
IR-04-03

**EVALUATION OF BEST MANAGEMENT
PRACTICES FOR CONTROLLING RUNOFF
AND EROSION AT TRANSPORTATION
CONSTRUCTION SITES**

Prepared by

Don Zhao
Yinhui Xu

AUGUST 2004

**Evaluation of Best Management Practices for
Controlling Runoff and Erosion at
Transportation Construction Sites**
(Preliminary Project Report-for Discussion only)

Prepared by

**Yinhui Xu (Graduate Research Assistant) and
Don Zhao (Principle Investigator)**

**Department of Civil Engineering
238 Herbert Engineering Center
Auburn University, Auburn AL 36849**

***Sponsor:* Highway Research Center
Auburn University, Auburn, AL 36849**

August, 2004

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Introduction

Erosion is the process by which the land's surface is worn away through the action of wind, water, ice, and/or gravity (1-3). Water-generated erosion is the most severe type of erosion, especially in the developing areas (1-2). Erosion and runoff during and after road construction creates large amounts of silt, which can pose adverse environmental impacts including serious impairment of receiving water bodies, changes in stream morphology, alteration of hydrologic and hydraulic characteristics, impacts on aquatic habitat, and increased flooding due to reduced capacity of stream channels (4-6). Polluted stormwater often ends up in local rivers or streams either directly or through municipal separate stormwater systems (MS4s) (7).

In 1990, the U.S. Environmental Protection Agency (EPA) developed a Phase-I Stormwater Program under the National Pollutant Discharge Elimination System (NPDES), in response to the 1987 Amendments to the Clean Water Act (CWA) (8). Effective on October 1, 1992, Phase I requires NPDES permit coverage for stormwater discharges from:

- Medium and large MS4s located in incorporated places or counties with populations of 100,000 or more;
- Eleven categories of industrial activity which includes construction activity that disturbs five or more acres of land. The eleven categories are:
 - Category One (i): Facilities with effluent limitations
 - Category Two (ii): Manufacturing
 - Category Three (iii): Mineral, Metal, Oil and Gas
 - Category Four (iv): Hazardous Waste, Treatment, or Disposal Facilities
 - Category Five (v): Landfills
 - Category Six (vi): Recycling Facilities
 - Category Seven (vii): Steam Electric Plants
 - Category Eight (viii): Transportation Facilities
 - Category Nine (ix): Treatment Works
 - Category Ten (x): Construction Activity
 - Category Eleven (xi): Light Industrial Activity

Three general steps should be followed in order to obtain the permit: (1) submit a notice of intent (NOI) notifying EPA and the delegated state, (2) develop and implement a stormwater pollution prevention plan (SWPPP), and (3) submit a notice of termination (NOT) to EPA or the delegated state notifying them that the construction is completed and the site is stabilized.

In 1999, EPA promulgated the Phase-II Stormwater Regulation, which extended the NPDES stormwater permitting process to much smaller cities and smaller construction sites effective from March 10, 2003 (9, 10). Phase II requires NPDES permit coverage for stormwater discharges from:

- Certain regulated small municipal separate storm sewer systems (MS4) (defined as all small MS4s located in "urbanized areas" (UAs) as defined by the Bureau of the Census, and those small MS4s located outside of a UA that are designated by NPDES permitting authorities (8-1)); and
- Construction activities disturbing between 1 and 5 acres of land.

Under the Phase II rule, construction operators will need an NPDES permit if their site disturbs more than 1 acre of a land. EPA addressed that the requirements for the small construction sites (< 5 acres) will be similar to those of large construction sites (>5 acres). However, there remain several differences between them (10). First, unlike the large construction sites, small sites may be waived from the NPDES permitting program. It depends on either the rainfall intensity anticipated from the project period or a water-quality analysis that shows construction controls are not necessary to protect water quality. The permitting authority has the right to determine whether or not to use these waivers. Second, EPA is not specifically requiring permitting authorities to collect notice of intent (NOIs) from small construction sites. If a state chose not to require NOIs, the small construction sites in that state shall still need to develop and implement a stormwater pollution prevention plan (SWPPP), but shall not have to submit any paperwork. Third, the new construction regulations have a specific exemption from permitting requirements for routine maintenance performed on small sites. They also have the ability to require permittees to follow the state erosion and sediment control programs instead of preparing a duplicate plan for NPDES permit.

Requirements under the Phase II permit can vary depending on the regulated activities. For **Industrial Activities**, the operators still need to:

1. Submit a notice of intent (NOI).
2. Develop and implement a stormwater pollution prevention plan (SWPPP).
3. Develop and implement an analytical stormwater monitoring and reporting program.

For **Construction Activities**, a regulated construction site must:

1. Submit a notice of intent (NOI).
2. Develop and implement a stormwater pollution prevention plan (SWPPP).
3. Submit a notice of termination (NOT).

For MS4s, the Phase II rule requires six minimum control measures, which should be implemented by applying the Best Management Practices (BMPs) appropriate to the source, location and climate (11). The six minimum measures are:

1. Public education and outreach.
2. Public participation/involvement.
3. Illicit discharge detection and elimination.
4. Construction site runoff control.
5. Post construction runoff control.

6. Pollution prevention/ Good housekeeping.

Transportation construction sites are among those most affected by the Phase II rule. There is an urgent need to develop an integrated approach for state transportation agencies to effectively comply with the regulation and to identify site-specific and cost-effective BMPs to control runoff and erosions. The objectives of this study are

- To review and compare current procedures and approaches employed by state transportation agencies against the NPDES permit requirements.
- To develop a protocol helping construction operators or designers identify and implement structural BMPs at affected transportation construction sites during and after construction activities.
- To identify the BMPs for preventing and controlling erosions at Alabama construction sites.

Chapter 1. The General NPDES Phase II Permitting Process

Construction activities that disturb one acre or more are now required to comply with the Phase II NPDES stormwater program. Operators of regulated construction sites are required to develop and implement stormwater pollution prevention plans and to obtain permit coverage from an authorized state agency or from the US EPA. Most states are authorized to implement the NPDES permit program, including the stormwater program. Appendix 1 lists all states that are authorized to issue the permit (12). This chapter discusses the permitting process used in five selected states including Alabama.

1.1 Permitting process in Alabama

In accordance with the EPA's requirements, the Alabama Department of Environmental Management (ADEM) is authorized to issue a state general NPDES Permit for small MS4s and Construction & Small Noncoal, Nonmetallic Mining & Dry Processing Sites, and Associated areas (13). The rules require that a Construction Best Management Practices Plan (CBMPP) be fully implemented and effectively maintained (14). The CBMPP should be prepared by a qualified credentialed professional (QCP) to minimize pollutant discharges in stormwater runoff to the maximum extent practicable during land disturbance activities. Generally, the operators are required to:

- Submit notice of registration (NOR) to register for proposed discharges. The CBMPP should be submitted with the registration. ADEM Form 4981-03 (Appendix Form 2-1) must be submitted.
- Perform regular inspection by a QCP, a trained person under the direct supervision of a QCP, or a qualified credentialed inspector (QCI) trained through the Qualified Credentialed Inspection Program (QCIP). ADEM Form 5001-03 (Appendix Form 2-2) must be submitted.
- Submit a notice of termination (NOT) upon completion. ADEM Form 4991-03 (Appendix Form 2-3) must be submitted.

The ADEM has constructed a website (13), where detailed rules and forms can be downloaded. The forms are also available at:
<http://www.adem.state.al.us/FieldOps/Permitting/Forms/forms.htm> (15).

1.2 Permitting process in Florida

In Florida, all regulated sources must obtain an NPDES stormwater permit (or exemption) from Florida Department of Environmental Protection (FDEP). Requirements of the permit may vary depending on the regulated activities. Under the Phase II rule, small construction activity on sites that disturb an area equal to or greater than one acre and less than five acres will be regulated. The construction sites less than one acre will also be included if the activity is part of a larger common plan of

development or scale that will disturb between one and five acres of land. The operators should seek to be covered by Generic Permit for Stormwater Discharge from Large and Small Construction Activities (CGP) (16). The CGP requires the regulated construction operator complete the following steps to apply for the NPDES permit coverage:

- Obtain copies of the CGP and NOI.
- Carefully read the permit language.
- Develop and implement a SWPPP.
- Complete an NOI in its entirety.
- Submit the NOI along with the application fee to the NPDES Stormwater Notices Center. DEP form 62-621.300(4)(b) (Appendix Form3-1) must be submitted to obtain permit coverage.
- Re-apply for coverage every five years (if the construction activity extends beyond a 5-year period) or submit an NOT to terminate coverage. DEP Form 62-621.300(6) (Appendix Form 3-2) must be submitted to the NPDES Stormwater Notices Center to discontinue permit coverage.

The Florida Program for Construction Activity - Permit Options & Requirements for Construction has a website containing information on the permitting process, along with some useful information links (17).

1.3 Permitting process in Georgia

Georgia Environmental Protection Division (EPD) is authorized to issue the Phase II NPDES permit. The following steps are required under a general stormwater permit (18, 19):

- Complete and submit a NOI (Appendix Form 4-1)
- Develop and implement an Erosion, Sedimentation & Pollution Control Plan (i.e., BMPs, inspection and sampling).
- Submit a NOT when the project is completed and the site meets the definition of final stabilization (Appendix From 4-2).

Information about applying for the General NPDES Permit for Stormwater Discharges from Construction Activities was also prepared by Georgia EPD and is available at its website <http://www.dnr.state.ga.us/dnr/environ/> (18). More information on the Permits is available on Georgia EPD's website at www.dnr.state.ga.us/dnr/environ – click on “Technical Guidance” and then “Storm Water”

1.4 Permitting process in Ohio

The Ohio EPA requires that all the construction sites must obtain a permit if the site or the larger plan of development for your site disturbs 1 or more acres. Most sites may get permit coverage under the Authorization for Storm Water Discharge Associated with Construction Activity under the National Pollution Discharge Elimination System (20). To get permit coverage, the following steps are required (21):

- Develop a Stormwater Pollution Prevention Plan (SWP3) for the construction site;
- Submit a Notice of Intent (NOI) (Appendix 5 Form 5-1) requesting coverage for your discharges under the general permit;
- Wait until you receive the Ohio EPA approval letter stating that you are covered under the general permit;
- Ensure that contractors, subcontractors and staff understand their role in carrying out the SWP3;
- Implement the SWP3;
- Proceed with construction, including regular maintenance and inspection of sediment and erosion controls and stormwater management facilities. The Ohio EPA has developed a construction inspection checklist, which can be downloaded at: http://www.epa.state.oh.us/dsw/storm/CGP_Ins1.pdf.
- Submit a Notice of Termination (NOT) (Appendix Form 5-2) to terminate the NPDES construction storm water general permit coverage for a site where final stabilization was achieved

All the information related to the Ohio storm water can be found at Storm Water Program Forms and Permits under the website:
<http://www.epa.state.oh.us/dsw/storm/stormform.html>

1.5 Permitting process in Illinois

The Illinois EPA issued General Stormwater NPDES Permit for Construction Site (22). It requires the following steps to get the construction permit regarding to the stormwater discharge:

- Develop a Pollution Prevention Plan. The BMP guidance can be found at: <http://www.epa.gov/npdes/pubs/owm0307.pdf>.
- Submit a completed NOI (Appendix Form 6-1).
- Submit a complete NOT after the land disturbing activities are complete and the site has been finally stabilized. The NOT form of Illinois is attached in Appendix From 6-2.

Generally speaking, all permitting process requires three basic steps: NOI, BMPs, and NOT. A website of Municipal Research and Service Center of Washington (<http://www.mrsc.org/Subjects/PubWorks/npdes/availres.aspx>) provides the resources available for more NPDES Phase II permit process.

Chapter 2. General Consideration in Design and Implementation of BMPs for Erosion Control at Transportation Construction Sites

Developing an erosion and sediment control plan is an important component in order to obtain the permit. The erosion and sediment control should be taken into account in the design and planning stages of a transportation project. Immediately prior to the beginning of the construction, a detailed plan should be developed by the project personnel in coordination with the contractor personnel (23). The developing process is discussed in the following part.

