

2006
Compliance Assistance Conference
Storm Water Permitting in Ohio



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Division of Surface Water



Workshop Agenda

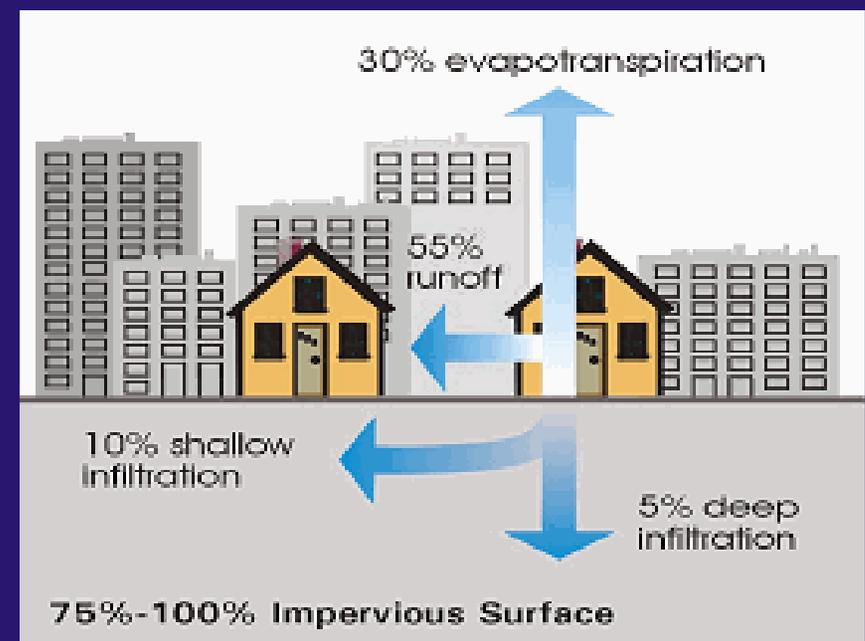
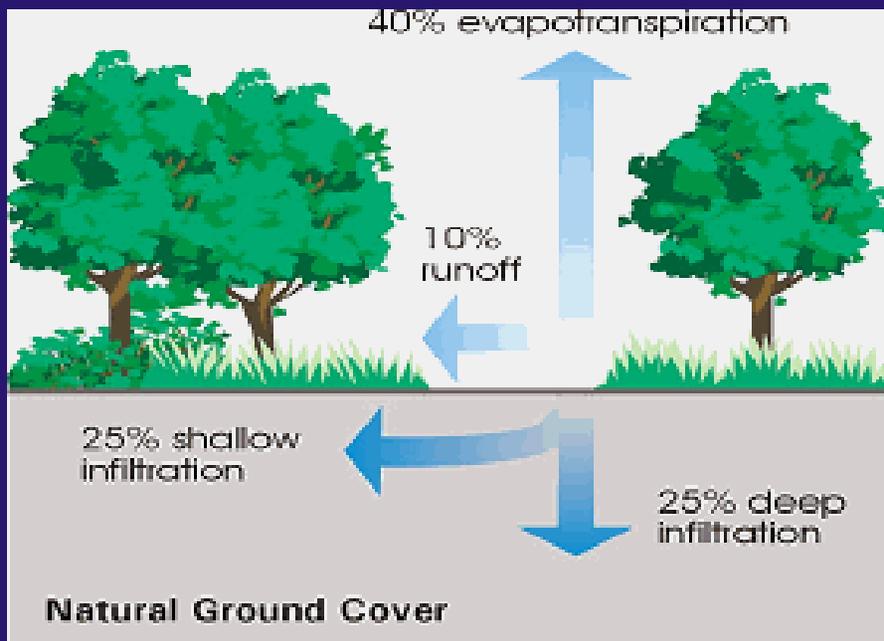
- ★ Regulatory Requirements
- ★ Storm Water Pollution Prevention Plan (SWPPP) for Industrial Activities
- ★ Best Management Practices (BMPs) for Industrial Activities
- ★ SWPPP for Construction Activities



Storm Water Regulatory Requirements



How Urbanized Areas Affect Water Quality



Storm Water Contamination

- ★ Storm water discharges are primarily generated by runoff from impervious areas
- ★ Material handling activities at a facility may contaminate storm water



Basic Regulatory Requirement



Contaminated storm water discharges from industrial facilities into surface waters are to be minimized or eliminated.

