

STORM WATER POLLUTION PREVENTION PLAN

FOR

WOODFIN SUITE HOTEL  
Emeryville, California

PREPARED FOR:

Hardage Suite Hotels  
12730 High Bluff Drive  
Suite 250  
San Diego, CA 92130

May 20, 1998

98 JUN -4 PM 2:58  
ENVIRONMENTAL  
PROTECTION

**STORM WATER POLLUTION PREVENTION PLAN**  
Woodfin Suites Hotel, Emeryville

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\*\*The "Notice of Intent" (NOI) must be filed by the owner before construction begins. The NOI should be mailed to the following address with appropriate annual fee:

**State Water Resources Control Board  
Division of Water Quality  
Attn: Storm Water Permit Unit  
P.O. Box 1977  
Sacramento, CA 95812-1977  
916/657-0757**





**NOTICE OF INTENT**  
TO COMPLY WITH THE TERMS OF THE  
GENERAL PERMIT TO DISCHARGE STORM WATER  
ASSOCIATED WITH CONSTRUCTION ACTIVITY (WQ Order No. 92-08-DWO)

<b>MARK ONLY ONE ITEM</b>	1. <input type="checkbox"/> Ongoing Construction	3. <input type="checkbox"/> Change of Information
	2. <input checked="" type="checkbox"/> New Construction	WDID # _____

**I. OWNER**

Name <u>HARDAGE SUITE HOTELS, LLC</u>		Contact Person <u>CHUCK PENDRY</u>	
Local Mailing Address <u>12730 HIGH BLUFF DRIVE, SUITE 250</u>		Title <u>CHIEF OPER. OFFICER</u>	
City <u>SAN DIEGO</u>	State <u>CA</u>	Zip <u>92130</u>	Phone <u>619/794-2338</u>

**II. CONSTRUCTION SITE INFORMATION**

A. Developer <u>HARDAGE SUITE HOTELS, LLC</u>		Contact Person <u>CHUCK HIBERT</u>	
Local Mailing Address <u>5800 SHELLMOUND STREET</u>		Title <u>SITE PROJECT MANAGER</u>	
City <u>EMERYVILLE</u>	State <u>CA</u>	Zip <u>94608</u>	Phone _____
B. Site Address <u>5800 SHELLMOUND STREET</u>		County <u>ALEMEDA</u>	
City <u>EMERYVILLE</u>	State <u>CA</u>	Zip <u>94608</u>	Phone _____
C. Is the construction site part of a larger common plan of development or sale? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes, name of plan or development _____	
D. Construction commencement date _____ M M D D Y Y		E. Projected construction completion date _____ M M D D Y Y	

**III. BILLING ADDRESS**

Send to: <input checked="" type="checkbox"/> OWNER <input type="checkbox"/> DEVELOPER <input type="checkbox"/> OTHER (Enter information at right)	Name <u>HARDAGE SUITE HOTELS, LLC</u>		
	Mailing Address <u>12730 HIGH BLUFF DRIVE, SUITE 250</u>		
	City <u>SAN DIEGO</u>	State <u>CA</u>	Zip <u>94608</u>

**IV. RECEIVING WATER INFORMATION**

A. Does your construction site's storm water discharge to: (Check one)	
1. <input checked="" type="checkbox"/> Storm drain system - Enter system owners name <u>City of Emeryville</u>	
2. <input type="checkbox"/> Directly to waters of U.S. (e.g., river, lake, creek, ocean)	
3. <input type="checkbox"/> Indirectly to waters of U.S.	
B. Name of closest receiving water <u>San Francisco Bay</u>	

**STATE USE ONLY**

WDID: _____	Regional Board Office: _____	Date Permit Issued: _____
NPDES Permit Number: <u>CA</u> _____	Order Number: _____	Fee Amount Received: \$ _____
		Date NOI Received: _____

**V. TYPE OF CONSTRUCTION ( Check all that apply)**

Residential     
  Commercial     
  Industrial     
  Reconstruction     
  Transportation  
 Utility     
  Hotel  
 Other (Please List)

**VI. MATERIAL HANDLING/MANAGEMENT PRACTICES**

A. Types of materials that will be handled and/or stored at the site: (Check all that apply)

Solvents     
  Metal     
  Petroleum Products     
  Plated Products  
 Asphalt/Concrete     
  Hazardous Substances     
  Paints     
  Wood Treated Products  
 Other (Please list)

B. Identify proposed management practices to reduce pollutants in storm water discharges: (Check all that apply)

Oil/Water Separator     
  Erosion Controls     
  Sedimentation Controls     
  Overhead Coverage  
 Detention/Desiltation Pond     
  Other (Please list)

**VII. SITE INFORMATION**

A. Total size of construction site: _____ 3.2 Acres	B. Percent of site impervious: (Including rooftops) Before construction <u>100</u> %                      After construction <u>97</u> %
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**VIII. REGULATORY STATUS**

Is the site subject to a locally approved erosion/sediment control plan?   
 Yes   
 No

If yes, name of local agency \_\_\_\_\_

**IX. CERTIFICATION**

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 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. 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.

Printed Name: C. L. Gilbert  
 Signature: [Signature]      Date: 5/29/98  
 Title: Project Manager

## Worksheet 2. Project Site Map Requirements

[X] Topographic Base Map Attached? Map shows:

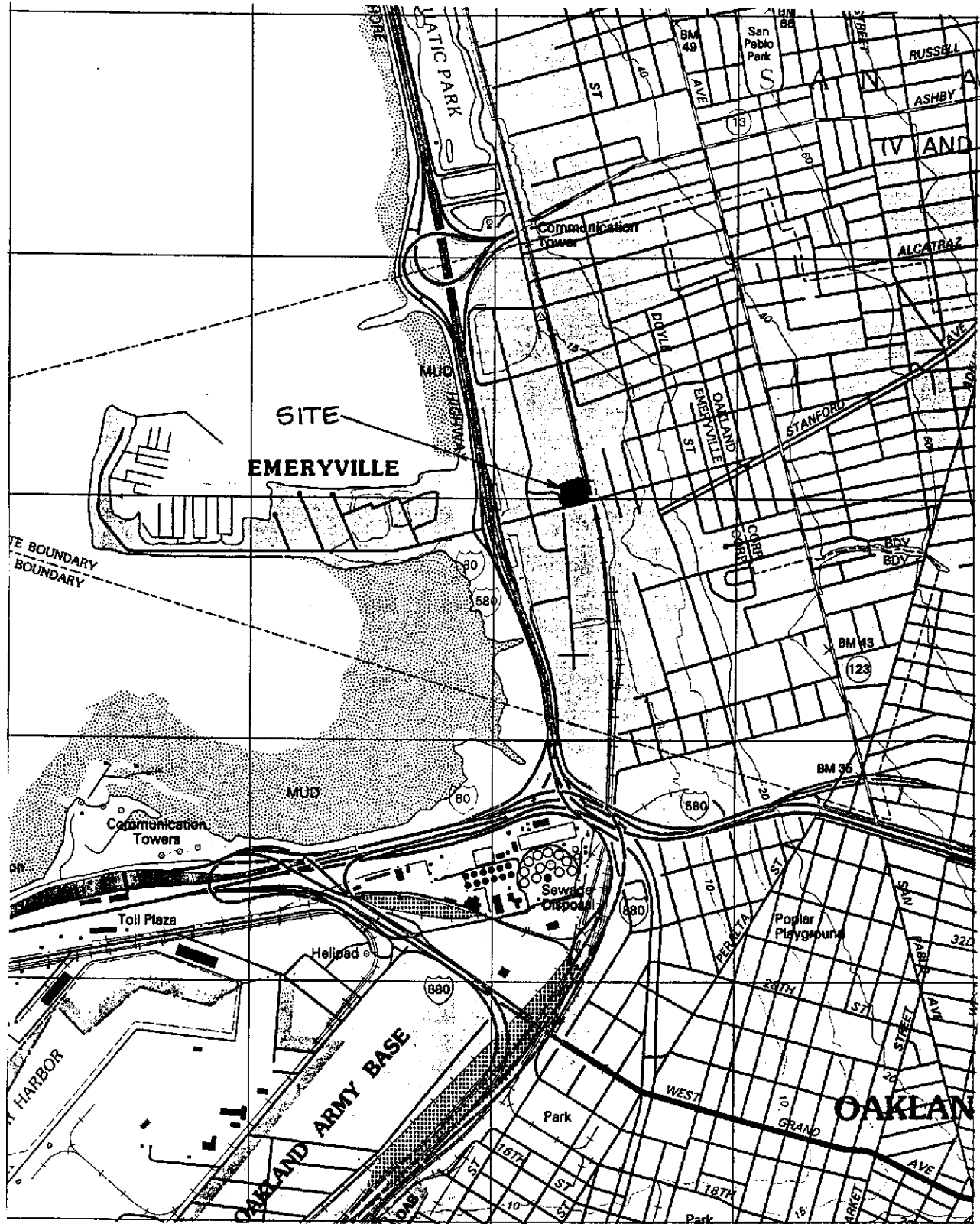
- [X] An area extending one quarter mile beyond the property boundaries of the construction site. **Construction Area = 3.2 acres.**
- [X] Nearby surface water bodies, including water courses, wetlands, springs and wells.
- [X] The location(s) where storm water drains onto or off of the property.
- [ ] Boundary of off-site areas that drain into the construction site.

[X] Site Maps attached? Maps show: **See Erosion Control Plan - C-5.**

- [X] Temporary Storm water structures used during construction.  
**Gravel filled bag berm and storm drain inlet protection.**
- [ ] Areas used to store soils and construction waste.
- [X] Areas of cut and fill.
- [X] Drainage patterns and slopes anticipated after major grading activities, including the location of storm water structures to be constructed on the property (e.g. storm drain, detention pods, channels).
- [ ] Areas of soil disturbance
- [ ] Locations of potential soil erosion requiring BMPs during construction.
- [X] Existing and proposed paved areas and buildings.

**Existing Areas: 99 Percent of site      Proposed Area: 97 Percent of site**

- [X] Estimated runoff coefficient: **Before construction: .85    After construction: .85**
- [ ] Locations where storm water structures and controls will be built to control storm water pollution after construction is complete.
- [ ] The boundary of the drainage area upstream of each location where storm water leaves the property.
- [ ] Any vehicles storage and service area.
- [ ] Areas of existing vegetation.



SCALE: 1" = 2000'

OAKLAND WEST, CA

1993

DMA 1559 IV SE-SERIES V895

**Certification**

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 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.

Agency: Hardage Suite Hotels

Name: Chuck Hibert

Title: Site Project Manager

Signature: \_\_\_\_\_



Date: May 20, 1998

This SWPPP was prepared by:

Agency: Austin Design Group

Name: Kristin L. Borer

Title: Project Engineer  
PE 57860, Exp. 6/30/98

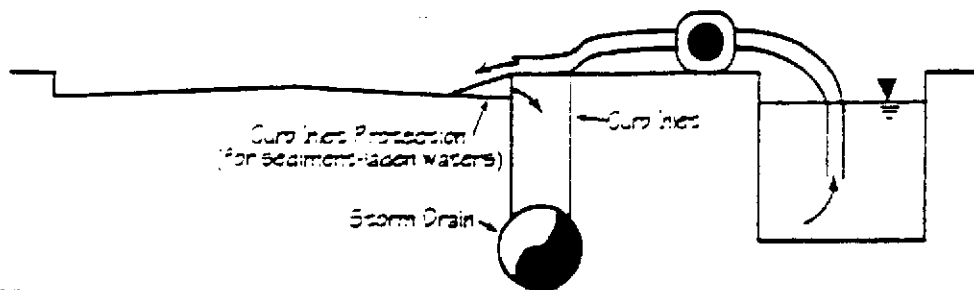
Signature: \_\_\_\_\_



Date: May 20, 1998



## ACTIVITY: DEWATERING OPERATIONS



### DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from dewatering operations by using sediment controls and by testing the groundwater for pollution.

### APPROACH

There are two general classes of pollutants that may result from dewatering operations: sediment, and toxics and petroleum products. A high sediment content in dewatering discharges is common because of the nature of the operation. On the other hand, toxics and petroleum products are not commonly found in dewatering discharges unless, the site or surrounding area has been used for light or heavy industrial activities, or the area has a history of groundwater contamination. The following steps will help reduce storm water pollution from dewatering discharges:

#### Sediment

- Use sediment controls to remove sediment from water generated by dewatering (See Sediment Trap (ESC 55) and Sediment Basin (ESC 56) in Chapter 5).
- Use filtration to remove sediment from a sediment trap or basin. Filtration can be achieved with:
  - Sump pit and a perforated or slit standpipe with holes and wrapped in filter fabric. The standpipe is surrounded by stones which filters the water as it collects in the pit before being pumped out. Wrapping the standpipe in filter fabric may require an increased suction inlet area to avoid clogging and unacceptable pump operation.
  - Floating suction hose to allow cleaner surface water to be pumped out.

#### Toxics and Petroleum Products

- In areas suspected of having groundwater pollution, sample the groundwater near the excavation site and have the water tested for known or suspected pollutants at a certified laboratory. Check with the Regional Water Quality Control Board and the local wastewater treatment plant for their requirements for dewatering, additional water quality tests, and disposal options.
- With a permit from the Regional Water Quality Control Board, you may be able to recycle/reuse pumped groundwater for landscape irrigation, or discharge to the storm sewer. With a permit from the local agency, you may be able to treat pumped groundwater and discharge it to the municipal wastewater treatment plant via the sanitary sewer.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA40, Employee/Subcontractor Training.

### Objectives

**Housekeeping Practices**

- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

**CA1**



## CONTRACTOR ACTIVITY: DEWATERING OPERATIONS (Continue)

### REQUIREMENTS

- Costs (Capital, O&M)
  - Sediment controls are low cost measures.
  - Treatment and/or discharge of polluted groundwater can be quite expensive.
- Maintenance
  - Maintain sediment controls and filters in good working order. (See Chapter 5 for details)
  - Inspect excavated areas daily for signs of contaminated water as evidenced by discoloration, oily sheen, or odors.

### LIMITATIONS

- The presence of contaminated water may indicate contaminated soil as well. See CA22 (Contaminated Soil Management) in this chapter for more information.

### REFERENCES

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

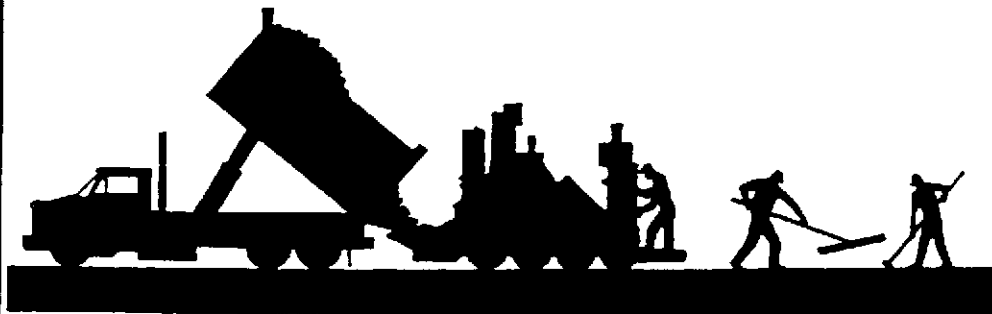
Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

CA1



# ACTIVITY: PAVING OPERATIONS

Graphic: North Central Texas COG, 1993



## Objectives

**Housekeeping Practices**

Contain Waste

Minimize Disturbed Areas

Stabilize Disturbed Areas

Protect Slopes/Channels

Control Site Perimeter

Control Internal Erosion

## DESCRIPTION

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runoff and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

## APPROACH

- Avoid paving during wet weather.
- Store materials away from drainage courses to prevent storm water runoff (see CA10 Material Delivery and Storage).
- Protect drainage courses, particularly in areas with a grade, by employing BMPs to divert runoff or trap/filter sediment (see Chapter 5).
- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use. Clean up spills with absorbent materials rather than burying. See CA32 (Vehicle and Equipment Maintenance) and CA12 (Spill Prevention and Control) in this chapter.
- Cover catch basins and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- If paving involves portland cement concrete, see CA23 (Concrete Waste Management) in this chapter.
- If paving involves asphaltic concrete, follow these steps:
  - Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks by sweeping. Properly dispose of this waste by referring to CA20 (Solid Waste Management) in this chapter.
  - Old asphalt must be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.
  - If paving involves on-site mixing plant, follow the storm water permitting requirements for industrial activities.
- Train employees and subcontractors.

## REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Inspect employees and subcontractors to ensure that measures are being followed.
  - Keep ample supplies of drip pans or absorbent materials on-site.

## LIMITATIONS

- There are no major limitations to this best management practice.

## Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

## Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

# CA2



Best Management Practices

## CONTRACTOR ACTIVITY: PAVING OPERATIONS (Continue)

### REFERENCES

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

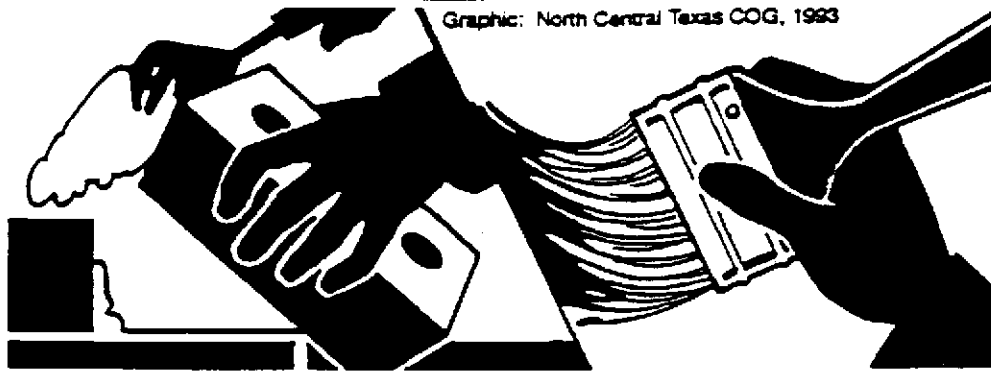
Hot-mix Asphalt Paving Handbook, U.S. Army Corps of Engineers, AC 150/5370-14, Appendix I, July 1991.

CA2



# ACTIVITY: STRUCTURE CONSTRUCTION AND PAINTING

Graphic: North Central Texas COG, 1993



## Objectives

**Housekeeping Practices**

Contain Waste

Minimize Disturbed Areas

**Stabilize Disturbed Areas**

Protect Slopes/Channels

Control Site Perimeter

Control Internal Erosion

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from structure construction and painting by enclosing or covering or berming building material storage areas, using good housekeeping practices, using safer alternative products, and training employees and subcontractors.

## APPROACH

- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep the area.
- Use soil erosion control techniques if bare ground is exposed (See Chapter 5).
- Buy recycled or less hazardous products to the maximum extent practicable.
- Conduct painting operations consistent with local air quality and OSHA regulations.
- Properly store paints and solvents. See CA10 (Material Delivery and Storage) in this chapter.
- Properly store and dispose waste materials generated from the activity. See the waste management BMPs (CA20 to CA24) in this chapter.
- Recycle residual paints, solvents, lumber, and other materials to the maximum extent practicable.
- Make sure that nearby storm drains are well marked to minimize the chance of inadvertent disposal of residual paints and other liquids.
- Clean the storm drain system in the immediate construction area after construction is completed.
- Educate employees who are doing the work.
- Inform subcontractors of company policy on these matters and include appropriate provisions in their contract to make certain proper housekeeping and disposal practices are implemented.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA40, Employee/Subcontractor Training.

## REQUIREMENTS

- Costs (Capital, O&M)
  - These BMPs are generally of low to moderate cost.
- Maintenance
  - Maintenance should be minimal.

## LIMITATIONS

- Safer alternative products may not be available, suitable, or effective in every case.
- Hazardous waste that cannot be re-used or recycled must be disposed of by a licensed hazardous waste hauler.

## Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

## Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

# CA3



## ACTIVITY: STRUCTURE CONSTRUCTION AND PAINTING (Continue)

- Be certain that actions to help storm water quality are consistent with Cal- and Fed-OSHA and air quality regulations.

Construction and painting activities can generate pollutants that can reach storm water if proper care is not taken. The sources of these contaminants may be solvents, paints, paint and varnish removers, finishing residues, spent thinners, soap cleaners, kerosene, asphalt and concrete materials, adhesive residues, and old asbestos insulation. For specific information on some of these wastes see the following BMPs in this chapter:

- CA20 Solid Waste.
- CA21 Hazardous Waste, and
- CA23 Concrete Waste.

More specific information on structure construction practices is listed below.

### Erosion and Sediment Control

If the work involves exposing large areas of soil or if old buildings are being torn down and not replaced in the near future, employ the appropriate soil erosion and control techniques described in Chapter 5.

### Storm/Sanitary Sewer Connections

Carefully install all plumbing and drainage systems. Cross connections between the sanitary and storm drain systems, as well as any other connections into the drainage system from inside a building, are illegal. Color code or flag pipelines on the project site to prevent such connections, and train construction personnel.

### Painting

Local air pollution regulations may, in many areas of the state, specify painting procedures which if properly carried out are usually sufficient to protect storm water quality. These regulations may require that painting operations be properly enclosed or covered to avoid drift. Use temporary scaffolding to hang drop cloths or draperies to prevent drift. Application equipment that minimizes overspray also helps. When using sealants on wood, pavement, roofs, etc, quickly clean up spills. Remove excess liquid with absorbent material or rags.

If painting requires scraping or sand blasting of the existing surface, use a drop cloth to collect most of the chips. Dispose the residue properly. If the paint contains lead or tributyl tin, it is considered a hazardous waste. Refer to the waste management BMPs in this chapter for more information.

Mix paint indoors, in a containment area, or in a flat unpaved area not subject to significant erosion. Do so even during dry weather because cleanup of a spill will never be 100% effective. Dried paint will erode from sloped surfaces and be washed away by storms. If using water based paints, clean the application equipment in a sink that is connected to the sanitary sewer or in a containment area where the dried paint can be readily removed. Properly store leftover paints if they are to be kept for the next job, or dispose of properly.

### Roof work

When working on roofs, if small particles have accumulated in the gutter, either sweep out the gutter or wash the gutter and trap the particles at the outlet of the downspout. A sock or geofabric placed over the outlet may effectively trap the materials. If the downspout is lined tight, place a temporary plug at the first convenient point in the storm drain and pump out the water with a vacor truck, and clean the catch basin sump where you placed the plug.

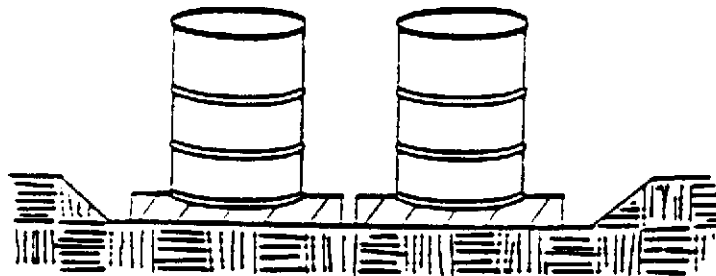
### REFERENCES

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

CA3



## ACTIVITY: MATERIAL DELIVERY AND STORAGE



### Objectives

#### Housekeeping Practices

- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

### DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from material delivery and storage by minimizing the storage of hazardous materials on-site, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see CA11 (Material Use), or CA12 (Spill Prevention and Control). For information on wastes, see the waste management BMPs in this chapter.

### APPROACH

The following materials are commonly stored on construction sites:

- Soil,
- Pesticides and herbicides,
- Fertilizers,
- Detergents,
- Plaster or other products,
- Petroleum products such as fuel, oil, and grease, and
- Other hazardous chemicals such as acids, lime, glues, paints, solvents, and curing compounds.

Storage of these materials on-site can pose the following risks:

- Storm water pollution,
- Injury to workers or visitors,
- Groundwater pollution, and
- Soil contamination.

Therefore, the following steps should be taken to minimize your risk:

- Designate areas of the construction site for material delivery and storage.
  - Place near the construction entrances, away from waterways
  - Avoid transport near drainage paths or waterways
  - Surround with earth berms (see ESC30, Earth Dike.)
  - Place in an area which will be paved
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA40, Employee/Subcontractor Training.
- Keep an accurate, up-to-date inventory of materials delivered and stored on-site.
- Keep your inventory down.

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

# CA10



## ACTIVITY: MATERIAL DELIVERY AND STORAGE (Continue)

- Minimize hazardous materials on-site storage.
- Handle hazardous materials as infrequently as possible.
- During the rainy season, consider storing materials in a covered area. Store materials in secondary containments such as an earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, in secondary containment.
- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids and to reduce corrosion.
- Try to keep chemicals in their original containers, and keep them well labeled.
- Train employees and subcontractors.
- Employees trained in emergency spill cleanup procedures should be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove materials and any contaminated soil (See CA22). If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

### REQUIREMENTS

- Cost (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Keep the designated storage area clean and well organized.
  - Conduct routine weekly inspections and check for external corrosion of material containers.
  - Keep an ample supply of spill cleanup materials near the storage area.

### LIMITATIONS

- Storage sheds often must meet building and fire code requirements.

### REFERENCES

Best Management Practices and Erosion Control Manual for Construction Sites: Flood Control District of Maricopa County, AZ, September 1992.

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper, USEPA, April 1992.

Storm Water Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

CA10





# ACTIVITY: MATERIAL USE

Graphic: North Central Texas COG, 1993



## Objectives

**Housekeeping Practices**

- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from material use by using alternative products, minimizing hazardous material use on-site, and training employees and subcontractors.

## APPROACH

The following materials are commonly used on construction sites:

- Pesticides and herbicides.
- Fertilizers.
- Detergents.
- Plaster and other products.
- Petroleum products such as fuel, oil, and grease, and
- Other hazardous chemicals such as acids, lime, glues, paints, solvents, and curing compounds.

Use of these materials on-site can pose the following risks:

- Storm water pollution.
- Injury to workers or visitors.
- Groundwater pollution, and
- Soil contamination.

Therefore, the following steps should be taken to minimize your risk:

- Use less hazardous, alternative materials as much as possible.
- Minimize use of hazardous materials on-site.
- Use materials only where and when needed to complete the construction activity.
- Follow manufacturer's instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Personnel who use pesticides should be trained in their use. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct on-site inspections.
- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydroseeding. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried off-site by runoff. Do not apply these chemicals just before it rains.
- Train employees and subcontractors in proper material use.

## Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

## Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

**CA11**



## ACTIVITY: MATERIAL USE (Continue)

### REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Maintenance of this best management practice is minimal.

### LIMITATIONS

- Alternative materials may not be available, suitable, or effective in every case.

### REFERENCES

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

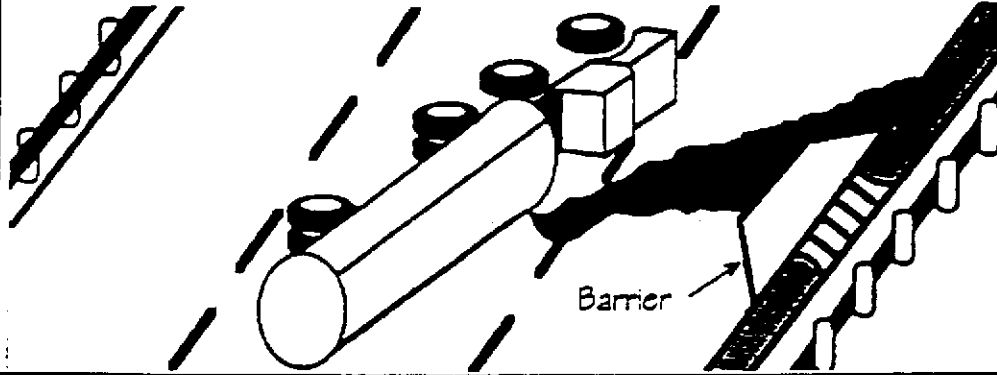
Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

CA11



## ACTIVITY: SPILL PREVENTION AND CONTROL



### Objectives

#### Housekeeping Practices

- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

### DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, CA10 (Material Delivery and Storage) and CA11 (Material Use), also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this chapter.

### APPROACH

The following steps will help reduce the storm water impacts of leaks and spills:

#### Define "Significant Spill"

- Different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.

#### General Measures

- Hazardous materials and wastes should be stored in covered containers and protected from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals.

#### Cleanup

- Clean up leaks and spills immediately.
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this chapter for specific information.

#### Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

## CA12



## ACTIVITY: SPILL PREVENTION AND CONTROL (Continue)

Use the following measures related to specific activities:

### Vehicle and Equipment Maintenance

- If maintenance must occur on-site, use a designated area and/or a secondary containment, located away from drainage courses, to prevent the runoff of storm water and the runoff of spills.
- Regularly inspect on-site vehicles and equipment for leaks, and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment on-site.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use adsorbent materials on small spills rather than hosing down or burying the spill. Remove the adsorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trash cans or dumpsters can leak oil and pollute storm water. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

### Vehicle and Equipment Fueling

- If fueling must occur on-site, use designated areas, located away from drainage courses, to prevent the runoff of storm water and the runoff of spills.
- Discourage "topping-off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/leaks.

### REQUIREMENTS

- Costs (Capital, O&M)
  - - - Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.
- Maintenance
  - Keep ample supplies of spill control and cleanup materials on-site, near storage, unloading, and maintenance areas.
  - Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals on-site.

### LIMITATIONS

- If necessary, use a private spill cleanup company.

### REFERENCES

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

CA12



# ACTIVITY: SOLID WASTE MANAGEMENT

Graphic: North Central Texas COG, 1993



## Objectives

Housekeeping Practices

**Contain Waste**

Minimize Disturbed Areas

Stabilize Disturbed Areas

Protect Slopes/Channels

Control Site Perimeter

Control Internal Erosion

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

## APPROACH

Solid waste is one of the major pollutants resulting from construction. Construction debris includes:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction;
- Packaging materials including wood, paper and plastic;
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces, and masonry products; and
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, and plastic wrappers, and cigarettes.

The following steps will help keep a clean site and reduce storm water pollution:

- Select designated waste collection areas on-site.
- Inform trash hauling contractors that you will accept only water-tight dumpsters for on-site use. Inspect dumpsters for leaks and repair any dumpster that is not water tight.
- Locate containers in a covered area and/or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it's windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Erosion and sediment control devices tend to collect litter. Remove this solid waste promptly.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Salvage or recycle any useful material. For example, trees and shrubs from land clearing can be used as a brush barrier (see ESC53), or converted into wood chips, then used as mulch on graded areas (see ESC11).
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to trash hauling contractor.
- Arrange for regular waste collection before containers overflow.

## Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

## Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

**CA20**



## ACTIVITY: SOLID WASTE MANAGEMENT (Continue)

- If a container does spill, clean up immediately.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.
- Train employees and subcontractors in proper solid waste management.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA-40, Employee/Subcontractor Training.

### REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Collect site trash daily.
  - Inspect construction waste area regularly.
  - Arrange for regular waste collection.

### LIMITATIONS

- There are no major limitations to this best management practice.

### REFERENCES

Best Management Practices and Erosion Control Manual for Construction Sites; Flood Control District of Maricopa County, AZ, September 1992.

Processes, Procedures, and Methods to Control Pollution Resulting from all Construction Activity; USEPA, 430/9-73-007, 1973.

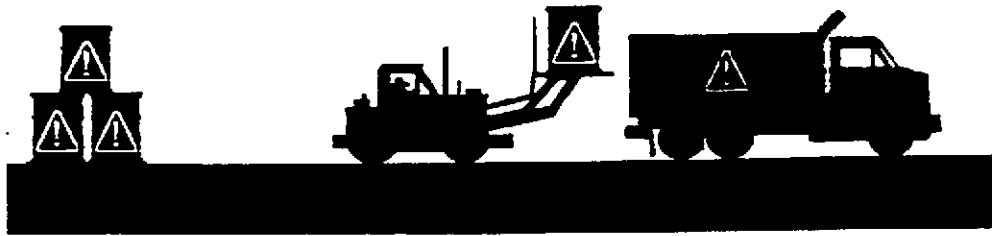
Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

CA20



# ACTIVITY: HAZARDOUS WASTE MANAGEMENT

Graphic: North Central Texas COG, 1993



## Objectives

### Housekeeping Practices

**Contain Waste**

Minimize Disturbed Areas

Stabilize Disturbed Areas

Protect Slopes/Channels

Control Site Perimeter

Control Internal Erosion

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

## APPROACH

Many of the chemicals used on-site can be hazardous materials which become hazardous waste upon disposal. These wastes may include:

- Paints and solvents;
- Petroleum products such as oils, fuels, and grease;
- Herbicides and pesticides;
- Acids for cleaning masonry; and
- Concrete curing compounds.

In addition, sites with existing structures may contain wastes which must be disposed of in accordance with Federal, State, and local regulations. These wastes include:

- Sandblasting grit mixed with lead-, cadmium-, or chromium-based paints;
- Asbestos; and
- PCBs (particularly in older transformers).

The following steps will help reduce storm water pollution from hazardous wastes:

### Material Use

- Use all of the product before disposing of the container.
- Do not remove the original product label, it contains important safety and disposal information.
- Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried off-site by runoff. Do not apply these chemicals just before it rains. People applying pesticides must be certified in accordance with Federal and State regulations.
- Do not clean out brushes or rinse paint containers into the dirt, street, gutter, storm drain, or stream. "Paint out" brushes as much as possible. Rinse water-based paints to the sanitary sewer. Filter and re-use thinners and solvents. Dispose of excess oil-based paints and sludge as hazardous waste.

## Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

## Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

# CA21



## ACTIVITY: HAZARDOUS WASTE MANAGEMENT (Continue)

### Waste Recycling/Disposal

- Select designated hazardous waste collection areas on-site.
- Hazardous materials and wastes should be stored in covered containers and protected from vandalism.
- Place hazardous waste containers in secondary containment.
- Do not mix wastes, this can cause chemical reactions, make recycling impossible, and complicate disposal.
- Recycle any useful material such as used oil or water-based paint.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Arrange for regular waste collection before containers overflow.
- Make sure that hazardous waste (e.g. excess oil-based paint and sludges) is collected, removed, and disposed of only at authorized disposal areas.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA40, Employee/Subcontractor Training.

### Training

- Train employees and subcontractors in proper hazardous waste management.
- Warning signs should be placed in areas recently treated with chemicals.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- If a container does spill, clean up immediately.

### REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Inspect hazardous waste receptacles and area regularly.
  - Arrange for regular hazardous waste collection.

### LIMITATIONS

- Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.

### REFERENCES

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

Processes, Procedures, and Methods to Control Pollution Resulting from all Construction Activity, USEPA, 430/9-73-007, 1973.

Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

CA21





## ACTIVITY: CONTAMINATED SOIL MANAGEMENT



Source: State of Ohio, 1991

### Objectives

Housekeeping Practices

Contain Waste

Minimize Disturbed Areas

Stabilize Disturbed Areas

Protect Slopes/Channels

Control Site Perimeter

Control Internal Erosion

### DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from contaminated soil and highly acidic or alkaline soils by conducting pre-construction surveys, inspecting excavations regularly, and remediating contaminated soil promptly.

### APPROACH

Contaminated soils may occur on your site for several reasons including:

- Past site uses and activities;
- Detected or undetected spills and leaks; and
- Acid or alkaline solutions from exposed soil or rock formations high in acid or alkaline-forming elements.

Most developers conduct pre-construction environmental assessments as a matter of routine. Recent court rulings holding contractors liable for cleanup costs when they unknowingly move contaminated soil, highlight the need for contractors to confirm that a site assessment is completed before earth moving begins.

The following steps will help reduce storm water pollution from contaminated soil:

- Conduct thorough site planning including pre-construction geologic surveys.
- Look for contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris.
- Prevent leaks and spills to the maximum extent practicable. Contaminated soil can be expensive to treat and/or dispose of properly. However, addressing the problem before construction is much less expensive than after the structures are in place.
- Test suspected soils at a certified laboratory.
- If the soil is contaminated, work with the local regulatory agencies to develop options for treatment and/or disposal.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA-40, Employee/Subcontractor Training.

### REQUIREMENTS

- Costs (Capital, O&M)
  - Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil can be quite expensive.
- Maintenance
  - Inspect excavated areas daily for signs of contaminated soil.
  - Implement CA12, Spill Prevention and Control, to prevent leaks and spills as much as possible.

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High  Low

## CA22



## ACTIVITY: CONTAMINATED SOIL MANAGEMENT (Continue)

### LIMITATIONS

- Contaminated soils that cannot be treated on-site must be disposed of off-site by a licensed hazardous waste hauler.
- The presence of contaminated soil may indicate contaminated water as well. See CA1 (Dewatering Operations) in this chapter for more information.

### REFERENCES

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

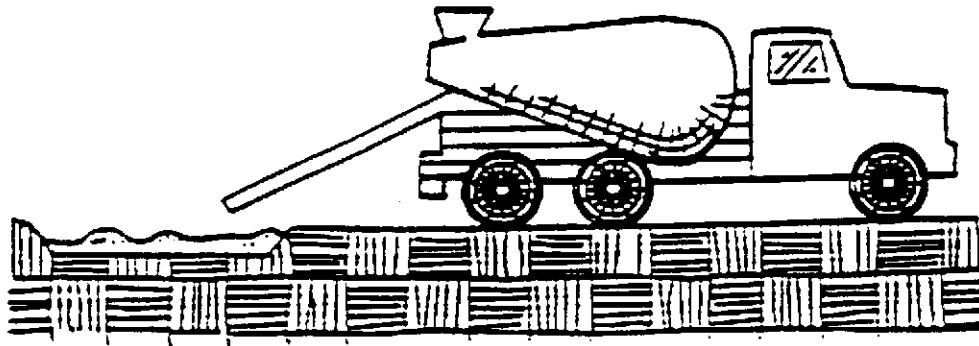
Processes, Procedures, and Methods to Control Pollution Resulting from all Construction Activity; USEPA, 430/9-73-007, 1973.

Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

CA22



## ACTIVITY: CONCRETE WASTE MANAGEMENT



### Objectives

Housekeeping Practices

**Contain Waste**

Minimize Disturbed Areas

Stabilize Disturbed Areas

Protect Slopes/Channels

Control Site Perimeter

Control Internal Erosion

### DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from concrete waste by conducting washout off-site, performing on-site washout in a designated area, and training employees and subcontractors.

### APPROACH

The following steps will help reduce storm water pollution from concrete wastes:

- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete or cement on-site.
- Perform washout of concrete trucks off site or in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped on-site, except in designated areas.
- For on-site washout:
  - locate washout area at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste;
  - wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed of properly.
- When washing concrete to remove fine particles and expose the aggregate, avoid creating runoff by draining the water to a bermed or level area.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stock pile, or dispose in the trash.
- Train employees and subcontractors in proper concrete waste management.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA-40, Employee/Subcontractor Training.

### REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Inspect subcontractors to ensure that concrete wastes are being properly managed.
  - If using a temporary pit, dispose hardened concrete on a regular basis.

### LIMITATIONS

- Off-site washout of concrete wastes may not always be possible.

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

## CA23



## ACTIVITY: CONCRETE WASTE MANAGEMENT (Continue)

### REFERENCES

Best Management Practices and Erosion Control Manual for Construction Sites: Flood Control District of Maricopa County, AZ, July 1992.

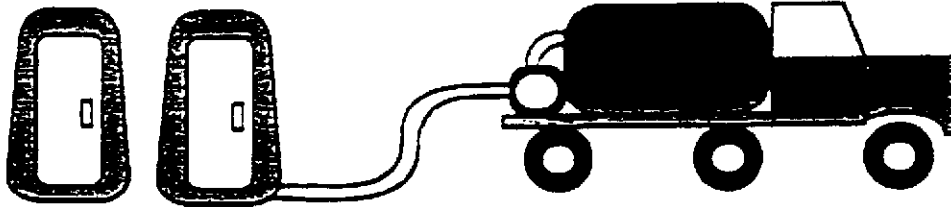
Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

Storm Water Management for Construction Activities. Developing Pollution Prevention Plans and Best Management Practices. EPA 832-R-92005; USEPA, April 1992.

CA23



## ACTIVITY: SANITARY/SEPTIC WASTE MANAGEMENT



### Objectives

Housekeeping Practices

**Contain Waste**

Minimize Disturbed Areas

Stabilize Disturbed Areas

Protect Slopes/Channels

Control Site Perimeter

Control Internal Erosion

### DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from sanitary/septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

### APPROACH

Sanitary or septic wastes should be treated or disposed of in accordance with State and local requirements. These requirements may include:

- Locate sanitary facilities in a convenient location.
- Untreated raw wastewater should never be discharged or buried.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- If using an on-site disposal system (OSDS), such as a septic system, comply with local health agency requirements.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- If discharging to the sanitary sewer, contact the local wastewater treatment plant for their requirements.
- Sanitary/septic facilities should be maintained in good working order by a licensed service.
- Arrange for regular waste collection by a licensed hauler before facilities overflow.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA-40, Employee/Subcontractor Training.

### REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Inspect facilities regularly.
  - Arrange for regular waste collection.

### LIMITATIONS

- There are no major limitations to this best management practice.

### REFERENCES

Best Management Practices and Erosion Control Manual for Construction Sites; Flood Control District of Maricopa County, AZ, September 1992.

Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

Likely to Have Significant Impact

Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

High  Low

## CA24



# ACTIVITY: VEHICLE AND EQUIPMENT CLEANING

Graphic: North Central Texas COG, 1993



## Objectives

*Housekeeping Practices*

*Contain Waste*

*Minimize Disturbed Areas*

*Stabilize Disturbed Areas*

*Protect Slopes/Channels*

*Control Site Perimeter*

*Control Internal Erosion*

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from vehicle and equipment cleaning by using off-site facilities, washing in designated, contained areas only, eliminating discharges to the storm drain by infiltrating or recycling the wash water, and/or training employees and subcontractors.

## APPROACH

- Use off-site commercial washing businesses as much as possible. Washing vehicles and equipment outdoors or in areas where wash water flows onto paved surfaces or into drainage pathways can pollute storm water. If you wash a large number of vehicles or pieces of equipment, consider conducting this work at an off-site commercial business. These businesses are better equipped to handle and dispose of the wash waters properly. Performing this work off-site can also be economical by eliminating the need for a separate washing operation at your site.
- If washing must occur on-site, use designated, bermed wash areas to prevent wash water contact with storm water, creeks, rivers, and other water bodies. The wash area can be sloped for wash water collection and subsequent infiltration into the ground.
- Use as little water as possible to avoid having to install erosion and sediment controls for the wash area.
- Use phosphate-free, biodegradable soaps.
- Educate employees and subcontractors on pollution prevention measures.
- Do not permit steam cleaning on-site. Steam cleaning can generate significant pollutant concentrations.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA40, Employee/Subcontractor Training.

## REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Minimal, some berm repair may be necessary.

## LIMITATIONS

- Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades.
- Sending vehicles/equipment off-site should be done in conjunction with ESC24 (Stabilized Construction Entrance).

## REFERENCE

Swisher, R.D., 1987. Surfactant Biodegradation, Marcel Decker Corporation

## Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

## Implementation Requirements

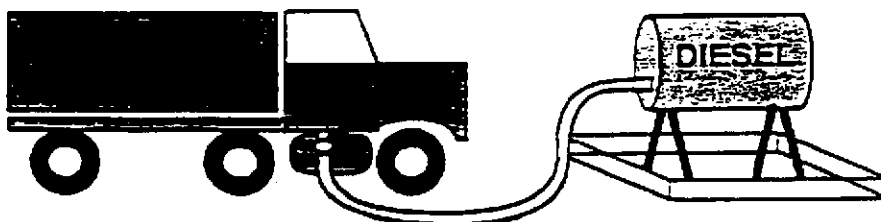
- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

**CA30**



## ACTIVITY: VEHICLE AND EQUIPMENT FUELING



### Objectives

#### Housekeeping Practices

- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

### DESCRIPTION

Prevent fuel spills and leaks, and reduce their impacts to storm water by using off-site facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors.

### APPROACH

- Use off-site fueling stations as much as possible. Fueling vehicles and equipment outdoors or in areas where fuel may spill/leak onto paved surfaces or into drainage pathways can pollute storm water. If you fuel a large number of vehicles or pieces of equipment, consider using an off-site fueling station. These businesses are better equipped to handle fuel and spills properly. Performing this work off-site can also be economical by eliminating the need for a separate fueling area at your site.
- If fueling must occur on-site, use designated areas, located away from drainage courses, to prevent the runoff of storm water and the runoff of spills.
- Discourage "topping-off" of fuel tanks.
- Always use secondary containment, such as a drain pan or drop cloth, when fueling to catch spills/leaks.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Use adsorbent materials on small spills rather than hosing down or burying the spill. Remove the adsorbent materials promptly and dispose of properly.
- Carry out all Federal and State requirements regarding stationary above ground storage tanks.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and perhaps forklifts, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA-40, Employee/Subcontractor Training.

### REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above measures are low cost, except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.
- Maintenance
  - Keep ample supplies of spill cleanup materials on-site.
  - Inspect fueling areas and storage tanks on a regular schedule.

### LIMITATIONS

- Sending vehicles/equipment off-site should be done in conjunction with ESC24 (Stabilized Construction Entrance).

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

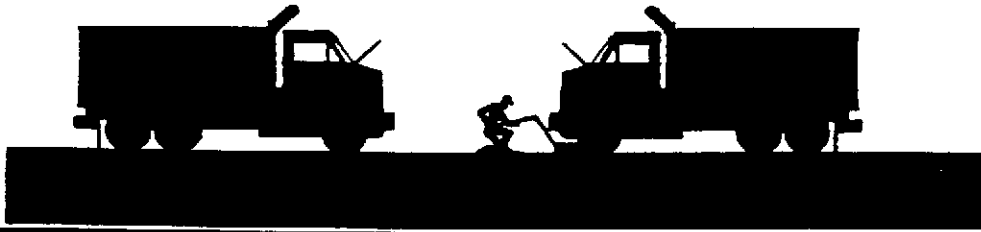
- High
- Low

# CA31



# ACTIVITY: VEHICLE AND EQUIPMENT MAINTENANCE

Graphic: North Central Texas COG, 1993



## Objectives

### Housekeeping Practices

- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

## DESCRIPTION

Prevent or reduce the discharge of pollutants to storm water from vehicle and equipment maintenance by running a "dry site". This involves using off-site facilities, performing work in designated areas only, providing cover for materials stored outside, checking for leaks and spills, containing and cleaning up spills immediately, and training employees and subcontractors.

## APPROACH

- Keep vehicles and equipment clean. don't allow excessive build-up of oil and grease.
- Use off-site repair shops as much as possible. Maintaining vehicles and equipment outdoors or in areas where vehicle or equipment fluids may spill or leak onto the ground can pollute storm water. If you maintain a large number of vehicles or pieces of equipment, consider using an off-site repair shop. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work off-site can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur on-site, use designated areas, located away from drainage courses, to prevent the runoff of storm water and the runoff of spills.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Use adsorbent materials on small spills rather than hosing down or burying the spill. Remove the adsorbent materials promptly and dispose of properly.
- Regularly inspect on-site vehicles and equipment for leaks, and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment on-site.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic, and transmission fluids.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- For a quick reference on disposal alternatives for specific wastes, see Table 4.2, CA40, Employee/Subcontractor Training.

## REQUIREMENTS

- Costs (Capital, O&M)
  - All of the above are low cost measures.
- Maintenance
  - Keep ample supplies of spill cleanup materials on-site.
  - Inspect maintenance areas on a regular schedule.

## Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

## Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High
- Low

# CA32





## ACTIVITY: VEHICLE AND EQUIPMENT MAINTENANCE (Continue)

### LIMITATIONS

- Sending vehicles/equipment off-site should be done in conjunction with ESC24 (Stabilized Construction Entrance).

Outdoor vehicle or equipment maintenance is a potentially significant source of storm water pollution. Activities that can contaminate storm water include engine repair and service, particularly changing or replacement of fluids, and outdoor equipment storage and parking (dripping engines). For further information on vehicle or equipment servicing, see CA30, Vehicle and Equipment Cleaning, and CA31, Vehicle and Equipment Fueling.

Listed below is further information if you must perform vehicle or equipment maintenance on-site.

### Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, 1,1,1-trichloroethane, or methylene chloride. Many of these parts cleaners are harmful and must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents (1,1,1-trichloroethane, methylene chloride, etc.) with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

### Recycling/Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous and non-hazardous wastes separate, do not mix used oil and solvents, and keep chlorinated solvents (like 1,1,1-trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.

Oil filters disposed of in trash cans or dumpsters can leak oil and contaminate storm water. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Do not bury used tires.

### REFERENCES

Best Management Practices and Erosion Control Manual for Construction Sites; Flood Control District of Maricopa County, AZ, September 1992.

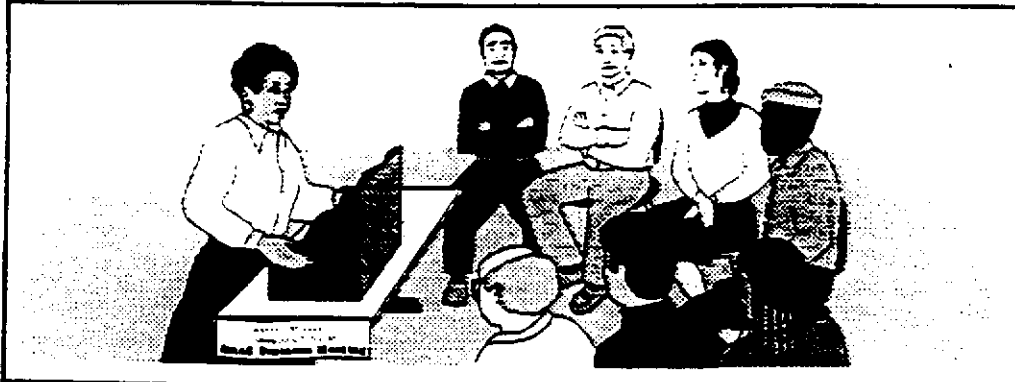
Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper, USEPA, April 1992.

CA32



## ACTIVITY: EMPLOYEE/SUBCONTRACTOR TRAINING



### Objectives

*Housekeeping Practices*

*Contain Waste*

*Minimize Disturbed Areas*

*Stabilize Disturbed Areas*

*Protect Slopes/Channels*

*Control Site Perimeter*

*Control Internal Erosion*

### DESCRIPTION

Employee/subcontractor training, like maintenance of a piece of equipment, is not so much a best management practice as it is a method by which to implement BMPs. This fact sheet highlights the importance of training and of integrating the elements of employee/subcontractor training from the individual source controls into a comprehensive training program as part of a company's Storm Water Pollution Prevention Plan (SWPPP).

