

Required BMPs for All Commercial Properties

MINIMUM REQUIREMENTS

The following BMPs are required if you own or occupy commercial, industrial, agricultural, public, or multifamily residential property in unincorporated King County.

1

Clean Your Storm Drainage System

Maintain your storm drainage system by removing sediment and other debris to prevent the transport of pollutants into receiving waters. The storm drainage system includes all drains, catch basins, pipes, ditches, gutters, and flow control and water quality facilities.



See BMP Info Sheet 7 in Chapter 5 for details on drainage system maintenance.

2

Eliminate Illicit Connections to the Storm Drainage System

A common situation that can cause severe stormwater pollution problems is discharge of non-stormwater to the storm drainage system. Examples are discharges from internal floor drains, appliances, industrial processes, sinks, and toilets. These are sometimes illegally or inadvertently connected or drained to the nearby storm drainage system. These discharges must go to the sanitary sewer system, a holding tank, an on-site process water treatment system, or a septic system. You must correct these illicit discharges. If you have any questions as to whether your discharge is allowable, contact the King County Water and Land Resources Division at 206-296-1900.



See BMP Info Sheet 1 in Chapter 5 for information on how to check for illicit connections. You can also ask for help from your local sewer utility. If you find out that your internal drains are

improperly connected to the storm drainage system, they will need to be either removed, permanently plugged, or connected to the sanitary sewer, septic system, on-site treatment system, or a holding tank.



Stencil Your Storm Drains

Stencil storm drains where applicable to prevent the improper disposal of pollutants. Storm drain inlets should have stenciled messages such as “Dump No Waste Drains to Stream” stenciled next to the catch basin to warn against intentional dumping or discharge of pollutants. If the metal catch basin grate has been cast with this message, stenciling may not be required unless evidence of dumping is found.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage of Liquid Materials in Stationary Tanks

This activity applies to you if you store any type of liquids, including but not limited to chemicals, waste oils, solvents, or petroleum products in above ground stationary tanks. Leaking tanks can contribute toxic compounds, oils and greases, metals, abnormal pH, and nutrients to stormwater runoff. In addition, spills may occur during liquid transfer operations to and from the tanks.

This activity does not apply to underground storage tanks or to businesses permitted by the Washington State Department of Ecology to treat, store, or dispose of dangerous wastes. Storage of reactive, combustible, or flammable liquids must comply with the King County Fire Code Title 17.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in storage of liquid materials in above ground stationary tanks:

1

Store and contain liquid materials in such a manner that if the tank is ruptured, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.



See BMP Info Sheet 5 in Chapter 5 for information on containment.

OR

If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as an oil/water separator or down-turned elbow) in the catch basins that collect runoff from the storage tank area.



See BMP Info Sheet 9 in Chapter 5 for information on oil/water separators.

2

Required Routine Maintenance:

- Place drip pans or absorbent materials beneath all mounted taps and at all potential drip and spill locations during filling and unloading of tanks. Any collected liquids or soiled absorbent materials must be reused, recycled, or properly disposed of.
- Store and maintain appropriate spill cleanup materials near the tank storage area, in a location known to all. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Sweep and clean the storage area as needed if it is paved. Do not hose down the area to a storm drain.
- Check tanks (and any containment sumps) daily for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating. Collect all spilled liquids and properly dispose of them.
- Inspect spill control devices regularly (daily/weekly) to remove separated floatables.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage of Liquid Materials in Portable Containers

This activity applies to you if you store any type of liquids including but not limited to chemicals, waste oils, solvents, or petroleum products in portable containers (such as drums). This activity covers permanent storage as well as temporary storage areas at temporary sites. Spills and drips of these liquids, or overtopping of storage containers, can contribute toxic compounds, oils and greases, metals, abnormal pH, and nutrients to stormwater runoff.

This activity does not apply to businesses that are permitted by the Washington State Department of Ecology to treat, store, or dispose of dangerous wastes. Storage of reactive, combustible, or flammable liquids must comply with the King County Fire Code.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in the storage of liquid materials in portable containers:

- 1** Place tight-fitting lids on all containers.
- 2** Enclose or cover the containers where they are stored. The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.
- 3** Raise the containers off the ground by using a spill containment pallet or similar method that has provisions for spill control.

OR

Contain the material in such a manner that if the container leaks or spills, the contents will not discharge, flow, or be washed into the storm drainage system, surface water, or groundwater.

 See BMP Info Sheet 5 in Chapter 5 for information on containment options.

4

Place drip pans or absorbent materials beneath all mounted container taps, and at all potential drip and spill locations during filling and unloading of containers. Any collected liquids or soiled absorbent materials must be reused, recycled, or properly disposed of.

 See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

5

Required Routine Maintenance:

- Store and maintain appropriate spill cleanup materials near the container storage area, in a location known to all. Ensure that employees are familiar with the site's spill plan and/or proper spill cleanup procedures.
- Sweep and clean the storage area as needed if it is paved. Do not hose down the area to the storm drainage system.
- Check containers (and any containment sumps) daily for leaks and spills. Replace containers that are leaking, corroded, or otherwise deteriorating. If the liquid chemicals are corrosive, containers made of compatible materials must be used instead of metal drums. New or secondary containers must be labeled with the product name and hazards.
- Collect all spilled liquids and properly dispose of them.
- Inspect spill control devices routinely (daily/weekly) and remove separated floatables.

 See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage of Soil, Sand, and Other Erodible Materials

This activity applies to you if you are stockpiling erodible raw materials such as soil, sawdust, landscaping bark, gravel, sand, and road deicing salts. It covers permanent sites as well as temporary construction sites and other temporary locations. Raw material stockpiles can easily erode due to wind or precipitation and contribute suspended solids, nutrients, metals, and abnormal pH to stormwater runoff.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in storage or stockpiling erodible material on a routine or temporary basis.

1

Cover and contain the stockpiles of raw materials to prevent stormwater from running into the covered piles. The covers must be in place at all times when the stockpile is not in active use. Do not hose down the contained stockpile area to the storm drainage system.

OR

If the stockpiles are so large that they cannot feasibly be covered and contained, you must implement erosion control practices at the perimeter and as needed on site to prevent erosion and runoff of the stockpiled material into the storm drainage system or off site. See the King County Surface Water Design Manual, Appendix D (Erosion and Sediment Control Standards).



See BMP Info Sheet 3 in Chapter 5 for information on covering options.



See BMP Info Sheet 5 in Chapter 5 for information on containment options.