Control of Storm Water Discharges

- ★ Storm water discharges regulated through NPDES permits
- ★ Permits require implementation of **Best Management Practices (BMPs)** to eliminate or reduce pollutant loadings in storm water



Storm Water Regulations Implemented in Phases

Phase I

- ★ Rule issued November 1990

Phase II

- ★ Rule Issued December 1999



Phase I Storm Water Regulations

Regulated activities include:

- ★ Specified industries
- ★ Municipal storm sewers serving $\geq 100,000$
- ★ POTWs ≥ 1 mgd, or with Pretreatment Programs
- ★ Construction sites ≥ 5 acres



Phase II Storm Water Regulations

Regulated entities include:

- ★ Municipal storm sewers serving $< 100,000$ in urban area
- ★ Construction sites ≥ 1 acre

Allows “No Exposure Certification” for all industries (except construction)

Eliminates waiver for small ($< 100,000$) municipally owned, industrial and construction sites

Phase II Storm Water Regulations

Impact of Phase II rule on industries:

- ★ No new industrial categories
- ★ No change in existing categories
- ★ All industries (except construction) may qualify for no exposure exemption (but must file form)
- ★ Smaller construction projects require permit and controls
- ★ Municipal separate storm system operators asking questions about system connections

Industrial Activities Covered by Regulations

- ★ Facilities in one or more of the 11 categories in 40 CFR 122.26(b)(14)
- ★ 11 categories defined by:
 - ★ Standard Industrial Classification (SIC)
 - ★ Description of facility industrial activities



11 Industrial Categories Subject to Storm Water Coverage

- i. Facilities with Effluent Limitations for SW
- ii. Manufacturing
- iii. Mineral, Metal, Oil & Gas Mining or Drilling
- iv. Hazardous Waste Treatment, Storage or Disposal Facilities
- v. Industrial Waste Landfills
- vi. Recycling Facilities
- vii. Steam Electric Plants
- viii. Transportation Facilities with Vehicle Maintenance
- ix. Wastewater Treatment Plants (WWTPs >1 MGD)
- x. Construction Activity
- xi. Light Industrial Activity

Options for Industrial Storm Water Permits Not Associated with Construction



Permit Options for Regulated Industries

- ① No Exposure Exclusion and Certification
- ② Industrial NPDES Storm Water General Permit
- ③ Individual NPDES Permit



① No Exposure Exclusion

★ Eligibility

- ★ All industrial categories eligible (except construction)

★ Requirements

- ★ Meet definition of “no exposure”

★ Process

- ★ Submit federal “no exposure certification” form to Ohio EPA

★ Result

- ★ No permit required

★ Re-certification

- ★ Every 5 years



① No Exposure Exclusion

Definition of no exposure:

“All industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff.”

NPDES FORM 3510-11		United States Environmental Protection Agency Washington, DC 20460 NO EXPOSURE CERTIFICATION for Exclusion from NPDES Storm Water Permitting	Form Approved OMB No. 2040-0211
<p>Submission of this No Exposure Certification constitutes notice that the entity identified in Section A does not require permit authorization for its storm water discharges associated with industrial activity in the State identified in Section B under EPA's Storm Water Multi-Sector General Permit due to the existence of a condition of no exposure.</p> <p>A condition of no exposure exists at an industrial facility when all industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. Industrial materials or activities include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products, or waste products. Material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product or waste product. A storm resistant shelter is not required for the following industrial materials and activities:</p> <ul style="list-style-type: none">- drums, barrels, tanks, and similar containers that are tightly sealed, provided those containers are not deteriorated and do not leak. "Sealed" means banded or otherwise secured and without operational taps or valves;- adequately maintained vehicles used in material handling; and- final products, other than products that would be mobilized in storm water discharges (e.g., rock salt).			

