

## **GUIDANCE DOCUMENT: COAL MINING**

### **PREPARING A STORMWATER MANAGEMENT PLAN (SWMP)**

In this document, the text in *bold italics* is quoted directly from the Coal Mining general permit. The text in straight type is provided as guidance in the preparation of your Stormwater Management Plan (SWMP).

The requirement to develop a SWMP prior to application for the general permit applies to **all** facilities.

The applicant needs to develop a SWMP for their facility, and certify to the Division that it has been developed and implemented. The SWMP shall be prepared in accordance with good engineering practices. (The plan need not be completed by a registered engineer.)

The plan should identify potential sources of pollution (including sediment) which may reasonably be expected to affect the quality of stormwater discharges associated with the mining activity. In addition, the plan should describe and ensure the implementation of Best Management Practices (BMPs) which will be used to reduce the pollutants in stormwater discharges associated with mining activity. BMPs are defined as physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water.

The SWMP should describe all areas that have not been previously permitted, and which meet the definition of a stormwater discharge in 40 CFR 122.26. Examples of such areas are roads and railroad lines used for transportation to and from the site, outcrops of ponds, inactive loadouts, sites used for storage and maintenance of material handling equipment, and areas granted small area exemptions.

Where necessary, the plan should include a schedule of activities and/or construction with a reasonable timetable for implementation of any new operations or construction of new facilities necessary to achieve the required goals. The timetable shall allow for attainment of operational level as expeditiously as possible, but in no case after June 30, 1995, in conformance with Part 402(p)(4)(A) of the Federal Clean Water Act.

**Coal mining operations must certify the completion of their SWMP, as described in Appendix A\* of the permit application.** Implementation of the plan is required at the time that coverage under the general permit begins. The Division reserves the right to request and review the plans, and to require additional measures to prevent and control pollution, as needed.

When preparing your plan, make sure to **address each item**. If it is not applicable to your site, briefly explain why. A simple "Not Applicable" is not enough. Also note that the SWMP should include any existing stormwater controls at your site, not just new or proposed ones. Take full credit for what you are already doing.

The SWMP shall include the following items, at a minimum:

#### **1. *Site Map***

*The plan shall provide a site map or maps which indicate, at a minimum:*

- *Mining site boundaries*
- *Access and haul roads*
- *Stormwater outfalls and an outline of the drainage area of each stormwater outfall*
- *An estimate of the direction of flow*
- *Materials handling areas*
- *Each existing structural control measure to reduce pollutants in stormwater runoff*
- *Areas used for storage or disposal of overburden, materials, soils or wastes, including tailings piles or ponds*
- *Areas used for mineral milling and processing*
- *Springs, streams, wetlands and other surface waters*
- *Location of mine drainage or any other process water discharge points*

- *boundary of area that contributes runoff to outfalls that are subject to effluent limitations guidelines.*
- *Date the map was prepared*

The drainage areas shown should include the portions of the site where industrial activities occur, as well as those portions contributing stormwater that mixes with runoff from the industrial area. Therefore, the entire drainage area where industrial activities occur must usually be included.

Aside from mining, industrial activities can include equipment washing, materials storage, vehicle maintenance or fueling, incineration, waste treatment, storage or disposal, shipping/loading/unloading, etc. You do not need to include industrial activities which only take place indoors, unless there is some part or aspect of the activity with which stormwater could come in contact. For example, if all vehicle maintenance is done indoors, but vehicle storage or fueling is outside, the vehicle storage or fueling area must be addressed.

It is a good idea to start with a portion of the USGS (U.S. Geological Survey) quadrangle map showing the site. These are available and easily obtainable for the entire state; they show a large amount of information for very little effort. You can then use the USGS map as a guide for preparing your site map, which will be more detailed.

County governments may also have maps suitable as bases to begin mapping procedures. If no other suitable base maps are available, one must be developed. Regardless of the source of the base map, the site map needs to be of suitable scale to show the industrial portion of the facility and the features within it.

