

# Stormwater Permits in PA: Industrial, Construction and Municipal Sources

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# What is Stormwater?

- Generated from rain and snow melt events that flow over land or surfaces (pavement, rooftops, buildings) and does not soak into the ground
- Picks up pollutants like chemicals, oil, sediment and trash before flowing into storm drains, rivers, and streams → pollution of waters
- In PA, stormwater runoff significantly contributes to the state's 19,000 miles of impaired waters

# Federal Clean Water Act (CWA) & NPDES Stormwater Program

- Primary federal law governing water pollution
- Programs for the control of point and nonpoint source pollution
- PA equivalent: Clean Streams Law (CSL)
- Stormwater Regulations published 1990
  - 40 CFR § 122.26(b)(14)(i-xi)
  - Applicable to all State programs 40 CFR § 123.25
- EPA requires states to take an approach to SWM that includes recharge, volume control, and water quality

# PA NPDES Stormwater Program

- 1978 - PA delegated authority to administer federal CWA program
  - EPA retains ultimate permitting and enforcement authority
- PA Clean Streams Law (CSL)
  - Incorporates federal NPDES stormwater program
    - 25 Pa. Code § 92a.32
  - Generally matches the federal program
  - A person may not discharge pollutants from a point source into surface waters except as authorized under an NPDES permit

# Building Blocks of CWA

- Water Quality Standards (WQS)
  - Describe desired condition of a water body and the means by which that condition will be protected or achieved
  - Comprised of designated uses (i.e., fishable, swimmable), Water Quality Criteria (WQC) to protect designated uses, and antidegradation requirements
  - 25 Pa. Code Chapter 93
- Permits that control point source discharge through effluent limits (NPDES)
  - Technology Based Effluent Limits (TBEL)
  - Water Quality Based Effluent Limit (WQBEL)
    - If TBEL not sufficient to meet WQS
    - No regard to technical/economic feasibility

# Building Blocks of CWA

- Total Maximum Daily Load (TMDL)
  - Capacity of water body to assimilate a particular pollutant and continued to be designated use/WQS
  - Allocate load between contributing point and non-point sources
  - TMDL is sum of these allocations
  - Submit to EPA for approval 40 CFR § 130.7(d)(1)

# PA and Local Regulation

- PA
  - WQS
    - Adopt designated uses and WQC to protect designated uses
    - Adopt antidegradation policy to help protect existing water quality and high quality waters
    - Issue discharge permits
  - Triennial review
    - TMDL
  - Program assumption and permitting (individual and general)
- Local
  - E&S Plan
  - Requirements for local ordinances (i.e., for small MS4s and post construction controls)

# PA Stormwater Permit Categories

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1. Industrial
2. Construction
3. Municipal (MS4)



# Industrial Stormwater in PA

- Federal regulations at 40 CFR § 122.26(b)(14) identify specific classes of industrial facilities that must apply for NPDES permit coverage for stormwater
  - i.e., mineral industry, hazardous waste treatment, storage or disposal, landfills, recycling, transportation
- DEP may require any other facility to obtain a permit if discharging pollutants to waters of the Commonwealth

# Industrial Stormwater in PA

- Means, for example, discharges from:
  - Industrial plant yards
  - Access roads used for raw material transport
  - Material handling
  - Refuse
  - Application or disposal of process wastewater
  - Storage and maintenance of material handling equipment
  - Manufacturing buildings
  - Storage areas
  - Areas of former industrial activity

# Permitting Industrial Stormwater in PA

## Options:

1. Submit a Notice of Intent (NOI) for coverage under the PAG-03 General Permit
2. Submit a No Exposure Certification (NEC)
3. Submit an Individual NPDES Permit Application for Industrial Stormwater and receive an individual NPDES permit

# PA General Permits

## Background

- General permits under NPDES permit program cover entire category of facilities, activities, or areas
  - I.e., industrial, construction, and municipal (MS4)
- No individualized review of facility → “stock” permits
  - Public Notice and Comment only on development of GP
  - Meet the requirements or submit individual NPDES application
- No individualized pollution controls
- Discharger submits notice of intent (NOI) to be covered

# Option #1: PAG-03 General Permit for Industrial Stormwater

- Authorizes specific discharges of stormwater associated with industrial activity and select non-stormwater discharges (i.e., potable water, irrigation drainage, spring water)
  - Applies to listed SIC codes and industrial activities (approx. 21)
  - May still qualify if SIC code or industrial activity is similar but not listed (Appendix J)
- Not available to facilities with individual NPDES permits
- 5-year permit term
  - Current permit (2016) expires March 23, 2023
  - Draft PAG-03 published for comment August 20, 2022

