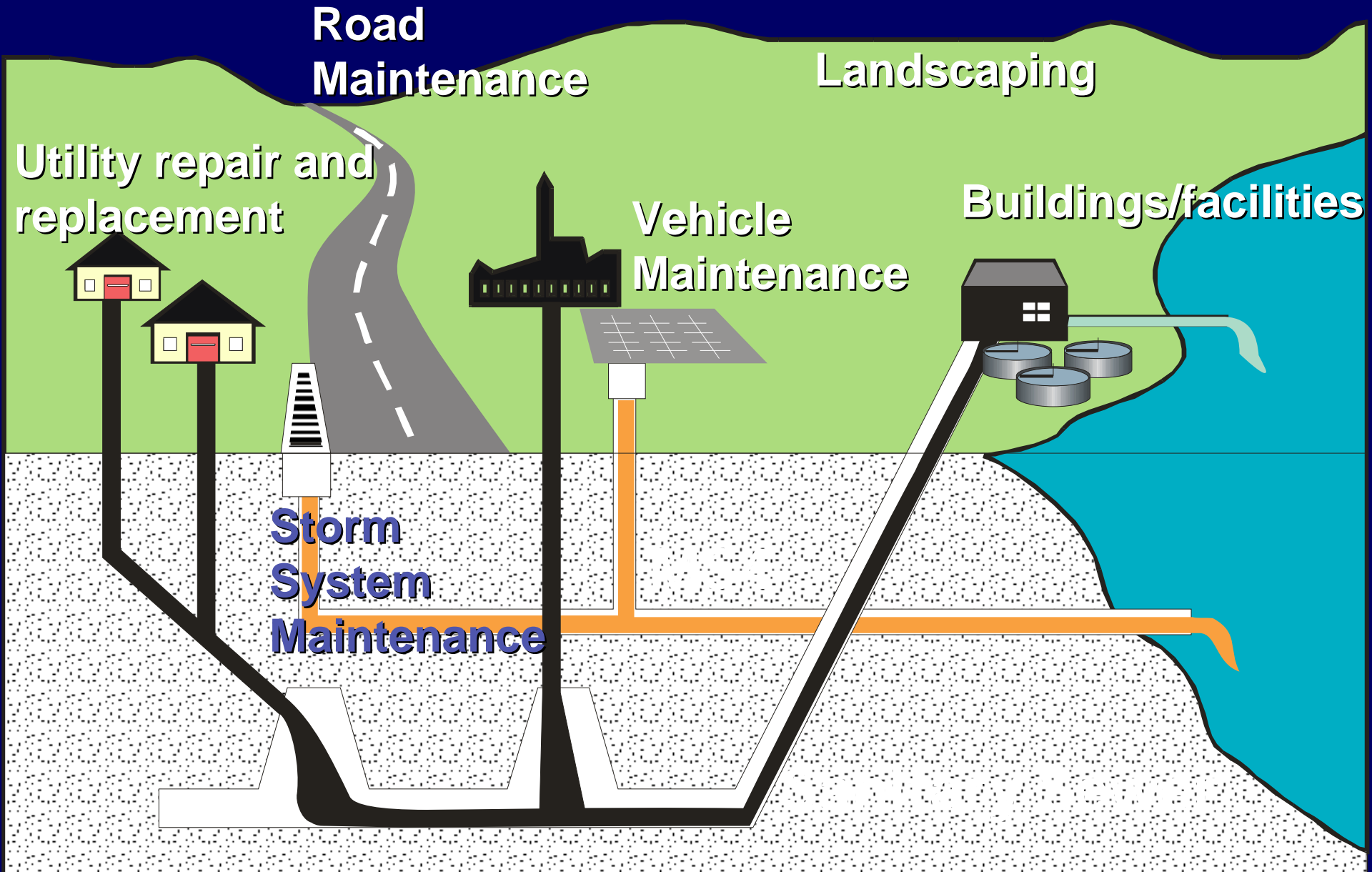


Pollution Prevention and Good Housekeeping for Municipal Operations

Barry Toning
Tetra Tech

Municipal Operations



Municipal facilities and activities can be sources of numerous stormwater pollutants

Potential pollutants likely associated with specific *municipal facilities*

Municipality Facility Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling and Disposal	X	X	X	X	X	X	X	X	X
Vehicle and Equipment Fueling			X	X		X	X		
Vehicle and Equipment Maintenance and Repair				X		X	X		
Vehicle and Equipment Washing and Steam Cleaning	X	X	X	X		X	X		
Outdoor Loading and Unloading of Materials	X	X	X	X		X	X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Overwater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X

Source: California Stormwater BMP Handbook (<http://www.cabmphandbooks.com/>)(slightly modified)



Pollution Prevention/ Good Housekeeping for Municipal Operations

MUST:

- Develop an O&M program to prevent or reduce pollutant runoff from operations
- Include employee training to prevent and reduce stormwater pollution from activities such as the maintenance of park and open space, buildings, and stormwater systems.



