

APPENDIX F

**VEHICLE MAINTENANCE/MATERIAL STORAGE
FACILITIES MANAGEMENT GUIDANCE**

Appendix F

Vehicle Maintenance/Material Storage Facilities Management Guidance

F.1 FACILITIES COVERED BY THE PERMIT

Facilities that meet the description in Item 3.a.i of the Permit are those that conduct activities similar to Phase 1 facilities but are not subject to the requirements of the California General Industrial Activities Storm Water Permit (General Industrial Permit). Examples may include portions of municipal yards that:

- Conduct vehicle and equipment repairs, painting, fueling, and lubrication.
- Serve as salvage yards to store or dismantle vehicles or equipment.
- Serve as temporary storage areas for waste oil and other materials discovered and removed from public areas.

Municipal facilities that are subject to the General Industrial Permit, and therefore are not covered under this Permit, generally include airports and large corporation yards that conduct activities such as servicing urban or suburban bus lines or public warehousing and storage. These facilities should have already filed for coverage under the General Industrial Permit. Additional information on obtaining coverage for these facilities is provided in Section 9.

Storage facilities that are regulated by state laws for hazardous materials should have already prepared hazardous materials business plans or Spill, Prevention, Control, and Counter-measure (SPCC) plans.

F.2 POLLUTION PREVENTION PLAN

Under this Permit, vehicle maintenance and material storage facilities are required to develop a plan to minimize the potential to discharge pollutants into stormwater, and implement best management practices (BMPs) to improve site-specific pollutant control. The pollution prevention plan is a method to help determine what the existing activities and potential pollutants are at facilities, and then select appropriate BMPs to improve pollutant control at those facilities. There are five suggested steps to preparing a pollution prevention plan:

- Planning and Organization
- Facility Assessment
- Best Management Practice Selection
- Documentation and Implementation
- Evaluation

Vehicle Maintenance/Material Storage Facilities Management Guidance

These suggested steps are based on the guidance provided in the General Industrial Permit. The guidance provided here does not include monitoring and reporting activities, as these are not required under this Permit.

Although a unique plan may be developed for each facility, if several facilities conduct similar activities, a general plan could be developed and then customized later for individual sites to help reduce cost and effort. An example of a written pollution prevention plan for a fleet maintenance facility is included as Attachment F1. Other pollution prevention plan formats may be used as long as they discuss the BMPs selected for implementation. The following sections detail the information that was used to complete the example pollution prevention plan.

F.2.1 Planning and Organization

The following planning and organizational activities may be considered:

- Identify a specific individual or individuals as members of a pollution prevention team to develop and implement the plan.
- Review any other regulatory requirements the facility has and any existing facility plans.

F.2.2 Facility Assessment

Facilities should be reviewed to determine existing conditions. The assessment may include the following steps:

- **Site Map.** Prepare a site map of the facility. This can be prepared from existing “as-built” or other construction plans of the yard, or similar drawings prepared for other programs. Features displayed on the map should include:
 - An outline of the entire property
 - Drainage areas on the property and direction of flow
 - Areas of soil erosion
 - Nearby water bodies and municipal storm drain inlets
 - Location of stormwater conveyance systems (ditches, inlets, storm drains, etc.)
 - Location of existing stormwater controls (oil/water separators, sumps, etc.).
 - Location of “impervious” areas--paved areas, buildings, covered areas
 - Locations where materials are directly exposed to stormwater
 - Locations where toxic or hazardous materials have spilled in the past

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- Location of buildings and activity areas (e.g., fueling islands, garages, waste container area, wash racks, hazardous material storage areas, etc.)
- **Significant Materials.** Complete an inventory of materials at the site, indicating where they are stored or handled and the typical amount on site. The materials inventory can be built from existing similar inventories prepared for other programs.
- **Potential Pollutant Sources.** Write a description of activities that take place at the facility, the potential pollutant sources from the activities, and the pollutants that could be discharged. Activities that may be identified include: lubricating, fueling and washing vehicles/equipment; stockpiling materials; mixing fertilizers or pesticides; warehouse receiving/shipping; and sandblasting, stripping and painting. Any non-stormwater discharges should be recorded here (such as rinse water, wash water, boiler blowdown). A note should also be made about previous “significant” spills of toxic or hazardous materials including the type, quantity, cleanup methods used, amount of material remaining, and measures taken to be sure it does not recur.
- **Assessment of Potential Pollutant Sources.** For the activities and pollutant sources noted above, determine which areas are probable sources of pollutants and the corresponding pollutants that are likely to be present in stormwater discharges.