Required Routine maintenance:

- Sweep paved storage areas as needed and collect and dispose of loose solid materials. Do not hose down the area to a storm drain or conveyance ditch.
- Stock cleanup materials, such as brooms, dustpans, and vacuum sweepers near the storage area.

ADDITIONAL BMPS

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control.



A catch basin insert, configured for sediment removal, may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this requirement when evaluating your options.



See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage of Pesticides and Fertilizers

This activity applies to you if you store non-liquid pesticides or fertilizers. See Activity Sheets A-2 and A-3 for storage of liquid materials. Runoff from pesticide storage areas can be contaminated with toxic compounds, oils, and metals. Runoff from fertilizer storage areas can be contaminated with nutrients and fecal coliform bacteria. The primary problem with most of these pollutants is that they are soluble, which means they cannot be removed from stormwater runoff, or out of contaminated water that seeps into the soil.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in the storage of non-liquid pesticides and fertilizers:

1

Cover pesticides and fertilizers.



See BMP Info Sheet 3 in Chapter 5 for information on covering options, which includes nonstructural or structural options.

2

Raise the materials off the ground by using pallets or another similar method to prevent contact with stormwater runoff. Provide spill control.

OR

Contain the material in such a manner that if the container leaks or spills, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.



See BMP Info Sheet 5 in Chapter 5 for information on containment options.



Required Routine Maintenance:

- Store and maintain appropriate spill cleanup materials near the storage area, in a location known to all.
- Clean up any spilled fertilizer or pesticides and ensure that the materials are kept in the designated covered or contained areas.
- Sweep paved storage areas as needed. Collect and dispose of loose solid materials. Do not hose down the area to a storm drain or conveyance ditch.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage of Contaminated Soils

This activity applies to you if you store and treat soils contaminated with toxic organic compounds, oils and greases, and metals. Typically this situation arises when other site work is being conducted, such as removing a leaking underground tank. Contaminated soils are usually excavated and left on the premises for treatment via aeration and perhaps chemical stabilization. Stormwater runoff that comes in contact with contaminated soil can carry some of those same contaminants along with suspended solids into receiving waters. The Washington State Department of Ecology regulates businesses engaged in this activity. In addition, a permit from the Puget Sound Clean Air Agency is required if the treatment method for removing soil contaminants involves forcing air through the soil. The BMPs below supplement other required regulations.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in storage and treatment of contaminated soils:

1

Cover or contain contaminated soils to prevent stormwater from carrying pollutants away to surface or ground waters.



See BMP Info Sheet 5 in Chapter 5 for information on containment and run-on prevention.

2

Required Routine Maintenance:

- Sweep paved storage areas as needed. Collect and dispose of soil particles. Do not hose down the area to a storm drain or conveyance ditch.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

- Stock cleanup materials such as brooms, dustpans, and vacuum sweepers near the storage area.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



A catch basin insert, configured for sediment removal, may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when evaluating your options.



See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage or Processing of Food Items

This activity applies to you if you temporarily store fruits and vegetables outdoors prior to processing or other use; crush, cut, or shred fruits or vegetables for wines, frozen juices, and other food and beverage products; or process meats, seafood and other foods for wholesale. Stormwater runoff from areas where these activities occur may be contaminated with nutrients from crushed or decaying fruits and vegetables and suspended solids from unwashed produce.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in the STORAGE of fruits or vegetables:

1

Minimize use of water to clean fruits and vegetables to avoid excessive runoff. Animal and fish wastes must be sealed or contained in some manner to ensure they do not leak from dumpsters or other waste containers. Do not drain water or ice used for storing fish and meat products to the storm drainage system.

2

Required Routine Maintenance:

- Clean the storage area as needed to collect dirt and fragments of fruits or vegetables or other foods. Properly dispose of collected waste. Do not hose down the area to the storm drainage system.
- Stock cleanup materials such as brooms and dustpans near the storage area.
- Minimize outdoor storage time for fruits and vegetables whenever possible.
- Collect rotting produce frequently and dispose of it properly.

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in the PROCESSING of fruits, vegetables, meats, or other foods:



Enclose the processing area. Any discharges must drain to the sanitary sewer or a treatment facility.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage of Solid Waste and Food Wastes (Including Cooking Grease)

This activity applies to you if you store solid wastes including both food and non-food wastes outdoors. This typically refers to garbage dumpsters, other outdoor waste containers such as cooking grease barrels or containers, and any stockpiled garbage. Improper storage of non-food solid wastes can allow toxic compounds, oils and greases, metals, nutrients, and suspended solids to enter stormwater runoff. Stormwater runoff from food waste storage areas may be contaminated with oils and greases, nutrients, and suspended solids if waste containers are leaking, are not covered, or are too small to contain the amount of waste generated. If you store dangerous wastes you must follow specific regulations outlined by the Washington State Department of Ecology.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in storage of solid wastes or food wastes:

1

Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and run-off with a berm or similar method. The waste containers or piles must be covered except when in use.



See BMP Info Sheet 5 in Chapter 5 for information on containment and run-on prevention and BMP Info Sheet 3 for information on covering options.

2

When transferring cooking oil/grease to outside containers from kitchens, cover the container with a tight lid during transport and clean up any spills immediately.

3

Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Clean up spills immediately. Collected grease must be properly disposed of as garbage.



Required Routine Maintenance:

- Check storage containers as needed for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the storage area as needed if it is paved. Do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning your containers into a sanitary sewer according to health department requirements.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Storage of Scrap and Recycling Materials (Including Auto Recycling Facilities)

This activity applies to you if you salvage and store scrap metal, scrap equipment, junked appliances and vehicles, empty metal drums, and recyclable items such as cans, bottles, and paper products for longer than two weeks (unless material is rotated and storage is essentially continuous). Stormwater runoff from these sites may contain toxic hydrocarbons, polychlorinated biphenyls (PCBs), other toxic compounds, metals, oils and greases, and suspended solids.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in storage of scrap and recycling materials:

1

Designate an area to drain gasoline, engine fluids, and other contaminated liquids from scrapped items. Dispose and store waste properly, or preferably recycle it, before the items are placed in the scrap storage area. Drain and transfer fluids from vehicles and other equipment to storage containers only in designated areas located on impervious surfaces (preferably Portland cement concrete) or over drip pans. All containers used to store fluids must comply with Activity Sheets A-2 and A-3 regarding secondary containment. Storage of gasoline must comply with the appropriate Fire Codes.

Contain the designated draining and dismantling area to prevent stormwater from entering the area and carrying pollutants to surface or ground water or drainage systems. Dismantling areas must be covered with roofs and/or tarps to prevent rainwater contact.

