STORM WATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES

GENERAL PERMIT NO. 2

A BRIEF GUIDE TO

DEVELOPING POLLUTION PREVENTION PLANS AND BEST MANAGEMENT PRACTICES

SUMMARY GUIDANCE

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SUMMARY GUIDANCE

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GLOSSARY

"Best Management Practices" **-** Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. With regard to construction these may include structural devices or non structural practices that are designed to prevent pollutants from entering water or to direct the flow of water.

"***Controls"*****--**The term "*controls*" refers to: methods, practices or measures to minimize or prevent erosion; methods, practices or measures, either structural or non-structural, to control sedimentation; methods, practices or measures for storm water control; or, methods, practices or measures to minimize contaminants from other types of waste or materials at construction sties.

"Final Stabilization"**-** means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover has been established or equivalent stabilization measures have been employed.

"Hazardous condition" means any situation involving the actual, imminent, or probable spillage, leakage, or release of a hazardous substance on to the land, into a water of the state, or into the atmosphere, which creates an immediate or potential danger to the public health or safety or to the environment. 455B.381(2) 1991, Code of Iowa

"Hazardous substance" means any substance or mixture of substances that presents a danger to the public health or safety and includes, but is not limited to, a substance that is toxic, corrosive, or flammable, or that is an irritant or that, in confinement, generates pressure through decomposition, heat, or other means. The following are examples of substances which, in sufficient quantity may be hazardous: acids; alkalis; explosives; fertilizers; heavy metals such as chromium, arsenic, mercury, lead and cadmium; industrial chemicals; paint thinners; paints; pesticides; petroleum products; poisons, radioactive materials; sludges; and organic solvents. "Hazardous substances" may include any hazardous waste identified or listed by the administrator of the United State Environmental Protection Agency under the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976, or any toxic pollutant listed under section 307 of the federal Water Pollution Control Act as amended to January 1, 1977, or any hazardous substance designated under section 311 of the federal Water Pollution Control Act as amended to January 1, 1977, or any hazardous material designated by the secretary of transportation under the Hazardous Materials Transportation Act (49 CFR 172.101). 455B.381(1) , 1991 Code of Iowa

"Municipality" **-** means a city, town, borough, county, parish, district, association, or other public body created by or under State law.

SUMMARY GUIDANCE

ABOUT THIS DOCUMENT

This document contains a step-by-step explanation of the development of an effective Storm Water Pollution Prevention Plan for construction activities in the State of Iowa. This document is referred to as the Summary Guidance because its primary focus is on the development of the pollution prevention plan. This Summary Guidance is consistent with the requirements in Iowa's NPDES General Permit No. 2 for *Storm Water Discharge Associated with Industrial Activity for Construction Activities.*

Any suggestions or comments on improvements to this document should be forwarded to the to the Storm Water Coordinator at the address on the cover of this document. Questions relating to Iowa's storm water program should also be directed to the Storm Water Coordinator.

INTRODUCTION

For What Type of Construction is a Storm water Discharge Permit Required?

New federal regulations require that storm water discharges from certain construction activities be covered under an NPDES permit[1]. Construction activities which disturb the land, such as clearing, grading or excavation, except for disturbances of less than one acre of total land area which are not part of a larger common plan of development or sale, are required to be covered by an NPDES permit. **In other words, if the overall project will cause a land disturbance of one or more acres, any storm water runoff from any portion of the project requires NPDES permit coverage.** The NPDES permit, a federal waste water discharge permit, is required for storm water or snow melt runoff that drains from areas where construction activities occur. These requirements became effective on March 10, 2003.

How Does one Obtain a NPDES permit for a Construction project?

Iowa's General Permit No. 2 covers storm water discharges from construction activities (land disturbances). The general permit is a generic NPDES permit that can cover most construction (land disturbing) activities. The general permit contains the terms and conditions of the NPDES permit, but the permit is not applicable to any storm water discharge until a completed Notice of Intent (NOI) is submitted to the IDNR and an authorization has been issued. The issued authorization ties a construction activity to the general permit.

What is A Pollution Prevention Plan?

Iowa's NPDES General Permit No. 2 requires that a pollution prevention plan for the construction activity be developed before the Notice of Intent is submitted to the IDNR. The pollution prevention plan is to be implemented with the start of construction. A pollution prevention plan for construction is designed to reduce pollution at the construction site, before it causes environmental problems. Construction activities produce many different kinds of pollutants which may cause storm water contamination problems. Storm water runoff becomes polluted by picking up soil particles and other pollutants from construction materials as it flows over surfaces where construction activities are occurring. Grading activities remove grass, rocks, pavement and other protective ground covers resulting in the exposure of underlying soil to the elements. Because the soil surface is unprotected erosion can occur. The water carrying these particles eventually reaches a stream, river or a lake where it slows down, allowing the particles to settle out resulting in sedimentation. In addition, the construction of buildings and roads may require the use of toxic or hazardous materials such as petroleum products, pesticides and herbicides, and building materials such as asphalt, sealants and concrete which may pollute storm water running off of the construction site.