The specific employee/subcontractor training aspects of each of the source controls are highlighted in the individual fact sheets. The focus of this fact sheet is more general, and includes the overall objectives and approach for assuring employee/subcontractor training in storm water pollution prevention. Accordingly, the organization of this fact sheet differs somewhat from the other fact sheets in this chapter.

### OBJECTIVES

Employee/subcontractor training should be based on four objectives:

- Promote a clear identification and understanding of the problem, including activities with the potential to pollute storm water;
- Identify solutions (BMPs);
- Promote employee/subcontractor ownership of the problems and the solutions; and
- Integrate employee/subcontractor feedback into training and BMP implementation.

### APPROACH

- Integrate training regarding storm water quality management with existing training programs that may be required for your business by other regulations such as: the Illness and Injury Prevention Program (IIPP) (SB 198) (California Code of Regulations Title 8, Section 3203), the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1910.120), the Spill Prevention Control and Countermeasure (SPCC) Plan (40 CFR 112), and the Hazardous Materials Management Plan (Business Plan) (California Health and Safety Code, Section 6.95).
- Businesses, particularly smaller ones that may not be regulated by Federal, State, or local regulations, may use the information in this Handbook to develop a training program to reduce their potential to pollute storm water.
- Use the quick reference on disposal alternatives (Table 4.2) to train employee/subcontractors in proper and consistent methods for disposal.

# CA40



## ACTIVITY: EMPLOYEE/SUBCONTRACTOR TRAINING (Continue)

- Consider posting the quick reference table around the job site or in the on-site office trailer to reinforce training.
- Train employee/subcontractors in standard operating procedures and spill cleanup techniques described in the fact sheets. Employee/subcontractors trained in spill containment and cleanup should be present during the loading/unloading and handling of materials.
- Personnel who use pesticides should be trained in their use. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct on-site inspections.
- Proper education of off-site contractors is often overlooked. The conscientious efforts of well trained employee/subcontractors can be lost by unknowing off-site contractors, so make sure they are well informed about what they are expected to do on-site.

CA40



**TABLE 4.2 QUICK REFERENCE - DISPOSAL ALTERNATIVES**  
 (Adopted from Santa Clara County Nonpoint Source Pollution Control Program - December 1992)

Construction Handbook

All of the waste products on this chart are prohibited from discharge to the storm drain system. Use this matrix to decide which alternative disposal strategies are most appropriate. **ALTERNATIVES ARE LISTED IN PRIORITY ORDER.**

- Key:** HHW Household hazardous waste (Government-sponsored drop-off events)  
 POTW Publicly Owned Treatment Plant  
 Reg.Bd. Regional Water Quality Control Board (Oakland)
- "Dispose to sanitary sewer" means dispose into sink, toilet, or sanitary sewer clean-out connection.  
 "Dispose as trash" means dispose in dumpsters or trash containers for pickup and/or eventual disposal in landfill.  
 "Dispose as hazardous waste" for business/commercial means contract with a hazardous waste hauler to remove and dispose.

DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
<b>General Construction and Painting; Street and Utility Maintenance</b>			
Excess paint (oil-based)	1. Recycle/reuse. 2. Dispose as hazardous waste.		1. Recycle/reuse. 2. Take to HHW drop-off.
Excess paint (water-based)	1. Recycle/reuse. 2. Dry residue in cans, dispose as trash. 3. If volume is too much to dry, dispose as hazardous waste.		1. Recycle/reuse. 2. Dry residue in cans, dispose as trash. 3. If volume is too much to dry, take to HHW drop-off.
Paint cleanup (oil-based)	Wipe paint out of brushes, then: 1. Filter & reuse thinners, solvents. 2. Dispose as hazardous waste.		Wipe paint out of brushes, then: 1. Filter & reuse thinners, solvents. 2. Take to HHW drop-off.
Paint cleanup (water-based)	Wipe paint out of brushes, then: 1. Rinse to sanitary sewer.		Wipe paint out of brushes, then: 1. Rinse to sanitary sewer.
Empty paint cans (dry)	1. Remove lids, dispose as trash.		1. Remove lids, dispose as trash.
Paint stripping (with solvent)	1. Dispose as hazardous waste.		1. Take to HHW drop-off.
Building exterior cleaning (high-pressure water)	1. Prevent entry into storm drain and remove offsite 2. Wash onto dirt area, spade in 3. Collect (e.g. mop up) and discharge to sanitary sewer	POTW	
Cleaning of building exteriors which have HAZARDOUS MATERIALS (e.g. mercury, lead) in paints	1. Use dry cleaning methods 2. Contain and dispose washwater as hazardous waste (Suggestion: dry material first to reduce volume)		

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DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
<b>General Construction and Painting; Street and Utility Maintenance (cont'd)</b>			
Non-hazardous paint scraping/ sand blasting	1. Dry sweep, dispose as trash		1. Dry sweep, dispose as trash
HAZARDOUS paint scraping/sand blasting (e.g. marine paints or paints containing lead or tributyl tin)	1. Dry sweep, dispose as hazardous waste		1. Dry sweep, take to HHW drop-off
Soil from excavations during periods when storms are forecast	1. Should not be placed in street or on paved areas 2. Remove from site or backfill by end of day 3. Cover with tarpaulin or surround with hay bales, or use other runoff controls 4. Place filter mat over storm drain Note: Thoroughly sweep following removal of dirt in all four alternatives.		
Soil from excavations placed on paved surfaces during periods when storms are not forecast	1. Keep material out of storm conveyance systems and thoroughly remove via sweeping following removal of dirt		
Cleaning streets in construction areas	1. Dry sweep and minimize tracking of mud 2. Use silt ponds and/or similar pollutant reduction techniques when flushing pavement		
Soil erosion, sediments	1. Cover disturbed soils, use erosion controls, block entry to storm drain. 2. Seed or plant immediately.		
Fresh cement, grout, mortar	1. Use/reuse excess 2. Dispose to trash		1. Use/reuse excess 2. Dispose as trash
Washwater from concrete/mortar (etc.) cleanup	1. Wash onto dirt area, spade in 2. Pump and remove to appropriate disposal facility 3. Settle, pump water to sanitary sewer	POTW	1. Wash onto dirt area, spade in 2. Pump and remove to appropriate disposal facility 3. Settle, pump water to sanitary sewer
Aggregate wash from driveway/patio construction	1. Wash onto dirt area, spade in 2. Pump and remove to appropriate disposal facility 3. Settle, pump water to sanitary sewer	POTW	1. Wash onto dirt area, spade in 2. Pump and remove to appropriate disposal facility 3. Settle, pump water to sanitary sewer

DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
<b>General Construction and Painting; Street and Utility Maintenance (cont'd)</b>			
Rinsewater from concrete mixing trucks	<ol style="list-style-type: none"> <li>1. Return truck to yard for rinsing into pond or dirt area</li> <li>2. At construction site, wash into pond or dirt area</li> </ol>		
Non-hazardous construction and demolition debris	<ol style="list-style-type: none"> <li>1. Recycle/reuse (concrete, wood, etc.)</li> <li>2. Dispose as trash</li> </ol>		<ol style="list-style-type: none"> <li>1. Recycle/reuse (concrete, wood, etc.)</li> <li>2. Dispose as trash</li> </ol>
Hazardous demolition and construction debris (e.g. asbestos)	<ol style="list-style-type: none"> <li>1. Dispose as hazardous waste</li> </ol>		<ol style="list-style-type: none"> <li>1. Do not attempt to remove yourself. Contact asbestos removal service for safe removal and disposal</li> <li>2. Very small amounts (less than 5 lbs) may be double-wrapped in plastic and taken to HHW drop-off</li> </ol>
Saw-cut slurry	<ol style="list-style-type: none"> <li>1. Use dry cutting technique and sweep up residue</li> <li>2. Vacuum slurry and dispose off-site.</li> <li>3. Block storm drain or berm with low weir as necessary to allow most solids to settle. Shovel out gutters; dispose residue to dirt area, construction yard or landfill.</li> </ol>		
Construction dewatering (Nonturbid, uncontaminated groundwater)	<ol style="list-style-type: none"> <li>1. Recycle/Reuse</li> <li>2. Discharge to storm drain</li> </ol>		
Construction dewatering (Other than nonturbid, uncontaminated groundwater)	<ol style="list-style-type: none"> <li>1. Recycle/reuse</li> <li>2. Discharge to sanitary sewer</li> <li>3. As appropriate, treat prior to discharge to storm drain</li> </ol>	POTW Reg. Bd.	
Portable toilet waste	<ol style="list-style-type: none"> <li>1. Leasing company shall dispose to sanitary sewer at POTW</li> </ol>	POTW	
Leaks from garbage dumpsters	<ol style="list-style-type: none"> <li>1. Collect, contain leaking material. Eliminate leak, keep covered, return to leasing company for immediate repair</li> <li>2. If dumpster is used for liquid waste, use plastic liner</li> </ol>		

DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
<b>General Construction and Painting; Street and Utility Maintenance (cont'd)</b>			
Leaks from construction debris bins	1. Insure that bins are used for dry nonhazardous materials only (Suggestion: Fencing, covering help prevent misuse)		
Dumpster cleaning water	1. Clean at dumpster owner's facility and discharge waste through grease interceptor to sanitary sewer 2. Clean on site and discharge through grease interceptor to sanitary sewer	POTW POTW	
Cleaning driveways, paved areas * (Special Focus = Restaurant alleys Grocery dumpster areas)  * Note: Local drought ordinances may contain additional restrictions	1. Sweep and dispose as trash (Dry cleaning only). 2. For vehicle leaks, restaurant/grocery alleys, follow this 3-step process: a. Clean up leaks with rags or absorbents. b. Sweep, using granular absorbent material (cat litter). c. Mop and dispose of mopwater to sanitary sewer (or collect rinsewater and pump to the sanitary sewer). 3. Same as 2 above, but with rinsewater (2c)(no soap) discharged to storm drain.		1. Sweep and dispose as trash (Dry cleaning only). 2. For vehicle leaks, follow this 3-step process: a. Clean up leaks with rags or absorbents; dispose as hazardous waste. b. Sweep, using granular absorbent material (cat litter). c. Mop and dispose of mopwater to sanitary sewer.
Steam cleaning of sidewalks, plazas *  * Note: Local drought ordinances may contain additional restrictions	1. Collect all water and pump to sanitary sewer. 2. Follow this 3-step process: a. Clean oil leaks with rags or adsorbents b. Sweep (Use dry absorbent as needed) c. Use no soap, discharge to storm drain		
Potable water/line flushing Hydrant testing	1. Deactivate chlorine by maximizing time water will travel before reaching creeks		
Super-chlorinated (above 1 ppm) water from line flushing	1. Discharge to sanitary sewer 2. Complete dechlorination required before discharge to storm drain		

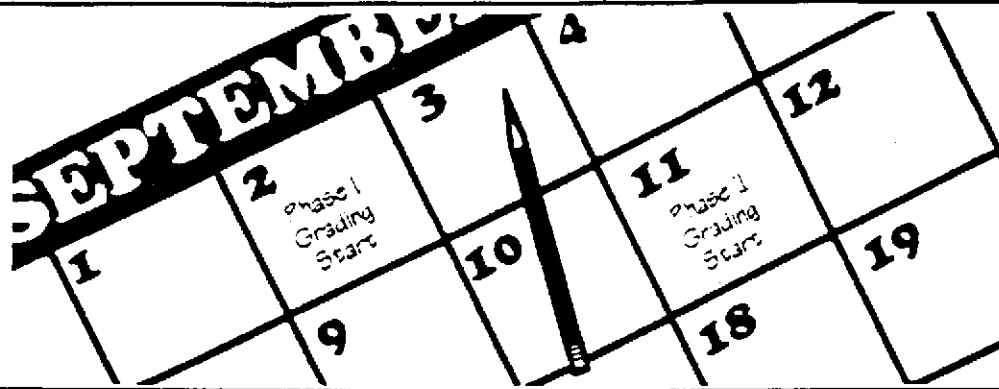
DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
<b>Landscape/Garden Maintenance</b>			
Pesticides	<ol style="list-style-type: none"> <li>1. Use up. Rinse containers use rinsewater as product. Dispose rinsed containers as trash</li> <li>2. Dispose unused pesticide as hazardous waste</li> </ol>		<ol style="list-style-type: none"> <li>1. Use up. Rinse containers, use rinsewater as pesticide. Dispose rinsed container as trash.</li> <li>2. Take unused pesticide to HHW drop-off</li> </ol>
Garden clippings	<ol style="list-style-type: none"> <li>1. Compost</li> <li>2. Take to Landfill</li> </ol>		<ol style="list-style-type: none"> <li>1. Compost</li> <li>2. Dispose as trash.</li> </ol>
Tree trimming	<ol style="list-style-type: none"> <li>1. Chip if necessary, before composting or recycling</li> </ol>		<ol style="list-style-type: none"> <li>1. Chip if necessary, before composting or recycling</li> </ol>
Swimming pool, spa, fountain water (emptying)	<ol style="list-style-type: none"> <li>1. Do not use metal-based algicides (i.e. Copper Sulfate)</li> <li>2. Recycle/reuse (e.g. irrigation)</li> <li>3. Determine chlorine residual = 0, wait 24 hours and then discharge to storm drain.</li> </ol>	POTW	<ol style="list-style-type: none"> <li>1. Do not use metal-based algicides (i.e. Copper Sulfate)</li> <li>2. Recycle/reuse (e.g. irrigation)</li> <li>3. Determine chlorine residual = 0, wait 24 hours and then discharge to storm drain.</li> </ol>
Acid or other pool/spa/fountain cleaning	<ol style="list-style-type: none"> <li>1. Neutralize and discharge to sanitary sewer</li> </ol>	POTW	
Swimming pool, spa filter backwash	<ol style="list-style-type: none"> <li>1. Reuse for irrigation</li> <li>2. Dispose on dirt area</li> <li>3. Settle, dispose to sanitary sewer</li> </ol>		<ol style="list-style-type: none"> <li>1. Use for landscape irrigation</li> <li>2. Dispose on dirt area</li> <li>3. Settle, dispose to sanitary sewer</li> </ol>
<b>Vehicle Wastes</b>			
Used motor oil	<ol style="list-style-type: none"> <li>1. Use secondary containment while storing, send to recycler.</li> </ol>		<ol style="list-style-type: none"> <li>1. Put out for curbside recycling pickup where available</li> <li>2. Take to Recycling Facility or auto service facility with recycling program</li> <li>3. Take to HHW events accepting motor oil</li> </ol>
Antifreeze	<ol style="list-style-type: none"> <li>1. Use secondary containment while storing, send to recycler.</li> </ol>		<ol style="list-style-type: none"> <li>1. Take to Recycling Facility</li> </ol>
Other vehicle fluids and solvents	<ol style="list-style-type: none"> <li>1. Dispose as hazardous waste</li> </ol>		<ol style="list-style-type: none"> <li>1. Take to HHW event</li> </ol>
Automobile batteries	<ol style="list-style-type: none"> <li>1. Send to auto battery recycler</li> <li>2. Take to Recycling Center</li> </ol>		<ol style="list-style-type: none"> <li>1. Exchange at retail outlet</li> <li>2. Take to Recycling Facility or HHW event where batteries are accepted</li> </ol>
home/construction trailer waste	<ol style="list-style-type: none"> <li>1. Use holding tank. Dispose to sanitary sewer</li> </ol>		<ol style="list-style-type: none"> <li>1. Use holding tank, dispose to sanitary sewer.</li> </ol>



DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
<b>Vehicle Wastes (cont'd)</b>			
Vehicle Washing	<ol style="list-style-type: none"> <li>1. Recycle</li> <li>2. Discharge to sanitary sewer, never to storm drain</li> </ol>	POTW	<ol style="list-style-type: none"> <li>1. Take to Commercial Car Wash.</li> <li>2. Wash over lawn or dirt area</li> <li>3. If soap is used, use a bucket for soapy water and discharge remaining soapy water to sanitary sewer.</li> </ol>
Mobile Vehicle Washing	<ol style="list-style-type: none"> <li>1. Collect washwater and discharge to sanitary sewer.</li> </ol>	POTW	
Rinsewater from dust removal at new car fleets	<ol style="list-style-type: none"> <li>1. Discharge to sanitary sewer</li> <li>2. If rinsing dust from exterior surfaces from appearance purposes, use no soap (water only); discharge to storm drain.</li> </ol>	POTW	
Vehicle leaks at Vehicle Repair Facilities	<p>Follow this 3-step process:</p> <ol style="list-style-type: none"> <li>1. Clean up leaks with rags or absorbents</li> <li>2. Sweep, using granular absorbent material (cat litter)</li> <li>3. Mop and dispose of mopwater to sanitary sewer.</li> </ol>		
<b>Other Wastes</b>			
Carpet cleaning solutions & other mobile washing services	<ol style="list-style-type: none"> <li>1. Dispose to sanitary sewer</li> </ol>	POTW	<ol style="list-style-type: none"> <li>1. Dispose to sanitary sewer</li> </ol>
Roof drains	<ol style="list-style-type: none"> <li>1. If roof is contaminated with industrial waste products, discharge to sanitary sewer</li> <li>2. If no contamination is present, discharge to storm drain</li> </ol>		
Cooling water Air conditioning condensate	<ol style="list-style-type: none"> <li>1. Recycle/reuse</li> <li>2. Discharge to sanitary sewer</li> </ol>	POTW	
Pumped groundwater, infiltration/ foundation drainage (contaminated)	<ol style="list-style-type: none"> <li>1. Recycle/reuse (landscaping, etc.)</li> <li>2. Treat if necessary; discharge to sanitary sewer</li> <li>3. Treat and discharge to storm drain</li> </ol>	Reg. Bd.  POTW Reg. Bd.	
Fire fighting flows	If contamination is present, Fire Dept. will attempt to prevent flow to stream or storm drain		

DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
<b>Other Wastes (cont'd)</b>			
Kitchen Grease	<ol style="list-style-type: none"> <li>1. Provide secondary containment, collect, send to recycler.</li> <li>2. Provide secondary containment, collect, send to POTW via hauler.</li> </ol>	POTW	1. Collect, solidify, dispose as trash
Restaurant cleaning of floor mats, exhaust filters, etc.	<ol style="list-style-type: none"> <li>1. Clean inside building with discharge through grease trap to sanitary sewer.</li> <li>2. Clean outside in container or bermed area with discharge to sanitary sewer.</li> </ol>		
Clean-up wastewater from sewer back-up	<ol style="list-style-type: none"> <li>1. Follow this procedure:               <ol style="list-style-type: none"> <li>a. Block storm drain, contain, collect, and return spilled material to the sanitary sewer.</li> <li>b. Block storm drain, rinse remaining material to collection point and pump to sanitary sewer. (no rinse-water may flow to storm drain)</li> </ol> </li> </ol>		

## BMP: SCHEDULING



### DESCRIPTION

Sequencing the construction project to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

### SUITABLE APPLICATIONS

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project. Use of other, more costly yet less effective, erosion and sedimentation controls, may often be reduced through proper construction sequencing.