☞ See BMP Info Sheet 5 in Chapter 5 for information on containment and runoff prevention and BMP Info Sheet 3 for information on covering options.

2

Check incoming scrap materials, vehicles and equipment for potential fluid contents and batteries. Always use the designated fluid draining/dismantling area.

- 3 Remove batteries and store batteries in enclosed containers with neutralizing agents such as baking soda in case of battery breaks and/or acid leaks.
- 4 All scrap metal removed from equipment or vehicles that may contribute pollutants to surface water or groundwater due to washoff from rainwater contact must be covered and raised off the ground.
- 5 Cover or enclose stockpiles of crushed containers, crushed glass, recycled plastic, and any other material that has the potential to contaminate stormwater runoff. Stockpiled materials must not enter the storm drainage system.
- 6 Required Routine Maintenance:
 - Inspect the storage area regularly to check for contamination from stockpiles or containers. Promptly clean up any leaks, spills, or contamination in the storage area.
 - Sweep open areas of the scrap storage area as needed if they are paved. Collect and properly dispose of loose scrap and other particles. Do not hose down the area to a storm drain.
 - Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- 7 If you are involved in transporting any of these materials you must (1) carry spill cleanup material in the vehicle to capture any spilled liquids, or (2) place an impermeable liner in the bed of your truck to capture any spilled or leaked materials. Properly dispose of or reuse any collected fluids.

ADDITIONAL BMPS

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:

- 1 A catch basin insert, configured for debris and oil/grease removal, may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. The absorbent materials for oil and grease removal must be monitored and replaced regularly to ensure they perform as intended. Carefully consider this when evaluating your options.

☞ See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Treatment, Storage, or Disposal of Dangerous Wastes

This activity applies to businesses that are permitted by the Washington State Department of Ecology (WSDOE) to treat, store, or dispose of dangerous wastes. Dangerous waste handling activities at these businesses can contribute toxic compounds, oils and greases, metals, nutrients, suspended solids, abnormal pH, and coliform bacteria to stormwater runoff. Detailed BMPs are not included here because treatment, storage, and disposal (TSD) site requirements are beyond the level of typical BMP application. WSDOE regulates these facilities with specific requirements, which include the need for a National Pollutant Discharge Elimination System (NPDES) permit.



Contact the Washington State Department of Ecology at 425-649-7000 or 360-407-6000.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Cleaning or Washing of Tools and Equipment

This activity applies to you if you clean tools, small power equipment such as lawn mowers and weedwackers, and manufacturing equipment such as saws, grinders, screens, and other processing devices outside of buildings. Uncontrolled outdoor washing can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, metals, abnormal pH, and suspended solids to stormwater runoff.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in cleaning or washing of tools and small power and manufacturing equipment:

1

Tool and equipment wash water is considered process water, and must discharge to the sanitary sewer, a holding tank, or a process treatment system, regardless of the washing method used.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

You are encouraged to recycle your wash water with an enclosed loop system or use self-contained parts washers. There are several products commercially available that enable recycling and containing of wash water and cleaning solvents.

If you cannot connect discharges to a sanitary sewer, process treatment system, or holding tank you must contact the Department of Ecology and go through the industrial wastewater National Pollutant Discharge Elimination System (NPDES) permit process.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Cleaning or Washing of Cooking Equipment

This activity applies to you if you clean cooking equipment such as vent filters and grills outside of buildings. Uncontrolled outdoor washing can contribute oils and greases, nutrients, and suspended solids to stormwater runoff. Ideally, this type of cleaning activity should take place indoors.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in cleaning or washing of cooking equipment:

1

Cooking equipment wash water is considered process water, and must discharge to the sanitary sewer, a holding tank, or a process treatment system, regardless of the washing method used.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

Washing must be done in an inside sink or wash basin. If washing is done outside, it must be done in a designated area and the wash water must discharge to one of the above systems. Provisions must be made to prevent stormwater from becoming contaminated from contact with the washing area.



See BMP Info Sheet 5 in Chapter 5 for information on containment and run-on prevention.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Vehicle Washing and Steam Cleaning

This activity applies to you if you wash or steam clean vehicles. It also applies to mobile operations and commercial car washes. The types of vehicles may include highway maintenance trucks, taxicabs, buses, rental cars, new and used autos on lots, government and company cars, construction equipment, fork lifts, golf carts, riding lawn mowers, and similar large vehicles. Wash water from cleaning activities can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, metals, and suspended solids to stormwater runoff. The soap used for washing is often a greater pollution threat than the substances washed off the vehicles. All soaps are harmful to aquatic organisms, including those labeled as "biodegradable", "non toxic", or "environmentally friendly".

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in vehicle washing and steam cleaning:

1

It is allowable to rinse down the body of a vehicle, including the bed of a truck, with just water without doing any wash water control BMPs.

If you wash with a mild (pH neutral) soap or detergent on an area that infiltrates water, such as gravel, grass, or loose soil, it is acceptable to let the wash water infiltrate as long as you only wash the body of vehicles. However, if your business is located in an area designated as a Critical Aquifer Recharge Area (CARA), infiltration may sometimes not be allowed. Check with the Water and Land Resources Division at 206-296-1900 or your local jurisdiction before infiltrating wash water.

If you wash on a paved area and use detergents or other cleansers, or if you wash/rinse the engine compartment or the underside of vehicles, you must choose ONE of the following options:

- (a) Designate and pave a wash area to wash all vehicles. Discharge wash water from vehicle cleaning operations to a sanitary sewer, holding tank, or process treatment system, or process it through an

enclosed recycling system.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

The local sewer authority and the King County Wastewater Treatment Division Industrial Waste Section may have limits on the types and amounts of pollutants, such as oil and metals that can be discharged to a sanitary sewer. Absolutely no untreated wash water can enter storm drains.

OR

(b) Designate and pave a wash area to wash all vehicles in. Use a storm drain cover or other effective method of preventing all wash and rinse water from entering a storm drain or other storm drainage system feature. All runoff from the activity must be collected for proper disposal to a sanitary sewer. A wet vacuum or pump can be used for this. There are several products commercially available that enable collection of runoff. This requirement also applies to mobile vehicle washing services.

OR

(c) Take the vehicles to a commercial car wash or use a mobile washer who complies with (a) or (b) above.



Designated wash areas must be well marked with signs indicating where and how washing must be done.



