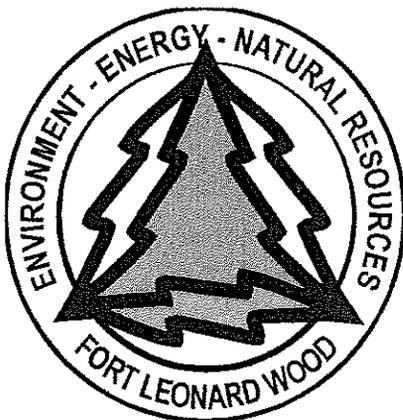


STORM WATER POLLUTION PREVENTION PLAN

**FOR THE
U.S. ARMY MANEUVER SUPPORT CENTER
AND
FORT LEONARD WOOD, MISSOURI**



August 2005

**U.S. Army Maneuver Support Center and Fort Leonard Wood, Missouri
Storm Water Pollution Prevention Plan**

The U.S. Army Maneuver Support Center (MANSCEN) and Fort Leonard Wood is located in South-Central Missouri, approximately 130 miles southwest of St. Louis. The installation comprises approximately 61,410 acres of mostly forested oak-hickory woodland. Much of the topography is karst, which can increase the potential for groundwater contamination if appropriate erosion control measures are not taken. Most of the installation is located on a broad upland plateau between the Big Piney River to the East and the Roubidoux Creek to the West. Thus, water discharges originating from the eastern one-half of the installation drains to tributary streams feeding the Big Piney River while water discharges originating from the western one-half of the installation drain to tributary streams feeding the Roubidoux Creek.

The purpose of this plan is to present regulatory requirements that must be followed for the construction and upgrade of ranges, training areas, and other facilities at Fort Leonard Wood, Missouri. Permittees shall comply with all requirements outlined in all permits related to their construction project. This plan includes sections for Storm Water Runoff Pollution Prevention, Erosion and Sediment Control, and Spill Control and Countermeasures.

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This plan includes the following:

- A. Definitions.
- B. A list of laws, regulations, and permits for construction/land disturbance operations.
- C. Examples of areas/resources that must be protected, monitoring and weekly inspections requirements, and related management concerns.
- D. A list of procedures to prevent and/or correct erosion or pollution of the environment.
- E. Requirements for solid waste disposal.
- F. Requirements for maps/plans for controlling erosion.
- G. Requirements for traffic control, if needed.
- H. How to obtain borrow material, if needed.
- I. Attachments
 - a. Attachment 1: National Pollutant Discharge Elimination System (NPDES) Inspection Report
 - b. Attachment 2: Erosion & Sedimentation Control Devices
 - i. Figure 1: Straw Bale Dike
 - ii. Figure 2: Typical Sediment Basin
 - iii. Figure 3: Energy Dissipator
 - iv. Figure 4: Silt Fence

A. DEFINITIONS:

1. Environmental Pollution and Damage

Environmental pollution and damage is herein defined as the presence of chemical, physical, or biological elements or actions that adversely affect human health or welfare, unfavorably alter ecological balances, or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires considerations of air, water, and land, and includes management of visual aesthetics, noise, solid waste, radiant energy, as well as other pollutants.

2. Erosion Control

Erosion control is defined herein as that portion of the environmental protection effort that addresses the prevention of soil erosion and the control of sediment runoff.

B. LIST OF LAWS, REGULATIONS, AND PERMITS:

Fort Leonard Wood operates under several existing permits to protect air and water resources, which is required by law. All activities on Fort Leonard Wood must, at a minimum, comply with these permits. The permittee is responsible for complying with all applicable laws and regulations, and for obtaining and complying with all applicable permits in order to provide adequate and continuing control of erosion and other pollutants.