# PAG-03 General Permit

## Discharges not authorized:

- Potential to cause or contribute to pollution
- Discharger cannot comply with PAG-03
- Poor compliance history (DEP will not issue – 2022 PAG-03)
- Certain stormwater discharges/pollutants (i.e., toxic, hazardous)
- Not comply with applicable effluent limitation or WQS
- Facility has individual permit
- Discharges to impaired, HQ or EV waters

# PAG-03 General Permit

## Permit Includes:

- General and sector-specific sections/appendices
- Effluent limitations through BMPs
- Prohibited discharges (i.e., floating solids, scum, sheen)
- Self-monitoring and reporting
  - Sampling at storm events (not always easy)
  - Semiannual and annual DMRs, Annual Report, non-compliance
  - Benchmark monitoring exceedances → CAP
- Test procedures
- Failure to comply → enforcement action or permit revocation

# PAG-03 General Permit - Benchmark Exceedance

- Benchmark exceedance is not a permit violation!
- A corrective action plan (CAP) must be submitted if the same benchmark level is exceeded in two consecutive monitoring periods at the same outfall
- Identifies additional pollutant control measures or BMPs that will be implemented and implementation schedule
- CAP must be submitted within 90 days following the end of the monitoring period and for any subsequent monitoring periods also demonstrating consecutive benchmark exceedances
  - Possible exceptions: natural background, economic and technological feasibility, not cause or contribute to exceedance of WQS ...



# Draft PAG-03 Updates (2022)

- New and revised benchmark values
  - Total Nitrogen and Total Phosphorous
  - TSS benchmark value was initially raised to 150 mg/L but lowered back to 100 mg/L (consistent with 2016 GP)
- Updated BMPs
- Four exceedances of CAP requires BMP checklist
- Pollutant analysis for discharges to impaired waters
- Option to use composite samples in lieu of grab samples
- For NOI, report all outfalls on-site

# Draft PAG-03 Benchmark Examples (2022)

- Oil & Grease: 30 mg/L
- COD: 120 mg/L
- BOD5: 30 mg/L
- TSS: 100 mg/L
- Nitrate + Nitrite-Nitrogen: 3.0 mg/L
- pH: 9.0
- Total Phosphorous (report only)
- Total Iron (report only)

# PAG-03 General Permit – NOI

- Submit NOI to DEP Regional Office 60 days before new discharge
- NOI form (3850-PM-BCW0083b) for new, renewed, or amended coverage
- Annual fee (proposed \$500/year)

# PAG-03 General Permit – NOI

- Similar to individual NPDES permit application
- Requires:
  - Description of industrial activities
  - Identify leaks or spills within past 5 years
  - PPC Plan
  - Non-Stormwater discharges
  - Inspection and maintenance
  - Outfall and receiving water/storm sewer info
  - Pollutant concentration data

# Option #2: PA No Exposure Certification

- Eligibility at 40 CFR § 122.26(g)
- Requirements:
  - Storm resistant shelter for industrial materials and activities
  - Certify no discharges of contaminated stormwater
  - DEP inspection (reports publicly available)
  - No non-stormwater discharges to HQ or EV waters
  - PPC Plan
  - Sampling of stormwater at outfall with application

# PA NEC– Benchmark Values (2016 and proposed)

- Oil and Grease (mg/L):  $\leq 5.0$
- BOD5 (mg/L):  $\leq 10$
- COD (mg/L):  $\leq 30$
- TSS (mg/L)  $\leq 30$
- Total Nitrogen (mg/L):  $\leq 2.0$
- Total Phosphorus (mg/L):  $\leq 1.0$
- pH (S.U.): 6.0 to 9.0 (unless precipitation pH is below 6.0)
- Total Iron (mg/L):  $\leq 7.0$

# Obtaining PA NEC

- Submit PAG-03 NOI and select “No Exposure Certification”
- NOI fee (proposed \$500/year)
- Submit No Exposure Certification application form (3850-PM-BCW0083e)
- Agree to DEP compliance inspections
  - Inspection reports may be made public
- Submit signed NEC to DEP every 5 years

