New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-01

Activity: Dewatering Operations

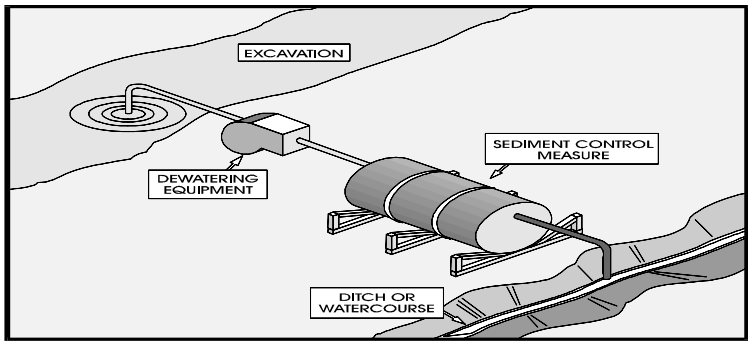
PLANNING CONSIDERATIONS:

Training:
Low

PE Design Approval:
Not Required

Maintenance:
Moderate

Inspection Frequency:
Weekly
As needed (due to wet weather)



Target Pollutants		
Significant ♦	Partial ◊	Low or Unknown ◊

Sediment ♦ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Testing of groundwater for pollution accumulation by using sediment controls is the basis of this BMP. This dewatering operation will reduce or prevent discharge of pollutants and aid in a partial reduction in toxic materials.

Approach

Sediment and toxic and petroleum products are two general classes of pollutants that may result from dewatering operations. Toxics and petroleum are rarely found in dewatering discharges unless the site or surrounding has been used for light or heavy industrial activities. Sediment, on the other hand, usually has a high content in dewatering discharges due to the commonality of the operation. This BMP only addresses capture of sediment. If it is determined that dewatering will result in transferor accumulation of toxics or petroleum products then the Indiana Department if Environmental Management (IDEM) should be consulted before any dewater activities are performed.

Maintenance and Inspection Checklist

- ❑ Inspect filtering device frequently and repair or replace once the sediment build-up prevents the structure from functioning as designed.
- ❑ Sediment removal must be disposed of at a disposal site or spread and stabilized onsite.
- ❑ Inspect excavated areas daily for signs of contaminated water (signs such as discolored water, oily sheen or odor).

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-02

Activity: Paving Operations

PLANNING CONSIDERATIONS:

Training:
Moderate

PE Design Approval:
Not required

Maintenance:
Low

Inspection Frequency:
Monthly, more frequently during summer months

Target Pollutants		
Significant ♦	Partial ◊	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Paving operations have the potential to introduce a large amount of pollutants to into the environment. This BMP will reduce or prevent the discharge of pollutants by using measures to prevent run-on and runoff pollution along with proper disposal of waste, and proper training of employees and subcontractors.

Approach

- Avoid paving during wet weather.
- Store material away from water courses to prevent stormwater run-on.
- Protect water courses, particularly in areas with a grade, by employing BMPs to divert runoff or trap/filter sediment (see SMP-06, -07, -11, -13, -14).
- Leaks and spills can contain toxic levels of heavy metals and oil and grease generated from paving equipments. To alleviate these pollutants into the area place drip pans or absorbent materials under paving equipment when they are not being used. When spills do occur, clean up spills with absorbent materials (see GHP-12 and GHP-06).
- Cover catch basins and manholes when applying seat coat, tack coat, slurry seal or fog seal.
- Commercial covers (most) will magnetically seal flat catch basins and inlets.
- If paving involves Portland cement concrete, see GHP-09 Concrete Waste Management
- If paving involves asphalt concrete do the following:
    1. Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets or creeks by sweeping Refer to GHP-06 for proper disposal.
    2. Old asphalt must be disposed of properly. Collect and remove all broken asphalt from the site and recycle.
    3. If paving involves on-site mixing plant, follow the stormwater permitting requirements for Industrial activities.

Activity: Paving Operations	GHP-02

Maintenance

- Maintain inlet protection so that water is not allowed to back up onto areas subject to traffic. Alternative measures should be employed if back up occurs.
- When sediment reaches storage capacity inlets need to be cleaned and repair as needed.
- Keep ample supplies of drip pans or absorbent materials on-site.

Inspection Checklist

- ❑ Machinery is not leaking and properly maintained.
- ❑ Inspect employees and subcontractors to ensure that measures are being followed.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-03

Activity: Structure Construction and Painting

PLANNING CONSIDERATIONS:

Training:
Minimal

PE Design Approval:
Not required

Maintenance:
Low

Inspection Frequency:
N/A

Target Pollutants

Significant ♦ Partial ◊ Low or Unknown ◊

Sediment ♦ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

A number of preventive measures around the construction site greatly decrease the amount of pollution entering the environment. Enclosing, covering or berming building material storage areas, using good housekeeping practices, utilizing safer products and training employees and subcontractors will make a significant difference in the amount of pollutants entering stormwater runoff. This will cause a significant reduction in floatable materials, other construction waste and a partial reduction of toxic materials.

Approach

- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep the area regularly.
- Use soil erosion control techniques if bare ground is exposed. See Erosion Prevention Practices.
- 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 GHP-04: Material Delivery, Storage and Use in this section.
- Properly store and dispose waste materials generated from the activity. See the waste management BMPs GHP-06,-07, -08,-09and -10 in this section.
- 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.

Activity: Structure Construction and Painting	GHP-03

Approach (Continued)

- Educate employees who are doing the work of the importance of keeping pollutants out of the stormwater system.
- 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 the table presented in the Employee/Subcontractor Training BMP fact sheet.
- For oil-based paints, paint out brushes to the extent practical, and filter and reuse thinners and solvents.
- Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain or watercourse.
- Dispose of any paint, thinners, residue, and sludges that cannot be recycled as hazardous waste. For a quick reference on disposal alternatives for paint, thinners, residue and sludges see the table presented in the Employee/Subcontractor Training BMP fact sheet.
- Latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, may be disposed of with other construction debris.
- Use recycled and less hazardous products when practical.
- Recycle residual paints, solvents, lumber, and other materials.

Maintenance

- Minimum maintenance required.
- Spot check employees and subcontractors monthly to assure appropriate practices are being employed.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-04

Activity: Material Delivery, Storage and Use

PLANNING CONSIDERATIONS:

Training:
Minimal

PE Design Approval:
Not required

Maintenance:
Low

Inspection Frequency:
Weekly

Target Pollutants		
Significant ♦	Partial ◈	Low or Unknown ◊

Sediment ◈ Heavy Metals ◊ Nutrients ◈ Oxygen Demanding Substances ◊ Toxic Materials ◈
Oil& Grease ◈ Bacteria & Viruses ◊ Floatable Materials ◈ Construction Waste ◊

Description

Material delivery and storage plays a role in stormwater runoff pollution if not performed correctly. By limiting the amount of onsite hazardous materials, storing materials in designated areas, installing secondary containment, conducting regular inspections and training employees and subcontractors pollution can be prevented or reduced. A partial reduction in sediment, nutrients, toxic materials oil and grease and floatable materials will occur as a result of these preventive measures.

Approach

The following materials are commonly stored on construction sites:

- Soil,
- Concrete compounds,
- 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.

Activity: Material Delivery, Storage and Use

Approach (cont'd)

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

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

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

1. Designate areas of the construction site for material delivery and storage.
2. Place near the construction entrances and away from waterways.
3. Avoid transport near drainage paths or waterways.
4. Surround with earth berms, dikes, swales or other containment practices.
5. Place in an area which will be paved.
6. 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.
7. Follow manufacturer's instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
8. For a quick reference on disposal alternatives for specific wastes, see the table presented in the Employee/Subcontractor Training BMP fact sheet.
9. Keep an accurate, up-to-date inventory of materials delivered and stored on-site.
10. Keep your inventory as close to "when you need it" levels as possible.
11. Minimize hazardous materials stored on-site and handle hazardous materials as infrequently as possible.
12. Consider storing materials in a covered area. Store materials in secondary containment's 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.
13. Do not store chemicals, drums, or bagged materials directly on the ground unless otherwise contained. Place these items on a pallet and, when possible, in secondary containment.
14. Try to keep chemicals in their original containers, and keep them well labeled. If other containers are used then be sure they are well marked and can be adequately sealed and stored in an appropriate place.
15. Train employees and subcontractors.

Maintenance

- Keep designated storage area clean and well organized.
- Conduct routine weekly inspections and check for external corrosion of material containers.
- Keep an ample supply of clean up material on hand.
- Inspect storage areas before and after rainfall events.
- Repair or replace perimeter controls, containment structures and covers needed for functionality.

Inspection Checklist

- ❑ Inspect storage area frequently for cleanliness and spills and leaks.
- ❑ Functions are appropriately utilized and ensured to allow proper procedures for delivery, storage and use.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-05

Activity: Spill Prevention and Control

PLANNING CONSIDERATIONS:

Training:
High

PE Design Approval:
Recommended

Maintenance:
High

Inspection Frequency:
Weekly

Target Pollutants

Significant ♦	Partial ◈	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◈
Oil& Grease ◈ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Leaks and spills promote the amount of pollution entering stormwater runoff. The reduction of chances of spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill material, and training employees all lead to a cleaner environment. The incorporation of this BMP and GHP-04 (Material, Delivery, Storage, and Use) has information that will lead to a reduction toxic materials and oil and grease.