F.2.3 Best Management Practice Selection

BMPs must be selected that are appropriate to prevent or mitigate pollution generated from the specific activities at the site. They may be selected based on the information learned from the facility assessment. The Permit requires the BMPs to include, but not be limited to:

- Good housekeeping practices
- Material storage control
- Vehicle leaks and spill control
- Vehicle and equipment washing area control
- Proper waste handling and disposal
- Maintenance for treatment controls
- Illicit discharge control
- Employee training

Attachment F2 includes lists of BMPs suggested for vehicle and equipment maintenance areas and material storage facilities that have been adapted from USEPA’s *Storm Water Multi-Sector General Permit for Industrial Activities* (September 1995). Attachment F2 also includes several BMP fact sheets from the California Storm Water Best Management Practices Handbook.

Vehicle Maintenance/Material Storage Facilities Management Guidance

Although all of these suggested BMPs are for industrial facilities, they serve as good general guidance for all vehicle maintenance/material storage facilities.

F.2.4 Plan Documentation and Implementation

With the facility assessment and BMP selection complete, compile the information into a written document. This may be done in a format similar to the example pollution prevention plan in Attachment F1.

Once the pollution prevention plan is prepared, it must be implemented. This may be done by training employees in any new procedures, moving materials under cover, installing spill kits, and conducting any other activities necessary to implement all specified BMPs.

F.2.5 Evaluation

A copy of the pollution prevention plan should be kept at the site and should be reviewed periodically to see that the information is current and accurate. BMPs that have been implemented should be assessed to determine if they are working as planned, and any changes required should be noted in the pollution prevention plan.

ATTACHMENT F1

**EXAMPLE POLLUTION PREVENTION PLAN
FOR A FLEET MAINTENANCE FACILITY**

Attachment F1

Example Pollution Prevention Plan For A Fleet Maintenance Facility

F1.1 FACILITY

Maintenance Yard #3
1234 Facilities Way
XYZ, California 99999

Facility Owner: City of XYZ

Prepared By: C. Lin Date Prepared: June 18, 1997

Updated: _____

F1.2 OBJECTIVES

The municipal storm water permit for discharges in the County of Los Angeles requires those Permittees who own and operate facilities where vehicle maintenance and/or material storage activities occur, as defined in Section IV.3.a of the Permit, to implement a pollution prevention plan. The purpose of the regulations is to protect water quality by reducing the amount of pollutants that could potentially reach the storm drainage system and receiving waters.

The minimum objectives of the Vehicle Maintenance/Material Storage Facilities Management program are to:

- Identify and evaluate sources of pollutants from public vehicle maintenance/material storage facilities that may affect the quality of stormwater discharges from the facility.
- Identify and implement site-specific best management practices (BMPs) to reduce or prevent pollutants in stormwater discharges.

A copy of this plan should be kept at the facility. It should be reviewed periodically to assure all information and measures are current and accurate and should be updated as conditions change.

Attachment F1

Example Pollution Prevention Plan For A Fleet Maintenance Facility

F1.3 PLANNING AND ORGANIZATION

F1.3.1 Pollution Prevention Team

<u>Name</u>	<u>Function</u>
C. Lin Public Works, Streets & Roads Division (999) 555-1212	Program Coordinator / Pollution Prevention Plan Development
A. Martinez Maintenance Staff (999) 555-1222	Pollution Prevention Plan Implementation
D. Jones Maintenance Staff (999) 555-1232	Pollution Prevention Plan Implementation

Attachment F1
Example Pollution Prevention Plan For A Fleet Maintenance Facility

F1.4 SITE MAP

Figure 1 is a detailed site map of the Maintenance Yard #3 facility.