Pollution Prevention/ Good Housekeeping for Municipal Operations

RECOMMEND:

- Maintenance activities and schedules, and long-term inspection procedures
- Controls on the discharge of pollutants from streets, salt/sand storage areas, waste transfer stations, etc.





Pollution Prevention/ Good Housekeeping for Municipal Operations

RECOMMEND:

- Procedures for disposing of waste
- Ensure new flood management projects assess impacts on water quality



Washington State permits require:

- ◆ Maintenance standards as protective as those in Ecology manuals
 - Eastern and Western WA manuals reflect different climate, soils, geology
- ◆ Policies to reduce pollutants for lands like parks, open space, road right-of-way.
- ◆ Inspection schedules, municipal facility SWPPPs, and staff training.



Basic principles

- ◆ Store leachable materials inside or cover with a tarp
- ◆ Do not store or handle fuels or liquids near storm drain inlets
- ◆ Clean up spills promptly, with dry absorbents
- ◆ Wash equipment away from storm drain system
- ◆ Keep pavement clean
- ◆ Inspect and maintain the storm drain system
- ◆ Infiltrate stormwater wherever and whenever possible





What Legal Authority does a Municipality Need?

- Non-stormwater discharges to the MS4 should be officially prohibited by ordinance or other legal mechanism
 - Certain flows specifically prohibited
 - Allows other flows not specifically named to be prohibited
- Applies to the municipality's own operations in addition to residents and businesses
- Municipal staff and operations set the example



What are Common Requirements?

- Storm drain system inspection, cleaning, and repair
- Equipment yard stormwater management
- Landscape/pesticide programs
- Streets and roads operation/maintenance
- Flood control/detention basin programs



What are Common Requirements?



- Municipal park operations and maintenance
- Water supply operations and maintenance
- Public buildings and open area operations and maintenance
- Training and education for municipal employees and crews



What are Minor Municipal Maintenance Activities?

- Maintenance activities routinely performed by city or county crews
 - Storm system maintenance
 - Road, curb, gutter, pothole repairs
 - Striping, painting, markings removal
 - Ditch digging, mowing, herbicide applications, post installation
 - Wet utility repairs
 - Litter and roadside waste collection





Storm Drain System Cleaning and Repair

- Identify the location of catch basins
- Describe the frequency of catch basin inspection and cleaning
- Describe O&M BMPs to be implemented
- Create a mechanism to track cleaning and debris removed

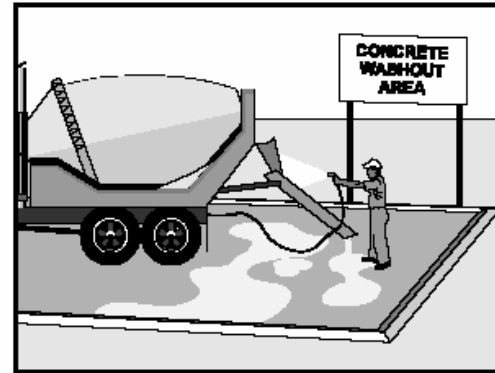


Develop Practical BMPs

- Goal: Familiar, Simple, Achievable
 - Evaluate and document current work practices
 - Identify opportunities for stormwater contamination and potential remedies
 - Provide simple and “on-the-go” fact sheets
 - Provide targeted employee training

Concrete Waste Management

WM-8



Objectives

EC	Erosion Control
SE	Sediment Control
TC	Tracking Control
WE	Wind Erosion Control
NS	Non-Stormwater Management Control
WM	Waste Management and Materials Pollution Control <input checked="" type="checkbox"/>

Legend:

<input checked="" type="checkbox"/>	Primary Objective
<input checked="" type="checkbox"/>	Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	<input checked="" type="checkbox"/>
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employee and subcontractors.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result from demolition activities
- Slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition
- Concrete trucks and other concrete-coated equipment are washed onsite
- Mortar-mixing stations exist
- See also NS-8, Vehicle and Equipment Cleaning

Limitations

- Offsite washout of concrete wastes may not always be possible.