# Option #3: PA NPDES Permit for Industrial Stormwater

- Where facility is not eligible for PAG-03 or NEC
- Application at 3800-PM-BCW0403
- Authorize discharges to surface water
- Regulate quality and quantity of the discharge
- Specify effluent limits or BMPs
- Establish Monitoring and Record Keeping
- Fixed Term (typically 5-year renewal term)
  - Submit renewal application 180 days prior to expiration



# PA NPDES Permit for Industrial Stormwater - Application

- Application fee
- Nature of industrial activity
- Site plan and topographic/aerial map
- Discharge and monitoring locations
- Non-stormwater discharges expected during permit term
- Stormwater outfall inspection and maintenance info
- Treatment or BMPs (including chemicals used)
- Identification of significant leaks or spills (past five years)
- Stormwater sampling results
- Other pollutants
- Lab information
- Compliance history
- PPC Plan

# Construction Stormwater in PA

- Permit Options:
  - General Permit (two options, acreage dependent)
  - Individual (two options, acreage dependent)
- Erosion and Sedimentation (E&S) Control Plans
  - Generally issued by local soil conservation district
- Wetlands
- Post-Construction Stormwater Management (PCSM)
  - Local ordinances and deed restrictions

# PAG-01 and PAG-02 General Permits

- GP for Discharges of Stormwater Associated with Small Construction Activities (PAG-01)
  - Less than 5 acres of earth disturbance
  - No permit required for less than 1 acre
- GP for Discharges of Stormwater Associated with Construction Activities (PAG-02)
  - Any acreage

# PAG-01 and PAG-02 General Permits

- Eligibility:
  - Stormwater runoff will not discharge to HQ or EV waters
  - No evidence of soil contamination
  - No discharge of hazardous pollutants, toxics, etc.
  - No discharges that cause significant adverse impact
- BMPs (E&S, PCSM)
- Monitoring, Reporting, and Recordkeeping
  - Routine inspections and sampling
  - Non-Compliance and potential pollution reporting

# PAG-01 and PAG-02 General Permits - NOI

- NOI fees
  - \$500 + disturbed acreage fee
- Submit NOI package to DEP (Forest and Philadelphia Counties) or County Conservation District (all others)
- DEP/CCD technical review
- If ineligible → individual NPDES permit

# PA NPDES Permit for Construction Stormwater

- Two options:
  - Small Construction Activities (3800-PM-BCW0407a)
    - Less than 5 acres of earth disturbance
  - Construction Activities (3800-PM-BCW0408b)
    - Any amount of earth disturbance
- Authorizes certain stormwater discharges and non-stormwater discharges associated with construction activity
- PPC Plan
- BMPs (E&S, PCSM)
- Monitoring, Reporting, and Recordkeeping

# PA NPDES Permit for Construction Stormwater - Application

- Application fees, including disturbed acreage fee
- Application due 120 days before planned construction
- Similar to other individual NPDES permits and applications
- Requirements:
  - Project site information (including impervious area)
  - Earth disturbance
  - E&S and PCSM Plan
  - Off-site construction support activities
  - Compliance history
  - Discharge points and receiving waters
  - Non-stormwater discharges
  - Anti-deg analysis if discharges to HQ or EV

# Post Construction Stormwater Management (PCSM) Plan

- Mechanism for ensuring post construction compliance
  - Structural: Stormwater retention basins, engineered infiltration, grit chamber, oil water separator
  - Non-structural: Operating practices, consideration of deed restrictions or covenants running with the land
  - Check local ordinances
  - Required under individual and GPs



# Municipal Stormwater in PA (MS4)

- MS4 is a conveyance or system of conveyances that is:
  - Owned by a state, city, town, or other public entity (i.e., universities and prisons) that discharges to waters of the Commonwealth
  - Designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches)
  - Not a combined sewer, and
  - Not part of a sewage treatment plant, or publicly owned treatment works (POTW)
- Polluted stormwater runoff is transported through MS4s and discharged, untreated, into local water bodies

# Municipal Stormwater in PA (MS4)

- Covered entities must obtain NPDES permit coverage or a waiver for discharges of stormwater from their MS4s
- MS4s may receive waiver depending on population (<10,000)
  - Not subject to permit requirements for 5-year term
- NPDES permits issued after 2017 for discharges to certain impaired waters or to water in the Chesapeake Bay watershed required Pollutant Reduction Plans (PRPs) or TMDL Plans
- MS4s in PA include:
  - Large MS4s (2)
  - Medium (0)
  - Small MS4s (1059)