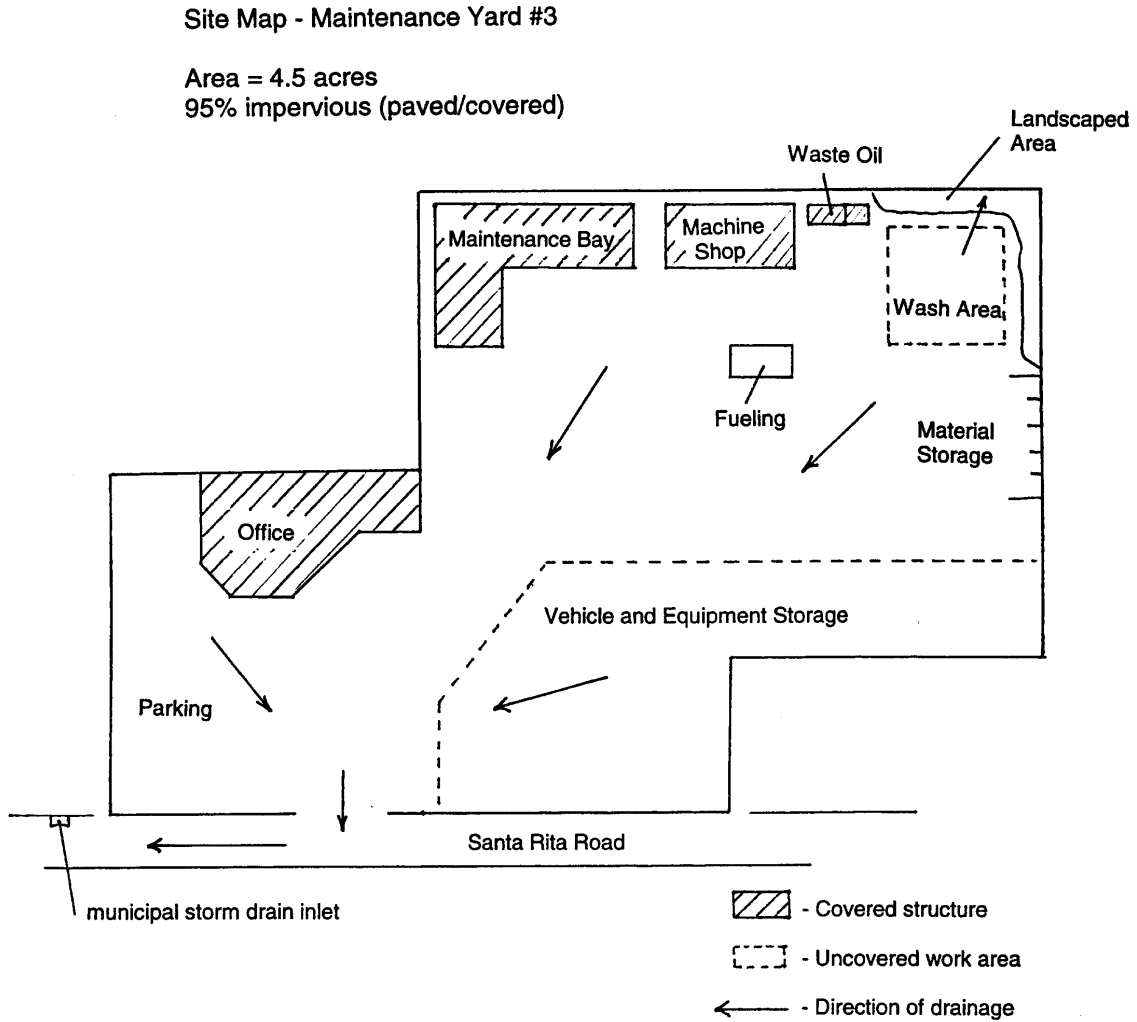


Figure 1
Site Map

Attachment F1
Example Pollution Prevention Plan For A Fleet Maintenance Facility

F1.5 LIST OF SIGNIFICANT MATERIALS

Table 1 describes materials that are handled and stored at the Maintenance Yard #3 facility:

<i>Table 1: Significant Materials</i>		
<i>Material</i>	<i>Handling and Storage Location</i>	<i>Typical Quantity/ Frequency</i>
Gasoline	Center of yard at fueling area	250 gal/day
Diesel fuel	Center of yard at fueling area	200 gal/day
Motor oil	North section of yard in Maintenance Bay	90 gal/wk
Used motor oil	North section of yard in Used Oil Storage Area	30 gal/wk
Lubricants	North section of yard in Maintenance Bay	15 gal/mo
Brake fluid	North section of yard in Maintenance Bay	40 gal/wk
Hydraulic fluid	North section of yard in Maintenance Bay	5 gal/day
Adhesives and sealants	North section of yard in Material Storage Area	10 gal/mo
Antifreeze	North section of yard in Maintenance Bay	30 gal/day
Used Antifreeze	North section of yard in the Used Antifreeze Storage Area	10 gal/day
Solvents	North section of yard in Chemical Storage Area	50 lb/wk
Detergents	North section of yard in Chemical Storage Area	40 lb/wk
Paint	North section of yard in Chemical Storage Area	20 gal/mo
Concrete	East section of yard in Raw Materials Area	1 ton/mo
Gravel	East section of yard in Raw Materials Area	200 lb/wk
Sand	East section of yard in Raw Materials Area	250 lb/wk
Aggregate	East section of yard in Raw Materials Area	100 lb/wk
Pesticides and herbicides	North section of yard in Chemical Storage Area	85 gal/mo
Fertilizers	North section of yard in Chemical Storage Area	100 lb/wk
Soil Amendments	North section of yard in Chemical Storage Area	50 lb/wk

Attachment F1
Example Pollution Prevention Plan For A Fleet Maintenance Facility

F1.6 DESCRIPTION OF POTENTIAL POLLUTANT SOURCES

Table 2 describes potential pollutant sources at the Maintenance Yard #3 facility:

<i>Table 2: Potential Pollutant Sources</i>		
Area / Activity	Pollutant Source	Pollutant
Vehicle and Equipment Fueling performed in the center of the yard at the fueling area; containing both unleaded and diesel fuel for smaller vehicles and large equipment. Both pumps in the fueling area are covered by a raised roof.	Spills caused by topping off fuel tanks	gasoline
	Spills and leaks during deliveries	fuel, oil
	Hosing or washing down fuel area.	fuel, oil
	Rainfall running onto and off of fueling area	fuel, oil
Vehicle and Equipment Maintenance performed at the Maintenance Bay Building in the northwest section of the yard. Activities include fluid changes, vehicle repairs, equipment repairs, and other necessary maintenance.	Vehicle fluid spills or leaks	transmission fluids, luring materials, radiator fluids, etc.
	Container spills or leaks	solvents, degreasers, other cleansers
Vehicle and Equipment Washing performed in the northeast section of the yard. Washing Area is uncovered and not bermed.	Washing particulates and debris off vehicles and equipment	sediment, metals, toxic materials, vehicle fluids
Material, Chemical, Vehicle and Equipment Storage located at the north and east sections of the yard. All areas are covered. See Table 1 for yard materials stored.	Container spills or leaks	antifreeze, oil, pesticides, herbicides, solvents, etc.
	Vehicle and equipment leaks	gasoline, oil

F1.7 ASSESSMENT OF POTENTIAL POLLUTANT SOURCES

Vehicle and Equipment Fueling is a potential source of stormwater pollution at the Maintenance Yard #3 facility. Stormwater run-on has the potential to wash away any spills or leaked fluids located at the fueling area and subsequently drain onto the street and into the storm drain. Pollutants located at the fueling area include oil and gasoline (unleaded and diesel). With the washing area currently northeast and upgrade of the fueling area, pollutants may be carried via wash water flows to the storm drain in a non-stormwater discharge.

Vehicle and Equipment Maintenance is a minimal potential source of stormwater pollution. Vehicle and equipment fluids are handled and changed in the Maintenance Bay and may

Example Pollution Prevention Plan For A Fleet Maintenance Facility

eventually flow into the storm drain only if staff cleans the bay area with the use of water hose. Maintenance pollutants include transmission and radiator fluids, solvents, degreasers, as well as gasoline.

Vehicle and Equipment Washing has a high pollutant potential as alluded to above. Without a bermed area or covered structure for this activity, non-stormwater discharges from washing may flow south-southwest, crossing the fueling area, concentrating pollutant flow even more. Pollutants from washing include sediment, metals, toxic materials, and vehicle fluids such as oil and gasoline.

Material, Chemical, Vehicle and Equipment Storage also has a potential for stormwater pollution. Particularly, vehicles and equipment, stored outside and uncovered, are susceptible to leaking. Rainfall at the facility has the potential to wash leaked fluids into the storm drain system. Material and chemical storage at the facility are covered and carefully protected, minimizing the potential for any stormwater pollution.