1. Laws & Regulations

- i. Federal Water Pollution Control Act
- ii. Federal Clean Water Act
- iii. National Pollutant Discharge Elimination System
- iv. Missouri Clean Water Law

2. Permits that may be required

- i. Missouri State Operating Permit
 1. Also referred to as a Land Disturbance Permit
 2. <http://www.dnr.missouri.gov/oac/forms/> - waterpollution
 - a. State Storm Water Form O (≥ 1 acre and < 5 acres)
 - b. State Storm Water Forms E & G (≥ 5 acres)
 3. Permittee must submit application and fee:
Missouri Department of Natural Resources
Southeast Regional Office
2155 North Westwood Blvd
Popular Bluff, MO 63901
(573) 840-9750
 4. May take up to 180 days to obtain permit
- ii. Fort Leonard Wood Digging Permit
 1. Also known as an Excavation Permit FLW Supp. 1 to AR 420-17
 2. Required for digging ≥ 6 inches deep
 3. See the Dept. of Public Works' Work Management Branch (B 2222)
- iii. Section 401 Water Quality Certification letter
 1. Contains a list of State conditions for stream crossings
 2. <http://www.dnr.mo.gov/wpscd/wpcp/401/wpcp-401.htm>
 3. Permittee must submit application:

Missouri Department of Natural Resources
WPCP, 401 Unit
PO Box 176
Jefferson City, MO 65102

- iv. Section 404 permit under the Clean Water Act
 1. Authorizes construction of stream crossings and contains nationwide permit conditions that must be adhered to during construction
 2. <http://www.nap.usace.army.mil/cenap-op/regulatory/eng4345.pdf>
 - a. ENG FORM 4345
 3. Permittee must request:
U.S. Army Corps of Engineers
Attn: CENWK-OD-RM-HT
Route 2 Box 29C
Warsaw, MO 65355
(660) 438-6758

C. EXAMPLES OF AREAS/RESOURCES THAT MUST BE PROTECTED, MONITORING AND WEEKLY INSPECTIONS REQUIREMENTS, AND RELATED MANAGEMENT CONCERNS:

The permittee is responsible for protecting all areas/resources within or surrounding work areas. Examples include, but are not limited to, trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical and archeological/cultural resources, as applicable to this project. In addition, the permittee is responsible for *performing inspections weekly and within 12 hours* of a rain event of more than 2 inches in a 24-hour period (required by land disturbance permits) of erosion control measures and protected areas, as applicable, and documenting the findings as in Attachment 1 (National Pollutant Discharge Elimination System (NPDES) Inspection Form).

1. Training of Personnel in Pollution Prevention

The permittee will be responsible for training personnel in all phases of environmental protection. The training will include methods of detecting and avoiding pollution, basic familiarization with pollution standards, and installation and care of facilities (Erosion & Sedimentation Control Devices, Best Management Practices, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control. Training will be documented and kept on file by the permittee.

2. Protection of Environmental Resources

The permittee will confine activities to areas defined by their drawings and specifications. Note, also, that the permittee must keep their activities within the acreage sited on their permit application. The environmental resources within the project boundaries and those affected outside the limits of the permanent work area

will be protected during the entire length of the contract. Before any earthmoving or clearing activities begin, erosion/pollution controls must be installed and the permit available on site.

3. Work Area Limits

In order to minimize damages and unnecessary construction traffic, the permittee will, prior to the start of construction, mark the necessary project boundaries. Isolated areas within the general work area that are to be saved and protected will also be marked or fenced. Monuments and markers will be protected before construction operations commence. Markers must be visible for construction operations conducted during darkness. The permittee will convey to all personnel the purpose of the markers and the need to protect all objects.

4. Protection of Landscape

Trees, shrubs, vines, grasses, land forms, and other landscape features to be preserved will be clearly identified by marking, fencing, or any other approved technique. Markers must be visible for construction operations conducted during darkness. The permittee will restore landscape features damaged or destroyed during construction operations. Such restoration work will be in accordance with this plan. A joint inspection with the permittee and DPW will be conducted to identify subject areas and determine scope of restoration.

5. Reduction of Exposure of Unprotected Erodable Soils

Earthwork brought to final grade will be finished as indicated and specified. Side slopes and back slopes will be protected as soon as practicable upon completion of rough grading. All earthwork will be planned and conducted to minimize the duration of exposure of unprotected areas, top-soil stockpiles, and waste material areas; these areas will not initially be cleared in total. Clearing such areas will progress in reasonably sized increments as needed to use the areas developed as approved by the DPW.