# PAG-13 General Permit

- NPDES General Permit for Stormwater Discharges from Small MS4s (PAG-13)
- Authorizes select non-stormwater discharges
- Requires:
  - SWMP, PRP, TMDL Plan
    - Require public participation
  - Pollutant control measures/BMPs
  - Reporting (i.e., annual and progress reports)
  - Stormwater management ordinance

# PAG-13 General Permit – NOI

- Submit NOI
- Annual fee (\$500)
- Ineligible → individual NPDES permit
- 5-year permit term
- Must submit timely NOI renewal for reissued PAG-13 (2023)

# Individual NPDES Permit for Small MS4s – Application

- NPDES Individual Permit to Discharge Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) (3800-PM-BPNPSM0200)
- 5-year permit term
- Submit to DEP Regional Office where MS4 located
- \$5,000 fee
- Submit site, surface water, and outfall info, etc.
- Pollution controls/BMPs
- Stormwater ordinance
- Compliance history

# MS4s and SWMPs

To prevent harmful pollutants from being washed or dumped into MS4s, certain operators are required to obtain NPDES permits and develop stormwater management programs (SWMPs)

- SWMPs must address Six Minimum Controls:
  - Public education & outreach
  - Public participation/involvement
  - Illicit discharge detection and elimination
  - Construction site runoff control
  - Post-Construction runoff control
  - Pollution prevention/good housekeeping

# Conclusion

- Three stormwater permit categories:
  - Industrial, construction, MS4
- Generally, two permit options
  - General, individual
- GP's becoming more prescriptive (PAG-03)
- Similar application and permit requirements for each
- Read your permit!

# Questions?

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# **Stormwater Pollution Prevention Planning and Best Management Practices**

***Presented by:***

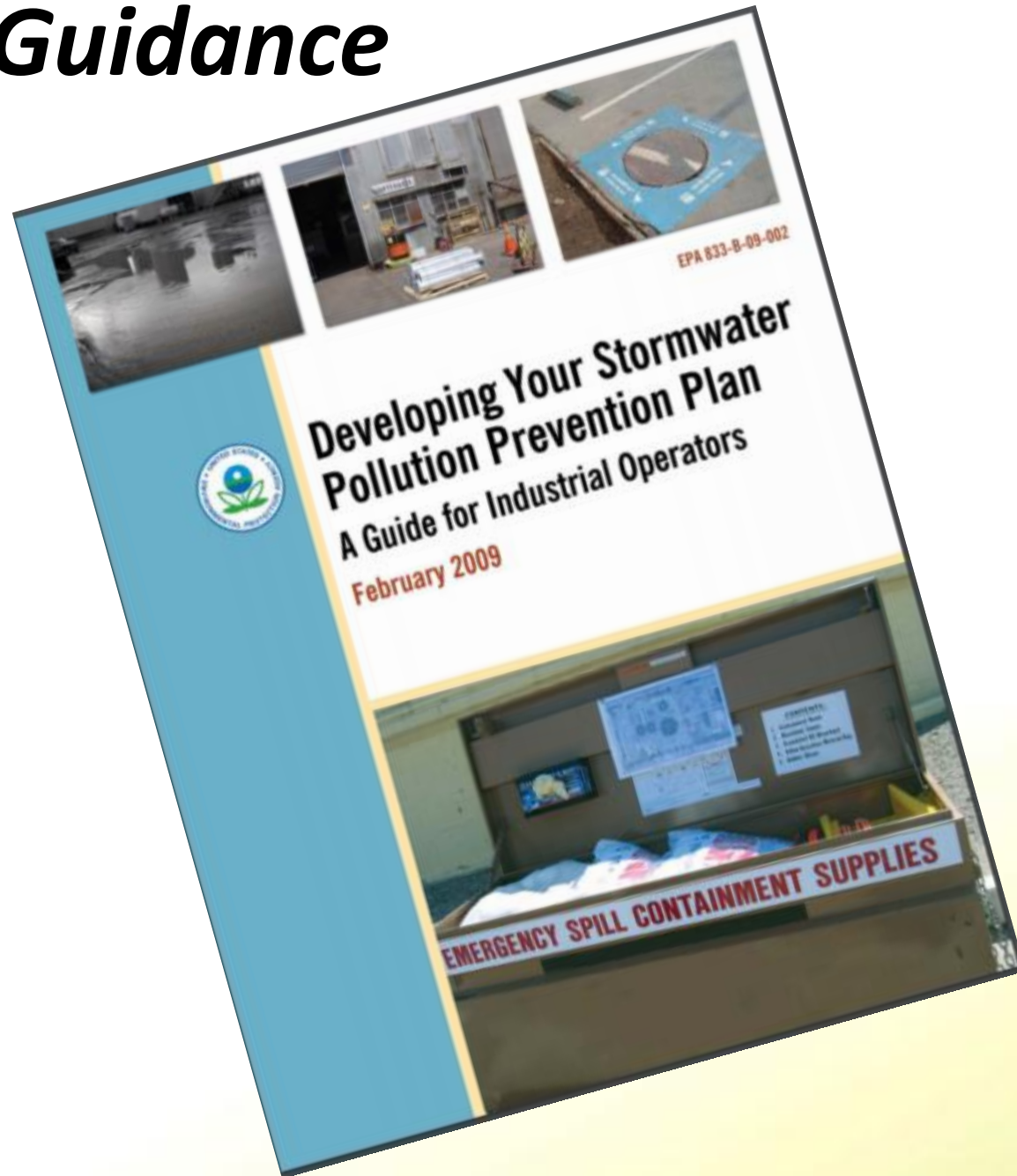
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# ***EPA Guidance***