A number of familiar hazardous substances that affect construction sites are: soil stabilizers, palliatives, herbicides, growth inhibitors, fertilizers, deicing/anti-icing chemicals, fuels, lubricants, and other petroleum distillates.

Approach

Define significant spills and the material used for each, along with the appropriate response for significant and insignificant spills. This definition should become clear after review of the Materials Safety Data Sheet or other evocative documentation. There are a few measures to follow concerning spill prevention and control:

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 procedures for the site.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

Activity: Spill Prevention and Control

Approach (Continued)

- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Designate a foreman or supervisor to oversee and enforce proper spill prevention and control measures.

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 section for specific information.
- Minor Spills.
- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Remove the absorbent materials promptly and dispose of properly.
- The practice commonly followed for a minor spill is:

  1. Contain the spread of the spill.
  2. Recover spilled materials.
  3. Clean the contaminated area and/or properly dispose of contaminated materials.

- Semi-Significant Spills
- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
- Clean up spills immediately:

  1. Notify the project foreman immediately. The foreman shall notify the Engineer or Safety Manager.
  2. Determine if spill response construction personnel are qualified to perform the cleanup in a safe manner. Alert additional trained personnel if necessary including a Haz-Mat team or dial 911 for local authorities.

Activity: Spill Prevention and Control

Approach (Continued)

3. Contain spread of the spill.
4. If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
5. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
6. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps shall be taken:

1. Notify the Engineer immediately and follow up with a written report.
2. Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
3. For spills of state reportable quantities or into a waterbody or adjoining shoreline, the contractor shall notify the IDEM general hotline – environmental assistance at 1-888-233-7745 (IDEM).
4. For spills of federal reportable quantities or into a waterbody or adjoining shoreline, the contractor shall notify the National Response Center at (800) 424-8802.
5. Notification should first be made by telephone and followed up with a written report.
6. The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staff has arrived at the job site.
7. Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the City/County Police Department, OSHA, etc.

See GHP-12 and -13 for details about spill prevention and control while maintaining or fueling vehicles and equipment.

Maintenance

- Keep an ample supply of spill control and cleanup material on-site, near storage, unloading and maintenance areas.

Inspection Checklist

- ❑ Required amount of clean up material available at the site.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-06

Activity: Solid Waste Management

PLANNING CONSIDERATIONS:

Training:
Minimal

PE Design Approval:
Not required

Maintenance:
Moderate

Inspection Frequency:
If reported

Target Pollutants		
Significant ♦	Partial ◊	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ♦ Construction Waste ♦

Description

The management of waste in and out of a construction site reduces and in some cases prevents the discharge of pollutants to stormwater. This waste may be solid or construction waste, and can be disposed of at designated waste collection areas and in containers. The reduction of floatable materials and other construction wastes result in this management practice.

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;
- Concrete, brick, and mortar;
- Pipe and electrical cuttings;
- Pavement planning or grinding and removal;
- Wood framing or false work; 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 stormwater pollution:

Activity: Solid Waste Management

Approach (cont'd)

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

- Designate waste storage areas that are away from storm drain inlets, stormwater facilities, or watercourses.
- Provide containers in areas where employees congregate for breaks and lunch.
- Inform trash hauling contractors that you will accept only watertight dumpsters for on-site use. Inspect dumpsters for leaks or open drain valves and repair any dumpster that is not watertight and tightly close the drain valve.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- If a container does spill, clean up immediately.
- Locate storage containers in a covered area and/or in secondary containment.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- 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 or converted into wood chips, then used as mulch on graded areas.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Activity: Solid Waste Management	GHP-06

Approach (cont'd)	➢ Train employees and subcontractors in proper solid waste management. ➢ Require that employees and subcontractors follow solid waste handling and storage procedures. ➢ For a quick reference on disposal alternatives for specific wastes, see the table presented in the Employee/Subcontractor Training BMP fact sheet.
Maintenance	➢ Collect site trash daily. ➢ Inspect construction waste area regularly. ➢ Arrange for regular waste collection.
Inspection Checklist	There are no major limitations to this best management practice.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-07

Activity: Hazardous Waste Management

PLANNING CONSIDERATIONS:

Training:
Moderate

PE Design Approval:
Not required

Maintenance:
High

Inspection Frequency:
As reported

Target Pollutants		
Significant ♦	Partial ◊	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Proper material use, storage, waste disposal and training of employees and subcontractors help to reduce and prevent pollution to stormwater. The resulting aspect being a partial reduction in toxic materials.

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).

Activity: Hazardous Waste Management

Approach (Continued)

The following steps will help reduce stormwater 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.
- Material Safety Data Sheets should be provided for each product being handled. All persons using or handling the product should be made aware of the safety information and the location of the readily available Material Safety Data Sheets.
- Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instruction
- ns. Over-application is expensive, environmentally harmful and generally doesn't provide the intended additional benefit. 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 trained and 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.

Waste Recycling/Disposal

- Select designated hazardous waste collection areas on-site.
- Regularly schedule hazardous waste removal to minimize on-site storage.
- Hazardous materials and wastes should be stored in covered containers and protected from vandalism. They should be stored in the original containers or in other well marked containers.
- Place hazardous waste containers in secondary containment.

Storage Procedures

- Ensure that adequate hazardous waste storage volume is available.
- Ensure that hazardous waste collection containers are conveniently located.
- Designate hazardous waste storage areas on site, away from storm drains or watercourses.

Activity: Hazardous Waste Management

Approach (Continued)

- Minimize production or generation of hazardous materials and hazardous waste on the jobsite.
- Use containment berms in fueling and maintenance areas and where the potential for spills is high.
- Segregate potentially hazardous waste from non-hazardous construction site debris.
- Store hazardous materials and wastes in covered containers and protected from vandalism.
- Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.
- Clearly mark on all hazardous waste containers which materials are acceptable for the container.
- Place hazardous waste containers in secondary containment.
- Do not allow potentially hazardous waste materials to accumulate on the ground.
- Do not mix wastes as this can cause unforeseen 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 non-hazardous 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 the table presented in the Employee/Subcontractor Training BMP fact sheet.

Training

- Educate employees and subcontractors on hazardous waste storage and disposal procedures.
- Educate employees and subcontractors of potential dangers to humans and the environment from hazardous wastes.
- Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.

Activity: Hazardous Waste Management

Approach (Continued)

- Instruct employees and subcontractors in identification of hazardous and solid waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Designate a foreman or supervisor to oversee and enforce proper solid waste management procedures and practices.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Train employees and subcontractors in proper hazardous waste management including review of material safety data sheets.
- 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.

Maintenance

- Inspect hazardous waste receptacles and area regularly.
- Arrange for regular hazardous waste collection.

Inspection Checklist

- ❑ This practice is not intended to address site-assessments and pre-existing contamination.
- ❑ Major contamination, large spills, and other serious hazardous waste incidents require immediate response from specialists.
- ❑ Demolition activities and potential pre-existing materials, such as asbestos, are not addressed by this program.
- ❑ Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-08

Activity: Contaminated Soil Management

PLANNING CONSIDERATIONS:

Training:
Extensive

PE Design Approval:
As needed

Maintenance:
High

Inspection Frequency:
As required

Target Pollutants		
Significant ♦	Partial ◈	Low or Unknown ◊

Sediment ◈ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ♦
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Contaminated soil and highly acidic or alkaline soils produce pollutants in stormwater. Contaminated Soil Management allows preventive measures such as pre-construction surveying, inspecting excavations regularly, and remediating contaminated soil promptly all reduce or prevent the discharge of pollutants to stormwater.

Suitable Applications

- Applicable to many construction projects, especially those in highly urbanized or industrial areas, where soil contamination may have occurred due to spills, illicit discharges, and underground storage tanks.
- Applicable to highway widening projects in older areas where median and shoulder soils may have been contaminated by aerially deposited lead.

Approach

Contaminated soils are often identified in the project material report with known locations identified in the plans and specifications. The contractor shall review applicable reports and investigate appropriate callouts in the plans and specifications.

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.

Activity: Contaminated Soil Management

Approach (Continued)

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 stormwater 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.
- For a quick reference on disposal alternatives for specific wastes, see the table presented in the Employee/Subcontractor Training BMP fact sheet, Table GHP-14-1.

Application of this BMP Fact Sheet

Excavation, transport, and disposal of contaminated material and hazardous material shall be in accordance with the rules and regulations of the following agencies (the specifications of these agencies shall supersede the procedures outlined in this BMP):

- United States Department of Transportation (USDOT)
- United States Environmental Protection Agency (USEPA)
- Indiana Department of Environmental Management (IDEM)
- Indiana Division of Occupation Safety and Health Administration (I-OSHA)

Education

- Prior to performing any excavation work at the locations containing material classified as hazardous, employees and subcontractors shall complete a safety-training program.
- Educate employees and subcontractors on contaminated soil handling and disposal procedures.
- Instruct employees and subcontractors in identification of contaminated soil.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Provide additional training for field supervisors and inspectors, including hazardous material safety training.