6. Temporary Protection of Disturbed Areas

It is necessary to effectively prevent erosion and control sediment runoff. Runoff from the construction site will be controlled by construction of diversion ditches, basins, and berms to retard and divert runoff to protected drainage courses, and by any measure required by area-wide plans approved under paragraph 208 of the Clean Water Act. The permittee is obligated to all of the requirements of their permits in addition to the requirements outlined in this plan.

MONITORING AND WEEKLY INSPECTIONS:

The permittee will monitor construction activities and document inspections weekly and within 12 hours of a rain event of more than 2 inches in a 24-hour period as in Attachment 1 (NPDES Inspection Form) in order to control erosion and avoid pollution of surface and ground waters. Those inspection records must be kept on site ✓ and available upon request. The following are examples of what is to be monitored and should be included in each inspection.

1. Maintenance and Monitoring of Erosion Control Devices

The permittee will maintain all erosion/pollution control devices for the duration of the project or the length of time construction activities could create potential pollutants. When sedimentation basins are used as erosion control devices, construction activities will be monitored by the permittee to ensure that the basin captures the intended runoff from the site. Likewise, all areas where water may discharge from the site must be monitored by the permittee to ensure erosion control.

2. Preservation and Recovery of Historical, Archeological, and Cultural Resources

Existing historical, archeological, and cultural resources within the work area will be so designated by the DPW and precautions will be taken by the permittee to preserve all such resources as they existed at the time they were marked. The permittee will install all protection for these resources and will be responsible for their preservation during this project. If during construction activities the permittee observes unusual items that might have historical or archeological value, construction will temporarily cease and such observations will be reported as soon as possible to the DPW.

3. Monitoring Air Quality

The permittee will keep construction activities under surveillance, management and control to minimize pollution of air resources. All activities, equipment, processes, and work operated or performed by the permittee in accomplishing the specified construction will be in strict accordance with all state and federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environment Protection Agency will be maintained for the construction operations and activities specified in this plan. Special management techniques will be implemented to control air pollution by construction activities.

RELATED MANAGEMENT CONCERNS:

Special management techniques, as described below, will be implemented to control erosion/pollution by the listed construction activities.

1. Post Construction Cleanup

At the end of the project, the permittee will cleanup all areas used for construction, to include temporarily placed erosion control devices.

2. Oily Waste

The permittee will attempt to prevent oily, petroleum-based, and other hazardous substances from entering the ground, drainage areas, or local bodies of waters. Temporary fuel, oil, or petroleum storage tanks/drums must be provided with secondary containment (110% of storage vessel capacity) to contain the entire contents of the tank in the event of leakage. In the case of spill incidents, the Fire Department must be contacted immediately (911), and the spill should be contained and cleaned up as soon as possible. Contracted activities will be responsible for spill cleanup. If the contractor does not have the capability, the DPW Base Operations will perform the cleanup at the contractor's expense.

3. Stream Crossing

Stream crossings will be coordinated through the Natural Resources office (Building 2112) and must be controlled during construction. This action may require a 404 permit (see Section B of this plan) review. Crossings will provide movement of local materials or equipment that do not violate water pollution control standards of the federal, state or local government.

4. Protection of Fish & Wildlife Resources

The permittee will keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, or damage to fish and wildlife. Species that require specific attention along with measures for the protection will be listed by DPW prior to beginning construction activities.

5. Particulates and Particulate Control

Dust particles from all activities, processing, and preparation of materials, will be controlled at all times, including weekends, holidays, and hours when work is not in progress. Burning of any material is strictly prohibited unless prior approval is received from the Environmental Division. The permittee will maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within and surrounding project boundaries to minimize visible particulates. This is necessary to avoid exceeding air pollution standards and nuisances. Sprinkling work areas with water is permitted to control particulates. Sprinkling, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times. The permittee will have sufficient equipment available to accomplish this task. Particulate control will be

performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

6. Protection of Sound Intrusions/Noise

The permittee will keep construction activities and equipment under surveillance and control to minimize noise.