2.1 Preliminary site investigation

A site investigation should be scheduled to obtain information about the soil in order to develop the erosion and sediment control plan. The following information should be acquired based on this investigation:

- Soil properties and suitability
- Evaluation of potential problems such as erosion potential, water infiltration capacity, structure, texture, and other engineering properties related to the construction activity
- A site topographic map showing the critical areas on or adjacent to the site, such as woodlands, wetlands, and special areas of natural vegetative cover
- Inspection of the proposed and existing drainage patterns
- Existing topographic features such as the length and grade of the natural slopes
- Evaluation of the proposed alterations to the natural terrain
- Assessment of the watershed both upstream and downstream from the construction site

2.2 Preliminary design

Attention should be paid to the measures needed to prevent or control the erosion and sediment of the site. Some general principles and specific guidance are listed below for selecting and implementing erosion and runoff BMPs:

- Schedule the construction to minimize the area and duration of the disturbance. The schedule is needed to show the sequencing of construction activities with the installation and maintenance of the BMPs
- Preserve existing vegetation as much as possible and as long as possible

- Protect bare soil from rainfall and overland flow as soon as possible
- Reduce the runoff velocity with proper control measurement
- Reduce the runoff volume by planned diversions
- Provide temporary or permanent drainage facilities to control the runoff released from the construction area
- Filter or trap the sediment before it leaves the construction area

2.3 Final specifications

Based on the data obtained during the site investigation and preliminary design, the final contract plan and specifications should include the following:

- Suitable contour internals which are sufficient to describe the existing terrain on the project
- Existing vegetative cover
- Existing drainage patterns, streams, lakes, ponds, and other bodies of water
- Limits of the excavation and embankment for the project
- The location and size of every temporary or permanent drainage structure
- Dimensional details, types, location, and typical drawings for each erosion and sediment control BMPs
- Some specification requirements that:
 - The project be constructed in small workable units
 - Grubbing and scaling be performed in several operations on the individual work units
 - The temporary erosion and sediment control measures be in place before removing the ground cover
 - The erosion and sediment control measures be maintained and supplemented, and inspected after each rainfall
- A designer's narrative should be prepared in order that the project personnel can adequately provide erosion and sediment control. The following should be included in the narrative:
 - A general description of each construction activity within each drainage area
 - A brief description of the susceptibility to erosion and the treatment needed
 - A general description of how to control the runoff of the surface water
 - A general description of how to handle the offsite storm water through the work area
 - A general description of how to control the onsite stormwater.

2.4 Final Erosion and Sediment Control Plan

Before the construction work begins, construction engineers, contractor representatives, and other interested parties should do an onsite review of the project to develop the final erosion and sediment control measures. The following measures should be taken in order to develop the final erosion and sediment control plan:

- Clear site by cutting, slashing, and disposing of the trees and other debris
- Install the temporary erosion and runoff control measures before excavating haul road and drainage structure foundations
- Construct a haul road in the original ground and shaping it to drain properly
- Install temporary drainage structures across streams for construction traffic
- Construct temporary drainage ditches to convey offsite drainage through the work area before the permanent drainage structure is excavated
- Install temporary erosion and runoff control measures at the toe of embankment slope before the excavation and embankment begins
- Keep the top of the work area shaped and compacted without causing serious soil erosion. At the end of each work day, rill-berms must be constructed to control the release of onsite drainage
- Maintain and inspect of each erosion and sediment control measure after each significant storm.

The Alabama handbook (*1*) lists detailed, step-by-step procedures to develop a plan to control erosion and runoff based on the above principles. In general, 5 steps should be followed, including: 1) data collection, 2) data analysis, 3) facility plan development, 4) planning for erosion and sediment control and stormwater management, and 5) plan assembly. The owner or lessee of the land planned for development has the responsibility for plan preparation and adequacy.

Chapter 3. Recommended BMPs in Alabama, Georgia, and Florida

Climate condition and geographical location are important factors in selecting BMPs. This chapter summarizes and compares BMPs recommended in Alabama and in two neighboring states (Georgia and Florida).

3.1 BMPs in Alabama

The Alabama Handbook (1) describes various BMPs for preventing and controlling erosion, sedimentation, and stormwater runoff at Alabama construction sites. The following BMPs are recommended for small construction sites.

3.1.1 Site Preparation

- **Construction exit pad**
It is a stone or rock stabilized pad applied at the points of the inlet or outlet of the construction site. It can help to reduce the transport of mud from the construction site to public road.
- **Land grading**
It is to reshape the ground surface to provide suitable topography for land uses.
- **Topsoiling**
It is to protect the topsoil by replacing it after final grading to enhance permanent site stabilization with vegetation. It can provide a better soil cover and minimize future erosion.

3.1.2 Surface Stabilization

- **Chemical stabilization**
Typically, an anionic polyacrylamide (PAM) product is spread onto the soil to minimize soil erosion caused by water and/or wind.
- **Dune sand fence**
It is a wooden slot installed across a dune landscape perpendicular to the prevailing wind. It can reduce the wind velocity at the ground surface and trap the blowing sand.
- **Dune vegetation planting**
It is to apply vegetation on the dunes, which can provide long-term erosion control and keep sediment in the site.
- **Dune walkover**
It is the elevated walkway installed over and across the dunes to provide access for pedestrian to go to the beach without damaging the dunes.
- **Dust control**
It is to reduce or prevent the movement of wind-borne soil particles (dust) during land disturbing activities using various techniques.

- Erosion control blanket
It is to provide a cover on the critical area which is a slope or the erosion hazard is high and where vegetation is hard to grow
- Grounds keeping
It is to take measures to keep the construction area clean and the utilities in order to reduce the erosion potential. This housekeeping measure is suitable to all construction areas.
- Mulching
It is to cover the soil surface by plant residues and other suitable materials.
- Permanent seeding
It is to plant vegetation such as grasses and legumes on disturbed areas to provide long-term protection.
- Preservation of vegetation
It is to protect the desirable plants on the area under construction.
- Retaining wall
It is to construct wall in the area where the slope changes abruptly to stabilize the slope.
- Shrub, vine, and groundcover plantings
It is to stabilize soil by planting shrubs, vines, or groundcover in the areas where establishing grass is difficult and mowing is not feasible.
- Sodding
It is to transport vegetation from other places to provide immediate protection of the construction sites.
- Temporary seeding
It is to establish the fast-growing annual vegetation from seed on disturbed areas.
- Tree planting on disturbed areas
It is to plant trees on the construction sites or other disturbed areas to stabilize the soil.

3.1.3 Runoff Conveyance

- Check dam
It is to construct barriers or dams across a swale, drainage or areas of concentrated flow to reduce the flow velocity.
- Diversion
It is to construct a channel on grade across a slope with a supporting ridge on the lower side to intercept stormwater runoff and safely divert it to proper outlet at non-erosive velocities.
- Drop structure
It is to construct a barrier across a drainage way to prevent erosion of slopes and channel banks by preventing high velocity flows and conveying the flow.
- Grass swale
It is to construct suitable channel or use the right natural channels with stable vegetation to convey the runoff with no damage to the channel by erosion.
- Lined swale

It is to construct natural or constructed channels with permanent lining to convey concentrated runoff flow to an outlet.

- **Outlet protection**
It is to place structurally lined aprons of riprap, concrete or other acceptable devices at the outlets of pipes or paved channel section.
- **Subsurface drains**
It is to apply pipes or continuous layer of porous layer materials under the ground surface to intercept, collect, or carry the excessive groundwater to the stable outlet.
- **Temporary slope drains**
It is to use pipes or other conduits to convey concentrated runoff down the slope without any erosion to the surface.

3.1.4 Sediment Control

- **Block and gravel inlet protection**
It is to install a barrier around a storm drain drop inlet or curb inlet to reduce sediment discharge.
- **Brush/Fabric barrier**
It is to use woody residue to build a dam-like barrier faced with the fabric barrier to provide a temporary sediment basin.
- **Excavated drop inlet protection**
It is to excavate an area to a storm drain inlet to reduce sediment from entering the storm drains during the construction period.
- **Fabric drop inlet protection**
It is to install a woven geo-textile barrier around the drop inlet to resist the sediment to enter the drainage way during the site construction.
- **Filter strip**
It is to apply a wide vegetation belt to intercept sediment and other pollutants and reduce the flow velocity.
- **Floating turbidity barrier**
It is to use the geo-textile material with floats (on the top), weights (at the bottom) and an anchorage system that reduce the sediment moving from a developed area to or within a water body.
- **Rock filter dam**
It is to install a temporary stone embankment to capture the sediment in the natural drainage ways on the construction sites and prevent transportation of sediment off-site.
- **Sediment barrier**
It is to intercept and detain small amounts of sediment from disturbed areas during site development by silt fence with sand bags, brush piles or other filtering mediums across a landscape.
- **Sediment basin**
It is to create a temporary holding pond by constructing a barrier across a drainage way or by excavating a basin or by a combination of both.
- **Temporary sediment trap**

It is to use a pond basin in smaller drainage sites to control stormwater runoff and trap sediments.

3.1.5 Stormwater Management

- Porous pavement
It is to use the permeable layer to pave the road with the stone under it for stormwater storage
- Storm water detention basin
It is to apply a dam-basin to hold stormwater runoff and release the water to prevent downstream flooding and erosion.

3.1.6 Stream Protection

- Buffer zone
It is to apply a strip of plants adjacent to land-disturbing sites to reduce scour erosion and reduce runoff velocities.
- Channel stabilization
It is to stabilize the channels with rock riprap lining, concrete lining and grade stabilizations structures.
- Streambank protection
It is to protect the sides of the stream by stabilizing the slopes.
- Temporary stream crossing
It is to construct a temporary road cross over a stream to be used by the construction traffic, which can reduce the turbidity and disturbance caused by traffic.

3.2 BMPs in Georgia

Georgia Handbook for Erosion and Sediment Control (24) provides detailed vegetative measures and structural practices in Georgia. Key components of the BMPs are outlined as follows.

3.2.1 Vegetative Measures

- Buffer zone
Refer to section 3.1.6 under buffer zone.
- Coastal dune stabilization
It is to plant vegetation on dunes that are denuded, artificially constructed, or re-nourished.
- Disturbed area stabilization (with mulching only)
Refer to section 3.1.2 under mulching.
- Disturbed area stabilization (with temporary seeding)
Refer to section 3.1.2 temporary seeding.
- Disturbed area stabilization (with permanent vegetation)

It is a final stabilization by planting perennial vegetations such as trees, shrubs, vines, grasses, or legumes on the exposed areas.

- Disturbed area stabilization (with sodding)
Refer to section 3.1.2 under sodding.
- Dust control on disturbed areas
Refer to section 3.1.2 under dust control.
- Erosion control matting and blankets
It is to establish permanent vegetation on steep slopes, channels, or shorelines using a protective covering (blanket) or soil stabilization mat.
- Polyacrylamide (PAM) stabilization
Refer to section 3.1.2 under chemical stabilization.
- Streambank stabilization
It is to maintain and enhance streambanks, or to prevent and repair streambank erosion problems using the available native plant materials.
- Application of binders
It is to fix the straw or hay mulch using a binding material.

3.2.2 Structural Practices

- Check dam
Refer to section 3.1.3 under check dam.
- Channel stabilization
Refer to section 3.1.6 under channel stabilization.
- Construction exit
Refer to section 3.1.1 under construction exit pad.
- Construction road stabilization
It is to construct a stable travel way as part of a construction plan. It includes the access roads, subdivision roads, parking areas, and other on-site vehicle transportation routes.
- Stream diversion channel
It is to construct a temporary channel to convey flow around a construction site when a permanent structure is being constructed.
- Diversion
Refer to section 3.1.3 under diversion.
- Temporary down drain structure
It is to build a temporary structure to convey concentrated stormwater down the face of cut or fill slopes.
- Permanent down drain structure
It is to safely convey surface runoff from the top to the bottom of the slope using a permanent structure.
- Filter ring
It is to construct a temporary stone barrier at the storm drain inlet and pond outlet.
- Gabion
It is to use large, multi-celled gabions in channel revetments, retaining walls, abutments, and check dams.

- **Grade stabilization structure**
It is to stabilize the grade in natural or artificial channels using a structure.
- **Level spreader**
It is to construct a storm flow outlet device at zero grade across the slope where concentrated runoff may be discharged at a non-erosive velocities onto undisturbed areas.
- **Rock filter dam**
It is to install a permanent or temporary stone filter dam across small streams or drainage ways.
- **Retaining wall**
It is to construct a wall of concrete masonry, reinforced concrete cribbing, treated timbers, steel pilings, gabions rock riprap, or stone drywall.
- **Retrofit**
It is to use retrofit to allow permanent stormwater detention basins to function as temporary sediment retention basins for land-disturbing projects.
- **Sediment barrier**
Refer to section 3.1.4 under sediment barrier.
- **Inlet sediment trap**
It is to trap sediment using a temporary protective device formed around a storm drain drop inlet.
- **Temporary sediment basin**
Refer to section 3.1.4 under sediment basin.
- **Temporary stream crossing**
Refer to section 3.1.6 under temporary stream crossing.
- **Storm drain outlet protection**
It is to place paved or riprapped channel sections below storm drain outlets. Als
- **Surface roughening**
It is to provide a rough soil surface to reduce erosion.
- **Topsoiling**
Refer to section 3.1.1 under topsoiling.
- **Vegetated waterway or stormwater conveyance channel**
It is to stabilize the conveyance of runoff using a natural or constructed channel.