Activity: Contaminated Soil Management

Approach (Continued)

Handling Procedures for Material with Aerially Deposited Lead

- Materials from areas designated as containing aerially deposited lead may, if allowed by the contract special provisions, be excavated, transported, and used in the construction of embankments and/or backfill.
- Excavation, transportation, and placement operations shall result in no visible dust.
- Use caution to prevent spillage of lead containing material during transport.
- Monitor the air quality during excavation of soils contaminated with lead.

Handling Procedures for Contaminated Soils or Hazardous Materials

- Test suspected soils at a certified laboratory.
- If the soil is contaminated, work with IDEM to develop options for treatment and/or disposal.
- Avoid temporary stockpiling of contaminated soils or hazardous material.
- If temporary stockpiling is necessary:

  1. Cover the stockpile with plastic sheeting or tarps.
  2. Install a berm around the stockpile to prevent runoff from leaving the area.
  3. Do not stockpile in or near storm drains or watercourses.
  4. Implement stockpile controls as presented in GHP-04: Material Delivery, Storage, and Use.

- Contaminated material and hazardous material on exteriors of transport vehicles shall be removed and placed either into the current transport vehicle or the excavation prior to the vehicle leaving the exclusion zone.
- Monitor the air quality continuously during excavation operations at all locations containing hazardous material.
- Procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work, including registration for transporting vehicles carrying the contaminated material and the hazardous material.
- Collect water from decontamination procedures and dispose of at an appropriate disposal site.
- Collect non-reusable personal protective equipment (PPE), once used by any personnel, and dispose of at an appropriate disposal site.
- Install temporary security fence to surround and secure the exclusion zone. Remove fencing when no longer needed.

Activity: Contaminated Soil Management

Approach (Continued)

Procedures for Underground Storage Tank Removals

- Prior to commencing tank removal operations, obtain the required underground storage tank removal permits and approval from IDEM, which has jurisdiction over such work.
- Arrange to have tested, as directed by the Engineer, any liquid or sludge found in the underground tank prior to its removal to determine if it contains hazardous material.
- Following the tank removal, take soil samples beneath the excavated tank and perform analysis as required by IDEM and the local agency representative(s).
- The underground storage tank, any liquid and/or sludge found within the tank, and all contaminated material and hazardous material removed during the tank removal shall be transported to disposal facilities permitted to accept such material by a licensed hazardous waste hauler.

Water Control

- Take all necessary precautions and preventive measures to prevent the flow of water, including ground water, from entering hazardous material or underground storage tank excavations. Such preventative measures may consist of, but are not limited to berms, cofferdams, grout curtains, freeze walls, and seal course concrete or any combination thereof.
- If water does enter an excavation and becomes contaminated, such water, when necessary to proceed with the work, shall be discharged to clean, closed top, watertight, transportable holding tanks, and disposed of in accordance with federal, state, and local laws.

Maintenance

- Inspect excavated areas daily for indications of contaminated soil.
- Implement GHP-05: Spill Prevention and Control, to prevent leaks and spills as much as possible.
- Monitor air quality continuously during excavation operations at all locations containing hazardous material.
- Coordinate contaminated soils and hazardous material management with the appropriate federal, state, and local agencies.
- Inspect hazardous waste receptacles and areas regularly.

Inspection Checklist

- ❑ The procedures and practices presented in this BMP are general. The contractor shall identify appropriate practices and procedures for the specific contaminants known to exist or discovered on site.
- ❑ 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 GHP-01: Dewatering Operations for more information.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-09

Activity: Concrete Waste Management

PLANNING CONSIDERATIONS:

Training:
None

PE Design Approval:
Not required

Maintenance:
Low

Inspection Frequency:
If reported

Target Pollutants

Significant ♦	Partial ◈	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◈

Description

To avert concrete pollutant discharge to stormwater a number of precautionary measures should be taken. These measures include conducting off-site washouts, performing on-site washout in a designated area and training employees and subcontractors.

Approach

The following steps will help reduce stormwater 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 – such as a specially designed soil mixing sump protected by a sediment trap.
- 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.
- Be sure the stormwater collection system is protected by means of a sediment trap or similar practice.

Activity: Concrete Waste Management

Approach (Continued)

- 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 stockpile, 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 the table presented in the Employee/Subcontractor Training BMP fact sheet.
- Illicit dumping on-site or off-site without property owner's knowledge and consent is unacceptable.
- Washout locations may be flagged with lath and surveyors tape or designated as necessary to insure that truck drivers utilize proper areas.

Education

- Instruct drivers and equipment operators on proper disposal and equipment washout practices.
- Educate employees, subcontractors, and suppliers on concrete waste storage and disposal procedures.
- Designate a foreman or supervisor to oversee and enforce concrete waste management procedures. Make supervisors aware of the potential environmental consequences of improperly handled concrete wastes.

Demolition Practices

- Monitor weather and wind direction to ensure concrete dust is not entering storm drains, watercourses, or surface waters.
- Where appropriate, construct sediment traps or other types of sediment detention devices downstream of demolition activities.

Maintenance

- Inspect subcontractors to ensure that concrete wastes are being properly managed.
- If using a temporary pit, dispose hardened concrete on a regular basis that will prevent the pit from being more than half full.
- Foreman and/or construction supervisor shall monitor on site concrete waste storage and disposal procedures at least weekly.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-10

Activity: Sanitary/Septic Waste Management

PLANNING CONSIDERATIONS:

Training:
Moderate

PE Design Approval:
Required

Maintenance:
High

Inspection Frequency:
Monthly

Target Pollutants		
Significant ♦	Partial ◊	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Providing convenient well-maintained facilities with regular service and disposal reduces or prevents discharge of pollutants to stormwater from sanitary/septic waste.

Approach

- Sanitary or septic wastes should be treated or disposed of in accordance with IDEM requirements. These requirements may include:
- Locate sanitary facilities in a convenient location.
- Untreated or raw wastewater should never be discharged to a ditch, creek or other waterway, or buried.
- Temporary septic systems should treat wastes to appropriate levels before discharging. IDEM should be consulted to determine appropriate levels.
- If using an on-site disposal system (OSDS), such as a septic system, comply with local health agency requirements. IDEM should be consulted.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected and inspected by the local sewer authority to avoid illicit discharges to the storm sewer system.
- If discharging to the sanitary sewer, contact the local sewer authority for their requirements.

Activity: Sanitary/Septic Waste Management	GHP-10

Approach

- Privately held 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 the table presented in the Employee/Subcontractor Training BMP fact sheet.
- Anchor portable sanitary facilities, when needed, to prevent them from blowing over or being turned over by vandals.

Maintenance

- Inspect facilities regularly.
- Arrange for regular waste collection.

Inspection Checklist

- ❑ There are no major limitations to this best management practice other than those that may be imposed by the local sewer authority.

	New Albany, Indiana **Stormwater Best Management Practices (BMPs)** **Good Housekeeping Practices (GHPs)**	GHP-11
	Activity: Vehicle and Equipment Cleaning	

PLANNING CONSIDERATIONS:

Training:
None

PE Design Approval:
Not required

Maintenance:
Low

Inspection Frequency:
If reported

Target Pollutants		
Significant ♦	Partial ◈	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◈
Oil& Grease ◈ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

The source of pollution through improper vehicle and equipment cleaning can be abated by cleaning equipment using an off-site facility, washing in designated contained areas only, infiltrating or recycling the wash water and by training employees and subcontractors.

Approach

- Use off-site commercial washing businesses as much as possible except for removing mud and dirt off equipment while on site. Washing vehicles and equipment outdoors or in areas where wash water flows onto paved surfaces or into drainage pathways can pollute stormwater. If you wash a large number of vehicles or pieces of equipment, consider conducting this work at an off-site commercial business.

- Off-site commercial 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 entering stormwater infrastructure, creeks, rivers, and other water bodies. The wash area can be sloped for wash water collection and subsequent infiltration into the ground.