Developing BMPs

- Municipal staff need to be involved in the development of BMPs and manuals
- Group BMPs by job/task categories or by department
- List responsible parties and individuals
- Provide opportunities for frequent modification and updates

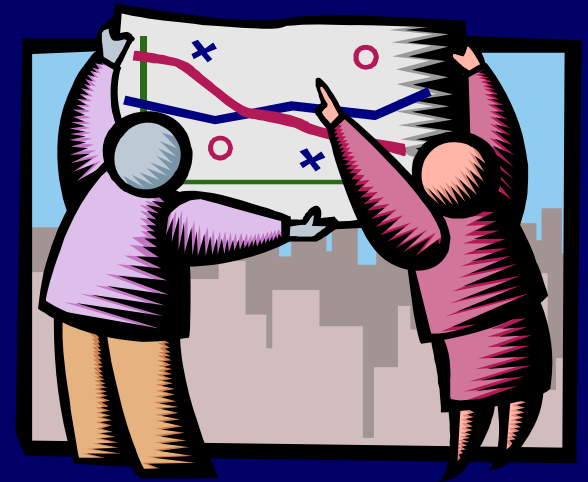


Ownership
ensures
implementation!

What Works?

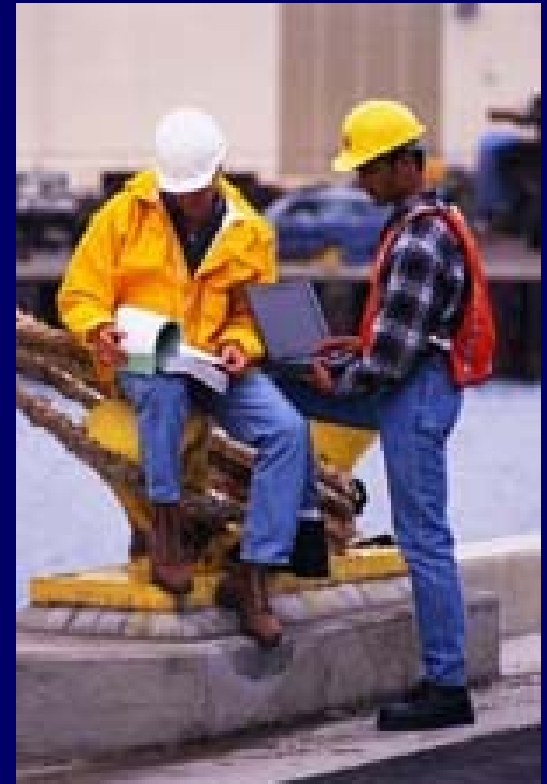
O&M Plans that . . .

- Involve and list all responsible departments
- Focus on specific activities and include achievable BMPs
- Focus on maintenance of controls
- Address pollutants of concern
- Consider seasonal variations
- Reflect staff input and ideas



What Doesn't?

- O&M programs that do not accurately address O&M activities
- Programs expected to be implemented by untrained staff
- Programs directed at a single department
- BMPs that are not reviewed, revised and maintained
- BMPs claiming to address and/or remove every type of pollutant



Training for Municipal Staff

- Teach employees that their actions have an impact on water quality and they are examples for the community
- Link your employee training with your public education message
- Create recognizable links between pollutants of concern and uses they enjoy/value



What to Include

- Have you...
 - Developed BMPs?
 - Developed procedures to ensure BMPs are being implemented by all departments?
 - Conducted training for city employees?
 - Modified municipal maintenance activities to improve stormwater quality (not just for aesthetics or flood control)?





What are Some Measurable Goals?

- The number of employees receiving stormwater training each year
- Successful development of BMPs for all municipal activities that could impact storm water
- Number of miles of streets swept





What are Some Measurable Goals?

