

Stormwater Program and MS4 Permitting

Presented by

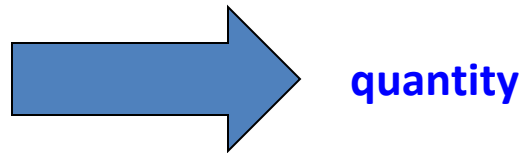
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Why should I be concerned with stormwater?...It's just rain water. Isn't it?

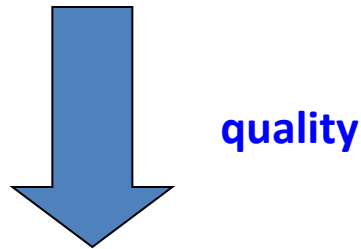
Stormwater is primarily a problem for 2 reasons:

1. Quantity
2. Quality

Concerns over stormwater increase as **quantity** increases and **quality** decreases.



Everything that "builds up" in dry weather periods "washes off" when it rains.



What is Stormwater Discharge?

- Defined as “stormwater runoff, snow melt runoff, and surface runoff and drainage”
- Runoff must be a discernable conveyance system
- Agricultural runoff is exempt

What is in Stormwater Runoff?



Source: <http://photogallery.nrcs.usda.gov/Detail.asp>

What is in Stormwater Runoff?

- Suspended sediment from erosion or unstable stream banks
- Oxygen reducing constituents (BOD/COD)
- Hydrocarbons
- Nutrients such as Nitrogen and Phosphorus
- Heavy Metals (Copper, lead, zinc, etc.)
- Pathogen and antibiotics
- Industrial pollutants
- Thermal pollution

Why is Controlling Runoff Important?

- Storm water runoff can pollute lakes and streams.
- Runoff picks up and carries pollutants, carrying those pollutants into the waterway, resulting in degraded water quality.
- Runoff can cause increased erosion which means more soil and other substances in the surface water.

Soil Erosion / Sediment Control

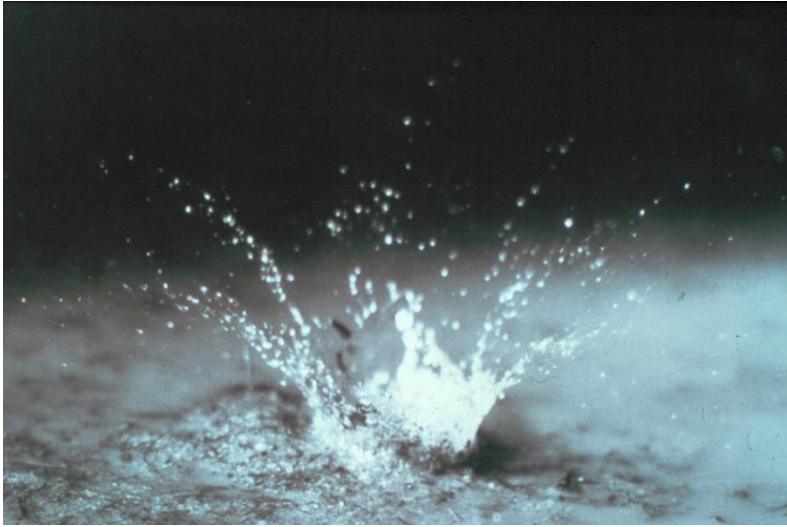
- What is soil erosion? A natural process?
- Common definition:
 - Erosion is the process whereby soils are moved by raindrop impact, flowing water or wave action.
- Geological erosion
- Accelerated Man-made erosion is the problem of concern

Definitions

- Erosion - the removal or wearing away of soil due to the action of water (or wind).
- Sediment - soil particles that settle out of flowing water.