# ***Non-Storm Water Discharges?***

1. Visual Inspection
2. Plant Schematic Review
3. Dye Testing

# ***Baseline (minimum) BMPs***

- Good housekeeping
- Preventive maintenance
- Visual inspections
- Spill prevention and response
- Sediment and erosion control
- Management of runoff
- Employee training
- Recordkeeping and reporting

# *Housekeeping*





# *Housekeeping*



# *Spill Prevention ☹️*





# *Spill Prevention ☺*





# ***Sediment and Erosion Control***



**Manmade Channel in  
Poor Condition**



**Vegetated Swale**

# ***Driveway/Parking Area Erosion***

Often cause  
benchmark value  
exceedances for  
TSS and COD



# ***Constructed BMPs***

1. Flow Diversion Practices
2. Exposure Minimization Practices
3. Mitigative Practices
4. Filtration and Infiltration Practices
5. Separators



# ***Exposure Minimization Practices***

- Containment diking (tank fields)
- Curbing (drum storage areas)
- Drip pans
- Covering (tarps, buildings)
- Vehicle positioning
- Loading/unloading by vacuum
- Collection basins (can receive spills from many areas across a facility)

# ***Dikes and Curbing***

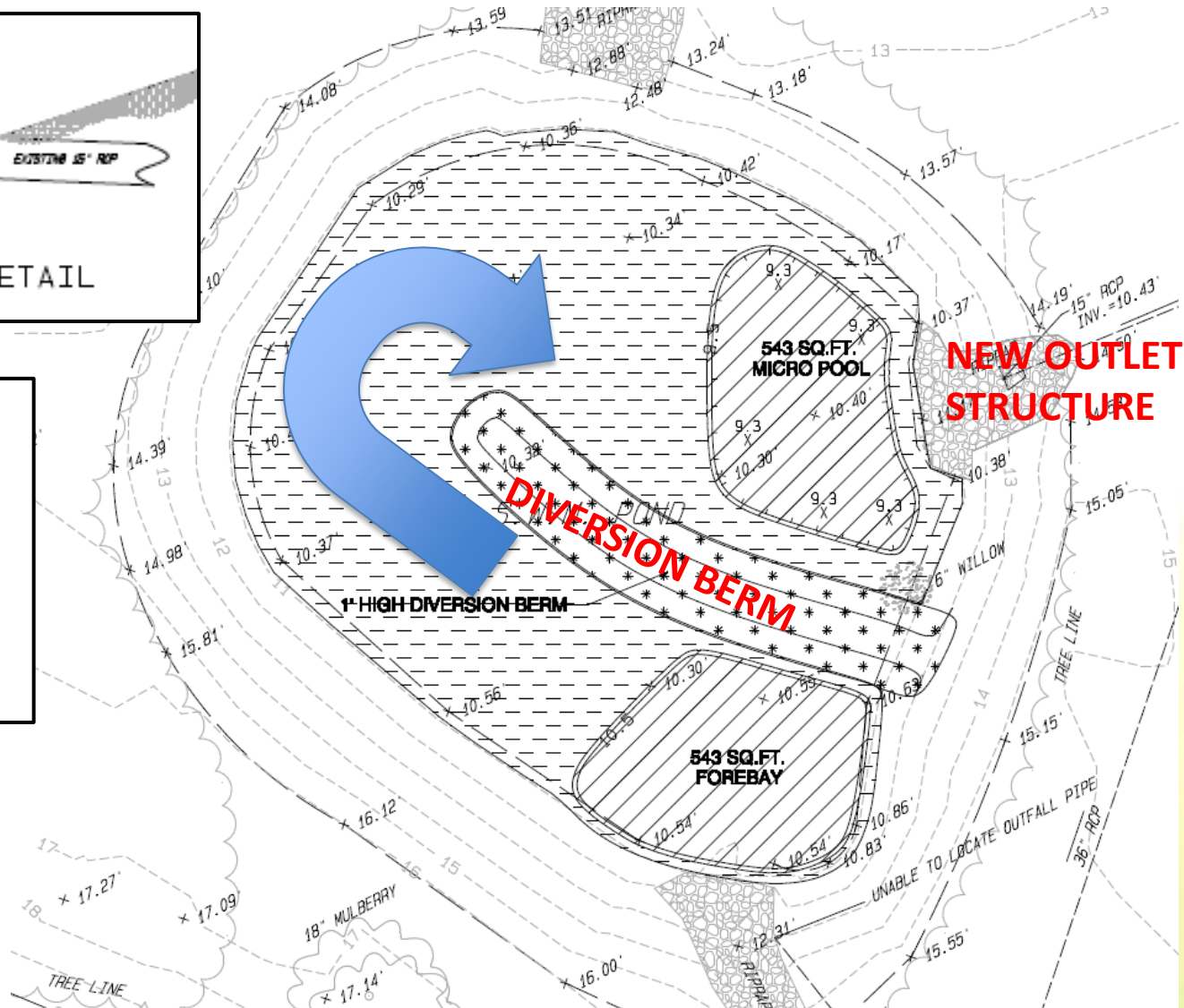
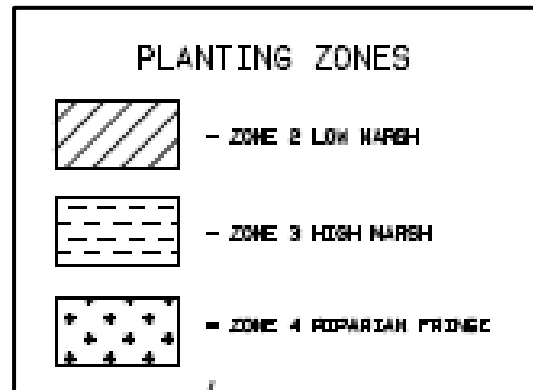
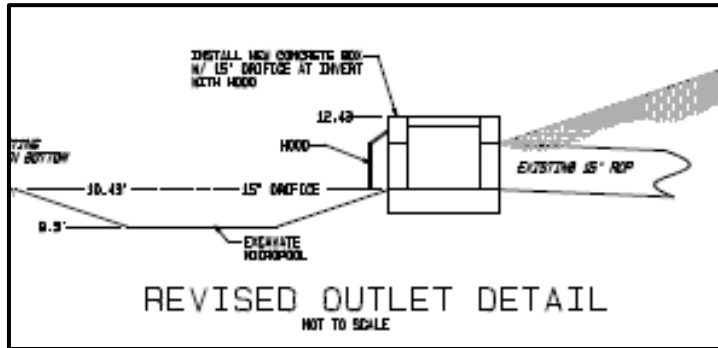


# ***Filtration and Infiltration Practices***

- Vegetated filter strips
- Grassed swales
- Detention/retention basins
- Constructed wetland basins