① No Exposure Exclusion

Industrial materials:

- ★ Raw materials
- ★ Intermediate materials
- ★ By-products
- ★ Waste products
- ★ Material handling equipment
- ★ Industrial machinery
- ★ Final products not intended to be used outside



① No Exposure Exclusion

Other means of avoiding storm water permits:

- ★ Don't discharge storm water
- ★ Discharge storm water to POTW
(if approved by POTW)



② Coverage Under General NPDES Permit

- ★ Requires submittal of Notice of Intent (NOI) form
- ★ Entity subject to conditions of general permit, no site specific conditions
- ★ SWPPP required
- ★ Ohio EPA contacts you when time to renew



Notice of Intent (NOI) For Coverage Under Ohio Environmental Protection Agency General Permit

(Read accompanying instructions carefully before completing this form)

Submission of this NOI constitutes notice that the party identified in Section I of this form intends to be authorized to discharge into state surface waters under Ohio EPA's NPDES general permit program. Becoming a permittee obligates a discharger to comply with the terms and conditions of the permit. Complete all required information as indicated by the instructions. Forms transmitted by fax will not be accepted. A check for the proper amount must accompany this form and be made payable to "Treasurer, State of Ohio." (See the fee table in Attachment D of the NOI instructions for the appropriate processing fee)

I. Applicant Information/Mailing Address

Company (Applicant) Name: _____

② Coverage Under General NPDES Permit

Industries not eligible for general permit (in Ohio):

- ★ New discharges to state resource or superior high quality waters
- ★ Landfills
- ★ Petroleum bulk terminals
- ★ Non-metallic mineral mining
- ★ New discharges from coal piles



③ Individual NPDES Permit

- ★ Applicable where site specific conditions are appropriate (e.g., monitoring)
- ★ Requires submittal of NPDES application forms
- ★ Combine storm water discharges and process water discharge in single permit
- ★ May require treatment with discharge limits & monitoring
- ★ May require SWPPP and effluent limits
- ★ Renew every five years

Storm Water Pollution Prevention Plans for Industrial Facilities



Storm Water Pollution Prevention Plans for Industrial Facilities

General permit and individual permit coverage may require development and implementation of a **storm water pollution prevention plan (SWPPP)**.



Industrial SWPPP

- ★ Objective is to minimize or eliminate the contamination of storm water
- ★ Consists of steps and activities to:
 - ★ Identify pollutant sources
 - ★ Identify ways to control storm water pollution
 - ★ Implement strategies



SWPPP Development

Five steps

1. Planning & organization phase
2. Site assessment phase
3. BMP identification phase
4. Implementation phase
5. Evaluation/monitoring phase



1. SWPPP Planning & Organization Phase

★ Form storm water pollution prevention team

- ★ Get the right people involved
- ★ Identify responsibilities and goals
- ★ Establish open lines of communication with management

★ Review other plans

- ★ For consistency and overlap



2. SWPPP Site Assessment Phase

★ Identify pollutant sources

- ★ Develop a site map
- ★ Assess potential sources of contamination
- ★ Conduct a material inventory
- ★ Evaluate past spills & leaks
- ★ Identify non-storm water discharges
- ★ Identify any illicit connections
- ★ Summarize findings of this assessment