D. A LIST OF PROCEDURES TO PREVENT AND/OR CORRECT EROSION OR POLLUTION OF THE ENVIRONMENT:

Following are references and examples of procedures, including and in addition to those outlined in permits, that the permittee must follow to prevent and/or correct erosion or pollution of the environment due to accident, natural causes, neglect, or other.

1. Storm Water Management for Construction Activities

Developing Pollution Prevention Plans and Best Management Practices. (Document number EPA 832-R-92-005) published by the United States Environmental Protection Agency (USEPA) in September 1992.

2. Protecting Water Quality

A field guide to erosion, sediment and storm water best management practices for development sites in Missouri, published by Missouri Department of Natural Resources (MDNR) in November 1995.

3. Quality Control

The permittee will establish and maintain quality control for all environmental provisions herein. The permittee will record in weekly reports (as in Form 1) any problems in complying with laws, regulations, or permits and the corrective actions implemented.

4. Subpermittee

The permittee is responsible for all subpermittee actions and for assuring compliance of the erosion control plan by the subpermittee.

5. Notification

The Directorate of Public Works will notify the permittee of any observed noncompliance with the aforementioned federal laws, state laws, local laws, regulations, permits, or other elements of the permittee's erosion control plan. The permittee, after receipt of such notice, will inform the DPW of the proposed

corrective action(s) and take such action as may be approved. If the permittee fails to comply promptly, the DPW may issue an order stopping all or part of the work until satisfactory corrective action has been taken.

6. Erosion & Sedimentation Control Devices

Prior to any earth disturbance, the permittee will have in place soil erosion and sedimentation control features. The permittee will construct or install all temporary and permanent erosion and sedimentation control features as indicated in the plan. Temporary erosion and sediment control measures such as berms, dikes, drains, sediment basins, grassing, debris dams, and mulching will be maintained until permanent drainage and erosion control facilities are completed and operative. Once the project is completed, all temporary erosion control measures will be removed and discarded by the permittee. Attachment 2 contains illustrations of erosion and sedimentation control devices. Following are examples for controlling erosion/pollution.

7. Best Management Practice (BMP) Sediment Control

- a. Install and maintain approved sediment control measures as shown in the erosion control plan.
- b. Do not strip existing vegetation outside limits of parking lots, pavement, or graded areas.
- c. Vehicles for passenger transport will not operate on the grading site and will be legally parked on stabilized surfaces. To the maximum extent practicable, materials and equipment will be stored/operated only on stabilized surfaces.
- d. Seed and mulch all disturbed areas that are to remain idle for more than 30 days.
- e. Sediment and erosion controls will be checked and documented (NPDES Inspection Report) weekly and within 12 hours of a rain event of more than 2 inches in a 24-hour period in order to ensure that the sediment and erosion control facilities function as devised. Problems and corrective actions will be noted on the weekly NPDES Inspection Report (as in Form 1).
- f. Sediment barriers will be installed at locations shown on the plans or as directed by DPW. Sediment barriers will be in place prior to earthwork operations in a given basin. Removal and disposal of accumulated debris and/or removal of reconstructed sediment barriers will be performed throughout the project life when debris reaches one-third of the fence or barrier height or as deemed necessary by the DPW. Sediment barriers and accumulated debris will be removed and disposed of by the permittee after turf cover has been established, unless other arrangements have been agreed upon.
- g. Temporary erosion control berms, sediment basins, and intercept ditches will be constructed at locations shown on the plan or as directed by DPW. Where temporary erosion control berms, sediment basins, or intercept ditch are used, all areas where flow is concentrated will be protected by siltation barriers prior to discharge into any ditch, or storm or sewer or water course.

8. Spoil area on Government Property

Spoil areas on government property, if any, will be managed and controlled to limit spoil to areas designed on drawings and to prevent erosion of soil or sediment from entering nearby water courses or lakes. Spoil areas will be developed in accordance with the grading plan indicated on the drawings.