# Stormwater Basin Retrofit





# ***Stormwater Basin Retrofit - Before***





# ***Stormwater Basin Retrofit - After***





# ***Stormwater Basin Retrofit - Before***





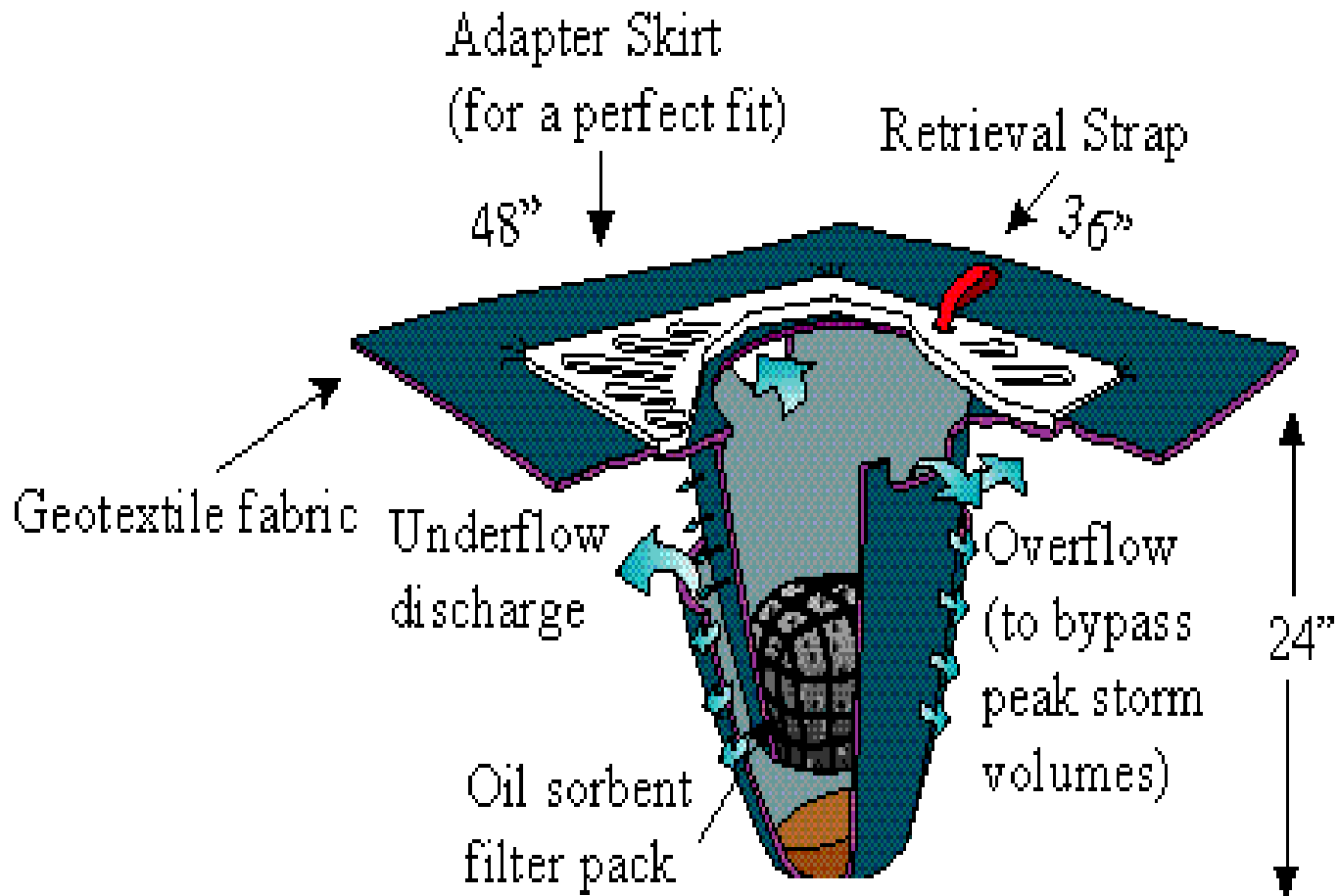
# ***Stormwater Basin Retrofit - After***