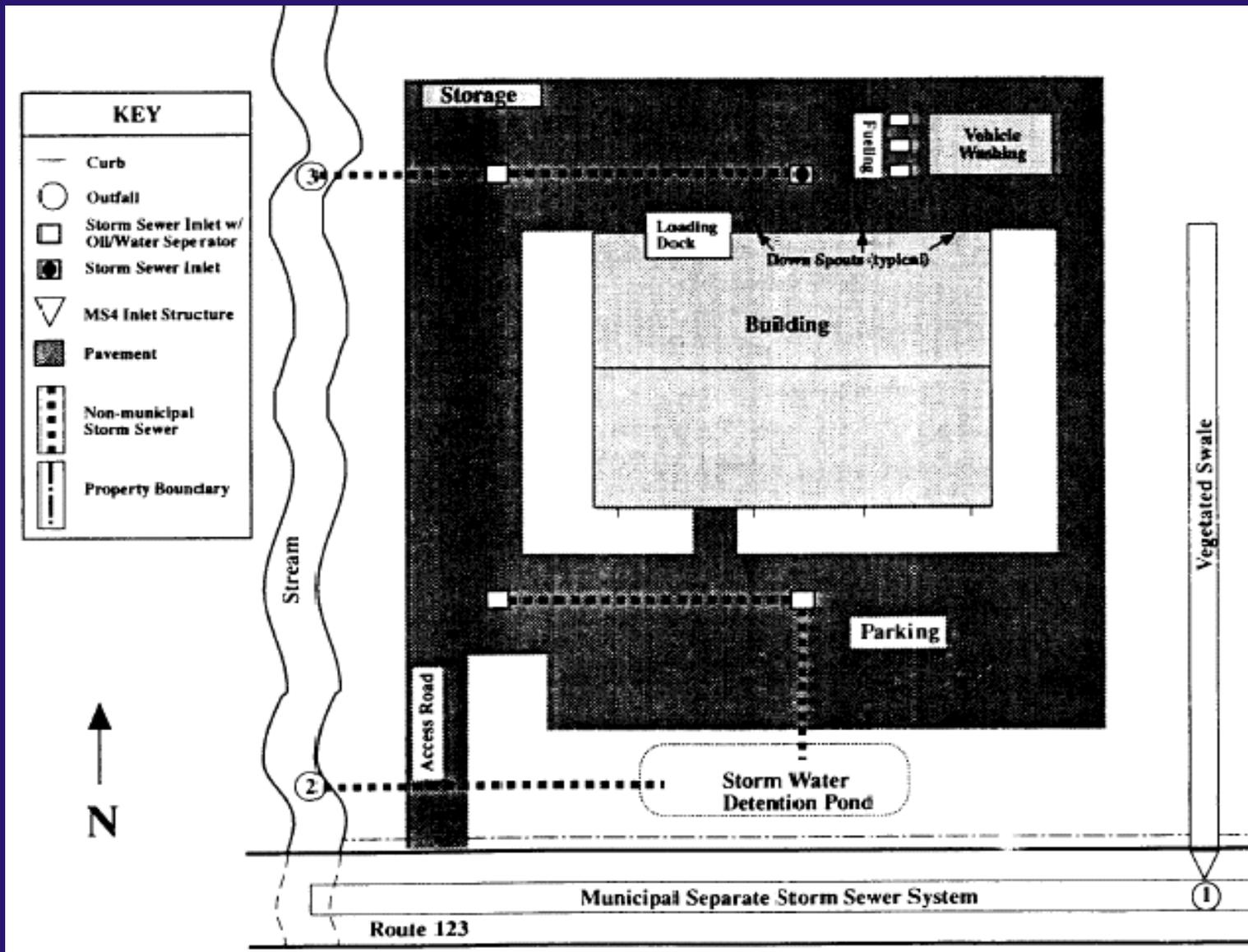


2. SWPPP Site Assessment Phase

★ Site map – essential components

- ★ Discharge points (outfalls)
- ★ Drainage patterns
- ★ Surface water bodies
- ★ Locations of industrial activities
- ★ Locations of materials exposed to storm water
- ★ Existing storm water management practices

Example Site Map



2. SWPPP Site Assessment Phase

Materials inventory & pollution sources

- ★ List materials exposed to storm water
 - ★ Location of on-site storage & disposal
 - ★ Describe material handling procedures
 - ★ Describe existing pollutant control measures (structures or practices)
 - ★ Are there treatment measures for runoff? (Oil/water separator, water quality ponds)

2. Site Assessment Phase

Spills and leaks

- ★ List past significant spills and leaks of toxic or hazardous pollutants
 - ★ Location, substance, amount, etc.
- ★ Existing sampling data
 - ★ Summary of any existing discharge sampling data

2. Site Assessment Phase

Non-storm water discharges

- ★ Identify illicit connections
- ★ Include a certification that discharges have been tested or evaluated for the presence of non-storm water discharges
 - ★ Procedures used
 - ★ Results



3. BMP Identification Phase

Best management practices

- ★ Structural or non-structural controls which eliminate or reduce pollutant loadings in storm water discharges
- ★ Schedule of implementation