3.3 BMPs in Florida

A number of BMPs and guidance are provided in chapter 4 of the Florida Erosion and Sediment Control Inspector's Manual (25). Below is an outline of the practices included in the manual.

- **Importance of construction sequencing**
This BMP requires coordinating the construction schedule to minimize the amount of area disturbed, thereby to reduce the erosion potential.
- **Pollution source control on construction sites**
It is to use good management and "housekeeping" to minimize the non-point source pollution from construction sites.

- Temporary gravel at construction entrance & exit
It is to place a stone stabilized pad at the points of vehicular ingress and egress on a construction site.
- Construction road stabilization
It is to stabilize the access roads, subdivision roads, parking areas, and other on-site vehicle transportation routes with stone immediately after grading.
- Straw bale barrier
It is to use a row of entrenched and anchored straw bales as a temporary sediment barrier.
- Silt fence
It is a temporary sediment barrier consisting of a fabric stretched across and attached to supporting posts and entrenched.
- Brush barrier
It is to construct a temporary sediment barrier with the residue materials from clearing and grubbing the site at the perimeter of a disturbed area.
- Storm drain inlet protection
It is to construct a sediment filter or an excavation impounding area around a storm drain drop inlet or curb inlet.
- Temporary diversion dike
It is to construct a temporary ridge of compacted soil located at the top or base of a sloping disturbed area.
- Temporary fill diversion
It is to construct a temporary channel with a supporting ridge on the lower side cut along the top of an active earth fill.
- Temporary right-of-way diversion
It is to construct a ridge of compacted soil, loose rock, or gravel constructed across disturbed rights-of-way and similar sloping areas.
- Temporary sediment trap
It is to construct a small temporary pond area across a drainage way.
- Temporary sediment basin
Refer to section 3.1.4 under sediment basin.
- Temporary slope basin
It is to construct an embankment of compacted soil across drainage as a temporary basin with a controlled stormwater release structure.
- Temporary slope drain
It is to construct a flexible tubing or conduit extending from the top to the bottom of a cut or fill slope.
- Temporary check dams
Refer to section 3.1.3 under check dam.
- Dewatering
It is to lower the water table by pumping.
- Floating turbidity barrier
It is to minimize sediment transport from a disturbed area adjacent to or within a body of water using a floating geo-textile material.

Chapter 4. Design of BMPs at Transportation Construction Sites

This chapter discusses physical, chemical, and biological measures for preventing and controlling erosions at transportation construction sites. Application, installation, and maintenance requirements are also presented for selected BMPs.

In general, these practices are divided into four categories (6):

- Temporary structure practices
- Permanent structure practices
- Vegetative practices (temporary and permanent)
- Special practices

Constructed structures practices are used to control the flow of water, to prevent erosion, or to trap sediment. Vegetative practices refer to engineered covering of the soil surface with growing vegetation in order to stabilize the soil surface and to prevent erosion. Temporary practices are used for relatively short periods of time (3 months to 36 months). Permanent practices are used for an indefinite period of time or when the temporary practices are not adequate. They will accomplish their intended function with a minimum of maintenance over a long period of time.

The NPDES Phase II rule lists a number of erosion control BMPs, including (11, 26):

- Chemical stabilization
- Mulching
- Permanent seeding
- Sodding
- Soil roughening
- Geo-textiles
- Gradient terraces
- Soil retention
- Temporary slope drain
- Temporary stream crossings
- Vegetated buffer
- Construction sequencing
- Dust control

This chapter provides key design consideration and criteria of selected BMPs for preventing and controlling erosions under various site conditions.

4.1 Diversion Channel (23)

Description: It is a temporary channel to convey flow around a construction site while the permanent drainage structure is being constructed.

Purpose: The purpose is to convey stormwater runoff and to keep the construction site dry, thereby minimizing the erosion potential.

Application Conditions: Diversion channels are used when the permanent structures are being constructed. They are constructed when the drainage pipes larger than 36-inch diameter are to be installed in the natural streams. When other practices such as silt fence or brush barriers can not provide sufficient protection, or when maintenance would be a constant problem and heavy flows may destroy these control devices, diversion channels should be used.

Design Criteria: The size of diversion channels depends on the discharge, channel slope, channel geometry and channel roughness. In order to protect newly constructed channels from erosion, it is necessary to use a protective lining, which may be plastic sheets, 3 to 6 mils thick, vegetation or rock riprap. Figure 1 shows a plan view of a diversion channel. It is often necessary to consult a hydraulic engineer to determine the design frequency and discharge.

Silt fence, berms or brush barriers may be required to the top of the channel to prevent sediment laden runoff from other construction activities from entering the stream.

Materials:

1. Plastic linings of about 0.08 to 0.16 mm thickness
2. Riprap and vegetative materials which conform to appropriate section of the project specification

Construction Specification:

1. Excavate and shape the channel, and plugs should be left at both ends
2. install channel linings
3. Remove plugs with downstream first and divert flow to the new channel
4. Construct the permanent structure for drainage and divert flow through it

The laps should run transversely to the flow direction and overlap at least 2 feet when a plastic lining is used. All edges outside the channel should be secured by compacted soil, rocks or other suitable material.

Maintenance: The channel should be inspected periodically to make sure that linings are not destroyed and that the channel is working properly.

TEMPORARY DIVERSION CHANNEL

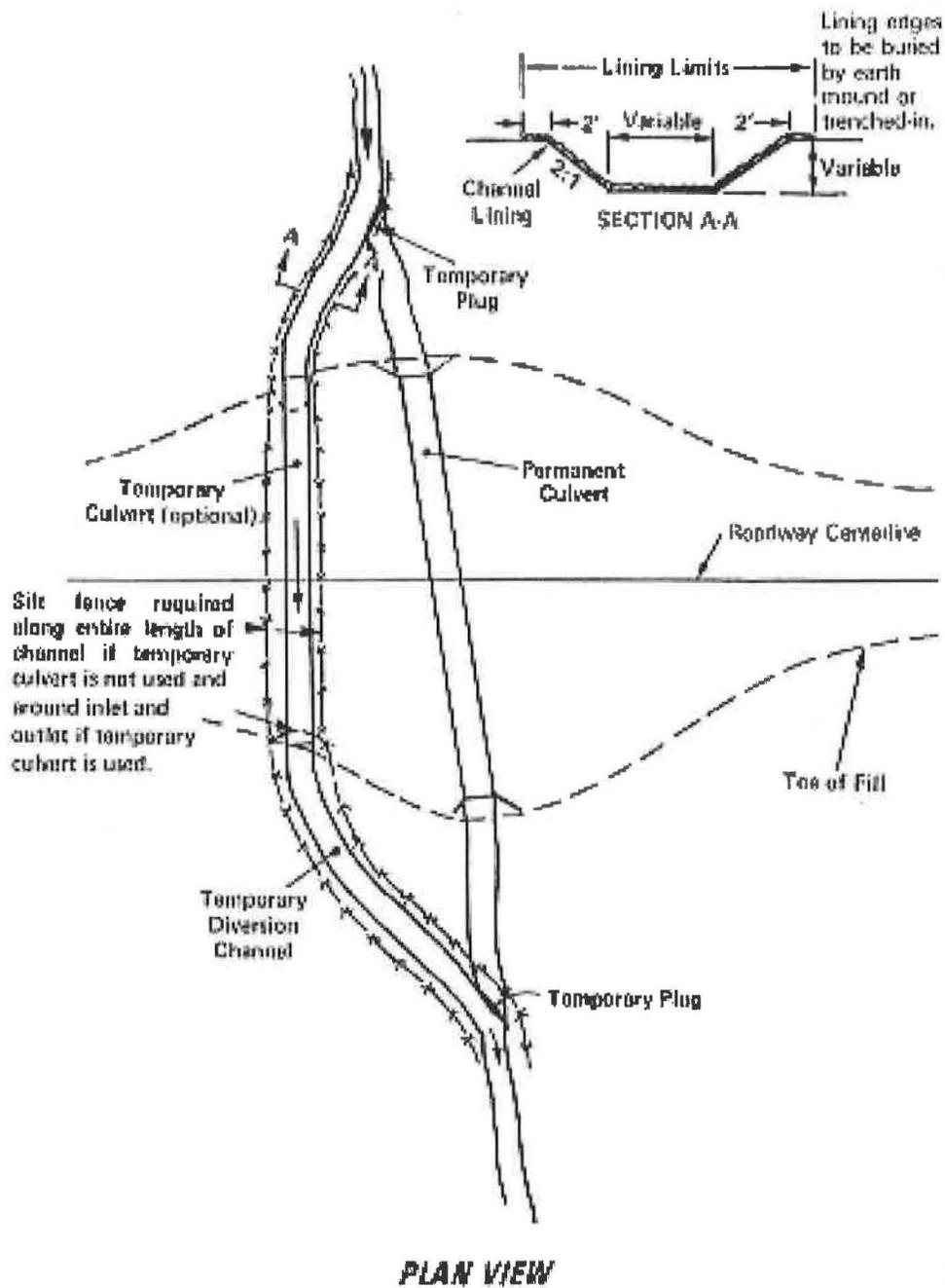


Figure 1. Plan view of a diversion channel (23).

4.2 Chemical stabilization (10, 1, 24)

Description: It is to use chemical stabilizers, known as binders or soil palliatives to provide temporary soil stabilization. The chemical commonly used at the construction sites in the southeast is polyacrylamide (PAM). Typically, PAM is sprayed (Figure 2) onto the surface of exposed soils to hold the soil in place and protect against erosion.



Figure 2. Applying PAM to a construction site (1).

Purpose: PAM is used to reduce erosion from wind and water on construction sites and agricultural lands. It can also improve water quality, infiltration, soil fertility, and visibility.

Application conditions: PAM usually is applied in combination with mulching or temporary seeding on areas where the timely establishment of temporary erosion control is critical and the seeding and mulching need additional reinforcement. It may also be used along on sites where no disturbance will occur and channel erosion is not a significant potential problem.

Design Criteria: The rate and application of PAM should follow the manufacture's recommendation. Some specific criteria are as follows:

1. Only the anionic form of PAM should be used for soil stabilization. Cationic PAM is toxic and can not be used for this purpose.

2. PAM and PAM mixtures shall be environmentally benign, harmless to wildlife, plants, and fish. They shall be not combustible.
3. The maximum application rate of PAM, in pure form shall not exceed 200 pounds/acre/year, in order to maintain less than or equal to 0.05% acrylamide monomer by weight. Excessive application of PAM can lower the infiltration rate of suspend solids in water by creating impervious surface.
4. Users of PAM shall obtain and follow all Material Safety Data Sheet (MSDS) requirements and manufacture's recommendations.
5. Any additives such as fertilizers, solubility promoters, or inhibitor to PAM shall be non-toxic.
6. The manufacturer or supplier shall provide written instruction to insure proper use, safety, storage, and mixing of the product. The manufacturer shall also provide the written application method for PAM and PAM mixtures.
7. When gel bars or logs of anionic PAM mixtures are used in ditch system, the application shall meet the same testing requirement as anionic PAM emulsions and powders.

Maintenance: PAM application areas should be regularly inspected for signs of erosion. Maintenance shall also consist of reapplying anionic PAM to disturbed areas including high use traffic areas which may interfere in the performance of this practice.

4.3 Mulching (1, 2, 24, 27)

Description: It is to cover the soil surface by plant residues and other suitable materials as shown in Figure 3. Mulches are applied to reduce erosion from rainfall and wind.



Figure 3. Mulching at a construction site (11).

Purpose: Mulching is one of the most effective practices for runoff and erosion control. It can serve as the following:

1. Protect the soil surface from erosion by reducing the velocity and crusting by reducing raindrop impact.
2. Keep the soil moisture.
3. Help plant growing to serve as surface cover.
4. Prevent surface compaction or crusting.
5. Control undesirable vegetation.
6. Modify soil temperature.
7. Increase biological activity in the soil.

Application Conditions: Mulching should be applied under the following conditions:

1. In areas where seeding can not have a suitable growing season to produce an erosion cover, mulching should be used.
2. Bared areas that are subject to erosion for 6 months or less should apply mulching.
3. Mulching may be used with the planting, vegetating or ground cover which may not supply effective stabilization by themselves.

Design Criteria: Necessary erosion practices such as diversions, dikes, seeding and other structure should be installed before mulching.

Spread the organic mulches by hand or by a mulch blower with the rate of 75% ground cover. Straw mulches should be spread by hand. The area should be divided into sections of about 1000 ft² and put 70-90 pounds of straw in each section in order to distribute uniformly. In case the straw mulch is blown by wind, the mulch must be anchored right after spreading.