A storm water pollution prevention plan must be developed for each construction site covered under General Permit No. 2. The plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of the storm water discharge for the construction activities. The plan shall describe and ensure the implementation of

[1]Agricultural storm water runoff is excluded by federal regulation 40CFR 122.3(e).

practices which will be used to reduce the pollutants in storm water discharge from the construction site and to assure compliance with the terms and conditions of the general permit. Facilities must implement the provisions of the storm water pollution prevention plan required as a condition of the permit.

What Does this Document Contain?

This document is organized as step-by-step instructions for developing a pollution prevention plan. A number of steps are identified under different phases in the preparation of the pollution prevention plan. Each phase focuses on a particular type of information relating to the construction activity. The pollution prevention planning process is organized as shown on the chart on the next page. The six major phases in developing the pollution prevention plan are:

(1) SITE EVALUATION AND DESIGN DEVELOPMENT

(2) ASSESSMENT

(3) CONTROL SELECTION AND PLAN DESIGN

(4) CERTIFICATION AND NOTIFICATION

(5) CONSTRUCTION/IMPLEMENTATION

(6) FINAL STABILIZATION AND DISCONTINUATION

Six Phases For Developing and Implementing a Storm Water Pollution Prevention Plan

PHASE 1
SITE EVALUATION AND DESIGN DEVELOPMENT

- COLLECT SITE INFORMATION
- DESCRIBE CONSTRUCTION ACTIVITY
- DEVELOP SITE PLAN DESIGN
- PREPARE POLLUTION PREVENTION PLAN SITE MAP

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PHASE 2
ASSESSMENT

- MEASURE SITE AREA
- DETERMINE DRAINAGE AREAS
- CALCULATE RUNOFF COEFFICIENT

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PHASE 3
CONTROL SELECTION/PLAN DESIGN

- REVIEW AND INCORPORATE STATE AND LOCAL REQUIREMENTS
- SELECT EROSION AND SEDIMENT CONTROLS
- SELECT OTHER CONTROLS
- SELECT STORM WATER MANAGEMENT CONTROLS
- INDICATE THE LOCATION OF CONTROLS ON THE SITE MAP
- PREPARE AN INSPECTION AND MAINTENANCE PLAN
- PREPARE A DESCRIPTION OF THE CONTROLS
- PREPARE A SEQUENCE OF MAJOR ACTIVITIES

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PHASE 4
CERTIFICATION AND NOTIFICATION

- POLLUTION PREVENTION PLAN CERTIFICATION
- SUBMITTING A NOTICE OF INTENT

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PHASE 5
CONSTRUCTION/ IMPLEMENTATION

- IMPLEMENT CONTROLS
- INSPECT AND MAINTAIN CONTROLS
- MAINTAIN RECORDS OF CONSTRUCTION ACTIVITIES
- UPDATE/CHANGE THE PLAN TO KEEP THE PLAN CURRENT
- REPORT ANY "HAZARDOUS CONDITION" AND UPDATE PLAN
- PROVIDE FOR PLAN LOCATION AND ACCESS

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PHASE 6
FINAL STABILIZATION AND DISCONTINUATION

- FINAL STABILIZATION
- NOTICE OF DISCONTINUATION

PHASE 1
SITE EVALUATION AND DESIGN DEVELOPMENT

The first phase in preparing a Storm Water Pollution Prevention Plan for a construction project is to define the characteristics of the site and the type of construction that will be occurring. This phase consists of four steps: (A) collect site information, (B) develop the site plan design, (C) describe the construction activity, and (D) prepare the pollution prevention site map.

(A) COLLECT SITE INFORMATION

Prior to design, it is necessary to collect information about the existing conditions at the construction site. Iowa's General Permit No. 2 requires that the Pollution Prevention Plan include the following information:

- **Existing soils information**—Where information exists which describes the soils at the construction site, this data must be included in the pollution prevention plan. Soils data may include soil type, depth of the soil layer, soil texture, infiltration (percolation rate), or whether the soils are susceptible to erosion. Soil information can be obtained from county Soil Survey Reports. The Soil Survey Reports may be obtained from the local county Soil Conservation Service and Cooperative Extension Office.

- **Existing runoff water quality**—If storm water runoff from the proposed construction site has been sampled and analyzed for the presence of any pollutant (e.g., total suspended solids), then the results of the analyses must be included in the pollution prevention plan. It is not necessary to collect or analyze storm water samples if no data is available**.**

- **Location of surface waters on the construction site**—If the construction site includes or is adjacent to surface waters then the location and extent of the surface waters must be determined so that they may be indicated on the pollution prevention site map. Surface waters include lakes, rivers, streams (both perennial and intermittent), and wetlands.

- **Name of receiving water**—Identify the name and location of the body of water, e.g., stream, creek, run, wetland, river, lake, that will receive the runoff from the construction site. If the storm water discharges into an unnamed tributary also identify the first named body of surface water to which the storm water will flow. This information is usually available from county, State or USGS maps.

  If the site drains into a municipal separate storm sewer system, identify the system and indicate the receiving water to which the system discharges.