Oil changes and other engine maintenance cannot be conducted in the designated washing area.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Interior Washing Operations (Including Mobile Contractors)

This activity applies to you if you are engaged in washing carpets, floors, upholstery, and other interior items. This activity is performed by both mobile contractors and on-site staff. The typical washing process includes the use of machines that scrub and suck dirt and other particles with a wash water solution into a portable containment device with limited capacity. Stormwater and surface waters or groundwater may become contaminated if collected wash water is disposed outdoors. Wastewater from washing operations that is dumped into storm drains, on streets, in drainage ditches, and in other outdoor locations can contaminate water bodies with nutrients, suspended solids, and chemicals used in the cleaning process.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you engage in interior washing activities:

1

Do not dispose of any wastewater from this activity outdoors or to the storm drainage system. This point must be clear to employees. Wastewater from mobile fleet washing operations may be permitted for sanitary sewer disposal if it does not contain high concentrations of toxic materials. Contact the local sewer authority and the King County Wastewater Treatment Division Industrial Waste Section for more information at 206-263-3000. Wash water can also be recycled.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

2

Do not dispose of sludges that are left in tanks, containers, or trucks outdoors or to a ditch or drain connected to the storm drainage system. Sludges must be disposed of properly.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

Additional BMPs

The following BMPs are optional, unless the above minimum required BMPs do not provide adequate source control.



1 Limit the amount of water used in interior washing operations. This limits the amount of wastewater you need to worry about properly disposing of.



2 Recycle wash water.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

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Pressure Washing of Buildings, Rooftops, and Other Large Objects

This activity applies to you if you are engaged in pressure washing large, immobile objects such as building facades, rooftops, and awnings on a site-to-site basis. Pressure washing can readily degrade water quality as the runoff and loosened solids typically travel directly into the storm drainage system. Wash water from pressure washing operations can be contaminated with suspended solids, metals, and possibly other pollutants present on the objects being washed. Pressure washing of boats in boat yards, marinas, and dry dock areas is covered by a National Pollutant Discharge Elimination System (NPDES) permit, administered by the Washington State Department of Ecology, so the BMPs listed below may not apply to pressure washing in these locations.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in pressure washing of large objects:

1

In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

2

If soaps or detergents are NOT used, and the surrounding area is paved, wash water runoff does not have to be collected but must be screened. Pressure washers must use filter fabric catch basin inserts or some other type of screening device on the ground and/or in the catch basin to trap the particles in wash water runoff.



If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash water runoff must infiltrate into the grass and not drain to the pavement or storm drainage system.



Another option is to hire a mobile washer who collects and recycles water or complies with the above.

If the painted surface being pressure washed is painted with lead or other heavy metal-bearing paint (such as chromium or cadmium), consider using a commercial pressure washing service that can collect, test, and properly dispose of the wastewater.

Additional BMPs

The following BMPs are optional, unless the above minimum required BMPs do not provide adequate source control:

A catch basin insert, configured for debris removal, may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when evaluating your options.



See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Truck or Rail Loading and Unloading of Liquid Materials

This activity applies to you if you receive shipments of bulk liquid materials by truck or rail and transfer those liquids into storage tanks or containers or handle the truck or rail loading of liquid materials from tanks. Spills and drips of these liquids can potentially contribute toxic organic compounds, oils and greases, nutrients, metals, and abnormal pH to stormwater runoff.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in loading and unloading of liquid materials:

1

Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip-collected materials must be disposed of properly.

☞ See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

2

Train employees in proper handling techniques during liquid transfers to avoid spills.

3

Required Routine Maintenance:

- Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Fueling Operations

This activity applies to you if you refuel vehicles on the premises, whether a large sized gas station or a single pump maintenance yard installation. It also covers mobile fueling operations. Stormwater runoff from fueling areas may be contaminated with toxic hydrocarbons, oils and greases, and metals.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in dedicated permanent fueling operations:

1

Cover the fueling area with an overhanging roof structure or canopy so that precipitation cannot come in contact with the fueling area.

- ☞ See BMP Info Sheet 3 in Chapter 5 for information on covering options. An exception to this requirement is granted for mobile fueling equipment, floating fuel islands on water, and oversized vehicles that can not maneuver under a roof.

2

Pave the fueling area with Portland cement concrete and contain the area to prevent uncontaminated stormwater from running into the fueling area and carrying pollutants to the onsite storm drainage system or adjacent surface water or conveyance systems.

- ☞ See BMP Info Sheet 5 in Chapter 5 for information on containment.

3

Install and maintain an oil or spill control device in the appropriate catch basin(s) to treat runoff from the fueling area.

- ☞ See the King County Surface Water Design Manual for various designs and the BMP Info Sheet 9 in Chapter 5 for further information on oil/water separators.

4

Never hose down the fueling area to the storm drains. Contaminated runoff must be collected for proper disposal.

5

Required Routine Maintenance:

- Post signs to remind employees and customers not to top off the fuel tank when filling. Post signs that ban customers and employees from changing engine oil or other fluids at that location.
- Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

If you cannot implement the above requirements on your site, consider ceasing your on-site fueling activities and take your vehicles to a fueling station that meets these requirements.

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in mobile fueling operations:

- 1** Locate the fueling operation to ensure leaks or spills will not discharge, flow, or be washed into the storm drainage system, surface water, or groundwater.
- 2** Use drip pans or absorbent pads to capture drips or spills during fueling operations.
- 3** If fueling is done during evening hours, lighting must be provided.
- 4** Required Routine Maintenance:
 - Store and maintain appropriate spill cleanup materials in the mobile fueling vehicle. Ensure that employees are familiar with proper spill control and cleanup procedures.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control.

- 1** Use absorbent pillows or similar absorbent materials in or around storm drain inlets on the property to filter oily runoff. These require frequent maintenance and close attention, but can be useful in short-term situations. Used absorbent materials containing oil must be picked up by a qualified disposal contractor.
- 2** A catch basin insert configured for oil removal may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when evaluating your options. The oil absorbent filter media must retain absorbed oil during future storm events. See Chapter 6.6.1 of the King County Surface Water Design Manual for more information regarding which filter media provide acceptable oil retention.

☞ See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Engine Repair and Maintenance

This activity applies to you if you conduct engine repair and maintenance on vehicles and other equipment. It also applies to mobile vehicle maintenance operations, such as at construction sites. This common activity can lead to immediate stormwater contamination if repairs and maintenance are not done in a controlled manner. This activity can contaminate stormwater runoff with toxic hydrocarbons, other toxic organic compounds, oils and greases, abnormal pH, and metals.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in engine and vehicle repair and maintenance:

1

If temporary work is being conducted outside:

Use a tarp, ground cloth, or drip pans beneath the vehicle or equipment to capture all spills and drips. The collected drips and spills must be disposed of, reused, or recycled properly.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

2

Work done on a regular basis at a stationary business location should be done indoors.