Materials: Mulch material shall be free of any weeds. The following materials may be used:

1. Straw: It should be unrotted grain straw.
2. Asphalt emulsion or cutback asphalt. This is only suitable for a limited period of time where travel by people, animal, or machine is not a problem.
3. Wood chips may be used.
4. Mulch nettings like excelsior blanket may be used to staple to surface and on the steep slopes. If the area is to be mowed, metal staples should not be used.
5. Crushed rock, stones, gravel or shale blankets may also be used.

Table 1 lists the materials, and their application rate, and recommended application method.

Table 1. Mulching Materials and Application Rates (I).

Material	Rate Per Acre (Per 1000 ft²)	Notes
Straw with seed	1.5-2 tons (70-90 lbs)	Spread by hand or machine; anchor when subject to blowing.
Straw alone	2.2-3 tons (115 -160 lbs)	Spread by hand or machine; anchor when subject to blowing.
Wood Chips	5-6 tons (225-270 lbs)	Treat with 12 lbs. nitrogen/ton
Bark	35 cubic yards	Can apply with mulch blower
Pine Straw	1-2 tons (45-90 lbs)	Spread by hand or machine; will not blow like straw
Peanut Hulls	10-20 tons (450-900 lbs)	Treat with 12 lbs. nitrogen/ton

Maintenance: Mulches should be inspected periodically, especially after storm to check for erosion and dislocation. If erosion is observed, additional mulching should be applied. If washout occurs, slope should be repaired and mulch should be reinstalled. Check continuously until a new cover is established.

4.4 Temporary Seeding (1, 2, 24)

Description: It is to plant a rapidly growing vegetative cover on disturbed areas to prevent or control erosion for up to 12 months on critical area where the natural vegetation has been removed. Figure 4 shows a site covered through temporary seeding.



Figure 4. A site covered through temporary seeding (1).

Purpose: Temporary seeding is used to protect cleared, grubbed, and/or scaled areas with a temporary cover to:

1. Stabilize the surface soil
2. Improve wildlife habitat and enhance natural beauty
3. Reduce damages by sediment and erosion to downstream areas

Application conditions: In areas where erosion is expected to last for a year or less, temporary vegetation may be used. Any cut slope or embankment slope that may be disturbed before the project is complete should be seeded with temporary vegetation. Permanent structures are to be installed prior to it. However, it is not necessary to apply temporary vegetative measures in areas where constructions will be finished within 1 month.

Design steps: The following steps are recommended:

1. Install required erosion control practices such as diversions and dikes before temporary vegetation applied.

2. Choose suitable seed species to the area and season of the year. Consult with the local Soil Conservation Service office or as specified by the contract.
3. Grade and shape the area to be seeded.
4. Pit and trench the smooth slopes to provide for seed retention and germination;
5. Lime should be applied if the soil analysis indicates it is necessary. If there is no soil tests, 1 ton of agriculture limestone or equivalent per acre on coarse textured soils and 3 tons per acre on fine textured soils are recommended.
6. Fertilize the site.
7. Improve plant growth by topping dress with 30 to 50 lbs of nitrogen within 30 to 60 days after planting.

Maintenance: The vegetation area should be inspected for failure and make necessary repairs as soon as possible.

4.5 Permanent Seeding (2, 11, 24)

Description: Planting vegetation such as grasses and legumes on disturbed areas, as shown in Figure 5.

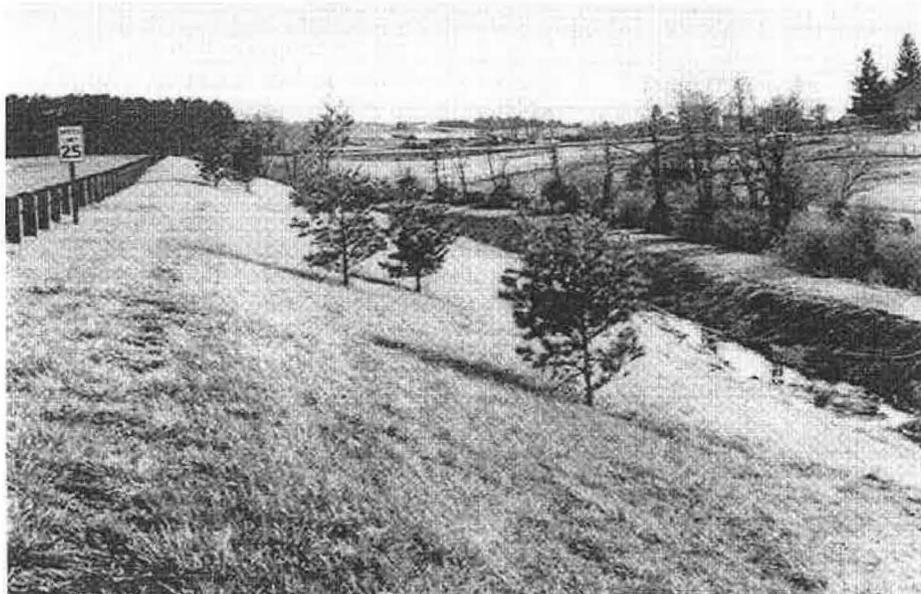


Figure 5. A construction site protected through permanent seeding (2).

Purpose: Permanent vegetation can provide long-term erosion control and prevent sediment from leaving the site. It is used to reduce erosion and to decrease sediment yields from disturbed areas. This is an economical practice adaptable to different site conditions and it allows for selection of the most appropriate plant materials.

Application Conditions: In areas where further construction will not disturb the slope, a permanent seed mixture should be used. All areas which will not be disturbed or completed within one year should be covered with both temporary and permanent seeding. The contractor should be required to seed on most of the highway projects at least once every 2 weeks.

Design Steps:

1. Select suitable seeds.
2. Grade and shape the area to be seeded.
3. Loosen compacted areas and scarify smooth slopes to provide good seed retention and germination.
4. Spread more than 3 inches of topsoil before seeding if required.
5. Apply fertilizer, lime, and or nitrogen and mix into the soil.

Permanent seeding should be performed during a favorable season.

Maintenance: Grasses should come out within 4-28 days and legumes 5-28 days after seeding, with legumes following grasses. Inspection should be regularly done to assure the seeding is successful, which shall have the following signs:

1. Vigorous dark or bluish green seedlings, not yellow color
2. Uniform density, with nurse plants, legumes, and grasses well intermixed
3. Green leaves-plants should remain green throughout the summer, at least at the plant bases.

The seeded areas should be inspected regularly for failure. Repairs and reseeding should be made as quickly as possible. On a typical construction site, full plant establishment usually requires re-fertilization in the second growing season.

4.6 Sodding (1, 2, 11)

Description: It is to use a continuous transplanted vegetative cover on the exposed soil to provide immediate erosion control. Figure 6 shows a site where Sodding is being practiced.



Figure 6. Sodding at a construction site (1).

Purpose: Sodding is a practical measure for effective erosion control on disturbed areas. It can

1. Reduce the velocity of stormwater runoff
2. Establish permanent turf immediately
3. Stabilize areas that cannot be vegetated by seed
4. Stabilize channels or swales that convey concentrated flows
5. Reduce production of dust and mud associated with bare soil surfaces
6. Serve as a filter for sediments in areas prior to achieving permanent stabilization

Application conditions: Sodding is appropriate for the following areas:

1. Any graded or cleared area that might erode
2. Residential or commercial lawns and golf courses where prompt use and aesthetics are important
3. Steeply-sloped areas
4. Waterways and channels carrying intermittent flow
5. Areas around drop inlets that require stabilization

Design criteria: The type of sod selected should be composed of plants adapted to the site environmental conditions and the intended purpose. In Alabama, it is limited to Bermuda, zoysia, centipede, St. Augustine, tall fescue, and bahiagrass. Table 2 lists the grasses appropriate for sodding in Alabama.

Table 2. Grasses for sodding in Alabama (I).

Warm Season Grasses		
Species	Variety	Area Adapted
Centipede	No improved varieties	Central, South
Bermuda grass	Tifway, tifgreen, Tiflawn, Common	North, Central, South
Bahiagrass	Pensacola	Central, South
St. Augustine	Bitterblue, Raleigh, Common	South
Zoysia	Emerald, Meyer	Central, South
Cool Season Grasses		
Tall fescue	Kentucky 31	North

The following criteria should be followed:

1. The sod should be machine cut at a uniform soil thickness of 15 to 25 mm at the time of establishment, not including the top growth or thatch.
2. The soil surface should be cleared of trash, debris, roots, branches, stones, and clods larger than 2 inches in diameter.
3. Heavy equipment should be avoided on the area, especially when the soil is wet.
4. If the soil test indicates that the soil need amendments, the following practices are recommended:
 - Limestone for agriculture at a rate of 2 tons per acre (100 lbs per 1000 sq. ft.).
 - Fertilizer at a rate of 1000 lbs per acre (25 lbs per 1000 sq. ft.) of 10-10-10.
 - Soil amendments should be spread evenly over the treatment area and incorporated into top 6 inches of soil by disking, chiseling, or other effective means.
5. Sod should not be laid on gravel, frozen soils, or soils that have been recently sterilized or treated with herbicides.
6. The first layer should be laid in a straight line with subsequent rows placed parallel to and tightly against each other, as shown in Figure 7. The stagger strips in a brick-like pattern.

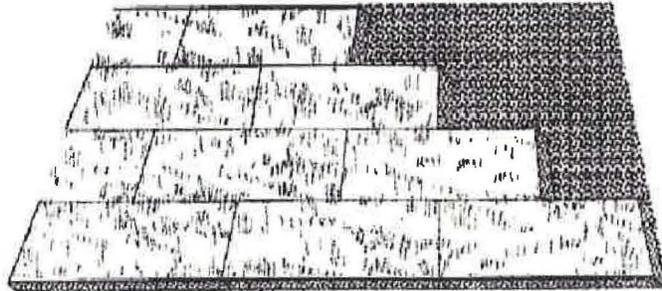


Figure 7. Sodding of an affected site (1).

Maintenance: Watering is necessary to maintain adequate moisture in the root zone and to prevent dormancy, especially within the first few weeks. Watering should be continued until it is fully rooted. Grass height should be maintained between 2 and 3 inches. Sod may need additional fertilization or liming after the first growing season. Yearly fertilization is required for permanent and fine turf areas. Warm-season grass should be fertilized in late spring to early summer, and cool-season grass, in later winter and in early fall.

4.7 Gradient terraces (11)

Description: Gradient terraces are made of earthen embankments or ridge and channel systems that are properly spaced and constructed with the adequate grade, as shown in Figure 8.



Figure 8. Gradient terraces (11).

Purpose: Gradient terraces can reduce the damage from erosion by collection and redistributing surface runoff to stable outlets at slower speeds. They can also help hold moisture and minimize sediment loading of surface runoff.

Application conditions: Gradient terraces are suitable in areas with existing or expected water erosion and no vegetation. They should be used where there are runoff outlets provided. Their use is usually limited on long, steep slopes with a water erosion problem, or where erosion problem is potential.

Design Criteria: Gradient terraces should be designed with adequate and appropriate outlets and installed according to a well-developed plan after conduction of an engineering survey and layout. The outlets used should be able to distribute runoff away from the terraces and toward an area that is not susceptible to erosion. In addition, the following specific criteria should be followed:

1. Gradient terraces should not be constructed on slopes containing rocky or sandy soil.
2. Vegetative cover should be used whenever possible.
3. The terrace's water surface design elevation should be no lower than the outlet's water surface design elevation at the junction of the terrace and the outlet when both are performing at design flow.
4. Proper stabilization practices should be followed while constructing the terraces.

Maintenance: Regular inspection should be performed after any major storms and at least once a year to ensure that the terraces are structurally sound and have not been subject to erosion.

4.8 Temporary slope drain (1, 2, 23, 25, 27)

Description: It is to use flexible tubing or conduits extending the length of a disturbed slope and serving as a temporary slope outlet for diversion, as shown in Figure 9.

Purpose: The slope drain is to temporarily conduct concentrated stormwater runoff safely down the face of a cut or fill slope without causing erosion on the slope.

Application conditions: Temporary slope drain is a temporary practice used during grading operations until permanent drainage structures are installed and until slopes are permanently stabilized. This measure applies on cut or fills slopes where there is a potential for the concentrated stormwater runoff over the face of the slope to cause erosion and preventing adequate stabilization.

Design criteria: The following requirement should be followed for the design of the temporary slope drain.



Figure 9. Temporary stream drain (1).

Drainage area: The maximum allowable drainage is 5 acres per slope drain.

Flexible conduit: The slope drain should consist of heavy-duty, flexible material which is designed for this purpose. The downdrain's diameter should be equal over the entire length. Reinforced hold-down grommets should be spaced at 10 feet or less intervals. The slope should be sized as shown in Table 3.