Activity: Vehicle and Equipment Cleaning

Approach (Continued)

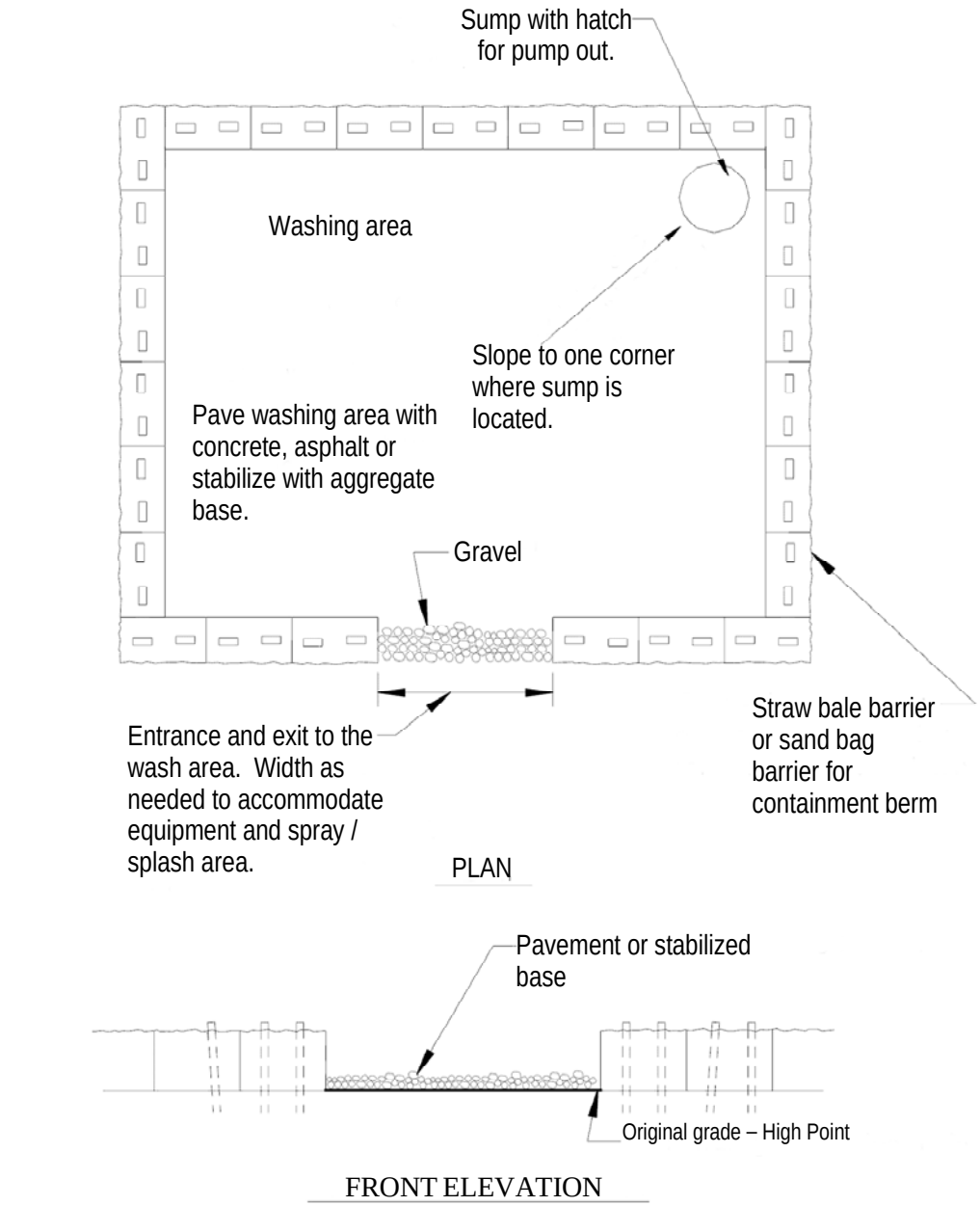
- Use phosphate-free, biodegradable soaps.
- Educate employees and subcontractors on pollution prevention measures about the importance of this practice.
- Do not permit steam cleaning on-site. Steam cleaning can generate significant pollutant concentrations.
- Clean all vehicles/equipment off-site that regularly enter and leave the construction site.
- When vehicle/equipment washing/cleaning must occur on-site, and the operation cannot be located within a structure or building equipped with sanitary sewer facilities, the outside cleaning area shall have the following characteristics:
  1. Located away from storm drain inlets, drainage facilities, or watercourses;
  2. Paved with concrete or asphalt, or stabilized with an aggregate base;
  3. Configured wash area with a sump to allow collection and disposal of wash water;
  4. Discharge wash water to a sanitary or process waste sewer (where permitted), or to a dead end sump. Wash waters shall not be discharged to storm drains or watercourses.
- When cleaning vehicles/equipment with water:
  1. Use as little water as possible to avoid having to install erosion and sediment controls for the wash area. High-pressure sprayers may use less water than a hose, and should be considered.
  2. Use positive shutoff valve to minimize water usage.
- DO NOT use solvents to clean vehicles/equipment on site.

Maintenance

- Minimal, some berm repair may be necessary, inspect weekly.
- Service sump regularly.

Inspection Checklist

- ❑ Sending vehicles/equipment off-site should be done in conjunction with a stabilized construction entrance and mud tracking removal.
- ❑ The local sewer authority may require pretreatment and monitoring of wash water discharges to the sanitary sewer and should be consulted first.



TYPICAL VEHICLE & EQUIPMENT CLEANING AREA

NOT TO SCALE

Figure GHP-11-01

Typical Vehicle & Equipment Cleaning Area

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-12

Activity: Vehicle and Equipment Fueling

PLANNING CONSIDERATIONS:

Training:
High

PE Design Approval:
Required

Maintenance:
Low

Inspection Frequency:
Weekly

Target Pollutants

Significant ♦ Partial ◈ Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◈
Oil& Grease ◈ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

This BMP prevents fuel spills and leaks and their impact to stormwater 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 stormwater. 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 run-on of stormwater 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.

Activity: Vehicle and Equipment Fueling

Approach (Continued)

- Carry out all Federal and State requirements regarding stationary above ground storage tanks with special attention given to secondary containment.
- 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 the table presented in the Employee/Subcontractor Training BMP fact sheet.
- Locate fueling areas on a paved surface where practical.
- Protect fueling areas with berms and/or dikes to prevent run-on, runoff, and to contain spills.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts.

Maintenance

- Keep ample supplies of spill cleanup materials on-site.
- Inspect fueling areas and storage tanks on a regular schedule.

Inspection Checklist

- ❑ Vehicles/equipment leaving site are using a stabilized construction entrance.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-13

Activity: Vehicle and Equipment Maintenance

PLANNING CONSIDERATIONS:

Training:
Moderate

PE Design Approval:
Not required

Maintenance:
Low

Inspection Frequency:
If reported

Target Pollutants

Significant ♦	Partial ◊̇	Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊̇
Oil& Grease ◊̇ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Running a "dry site" will reduce or prevent discharge of pollutants to stormwater from vehicles and equipment maintenance. A "dry site" 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 stormwater. 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.

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

Activity: Vehicle and Equipment Maintenance

Approach (Continued)

- 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.
- If maintenance must occur on-site, use designated areas, located away from water courses, to prevent the run-on of stormwater 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.
- 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.
- Regularly inspect on-site vehicles and equipment for leaks, and repair immediately.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- 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.
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. 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.
- 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 the table presented in the Employee/Subcontractor Training BMP fact sheet, Table GHP-14-1.
- Perform maintenance activities on paved surfaces where practical.
- Use diversion berms to protect maintenance areas from run-on.

Activity: Vehicle and Equipment Maintenance

Approach (cont'd)

- Provide spill containment dikes or secondary containment around stored oil and chemical drums.
- For long-term projects, consider using portable tents or covers over maintenance areas.
- Do not dump fuels and lubricants onto the ground.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Do not bury used tires.

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).
- 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.

Maintenance

- Keep ample supplies of spill cleanup materials on-site.
- Inspect maintenance areas on a regular schedule.
- Maintain waste fluid containers in leak proof condition.
- Vehicle and equipment maintenance areas shall be inspected regularly.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

Inspection Checklist

- ❑ Sending vehicles/equipment off-site should be done in conjunction with a stabilized construction entrance.
- ❑ Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater 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 GHP-12: Vehicle and Equipment Fueling.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-14

Activity: Employee/Subcontractor Training

PLANNING CONSIDERATIONS:

Training:
Required

PE Design Approval:
Not required

Maintenance:
None

Inspection Frequency:
N/A

Target Pollutants

Significant ♦ Partial ◈ Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

The importance of a competently trained employee or subcontractor will determine the success of the stormwater pollution prevention program. This BMP points out general methodologies used when implementing stormwater pollution prevention techniques and objectives. This training guide will focus on approaches to assure that employees and subcontractors are verse in the Storm Water Pollution Prevention Plan (SWPPP) and will turn the attention from an individualized source control into a comprehensive training program.

Suitable Applications

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 stormwater;
- 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 stormwater quality management with existing training programs that may be required for your business by other regulations such as the 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1910.120); and the Spill Prevention Control and Countermeasure (SPCC) Plan (40 CFR 112).

Activity: Employee/Subcontractor Training

Approach (cont'd)

- Supervisors and inspectors should receive additional annual 8-hour refresher courses.
- Businesses, particularly smaller ones that may not be regulated by Federal, State, or local regulations, may use the information in this BMP Manual to develop a training program to reduce their potential to pollute stormwater.
- Use the quick reference on disposal alternatives (Table GHP-14-01) to train employee/ subcontractors in proper and consistent methods for disposal.
- 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.
- 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.

TABLE GHP-14-1 QUICK REFERENCE – DISPOSAL ALTERNATIVES

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 to use. ALTERNATIVES ARE LISTED IN PRIORITY ORDER.

Key: HHW Household hazardous waste
POTW Publicly Owned Treatment Plant
NPDES National Pollutant Discharge Elimination System (NPDES) Office.
"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
General Construction and Painting: Street and Utility Maintenance			
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-MWS	
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).		

General Construction and Painting: Street and Utility Maintenance (cont'd.)			
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 Note: Thoroughly sweep following removal of dirt in all four alternatives.	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 silt fences, or use other runoff controls. 4. Place filter mat over storm drain.		
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 to 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-MWS	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-MWS	1. Wash onto dirt area, spade in. 2. Pump and remove to appropriate disposal facility. 3. Settle, pump water to sanitary sewer.
Rinsewater from concrete mixing trucks	1. Return truck to yard for rinsing into pond or dirt area. 2. At construction site, wash into pond or dirt area.		