3. BMP Identification Phase

- ★ Minimum components addressed
 - ★ Good housekeeping
 - ★ Preventative maintenance
 - ★ Facility inspections
 - ★ Spill prevention & response
 - ★ Sediment & erosion control
 - ★ Employee training
 - ★ Management of runoff



4. Implementation Phase

- ★ Implement BMPs according to schedule
- ★ Evaluate SWPPP measures once a year
- ★ Employee training
- ★ Develop program to inform personnel at all levels & a frequency for training
 - ★ Spill prevention & response
 - ★ Good housekeeping
 - ★ Material management practices



5. Evaluation/Monitoring Phase

- ★ Evaluating the effectiveness of your plan
 - ★ Conduct annual site compliance evaluations
 - ★ Maintain records for 3 years
 - ★ Revise plan as needed



5. Evaluation/Monitoring Phase

★ Monitoring

★ Annual sampling (if required by permit)

- ▶ Grab sample from storm event >0.1 inch provided it's at least 72 hours from last 0.1-inch event
- ▶ Such facilities include: primary metals, land disposal, wood preservative, airports, power plants, junkyards



Best Management Practices:

BMPs



BMPs

Good Housekeeping

- ★ Clean, orderly facility
- ★ Focus on pollution prevention
- ★ Implement proper material storage practices



BMPs

Preventative Maintenance

- ★ Inspect & repair plant equipment regularly
- ★ Repair valves, pumps, and connections
- ★ Clean & maintain storm water devices (oil/water separators)



BMPs

Facility Inspections

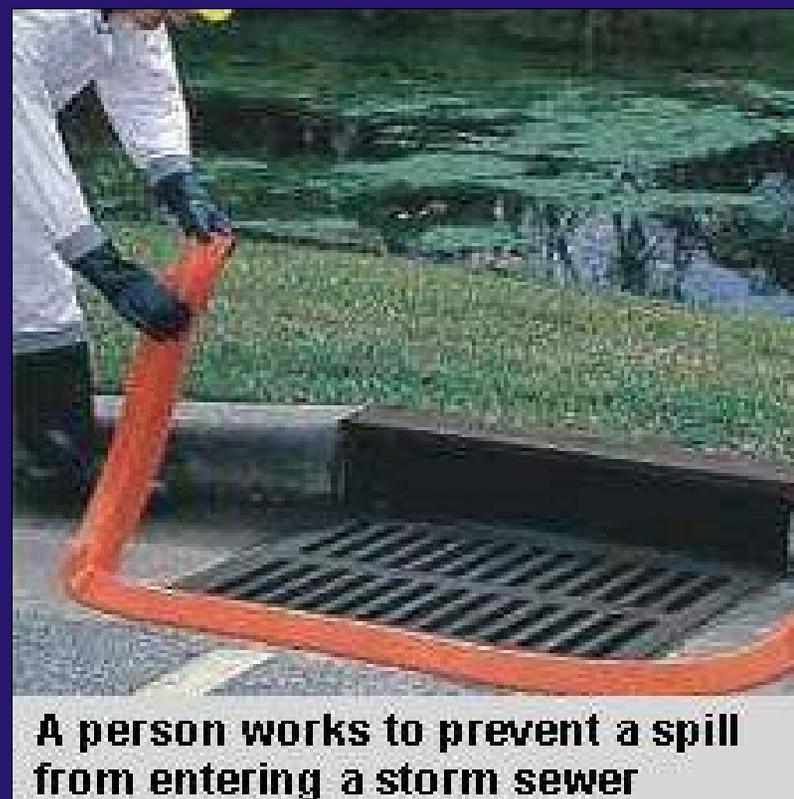
- ★ Set schedule
- ★ Select areas to inspect
- ★ Maintain records
- ★ Make necessary changes in the SWPPP



BMPs

Spill Response & Prevention

- ★ Assemble a spill response team
- ★ Identify potential spill areas
- ★ Develop procedures to clean-up spills & materials handling



A person works to prevent a spill from entering a storm sewer

BMPs

Sediment & Erosion Control

- ★ Identify areas which have high potential for significant soil erosion
- ★ Identify methods to limit erosion
- ★ For unstabilized areas, install sediment controls



Grass mulching is applied to stabilize exposed soils and to reduce storm water runoff velocity