Table 3. Flexible conduit size (1, 2).

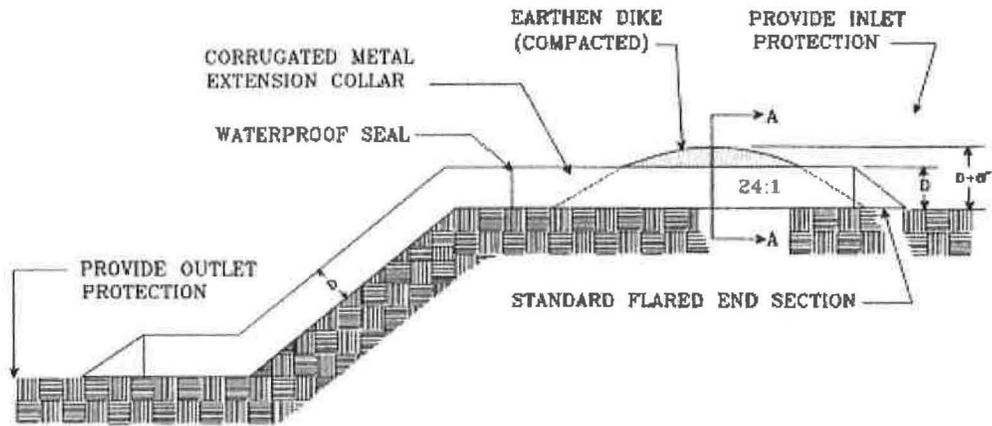
Maximum drainage area (Acres)	Diameter (inches)
0.5	12
1.5	18
2.5	21
3.5	24
5.0	30

Entrance section: All the fittings must be watertight. The toe plate should be at least 8" deep. The extension collars shall consist of 12-inch long corrugated metal pipe. The helical pipe should be avoided. Figures 10-12 show specifics on sizing slope drains.

Dike design: It is necessary to use an earthen dike to direct stormwater runoff into the temporary slope.

Outlet protection: The outlet of the slope drain should be protected from erosion by reducing the velocity of flow and dissipating the energy (1).

Maintenance: The slope drains should be inspected weekly and after each storm to determine if capacity is exceeded or if blockage occurred. Repairs should be made as immediately as possible.



NOTE: SEDIMENT MAY BE CONTROLLED AT OUTLET IF UPLAND PONDING WILL CREATE PROBLEMS

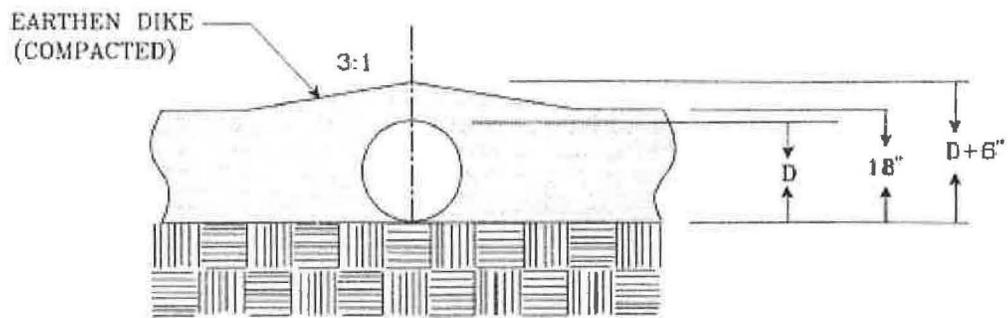
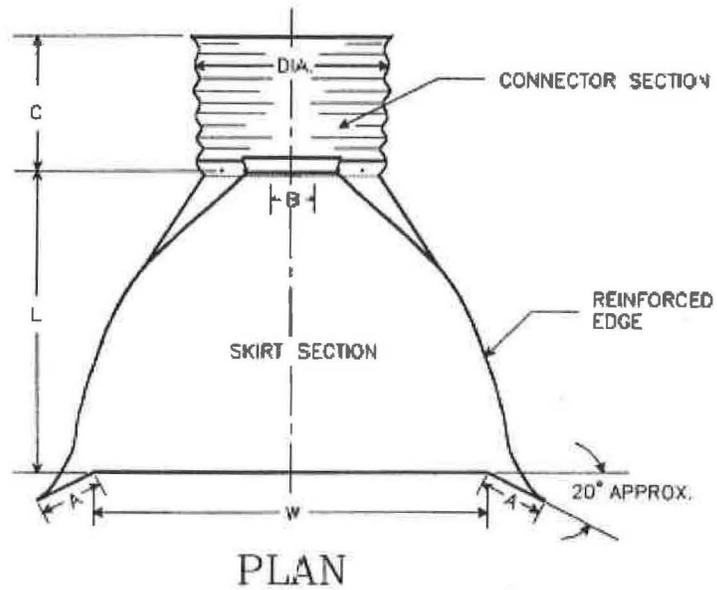


Figure 10. Temporary slope drain (2).



WHERE FLARED END-SECTIONS ARE TO BE USED WITH BITUMINOUS COATED AND PAVED METAL PIPE, THEY ARE TO BE GALVANIZED ONLY.

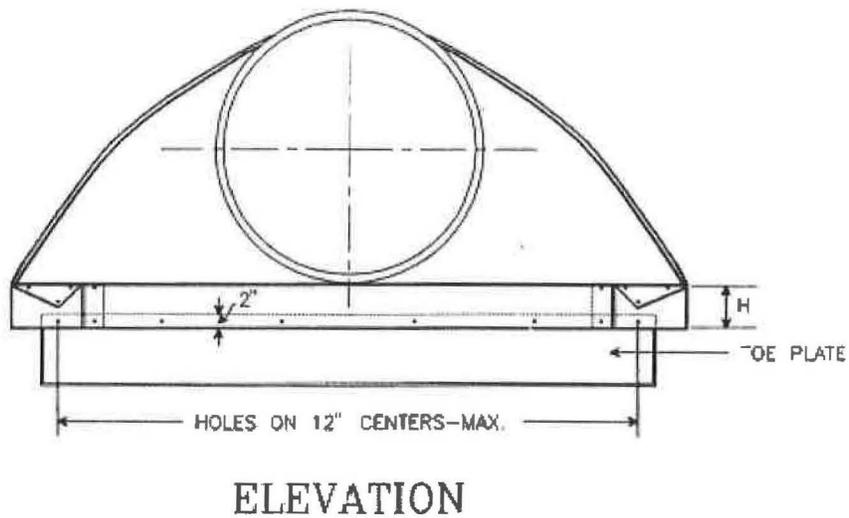
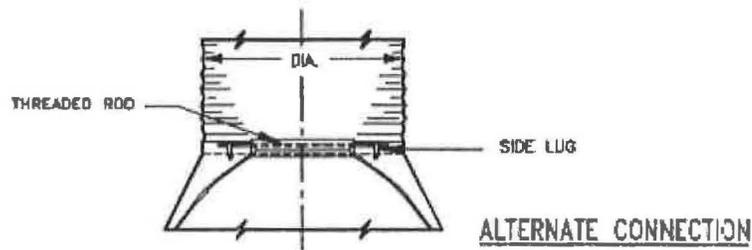


Figure 11. Flared end-section (2).



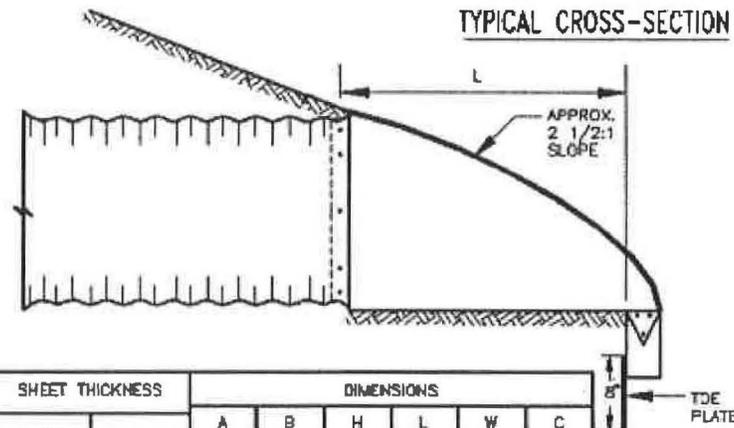
TOE PLATE, WHERE NEEDED, TO BE PUNCHED TO MATCH IN SKIRT LIP. 3/8" GALV. BOLTS TO BE FURNISHED. LENGTH OF TOE PLATE IS W + 10" FOR 12" TO 30" DIA. PIPE AND W + 22" FOR 36" TO 60" DIA. PIPE.

SKIRT SECTION FOR 12" TO 30" DIA. PIPE TO BE MADE IN ONE PIECE.

SKIRT SECTION FOR 36" TO 54" DIA. PIPE MAY BE MADE FROM TWO SHEETS JOINED BY RIVETING OR BOLTING ON CENTER LINE, 60" MAY BE CONSTRUCTED IN 3 PIECES.

CONNECTOR SECTION, CORNER PLATE AND TOE PLATE TO BE SAME SHEET THICKNESS AS SKIRT.

END-SECTIONS AND FITTINGS ARE TO BE GALVANIZED STEEL OR ALUMINUM ALLOY FOR USE WITH LIKE PIPE.



PIPE DIA.	SHEET THICKNESS		DIMENSIONS					
	STEEL	ALUMINUM	A 1" TOL.	B MAX.	H 1" TOL.	L 1 1/2" TOL.	W 2" TOL.	C
12"	.064"	.060"	6"	6"	6"	21"	24"	24"
15"	.064"	.060"	7"	8"	6"	26"	30"	24"
18"	.064"	.060"	8"	10"	6"	31"	36"	24"
21"	.064"	.060"	10"	12"	6"	36"	42"	24"
24"	.064"	.060"	10"	13"	6"	41"	48"	24"
27"/30"	.064"	.075"	12"	16"	8"	51"	60"	24"
36"	.064"	.075"	14"	18"	8"	60"	72"	36"
42"	.064"	.105"	16"	22"	11"	69"	84"	36"
48"	.064"	.105"	18"	27"	12"	78"	90"	24"
54"	.064"/.078"	.105"	18"	30"	12"	84"	102"	36"
60"	.064"/.109"	.105"/.135"	18"	33"	12"	87"	114"	36"

Figure 12. Flared end-section (continued) (2).

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Appendix 1. Authorization Status for EPA's Stormwater Construction Program (12)

State or Territory Name	Is EPA the Permitting Authority?	Areas of Coverage / Where EPA is Permitting Authority / Permit Number
Alabama	For Indian Country only	Indian Country construction activities in Region 4 must use Region 4 Construction General Permit
Alaska	Yes	The State of Alaska (except Indian country). Permit number: AKR100000 Indian country within the State of Alaska. Permit Number: AKR10000I
American Samoa	Yes	The Island of American Samoa. Permit Number: ASR100000
Arizona	For Indian Country only	Indian country within the State of Arizona, as well as Navajo Reservation lands in New Mexico and Utah. Permit Number: AZR10000I
Arkansas	No	The State of Arkansas is the NPDES Permitting Authority for all regulated discharges.
California	For Indian Country only	Indian country within the State of California. Permit Number: CAR10000I
Colorado	For Indian Country and Federal Facilities only	Indian country within the State of Colorado, as well as the portion of the Ute Mountain Reservation located in New Mexico. Permit Number: COR10000I Federal Facilities in the State of Colorado, except those located on Indian country. Permit Number: COR10000F
Connecticut	For Indian Country only	Indian country in the State of Connecticut. Permit Number: CTR10000I
Delaware	For Federal Facilities only	Federal Facilities in the State of Delaware. Permit Number: DER10000F
District of Columbia	Yes	The District of Columbia. Permit Number: DCR100000
Florida	For Indian Country only	Indian Country construction activities in Region 4 must use this Region 4 Construction General Permit
Georgia	No	The State of Georgia is the NPDES Permitting Authority for all regulated discharges.