9. Temporary Excavations and Embankments

Temporary excavations and embankments for plan and/or work areas will be controlled to protect adjacent areas from despoilment.

E. REQUIREMENTS FOR SOLID WASTE DISPOSAL:

For activities under contract, please refer to contract specifications for disposal of solid wastes; otherwise, use the guidelines listed below. Solid waste will be placed in containers for proper disposal. Lids will remain closed unless adding solid waste, and drain plugs will remain in place at all times to prevent possible contamination.

The permittee may use the Fort Leonard Wood compost area, if available, for the disposal of wood chips, leaves, and grass clippings. Brush and stumps may be taken to the brush and stump site, if available. Concrete, masonry, rock and asphaltic concrete that meet the Missouri Department of Natural Resources' clean fill definition may be disposed of in the clean fill site, if available. It is located on FLW Route 30, approximately one mile from FLW Route 1. All metal protruding from concrete shall be cut away. Uncontaminated soil with rock less than six inches may be truck dumped on FLW landfill #3 located east of the south water tower near the airfield to be used as final cover material. Entry to the landfill must be coordinated with the Installation Restoration Program (IRP) manager in the Environmental office (573/596-0882).

Construction and demolition waste, in types and quantities established by the Missouri Department of Natural Resources (MDNR), shall be taken to a demolition landfill or a sanitary landfill off of the Installation for disposal. The permittee shall provide any information requested by the landfill operator to complete forms required by the MDNR or other government-required landfill records. This is to be completed at the permittee's expense.

No hazardous waste shall be disposed of without prior review of the Hazardous Waste Manifest/Department of Transportation (DOT) shipping paper by the Contracting Officer and the Environmental Coordinator, Director of Public Works, or designated representative. Hazardous wastes shall be disposed of off the Installation, unless otherwise specified. The permittee shall provide the Environmental Coordinator a signed copy of the original Hazardous Waste Manifest/DOT shipping paper from the approved EPA or state permitted disposal facility. The cost of compliance with this provision will be the responsibility of the permittee. All other

wastes generated during operations shall be disposed of off post by the permittee at their expense.

F. REQUIREMENTS FOR MAPS/PLANS FOR CONTROLLING EROSION:

The permittee is required to submit a copy of their permit and their erosion control plan for each project to the Fort Leonard Wood Environmental Office **PRIOR** to any land disturbance activity. Plans must include maps/drawings showing locations of 1) any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials; 2) an overall drawing showing the plan for temporary erosion control; and 3) permanent erosion control features. Figures 1 through 4 illustrate typical erosion control devices, including a straw bale dike, sediment basin, energy dissipater, and silt fence.

G. REQUIREMENTS FOR TRAFFIC CONTROL:

Any disruptions on normal traffic activities must be coordinated with DPW.

H. HOW TO OBTAIN BORROW MATERIAL:

Should the need arise for borrow material, DPW will provide the location.

I. ITEMS TO BE MAINTAINED AT THE PERMITTED SITE

The following items are to be maintained on site and available for inspection:

- Copy of Missouri State Operating Permit/Land Disturbance Permit
- Erosion Control Plan
- Map/Site Sketch(s)
- Weekly Inspection Reports

Figure 1.