3

Required Routine Maintenance:

- Employees must be educated on proper handling and disposal of engine fluids.
- Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures. You can use

reusable cloth rags, instead of disposable wipes, to clean up small drips and spills. A permitted industrial laundry can wash the reusable cloth rags. Do not wash cloth rags at home or at a coin-operated laundry business.

- Sweep the maintenance area as needed if it is paved to collect loose particles. Wipe up spills with rags or other absorbent material immediately. Do not hose down the area to a storm drain.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum requirements do not provide adequate source control.



Absorbent material such as pillows or booms can be used around storm drains or in catch basins to absorb oil and other substances. Used absorbent materials containing oil or other engine fluids must be disposed of in the appropriate manner. Oil recycling vendors or other vendors that pick up used vehicle fluids can assist in the appropriate disposal of these materials.



A catch basin insert, configured for oil removal, may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this requirement when evaluating your options.



See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Concrete and Asphalt Production at Stationary Sites

This activity applies to you if you mix raw materials on-site to produce concrete or asphalt. It also applies to subsequent activities such as pouring concrete structures, and making other concrete and asphalt products. Mishandling during concrete production can introduce suspended solids and metals to stormwater runoff and cause pH increases in receiving waters. Asphalt production can introduce toxic hydrocarbons, other toxic organic compounds, oils and greases, and metals to stormwater runoff. Improper equipment washing may cause concrete and asphalt waste materials and liquids to be washed to storm drainage systems. Mobile concrete pouring and asphalt applications are covered under Activity Sheet A-20. This activity sheet does not cover concrete production at mining or sand and gravel sites covered by a King County sand and gravel permit or a National Pollution Discharge Elimination System (NPDES) sand and gravel permit issued by the Washington State Department of Ecology. However, if the BMPs conditioned in these permits do not adequately protect stormwater, surface, or ground water quality, more stringent BMPs may be required under King County Code 9.12.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in concrete and asphalt mixing and production:

1

Discharge all process water from production, pouring, and equipment cleaning activities to a sump, process water treatment or recycling system, or sanitary sewer system. Never wash contaminated water to the storm drainage system.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

2

Contain the production and pouring area to prevent stormwater runoff so pollutants are not washed to stormwater or natural drainage systems.



See BMP Info Sheet 5 in Chapter 5 for information on containment and run-on prevention.



Prevent cement dust from settling onto surfaces where it will contaminate stormwater runoff. Sweep up any settled dust. Never hose down cement dust to the storm drainage system.



Required Routine Maintenance:

Sweep the production and pouring area as needed if it is paved. Collect loose chunks of aggregate and raw material particles for recycling or proper disposal. Do not hose down the area to a storm drain.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



Use an oil control device in the catch basins to treat stormwater runoff. See the King County Surface Water Design Manual and BMP Info Sheets 9 and 10 in Chapter 5 for further information.



Pave the mixing, production, and/or pouring area(s) with a slope that drains to a central collection area. For concrete production and pouring activities, a sump drain should not be provided because it would be quickly clogged with hardened concrete. It may be wise to segregate the mixing and pouring area from the curing area because wastewater from curing applications could be collected by a drain. By sloping the pavement to a central location, loose chunks of concrete or asphalt aggregate can be collected more easily and recycled or disposed of properly.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Concrete and Asphalt Application at Temporary Sites

This activity applies to you if you apply asphalt and/or pour concrete for building construction, road construction, sidewalk, curb and gutter repairs and construction, sealing of driveways and roofs, and other applications. These activities are typically done on a temporary site-to-site basis where permanent BMP measures do not apply. Asphalt application can contribute high concentrations of toxic hydrocarbons, other toxic organic compounds, oils and greases, and metals to stormwater runoff. Concrete pouring can contribute suspended solids and metals to stormwater runoff and cause detrimental pH changes in receiving waters.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in concrete pouring and asphalt application at temporary sites:

1

Use drip pans, ground cloths, and perhaps even heavy cardboard or plywood wherever concrete, asphalt, and asphalt emulsion chunks and drips are likely to fall unintentionally, such as beneath extraction points from mixing equipment.

2

Provide storm drain covers, inlet protection or similarly effective containment devices over all nearby drains at the beginning of the workday. All accumulations of runoff, aggregate chunks, and other solids must be collected for proper disposal at the end of the workday (or more frequently) prior to removing the containment device(s). Drain covers and other containment devices are commercially available to keep runoff out of the storm drainage system.

3

Contain and collect the slurry from exposed aggregate washing, where the top layer of unhardened concrete is hosed or scraped off to leave an exposed aggregate or rough finish. Never wash concrete slurry to a storm drain, ditch, roadway shoulder or gutter. Use a storm drain cover, inlet protection or other containment device, such as a hand-dug sump where slurry can be directed to and contained. (See item 4 below). All collected runoff must be properly disposed of.



Concrete and concrete pumping vehicles shall not under any circumstances discharge any concrete, slurry, or rinse water into street gutters, storm drains, or drainage ditches.

Designate a wash-out area onsite where the cleaning of application and mixing equipment will be conducted, and where the rinse water is controlled. It is also acceptable to dispose of rinse water and slurry in a hole in the ground large enough to contain the slurry and rinse material. Commercial products and services are also available for concrete, slurry, and rinse water disposal.



Routine Maintenance:

Sweep the pouring area at the end of each day or more frequently if needed. Collect loose aggregate chunks and dust. Do not hose down the area to a storm drain.

Additional BMPs

The following BMPs are optional, unless the above minimum required BMPs do not provide adequate source control:



If possible, portable asphalt mixing equipment should be covered by an awning or other simple structure while raining to avoid contact with rainfall.



A catch basin insert configured for sediment removal may remove some of the pollutants in runoff from this activity. This is especially useful if the activity must proceed on rainy days. Catch basin inserts require frequent maintenance to be effective, so consider this when evaluating your options. Concrete work of all types tends to cause elevated pH in runoff, and it must be monitored and neutralized before off site discharge of the runoff occurs.