Guam	Yes	The Island of Guam. Permit Number: GUR100000
Hawaii	No	The State of Hawaii is the NPDES Permitting Authority for all regulated discharges.
Idaho	Yes	The State of Idaho (except Indian country). Permit Number: IDR100000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9). Permit Number: IDR10000I
Illinois	No	The State of Illinois is the NPDES Permitting Authority for all regulated discharges.
Indiana	No	The State of Indiana is the NPDES Permitting Authority for all regulated discharges.
Iowa	For Indian Country only	Indian country within the State of Iowa. Permit Number: IAR10000I
Johnston Atoll	Yes	The island of Johnston Atoll. Permit Number: JAR100000
Kansas	For Indian Country only	Indian country within the State of Kansas. Permit Number: KSR10000I
Kentucky	No	The State of Kentucky is the NPDES Permitting Authority for all regulated discharges.
Louisiana	For Indian Country only	Indian country within the State of Louisiana. Permit Number: LAR15000I
Maine	No	The State of Maine is the NPDES Permitting Authority for all regulated discharges.
Maryland	No	The State of Maryland is the NPDES Permitting Authority for all regulated discharges.
Massachusetts	Yes	Commonwealth of Massachusetts (except Indian country). Permit Number: MAR100000 Indian country within the Commonwealth of Massachusetts. Permit Number: MAR10000I
Michigan	For Indian Country only	Indian country within the State of Michigan. Permit Number: MIR10000I
Midway Islands	Yes	The Islands of Midway Island and Wake Island. Permit Number: MWR100000
Minnesota	For Indian Country only	Indian country within the State of Minnesota. Permit Number: MNR10000I
Mississippi	For Indian Country only	Indian Country construction activities in Region 4 must use this Region 4 Construction General Permit
Missouri	No	The State of Missouri is the NPDES Permitting Authority for all regulated discharges.
Montana	For Indian Country	Indian country within the State of Montana.

	only	Permit Number: MTR10000I
Nebraska	For Indian Country only	Indian country within the State of Nebraska, except Pine Ridge Reservation lands (see Region 8). Permit Number: NER10000I
Nevada	For Indian Country only	Indian country within the State of Nevada, as well as the Duck Valley Reservation in Idaho, the Fort McDermitt Reservation in Oregon and the Goshute Reservation in Utah. Permit Number: NVR10000I
New Hampshire	Yes	State of New Hampshire. Permit Number: NHR100000
New Jersey	No	The State of New Jersey is the NPDES Permitting Authority for all regulated discharges.
New Mexico	Yes	The State of New Mexico (except Indian country). Permit Number: NMR150000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10000I and Ute Mountain Reservation Lands that are covered under Colorado permit COR10000I. Permit Number: NMR15000I
New York	For Indian Country only	Indian country within the State of New York. Permit Number: NYR10000I
North Carolina	For Indian Country only	Indian Country construction activities in Region 4 must use this Region 4 Construction General Permit
North Dakota	For Indian Country only	Indian country within the State of North Dakota, as well as that portion of the Standing Rock Reservation located in South Dakota (except for the portion of the lands within the former boundaries of the Lake Traverse Reservation which is covered under South Dakota permit SDR10000I listed below). Permit Number: NDR10000I
Northern Mariana Islands	Yes	Commonwealth of the Northern Mariana Islands. Permit Number: NIR100000
Ohio	No	The State of Ohio is the NPDES Permitting Authority for all regulated discharges.
Oklahoma	For Indian Country and specific discharges only	Indian country within the State of Oklahoma. Permit Number: OKR15000I Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated

		with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09). Permit Number: OKR15000F
Oregon	For Indian Country only	Indian country within the State of Oregon, except Fort McDermitt Reservation lands (see Region 9). Permit Number: ORR10000I
Pennsylvania	No	The State of Pennsylvania is the NPDES Permitting Authority for all regulated discharges.
Puerto Rico	Yes	The Commonwealth of Puerto Rico. Permit Number: PRR100000
Rhode Island	For Indian Country only	Indian country within the State of Rhode Island. Permit Number: RIR10000I
South Carolina	No	The State of South Carolina is the NPDES Permitting Authority for all regulated discharges.
South Dakota	For Indian Country only	Indian country within the State of South Dakota, as well as the portion of the Pine Ridge Reservation located in Nebraska and the portion of the lands within the former boundaries of the Lake Traverse Reservation located in North Dakota (except for the Standing Rock Reservation which is covered under North Dakota permit NDR10000I listed above). Permit Number: SDR10000I
Tennessee	No	The State of Tennessee is the NPDES Permitting Authority for all regulated discharges.
Texas	For Indian Country and specific discharges only	Indian country within the State of Texas. Permit Number: TXR15000I Discharges in the State of Texas that are not under the authority of the Texas Commission on Environmental Quality (formerly TNRCC), including activities associated with the exploration, development, or production of oil or gas or geothermal resources, including transportation of crude oil or natural gas by pipeline. Permit Number: TXR15000F
Utah	For Indian Country only	Indian country within the State of Utah, except Goshute and Navajo Reservation lands (see Region 9). Permit Number: UTR10000I
Vermont	For Federal Facilities only	Federal Facilities in the State of Vermont. Permit Number: VTR10000F
Virgin Islands	No	The Virgin Islands is the NPDES Permitting Authority for all regulated discharges.
Virginia	No	The State of Virginia is the NPDES Permitting Authority for all regulated discharges.
Wake Island	Yes	The Islands of Midway Island and Wake Island. Permit Number: MWR100000
Washington	For Indian Country	Federal Facilities in the State of Washington,

	and Federal Facilities only	except those located on Indian country. Permit Number: WAR10000F Indian country within the State of Washington. Permit Number: WAR10000I
West Virginia	No	The State of West Virginia is the NPDES Permitting Authority for all regulated discharges.
Wisconsin	For Indian Country only	Indian country within the State of Wisconsin, except the Sokaogon Chippewa (Mole Lake) Community. Permit Number: WIR10000I
Wyoming	For Indian Country only	Indian country within the State of Wyoming. Permit Number: WYR10000I

Note: EPA Region 4 maintains a separate permit for construction activities on Indian Country in Alabama, Florida, Mississippi, and North Carolina.)

Appendix 2. Forms Used in Alabama

Form 2-1

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM) FIELD OPERATIONS DIVISION NPDES STORMWATER PROGRAM

NOTICE OF REGISTRATION (NOR)

THIS FORM IS TO BE USED FOR ADEM ADMINISTRATIVE CODE CHAPTER 335-6-12 - NPDES CONSTRUCTION, NONCOAL/NONMETALLIC MINING AND DRY PROCESSING LESS THAN FIVE ACRES, OTHER LAND DISTURBANCE ACTIVITIES, AND AREAS ASSOCIATED WITH THESE ACTIVITIES

PLEASE READ THE INSTRUCTIONS BEGINNING ON PAGE 3 OF THIS FORM CAREFULLY BEFORE COMPLETING. COMPLETE ALL QUESTIONS. RESPOND WITH "N/A" AS APPROPRIATE. INCOMPLETE OR INCORRECT ANSWERS, OR MISSING SIGNATURES WILL DELAY ACCEPTANCE OF REGISTRATION. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. ATTACH CBMPP AND OTHER INFORMATION AS NEEDED. PLEASE TYPE OR PRINT LEGIBLY IN INK.

I. REGISTRANT INFORMATION Registration: Modification: Transfer: Re-Registration: AL _____

Registrant Name		Facility/Site Name		# of Years Coverage Requested:
Responsible Owner/Operator or Official, and Title			Site Contact and Title	
Mailing Address of Registrant			Site Street Address or Location Description	
City	State	Zip	City	State Zip
Business Phone Number		Site Phone Number		Fax Number
Responsible Official (RO) Street/Physical Address			RO Phone Number	Email Address
(If applicable) Registered Agent Name, Address, & Phone Number				

II. LEGAL STRUCTURE OF REGISTRANT

Corporation Individual Single Proprietorship Partnership LLC LLP Government Agency Other _____
 Yes No If not an Individual or Single Proprietorship, registrant is properly registered and in good standing with the Alabama Secretary of State's office. If "No", please explain:

III. ACTIVITY DESCRIPTION & INFORMATION

County(s) _____ Township(s), Range(s), Section(s) _____
 Directions To Site _____

Yes	No	Is/will this facility:	Yes	No
(a) <input type="checkbox"/>	<input type="checkbox"/>	an existing site which currently discharges to State waters?	(b) <input type="checkbox"/>	<input type="checkbox"/>
(c) <input type="checkbox"/>	<input type="checkbox"/>	a proposed site which will result in a discharge to State waters?	(d) <input type="checkbox"/>	<input type="checkbox"/>
				discharge to waters of or be located in the Coastal Zone?
				be located on Indian/ historically significant lands?

IV. PROPOSED SCHEDULE - Used to determine potential registration duration & applicable fee amount, considering responses to Item VIII.

Anticipated Activity schedule: Commencement date: _____ Completion date: _____
 Area of the Registered site: Total site area in acres: _____ Total disturbed area in acres: _____

V. VIOLATION HISTORY

Identify every Notice of Violation (NOV), Administrative Order, Directive, or Litigation filed by ADEM or EPA during the three year (36 months) period preceding the date on which this form is signed issued to the operator, owner, registrant, partner, parent corporation, subsidiary, LLP, or LLC

Member. Indicate the date of issuance, briefly describe alleged violations, list actions (if any) to abate alleged violations, and indicate date of final resolution:

VI. MAP SUBMITTAL

Yes No A 7.5 minute series USGS topographic map(s) or equivalent map(s) is attached according to the instructions beginning on Page 3. **If "No", explain:**

VII. PROPOSED ACTIVITY(S) TO BE CONDUCTED

If Non-Coal, Non-Metallic Mining, Recovery, or Construction Material Management Site: Dirt-Chert Sand-Gravel Shale-Clay
 Crushed-Dimension Stone Other _____ Other _____ Other _____

Primary SIC Code _____ Brief Description Construction, Noncoal Mining, or Materials Management Activity:

VIII. RECEIVING WATERS

List name of receiving water(s), latitude & longitude (decimal or deg,min,sec) of location(s) that run-off enters the receiving water, total number of disturbed acres, the total number of drainage acres which will drain through each treatment system or BMP, and the waterbody classification. **If receiving water is designated as ONRW and/or Tier 1 waterbody, attach/submit copy of CBMPP.**

Receiving Water	Latitude	Longitude	Disturbe d Acres	Drainag e Acres	Waterbody Classificati on	ONRW Y or N	TIER 1 Y or N

IX. MODIFICATION & RE-REGISTRATION - CONTINUING EDUCATION & INSPECTION INFORMATION

Yes No Required inspections/monitoring by QCP/QCI have been performed and records retained. **If "No", explain:**

List name(s) and designation/certification #s of QCPs/QCIs that performed required inspections/monitoring:

X. QUALIFIED CREDENTIALLED PROFESSIONAL (QCP) CERTIFICATION

"I certify under penalty of law that a comprehensive Construction Best Management Practices Plan (CBMPP) for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff has been prepared under my supervision for this site/activity, and associated regulated areas/activities, utilizing effective BMPs from the Alabama Handbook For Erosion Control, Sediment Control, And Stormwater Management On Constructions Sites And Urban Areas, Alabama Soil and Water Conservation Committee, as amended (ASWCC). If the CBMPP is properly implemented and maintained by the registrant, discharges of pollutants in stormwater runoff can reasonably be expected to be effectively minimized to the maximum extent practicable according to the requirements of ADEM Administrative Code Chapter 335-6-12. The CBMPP describes the pollution abatement/prevention management and effective structural & nonstructural BMPs that must be fully implemented and regularly maintained as needed at the registered site in accordance with sound sediment and erosion practices to ensure the protection of water quality."

QCP Designation/Description: _____

Address _____

Registration/Certification

Name and Title (type or print) _____ _____	Phone Number
Signature _____ _____	Date Signed

XI. OPERATOR - RESPONSIBLE OFFICIAL SIGNATURE

Pursuant to ADEM Administrative Code Rule 335-6-6-.09, this NOR must be signed by a Responsible Official of the registrant who is the operator, owner, the sole proprietor of a sole proprietorship, a general/controlling member or partner, a ranking elected official or other duly authorized representative for a unit of government; or an executive officer of at least the level of vice-president for a corporation, having overall responsibility and decision making for the site/activity. "I certify under penalty of law that this form, the CBMPP, 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 qualified credentialed professional (QCP) and other 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, correct, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations. I certify that this form has not been altered, and if copied or reproduced, is consistent in format and identical in content to the ADEM approved form. I further certify that the proposed discharges described in this registration have been evaluated for the presence of any non-construction and/or coal/mineral mining stormwater, or process wastewaters have been fully identified."

Name (type or print) _____ _____	Official Title
Signature _____ _____	Date Signed

Form 2-2

ADEM FIELD OPERATIONS DIVISION – NPDES CONSTRUCTION, AND NONCOAL MINING LESS THAN 5 ACRES STORMWATER REGISTRATION TERMINATION REQUEST AND CERTIFICATION

RESPOND WITH "N/A" AS APPROPRIATE. FORMS WITH INCOMPLETE OR INCORRECT ANSWERS, OR MISSING SIGNATURES WILL BE RETURNED AND MAY RESULT IN APPROPRIATE COMPLIANCE ACTION BY THE DEPARTMENT. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. PLEASE TYPE OR PRINT IN INK.

Complete this form, attach additional information as necessary, and send report to the nearest ADEM office.

Item I.