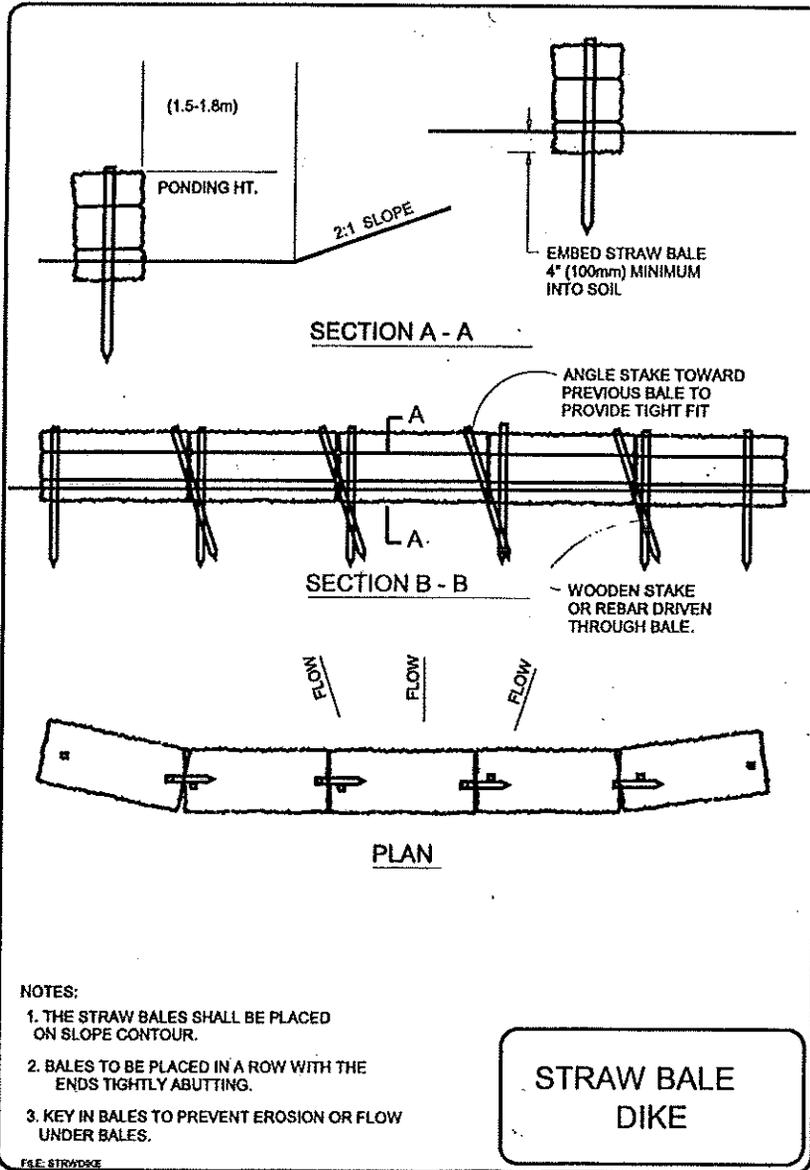


Figure 2.