BMPs

Employee Training

- ★ Develop program to inform personnel at all levels
 - ★ Topics may include spill response, good housekeeping & material management
 - ★ Explain components & goals of SWPPP
 - ★ Plan shall identify periodic dates for training



BMPs

Management of Runoff

- ★ Describe existing storm water controls
- ★ Describe additional measures that can be implemented to improve storm water quality
 - ★ Vegetative swales
 - ★ Reuse of collected storm water
 - ★ Infiltration trenches
 - ★ Detention ponds



Best Management Practices

The **GOOD**

The **BAD**

& The **UGLY**



GOOD

Movable covers
(to allow access) over containers

BAD

Exposed !





UGLY

Containment, but sloppy housekeeping



OK

Containment, but outside

GOOD

No Exposure



Fuel Storage: No Secondary Containment

BAD



Fuel Storage: Secondary Containment



GOOD

GOOD

Inlet Valve
Fresh Etchant Only

Outlet Valve
Spent Etchant Only



Container to catch drips

BAD

CAUTION

Spills Can Enter Storm Drain





BAD

Spills Allowed to
Drain to Curb

Any Questions?



Storm Water Pollution Prevention Plans For Construction Activities



SWPPP Requirements for Construction Activities

- ★ Prepared by professional experienced in sediment, erosion and storm water control
- ★ Identify potential pollutant sources during construction
- ★ Provide for implementation of best management practice controls
- ★ Complete prior to submittal of NOI
- ★ Submittal to Ohio EPA not typically required
- ★ SWPPP must be posted at site



Construction SWPPP Contents

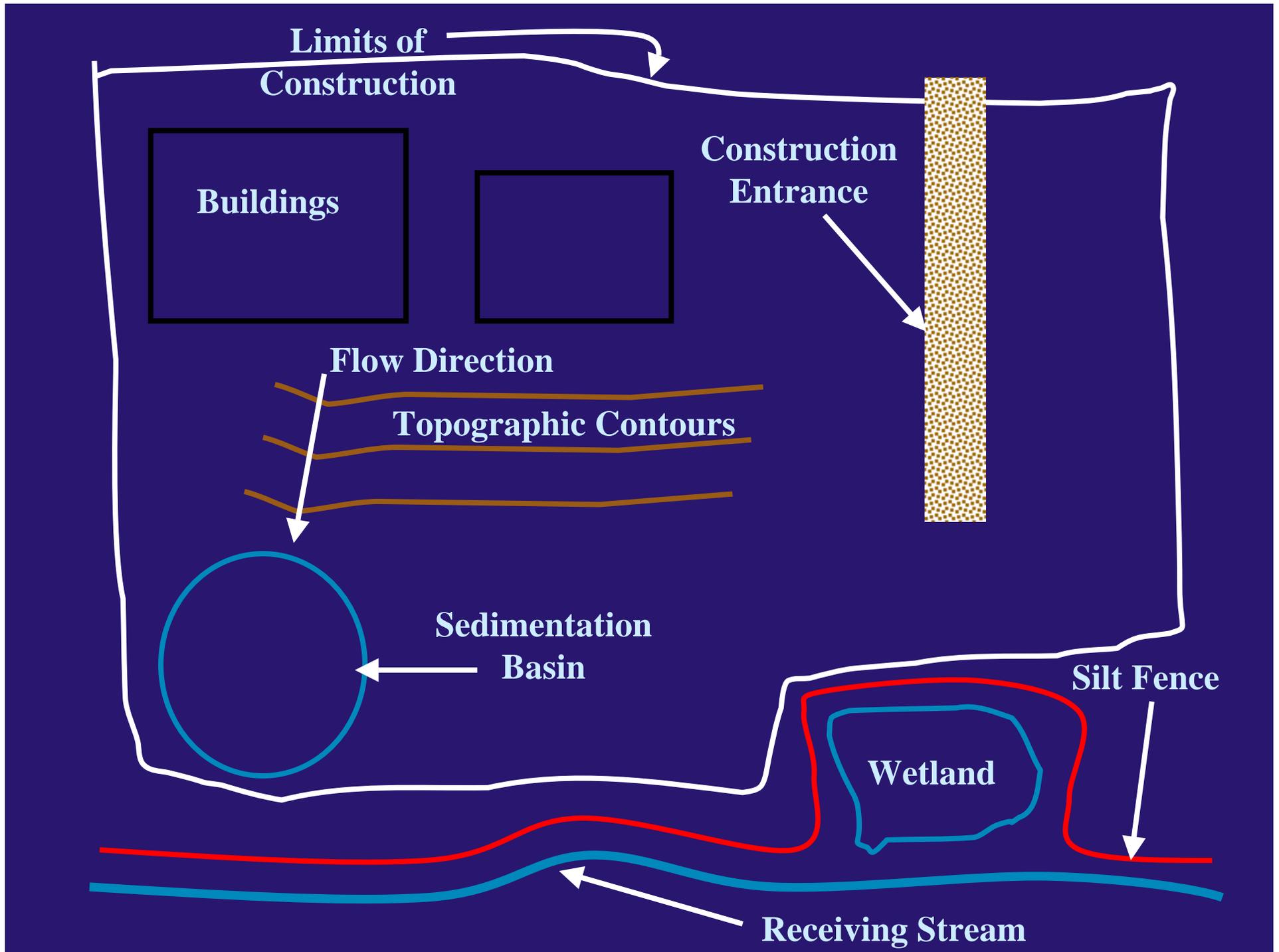
1. Site Description
2. Controls
3. Reference to Other Plans
4. Exceptions to Implementing Controls