### APPROACH

- Project design considerations: Design project to integrate into existing land contours. Significant regrading of a site will require more costly erosion and sedimentation control measures and may require that on-site drainage facilities be installed.
- Incorporate existing, natural areas: Inventory and evaluate the existing site terrain and vegetation. Disturbance of highly erosive natural areas (e.g., steep, unstable slope areas, watercourses) should be minimized, while protecting other areas may enhance site aesthetics. Construction should not disturb these areas (see ESC2).
- Avoid rainy periods: Schedule major grading operations during dry months. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means (see ESC 10 to 24) or to install temporary sediment trapping devices (see ESC 50 to 56).
- Practice erosion and sediment control year round: Erosion may be caused during dry seasons by "freak" rainfall, wind and vehicle tracking. Therefore, keep the site stabilized year-round, and retain wet season sediment trapping devices.
- Minimize soil exposed at one time: Schedule projects to disturb only small portions of the site at any one time. Complete grading as soon as possible. Immediately stabilize the disturbed portion before grading the next portion. Practice staged seeding—revegetate cut and fill slopes as the work progresses.
- Trenching: Close and stabilize open trenches as soon as possible. Sequence trenching projects so that most open portions of the trench are closed before new trenching is begun.

### REQUIREMENTS

- Cost
  - Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost-effectiveness of scheduling techniques should be compared with the other, less effective erosion and sedimentation controls to achieve a cost-effective balance.

### Objectives

- Housekeeping Practices
- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
- Protect Slopes/Channels
- Control Site Perimeter
- Control Internal Erosion

### Targeted Pollutants

- Sediment
- Nutrients
- Toxic Materials
- Oil & Grease
- Floatable Materials
- Other Construction Waste

- Likely to Have Significant Impact
- Probable Low or Unknown Impact

### Implementation Requirements

- Capital Costs
- O&M Costs
- Maintenance
- Training
- Suitability for Slopes >5%

- High  Low

## ESC1



## BMP: SCHEDULING ( Continue)

### LIMITATIONS

There are no significant limitations to the use of this BMP.

### REFERENCES

Best Management Practices and Erosion Control Manual for Construction Sites. Flood Control District of Maricopa County, Arizona - 1992.

Erosion and Sediment Control Guidelines for Developing Areas in Texas. U.S. Department of Agriculture. Soil Conservation Service, Fort Worth, Texas - 1976.

Storm Water Management for Construction Activities. Developing Pollution Prevention Plans and Best Management Practices. U.S. Environmental Protection Agency, Office of Water (EPA 832-R-92-005) - September, 1992.

Virginia Erosion and Sediment Control Handbook. Third Edition. Virginia Department of Conservation and Recreation. Division of Soil and Water Conservation - 1992.

ESC1



### Worksheet 3. Inventory of Contractor's Activities and Special Site Conditions

Provide a description of contractor's activities that could result in the discharge of pollutants in the storm water runoff from the site. In addition, provide a description of special site conditions that may impact pollutants in storm water discharges.

#### Contractor Activities

- [X] Describe toxic materials that are known to have been stored, disposed, spilled, or leaked in significant quantities onto the construction site:  
The soil on the site is known to contain petroleum product.
- [X] Describe construction materials, equipment and vehicles that comes in contact with storm water:  
Construction Materials: Lumber, concrete, masonry, steel, asphalt roofing, landscaping materials, fertilizer, and paint.  
Construction Vehicles: Service and delivery trucks, front loader and grading equipment.
- [X] Describe construction material loading, unloading and access areas/activities:  
All construction materials will be delivered to the building pad and used immediately or within a one month period. The building pad shall have an earth berm or gravel filled bag berm on each side to trap all loose and floatable materials.
- [X] Describe equipment storage, cleaning, and maintenance areas/activities:  
All equipment will be stored offsite if not being used. No vehicle maintenance shall be completed onsite. One vehicle shall be fueled onsite (weekly basis).
- [X] Describe storage and disposal of construction materials (on-site and off-site):  
All excess and waste building materials and domestic waste will be placed in stock piles daily. The stockpiles shall be removed on a weekly basis by a licensed waste management operation. Should stockpiles become excessively large before the scheduled pickup, a special removal will be requested.

#### Special Site Conditions

- [X] Describe storm water structures and controls on the site prior to construction and how these structures/controls will be integrated into the SWPPP to reduce sediment and other pollutants in storm water discharges:  
This site has been previously paved. There will be a limited amount of Grading and Soil Erosion during construction. All new Storm Water Inlets will have gravel bag inlet protection. The southerly entrance will also have a row of gravel bags across it to prevent sediment from entering the storm drain system. (See Erosion Control Plan - C-5)
- [X] List materials/waters other than storm water which will flow from the site during dry weather, the approximate amount of flow, and methods for preventing other dry weather flows:  
No dry weather flows/discharge will be generated onsite by this construction project.

### Worksheet 4. BMPs for Contractor Activities

Provide a list of BMPs selected to reduce pollutants associated with contractor activities (See worksheet 3). For each BMP selected, identify the pollution(s) of concern. Attach modified BMP fact sheets and/or appropriate information for the BMP selected.

Contractor Activities (Worksheet 3)	Construction Practices			Materials Management			Waste Management					Vehicle & Equipment Management			Primary Pollutant(s) of Concern
	CA1	CA2	CA3	CA10	CA11	CA12	CA20	CA21	CA22	CA23	CA24	CA30	CA31	CA32	
1. Toxic Material On-site	✓							✓	✓						Petroleum.
2. Construction material equipment & vehicles in contact with storm water		✓	✓	✓							✓	✓			See Worksheet 3.
3. Material loading, unloading and access areas/ activities					✓		✓								Various building materials (floatables).
4. Equipment storage cleaning, and maintenance areas/activities				✓		✓					✓	✓	✓	✓	Fueling and repairing of vehicles.
5. Storage and disposal of construction materials (on-site and off-site)										✓					Various building materials (floatables) and concrete.

**Worksheet 5. BMPs for Erosion and Sedimentation Control**

- [X] Describe the source and composition of the existing soil and fill material.  
(Soil Report Attached? [ ] Yes [X] No)

The existing soil is known to contain petroleum product. A "Soil and Groundwater Mitigation Plan" will be provided to ensure safe handling of Soil and Grounwater.

- [X] Provide a site map showing locations where BMPs for erosion and sediment control are placed.

See Erosion Control Plan - C-5.

	BMPs SELECTED	DESCRIPTION OF BMPs FOR EROSION & SEDIMENT CONTROL
<b>Site Planning Considerations</b>		
XX	Scheduling	See ESC 1.
	Preservation of Existing Vegetation	
<b>Soil Stabilization</b>		
	Seeding and Planting	
	Mulching	
<b>Physical Stabilization</b>		
	Geotextiles and Mats	
	Dust Control	
	Temporary Stream Crossing	
	Construction Road Stabilization	
XX	Stabilized Construction Entrance	See detail on Erosion Control Plan
<b>Diversion of Runoff</b>		
	Earth Dike	
	Temporary Drains and Swales	
	Slope Drain	
<b>Velocity Reduction</b>		
	Outlet Protection	
	Check Dams	
	Slope Roughening/Terracing	

	BMPs SELECTED	DESCRIPTION OF BMPs FOR EROSION & SEDIMENT CONTROL
<b>Sediment Trapping/Filtering</b>		
	Silt Fence	
	Straw Bale Barrier	
	Earth Dike	
	Rock or Brush Filter	
XX	Storm Drain Inlet Protection	See detail on Erosion Control Plan
	Sediment Trap	
	Sediment Basin	



**Worksheet 6. Post-Construction BMPs**

Provide a site map locating treatment control BMPs which be constructed as part of this project to reduce storm water pollution after construction is complete. Provide on the worksheet below the BMP selected, the responsible party for maintenance and operation, and source for funding the operation and maintenance.

	BMPs SELECTED	MAINTENANCE RESPONSIBILITY	FUNDING SOURCE FOR O&M
<b>TREATMENT CONTROL BMPs</b>			
	Earth Dike		
	Wet Ponds		
	Constructed Wetlands		
	Vegetated Swales and Strips		
	Extended Detention Basins		
	Media Filtration		
	Oil/Water Separators and Water Quality Inlets		
<b>SOURCE CONTROL BMPs</b>			
<b>XX</b>	Inlet Stenciling	Hardage Suite Hotels	
	Storm Water Monitoring Program		
	Inspection and Maintenance Program of Public Storm Drain System		
See: NPDES # CA0108758 SWRCB Order 90-42			

Worksheet 7. Monitoring, Inspection, and Maintenance Plan

- [X] Describe maintenance/repair efforts to ensure BMPs are in good and effective condition:
- 1) Sediment will be removed from behind gravel bag berm and inlet protection when sediment depth reaches 1/3 of the total available depth.
  - 2) Any gravel bag berm/inlet protection washed out or otherwise disrupted will be replaced repaired within 48 hours of discovery.

- [X] Describe inspection procedures and record keeping efforts:

Attached inspection form to be filled out and inserted after this worksheet in the SWPPP.

- [X] Annual Inspection:  
Inspection will occur prior to October 30, when all Erosion/Sedimentation Control (ESC) measures are installed.

- [X] Pre-storm Inspection:  
On days before predicted rainfall, a drive-by inspection will be conducted to check for any damage. Site Project Manager will call a crew to immediately repair damage.

- [X] Post-storm Inspection:  
Each BMP will be closely inspected within 48 hours after each rainfall of 0.5" or more. BMPs will be checked for:
- 1) Structural integrity
  - 2) Sediment accumulation greater than 1/3 total depth of BMP
  - 3) Evidence of excessive sediment downstream of the site
  - 4) Evidence of other construction material washed off-site.

- [X] Describe training program/material for site personnel responsible for installing, inspection, and maintaining BMPs:
- 1) BMP fact sheets from this SWPPP will be copied and distributed to site personnel engaged in the activity in question and/or installation/maintenance of ESC BMPs.
  - 2) Site Project Manager observing improper construction measures or pollution caused by ineffective construction pollution management practices will inform site personnel performing these practices of proper BMPs, along with special follow-up inspections for further training.
  - 3) Site Project Manager shall educate all employees regarding safe handling and spillage control procedures for all hazardous chemicals. (See all Attachments.)

**SAMPLE  
Construction General Permit  
Inspection Checklist**

Regular Inspection

Rainfall Event Inspection (Before)

Rainfall Event Inspection (After) Rainfall \_\_\_\_\_ Inches

Inspected By: \_\_\_\_\_ Date: \_\_\_\_\_

Project: \_\_\_\_\_

YES	NO	DOES NOT APPLY	
			Are the BMPs called for on the SWPPP installed in the proper location and according to the specifications for the SWPPP?
			Are all operational storm drain inlets protected from sediment inflow?
			Do any structural practices require repair or clean-out to maintain adequate function? If yes, indicate which ones:
			Are construction on-site traffic routes, parking, and storage of equipment and supplies restricted to areas specifically designated for those uses?
			Are locations of temporary soil stock piles or construction materials in approved areas?
			Do any seeded or landscaped areas require maintenance, irrigation, fertilization, seeding, or mulching?
			Is there any evidence that sediment is leaving the site?
			Is there any evidence of erosion or cut or fill slopes?
			Is there any evidence of sediment, debris, or mud on public roads at intersections with site access roads?
			Does the SWPPP require revisions? If yes, explain:

**ATTACHMENT "A"**

## EROSION CONTROL NOTES

IN CASE EMERGENCY WORK IS REQUIRED, CONTACT CHUCK HIBERT AT (209) 966-8066.

EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS EMINENT.

DEVICES SHOWN ON PLANS SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE ENGINEERING INSPECTOR.

THE CONTRACTOR SHALL RESTORE ALL EROSION CONTROL DEVICES TO WORKING ORDER TO THE SATISFACTION OF THE CITY ENGINEER AFTER EACH RUN-OFF PRODUCING RAINFALL.

THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL MEASURES AS MAY BE REQUIRED BY THE CITY ENGINEER DUE TO UNCOMPLETED GRADING OPERATIONS OR UNFORESEEN CIRCUMSTANCES WHICH MAY ARISE.

THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.

ALL EROSION CONTROL MEASURES PROVIDED PER THE APPROVED GRADING PLAN SHALL BE INCORPORATED HEREON.

GRADED AREAS AROUND THE PROJECT PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPE AT THE CONCLUSION OF EACH WORKING DAY.

ALL REMOVABLE PROTECTIVE DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FIVE (5) DAY RAIN PROBABILITY FORECAST EXCEEDS FORTY PERCENT (40%). SILT AND OTHER DEBRIS SHALL BE REMOVED AFTER EACH RAINFALL.

ALL GRAVEL BAGS SHALL BE BURLAP TYPE WITH 3/4 INCH MINIMUM AGGREGATE.

SHOULD GERMINATION OF HYDROSEEDS FAIL TO PROVIDE EFFECTIVE COVERAGE OF GRADED SLOPES (90% COVERAGE) PRIOR TO NOVEMBER 15, THE SLOPES SHALL BE STABILIZED BY PUNCH STRAW INSTALLED IN ACCORDANCE WITH SECTION 35.023 OF THE EROSION AND SEDIMENT CONTROL HANDBOOK OF THE DEPARTMENT OF CONSERVATION, STATE OF CALIFORNIA.

## TEMPORARY EROSION CONTROL PLANTING AND IRRIGATION

PERMANENT AND TEMPORARY EROSION CONTROL PLANTING AND IRRIGATION SHALL BE INSTALLED AND MAINTAINED AS REQUIRED IN SECTION 212 OF THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

HYDROSEEDING SHALL BE APPLIED TO:

1. ALL SLOPES THAT ARE GRADED 6:1 (HORIZONTAL TO VERTICAL) OR STEEPER WHEN THEY ARE:
  - a. THREE FEET OR MORE IN HEIGHT AND ADJACENT TO A PUBLIC WALL OR STREET.
  - b. ALL SLOPES 4 FEET OR MORE IN HEIGHT.
2. AREAS GRADED FLATTER THAN 6:1 WHEN ANY OF THE FOLLOWING CONDITIONS EXIST:
  - a. NOT SCHEDULED FOR IMPROVEMENTS (CONSTRUCTION OR GENERAL LANDSCAPING) WITHIN 60 DAYS OF ROUGH GRADING.
  - b. IDENTIFIED BY THE PARKS AND RECREATION DIRECTOR AS HIGHLY VISIBLE TO THE PUBLIC.
  - c. HAVE ANY SPECIAL CONDITION IDENTIFIED BY THE CITY ENGINEER THAT WARRANTS IMMEDIATE TREATMENT.