General Construction and Painting: Street and Utility Maintenance (cont'd.)			
Non-hazardous construction and demolition debris	1. Recycle/reuse (concrete, wood, etc.). 2. Dispose as trash.		1. Recycle/reuse (concrete, wood, etc.). 2. Dispose as trash.
Hazardous demolition and construction debris (e.g. asbestos)	1. Dispose as hazardous waste.		1. Do not attempt to remove yourself. Contact asbestos removal service for safe removal and disposal. 2. Very small amounts (less than 5 lbs.) may be double-wrapped in plastic and taken to HHW drop-off.
Saw-cut slurry	1. Use dry cutting technique and sweep up residue. 2. Vacuum slurry and dispose off-site. 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.		
Construction dewatering (Nonturbid, uncontaminated groundwater)	1. Recycle/reuse. 2. Discharge to storm drain.		
Construction dewatering (Other than nonturbid, uncontaminated groundwater)	1. Recycle/reuse. 2. Discharge to sanitary sewer. 3. As appropriate, treat prior to discharge to storm drain.	POTW-MWS MDPW-NPDES	
Portable toilet waste	1. Leasing company shall dispose to sanitary sewer at POTW.	POTW-MWS	
Leaks from garbage dumpsters	1. Collect, contain leaking material. Eliminate leak, keep covered, return to leasing company for immediate repair. 2. If dumpster is used for liquid waste, use plastic liner.		
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-MWS POTW-MWS	

DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
General Construction and Painting: Street and Utility Maintenance (cont'd.)			
Cleaning driveways, paved areas (Special Focus = Restaurant alleys, grocery dumpster areas)	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 absorb-ents; 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	1. Collect all water and pump to sanitary sewer. 2. Follow this 3-step process: a. Clean oil leaks with adsorbents. b. Sweep (Use dry absorbent as needed). c. 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.		
Landscape/Garden Maintenance			
Pesticides	1. Use up. Rinse containers, use rinsewater as product. Dispose rinsed containers as trash. 2. Dispose unused pesticide as hazardous waste.		1. Use up. Rinse containers, use rinsewater as pesticide. Dispose rinsed container as trash. 2. Take unused pesticide to HHW drop-off.
Garden clippings	1. Compost. 2. Take to Landfill.		1. Compost. 2. Dispose as trash.
Tree trimming	1. Chip if necessary, before composting or recycling.		1. Chip if necessary, before composting or recycling.

DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
Landscape/Garden Maintenance (cont'd.)			
Swimming pool, spa, fountain water (emptying)	1. Do not use metal-based algicides (i.e. Copper Sulfate). 2. Recycle/reuse (e.g. irrigation). 3. Determine chlorine residual = 0, wait 24 hours and then discharge to storm drain.	POTW-MWS	1. Do no use metal-based algicides (i.e. Copper Sulfate). 2. Recycle/reuse (e.g. irrigation). 3. Determine chlorine residual = 0, wait 24 hours and then discharge to storm drain.
Acid or other pool/spa/fountain cleaning	1. Neutralize and discharge to sanitary sewer.	POTW-MWS	
Swimming pool, spa filter backwash	1. Reuse for irrigation. 2. Dispose on dirt area. 3. Settle, dispose to sanitary sewer.		1. Use for landscape irrigation. 2. Dispose on dirt area. 3. Settle, dispose to sanitary sewer.
Vehicle Wastes			
Used motor oil	1. Use secondary containment while storing, send to recycler.		1. Put out for curbside recycling pickup where available. 2. Take to Recycling Facility or auto service facility with recycling program. 3. Take to HHW events accepting motor oil.
Antifreeze	1. Use secondary containment while storing, send to recycler.		1. Take to Recycling Facility.
Other vehicle fluids and solvents	1. Dispose as hazardous waste.		1. Take to HHW event.
Automobile batteries	1. Send to auto battery recycler. 2. Take to Recycling Center.		1. Exchange at retail outlet. 2. Take to Recycling Facility or HHW event where batteries are accepted.
Motor home/construction trailer waste	1. Use holding tank. Dispose to sanitary sewer.		1. Use holding tank, dispose to sanitary sewer.
Vehicle washing	1. Recycle. 2. Discharge to sanitary sewer, never to storm drain.	POTW-MWS	1. Take to Commercial Car Wash. 2. Wash over lawn or dirt area. 3. If soap is used, use a bucket for soapy water and discharge remaining soapy water to sanitary sewer.
Mobile vehicle washing	1. Collect washwater and discharge to sanitary sewer.	POTW-MWS	
Rinsewater from dust removal at new car fleets	1. Discharge to sanitary sewer. 2. If rinsing dust from exterior surfaces for appearance purposes, use no soap (water only); discharge to storm drain.	POTW-MWS	

DISCHARGE/ACTIVITY	BUSINESS/COMMERCIAL Disposal Priorities	Approval	RESIDENTIAL Disposal Priorities
Vehicle Wastes (cont'd.)			
Vehicle leaks at Vehicle Repair Facilities	Follow this 3-step process: 1. Clean up leaks with rags or absorbents. 2. Sweep, using granular absorbent material (cat litter). 3. Mop and dispose of mopwater to sanitary sewer.		
Other Wastes			
Carpet cleaning solutions & other mobile washing services	1. Dispose to sanitary sewer.	POTW-MWS	1. Dispose to sanitary sewer.
Roof drains	1. If roof is contaminated with industrial waste, discharge to sanitary sewer. 2. If no contamination is present, discharge to storm drain.		
Cooling water Air conditioning condensate	1. Recycle/reuse. 2. Discharge to sanitary sewer.	POTW-MWS	
Pumped groundwater, infiltration/foundation drainage (contaminated)	1. Recycle/reuse (landscaping, etc.) 2. Treat discharge to sanitary sewer. 3. Treat and discharge to storm drain.	MDPW-NPDES POTW-MWS MDPW-NPDES	
Fire fighting flows	If contaminates present, Fire Dept. will try to prevent flow to stream, storm drain.		
Kitchen Grease	1. Provide secondary containment, collect, send to recycler. 2. Provide secondary containment, collect, send to POTW via hauler.	POTW-MWS	1. Collect, solidify, dispose as trash.
Restaurant cleaning of floor mats, exhaust filters, etc.	1. Clean inside building with discharge through grease trap to sanitary sewer. 2. Clean outside in container or bermed area with discharge to sanitary sewer.		
Clean-up wastewater from sewer back-up	1. Follow this procedure: a. Block storm drain, contain, collect, and return spilled material to the sanitary sewer. b. Block storm drain, rinse remaining material to collection point and pump to sanitary sewer (no rinsewater may flow to storm drain).		

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-15

Activity: Pesticides, Herbicides and Fertilizer Use

PLANNING CONSIDERATIONS:

Training:
Minimal

PE Design Approval:
Not Required

Maintenance:
Moderate

Inspection Frequency:
If reported

Target Pollutants

Significant ♦ Partial ◊ Low or Unknown ◊

Sediment ◊ Heavy Metals ◊ Nutrients ♦ Oxygen Demanding Substances ♦ Toxic Materials ♦
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Potentially harmful chemicals such as fertilizers, herbicides and pesticides desire an efficient and safe housekeeping practices to assure that pollution does not enter into stormwater.

Approach

- Integrate this best management practice as much as possible with your existing programs.
- For a quick reference on disposal alternatives for specific wastes, see the table presented in the Employee/Subcontractor Training BMP fact sheet.
- Contractors/subcontractors should develop controls on the application of pesticides, on-site. Controls may include:
- List of approved pesticides and selected uses.
- Product and application information for users.
- Equipment use and maintenance procedures.
- Record keeping and public notice procedures.
- The following discussion provides some general information on good housekeeping:

Activity: Pesticides, Herbicides and Fertilizer Use

Approach (Continued)

- Always use caution when handling any pesticide or fertilizer product. Many products contain toxic chemicals that can cause severe injury or death.
- Store pesticide or fertilizer products securely and away from children, pets, and sources of heat, sparks, and flames.
- Store products in their original containers and keep them well labeled. Do not store chemicals in food containers.
- Read and follow use instructions provided on packaging and in Material Safety Data Sheets. Periodically review the Material Safety Data Sheets and discuss use and handling precautions with people using or handling the pesticides, herbicides, or fertilizers.
- Avoid contact with eyes and skin. Wear gloves and eye protection when using or handling hazardous substances. Do not wear contact lenses, which can absorb hazardous vapors.
- Work in only well ventilated areas.
- Use up all of the product before disposing the container.
- Do not dispose of pesticide or fertilizer wastes:
  1. in trash
  2. down storm drains or into creeks
  3. onto the ground
  4. by burning.
- Do dispose of hazardous wastes at household hazardous waste collection events or facilities. Metro operates a permanent household hazardous waste collection facility at _____. For more information call _____.

Maintenance

- Training
- Contractor and subcontractor employees who handle potentially harmful materials should be trained in good housekeeping practices. Personnel who use pesticides must be trained in their use.
- The primary cost is for staff time as noted above.