- Erosion is the displacement of soil from a still position



- Sediment Control attempts to recapture eroded material

Soil Erosion / Sediment Control

- Why is this a problem?
- Sediment is a pollutant
 - Typically contains metals, chemicals and pathogens
- Documented effects on the aquatic environment

Soil Erosion / Sediment Control

- How do we prevent erosion?
- Goal is to stabilize the soil (especially slopes)
 - tackifiers, blankets, matting
- Not high tech - improvements on old technologies

Soil Erosion / Sediment Control

- How do we control sediment?
- Goal is to hold the sediment on-site, dispose of properly (keep it out of the waterways!)
- Increase retention times - check dams, etc.
- Filtration – inlets/outlets of storm drains
- Again, refinement of old technologies...and some new products such as polymers

Land Disturbances

- All projects must be managed to prevent or reduce soil or other pollutants from being washed into storm drains, creeks, or lakes.
- In addition to soil, potential pollutants on construction sites include trash, debris, oil, grease, lime, concrete truck wash water, etc.



General Principles

- Preventing erosion is more effective than trying to remove sediment from runoff.
- Minimize the amount of disturbed area.
- Divert runoff or flowing water away from disturbed areas.



Where Does Pollution Prevention Begin?

Storm Water Pollution Prevention Plan:

- **Identifies Potential Impact of a Project**
- **Identifies Pollutants Associated w/Project**
- **Illustrates the Measures Required to Control or Reduce the Impact of Pollutants and Stormwater Discharges**



Where Does Pollution Prevention Begin?

Storm Water Pollution Prevention Plan:

- **Flexible Document - Modification**
- **Blueprint and Principal Site Reference:**
 - **Location, Design & Installation of Measures**
 - **Implementation Schedule in Relation to Site Activities**
 - **Maintenance of Each Measure**

Where Does Pollution Prevention Begin?

Storm Water Pollution Prevention Plan:

- **Effective Planning**
- **Selection of Stormwater Quality Measures**
- **Implementation**
- **Project Management**



Planning, Layout, & Design

Effective Planning – Design Principles:

➤ Fit the Project to Existing Terrain

- **Minimize Disruption of Existing Grades**
- **Avoid Unnecessary Land Disturbance**
- **Utilize Natural Drainage Systems**



(Minimize Erosion Potential, Project Cost, Environmental Issues)

Planning, Layout, & Design

Effective Planning – Design Principles:

➤ Confine Limits of Construction & Development

- **Least Critical Areas**
Steep and Long Slopes,
Erodible Soils,
Unique Vegetation
& Landscapes



(Utilize as Open Space or Natural Areas)

Planning, Layout, & Design

Effective Planning – Design Principles:

➤ Preserve & Design w/ Natural Features

- Wetlands
- Water Courses
- Floodplains
- Unique Resource Areas (Habitat)
- Riparian Buffers



Planning, Layout, & Design

Effective Planning – Design Principles:

➤ Utilize Existing Vegetative Cover

- Reduce Erosion
- Filter Strips
- Floodplains
- Unique Resource Areas (Habitat)
- Riparian Buffers



Storm Water Quality Measures Erosion & Sediment Control

Individual Building Sites

- **Require Basic Approach**
 - **Sites 1 Acre or Less**
 - **Slopes Less Than 6%**

- **Require Extensive Planning**
 - **Sites > 1 Acre**
 - **Slopes in Excess of 6%**



STORMWATER OBLIGATIONS WHEN BUILDING A HOUSE IN UNINCORPORATED LAKE COUNTY



Key stormwater management questions for home builders when disturbing more than 1 acre of land or when part of a larger common plan of development in unincorporated Lake County:

If disturbing more than 1 acre or if part of a larger development, does your project require a local Stormwater Permit?

Yes
 No

Do local Stormwater Permits typically require an approved **Stormwater Pollution Prevention Plan (SWPPP)**?

Yes
 No

Does your SWPPP require a self monitoring inspection after ***EVERY*** rain event greater than 0.5"?

Yes
 No

Even ***WITHOUT*** a rain event, should there be a documented site self-inspection every week?

Yes
 No

Does your SWPPP require **documented** maintenance and repair procedures?