HYDROSEEDS SHALL BE IRRIGATED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

1. ALL SLOPES THAT ARE GRADED 6:1 OR STEEPER AND THAT ARE:
  - a. THREE TO EIGHT FEET IN HEIGHT SHALL BE IRRIGATED BY HAND WATERING FROM QUICK COUPLERS/HOSE BIBS OR A CONVENTIONAL SYSTEM OF LOW PRECIPITATION SPRINKLER HEADS PROVIDING 100% COVERAGE.
  - b. GREATER THAN 8 FEET IN HEIGHT SHALL BE WATERED BY A CONVENTIONAL SYSTEM OF LOW PRECIPITATION SPRINKLER HEADS PROVIDING 100% COVERAGE.
2. AREAS SLOPED LESS THAN 6:1 SHALL BE IRRIGATED AS APPROVED BY THE CITY ENGINEER, PRIOR TO HYDROSEEDING. THE DEVELOPER SHALL SUBMIT A PROPOSED SCHEME TO PROVIDE IRRIGATION TO THE CITY ENGINEER. THE PROPOSAL SHALL BE SPECIFIC REGARDING THE NUMBERS, TYPES AND COSTS OF

---

A U S T I N  
D E S I G N  
G R O U P

---

ARCHITECTURE  
INTERIOR DESIGN  
PLANNING  
ENGINEERING

---

9605 SCRANTON ROAD  
SUITE 200  
SAN DIEGO, CA. 92121  
(619) 546-0110

---

---

SUITE HOTEL

EMERYVILLE CA

3. IRRIGATION SHALL MAINTAIN THE MOISTURE LEVEL OF THE SOIL AT THE OPTIMUM LEVEL FOR THE GROWTH OF THE HYDROSEEDING GROWTH.

HYDROSEEDING MIX SHALL CONSIST OF ALL OF THE FOLLOWING:

1. SEED MIX SHALL CONSIST OF NO LESS THAN:
  - a. 20 lbs. PER ACRE OF ROSE CLOVER
  - b. 20 lbs. PER ACRE OF ZORRO FESCUE
  - c. 3 lbs. PER ACRE OF E SCHOOL CIA CALIFORNICA
  - d. 4 lbs. PER ACRE OF ACHILLEA MILLEFOLIA
  - e. 3 lbs. PER ACRE OF ALYSSUM (CARPET OF SNOW)
  - f. 1/2 lb. PER ACRE OF DIMORPHOLECA
  - g. ITEMS c,d,e, AND f OF THIS SUBSECTION MAY BE OMITTED ON LOCATIONS WHERE THE AREA BEING HYDROSEEDING IS NOT VISIBLE FROM EITHER A PUBLIC STREET OR RESIDENTIAL STRUCTURES.
  - h. ITEM a OF THIS SUBSECTION MUST BE INOCULATED WITH A NITROGEN FIXING BACTERIA AND APPLIED DRY EITHER BY DRILLING OR BROADCASTING BEFORE HYDROSEEDING.
  - i. ALL SEED MATERIALS SHALL BE TRANSPORTED TO THE JOBSITE IN UNOPENED CONTAINERS WITH THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE CERTIFICATION TAG ATTACHED TO, OR PRINTED ON SAID CONTAINERS.
  - j. NON-PHYTO-TOXIC WETTING AGENTS MAY BE ADDED TO THE HYDROSEED SLURRY AT THE DISCRETION OF THE CONTRACTOR.
2. TYPE 1 MULCH APPLIED AT THE RATE OF NO LESS THAN 2000 lbs PER ACRE. TYPE 6 MULCH (STRAW) MAY BE SUBSTITUTED, ALL OR PART, FOR HYDRAULICALLY APPLIED FIBER MATERIAL. WHEN STRAW IS USED IT MUST BE ANCHORED TO THE SLOPE BY MECHANICALLY PUNCHING NO LESS THAN 50% OF THE STRAW INTO THE SOIL.
3. FERTILIZER CONSISTING OF AMMONIUM PHOSPHATE SULFATE, 16-20-0, WITH 15% SULPHUR APPLIED AT THE RATE OF 500 lbs. PER ACRE.

AREAS TO BE HYDROSEEDING SHALL BE PREPARED PRIOR TO HYDROSEEDING BY:

1. ROUGHENING THE SURFACE TO BE PLANTED BY ANY OR A COMBINATION OF:
  - a. TRACK WALKING SLOPES STEEPER THAN 6:1
  - b. HARROWING AREAS 6:1 OR FLATTER THAT ARE SUFFICIENTLY FRIABLE.
  - c. RIPPING AREAS THAT WILL NOT BREAK UP USING ITEMS a OR b ABOVE.
2. CONDITIONING THE SOILS SO THAT IT IS SUITABLE FOR PLANTING BY:
  - a. ADJUSTING THE SURFACE SOIL MOISTURE TO PROVIDE A DAMP BUT NOT SATURATED SEED BED.
  - b. THE ADDITION OF SOIL AMENDMENTS, PH ADJUSTMENT, LEACHING OR COVERING SALINE SOILS TO PROVIDED VIABLE CONDITIONS FOR GROWTH.

HYDROSEEDING AREAS SHALL BE MAINTAINED TO PROVIDE A VIGOROUS GROWTH UNTIL THE PROJECT IS PERMANENTLY LANDSCAPED OR, FOR AREAS WHERE HYDROSEEDING IS THE PERMANENT LANDSCAPING, UNTIL THE PROJECT IS COMPLETED AND ALL BONDS RELEASED.

PRELIMINARY

NOT FOR CONSTRUCTION

WOODFIN

5800 SHELLMOUND STREET

DRAWN: KLB

CHECKED: GLL

SET ISSUED:

1. November 3, 1997

2. FOUNDATION PERMIT:

November 26, 1997

3. GRADING PLAN CHECK:

March 5, 1998

4. GRADING PLAN CHECK:

APRIL 14, 1998

5. GRADING PLAN CHECK:

MAY 15, 1998

SHEET ISSUED:

PROJECT NO.

96238.05

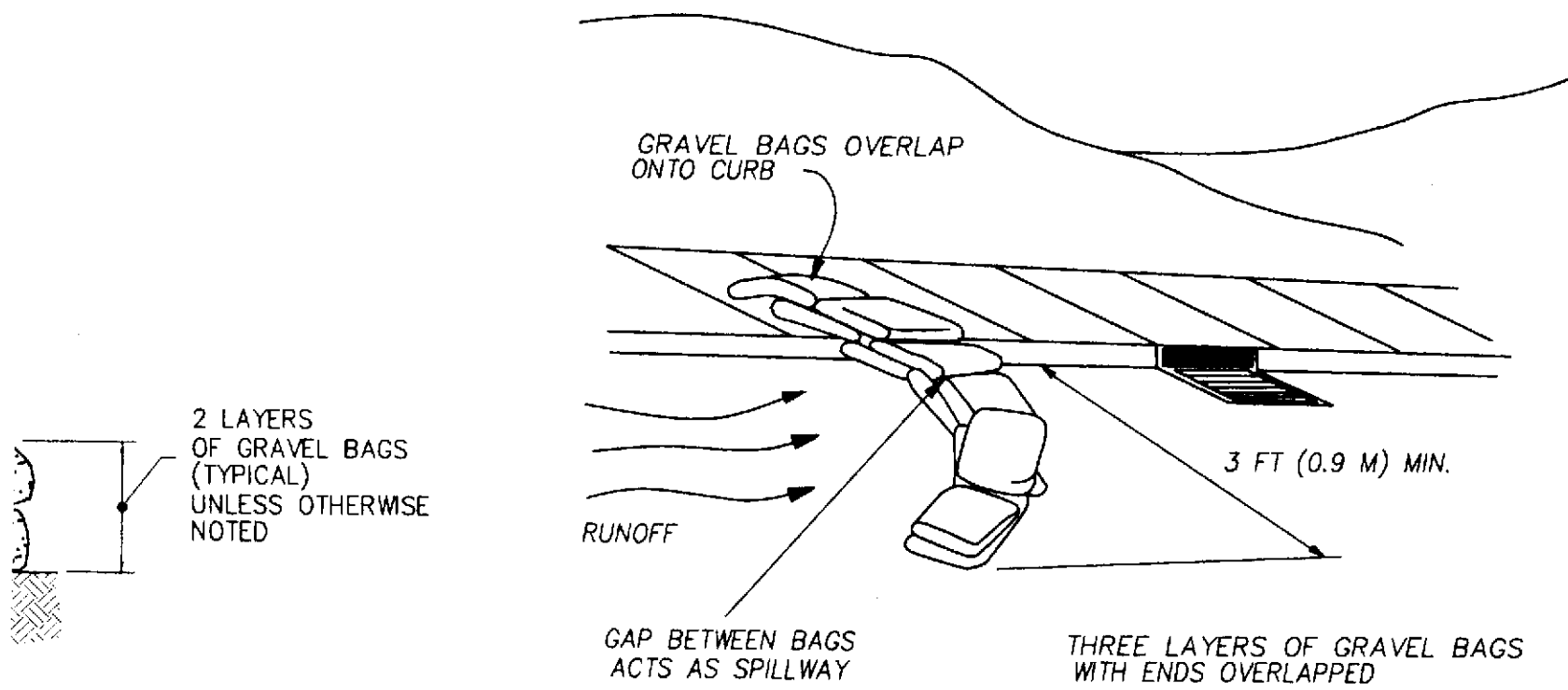
SHEET TITLE

EROSION CONTROL PLAN

WDFN-EMVL

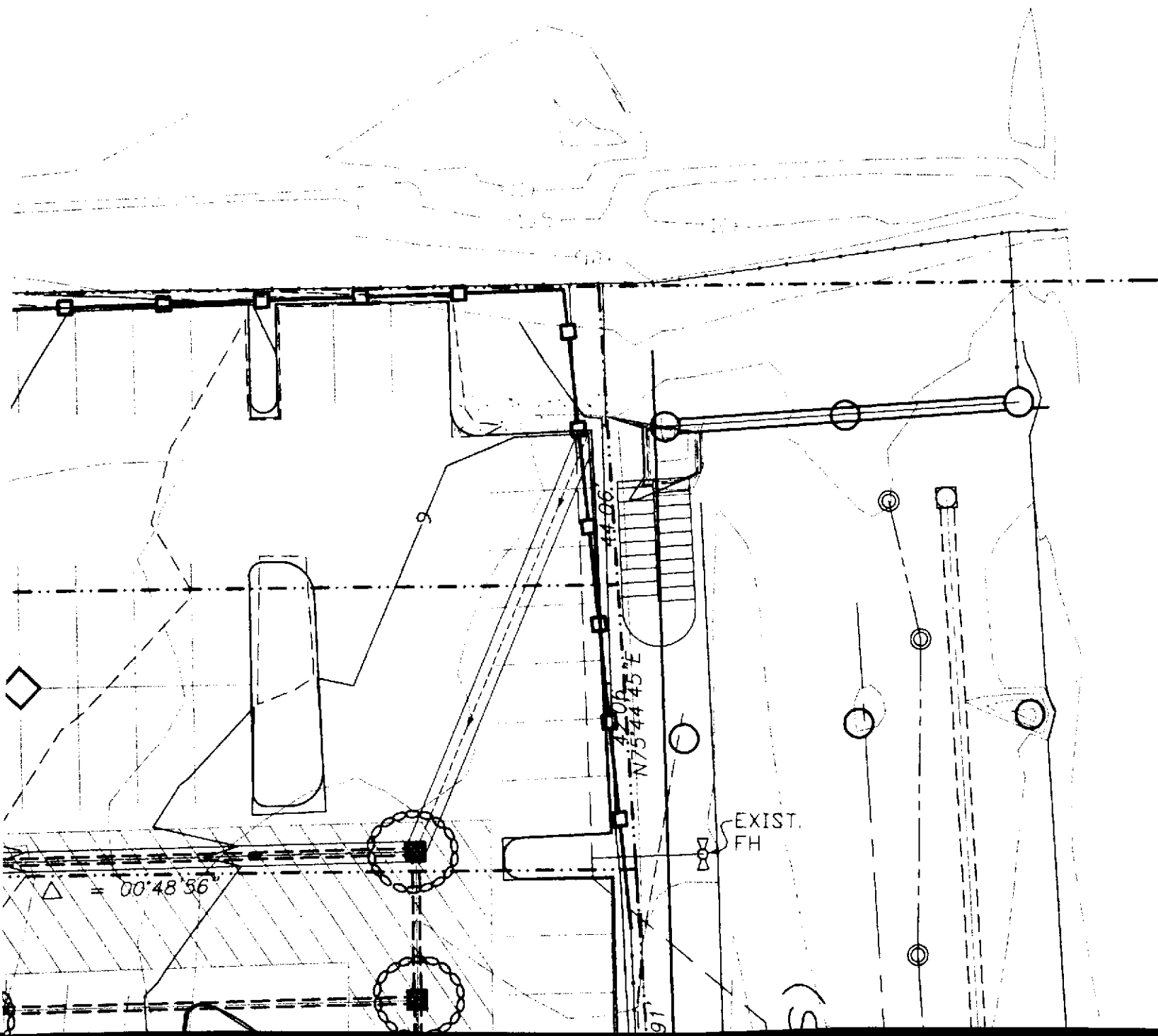
SHEET NO.

C-5



ERM

GRAVEL BAGS

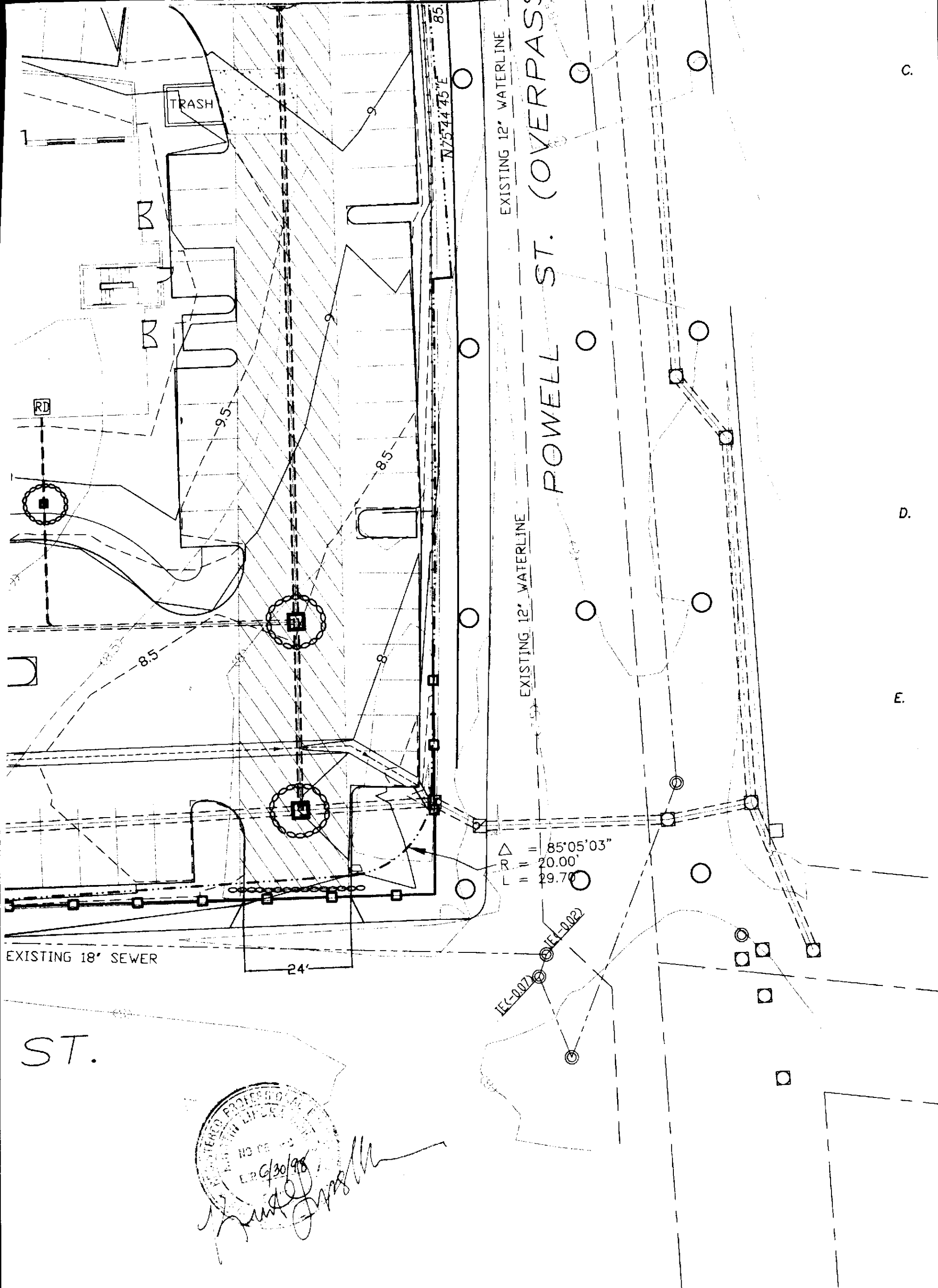


- 1. I
- 2. E
- 3. D
- 4. T
- 5. T
- 6. T
- 7. A
- 8. G
- 9. A
- 10. A
- 11. S

ALL INS SP

A.

