1.27	1.50
Salem	1.20	1.23	1.32
Somerset	1.19	1.24	1.48
Sussex	1.24	1.29	1.50
Union	1.20	1.23	1.35
Warren	1.20	1.25	1.37

2020 Projection

Current Precipitation Adjustment Factors			
County	2-year	10-year	100-year
Atlantic	1.01	1.02	1.03
Bergen	1.01	1.03	1.06
Burlington	0.99	1.01	1.04
Camden	1.03	1.04	1.05
Cape May	1.03	1.03	1.04
Cumberland	1.03	1.03	1.01
Essex	1.01	1.03	1.06
Gloucester	1.05	1.06	1.06
Hudson	1.03	1.05	1.09
Hunterdon	1.02	1.05	1.13
Mercer	1.01	1.02	1.04

Current Precipitation Adjustment Factors			
County	2-year	10-year	100-year
Middlesex	1.00	1.01	1.03
Monmouth	1.00	1.01	1.02
Morris	1.01	1.03	1.06
Ocean	1.00	1.01	1.03
Passaic	1.00	1.02	1.05
Salem	1.02	1.03	1.03
Somerset	1.00	1.03	1.09
Sussex	1.03	1.04	1.07
Union	1.01	1.03	1.06
Warren	1.02	1.07	1.15

100-Year Storm for Somerset County

Condition (100-yr Design Storm)	24-hour rainfall total (in)
2000 Rainfall Total	8.21
2020 Rainfall Total	8.95
2100 Rainfall Total	12.15



Clean Stormwater and Flood Reduction Act (Established in NJ in March 2019)

- ✓ Authorizes municipalities, counties, and certain authorities to establish stormwater utilities



- ✓ Recognizes problems affecting residents due to inadequate stormwater infrastructure/management:
 - Health and safety
 - Economic well-being
 - Quality of life



Clean Stormwater and Flood Reduction Act (Cont'd)

- ✓ Recognizes that stormwater infrastructure in NJ lacks a dedicated source of funding for upgrades and maintenance
- ✓ Allows for fee assessment based on a fair and equitable approximation of proportionate contribution of stormwater runoff from real property



Advantages of Creating a Stormwater Utility

- Provides a dedicated source of funding for maintenance and installation of stormwater practices
- Provide incentive for property owners who want to reduce/treat runoff
- Avoids stormwater costs from being embedded in other taxes/fees (water fee, sewer fee, property taxes)
- Property owners pay for their contribution to the stormwater problem based upon their impervious cover



For more information about stormwater utilities, visit the Flood Defense New Jersey websites:

- flooddefensenj.com
- stormwaterutilities.njfuture.org/about/



N.J.S.A. 4:24-39 - NJ Soil Erosion and Sediment Control Act

Establishes and implements, through the State Soil Conservation Committee and the Soil Conservation Districts, in cooperation with the counties, the municipalities and the Department of Environmental Protection, a statewide comprehensive and coordinated erosion and sediment control program to reduce the danger from stormwater runoff, to retard nonpoint pollution from sediment, and to conserve and protect the land, water, air and other environmental resources of the state



The Standards



Published by
the New Jersey Department of Agriculture—
State Soil Conservation Committee



*The Standards
for Soil Erosion and
Sediment Control
In New Jersey*

7th Edition, January 2014
Revised July 2017

Some Highlights

- Requires all development that disturbs more than 5,000 square feet to have a soil erosion and sediment control plan
- Requires practices such as:
 - silt fences
 - tree protection
 - gravel tracking pads
 - inlet protection



Vegetative Standards

- Acid soils management
- Dune stabilization
- Maintaining permanent vegetative cover for soil stabilization
- Stabilization with mulch only
- Stabilization with sod
- Temporary vegetative cover for soil stabilization
- Topsoiling (revised July 2017)
- Tree protection during construction
- Trees, shrubs, and vines



Engineering Standards

- Channel stabilization
- Conduit outlet protection
- Detention structures
- Dewatering
- Diversions
- Dust control
- Grade stabilization structure
- Grassed waterway
- Land grading (revised July 2017)
- Lined waterway
- Off-site stability analysis



Engineering Standards

- Riprap
- Sediment barrier
- Sediment basin
- Slope protection structures
- Soil bioengineering
- Stabilized construction access
- Storm sewer inlet protection
- Stream crossing
- Subsurface drainage
- Traffic control
- Turbidity barrier



Unprotected,
stockpiled soil

Eroded soil from
unprotected
construction sites

Vehicle tracked soil





- New Jersey League of Conservation Voters
- ANJEC (Association of NJ Environmental Commissions)
- Citizens' Climate Lobby
- New Jersey Environmental Lobby
- New Jersey Sierra Club
- Pinelands Preservation Alliance
- New Jersey Highlands Coalition
- Watershed Institute





QUESTIONS?