#### **6** Locations of stormwater outfalls:

If the site has a stormwater drainage system, the location of outfalls is a simple task. Indicate on the map where pipeline outfalls are, as well as the general layout of the drainage system such as inlets, grates, pipelines, etc. If stormwater is conveyed over land without a developed storm drainage system, the points where runoff collects and runs off must be located.

#### **6** Drainage basins for each outfall:

Field inspection can usually accomplish this task with acceptable accuracy. Look for high areas such as crests of parking lots, roads, etc. which would form the division between drainages. Gullies and swales are indicators of stormwater flow direction. Obviously, if runoff is observed during a storm, most uncertainties can be eliminated.

#### **6** Surface water bodies (including dry water courses):

Mark on the site map any surface water bodies, including lakes, streams, springs, wetlands, detention ponds, roadside or irrigation ditches, etc. These do not necessarily need to be within the facility, but may be adjacent to it or impacted by stormwater runoff. Also include any existing storm sewers.

#### **6** Existing structural control measures to reduce stormwater pollution:

Show on the map the location of any structural stormwater pollution control measures, such as detention ponds, diversion ditches, covered material storage areas, fuel farm secondary containment structures, etc.

## **2. Description of Potential Pollutant Sources/Material Inventory**

***The plan shall provide a description of all potential sources (activities and materials) which may reasonably be expected to add pollutants to stormwater discharges. Such sources may include haul roads, equipment storage and maintenance areas, fuel storage areas, etc.***

***In each case where stormwater pollution potential exists, appropriate preventive measures must be taken and documented.***

This section of the SWMP summarizes the existing potential for stormwater contamination at the site. It is a narrative description which states what is stored, where it is stored, how it is used, what has been used, etc. These can include such pollutants as fuels, oils, sediment, detergents, pesticides, herbicides, fertilizers, etc.

Describe the area(s) where stormwater contamination is likely, and what pollutants could be present. For mining areas, this is apt to be limited to sediment.

### 3. *Stormwater Quality Controls*

***Each mining site covered by this plan shall develop a description of stormwater quality controls appropriate for that site, and implement such controls. The appropriateness and priorities of controls in the plan shall reflect identified potential sources of pollutants at the site. The description of stormwater quality controls shall address the following minimum components, including a schedule for implementing such controls:***

There are four subparts to this section of the SWMP which, when completed, spell out what the facility is doing to control stormwater pollution, what the facility will do in the future, when Best Management Practices (BMPs) will be implemented, and who at the facility is responsible for the plan.

- a) ***SWMP Administrator - The SWMP shall identify a specific individual or individuals within the mining organization who is responsible for developing the SWMP and assisting the mine operator in its implementation, maintenance, and revision.***

The SWMP Administrator becomes the contact for all SWMP-related issues and is the person responsible for its accuracy, completeness, and implementation. Therefore, the SWMP Administrator should be a person in an authoritative position. Larger facilities may want to develop a "SWMP team" in order to share the responsibilities and generate greater awareness and participation.

- b) ***Materials Handling and Spill Prevention - Where materials can impact stormwater runoff, BMPs that reduce the potential for contamination shall be described. For example, materials should be stored and handled in covered areas whenever possible to prevent contact with stormwater; fuels and other chemicals should be stored within berms or secondary containment devices to prevent leaks and spills from entering stormwater runoff.***
- c) ***Erosion and Sediment Controls - Describe BMPs that will be used to reduce erosion and prevent sediment delivery to State waters. These should include structural (such as silt fences, sediment ponds, drop structures, check dams) and non-structural (such as mulching and revegetation) methods.***

***Whenever a facility or a portion of a facility enters the post-mining phase, it is likely that the overall configuration of the site will change considerably. Prior to the time when new vegetation becomes established, the surface areas will be subject to potentially significant erosion. The permittee will need to take adequate measures in order to minimize this erosion as well as the erosion normally encountered during mining activities.***

Both of these sections involve the evaluation and use of Best Management Practices (BMPs). This is the key part of the SWMP - a narrative description of the appropriate stormwater management practices for the permittee's site.