See BMP Info Sheet 10 in Chapter 4 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Stormwater Services Section at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Manufacturing and Post-Processing of Metal Products

This broad activity group applies to mills, foundries, and fabricators that manufacture and/or post-process metal products at stationary sites. It does not apply to temporary activities such as welding or pipe cutting that are conducted in the field. A variety of activities such as machining, grinding, soldering, cutting, welding, quenching, cooling, and rinsing may take place. Wastewater from these operations may be contaminated with toxic organic compounds, metals, oils and greases, abnormal pH, and suspended solids. Stormwater runoff from areas where these activities occur can be contaminated with these same pollutants as well. These businesses may be required to apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Washington State Department of Ecology. Painting, finishing, and coating of metal products is covered under Activity Sheet A-22.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in manufacturing or processing metal products:

1

Discharge process wastewater from this activity to a sanitary sewer, holding tank, or process treatment system.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

2

Required Routine Maintenance:

- Sweep the pouring area at least daily to collect metal fragments and debris and prevent stormwater contamination. Do not hose down the area to the storm drainage system.

Additional BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control.



Cover the activity area(s) to prevent precipitation from contacting the area, and to reduce the amount of runoff that has to be detained or treated.



See BMP Info Sheet 3 in Chapter 5 for information on covering options.



Use a catch basin insert configured to remove sediment to capture stray metal particles in runoff. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when evaluating your options.



See BMP Info Sheet 10 in Chapter 5 for information on inserts.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Painting, Finishing, and Coating of Vehicles, Products, and Equipment

This activity applies to you if you apply primers, paints, finishes, and coatings to vehicles, furniture, manufactured products, and other objects. This includes car detailing work. It also includes preparation work such as sanding and blasting. BMPs for painting of buildings are given in this manual under “Building Repair, Remodeling, and Construction.” BMPs for painting and finishing of boats and other marine objects are described under “Boat Building, Maintenance and Repair.” Stormwater runoff from work areas where this activity occurs may be contaminated with toxic hydrocarbons and other organic compounds, oils and greases, metals, and suspended solids.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are involved in painting, finishing, or coating of vehicles, products, and equipment:

- 1** Enclose all work while using a spray gun or conducting sand blasting (unless the work is too large) according to the Puget Sound Clean Air Agency requirements. Approved paint booths must be in place prior to any vehicle painting. All filters from paint booths must be handled as required under Dangerous and Hazardous Waste Regulations.
- 2** Use ground cloths or other methods to collect dust and debris from sanding operations. Do not hose down the area to the storm drainage system.
- 3** For outside work, use ground cloths and/or drip pans in locations where paints, finishes, and other liquid materials are mixed, carried, and applied.
- 4** Required Routine Maintenance:
 - Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with the site’s spill control plan and/or proper spill cleanup procedures.

- Train employees in careful and appropriate application of paints, finishes, and coatings to reduce misuse and over spray.
- Sweep the area at the end of each day at a minimum. Do not hose down the area to a storm drain.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

Wood Treatment and Preserving

This activity applies to you if you are involved in wood treatment operations that either are performed outdoors or include storage of freshly treated wood materials outdoors. It includes permanent sites as well as temporary (or mobile) sites. Some of these operations are unique to large-scale commercial wood preserving and therefore require a specific set of BMPs. Because materials used in wood treatment and preserving are extremely toxic, this activity is segregated from similar activities discussed elsewhere in this manual. Stormwater runoff from wood treatment and preserving activities may be contaminated with toxic hydrocarbons and other organic compounds, metals, oils and greases, and suspended solids. Large scale commercial operations are required to have a stormwater National Pollutant Discharge Elimination System (NPDES) permit from the Washington State Department of Ecology.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in wood treatment and preserving:

-  1 Use ground cloths or drip pans to collect drips and spills.
-  2 Store portable containers of wood preservative compounds indoors or in a covered location with appropriate secondary containment when not in use.
 See Activity Sheet A-3 “Storage of Liquid Materials in Portable Containers.”
-  3 Hold dipped lumber over dip tanks until dripping ceases (if applicable).
-  4 Store treated lumber in a covered and paved area for at least 24 hours following treatment (longer during cold periods) so that precipitation does not come into contact with the treated products until they are fully dry. Contain the storage area to restrict stormwater from running into the covered area.



Contain the wood treatment equipment and work areas to prevent stormwater from entering the area and carrying pollutants away.



See BMP Info Sheet 5 in Chapter 5 for information on containment and runoff prevention.



Required Routine Maintenance:

- Cover outdoor dip tanks when not in use.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Commercial Composting

This activity applies to you if you are engaged in receiving and composting wastes as a commercial service. This typically refers to businesses that have numerous compost piles that require large open areas to break down wastes. Composting can contribute nutrients, coliform bacteria, and suspended solids to stormwater runoff. When stormwater is allowed to contact any active composting area, it becomes leachate. Leachate should be separated from stormwater runoff as much as possible. All commercial-composting operations must satisfy Seattle-King County Health Department requirements. In addition, the Department of Ecology may require a National Pollution Discharge Elimination System (NPDES) permit for commercial composting operations. The BMPs listed below are intended to complement other regulatory requirements.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in composting wastes:

-  1 Ensure that wastes do not contain dangerous materials that belong in a hazardous waste facility, or solid wastes that do not break down by composting. Employees must be trained to screen these materials in incoming wastes.
-  2 Locate composting areas on impervious surfaces.
-  3 Drain all leachate from composting operations to a sanitary sewer, holding tank, or on-site treatment system.
 See BMP Info Sheet 2 in Chapter 5 for information on disposal options. Because biochemical oxygen demand (BOD) or fecal coliform bacteria are significant pollutants in compost runoff, drainage must be routed to a sanitary sewer or holding tank, regardless of whether a process treatment system is used.
-  4 Contain the compost pile leachate. Containment of leachate will

probably be best accomplished with a dike or berm, or with intercepting drains placed on the down slope side of the compost area.



See BMP Info Sheet 5 in Chapter 5 for information on containment. See the King County Health Code for full compliance.

Required Routine Maintenance:

- Clean up debris from yard areas as needed to prevent stormwater contamination.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



A catch basin insert, configured for debris and sediment removal, may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when considering your options.



See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Chemical Applications – Other Than Landscaping

This activity applies to you if you use pesticides, herbicides or other chemicals for such purposes as removing moss from rooftops, killing nuisance rodents, and using fungicides to preserve patio decks. The over application of pesticides in these situations can result in stormwater contamination in much the same way as in landscaping activities. The pollutants of concern for stormwater management are toxic organic pesticide compounds, oils, and metals. Businesses/agencies engaged in this activity must comply with Seattle-King County Department of Public Health structural pesticide applicator regulations. The BMPs listed below are intended to complement other regulations. Application of pesticides for landscaping purposes must follow the BMPs discussed under Activity Sheet A-26, “Landscaping Activities.”