B.



TRASH

RD

85

N75°44'45"E

EXISTING 12" WATERLINE

EXISTING 12" WATERLINE

POWELL ST. (COVERPASS)

EXISTING 18" SEWER

24'

$\Delta = 85^{\circ}05'03''$   
 $R = 20.00'$   
 $L = 39.70'$

IEC-007

IEC-002

ST.

REGISTERED PROFESSIONAL ENGINEER  
 CIVIL ENGINEERING  
 NO. 135, 136  
 E.P.C./30/98  
*[Signature]*

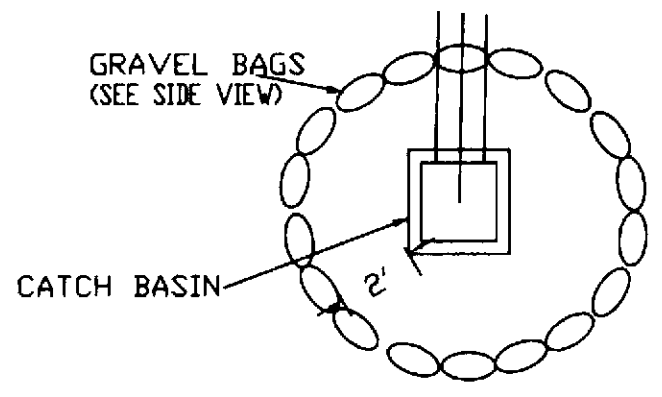
C.

D.

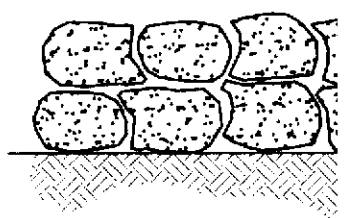
E.





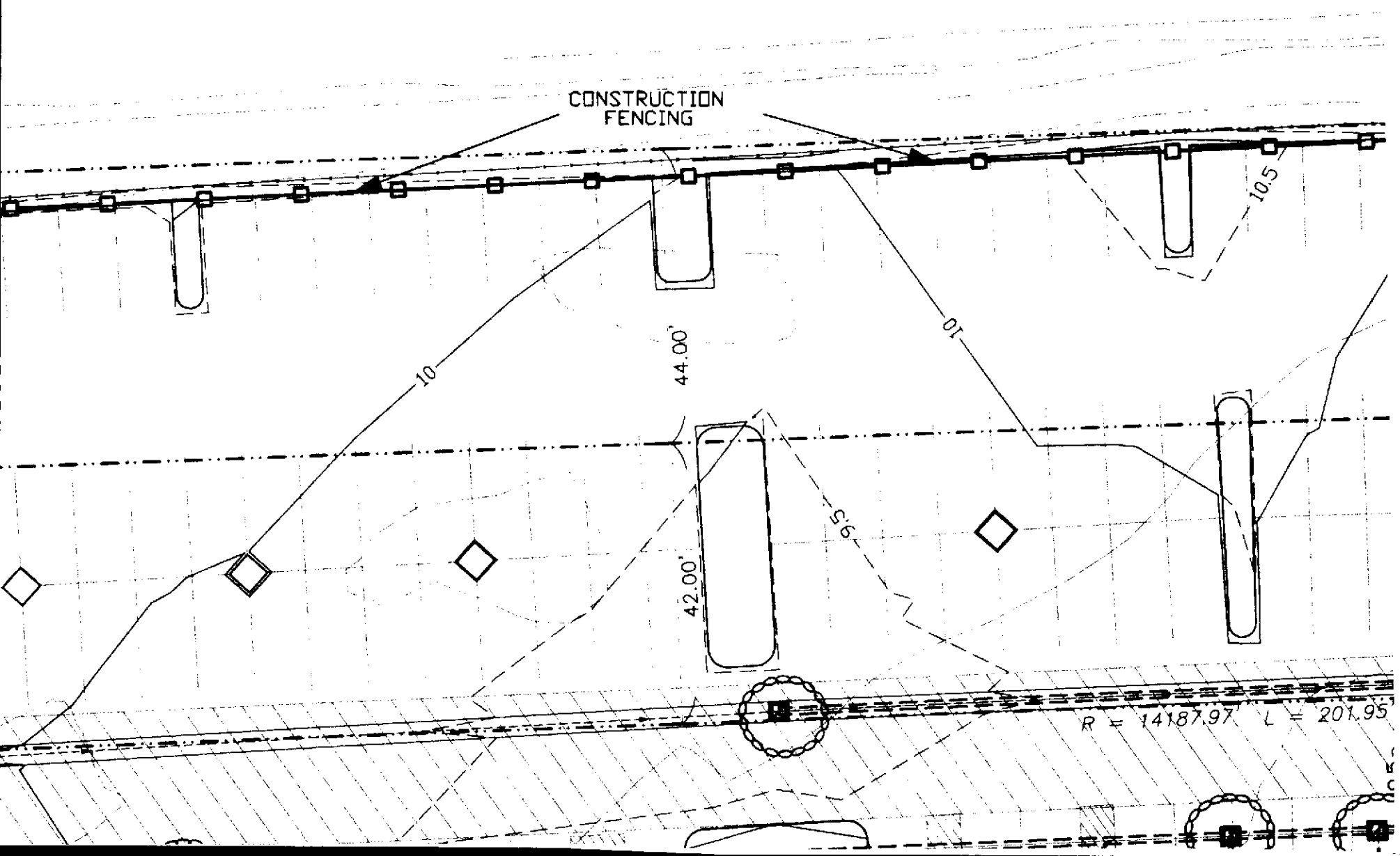


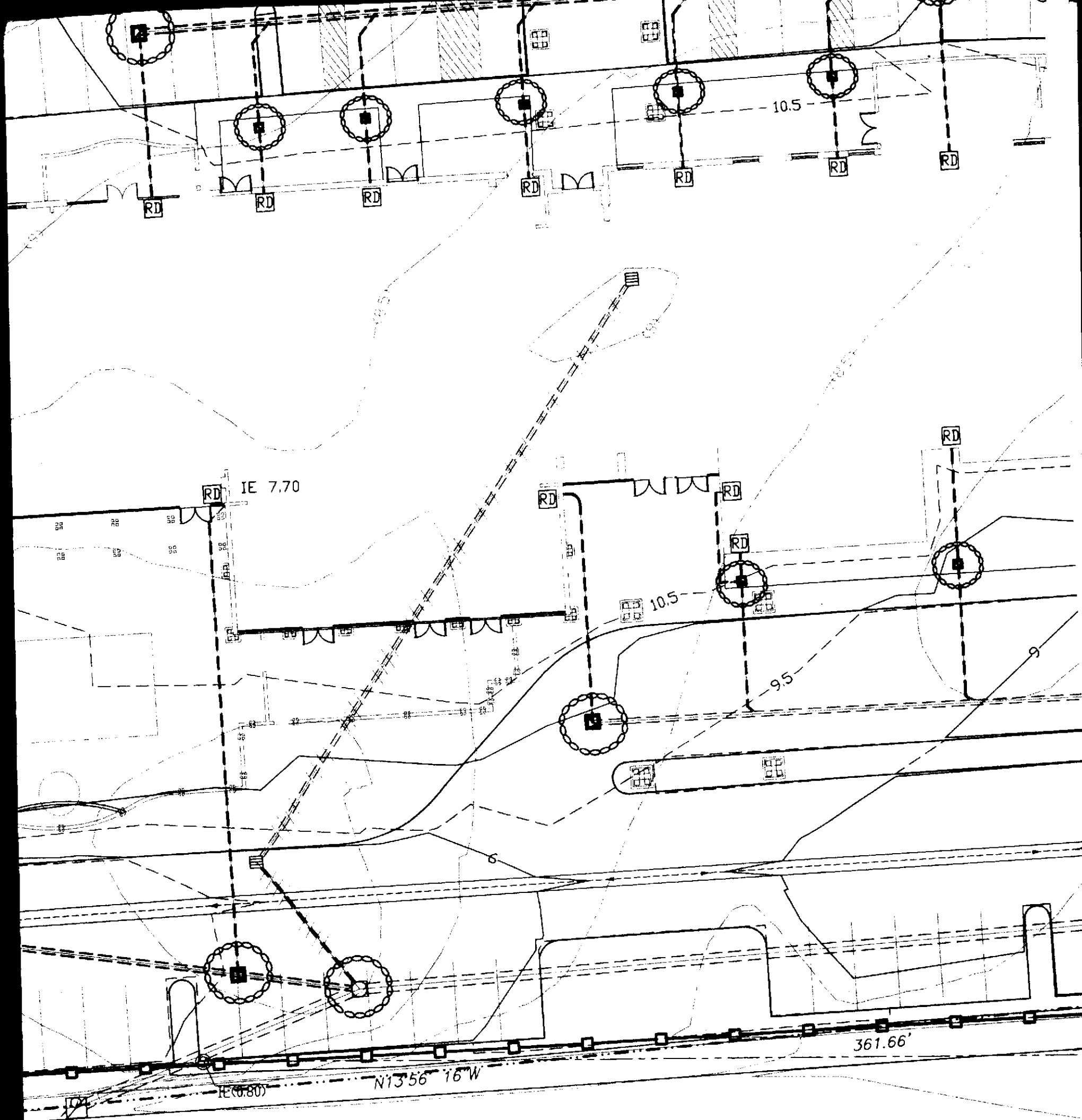
PLAN VIEW  
NTS



SIDE VIEW  
NTS  
CATCH BASIN

P.R.R. RIGHT-OF-WAY

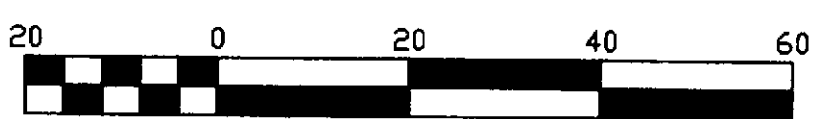
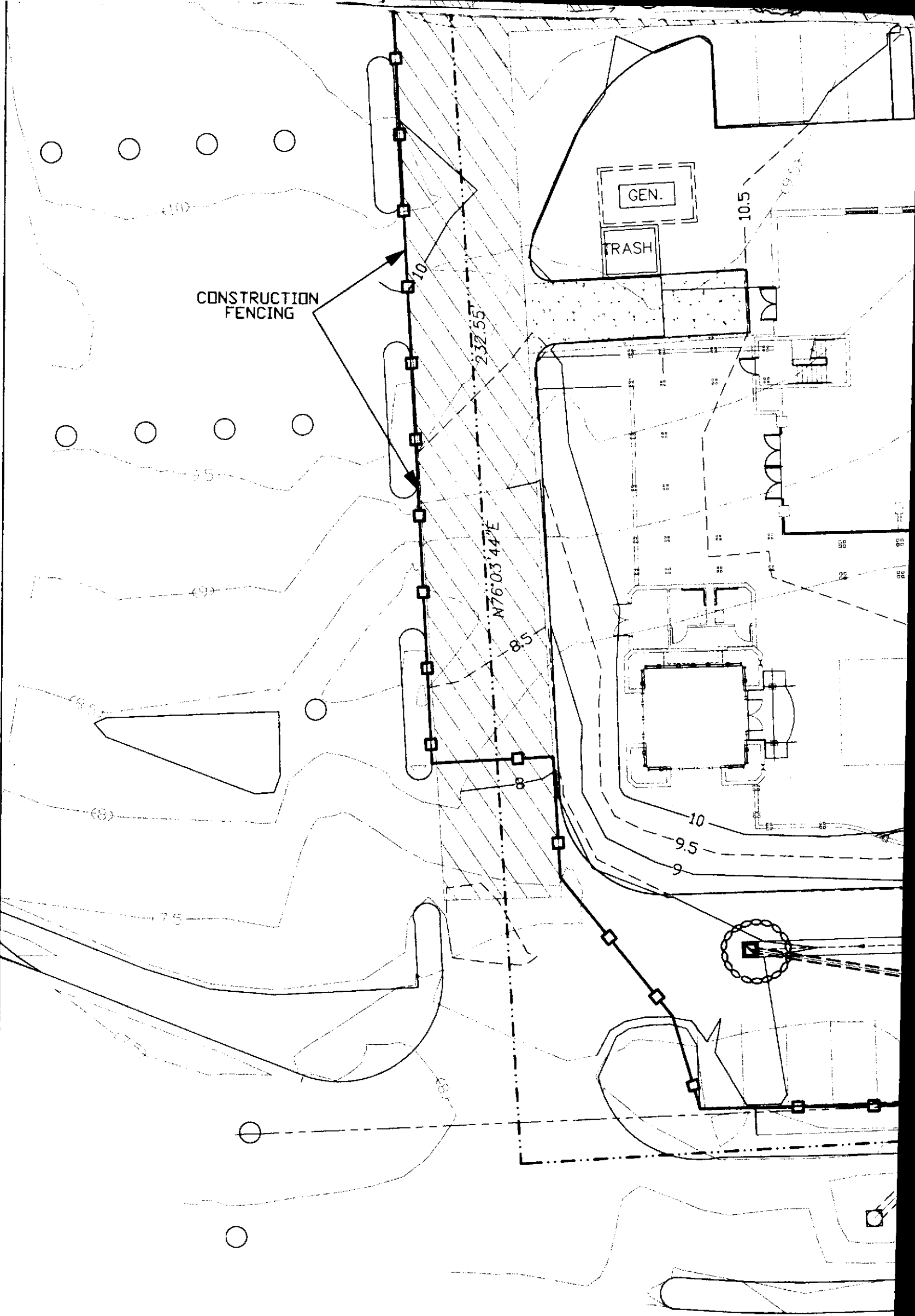




SHELLMOUND

EROSION CONTROL PLAN  
SCALE: 1" = 20'

ALL IDEAS, DESIGN ARRANGEMENTS AND PLANS INDICATED OR REPRESENTED BY THIS DRAWING ARE OWNED BY AND THE PROPERTY OF THE AUSTIN DESIGN GROUP AND WERE CREATED, DEVELOPED AND DESIGNED FOR USE ON AND IN CONNECTION WITH THE



Scale 1" = 20'

**ATTACHMENT "B"**

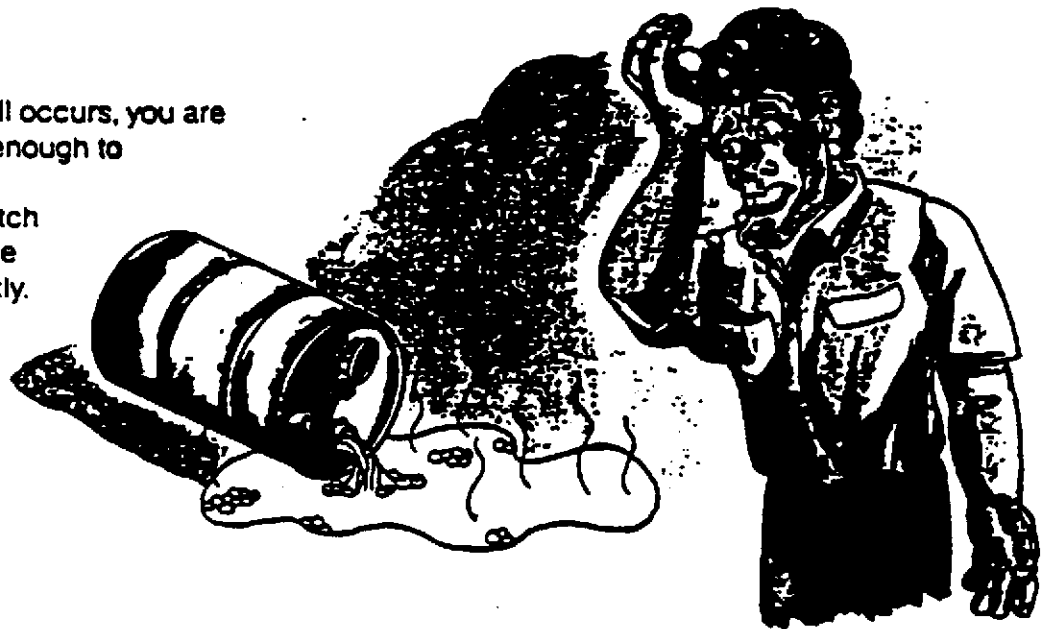
## CLEAN-UP OF SPILLS AND DISPOSAL



Clean-up of spills and proper disposal of a hazardous material is necessary to protect yourself and your community. Today, every state requires by law that you dispose of hazardous wastes in the proper way. This module covers the rules that concern disposal-and what you need to know to handle hazardous material spills.

In most cases, if an accidental spill occurs, you are the only one who can act quickly enough to prevent a disaster.