(B) DEVELOP SITE PLAN DESIGN

Once the information on the existing site conditions is collected, it is possible to develop a site plan design. In addition to the goals and objectives for the facilities being constructed the designers should also consider objectives which will limit the amount of pollution in storm water runoff from the construction site, such as:

- **Disturb** the smallest area possible.

- **Avoid** disturbance of sensitive areas such as:
  - Steep and/or unstable slopes
  - Areas with soils susceptible to erosion
  - Existing drainage channels

- **Identify** areas to be preserved or left as open space.

(C) DESCRIBE THE CONSTRUCTION ACTIVITY

In preparing your plan, you must describe the purpose or goal of the construction project (e.g., a single family residential development, a multistory office building, a highway interchange) and list the major soil disturbing activities necessary to complete the project. (Soil disturbing activities might include clearing, excavation and stockpiling, rough grading, final or finish grading, preparation for seeding or planting, excavation of trenches, demolition, etc.).

(D) PREPARE POLLUTION PREVENTION PLAN SITE MAP

The final step of the site evaluation and design development phase is to combine the information collected into a comprehensive Pollution Prevention Plan site map. The starting point for the map should be the site plan prepared for the construction design. The map for the construction site should be drawn to scale with topography. The scale of the map should be small enough so that you can easily distinguish important features such as drainage swales and control measures that will be added later. In addition to the location of surface waters, the following information must be included on the site map:

- **Slopes after grading**—Indicate the approximate steepness of slopes anticipated after major grading activities.

- **Disturbed areas**—Indicate the areas of soil disturbing activities or the total area of the site where soil will be disturbed. Draw the limit of disturbance so that any soil disturbing activity such as clearing, stripping, excavation, backfill, stock piling (topsoil or other fill material), and paving will be inside of the limit. The limit of disturbance should also include roads for construction vehicles unless those roads are paved or stabilized and have measures to reduce tracking of sediments. Also draw an outline of areas that will not be disturbed.

- **Drainage patterns/discharge points**—Indicate the drainage patterns of the site after the major grading activities and the location of the points where storm water will discharge from the site.
    - To illustrate the drainage pattern of the site, use topographic contour lines or arrows to indicate the direction runoff will flow.
    - Show the location of swales or channels. If there is a new or proposed underground storm drain system on the site, this should be indicated on the Storm Water Pollution Prevention Plan site map as well.

PHASE 2
ASSESSMENT

Once the characteristics of the site and the construction have been defined the next phase in developing a Storm Water Pollution Prevention Plan is to measure the size of the land disturbance and estimate the impact the project will have on storm water runoff from the site based on information collected in Phase 1, the Site Evaluation and Design Development Phase. Three things should be done to assess the project: (A) measure the site area, (B) determine the drainage areas and (C) calculate the runoff coefficient.

(A) MEASURE THE SITE AREA

Iowa's General Permit No. 2 requires that you indicate in the Storm Water Pollution Prevention Plan estimates of the total site area and the area that will be disturbed by excavating, grading or other activities. The total site area estimate must represent the size of the parcel of property or right of way on which the construction is occurring. The disturbed area estimate must represent the portion of the total site area which will be disturbed over the course of the construction project. These values can be measured from the pollution prevention site map which is drawn to scale.

(B) DETERMINE THE DRAINAGE AREAS

Although the size of each drainage area for each point where concentrated flow will leave the site is not required to be included in the pollution prevention plan, this information will help you select and design the sediment control and storm water management measures for your project in the next phase of the plan. Drainage areas are portions of the site where runoff will flow in one particular direction or to a particular discharge point. Be sure to include off-site water draining onto your site when determining the total size of the drainage basin. Use the drainage patterns indicated on the site map to determine the drainage areas.

(C) CALCULATE THE RUNOFF COEFFICIENT

Iowa's General Permit No. 2 requires that you estimate the runoff coefficient of the site after construction is complete. The runoff coefficient, "c", is an estimate of the fraction of total rainfall that will appear as runoff. For example, the "c" value of lawn area is 0.2, which indicates that only 20 percent of the water that falls on grassed areas will end up as surface runoff. In contrast, the "c" value of a paved area can be 0.9 or higher, indicating that 90 percent or more of the rain falling on this type of surface will run off. Runoff coefficients for sites with more than one land use are estimated by calculating a weighted average (based upon area) of the runoff coefficients for each land use. Table 1 lists runoff coefficients for various land uses.

Other recognized and technically accepted runoff determination methods may also be used.

Table 1 - TYPICAL "C" VALUES (ASCE 1960)