Inspection Checklist

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

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-16

Activity: Dust Control and Tracking

PLANNING CONSIDERATIONS:

Training:
Minimal

PE Design Approval:
Not required

Maintenance:
Low

Inspection Frequency:
Weekly

Target Pollutants

Significant ♦	Partial ◈	Low or Unknown ◊

Sediment ♦ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◈
Oil& Grease ◈ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

Dust control measures are used to stabilize soil from wind erosion and reduce dust generated by construction activities. This temporary measure-an intermediate treatment between disturbance in either construction, paving, or vegetation reduces the amount of eroded material available for stormwater runoff.

Suitable Applications

- Clearing and grading activities.
- Construction vehicle traffic on temporary or unpaved roads or construction site access paths.
- Drilling and blasting activities.
- Sediment tracking onto paved roads.
- Soil and debris storage piles.
- Batch drop from front end loaders.
- Areas with unstabilized soil.
- Final grading/site stabilization usually is sufficient to control post-construction dust sources.
- Dust control should be practiced at all construction sites by performing phased clearing and grading operations, using temporary stabilization methods, and/or placing undisturbed vegetative buffers of at least 50 ft. length between areas being graded and those areas to remain undeveloped.
- Dust control is particularly important in windy or wind-prone areas.

Approach

- Schedule construction activities to minimize exposed area by clearing only areas where phased construction is to take place.

Activity: Dust Control and Tracking

Approach (Continued)

- Quickly stabilize exposed soils using vegetation, mulching, spray-on adhesives, calcium chloride, sprinkling, and stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction. See SMP-02, 03 and 04.
- Minimizing the impact of dust by anticipating the direction of prevailing winds.
- Direct most construction traffic to stabilized roadways within the project site.
- Dust control BMP's generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. Table GHP-16-1 shows which Dust Control BMPs apply to site conditions which cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel or asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching and sand fences can be employed for areas of occasional or no construction traffic.
- Preventive measures would include minimizing surface areas to be disturbed, limiting on-site vehicle traffic to 15 miles per hour, and controlling the number and activity of vehicles on a site at any given time.
- Pave, vegetate, or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for wet suppression or chemical stabilization of exposed soils.
- Provide for rapid clean-up of sediments deposited on paved roads. Furnish stabilized construction road entrances and vehicle wash down areas.
- Stabilize unpaved haul roads, parking and staging areas. Reduce speed and trips on unpaved roads.
- Implement dust control measures for material stockpiles.
- Prevent drainage of sediment-laden stormwater onto paved surfaces.
- Stabilize abandoned construction sites using vegetation or chemical stabilization methods.
- For the chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. The types of chemicals available and recommendations for their use are tabulated in Table GHP-16-2, Commonly Used Chemicals for Dust Control.

Activity: Dust Control and Tracking

Approach (Continued)

Selection of Methods

Selection of dust control agents should be based primarily on cost-effectiveness and environmental hazards.

Chemical methods are dust suppressant or binding agents that are used on the soil surface to bind finer particles together. Chemical dust control agents must be environmentally benign, easily applied, easily maintained, economical and not significantly detrimental to traffic ability.

Approximately three-quarters of chemical dust control agents are inorganic compounds which are compatible with soil and biota. After application, the compounds dampen and penetrate into the soil; a hygroscopic reaction pulls moisture from the atmosphere into the surface and adheres fines to aggregate surface particles. The compounds may not penetrate soil surfaces made up primarily of silt and clay, so soil tests are required.

Key factors in determining the method include the following:

- Soil types and surface materials - both fines and moisture content are key properties of surface materials.
- Properties of the agents - the five most important properties are penetration, evaporation, resistance to leaching, abrasion, and aging.
- Traffic volumes – the effectiveness and life span of dust control agents decreases as traffic increases. For high traffic areas, agents need to have strong penetrating and stabilizing capabilities.
- Climate - some hygroscopic agents lose their moisture-absorbing abilities with lower relative humidity, and some may lose resilience. Under rainy conditions, some agents may become slippery or even leach out of the soil.
- Environmental requirements - the primary environmental concern is the presence and concentration of heavy metals in the agent that may leach into the immediate ecosystem, depending on the soil properties.
- Frequencies of application - rates and frequencies of application are based on the type of agent selected, the degree of dust control required, sub grade conditions, surface type, traffic volumes, types of vehicles and their speeds, climate, and maintenance schedule.

Application of Methods

For dust control agents, once all factors have been considered, the untreated soil surface must first contain sufficient moisture to assist the agent in achieving uniform distribution (except when using a highly resinous adhesive agent). The following steps should be followed in general:

Activity: Dust Control and Tracking

Approach (Continued)

- Ideally, application should begin in late spring, after seasonal rains - not during or just before heavy rainfall- so that sub grade and surface materials will not have dried.
- If the surface has minimal natural moisture, the area to be protected must be pre-wetted so that the chemicals can uniformly penetrate the surface.
- In general, cooler and/or more humid periods result in decreased evaporation, increased surface moisture, and thus significant increase in control efficiency. However, chemical and organic agents should not be applied under frozen conditions, rainy conditions, or when the temperature is below 40° F. Tar and bitumen agents should not be applied in fog or in rain or below 55°F.
- More than one treatment with salts or organic compounds per year is often necessary, although the second treatment should probably be significantly diluted.

Maintenance

- Most dust control measures require frequent, often daily, attention.
- The primary maintenance requirement is the reapplication of the selected dust control agent at intervals appropriate to the agent type. High traffic areas shall be inspected on a daily basis, and lower traffic areas shall be inspected on a weekly basis.

Inspection Checklist

- ❑ Watering is preventing dust.
- ❑ Watering is not causing further erosion adjacent to streets.
- ❑ Watering freshly tacked roads is avoided for a minimum of 24 hours.
- ❑ Contaminants are not being washed into adjacent storm appurtenances.

TABLE GHP-16-1 DUST CONTROL BMPs FOR GIVEN SITE CONDITIONS

	DUST CONTROL BMPs								
SITE CONDITION	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt Surfacing	Silt or Sand Fences	Temporary Gravel Construction Entrances/ Equipment Wash Down	Haul Truck Covers	Minimize Extent of Area Disturbed
Disturbed Areas not Subject to Traffic	X	X	X	X	X				X
Disturbed Areas Subject to Traffic			X	X	X				X
Material Stock Pile Stabilization			X	X		X			X
Demolition			X				X	X	
Clearing/ Excavation			X	X					X
Truck Traffic on Unpaved Roads			X	X	X			X	
Mud/Dirt Carry-Out					X		X		

TABLE GHP-16-2 COMMONLY USED CHEMICALS FOR DUST CONTROL

	SALTS	ORGANIC, NON PETROLEUM-BASED	PETROLEUM BASED PRODUCTS [1]
CHEMICAL TYPES	• Magnesium Chloride • Natural Brines	• Calcium Lignosulfonate • Sodium Lignosulfonate • Ammonium Lignosulfonate	• Bunker Oil • Asphalt Primer • Emulsified Asphalt
LIMITATIONS	Can lose effectiveness in dry periods with low humidity. Leaches from road in heavy rain. Not recommended for gravel road surfaces with low fines. Recommended 10-20% fines.	Not affected by dry weather and low humidity. Leached from road in heavy rain if not sufficiently cured. Best performance on gravel roads with high surface fines (10-30%) and dense compact surface with loose gravel.	Generally effective regardless of climatic conditions may pothole in wet weather. Best performance on gravel roads with 5-10% fines.
COMMENTS	Calcium Chloride is popular. May become slippery when wet on gravel surfaces with high fines.	Ineffective on gravel surfaces low in fines. May become slippery when wet on gravel surfaces with high fines content.	Creates a hardened crust.

1 Motor oils and oil treatments are not recommended due to adverse effects on plant life and groundwater. They should only be applied in areas that will soon be paved.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-17

Activity: Maintenance of Collection Facilities and Appurtenances

PLANNING CONSIDERATIONS:

Training:
Moderate

PE Design Approval:
Not Required

Maintenance:
Moderate

Inspection Frequency:
Monthly, and as needed following significant wet weather events

Target Pollutants

Significant ♦ Partial ◈ Low or Unknown ◊

Sediment ♦ Heavy Metals ♦ Nutrients ◊ Oxygen Demanding Substances ♦ Toxic Materials ◊
Oil& Grease ♦ Bacteria & Viruses ♦ Floatable Materials ♦ Construction Waste ◊

Description

Catch basins have a sediment sump at its base designed to catch and retain sediment below the overflow point. This basin removes pollutants, reduce high pollutant concentration during first flush of storms, prevent clogging of the downstream conveyance system and restore the catch basins' sediment trapping capacity. The proper maintenance and siltation removal is required to have an effective storm water pollutant removal system for both wet and dry detention ponds and infiltration devices.

Approach

- Regular maintenance of catch basins and inlets is necessary to ensure their proper functioning. Clogged catch basins are not only useless but may act as a source of sediments and pollutants.