Most hazardous materials catch fire easily, and if spilled over a large area they begin to evaporate quickly. The vapors add to the fire hazard, and they also find their way into our throat and lungs, because you breathe these vapors.





If there is a spill, small or large, you must know what to do, and you must react quickly!

You must be prepared to handle a spill before it happens. To prepare yourself to handle spills, the product label and MSDS are the best places to start. While each MSDS gives you spill information, some product labels may not.



The spill section of the container label, or the MSDS will tell you:

- What to use to absorb or soak up the material.
- What personal protective equipment to wear to prevent exposure during clean-up.

No matter what the spilled material is, always:  
**TELL YOUR SHOP MANAGER IMMEDIATELY!**



If there is a spill in your work area, you must act quickly:

First, decide if the spill is large or small.

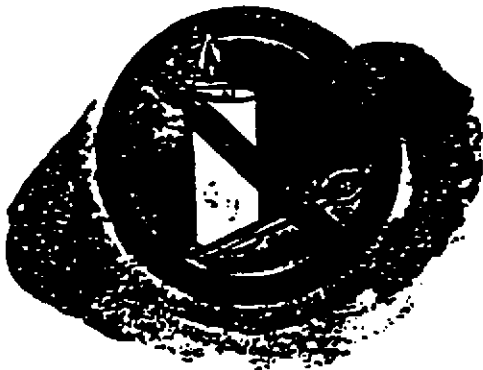
### SMALL SPILL

- Try to stop the spill immediately.

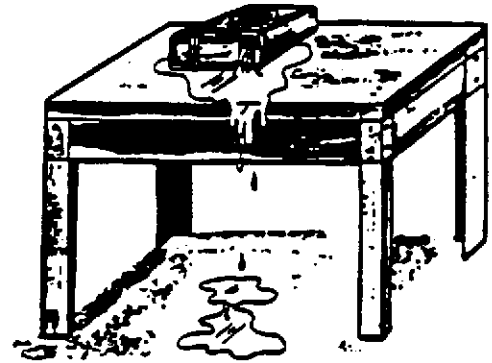
Inform your shop manager. The shop manager can review the product MSDS for instructions on how to deal with the spill.



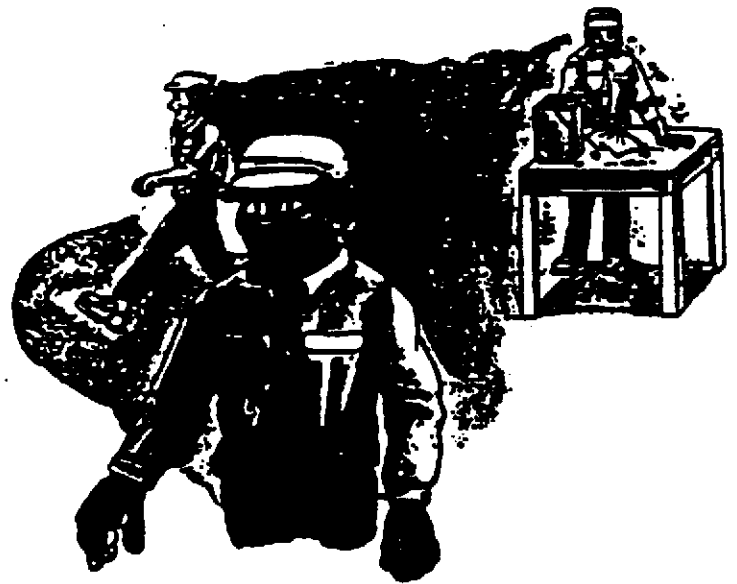
- Use the recommended equipment so you don't breathe the vapors, or get any of the material on yourself.
- Remove anything that might cause the material to ignite, such as flames, cigarettes or electrical wiring.



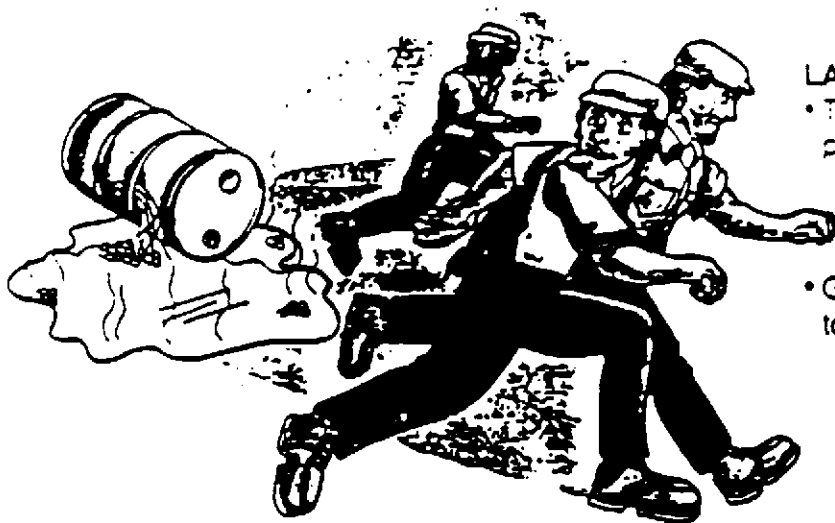
- Use recommended absorbents, such as paper towels, rags or special absorbent materials; then put any leftover liquids in a clean, empty container.
- Put used absorbents in an air-tight metal container that is closed tightly and emptied daily.



- Have everyone leave the area at once and allow fresh air into the area.







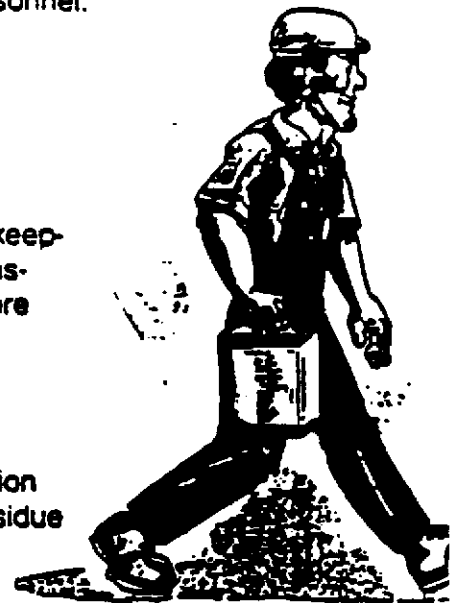
### LARGE SPILL

- Tell your shop manager to contact trained "clean-up" personnel immediately.
- Warn your co-workers and anyone else to leave the area; then seal off the area by closing all the windows and doors.
- Get the product MSDS and be ready to give information to "clean-up" personnel.

You can keep spills from happening by keeping containers tightly closed and by transferring materials in small amounts. Before a spill happens make sure you **KNOW WHAT TO DO!**

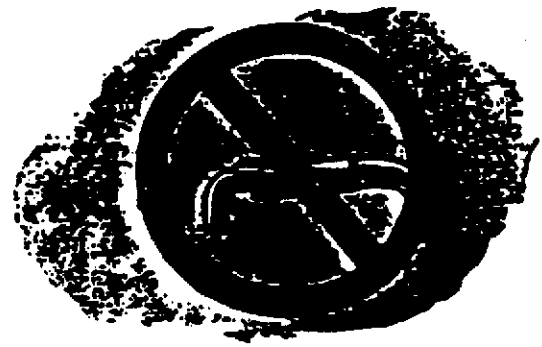
You need to take special care when cleaning up fine dusts from:

- asbestos
- battery corrosion
- metal particles
- glass bead residue
- grinding wheel dust



Use a special vacuum designed to pick up these very fine particles. If your shop doesn't have one of these special vacuums, wet down particle areas with water and sweep up or use a mop to collect the residue.

**Never use an air gun.** Air guns only spread the particles around and once these tiny particles become airborne, they will end up in your lungs.



Sooner or later, each of the hazardous materials you work with become hazardous wastes that you need to dispose of. There are new laws and regulations with strict rules for disposal of hazardous wastes.

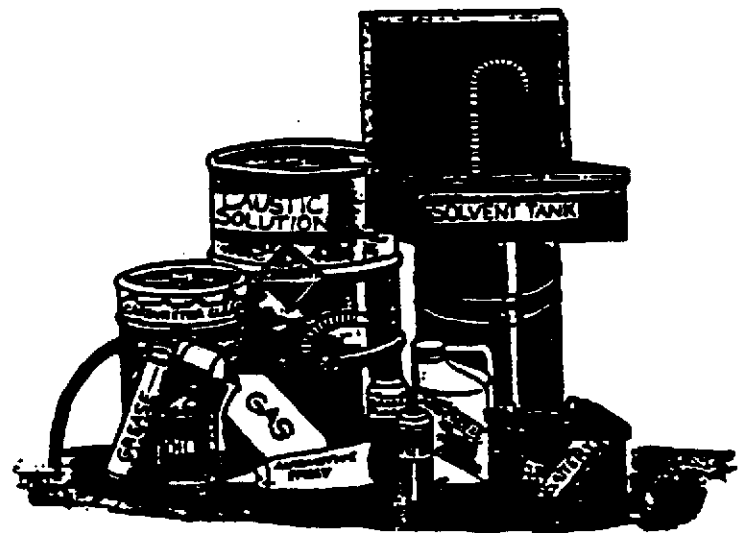


The most important law that regulates hazardous waste is the **Resource Conservation and Recovery Act (RCRA)**. Your employer knows the details of this new law. Basically, the law says that hazardous material users are responsible for those hazardous materials from the time they become a waste until they are properly disposed of.

Although you are not responsible for the whole waste-disposal process, you do play an important part in preparing the hazardous wastes you generate for disposal or recycling.

**What are the hazardous wastes generated in your shop that need special handling?**

- caustic wastes
- waste crankcase and transmission oil
- brake fluid, automatic transmission fluid, and antifreeze
- batteries and battery acid
- waste solvent and carburetor cleaner



How do you know what to do with a hazardous waste material?

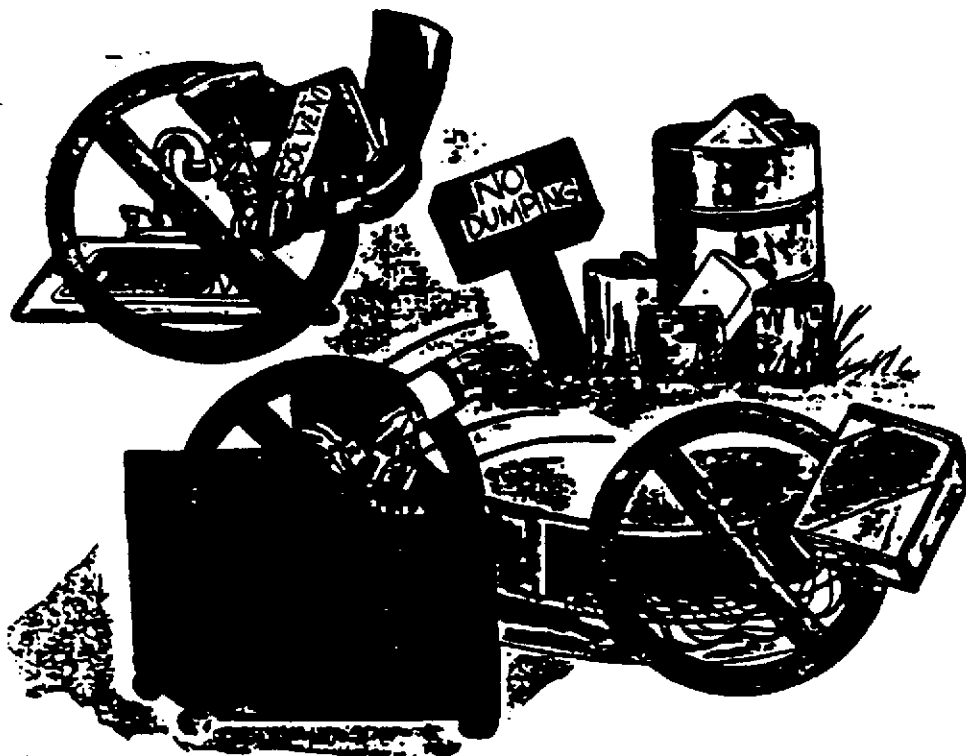
**FIRST:** Check the Material Safety Data Sheet (MSDS) for each material under "waste disposal method." Most MSDS say to dispose in accordance with local, state and federal regulations, and not to incinerate, or burn, in closed containers.

**SECOND:** Check with your shop manager to find out what the exact method is in your shop for disposal of each hazardous waste.

**THIRD:** Follow the recommendations you have been given.

There are only two **LEGAL** ways to dispose of hazardous waste:

- **Recycle the hazardous waste in your shop, then reuse the material.**
- **Have a licensed disposal contractor remove the hazardous waste to a treatment facility.**



This means it is **ILLEGAL** and there are stiff **PENALTIES** for:

- Throwing hazardous wastes into your trash dumpster.
- Dumping the wastes anywhere other than a licensed facility.
- Pouring wastes into drains—this means sinks, toilets, floor drains—or washing them into sewers.

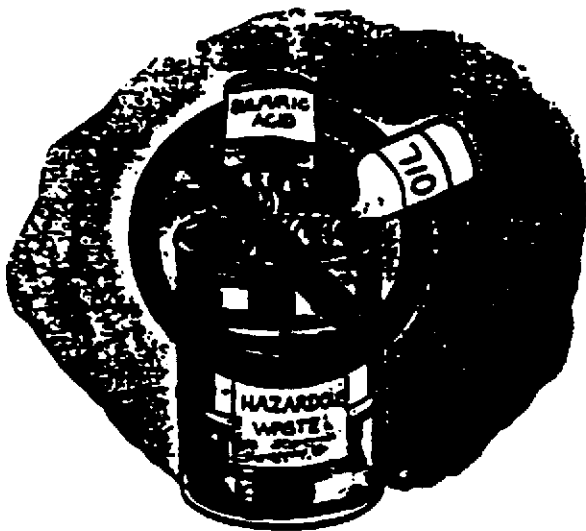
Your shop should have separate containers for each different hazardous waste material and each container should have a label telling what is inside.

Your role in the waste-disposal process is to handle the hazardous waste the right way until it is ready to be recycled or disposed of.

**You have certain responsibilities for handling hazardous wastes:**

- Place wastes in the correct storage containers and make sure they are tightly sealed and not overfilled.
- Make sure you don't mix different hazardous wastes in the same container, such as waste oil and battery acid or carburetor and brake fluid waste.
- Don't mix any materials you think might react together. If you have any doubt, ask your shop manager.
- Wear the proper personal protective equipment when handling a hazardous waste material.

Hazardous wastes can threaten you, your family, your neighbors, and your community. Please do your part to protect yourself and everyone around you from accidents that can happen when a hazardous waste is not handled properly.



### Summary

To handle a hazardous material spill you must know what to do and you must act **QUICKLY**. If there is a spill remember:

- You must tell your shop manager.
- Decide if the spill is small or large.
- Take the proper action for a large or small spill.

When a hazardous material becomes a "hazardous waste," make sure you:

- Place wastes in the correct storage containers.



- Don't mix different wastes in the same storage container.



- Wear proper protection when handling hazardous waste.



**CLEAN-UP OF  
SPILLS AND  
DISPOSAL**

Name: \_\_\_\_\_

Complete the following exercise for Module 5. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

**Fill in the blanks**

- 1) You must be prepared to handle a spill \_\_\_\_\_ it happens.
- 2) The product \_\_\_\_\_ and MSDS are the best places to start to prepare yourself to handle spills.
- 3) No matter what the spilled material is, notify your shop \_\_\_\_\_ immediately.

**True or False — Mark T for True, F for False**

- \_\_\_\_\_ If a spill occurs in your work area it is *not* important to know if the spill is large or small.
- \_\_\_\_\_ It is important to use the proper absorbents when cleaning up a spill.
- \_\_\_\_\_ It is illegal to pour hazardous materials down a drain or to wash them into sewers.
- \_\_\_\_\_ The Resource Conservation Recovery Act makes sure someone is responsible for hazardous waste from the time it is generated until it is disposed of.

**Circle the best answer**

- 1) Hazardous wastes generated in the automotive repair shop include:  
a) waste oil    b) batteries and acids    c) solvent wastes  
d) caustic wastes    e) a and b only    f) all of the above
- 2) There are really only \_\_\_\_\_ forms of waste disposal that are legal  
a) 3    b) 4    c) 2    d) none of the above
- 3) Disposal instructions can always be found:  
a) on the product label    b) on the product MSDS  
c) by asking your shop manager    d) both b and c



4) Your duties in the waste-disposal process include:

- a) placing wastes in proper storage containers
- b) mixing different wastes in the same storage container
- c) using protective equipment only when depositing large amounts of waste

**CLEAN-UP OF  
SPILLS AND  
DISPOSAL**  
(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 5: Clean-up of Spills and Disposal.

Employee \_\_\_\_\_ Date \_\_\_\_\_

I am satisfied that the employee, (named above) understands the contents of Module 5.

Shop Manager \_\_\_\_\_ Date \_\_\_\_\_