Description of area	Runoff coefficient
Business	
Downtown Area	**0.70 - 0.95**
Neighborhood Area	**0.50 - 0.70**
Residential	
Single-Family Areas	**0.30 - 0.50**
Multi-Units, Detached	**0.40 - 0.60**
Multi-Units, Attached	**0.60 - 0.75**
Residential (Suburban)	**0.25 - 0.40**
Apartment Dwelling Areas	**0.50 - 0.70**
Industrial	
Light Areas	**0.50 - 0.80**
Heavy Areas	**0.60 - 0.90**
Parks, Cemeteries	**0.10 - 0.25**
Playgrounds	**0.20 - 0.35**
Railroad Yard Areas	**0.20 - 0.40**
Unimproved Areas	**0.10 - 0.30**
Streets	
Asphalt	**0.70 - 0.95**
Concrete	**0.80 - 0.95**
Brick	**0.70 - 0.95**
Drives and Walks	**0.75 - 0.85**
Roofs	**0.75 - 0.95**
Lawns - Course Textured Soil (Greater than 85 % Sand)	
Slope: Flat, 2 %	**0.05 - 0.10**
Average, 2 - 7 %	**010 - 0.15**
Steep, 7 %	**0.15 - 0.20**
Lawns - Fine Textured Soil (Greater than 40 % Clay)	
Slope: Flat, 2 %	**0.13 - 0.17**
Average, 2 - 7 %	**0.18 - 0.22**
Steep, 7%	**0.25 - 0.35**

PHASE 3
CONTROL SELECTION/PLAN DESIGN

After you have collected the information and made measurements, the next phase is to design a plan to prevent and control pollution of storm water runoff from your construction site. To complete the Storm Water Pollution Prevention Plan: (A) review and incorporate state and local requirements, (B) select erosion and sediment controls, (C) select other controls, (D) select storm water management controls, (E) indicate the location of controls on the site map, (F) prepare an inspection and maintenance plan, (G) prepare a description of controls, and (H) prepare a sequence of major activities. The following subsections explain how the controls you select should be described in the Storm Water Pollution Prevention Plan.

(A) REVIEW AND INCORPORATE STATE AND LOCAL REQUIREMENTS

The pollution prevention plan prepared for compliance with Iowa's NPDES General Permit must also comply with the other state and local requirements. Therefore, prior to designing the pollution prevention plan, you must first determine what state and local requirements, if any, exist for sediment and erosion site plans, site permits or storm water management site plans, or site permits. Where these requirements do exist, they then must be carefully reviewed and incorporated into the plan design.

Consideration of state and local requirements in the plan design phase is necessary because the permit requires that the permittee provide a certification that the pollution prevention plan reflects the requirements applicable to protecting surface water resources in sediment and erosion site plans or permits, or storm water management site plans or site permits approved by state or local officials. Identified below are the state requirements pertaining to erosion control plans.

161A.64 Code of Iowa
STATE OF IOWA STATUTORY REQUIREMENTS PERTAINING TO EROSION CONTROL PLANS

Prior to initiating a land disturbing activity a person engaged in the land disturbing activity shall file a signed affidavit with the soil and water conservation district that the project will not exceed the soil loss limits.

"Land disturbance" (for purposes under 161A.64 of the Iowa Code) means a land change such as the tilling, clearing, grading, excavating, transporting or filling of land which may result in soil erosion from water or wind and the movement of sediment and sediment related pollutants into the waters of the state or onto lands in the state but does not include tilling, planting, harvesting, gardening, landscaping, installing posts or poles and emergency work to protect life or property.

(A) SELECT EROSION AND SEDIMENT CONTROLS

The Storm Water Pollution Prevention Plan must include a description of the measures to be used for erosion and sediment controls throughout the construction project. These controls include stabilization measures for controlling erosion from disturbed areas and structural controls to divert runoff and remove sediment. Erosion and sediment controls are implemented during the construction period to prevent and/or control the loss of soil from the construction site into the receiving waters. Your selection of the most appropriate erosion and sediment controls depends on a number of factors but is most dependent on site conditions. The information collected in the Site Evaluation and Design Development - Phase 1 and the Assessment - Phase 2 is used to select the controls. Some controls are discussed below:

- **Stabilization**—Under Iowa's General Permit No. 2, disturbed areas of the construction site that will not be re-disturbed for 21 days or more must initiate stabilization measures by the 14th day after the last disturbance,

except as precluded by snow cover. In the event of snow cover, stabilization measures must be initiated as soon as practicable thereafter.

Stabilization measures include the following:

- **Temporary seeding**—Temporary seeding is the planting of fast-growing grasses to hold down the soils in disturbed areas so that they are less likely to be carried off-site by storm water runoff or wind.
- **Permanent seeding and planting**—Permanent seeding is the use of permanent vegetation (grass, trees, or shrubs) to stabilize the soil by holding soil particles in place.
- **Mulching**—Mulching is the placement of material such as hay, grass, wood chips, straw, or gravel on the soil surface to cover and hold in place disturbed soils. (Mulching often accompanies seeding.)
- **Geotextiles**
- **Chemical Stabilization**
- **Sod Stabilization**
- **Vegetative Buffer Strips**
- **Protection of Trees**
- **Preservation of Natural Vegetation**
- **Dust Control**
- **Soil Retaining Measures**
- **Stream Bank Stabilization**

Iowa's General Permit No. 2 requires that the pollution prevention plan include structural practices to divert flows away from disturbed areas, to store flows, or to limit the discharge of pollutants from the site to the degree attainable. The following is a partial list of some of the structural practices which may be used.