- In the same way, if sediment traps and basins, dry detention and wet detention ponds are not routinely cleaned and dredged then they can act as pollutant sources under certain storm conditions. Proper maintenance of detention pond and infiltration device systems is a source control procedure necessary to ensure effective stormwater pollutant removal efficiency. Routine and corrective maintenance needs should be monitored after storms for proper function of wet ponds, detention basins, and infiltration device structures. Proper maintenance of these structures requires periodic silt/sediment and trash debris removal, as well as timely vegetation control. They should be cleaned out when it is recognized that they have filled from 1/5 to 1/3 of their pollutant (sediment) storage capacity.

Activity: Maintenance of Collection Facilities and Appurtenances	GHP-17

Approach

- More frequent sediment removal is recommended, especially in areas where roadway drainage provides a significant runoff component. High accumulation rates of heavy metal contaminants (lead, zinc, and copper) have been identified in these BMP structures adjacent to high traffic areas. In order to avoid situations of hazardous waste disposal, sediment dredging and excavation should be given frequent priority.
- Clean catch basins in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.
- Catch basins should be inspected weekly and cleaned if necessary to reduce the possibility of sediment and other pollutants from leaving the construction site. This should be checked after all areas have been stabilized and at the end of the project.
- To prevent sediment and pollutant build-up in on-site catch basins, be sure to follow the guidelines set out in Temporary Inlet Protection, SMP-13.
- Maintain a clean work site, free of litter that can build-up and clog catch basins and downstream conveyance systems.
- Do not allow dumping into catch basins and stormwater inlets.
- Clean accumulated sediment and silt out of pre-treatment inlets when they have reached 1/3 of their capture volume.
- Removal of accumulated paper, trash, and debris should occur weekly or as needed to prevent clogging of control devices throughout the construction project.
- Vegetation growth in stormwater quality devices should not be allowed to exceed 24 inches (0.61 m) in height.
- Mow the slopes periodically and check for clogging, erosion and tree growth on the embankment.
- Corrective maintenance may require more frequent attention (as required).
- Maintenance of accurate logs to evaluate materials removed and improvements made.

Maintenance

- Maintenance crews may require access vehicles, dump trucks, bulldozers, and dredging/excavation equipment. Manual use equipment (such as rakes, shovels, sickles, and machetes) may suffice for maintenance of dry detention ponds and infiltration device systems. Staffing will require a minimum of two (2) person crews for health and safety reasons and effective structural BMP maintenance.
- Training
- Crews must be trained in proper maintenance, including record keeping and disposal.

Activity: Maintenance of Collection Facilities and Appurtenances	GHP-17

Maintenance

- Appropriate excavation and maintenance procedures.
- Proper waste disposal procedures.
- Channel maintenance and use of heavy equipment.
- Identification and handling of hazardous materials/wastes.
- Application of this technique in "blue line" streams requires permits from the U.S. Army Corps of Engineers, and the Indiana Department of Environmental Management.
- Frequent sediment removal is labor and cost intensive.

Inspection Checklist

- ❑ Dredged sludge is dried prior to removal to waste management facility. (See GHP-01: Dewatering Operations.)
- ❑ All drainage activities are approved by IDEM.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-18

Activity: Preservation and Maintenance of Existing Vegetation

PLANNING CONSIDERATIONS:

Training:
None

PE Design Approval:
Recommended

Maintenance:
Minimal

Inspection Frequency:
N/A

Target Pollutants

Significant ♦	Partial ◈	Low or Unknown ◊

Sediment ♦ Heavy Metals ◊ Nutrients ♦ Oxygen Demanding Substances ♦ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ♦ Construction Waste ◊

Description

The careful preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs and/or grasses that serve as erosion controls or otherwise stabilize or slopes.

Suitable Applications

This technique is applicable to all types of construction sites. Areas where preserving vegetation can be particularly beneficial are floodplain, buffers, wetlands, streambanks, steep slopes, and other areas where erosion control would be difficult to establish, install, and maintain, or areas where there are critical resources downstream.

- Preservation of existing vegetation should be practiced in the following locations:
- Areas within site where construction activity is not permitted (such as buffers) or does not occur or occurs at a later date.
- Sensitive areas where natural vegetation exists and should be preserved, such as: steep slopes, watercourses, and building sites in wooded areas.
- Areas where local, state and federal government requires preservation, such as: vernal pools, wetlands, marshes, certain oak trees, etc.

Installation Procedures

- Preservation of vegetation on a site should be planned before any site disturbance begins. Preservation requires good site management to minimize the impact of construction activities on existing vegetation, which may adversely affect their respiration, food processing, and growth.

Installation Procedures (Continued)

- During a pre-construction conference, vegetation preservation and protection measures for that project should be reviewed with the contractor and any subcontractors.

Planning

- The following planning steps should be taken to preserve existing vegetation:

- A plan for vegetation preservation should be completed before clearing and construction begins.

- Critical areas, such as floodplains, buffers, steep slopes, and wetlands should be left in their natural condition unless disturbance is unavoidable and permitted by buffer and floodplain/floodway requirements.

- Decisions on which vegetation to save should be based on the following considerations:

  1. Life expectancy and present age
  2. Health and disease susceptibility
  3. Structure
  4. Cleanliness
  5. Aesthetic values
  6. Comfort relative to site temperature variations and wind
  7. Wildlife benefits
  8. Adaptability to the proposed project
  9. Survival needs of the vegetation
  10. Relationship to other vegetation

- Areas for buffers where construction is not permitted should be delineated in the field with flags or colored temporary construction fencing.

- All vegetation to be retained should be delineated and identified (species and size) on the site plan and identified in the field by an easily seen colored flag.

- Plans should include the maintenance of existing grade around vegetation to be preserved. Most vegetation damage due to construction activities is to the root zone, which can result in the vegetation dying within a few years. Raising the grade can suffocate roots, and lowering the grade may expose roots.

- Plans for tree preservation should: avoid compaction of the soil within the drip line of a tree which can block off air and water from the roots and avoid changes in soil chemistry that can result from refuse of chemicals deposited on the soil surface.

- Temporary roadways should be located to minimize damage to shrub and tree stands, following contours to reduce cutting and filling.

Installation Procedures (Continued)

- Locate multiple utilities in the same trench to minimize trenching. Excavations should be outside the drip line of trees.
- Construction material storage and crew parking should be noted on the site plan and located where they will not cause root compaction. They can eventually kill a tree.
- For retention of existing trees in paved areas, at least 5 ft. of ungraded ground beyond the drip line should be left to help ensure tree survival.
- Soil stabilization measures should be located at the limits of clearing to prevent sediment deposition within the area where vegetation is being preserved.
- Wind damage can result from exposure of vegetation to increased wind velocities, therefore this must be considered when removing adjacent vegetation.
- Equipment must be kept away from trees to be preserved to avoid trunk damage caused by equipment nicking or scarring the trunk.

Timing

The following timing considerations should be taken to preserve existing vegetation:

- Preservation of existing vegetation should be planned before any site disturbance begins. Preservation of existing vegetation should be planned during the design stages by the design engineer and the contractor should meet onsite with the design engineer.
- No vegetation should be destroyed or altered until the design of roads, buildings, and utility systems is finalized.

Tree and Vegetation Marking and Protection

- Clearing limits should be outside of the drip line of any retained tree, and at a minimum of 5 ft. from the trunk regardless of the size of the tree. A protective device, such as a colored temporary construction fence, to guard against damage to roots, trunk, and tops of trees, should be placed at these limits.
- Individual trees, stands of trees, and areas of vegetation to be retained should be marked before construction at a height visible to equipment operators. Orange-colored plastic construction fencing or other suitable material should be used. Within 40 ft. of a proposed building or excavation, however, retained trees should be protected by fencing. The following are alternatives for tree and vegetation protection:
- Board fencing on 4-in. square posts set securely and 6 ft. apart, and protruding at least 4 ft. above the ground, placed at clearing limits.
- A cord fence with 2 rows of cord at least 3 in. in thickness running between posts. Each post should be at least 2 in. thick set securely and 6 ft. apart, protruding at least 4 ft. above the ground placed at clearing limits. Strips of colored surveyor's flagging should be tied securely to the cord at intervals of no more than 3 ft.

Installation Procedures (Continued)

- Plastic fencing of 40 in. high orange polyethylene webbing, secured to metal "T" or "U" posts driven to a depth of at least 18 in., on 6 ft. minimum centers, placed at the clearing limits. The posts should be chemically inert to most chemicals and acids.

- An earth berm constructed according to specifications, but only if its presence does not conflict with drainage patterns. The base of the berm on the tree or vegetation side should be located at the clearing limits.

- Leaving a buffer zone of existing trees between the trunks of retained trees and the clearing limits. Trees in this buffer zone should be a maximum of 6 ft. apart so that equipment and material cannot pass. These trees should be re-examined before construction is completed to check for and ensure survival or be removed.

- As a last resort, a tree trunk may be armored with burlap wrapping and 2-in. studs wired vertically, no more than 2 in. apart encircling the trunk to a height of 5 ft. No nailing should ever be done to a retained tree. The root zone, however, will still require protection.

- Employees and subcontractors should be instructed to honor protective devices. No heavy equipment, vehicular traffic, or storage piles of any construction materials should be permitted within the drip line of any tree to be retained. Removed trees should not be felled, pushed, or pulled into any retained trees. Fires should not be permitted within 100 ft. of the drip line of any retained trees. Any fires should be of limited size, and should be kept under continual surveillance. No toxic or construction materials including paint, acid, nails, gypsum board, chemicals, fuels, and lubricants should be stored within 50 ft. of the drip line of any retained trees, nor disposed of in any way which would injure vegetation. This also precludes vehicle fueling or maintenance in these areas.