- Proportion of storm drain system (pipes, catch basins) cleaned and repaired each year
- Amount of trash collected in receptacles or in stream cleanups each year
- Reduction in frequency of spills or discharges from municipal facilities or public works projects





National Pollutant Discharge Elimination System (NPDES)

[Recent Additions](#) | [Contact Us](#) | [Print Version](#) Search NPDES: [GO](#)

[EPA Home](#) > [QW Home](#) > [QWM Home](#) > [NPDES Home](#) > [Stormwater](#) > Menu of BMPs

NPDES Topics	Alphabetical Index	Glossary	About NPDES
Search BMPs		Filter by Minimum Measure	GO
<input type="text"/>	All of the words ▼	All ▼	Browse Fact Sheets Search Help



National Menu of Stormwater Best Management Practices

The National Menu of Best Management Practices for Stormwater Phase II was first released in October 2000. EPA has renamed, reorganized, updated, and enhanced the features of the website. These revisions include the addition of new fact sheets and revisions of existing fact sheets. Because the field of stormwater is constantly changing, EPA expects to update this menu as new information and technologies become available. Therefore EPA invites you to submit comments on the existing fact sheets and suggest additional fact sheet subjects (click on the comment button at the top or bottom of each website).

The Menu of BMPs is based on the Stormwater Phase II Rule's six minimum control measures. Click on the minimum control measure below to see the Phase II requirements for that minimum measure and for the BMPs that can be used to implement it. You can also perform a general search for keywords using the search menu above. For information on problems associated with stormwater, general BMP information, and the stormwater Phase II rule, go to [background information](#).

1. [Public Education](#) - BMPs for MS4s to inform individuals and households about ways to reduce stormwater pollution.
2. [Public Involvement](#) - BMPs for MS4s to involve the public in the development, implementation, and review of an MS4's stormwater management program.

National Menu of BMPs

- [Public Education](#) 1
- [Public Involvement](#) 2
- [Illicit Discharge](#) 3
- [Construction](#) 4
- [Post-construction](#) 5
- [Good Housekeeping](#) 6





Vertical text on a white pole, possibly a phone number or address, partially obscured by the pallet.

Labels on the batteries, including "MAINTENANCE FREE" and "GALVAN".

Labels on the propane tanks, including "GASOL" and "GALVAN GASOL".

0393





5

NO CURS

NO CURS



NO OIL
BLOW OUT AREA





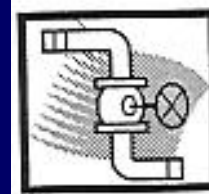
Vehicle &
Equipment
Maintenance



Facilities
Maintenance



Storm Drain
System
Maintenance



Construction
& Land
Disturbances



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Vehicle & Equipment Maintenance

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True or False?

- ◆ Whenever possible you should encourage individuals to wash vehicles on gravel, grass or other permeable surfaces.

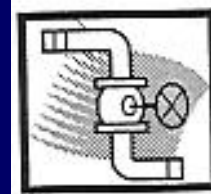
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Storm Drain
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Vehicle & Equipment Maintenance

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Which should you *ALWAYS* do:

- ◆ Inspect parking areas for stains or leaks and address leaking vehicles ASAP ✓ ✓
- ◆ Store vehicles on paved areas and sweep regularly to remove drips/leaks/dirt ✓