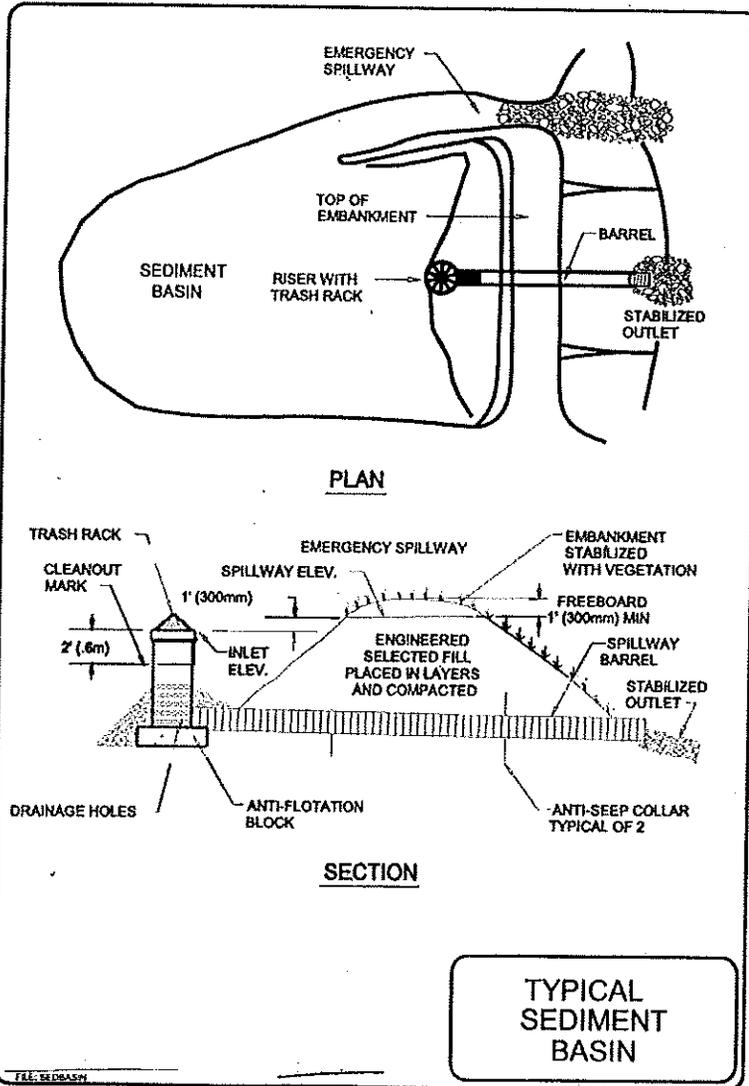


Figure 3.

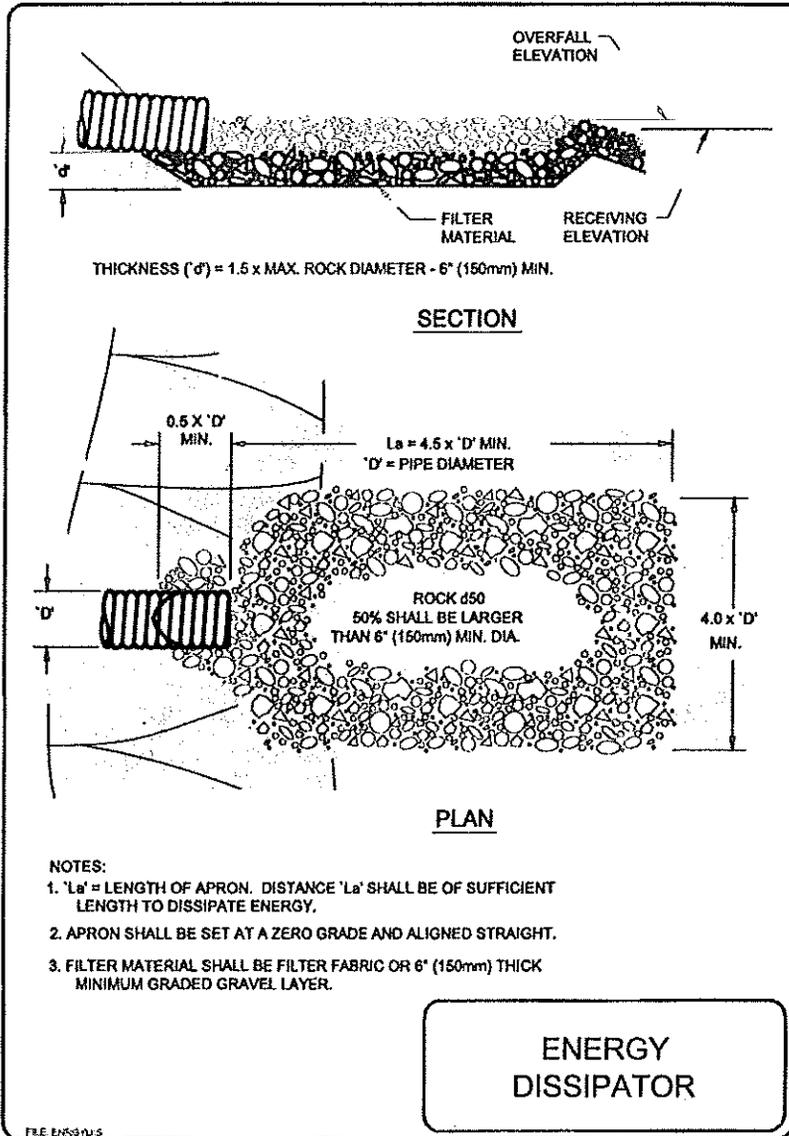


Figure 4.