Example Pollution Prevention Plan For A Fleet Maintenance Facility

F1.8 STORMWATER BEST MANAGEMENT PRACTICES

Table 3 describes applicable best management practices for the Maintenance Yard #3 facility:

<i>Table 3: Applicable Best Management Practices</i>			
<i>Area / Activity</i>	<i>Pollutant Source</i>	<i>Pollutant</i>	<i>Best Management Practice</i>
Vehicle and Equipment Fueling	Spills caused by topping off fuel tanks	gasoline	<ul style="list-style-type: none"> • Train employees in proper fueling and cleanup procedures • Discourage “topping off” of fuel tanks • Install “shut-off” valves on nozzles • Use adsorbent materials on spills as opposed to hosing down • Install covered spill kits next to fueling area
	Spills and leaks during deliveries	fuel, oil	
	Hosing or washing down fuel area.	fuel, oil	
	Rainfall running onto and off of fueling area	fuel, oil	
Vehicle and Equipment Maintenance	Vehicle fluid spills or leaks	transmission fluids, luring materials, radiator fluids, etc.	<ul style="list-style-type: none"> • Train employees in proper cleanup procedures of spills and leaks • Keep equipment clean, disallowing excessive grease/oil buildup • Use drip pans for any leaking vehicle/equipment • Complete all maintenance in proper location (covered) • Sweep up daily • Install spill kits in Maintenance Bay
	Container spills or leaks	solvents, degreasers, other cleansers	
Vehicle and Equipment Washing	Washing vehicle particulates and debris off	sediment, metals, toxic materials, vehicle fluids	<ul style="list-style-type: none"> • Wash vehicles and equipment at an off-site commercial washing location whenever possible • If on-site, direct wash water towards surrounding, existing vegetation • Evaluate the feasibility of constructing a bermed or covered wash area draining to the sanitary sewer
	Washing equipment particulates and debris off	sediment, metals, toxic materials, vehicle fluids	
Material, Chemical, Vehicle and Equipment Storage	Container spills or leaks	antifreeze, oil, pesticides, herbicides, solvents, etc.	<ul style="list-style-type: none"> • Store materials in enclosed or covered areas
	Vehicle and equipment leaks	gasoline, oil	<ul style="list-style-type: none"> • Use drip pans underneath leaking vehicles and equipment

ATTACHMENT F2

**SUGGESTED BMPs FOR VEHICLE MAINTENANCE/
MATERIAL STORAGE FACILITIES**

Attachment F2

Suggested BMPs for Vehicle Maintenance/Material Storage Facilities

The following best management practices (BMPs) were adapted from USEPA's *Storm Water Multi-Sector General Permit for Industrial Activities* (September 1995) and include additional guidance on using treatment controls. Although they were developed for industrial facilities, they serve as good general guidance for vehicle maintenance/material storage facilities.

F2.1 VEHICLE MAINTENANCE FACILITIES

F2.1.1 Fueling

- Use spill and overflow protection.
- Minimize run-on of stormwater into the fueling area by grading the area such that stormwater only runs off.
- Reduce exposure of the fuel area to stormwater by covering the area.
- Use dry cleanup methods for fuel area rather than hosing the fuel area down.
- Use proper petroleum spill control.
- Perform preventive maintenance on storage tanks to detect potential leaks before they occur.
- Inspect the fueling area to detect problems before they occur.
- Train employees on proper fueling techniques.

F2.1.2 Vehicle and Equipment Maintenance

- Maintain an organized inventory of materials used in the maintenance shop.
- Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly.
- Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries).
- Drain oil filters before disposal or recycling.
- Drain and contain all fluids from wrecked vehicles and "parts" cars.
- Store cracked batteries in a nonleaking secondary container.
- Promptly transfer used fluids to the proper container; do not leave full drip pans or other open containers around the shop. Empty and clean drip pans and containers.
- Do not pour liquid waste down floor drains, sinks, or outdoor storm drain inlets.

Suggested BMPs for Vehicle Maintenance/Material Storage Facilities

- Plug floor drains that are connected to the storm or sanitary sewer. Alternatively, install a sump that is pumped regularly.
- Inspect the maintenance area regularly for proper implementation of control measures.
- Train employees on proper waste control and disposal procedures.

F2.1.3 Outdoor Vehicle and Equipment Storage and Parking

- Use drip pans under all vehicles and equipment waiting for maintenance.
- Cover the storage area with a roof.
- Inspect the storage yard for filling drip pans and other problems regularly.
- Train employees on procedures for storage and inspection items.