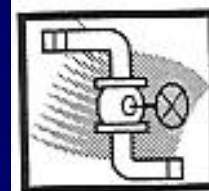
Vehicle &
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Facilities
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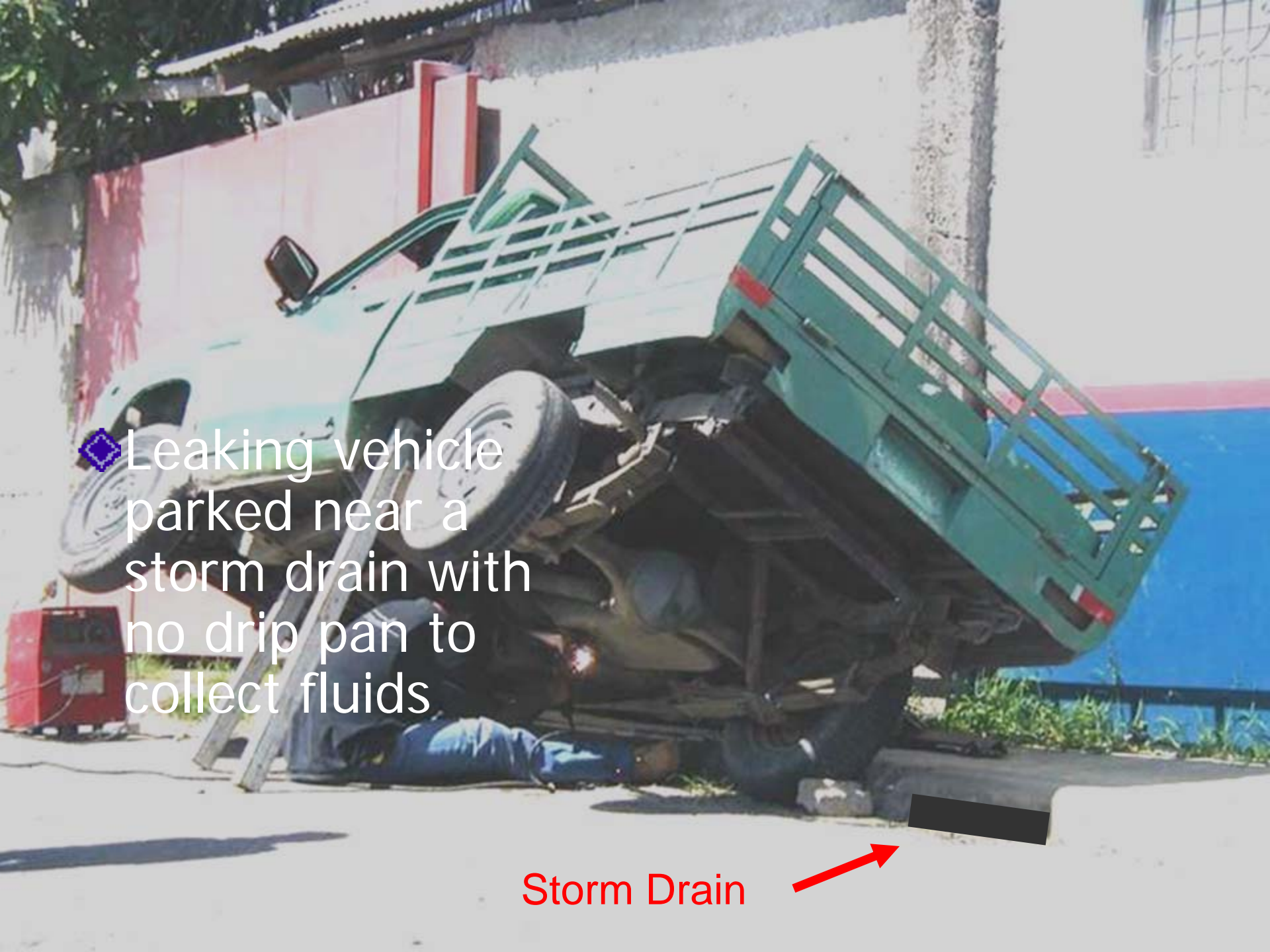
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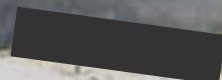
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◆ Leaking vehicle parked near a storm drain with no drip pan to collect fluids

Storm Drain



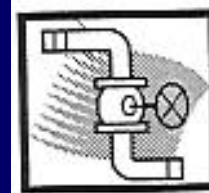
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Vehicle & Equipment Maintenance

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Which of these should you NEVER do:

- ✓  Minimize the amount of soap and water used to wash vehicles
- ✓  Use a commercial car wash
-   Perform engine washing outside

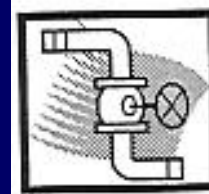
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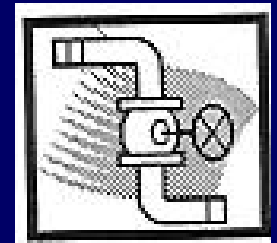
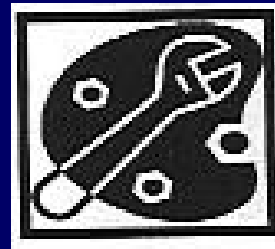
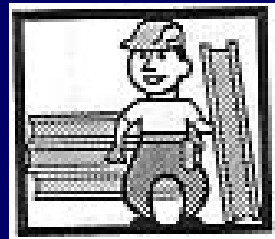
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Vehicle & Equipment Maintenance

List three things you should ALWAYS do
when cleaning up a spill.

- ✓ Stop source of the spill
- ✓ Contain liquids
- ✓ Report all spills promptly
- ✓ Cover with absorbent material (not straw)
- ✓ Use water only when necessary
- ✓ Contact municipal officials
- ✓ Secondary containment for petroleum and chemical containers
- ✓ Keep a spill kit handy
- ✓ Train employees in spill response
- ✓ Deploy containment booms
- ✓ Use drip mats



BONUS ROUND



BUT WHERE IS THEIR SPILL KIT?