Yes
 No

Must you produce your permanent record log of site inspections to inspectors within **48 hours upon request**?

Yes
 No

CONSTRUCTION SITE REQUIREMENTS FOR UNINCORPORATED LAKE COUNTY



CONSTRUCTION SITE VIOLATION

Per EPA & IDEM regulations, the type of construction project soil stockpiling shown above would not be acceptable. Locally, Lake County Ordinance No. 1365C, entitled Stormwater Management and Clean Water Regulations Ordinance for Lake County, Indiana, provides local requirements for construction sites.

How does Ordinance No. 1365C apply to home construction in Lake County?

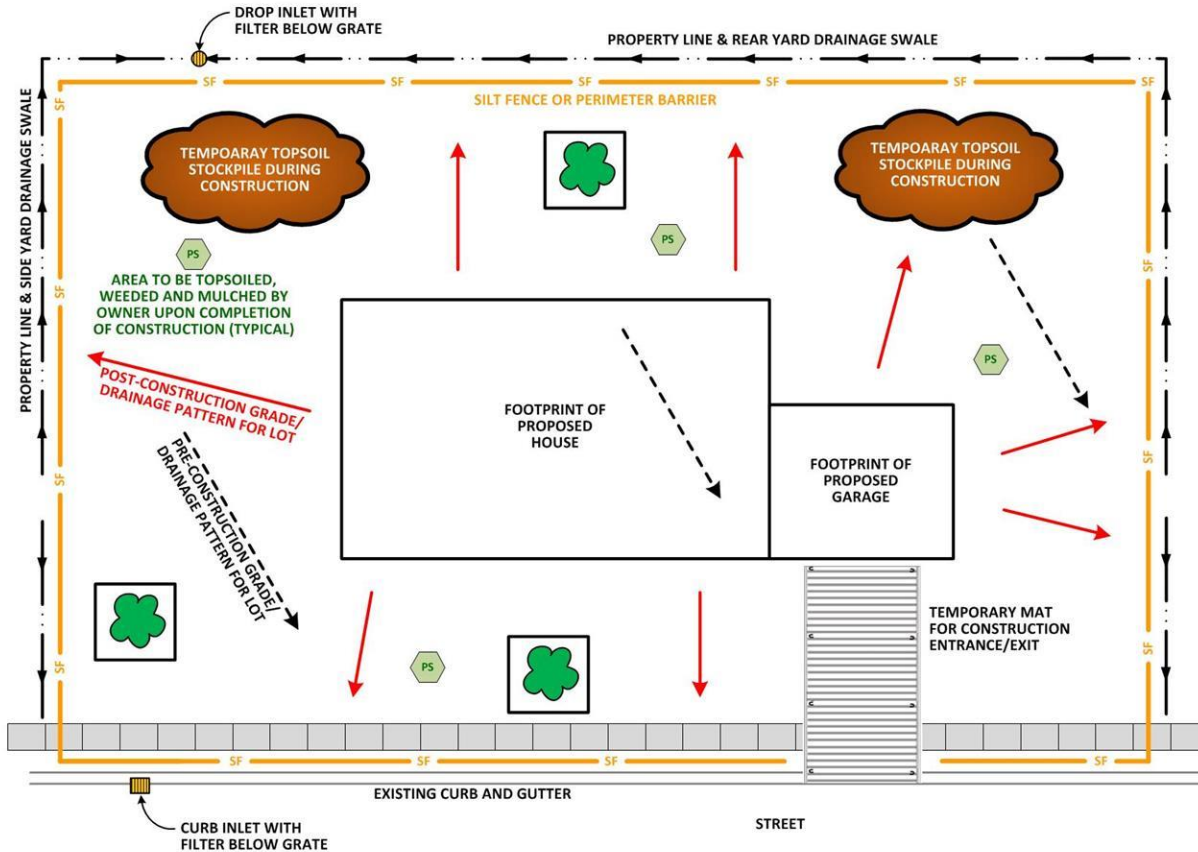
- For **an individual lot** where the disturbance is 1 acre or more, the lot owner must remain in compliance with the Stormwater Management and Clean Water Regulations Ordinance No. 1365C and Rule 5.
- For **an individual lot located within a larger development**, the lot owner must comply with the terms and conditions for the larger permitted site.