1. Site Description

- ★ Description of construction activity
- ★ Quantification of affected area
- ★ Description of soil type
- ★ Construction schedule
- ★ Description of affected surface waters
- ★ Site map





2. Controls

- ★ Non-Structural Preservation
- ★ Erosion Controls
- ★ Runoff Controls
- ★ Sediment Controls
- ★ Post-Construction BMPs
- ★ Surface Water Protection Compliance
- ★ Others (non-sediment pollutants, dewatering)

Sediment & Erosion Controls

- ★ BMPs for erosion controls are 90 to 98 percent effective at keeping sediment at a construction site
- ★ BMPs for sediment controls are 50 to 75 percent effective at keeping sediment at a construction site
- ★ Therefore, erosion control BMPs are preferred over sediment control BMPs

Erosion Control BMPs

Erosion controls must be installed in 7 days when the site will remain dormant for over 21 days

- ★ Examples include
 - ★ Vegetation
 - ★ Mulch (i.e., straw or wood chip mulch)
 - ★ Ditch Checks
 - ★ Matting or Sod
 - ★ Riprap
 - ★ Geotextiles



Mulch Application

Application of Wood Mulch to Prevent Erosion



Ditch Checks

Ditch Checks are Considered an Erosion Control Feature, not a Sediment Control Feature



Riprap for Storm Sewer Outlets



Sediment Control BMPs

Sediment controls must be installed in 7 days after the initiation of grubbing (construction) activities

- ★ Examples include:
 - ★ Silt fence or berms
 - ★ Sediment settling ponds
 - ★ Curb or field drain inlet protection
 - ★ Trench dewatering filter bags



Silt Fence & Berm Barriers



Silt Fence



Berm

Poor Silt Fence Installation



Not trenched in and in backwards

Poor Silt Fence Installation



Silt fence may not be placed across a ditch or stream

Poor Silt Fence Maintenance



Buried Silt Fence

Design Capacity of Silt Fence

Maximum drainage area to 100 linear feet of silt fence	Slope range for the corresponding drainage area
0.5 acres	< 2%
0.25 acres	$\geq 2\%$ but < 20%
0.125 acres	$\geq 20\%$ but < 50%

Sediment Settling Ponds



Sediment Trap
(for < 10 acre areas)



Sediment Basin
(Required for > 10 acres)

Sediment Settling Ponds



Dual Sediment Traps Protect a Culvert

New Sediment Pond Requirements

- ★ Maximum pond depth of 5 feet
- ★ Minimum 2:1 length to width pond ratio
- ★ Maximum silt settling capacity of 40%



Inlet Protection



Poor Field Drain Inlet Protection

Inlet Protection



Good Drop Inlet Protection

Filter Bags to Dewater Ponds or Trenches



Vehicle Access Road and Wheel Washing



Stream Crossings



Stream Crossings



What is wrong with this picture?