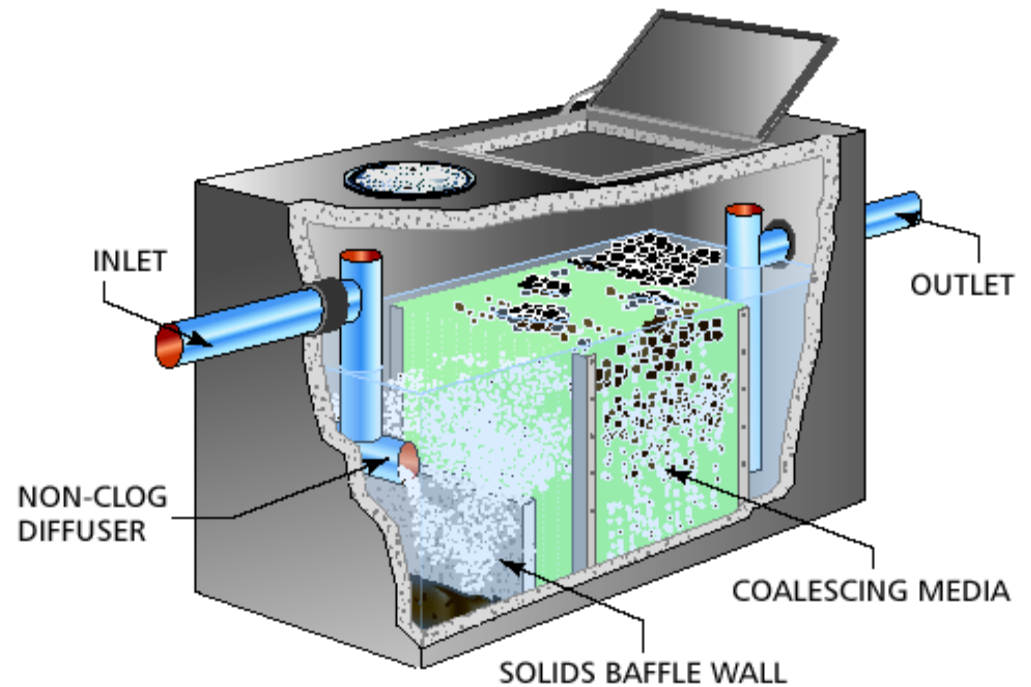
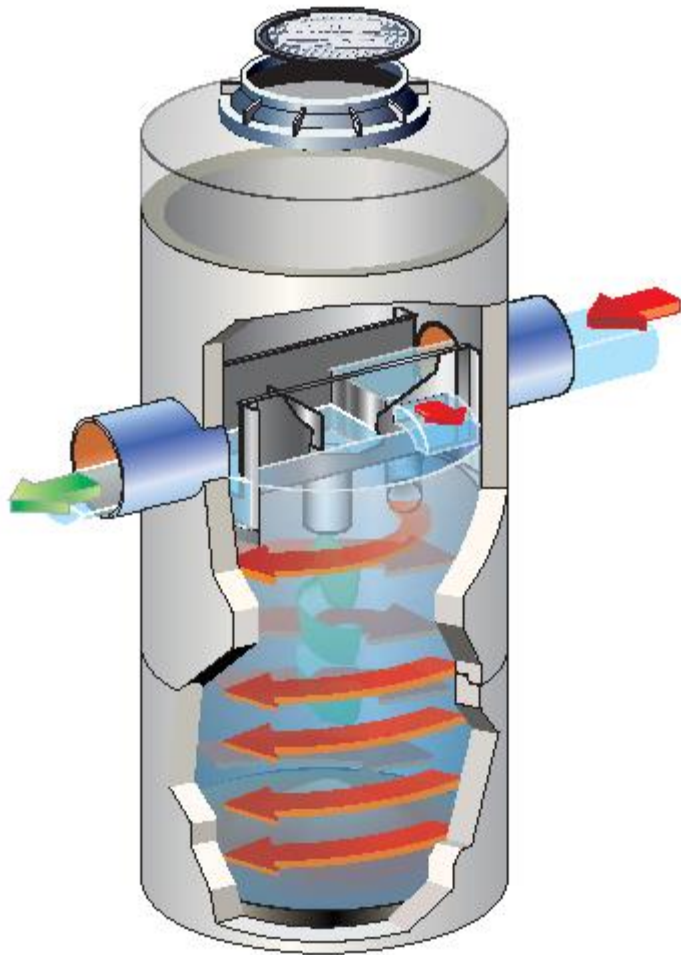
# ***Separators***

- Float organics, settle solids.
  - Multi-chamber type
  - Vortex type

# Catch Basin Inserts



# Separators



*Courtesy of CONTECH Construction Products, Inc.*



# ***Storm Water Wetlands***



**Typical Mowed Grass  
Detention Basin**



**Stormwater Treatment  
Wetland**

**TABLE 1 EFFECTIVENESS OF DESIGN  
SWALES**

<b>Pollutant</b>	<b>Median % Removal</b>
Total Suspended Solids	81
Oxygen Demanding Substances	67
Nitrate	38
Total Phosphorus	9
Hydrocarbons	62
Cadmium	42
Copper	51
Lead	67
Zinc	71

**TABLE 2 PERFORMANCE OF STORM  
WATER WETLANDS**

<b>Pollutant</b>	<b>Removal Rate</b>
Total Suspended Solids	67%
Total Phosphorus	49%
Total Nitrogen	28%
Organic Carbon	34%
Petroleum Hydrocarbons	87%
Cadmium	36%
Copper	41%
Lead	62%
Zinc	45%
Bacteria	77%

Source: CWP, 1997.



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