What information you will find in a SWPPP?

- A listing of key project personnel, expected roles during the construction process, and contact information for routine contacts & emergency situations.
- A Site Map showing activity staging and location of activities or practices.
- An identification of potential pollutant sources, as well as any activities or practices designed to reduce pollution.
- A record of any maintenance activities, site inspections, practice inspections, and any amendments or other changes to the approved SWPPP.
- A SWPPP certification signed by a qualified, responsible individual.

SAMPLE INDIVIDUAL LOT SITE PLAN FOR A STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

SAMPLE INDIVIDUAL LOT EROSION/SEDIMENT CONTROL PLAN:



SAMPLE LEGEND FOR INDIVIDUAL LOT EROSION CONTROL PLAN:

	PROPERTY LINE/ DRAINAGE SWALE		DROP INLET PROTECTION
	EXISTING GRADE/ DRAINAGE PATTERN		CURB INLET PROTECTION
	FINISHED GRADE		TREE CONSERVATION WITH PROTECTION DURING CONSTRUCTION
	SILT FENCE OR PERIMETER BARRIER		PERMANENT SEEDING AREA
	SOIL SALVAGE AND UTILIZATION		TEMPORARY MAT FOR ENTRANCE/EXIT

SAMPLE GENERAL NOTES FOR EROSION AND SEDIMENT CONTROL ON INDIVIDUAL BUILDING LOTS:

- The individual lot operator, whether owning the property or acting as the agent of the property owner, shall be responsible erosion and sediment control requirements associated with activities on individual lots.
- Temporary seeded areas established by the developer shall be maintained by the homeowner and his sub-contractors. Silt fences previously installed will be maintained.
- Installation and maintenance of a stable construction site access drive from the house/site to the street/alley shall be installed; consisting of pocketed, double-wall, high-strength fabric with high tensile reinforcing ribs confined within sleeves. This shall be utilized for access to the house and any mud or dirt tracked in to the street/alley shall be promptly removed and placed in a stable area. Water shall not be used to flush silt, mud or debris into the storm sewer system.
- Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance. A silt fence is to be installed along the entire perimeter of the lot (front, back & sides). The silt fence shall be maintained until permanent vegetation (grass) is established.
- Sediment discharge and tracking from each lot must be minimized throughout the land disturbing activities on the lot until permanent stabilization has been achieved.
- Clean-up of sediment that is either tracked or washed onto roads. Bulk clearing of sediment shall not include flushing the area with water. Cleared sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
- Adjacent lots disturbed by an individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
- When time is appropriate, and as soon as possible, roof down spout extender of a non-perforated drain tile should be extended to the street or other solid outlet until a lawn is established.
- For individual residential lots, final stabilization meeting the criteria of Rule 5 will be achieved when the individual lot operator,
 - Completes final stabilization; or,
 - Has installed appropriate erosion and sediment control measures for an individual lot prior to occupation of the home by the homeowner and has informed the homeowner of the requirement for, and benefits of, final stabilization.

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STEPS TOWARDS STORMWATER COMPLIANCE FOR HOME BUILDERS

- 1. When applicable, obtain the larger development's Stormwater Pollution Prevention Plan (SWPPP). Use this information to create a SWPPP for the individual lot.**
- 2. Submit individual lot information to the Lake County Surveyor's Office for review.**
- 3. After review and if acceptable, an Individual Lot Plot Plan Permit will be issued.**
- 4. Implement the SWPPP throughout the project. Changes may need to be made to ensure the Construction Plan or the SWPPP accurately reflect what is being done on site.**
- 5. The individual lot operator is responsible for installation and maintenance of all erosion and sediment control measures until the site is stabilized.**

Questions?