F2.1.4 Painting Areas

- Keep paint and paint thinner away from traffic areas to avoid spills.
- Spray paint in an Occupational Safety and Health Act (OSHA) approved hood.
- Use effective spray equipment that delivers more paint to the target and less over-spray.
- Avoid sanding in windy weather and collect and dispose of waste properly.
- Recycle paint, paint thinner, and solvents.
- Inspect painting procedures to ensure that they are conducted properly.
- Train employees on proper sanding, painting, and spraying techniques.

F2.1.5 Vehicle or Equipment Washing Areas

- Avoid washing parts or equipment outside.
- Use phosphate-free biodegradable detergents.
- Designate an area for cleaning activities.
- Contain and recycle washwaters.
- Ensure that washwaters drain well.
- Inspect cleaning area regularly.
- Train employees on proper washing procedures.

Attachment F2

Suggested BMPs for Vehicle Maintenance/Material Storage Facilities

F2.1.6 Liquid Storage in Above Ground Storage

- Maintain good integrity of all storage containers.
- Install safeguards (such as diking or berming) against accidental releases at the storage area.
- Inspect storage tanks to detect potential leaks and perform preventive maintenance.
- Inspect piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks.
- Train employees on proper filling and transfer procedures.

F2.1.7 Improper Connections to Storm Drain

- Plug all floor drains connected to storm drain or if connection is unknown. Alternatively, install a sump that is pumped regularly.
- Perform smoke or dye testing to determine if interconnections exist between sanitary sewer system and storm drain system.
- Update facility schematics to accurately reflect all plumbing connections.
- Install a safeguard against vehicle washwaters entering the storm drain unless permitted.
- Maintain and inspect the integrity of all underground storage tanks; replace when necessary.
- Train employees on proper disposal practices for all materials.

F2.1.8 Treatment Controls

- In areas where the concentration of oil and grease-related compounds are high, consider using treatment controls in addition to source controls. These areas may include marine ports, airfields, and fleet vehicle maintenance and washing facilities.
- Determine appropriate treatment controls based on the amount and type of potential pollutant. Controls may include oil/water separators, media filtration, biofilters, and retention basins.
- Implement appropriate maintenance schedules for all treatment controls to retain their pollutant removal effectiveness.

F2.2 MATERIAL STORAGE AREAS

F2.2.1 Outdoor Unloading and Loading

- Confine loading/unloading activities to a designated area.
- Consider performing loading/unloading activities indoors or in a covered area.
- Consider covering loading/unloading area with permanent cover (e.g., roofs) or temporary cover (e.g., tarps).
- Close storm drains during loading/unloading activities in surrounding areas.
- Avoid loading/unloading materials in the rain.
- Inspect the unloading/loading areas to detect problems before they occur.
- Inspect all containers prior to loading/unloading of any raw or spent materials.
- Consider berming, curbing, or diking loading/unloading areas.
- Install dead-end sumps where spilled materials could be directed.
- Place drip pans under hoses.
- Use dry clean-up methods instead of washing the areas down.
- Train employees on proper loading/unloading techniques and spill prevention and response.

F2.2.2 Outdoor Material Storage

- Confine storage of materials, parts, and equipment to designated areas.
- Consider secondary containment using curbing, berming, or diking all liquid storage areas.
- Train employees on proper waste control and disposal.
- Train employees in spill prevention and response.
- Consider covering tanks.
- Ensure that all containers are closed (e.g., valves shut, lids sealed, caps closed).
- Wash and rinse containers indoors before storing them outdoors.
- If outside or in covered areas, minimize run on of stormwater by grading the land to divert flow away from containers.
- Perform leak detection and container integrity testing.
- Direct runoff to onsite retention pond.

Suggested BMPs for Vehicle Maintenance/Material Storage Facilities

- Inventory all raw and spent materials.
- Clean around vents and stacks.
- Place tubs around vents and stacks to collect particulates.
- Inspect air emission control systems (e.g., baghouses) regularly, and repair or replace when necessary.
- Store wastes in covered, leak proof containers (e.g., dumpsters, drums).
- Consider shipping all wastes to offsite landfills or treatment facilities.
- Ensure hazardous waste disposal practices are performed in accordance with federal, state, and local requirements.