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you apply chemicals for non-landscaping purposes:

-  1 Avoid excessive application. Follow manufacturers’ application guidelines and label directions. Chemicals must never be applied outside if it is raining.
-  2 Use the smallest amount of chemicals necessary to accomplish the job.
-  3 When applying chemicals on rooftops for moss control or other chemical treatment, downspouts must either be blocked or disconnected if the downspouts are directly connected to the storm drainage conveyance system in the roadway or to a flow control or water quality facility. The wash/waste water must be directed to pervious areas such as landscaping or gravel for infiltration or collected and disposed of to the sanitary sewer, or taken off site for appropriate disposal. To check if roof downspouts are connected to street drains, verify if downspouts go directly into the ground, rather than splash blocks. If the downspouts are tied directly into the ground, look in the closest catch basin on the roadway to see if a small (usually a 4 inch PVC) is connected or discharging into the catch basin which indicates the downspouts directly discharge to the roadway drainage system.

- 4 Clean up any spilled chemicals immediately. Do not hose down to a storm drain or conveyance ditch.
- 5 Do not spray pesticides within 100 feet of open waters, including wetlands, ponds, and streams, unless approved by local jurisdiction.
- 6 Unblock the roof drains or reconnect downspouts when the chemical application is finished.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:

- 1 Manual pest control strategies such as physically scraping moss from rooftops, using high-pressure sprayers to remove moss, and using rodent traps should be attempted.
- 2 Integrated pest management (IPM), a comprehensive approach to the use of pesticides which minimizes pesticide application and stresses selection of proper products and tailored application rates, is the most effective BMP measure that can be taken. IPM is applicable to businesses that frequently apply pesticides.



See BMP Info Sheet 6 in Chapter 5 for information on IPM.

- 3 Educate employees about the pollution they can cause if they do not follow simple rules of application.
- 4 Select the least toxic chemical application that can accomplish the job.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Landscaping Activities

This broad activity encompasses all aspects of landscaping, from small-scale yard maintenance to large-scale commercial landscaping businesses. It includes vegetation removal, herbicide and insecticide application, fertilizer application, watering, and other gardening and lawn care practices. Stormwater runoff from areas that have been subject to pesticide or fertilizer application or extensive cutting may be contaminated with toxic organic compounds, metals, oils, suspended solids, nutrients, or coliform bacteria, and may cause biochemical oxygen demand.

Landscaping activities related to golf courses should refer to King County's Golf Course BMP Manual (see Chapter 6 of this manual for more information). The BMPs listed below are intended to complement other regulatory requirements. See related Activity Sheets for "Storage of Pesticides and Fertilizers" and "Storage of Liquid Materials in Portable Containers."

Note: The term pesticide includes insecticides, herbicides, fungicides, rodenticides, etc.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in landscaping activities:

- 1** Do not apply any pesticides directly to surface waters, unless the application is approved and permitted by the Washington State Department of Ecology.
- 2** Follow manufacturers' recommendations and label directions. Pesticides and fertilizers must never be applied if it is raining or about to rain. Do not apply pesticides within 100 feet of surface waters such as lakes, ponds, wetlands, and streams. This also can include stormwater conveyance ditches. (This buffer distance is specified in the Department of Ecology's Stormwater Management Manual and the King County Critical Areas Ordinance). Remove weeds/vegetation in stormwater ditches by hand or other mechanical means. Chemicals should be used as a last resort.
- 3** Dispose of grass clippings, leaves, branches, sticks, or other collected vegetation as garbage, by composting, or by burning (where allowed). Do not dispose of collected vegetation into storm drainage systems, conveyance ditches, stormwater ponds, or surface water.
- 4** Use mulch or other erosion control measures when soils are exposed for more than one week during the dry season or two days during the rainy season.



Avoid planting Species on the King County Noxious Weed List. Contact the King County WLRD Noxious Weed Program at 206-296-0290 or 206-296-6519 for information on these types of plants.



Required Routine Maintenance:

- Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with proper spill cleanup procedures.
- Educate and train employees on the use of pesticides and in pesticide application techniques to prevent pollution.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



Integrated pest management (IPM), a comprehensive approach to the use of pesticides is the most effective BMP measure that can be taken for herbicide, insecticide, and fungicide use.

☞ See BMP Info Sheet 6 in Chapter 5 for information on IPM.



Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface. Determine the proper fertilizer application for the types of soil and vegetation involved. Soil should be tested for the correct fertilizer usage.



Use mechanical methods of vegetation removal rather than applying herbicides.



An effective measure that can be taken to reduce pesticide use, excessive watering, and removal of dead vegetation involves careful soil mixing and layering prior to planting. A topsoil mix or composted organic material should be rototilled into the soil to create a transition layer that encourages deeper root systems and drought-resistant plants. This practice can improve the health of planted vegetation, resulting in better disease resistance and reduced watering requirements.



Use native plants in landscaping. Native plants do not require extensive fertilizer or pesticide applications.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Clearing and Grading of Land for Small Construction Projects

This activity applies to you if you clear, grade or prepare land for projects. Stormwater runoff from cleared and graded sites can be loaded with suspended sediments and attached pollutants such as oils and greases, toxic hydrocarbon and herbicide compounds, metals, and nutrients. Control of this runoff at the source can prevent large pollutant loadings from entering and degrading receiving waters. Prior to clearing, grading, and preparation activities for construction sites greater than 2,000 square feet, the King County Department of Development and Environmental Services (DDES) must be contacted. You may need to follow the procedures for construction site erosion and sediment control outlined in the King County Surface Water Design Manual, Appendix D.

Note: King County DDES coordinates the clearing, grading, and erosion control requirements on individual sites. The King County Surface Water Design Manual has requirements for erosion and sediment control measures. Appendix D (Erosion and Sediment Control Standards) outlines requirements that all sites must implement. The King County Surface Water Design Manual Appendix C (Small Project Drainage Requirements) addresses small project developments. King County uses the authority of K.C.C. 9.12 and this manual to develop erosion control requirements for those activities not covered by the King County Surface Water Design Manual.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Stormwater Services Section at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system you will be asked to take additional measures to correct the continued pollution discharges.