Registrant Name		Facility/Site Name	
NPDES AL	County	Facility Contact and Title	
Facility Latitude & Longitude (decimal or deg,min,sec)		Facility Street Address <u>or</u> Location Description	
Township(s), Range(s), Section(s)		City	State Zip
Phone Number	Fax Number	Email Address	

Item II.

Yes No required inspections/monitoring have been performed and records retained. If "No", explain:

Yes No required inspections/monitoring were performed by a QCI, QCP, or qualified person under the direct supervision of a QCP. If "No", attach required Continuing Education Greenfield Fee, and explain:

Item III.

Yes No All regulated activity authorized by this registration at this facility has been completed, construction/industrial effects removed, solid waste/debris properly disposed, all disturbed areas have been fully reclaimed, suitably stabilized, or perennial vegetative cover established, and stormwater discharges do not represent an adverse impact to water quality.

Yes No Permittee no longer has operational control of the facility or legal responsibility for the site, this registration only provides coverage for a part of a phased project or a part of a larger common plan of development or sale. In order for this termination request to be granted, the Name, Phone Number, and Address of the succeeding responsible operator(s) must be listed:

If "No" attach Inspection Report and BMP Certification [and if conducted, any photographs or monitoring results], and explain:

"I understand that discharging pollutants in storm water associated with regulated activity to waters of the State that is not authorized by NPDES registration coverage is a violation of State law. I also understand that the submittal of this request for termination does not release the operator from liability for any violations of this registration, ADEM Administrative Code Chapter 335-6-12, or other ADEM rules until a complete and correct request for termination of the registration is received by the Department. I understand that the registrant, operator, owner, developer, contractors, home builder(s), property owners association, etc., separately or collectively, must retain coverage for subdivision developments or other phased developments until all disturbance activity, including individual home construction, is substantially complete. Coverage for mines or borrow pits must be retained until all disturbance activity is reclaimed or protection of water quality is assured. I understand that should an inspection or complaint reveal significant noncompliance with ADEM rules, an environmental problem related to the discharge of stormwater from the site or that incorrect information has inadvertently been provided, implementation of remedial measures may be required, to include resubmittal of the NOR and subsequent re-registration in order to correct any deficiencies, comply with federal stormwater permitting requirements, and provide for the protection of water quality. 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 gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Name & Designation of QCP	Signature	Date
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Name & Title of Registrant Responsible Official	Signature	Date
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Form 2-3

ADEM FIELD OPERATIONS DIVISION – NPDES CONSTRUCTION, AND NONCOAL MINING LESS THAN 5 ACRES STORMWATER INSPECTION REPORT AND BMP CERTIFICATION

RESPOND WITH "N/A" AS APPROPRIATE. FORMS WITH INCOMPLETE OR INCORRECT ANSWERS, OR MISSING SIGNATURES WILL BE RETURNED AND MAY RESULT IN APPROPRIATE COMPLIANCE ACTION BY THE DEPARTMENT. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. PLEASE TYPE OR PRINT IN INK.

Complete this form, attach additional information as necessary, and send report to the nearest ADEM office.

Item I.

Registrant Name		Facility/Site Name	
NPDES AL	County	Facility Contact and Title	
Facility Latitude & Longitude (decimal or deg,min,sec)		Facility Street Address or Location Description	
Township(s), Range(s), Section(s)		City	State Zip
Phone Number	Fax Number	E-Mail Address	

Item II.

List name of current ultimate receiving water(s) (indicate if through MS4) and the number of disturbed acres which drain through each treatment system or BMP:

Receiving Water	Disturbed Acres	Receiving Water	Disturbed Acres
_____	_____	_____	_____

Item III.

- Any Discharge Sampling Data Attached. Any Instream Sampling Data Attached. Any Photographs attached.
- Based on this site evaluation which a QCI, QCP, or a qualified person under the direct supervision of a QCP conducted, discharge and/or instream sampling is not necessary to properly evaluate the effectiveness of BMP implementation to ensure compliance with this registration. I understand that it is the responsibility of the registrant to know and effectively evaluate the quality of the stormwater being discharged. Lack of knowledge regarding the requirements of ADEM Administrative Code Chapter 335-6-12, stormwater discharge or instream water quality, shall not constitute a valid defense with regard to deficiencies in BMP implementation and maintenance, or negative impacts to water quality.

Item IV.

INSPECTION RESULTS: (Describe current activities, deficiencies, proposed corrective action(s) and compliance schedule, etc.)

"Based upon the inspection of (date & time) _____ by the QCP, QCI, or a qualified person

(list: _____) under the direct supervision of the QCP identified below conducted, the QCI or QCP identified below certifies that effective structural and non-structural BMPs have been fully implemented and regularly maintained to the maximum extent practicable for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff, **except for those deficiencies noted above**, in accordance with the facility's CBMPP, good sediment, erosion, and other pollution control practices, and the requirements of ADEM

Administrative Code Chapter 335-6-12. I certify that discharges have been tested or evaluated for the presence of non-stormwater and non-authorized process wastewaters. 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 gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.”

Name & Designation of QCI or QCP	Signature	Date
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Name & Title of Registrant Responsible Official	Signature	Date
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Appendix 3. Forms Used in Florida

Form 3-1



NOTICE OF INTENT (NOI) TO USE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (RULE 62-621.300(4), F.A.C.)

This Notice of Intent (NOI) form is to be completed and submitted to the Department before use of the Generic Permit for Stormwater Discharge From Large and Small Construction Activities provided in Rule 62-621.300(4), F.A.C. The type of project or activity that qualifies for use of the generic permit, the conditions of the permit, and additional requirements to request coverage are specified in the generic permit document [DEP Document 62-621.300(4)(a)]. **The appropriate generic permit fee, as specified in Rule 62-4.050(4)(d), F.A.C., shall be submitted with this NOI in order to obtain permit coverage. Permit coverage will not be granted without submittal of the appropriate generic permit fee.** You should familiarize yourself with the generic permit document and the attached instructions before completing this NOI form. **Please print or type information in the appropriate areas below.**

I. IDENTIFICATION NUMBER: _____ Project ID

II. APPLICANT INFORMATION:

A. Operator Name:		
B. Address:		
C. City:	D. State:	E. Zip Code:
F. Operator Status:	G. Responsible Authority:	
	H. Phone No.:	

III. PROJECT/SITE LOCATION INFORMATION:

A. Project Name:		
B. Project Address/Location:		
C. City:	D. State:	E. Zip Code:
F. County:	G. Latitude: ° ' "	Longitude: ° ' "
H. Is the site located on Indian lands? No	<input type="checkbox"/> Yes <input type="checkbox"/> No	I. Water Management District:
J. Project Contact:	K. Phone No.:	

IV. PROJECT/SITE ACTIVITY INFORMATION:

A. Indicate whether Large or Small Construction (check only one):	<input type="checkbox"/> Large Construction (Project will disturb five or more acres of land.)	
	<input type="checkbox"/> Small Construction (Project will disturb one or more acres but less than five acres of land.)	
B. Approximate total area of land disturbance from commencement through completion of construction: _____ Acres		
C. SWPPP Location	<input type="checkbox"/> Address in Part II above <input type="checkbox"/> Address in Part III above <input type="checkbox"/> Other address (specify below)	
D. SWPPP Address:		
E. City:	F. State:	G. Zip Code:
H. Construction Period	Start Date:	Completion Date:

V. DISCHARGE INFORMATION

A. MS4 Operator Name (if applicable):
B. Receiving Water Name:

VI. CERTIFICATION¹:

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 gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Official Title (Type or Print):

Signature:

Date Signed:

¹ Signatory requirements are contained in Rule 62-620.305, F.A.C.



NOTICE OF TERMINATION OF GENERIC PERMIT COVERAGE (RULE 62-621.300(6), F.A.C.)

This form is to be completed and submitted to the Department to terminate coverage under the Generic Permit for Stormwater Discharge From Construction Activities that Disturb Five or More Acres of Land provided in Rule 62-621.300(4), F.A.C., and the Multi-Sector Generic Permit for Stormwater Discharge Associated with Industrial Activity provided in Rule 62-621.300(5), F.A.C. Instructions for completing this form are attached. **Please print or type information in the appropriate areas below.**

I. PERMIT INFORMATION:

A. Generic Permit Coverage Number (Facility/Project ID):		
B. Reason for Termination:	<input type="checkbox"/> Check here if you are no longer the operator of the facility/project.	<input type="checkbox"/> Check here if the stormwater discharge is being terminated.

II. PERMITTEE INFORMATION:

A. Operator Name:		
B. Address:		
C. City:	D. State:	E. Zip Code:
F. Responsible Authority:		G. Phone No.:

III. FACILITY/PROJECT INFORMATION:

A. Name:		
B. Address/Location:		
C. City:	D. State:	E. Zip Code:
F. County:	G. Latitude: ° ' "	Longitude: ° ' "

IV. CERTIFICATION¹:

I certify under penalty of law that all stormwater discharges associated with industrial activity from the identified facility or activity that are authorized by the referenced State of Florida generic permit have been eliminated or that I am no longer the operator of the facility or activity. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge stormwater associated with industrial activity under this generic permit, and that discharging pollutants in stormwater associated with industrial activity to surface waters of the State is unlawful unless authorized by a permit issued pursuant to 403.0885, F.S. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit.

¹ Signatory requirements are contained in Rule 62-620.305, F.A.C.

Name and Official Title (Type or Print):

Signature:

Date Signed:

C. Sampling of Outfall(s) Sampling of Receiving Stream(s) Trout Stream

Number of Outfalls: _____ Appendix B NTU Value: _____ Surface Water Drainage Area: _____

IV. ATTACHMENTS. (Check those that apply.)

Indicate below the items attached to this Notice of Intent:

- _____ Location map showing the receiving stream(s), outfall(s) or combination thereof to be monitored.
- _____ List of known secondary permittees.
- _____ Schedule for the timing of the major construction activities.

V. CERTIFICATIONS. (Owner or Operator or both to initial as applicable.)

_____ I certify that the site has been mass graded.

_____ I certify that the site in compliance with existing E & S plan.

_____ I certify that the permittee shall submit any applicable fees.

_____ I certify that the site shall reach final stabilization within 180 days.

_____ I certify that a schedule for the timing of the various major construction activities, if applicable, is attached to this Notice.

_____ 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 gather and evaluate the information submitted. Based upon 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.

Owner's Printed Name: _____

Title: _____

Signature: _____

Date: _____

Operator's Printed Name: _____

Title: _____

Signature: _____

Date: _____



For Official Use Only

NOTICE OF TERMINATION

**State of Georgia
Environmental Protection Division
To Cease Coverage Under General Permit
To Discharge Storm Water Associated With Construction Activity**

I. Permit Type: (Choose Only One)

- GAR 100001-Stand Alone GAR 100002-Infrastructure GAR 10003Common Development

II. SITE / PERMITTEE INFORMATION

Site/Project Name: _____

GPS Location of Construction Exit: _____

Site Location and Street Address: _____

City: _____ County: _____

Subdivision Name: _____ Lot Number: _____

Owner's Name: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Operator's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Type of Permittee: Primary Secondary Tertiary

Facility Contact: _____ Phone: _____

If Applicable:

Primary Permittee's Name: _____ Phone: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Number of Secondary Permittees: _____

III. SITE ACTIVITY INFORMATION

- Construction Activity Completed No Longer Owner / Operator of Construction Activity

Construction Activity: Commercial Industrial Municipal DOT Utility

Residential Primary Permittee of a Subdivision Development, or

Individual Lot, or

Individual Lot within a Surface Water Drainage Area

where the Primary Permittee has ceased Permit Coverage

Name of Initial Receiving Water(s): _____

Name of Municipal Storm Sewer System Owner/Operator: _____

Name of Receiving Waters: _____

IV. CERTIFICATIONS. (Owner or Operator or both to initial as applicable.)

_____ 1. I certify under penalty of law that either: (a) all storm water discharges associated with construction activity from the portion of the construction activity where I was an Owner or Operator have ceased or have been eliminated; (b) all storm water discharges associated with construction activity from the identified site that are authorized by General NPDES Permit number indicated in Section I of this form have ceased; (c) I am no longer an Owner or Operator at the construction site and a new Owner or Operator has assumed operational control for those portions of the construction site where I previously had ownership or operational control; and/or if I am a primary permittee filing this Notice of Termination under Part VI.A.2. of this permit, I will notify by written correspondence to the subsequent legal title holder of any remaining lots that these lot Owners and /or Operators will become tertiary permittees for purposes of this permit and I will provide these tertiary permittees with the primary permittee's Erosion, Sedimentation and Pollution Control Plan. I understand that by submitting this Notice of Termination, that I am no longer authorized to discharge storm water associated with construction activity by the general permit, and that discharging pollutants in storm water associated with construction activity to waters of Georgia is unlawful under the Georgia Water Quality Control Act and the Clean Water Act where the discharge is not authorized by a NPDES permit.