Grade Protection

- If the ground level must be raised around an existing tree or tree group, a tree well can be constructed. A professional arborist should be consulted if a tree well appears to be warranted or desired. A well may be created around the tree slightly beyond the drip line to retain the natural soil in the area of the feeder roots.

- If the grade is being lowered, trees can be protected by constructing a surrounding tree wall of large stones, brick, or block, filled with topsoil. Fertilizer and water should be applied thoroughly and drainage provided so that water does not accumulate.

- Remove vegetation and organic matter from beneath the retained tree(s) to at least 3 ft. beyond the drip line, loosening the soil to at least 3 in. in depth without damaging roots.

- Apply fertilizer to the loosened soil at rates not to exceed those recommended by the fertilizer manufacturer.

- Construct a dry well to allow for trunk growth. Provide 12 in. between the trunk and the wall for older, slow-growing trees, and at least 24 in. for younger trees.

- The well should be just above the level of the proposed fill, and the wall should be just above the level of the proposed fill, and the wall should taper away from the trunk by 1 in./ft. of wall height.

Installation Procedures (Continued)

- The well wall should be constructed of large stone, brick, building tile, concrete blocks, or cinder blocks, with openings left in the wall for the flow of air and water. Mortar should be used only near the top of the well and above the porous fill.

- Drain lines beginning at the lowest point inside the well should be built extending outward from the trunk in a radial pattern with the trunk as the hub. They should be made of 4-in. drain tiles, sloping away from the well at a rate of 0.125 in./ft. A circumferential line of tiles should be located beneath the drip line; vertical tiles or pipes should be placed over the intersections of the two tile systems for fills greater than 24 in. in depth, held in place with stone fill. All tile joints should be tight. Drainage may be improved by extending a few radial tiles beyond each intersection and slope sharply downward. Coarse gravel may be substituted for tile in areas where water drainage is not a problem. Stones, crushed rock, and gravel may be added instead of vertical tiles or pipes, so the upper level of these porous materials slopes toward the surface near the drip line.

- Tar paper or an approved equivalent should be placed over the tile or pipe joint to prevent clogging, and a large stone placed around and over drain tiles or pipes for protection.

- Layer 2 in. to 6 in. of stone over the entire area under the tree from the well outward at least to the drip line. For fills up to 24 in. deep, a layer 8 in. to 12 in. should be adequate. Deeper fills require thicker layers of stone to be built to a maximum of 30 in.

- A layer of 0.75-in. to 1-in. stone covered by straw, fiberglass mat, or filter fabric should be used to prevent soil clogging between stones. Do not use cinders as fill material.

- Complete filling with porous soil (to sustain vegetation) until the desired grade is reached.

- Crushed stone should be placed inside the dry well over the openings of the radial tiles to prevent clogging of the drain lines. Vertical tiles should also be filled with crushed rock and covered with a screen.

- The area between the trunk and the well wall should be covered by an iron grate or filled with a 1:1 mixture of crushed charcoal and sand to prevent anyone from falling into the well or to prevent leaves, debris, rodents, or mosquitoes from accumulating.

- One-half of these systems may be constructed if the grade is being raised on only one side of the tree(s).

Trenching and Tunneling

- Trenching should be as far away from tree trunks as possible, usually outside of the tree crown. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching and/or tunneling proximate to trees to be retained, tunnels should be at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.

Installation Procedures (Continued)

- Tree roots should not be left exposed to air; they should be covered with soil as soon as possible, protected, and kept moistened with wet burlap or peat moss until the tunnel and/or trench can be completed.

- The ends of damaged or cut roots should be cut off smoothly and protected by painting them with a tree-wound dressing.

- Trenches and tunnels should be filled as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots. Be careful not to over-compact as this can smother and kill the tree.

- To induce and develop root growth, peat moss should be added to the fill material.

- The tree should be mulched to conserve moisture and fertilized to stimulate new root growth.

- Remove any trees intended for preservation if those trees are damaged seriously enough to affect their survival. If replacement is desired or required, the new tree should be of similar species and of at least 2-in. (50-mm) caliper balled and burlapped nursery stock, unless otherwise required by the contract documents.

- Because protected trees may be destroyed by carelessness during the final cleanup and landscaping, fences and barriers should be removed last, after all other work is complete.

Vegetation Control

- Mechanical control of vegetation includes mowing, “bush-hogging”, and hand cutting. Large scale mowing is typically done by tractor-type mowers similar to farm machinery. “Bush-hogging” usually refers to tractor mounted mowing equipment with hydraulically mounted cutting machinery. On smaller areas, lawn tractors or push mowers may be used. In areas that are inaccessible by machinery, such as steep grades and rocky terrain, hand cutting using gas powered weed trimmers and scythes may be used.

- Clippings and cuttings are the primary waste produced by mowing and trimming. Clippings and cuttings are almost exclusively leaf and woody materials. Minimize transportation of clippings and cuttings into the stormwater conveyance system. Compost piles are encouraged to create mulch and topsoil for landscaping.

- Mowing should be performed at optimal times (e.g., when it is dry). Mowing should not be performed if significant rain events are predicted.

- Mulching mowers may be recommended for certain areas. Mulching mowers should be encouraged for homeowners in flat areas. Mulching mowers have the added benefit of reducing the fertilizer demand through reuse of organic material. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs. Alternatively, the grass clippings can be bagged and used in composting.

Activity: Preservation and Maintenance of Existing Vegetation	GHP-18

Maintenance

- During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should conform to the requirements in the landscaping plan.
- If damage to protected trees still occurs, maintenance guidelines described below should be followed:
- Soil, which has been compacted over a tree's root zone, should be aerated by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Holes should be placed 18 in. apart throughout the area of compacted soil under the tree crown. Any damage to the crown, trunk, or root system of a retained tree should be repaired immediately.
- Damaged roots should be immediately cut cleanly inside the exposed area and surfaces painted with approved tree paint, and moist soil or soil amendments should be spread over this area.
- If bark damage occurs, all loosened bark should be cut back into the undamaged area, with the cut tapered at the top and bottom, and drainage provided at the base of the wound. Cutting of the undamaged area should be as limited as is possible.
- Serious tree injuries should be attended to by an arborist, forester or tree specialist.
- Stressed or damaged broadleaf trees should be fertilized to aid recovery.
- Trees should be fertilized in the late fall or early spring.
- Fertilizer should be applied to the soil over the roots and in accordance with label instructions, but never closer than 3 ft. to the trunk. The fertilized area should be increased by one-fourth of the crown area for conifers that have extended root systems.

Inspection Checklist

- ❑ Protecting existing vegetation requires detailed planning, and may constrict the area available for construction activities.
- ❑ It is appropriate to evaluate the existing vegetation for species type for use in landscaping plans. Natural vegetation and invasive or "alien" species should be delineated. The use of natural vegetation is preferred.

New Albany, Indiana
Stormwater Best Management Practices (BMPs)
Good Housekeeping Practices (GHPs)

GHP-19

Activity: System Flushing

PLANNING CONSIDERATIONS:

Training:
Moderate

PE Design Approval:
Not Required

Maintenance:
Moderate

Inspection Frequency:
Monthly, and as needed following significant wet weather events

Target Pollutants

Significant ♦ Partial ◊ Low or Unknown ◊

Sediment ♦ Heavy Metals ◊ Nutrients ◊ Oxygen Demanding Substances ◊ Toxic Materials ◊
Oil& Grease ◊ Bacteria & Viruses ◊ Floatable Materials ◊ Construction Waste ◊

Description

The suspension and removal of deposited materials are "flushed" out of storm drains. Flushing is beneficial for storm drain pipes with grades to flat to be self cleansing. This helps to maintain flow as well as removes pollutants from the storm drain system.

Approach

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Whenever possible, flushed effluent should be collected and pumped to a sediment trap, or basin, or a detention pond.
- Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the influted device is rapidly deflated with the assistance of a vacuum pump, releasing the backed up water and resulting in the cleaning of the storm drain segment.
- If the flushed water does not drain to a stormwater treatment device (e.g., detention pond or swale), then a second inflatable device, placed well downstream, may be used to re-collect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to a stormwater treatment practice. In some cases, an interceptor structure may be more practical or required to re-collect the flushed waters.

Activity: System Flushing

Approach (Continued)

Regulations

- IDEM regulations exist prohibiting the discharge of soil, debris, refuse, hazardous waste, and other pollutants that may hinder the designed conveyance capacity or damage stormwater quality or habitat in the storm drain system. This includes flushing a system to "Waters of the State". IDEM should be consulted if this practice is planned.

Equipment

- Water source (water tank truck, fire hydrant).
- Sediment collector (educator/vacuum truck, dredge).
- Inflatable devices to block flow.
- Sediment/turbidity containment/treatment equipment required if flushing to an open channel.

Inspection Checklist

- ❑ Flushing is being used for smaller diameter pipes (less than 36")
- ❑ Water source is available.
- ❑ Discharging to an approved, downstream appurtenance.