- **Structural control measures**
  - **Earthen Dike**—An earthen dike is a mound of stabilized soil which is constructed to divert runoff. Earthen dikes may be used to either divert uncontaminated runoff away from disturbed areas or to divert contaminated runoff into a sediment basin or sediment trap.
  - **Silt fence**—A silt fence is a temporary measure consisting of posts with filter fabric stretched across them and sometimes with a wire support fence. The fence is installed along the down slope or side slope perimeter of a disturbed area. Runoff passes through the openings in the fabric, while sediment is trapped on the uphill side.
  - **Sediment trap**—A sediment trap is formed by excavating a pond or by placing an earthen embankment across a low area or drainage swale. It has an outlet or spillway made of large stones or aggregate. The trap retains the runoff long enough to allow the silt to settle out.
  - **Sediment basin**—A sediment basin is a settling pond with a controlled water release structure, e.g., a riser and pipe outlet with a gravel filter, which slows the release of runoff. The basin detains sediment-laden runoff from larger drainage areas long enough for most of the sediment to settle out.
  - **Brush barrier**
  - **Drainage swale**
  - **Subsurface drains**
  - **Pipe slope drains**
  - **Level spreaders**
  - **Storm drain inlet protection**
  - **Rock outlet protection**
  - **Reinforced soil retaining systems**
  - **Gabions**

Iowa's General Permit No. 2 requires that, where it is attainable, a temporary or permanent sediment basin be installed in any drainage location where more than 10 acres in the upstream drainage area are disturbed at one time. The sediment basin must provide at least 3,600 cubic feet of storage for every acre of land which it drains (flows from upland areas that are undisturbed may be diverted around the basin). Where such a sediment basin is not attainable other structural sediment controls providing equivalent effectiveness are required for all side slope and down slope boundaries of the construction areas.

For drainage locations with 10 or fewer disturbed acres, sediment traps, filter fences, or equivalent measures must be installed along the downhill boundary of the construction site.

(B) SELECT OTHER CONTROLS

In addition to erosion and sediment controls, the Pollution Prevention Plan for your project must address the other potential pollutant sources that may exist on a construction site. These controls include proper disposal of construction site waste disposal, compliance with applicable State or local waste disposal, sanitary sewer or septic system regulations, control of off-site vehicle tracking, and control of allowable non-storm water discharges, as explained below:

- **Ensure proper disposal of construction site waste materials.** Iowa's solid waste regulations require that construction and demolition waste be taken to a permitted sanitary landfill. No liquids or hazardous waste will be accepted. Contact the nearest IDNR field office to determine the nearest permitted sanitary landfill.

  Rubble (which is uncontaminated stone, brick, or similar inorganic material), rock and sand may be disposed without a permit in an environmentally safe manner. This means not impeding waterways or drainage as well as not disposing of rubble, rock or sand in flood plains or wetlands without IDNR prior approval.

  The open burning of trees, tree trimmings, and landscape waste is allowed without a permit provided that: the material originated on the premises, the burning occurs at least one-quarter mile away from any inhabited building, rubber tires are not used to ignite the fire and the burning meets with local requirements.

- **Treat or dispose of sanitary wastes that are generated on-site in accordance with State or local requirements.** Contact the County Sanitarian's office for local requirements. If the county sanitarian cannot be reached, contact the regional IDNR field office.

- **Prevent off-site tracking of sediments and generation of dust.** Stabilized construction entrances or vehicle washing racks should be installed at locations where vehicles leave the site. Where dust may be a problem, implement dust control measures.

- **Identify and prevent contamination of non-storm water discharges.** Where non-storm water discharges allowed by the General Permit exist, the pollution prevention plan must identify these discharges and take steps to prevent contamination from these discharges.

(C) SELECT STORM WATER MANAGEMENT CONTROLS

Storm water management controls are constructed to prevent or control pollution of storm water after the construction is completed. Iowa's General Permit No. 2 requires that the pollution prevention plan include a description of the measures that will be installed to control pollutants in storm water after construction is complete. These controls include, but are not limited to, one or more of the following:

- **Retention pond**—A pond that holds runoff in a reservoir without release except by means of evaporation, infiltration, or emergency bypass.

- **Detention pond**—A pond that holds or detains runoff in a basin for a limited time releasing it slowly to allow most of the sediments to drop out.

- **Infiltration measures**—Measures that allow the percolation of water though the ground surface into subsurface soil. Specific measures include infiltration trenches, basins, and dry wells.

- **Vegetated swales and natural depressions**—Grass-lined ditches or depressions that transport runoff, filter sediments from the runoff, and enhance infiltration of the runoff.

Selection of the most appropriate storm water management measures depends upon a number of factors associated with site conditions. Most sites can employ measures to remove 80 percent of the total suspended solids resulting from the construction project. When you select storm water management measures for a development project, consider the impacts of these measures on other environmental media (e.g., land, air, and ground water).

In addition to pollutant removal, the storm water management portion of the plan must address velocity dissipation at discharge locations. Development usually means an increase in speed with which the site will drain because of the addition of paved areas, storm sewers, curbs, gutters, etc. The general permit requires that velocity dissipation devices be placed along the length of any outfall where the discharge from the developed area may erode the channel so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions present prior to the initiation of construction activities). The potential for erosion is primarily dependent upon the velocity of the storm water discharge and the type of material that lines the channel. One velocity dissipation device is rip rap outlet protection, which is stone or rip rap placed at the discharge point to reduce the speed of concentrated storm water flows.