_____ 2. 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 gather and evaluate the information submitted. Based upon 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.

Owner's Printed Name: _____ Title: _____

Signature: _____ Date: _____

Operator's Printed Name: _____ Title: _____

Signature: _____ Date: _____

Appendix 5. Forms Used in Ohio

Form 5-1



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: _____
 Mailing (Applicant) Address: _____
 City: _____ State: _____ Zip Code: _____
 Contact Person: _____ Phone: _____ Fax: _____
 Contact E-Mail Address: _____

II. Facility/Site Location Information

Facility Name: _____
 Facility Address/Location: _____
 City: _____ State: _____ Zip Code: _____
 County(ies): _____ Township(s): _____
 Facility Contact Person: _____ Phone: _____ Fax: _____
 Facility Contact E-Mail Address: _____
 Quarter: _____ Section(s): _____ Range: _____
 Receiving Stream or MS4: _____

If aware of a state nature preserve within 1,000 feet of the facility/site, check here: _____
 Enter river code here, if discharge is to a river designated scenic, wild, or recreational, or to a tributary within 1,000 feet (see instructions): _____
 General Permit Number: OH _____ Initial coverage: _____ Renewal Coverage: _____

Type of Activity: _____
 SIC Code(s): _____
 Existing NPDES Permit Number: _____
 ODNR Coal Mining Application Number: _____

Outfall:	Design Flow (MGD)	Latitude	Longitude
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

For Ohio EPA Use Only	
Check ID (OFA):	_____
Person:	_____
Place:	_____
DOC #:	_____
ORG #:	_____
Rev. ID #:	_____

Other DSW Permits Required: _____
 Proposed Project Start Date (MO DY YR): _____ Estimated Completion Date: (MO DY YR): _____
 Total Land Disturbance (Acres): _____ MS4 Drainage Area (Square Miles): _____
 Payment Information: Check # _____ Check Amount: _____ Date of Check: _____

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 gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant Name: _____ Title: _____
 Applicant Signature: _____ Date: _____



Notice of Termination (NOT) of Coverage Under Ohio Environmental Protection Agency General Permit

(Read accompanying instructions carefully before completing this form)

Submission of this NOT constitutes notice that the party identified in Section II of this form is no longer authorized to discharge into state waters under the NPDES general permit program. Complete all information - THIS FORM MUST BE COMPLETELY TYPEWRITTEN AND ORIGINAL (not a copy) - NOT FOLDED OR STAPLED - FOR PROPER ELECTRONIC SCANNING. Forms transmitted by fax will not be accepted.

I. Permit Information:

NPDES general permit number: OH _____ Facility General Permit Number: _____

II. Owner/Applicant Information/Mailing Address:

Company Name: _____
 Contact Person: _____ Phone: _____
 Mailing Address: _____
 City: _____ State: _____ Zip Code: _____

II. Facility/Site Location Information:

Facility Name: _____
 Facility Contact Person: _____ Phone: _____
 Facility Address/Location: _____
 City: _____ State: _____ Zip Code: _____
 County: _____ Township: _____ Section: _____

IV. Reason for Termination:

_____ Transfer of Ownership _____ Cease to Discharge _____ Facility Closed _____ Project Completed
 _____ Obtained Individual Permit

Standard Certification:

I certify under penalty of law that all discharges authorized by the NPDES general permit have been eliminated or that I am no longer the operator of the facility. I understand that by submitting this NOT, I am no longer authorized to discharge under this general permit and that discharging pollutants to waters of the state without a NPDES permit is unlawful under ORC 6111.

Name (typed): _____
 Signature: _____ Date: _____

Industrial Storm Water and Coal Mining Activity Certification Only:

I certify under penalty of law that all discharges associated with the identified facility that are authorized by the above referenced NPDES general permit have been eliminated, that I am no longer the operator of the facility, or in the case of a coal mine that the SMCRA bond has been released by ODNR-Division of Reclamation. I understand that, by submitting this NOT, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that all discharging pollutants in storm water associated with industrial activity to waters of the state is unlawful under ORC 6111 where the discharge is not authorized by a NPDES permit.

Name (typed): _____
 Signature: _____ Date: _____

Storm Water Construction Activity Certification Only:

I certify under penalty of law that all elements of the storm water pollution prevention plan have been completed, the disturbed soil 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, or that all storm water discharges associated with construction activity from the identified facility that are authorized by the above referenced NPDES general permit have otherwise been eliminated. I understand that, by submitting this NOT, I am no longer authorized to discharge storm water associated with construction activity by the general permit, and that discharging pollutants in storm water associated with construction activity to waters of the state is unlawful under ORC 6111 where the discharge is not authorized by a NPDES permit.

Name (typed): _____
 Signature: _____ Date: _____

Appendix 6. Forms Used in Illinois

Form 6-1

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY NOTICE OF INTENT (NOI) GENERAL PERMIT TO DISCHARGE STORM WATER CONSTRUCTION SITE ACTIVITIES

OWNER INFORMATION

NAME: LAST FIRST MIDDLE (OR COMPANY NAME)		OWNER TYPE (select one)	
MAILING ADDRESS:			
CITY:		STATE:	ZIP:
CONTACT PERSON:		TELEPHONE NUMBER:	AREA CODE NUMBER

CONTRACTOR INFORMATION

NAME: LAST FIRST MIDDLE (OR COMPANY NAME)		TELEPHONE NUMBER:	AREA CODE	NUMBER
MAILING ADDRESS:		CITY:	STATE:	ZIP:

CONSTRUCTION SITE INFORMATION

SELECT ONE:	<input type="checkbox"/> New Site <input type="checkbox"/> CHANGE OF INFORMATION TO PERMIT NO. ILR10 _____			
FACILITY NAME:	OTHER NPDES PERMIT NOS.:		TELEPHONE NUMBER:	AREA CODE NUMBER
FACILITY LOCATION:	CITY:	ST: IL	ZIP:	LATITUDE:
COUNTY:	SECTION:	TOWNSHIP:	RANGE:	LONGITUDE:
APPROX. CONST. START DATE: / /	APPROX. CONSTRUCTION END DATE: / /	TOTAL SIZE OF CONSTRUCTION SITE IN ACRES:		
STORM WATER POLLUTION PREVENTION PLAN COMPLETED <input type="checkbox"/> YES <input type="checkbox"/> NO (If no, separate notification required to Agency prior to construction.)				

TYPE OF CONSTRUCTION

(select one)	TYPE BRIEF DESCRIPTION OF PROJECT
--------------	-----------------------------------

HISTORIC PRESERVATION AND ENDANGERED SPECIES COMPLIANCE

HAS THIS PROJECT SATISFIED APPLICABLE REQUIREMENTS FOR COMPLIANCE WITH ILLINOIS LAW ON:			
HISTORIC PRESERVATION	<input type="checkbox"/> YES	<input type="checkbox"/> NO	
ENDANGERED SPECIES	<input type="checkbox"/> YES	<input type="checkbox"/> NO	

RECEIVING WATER INFORMATION

DOES YOUR STORM WATER DISCHARGE DIRECTLY TO: <input type="checkbox"/> WATERS OF THE STATE OR <input type="checkbox"/> STORM SEWER	OWNER OF STORM SEWER SYSTEM:
NAME OF CLOSEST RECEIVING WATER:	

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this 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. In addition, I certify that the provisions of the permit, including the development and implementation of a storm water pollution prevention plan and a monitoring program plan, will be complied with.

OWNER SIGNATURE: _____ DATE: _____

MAIL COMPLETED FORM TO: (DO NOT SUBMIT ADDITIONAL DOCUMENTATION UNLESS REQUESTED)	ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF WATER POLLUTION CONTROL ATTN: PERMIT SECTION POST OFFICE BOX 18278 SPRINGFIELD, ILLINOIS 62794-0278 www.epa.state.il.us	FOR OFFICE USE ONLY
		LOG:
		PERMIT NO. ILR10
		DATE:

Information required by this form must be provided to comply with 415 ILCS 5/30 (1998). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532 2104
WPC 823 Rev 8/03

**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
NOTICE OF TERMINATION (NOT)
OF COVERAGE UNDER THE GENERAL PERMIT
FOR STORM WATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION SITE ACTIVITIES**

Please use the tab or arrow keys

OWNER INFORMATION

NAME:	LAST	FIRST	MIDDLE	OWNER TYPE: PRIVATE (select option)
MAILING ADDRESS:				
CITY:	STATE:	ZIP:		
CONTACT PERSON:	TELEPHONE NUMBER:		AREA CODE	NUMBER

CONTRACTOR INFORMATION

NAME:	LAST	FIRST	MIDDLE	TELEPHONE NUMBER:	AREA CODE	NUMBER
MAILING ADDRESS:	CITY:	STATE:	ZIP:			

CONSTRUCTION SITE INFORMATION

FACILITY NAME:	OTHER NPDES PERMIT NOS.:			I	L	R	1	0				
FACILITY LOCATION:												
CITY:	STATE:	IL	ZIP:	LATITUDE:	LONGITUDE:							
COUNTY:	SECTION:	TOWNSHIP:	RANGE:									

DATE PROJECT HAS BEEN COMPLETED AND STABILIZED:

I certify under penalty of law that disturbed soils at the identified facility have been finally stabilized or that all storm water discharges associated with industrial activity from the identified facility that are authorized by an NPDES general permit have otherwise been eliminated. I understand that by submitting this notice of termination, that I am no longer authorized to discharge storm water associated with industrial activity by the general permit, and that discharging pollutants in storm water associated with industrial activity to Waters of the State is unlawful under the Environmental Protection Act and the Clean Water Act where the discharge is not authorized by an NPDES permit.

OWNER SIGNATURE: _____ DATE: _____

MAIL COMPLETED FORM TO:
(DO NOT SUBMIT ADDITIONAL DOCUMENTATION UNLESS REQUESTED)

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
ATTN: PERMIT SECTION
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

FOR OFFICE USE ONLY	
LOG:	
PERMIT NO. ILR10	_____
DATE:	

Information required by this form must be provided to comply with 415 ILCS 5/39 (1996). Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 612 2102
WPC 921 Rev. 1/04

Appendix 7: Related Information Sources

1. National storm water BMP database: www.bmpdatabase.org
2. The Erosion Control Technology Council (ECTC)
3. Journal of "Erosion Control" in Forestpress: <http://www.forester.net/ec.html>
4. Erosion and sediment control manual or handbook of each state, which can be found in the state's DOT (Department of Transportation) or DEM (Department of Environment Management)
5. ADEM's rules and forms related to NPDES (II) permit: <http://www.adem.state.al.us/FieldOps/Permitting/Construction/Construction.htm>
6. EPA's erosion and sediment control section: <http://www.epa.gov/owow/nps/ordinance/erosion.htm>
7. Jerald S. Fifield. Field Manual on Sediment and Erosion Control---Best Management Practices. 2002, Forester press, Santa Barbara, CA.
8. Jerald S. Fifield. Designing for effective sediment and erosion control on construction sites. 2004, Forester press, Forester press, Santa Barbara, CA.
9. The local Technical Assistance Program (LTAP) of the University of Kansas Transportation Center: www.kslap.kutc.ku.edu
10. <http://cfpub.epa.gov/npdes/stormwater/authorizationstatus.cfm>
11. <http://www.adem.state.al.us/FieldOps/Permitting/Construction/Construction.htm>
12. <http://www.adem.state.al.us/FieldOps/Permitting/Forms/forms.htm>
13. <http://www.dep.state.fl.us/water/stormwater/npdes/construction3.htm#permit>
14. http://www.ganet.org/dnr/environ/techguide_files/wpb/stormwtr.pdf
15. http://www.epa.state.oh.us/dsw/storm/construction_index.html
16. <http://www.epa.state.il.us/water/permits/storm-water/construction.html>
17. Municipal Research and Service Center of Washington: <http://www.mrsc.org/Subjects/PubWorks/npdes/availres.aspx>

Appendix 8. Abbreviations

ADEM----Alabama Department of Environmental Management
CBMPP----Construction Best Management Practices Plan
CGP----Generic Permit for Stormwater Discharge from Large and Small Construction Activities
CWA----Clean Water Act
EPA---- Environmental Protection Agency
FDEP----Florida Department of Environmental Protection
MS4s----Municipal Separate Stormwater Systems
MSDS----Safety Data Sheet
NOI----Notice of Intent
NOR----Notice of Registration
NOT----Notice of Termination
NPDES----National Pollutant Discharge Elimination System
PAM----polyacrylamide
QCIP----Qualified Credentialed Inspection Program
QCP----Qualified Credentialed Professional
SWPPP, SWP3----Stormwater Pollution Prevention Plan