Stream Crossings



Good Stream Crossing

In-stream Activities



Build a pad to work in-stream

In-stream Activities



Or Simply Divert the Water

In-stream Activities



In this example, the stream has been re-routed to perform construction activities within the stream.

Trench Dewatering Activities



Keep it clean all the way to the stream.

New Post-construction BMP Requirements

- ★ A maintenance plan must be developed & provided to the post-construction operator
- ★ The CGP does not require maintenance plan compliance, but local municipalities may
- ★ Linear projects without impervious surfaces do not need post-construction BMPs
- ★ Different post-construction BMP requirements for small and large construction activities

Post Construction Requirements for Sites > 5 Acres

- ★ The structural post-construction BMP must be sized to treat the water quality volume (WQv)
- ★ The WQv is calculated by 2 methods:
 - ★ Using hydrologic simulation with hourly precipitation data from local municipality
 - ★ Using the following equation:
$$WQv = C * P * A / 12$$



$$WQ_v \text{ (in acre-feet)} = C * P * A / 12$$

C = runoff coefficient (see table below)

P = 0.75 inch precipitation depth

A = area draining into the BMP

Land Use	C
Industrial & Commercial	0.8
High Density Residential (> 8 dwellings/acre)	0.5
Medium Density Residential (4-8 dwellings/acre)	0.4
Low Density Residential (< 4 dwellings/acre)	0.3
Open Space & Recreational Areas	0.2

New SWP3 Requirements (Continued)

Target Drain Times for Structural BMPs

Best Management Practice	WQv Drain Time
Infiltration	24-48 Hours
Vegetated Swale, & Filter Strip	24 Hours
Extended Detention Basin (Dry Basins)	48 Hours
Retention Basin (Wet Basins)	24 Hours
Constructed Wetlands (above permanent pool)	24 Hours
Media Filtration, Bioretention	40 Hours

New SWP3 Requirements (Continued)

Large construction activities (continued)

- ★ The permittee may use alternative structural post-construction BMPs if approved by Ohio EPA
- ★ Large redevelopment projects may simply reduce the impervious area by 20%, detain 20% of the WQv, or a combination of both in lieu of post-construction requirements for large sites
- ★ Public road construction projects must include post-construction BMPs starting March 10, 2006

New SWP3 Requirements (Continued)

Small construction activities (≥ 1 , but < 5 acres)

- ★ Language is consistent with the previous CGP & the federal CGP
- ★ A structural post-construction BMP must be installed (however, no minimum design standards are specified)
- ★ Velocity dissipation devices (e.g., Riprap) must be placed at a discharge culvert for erosion control

Tips for Implementing an Effective SWPPP

1. Incorporate site map into construction contract drawings and controls into specifications.
2. Have contractor sign statement indicating SWPPP has been read and understood.
3. Include status of controls as regular agenda item in construction progress meetings.
4. Have contractor and owner/engineer perform regular inspections of controls and document with photographs.
5. Inspect controls after rain events.
6. Design controls to function during construction and post-construction (e.g., sedimentation/flow equalization basins).

New Inspection Requirements

- ★ Inspections of BMPs must be done every 7 days and within 24 hours after 0.5” rainfall in a 24 hour period (same as the previous general permit condition)
- ★ Permittee must maintain inspection records for 3 years

BMP	Repair Timeframe
Sediment barriers (silt fence & inlet protection)	3 days
Sediment settling ponds	10 days
Modify SWP3 & replace failing BMPs	10 days
Install BMPs in SWP3 that were not installed	10 days

Any Questions?



In Summary

- ★ Determine if a Discharge Permit is Required
- ★ If Permit Required....Then SWP3 Required
- ★ SWPPPs for Industrial & Construction Require:
 - ★ Common sense BMPs
 - ★ Good communication between SWPPP writer(s) and responsible staff
 - ★ Verify BMP implementation and maintenance
 - ★ Revise SWPPP in response to facility/site changes

Ohio EPA Storm Water Contacts

www.epa.state.oh.us/dsw/storm

District Office Storm Water Staff		
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