(D) INDICATE THE LOCATION OF CONTROLS ON THE SITE MAP

Pollution prevention measures must be shown on the pollution prevention site map, including the location of each measure used for erosion and sediment control, storm water management, and other waste controls. When this has been done, the site map is ready to be included in the Pollution Prevention Plan. It may not be feasible to indicate some controls on the site map, e.g., waste control measures.

(E) PREPARE AN INSPECTION AND MAINTENANCE PLAN

After the Storm Water Pollution Prevention Plan is prepared and the necessary controls are installed, you will be responsible for inspecting and maintaining them. The General Permit requires that you prepare a description of the procedures to maintain in good and effective operating conditions vegetation, erosion and sediment control measures and other protective measures identified in the site plan. Qualified personnel (provided by the permittee) shall inspect disturbed areas of the construction site that have not reached "final stabilization" at least once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater. An inspection and maintenance checklist for each of the control measures proposed for the construction site should be included in the Storm Water Pollution Prevention Plan prior to starting construction.

(F) PREPARE A DESCRIPTION OF THE CONTROLS

Once you have finished planning your construction activities and selected the controls, make a list of each type of control you plan to use on the site. Include a description of each control, describe its purpose, and explain why it is appropriate in this location. The description should also include specific information about the control such as size, required materials, and methods of installation/use.

(G) PREPARE A SEQUENCE OF MAJOR ACTIVITIES

You must prepare a sequence of major activities that includes the installation of all the controls, earth disturbing activities, all stabilization activities, and the maintenance required for the controls. The sequence should clearly indicate the order in which each of the activities described takes place. Several general principles are helpful in developing the sequence of major activities:

- **Install** down slope and side slope perimeter controls before the land disturbing activity occurs.
- **Do not disturb** an area until it is necessary for construction to proceed.
- **Cover** or **stabilize** disturbed areas as soon as possible.
- **Time** construction activities to limit impact from seasonal climate changes or weather events.
- **Delay** construction of infiltration measures until the end of the construction project when upstream drainage areas have been stabilized.
- **Do not remove** temporary perimeter controls until after all upstream areas are finally stabilized.

PHASE 4
POLLUTION PREVENTION PLAN CERTIFICATION AND SUBMITTING A NOTICE OF INTENT

Once the Storm Water Pollution Prevention Plan has been prepared, each operator must: (A) certify by signing the Pollution Prevention Plan. After the plan has been developed and certified, either the owner or general contractor is ready to (B) submit a notice of intent to the Iowa Department of Natural Resources. The pre-construction checklist will be very useful in evaluating whether all the required items are included in your Storm Water Pollution Prevention Plan prior to certifying the plan or submitting a Notice of Intent.

(A) POLLUTION PREVENTION PLAN CERTIFICATION

For each control measure, the storm water pollution prevention plan must clearly identify the contractor(s) and or subcontractor(s) that will implement the measure. All contractors and subcontractors identified in the plan, including short-term contractors and subcontractors coming on-site, must sign the following certification statement before conducting any professional service at the site identified in the plan. The certification must be signed in accordance with the signatory requirements found in the general permit (i.e., principal executive officer, vice-president, general partner, proprietor, elected official) and must be incorporated into the pollution prevention plan.

Upon signing the certification, the contractor or sub-contractor becomes a co-permittee with the owner and other co-permittee contractors. In signing the plan, the authorized representative certifies that the information is true and assumes liability for the plan. Note that Section 309 of the Clean Water Act provides for significant penalties where information is false or the permittee violates, either knowingly or negligently, permit requirements.

Certification Statement

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site as part of this certification. Further, by my signature, I understand that I am becoming a co-permittee, along with the owner(s) and other contractors and subcontractors signing such certifications, to the Iowa Department of Natural Resources NPDES General Permit No. 2 for "Storm Water Discharge Associated with Industrial Activity for Construction Activities" at the identified site. As a co-permittee, I understand that I, and my company, are legally required under the Clean Water Act and the Code of Iowa, to ensure compliance with the terms and conditions of the storm water pollution prevention plan developed under this NPDES permit and the terms of this NPDES permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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 knowing violations.

This certification must include the name and title of the person providing the signature; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

(B) SUBMITTING A NOTICE OF INTENT

Either the owner or general contractor can submit the Notice of Intent to the IDNR for coverage under Iowa's NPDES General Permit No. 2. A copy of the Notice of Intent must be included in the Pollution Prevention Plan. As additional operators (either contractors or subcontractors) are identified, each operator shall certify (sign) the

pollution prevention plan and become co-permittees with the other known operators as described above in **(A) POLLUTION PREVENTION PLAN CERTIFICATION.**

PHASE 5
CONSTRUCTION / IMPLEMENTATION

Once you have prepared a Storm Water Pollution Prevention Plan and submitted a complete Notice of Intent to the Iowa Department of Natural Resources, you may not start construction of the project until the Department has issued the authorization. You must now do the following things that are indicated in the Storm Water Pollution Prevention Plan: (A) implement controls, (B) inspect and maintain the controls, (C) maintain records of construction activities, (D) update/change the plan to keep it current, (E) Report any hazardous condition and update the plan and (F) have plans accessible.