BMPs can describe a wide range of management procedures, schedules of activities, prohibitions and other management practices. BMPs can include operating procedures, treatment requirements and practices to control site runoff, drainage from materials storage, spills or leaks. Nonstructural BMPs are mainly definitions of operational or managerial techniques. Structural BMPs include physical processes ranging from diversion structures to oil/water separators to retention ponds.

The first thing to do is assess the potential of various sources at the site to contribute pollutants to stormwater discharges associated with industrial activity. In addition to the actual construction and ground disturbance activities, evaluate the following types of activities for the reasonable potential for contributing pollutants to runoff: loading and unloading operations; outdoor storage activities; vehicle and equipment maintenance and fueling; significant dust or particulate generating processes; and on-site waste disposal practices. Some of the factors to consider include the quantity of chemicals used or discharged, site conditions (slope, soil permeability, etc.), and the likelihood of contact with stormwater.

## **6 In each case where stormwater pollution potential exists, appropriate preventive measures (that is, BMPs) must be taken and documented.**

Based on an assessment of the potential of various sources at the site to contribute pollutants to stormwater, the plan should describe the control measures that are reasonable and appropriate. Estimated dates of compliance for the chosen BMPs to be implemented and maintained are also needed. Any existing controls should also be discussed. Good housekeeping measures, such as cleaning and maintenance schedules, trash disposal and collection practices, grounds maintenance, etc., can be included here.

When selecting BMPs, the most important ones to evaluate first are those which limit the source of the pollutant. It is much more efficient, from both a cost and environmental standpoint, to prevent the pollution in the first place than to clean up contaminated stormwater. For example, a BMP requiring that any vehicle maintenance that involves fluid exchange must take place indoors, results in the removal of a pollutant source (i.e., oil/hydraulic fluids) from possible contact with stormwater. (Of course, the handling of the pollutant inside must still be addressed, though not necessarily in the SWMP.)

Once source reduction BMPs have been evaluated, then more costly options, such as mitigation of impacts, or stormwater treatment through detention storage, should be considered if necessary. The BMPs selected are up to the judgment of the individual permittee. However, it is important to keep in mind that a fully implemented SWMP will constitute compliance with Best Available Technology (BAT) and Best Conventional Technology (BCT), as mandated under the Federal Clean Water Act. Basically, this means that, in order to comply with your permit, the appropriate measures **must** be taken in keeping with the pollutant(s) involved and the risk potential at the facility.

Remember that the purpose of BMPs is to keep the pollutants out of stormwater runoff by reducing material exposure to stormwater, directing the stormwater away from contaminated areas, or reducing the volume of potentially polluting materials on the site.

BMPs applicable to the mining areas have long been standard under mining permits. Contact the Dept. of Natural Resources, Division of Minerals and Geology at (303) 866-3567 for more information. \*A list of common BMPs, for construction and other industrial activities, is provided in Appendix C. Also, see the List of Available Documents (Appendix \*). This includes ordering information for local and national BMP manuals.

- d. **Testing/Evaluation for Non-Stormwater - The Stormwater Quality Controls section of the SWMP shall include documentation that the discharges have been evaluated or tested for the presence of non-stormwater discharges such as mine drainage, spoil springs, sanitary waste, or process water of any kind. The documentation shall include a description of the results of any test or evaluation method for the presence of non-stormwater discharges, the method used, the date of any testing, and the on-site drainage points that were directly observed during the test.***

In other words, only stormwater can be conveyed by the stormwater drainage system. Examples of potential illicit connections include the floor drains and toilets in maintenance buildings, chemical storage buildings, etc.

There are several methods of determining whether or not illicit connections exist. Dry weather observations of outfalls or other appropriate locations is the most common method of determining whether or not non-stormwater discharges are occurring. Other acceptable procedures include analysis and validation of accurate piping schematics, dye tests, etc.

In general, it is not anticipated that non-stormwater discharges will be a problem at most mine sites.

**Note - if illicit connections are discovered, corrective measures must be taken.**