(A) IMPLEMENT CONTROLS

The first action that should be taken is to construct or perform the controls over erosion, sedimentation and other waste that were selected in the Storm Water Pollution Prevention Plan. The controls must be constructed in the order indicated in the sequence of major activities identified in phase 3.

Stabilization controls (measures) must be applied within the time frame specified in the general permit which are as follows:

- Except as precluded by snow cover, temporary and permanent stabilization measures shall be initiated on all disturbed areas as soon as practical but in no case where construction activity will not occur for a period of 21 or more calendar days later than the 14th day after no construction activity has occurred on such area.

- When precluded by snow cover stabilization measures shall be initiated as soon as practical thereafter.

To ensure that all controls are adequately implemented, it is important that the work crews who install the measures are experienced and/or adequately trained. Improperly installed controls can have little or no effect and may actually increase the pollution in storm water. It is also important that all other workers on the construction site be made aware of the controls so that they do not inadvertently disturb or remove them.

(B) INSPECT AND MAINTAIN CONTROLS

As discussed previously, inspection and maintenance of the protective measures that are part of this plan are as important to pollution prevention as proper planning, design/selection, and installation.

- **Inspections**—The general permit requires inspection every 7 days and within 24 hours of the end of a storm of 0.5 inch or greater of rainfall. All disturbed areas of the site, areas for material storage, locations where vehicles enter or exit the site, all of the erosion and sediment controls that were identified as part of the plan, and accessible discharge locations must be inspected. Controls must be in good operating condition until the construction activity is complete and final stabilization has been reached

The inspector must prepare an inspection report of the pollution control measures. The report shall: summarize the scope of the inspection; provide the name(s) and qualifications of personnel making the inspection; include the date(s) of the inspection; identify any damages or deficiencies in the control measures; and identify what actions will be taken to modify pollution control practices. These reports document the inspection of the pollution prevention measures. Inspection reports must contain the following certification statement and be signed in accordance with the signatory requirements found in the general permit (i.e., principal executive officer, vice-president, general partner, proprietor, elected official).

Inspection Report Certification Statement

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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 knowing violations."

- **Maintenance/Repairs**—The pollution prevention plan must contain a description of procedures that will be followed to maintain in good and effective operating condition all control measures identified. The inspection reports can be used to record scheduled maintenance.

  Any changes that may be required to correct deficiencies in the Storm Water Pollution Prevention Plan noted during an inspection should be made as soon as practical after an inspection but in no case later than 7 days after the inspection.

(C) MAINTAIN RECORDS OF CONSTRUCTION ACTIVITIES

In addition to the inspection and maintenance reports, the operator should keep records of the construction activity on the site. In particular, the operator should keep a record of the following information:

- The dates when major grading activities occur in a particular area.
- The dates when construction activities cease in an area, temporarily or permanently.
- The dates when an area is stabilized, temporarily or permanently.

These records can be used to make sure that areas where there is no construction activity will be stabilized within the required time frame.

Records shall be retained for a period of at least three years from the date that the site is finally stabilized.

(D) UPDATE/CHANGE THE PLAN TO KEEP THE PLAN CURRENT

For a construction activity to be in full compliance with its NPDES storm water general permit, and for the Storm Water Pollution Prevention Plan to be effective, the plan must accurately reflect site features and operations. When it does not, the plan must be changed. The plan must also be changed if the operator observes that it is not effective in minimizing pollutant discharge from the site.

In addition, the pollution prevention plan shall be updated to:

- include contractors identified after the submittal of the Notice of Intent. These contractors shall certify the plan and be identified as co-permittees and
- identify any change in ownership or transference of the permit and permit responsibilities.

If, at any time during the effective period of the permit, the IDNR finds that the plan does not meet one or more of the minimum standards established in the general permit, the IDNR will notify the permittee of required changes necessary to bring the plan up to standard. Permittees shall have 7 days after notification to make the necessary changes.

(E) REPORT ANY HAZARDOUS CONDITION AND UPDATE THE PLAN

Because construction activities may include handling of certain hazardous substances over the course of the project, spills of these substances may create a hazardous condition and are required to be reported. Iowa law requires that as soon as possible but not more than six hours after the onset of a hazardous condition the IDNR and local sheriff's office or the office of the sheriff of the affected county be notified. (Refer to Glossary for definition of a "hazardous condition").

The storm water pollution prevention plan must be modified with 14 calendar days of a hazardous condition. The pollution prevention plan shall describe the release and the circumstances leading to the release. Steps to prevent the reoccurrence of such releases are to be identified in the plan and implemented.

(F) PROVIDE FOR PLAN LOCATION AND ACCESS

The general permit has specific requirements regarding plan location and access.

- **Plan location**—A copy of the Pollution Prevention Plan must be kept at the construction site from the time construction begins until the site has reached final stabilization.

- **Retention of records**—Retention of records requires that copies of the Storm Water Pollution Prevention Plan and all other reports required by the permit, as well as all of the data used to complete the Notice of Intent, be retained for 3 years after the completion of final site stabilization.

- **Access**—Although plans and associated records are not necessarily required to be submitted to the IDNR, these documents must be made available upon request to the Department of Natural Resources. If storm water runoff is discharged to a municipal separate storm sewer system, the plans must be made available upon request to the municipal operator of the system.

PHASE 6
FINAL STABILIZATION AND NOTICE OF DISCONTINUATION

The storm water discharge from a construction activity is no longer considered to be a discharge subject to the storm water permit requirements when final stabilization has been reached and temporary erosion and sediment controls have been or will be removed. A permittee must submit a Notice of Discontinuation (NOD) to inform the IDNR that storm water discharge no longer needs to be covered by the general permit.

(A) FINAL STABILIZATION

Final stabilization is defined in the general permit as meaning that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover for unpaved areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of rip rap, gabions, or geotextiles) have been employed.

(B) NOTICE OF DISCONTINUATION (NOD)

A storm water discharge that is covered under the general permit is required to notify the Iowa IDNR that discharge has been discontinued and that the discharge is no longer subject to the NPDES permitting requirements. For construction activities, this means that final stabilization has been reached. This notification is made by providing the IDNR with a Notice of Discontinuation. Within 30 days after final stabilization has been reached the owner or general contractor must submit the NOD to the IDNR.

Information to be included on the Notice of Discontinuation includes the following:

- the name of the owner or operator to which coverage under the general permit was issued;
- the general permit number and the permit authorization number
- the date the construction site reached final stabilization; and
- a signed certification.

The Notice of Discontinuation should be mailed to the following address:

Storm Water Coordinator
Iowa Department of Natral Resources
502 E. 9th Street
Des Moines, Iowa 50319-0034

Table 2 – Soil Conservation Service Standards and Specifications

560	Access Roads
342	Critical Area Planting
356	Dike
362	Diversion
393	Filter Strip
410	Grade Stabilization Structure
412	Grassed Waterway
484	Mulching
378	Pond
521A	Pond Sealing or Lining, Flexible Membrane
521B	Pond Sealing or Lining, Soil Dispersant
521C	Pond Sealing or Lining, Bentonite Sealant
521D	Pond Sealing or Lining, Cationic Emulsion - Waterborne Sealant
521E	Pond Sealing or Lining, Asphalt-Sealed Fabric Liner
566	Recreation Land Grading and Shaping
568	Recreation Trail and Walkway
350	Sediment Basin
587	Structure for Water Control
606	Subsurface Drain
608	Surface Drainage, Main or Lateral
600	Terrace
620	Underground Outlet
638	Water and Sediment Control Basin

- Copies of these standards are available from your local County Soil Conservation Service office. See listing in the telephone book under: **- U.S. Government, Agriculture Department of Soil Conservation Service**

NOTICE OF DISCONTINUATION

OF A STORM WATER DISCHARGE
COVERED UNDER IOWA NPDES GENERAL PERMIT NO. 2
FOR CONSTRUCTION ACTIVITIES

Name of the owner or facility to which the storm water discharge general permit coverage was issued.

_____

List the complete permit authorization number for the discharge. This number is provided on the bottom of the authorization sheet for General Permit No. 2.

IA - _____---_____

List the date the construction site reached final stabilization.

_____

The following certification signed in accordance with the signatory requirements of the general permit: (see back side)

I certify under penalty of law that disturbed soils at the identified facility have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time. I understand that by submitting this Notice of Discontinuation, that I am no longer authorized to discharge storm water associated with industrial activity for construction activities by Iowa Department of Natural Resources NPDES General Permit No. 2, and that discharging pollutants from storm water associated with industrial activity to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit.

I further certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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 knowing violations.

_____Name (print) _____Title

_____Signature _____Date

Return to:

Storm Water Coordinator
Department of Natural Resources
502 E. 9th Street
Des Moines, IA 50319-0034

"Final Stabilization" means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover for the area has been established or equivalent stabilization measures have been employed.

SIGNATORY REQUIREMENTS All Notices of Intent, storm water pollution prevention plans, reports, certifications or information either submitted to the Department or the operator of a large or medium municipal separate storm sewer system, or that this permit requires be maintained by the permittee, shall be signed in accordance with rule 567--64.3(8) of the Iowa Administrative Code as follows:

64.3(8) *Identity of signatories of operation permit applications.* The person who signs the application for an operation permit shall be:

a. *Corporations*. In the case of corporations, a principal executive officer of at least the level of vice-president.

b. *Partnerships*. In the case of a partnership, a general partner.

c. *Sole proprietorships*. In the case of a sole proprietorship, the proprietor.

d. *Public facilities*. In the case of a municipal, state, or other public facility, by either the principal executive officer, or the ranking elected official.

e. *Storm water discharge associated with industrial activity from construction activity*. In the case of a storm water discharge associated with industrial activity from construction as identified in 40 CFR 122.26(b)(14)(*x*), either the owner of the site or the general contractor.

The person who signs NPDES reports shall be the same, except that in the case of a corporation or a public body, monitoring reports required under the terms of the permit may be submitted by the person who is responsible for the overall operation of the facility from which the discharge originated.