Demolition of Buildings

This activity applies to the removal of existing buildings by controlled explosions, wrecking balls, or manual methods, and subsequent clearing of the rubble. Demolition of buildings can introduce a variety of pollutants into stormwater runoff, primarily suspended solids, but also toxic organic compounds and metals. Broken concrete can elevate the pH of stormwater. This activity can also produce air borne pollutants that must be controlled to avoid surface water contamination.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in building demolition:

1

Spray water throughout the site to help control fine materials and dust. The amount of water must be actively controlled to eliminate runoff from the site. Other approved dust suppressants are available. Avoid excessive and repeated applications of dust suppressant chemicals.

2

Place filter fabric, inlet control measures or a similarly effective device in or around all nearby drains to prevent particles and solids from entering the storm drainage system. Filters shall be placed at the beginning of the workday and the accumulated materials collected and disposed of properly before removing them at the end of the workday. Filter fabric and other filter devices are commercially available.

3

Sweep surrounding street gutters, sidewalks, driveways, and other paved surfaces as needed to collect loose debris and garbage. Properly dispose of collected debris and garbage. Do not hose down the area to a storm drain.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:

A catch basin insert configured for sediment and debris removal may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when evaluating your options.



See BMP Info Sheet 10 in Chapter 5 for information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Building Repair, Remodeling, and Construction

This activity applies to you if you are engaged in common on-site labor activities associated with construction of buildings and other structures, remodeling of existing buildings and houses, painting of building exteriors, and general exterior building repair work. Stormwater runoff from building repair, remodeling, and construction work can be contaminated with toxic hydrocarbons in solvents, other toxic organic compounds, suspended solids, metals, abnormal pH, and oils and greases. Concrete pouring is covered under Activity Sheet A-20, "Concrete and Asphalt Application at Temporary Sites."

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in building repair, remodeling, and construction:

1

Do not dump any substance, wash water or liquid waste on the pavement, the ground, or toward a storm drain or drainage ditch.

2

Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work and properly dispose of collected material daily.

3

Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning. Dispose of all wash water from tool cleaning to the sanitary sewer system. Never dispose of wash water to on-site yard drains or street drains.

4

Never dispose of any wash water to a storm drain. Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.



See BMP Info sheet 2 in Chapter 5 for information on disposal options.

5

Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the workday, and accumulated dirty runoff and solids must be collected and disposed of in an appropriate manner before removing the containment device(s) at the end of the workday. For example, a combination of a wet vacuum and brooms and dustpans could be used to collect accumulations of dirty runoff. Drain covers, filter fabric, and other containment devices are commercially available if effective runoff control cannot otherwise be provided.

If you need to dewater an excavation site, you must filter the water before discharging to a catch basin or discharging off-site. You should direct the water through sediment filters or traps or use an equivalent method. The pH of water from dewatering activities must be monitored. If the pH is not neutral, discharge must not occur to a drainage system until the water is neutralized through an approved method. Dewatering must also be assessed for other pollutants that may not be removed by simple filtering of stormwater. If other pollutants are present, discharging the water to surface or stormwater systems may not be allowed. See Appendix D of the King County Surface Water Design Manual, "Erosion and Sediment Control Standards."

6

Routine Maintenance:

- Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with proper spill cleanup procedures.
- Sweep paved areas as needed and collect loose particles for proper disposal. Wipe up spills with rags and other absorbent material immediately. Do not hose down the area to a storm drain.
- Store toxic material under cover during precipitation events and when not in use (such as overnight). A cover would include tarps or other temporary cover materials.



See Activity Sheet 3, "Storage of Liquid Materials Portable Containers."

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



Recycle or reuse left over materials.



A catch basin insert configured for debris and sediment removal may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when evaluating your options.



See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Boat Building, Maintenance, and Repair

This activity group applies to mobile operations, onshore repair facilities, and on-water fueling and repair operations that are not covered in other activity categories. The variety of practices grouped into this activity can collectively contaminate stormwater and surface water bodies with toxic organic compounds, oils and greases, metals, nutrients, suspended solids, and abnormal pH. All boatyards are required to be covered under a National Pollutant Discharge Elimination System (NPDES) general or individual permit from the Washington State Department of Ecology. The BMPs discussed below are similar to those listed in the NPDES Permit and apply to areas not covered by an NPDES permit.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in boat building, mooring, maintenance, and repair; and you are not covered by an NPDES Permit for Boat Building and Repair Facilities:

-  1 Move maintenance and repair activities onshore if possible. This action reduces some of the potential for direct pollution of water bodies.
-  2 Shelter any blasting and spray painting activities by hanging wind blocking tarps to prevent dust and overspray from escaping.
-  3 Use ground cloths or drip pans for collection of drips and spills in painting, maintenance, repair, and finishing activities.
-  4 Collect bilge and ballast water that has an oily sheen on the surface. Properly dispose of it rather than dumping it in surface waters or on land.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options. Several companies are available for bilge pump-out services. The problem can possibly be avoided if oil-absorbent pads are used to capture the oil in the bilge water before pumping. If pads are used, they must be recycled or properly disposed of.



To avoid spilling directly in surface water bodies, perform paint and solvent mixing, fuel mixing, and similar handling of liquids on-shore. Clean up spills immediately. Do not wash spills to a storm drain or surface waters.



Collect and properly dispose of wash water from washing painted boat hulls. Consider taking the boat to a local boat yard that is equipped to collect and treat the wash water. Never dispose of wash water containing soap or other chemicals to storm drains or surface waters. It is acceptable to wash a boat using only water.



Required Routine Maintenance:

- Store and maintain appropriate spill cleanup materials in a location known to all. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Sweep maintenance yard areas, docks and boat ramps as needed to collect sandblasting material, paint chips, oils, and other loose debris. Properly dispose of these collected materials. Do not hose down the area to the water or to a storm drain.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



Boat construction and structural repair activities should be covered.



A tarp should be placed above the water surface underneath the work area on boats or docks to collect drips, spills, paint chips, and loose solids when work is performed over water.



All used oil and oil filters should be recycled. Most marinas now offer used oil recycling services.



No soaps or detergents of any kind should be used to wash the topsides or hulls of boats where the wash water will enter surface waters.



Use sanders that have dust containment bags.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Vehicle and Equipment Parking and Storage

This activity applies to all types of parking lots (commercial, public, and private), retail store parking lots, fleet vehicle lots and yards (including rent-a-car lots and car dealerships), equipment sale and rental lots, and parking lot driveways. Stormwater runoff from these sites can be contaminated with toxic hydrocarbons and other organic compounds, oils and greases, metals, nutrients, and suspended solids.

MINIMUM REQUIRED ROUTINE MAINTENANCE

The following BMPs, or equivalent measures, methods, or practices are required if you have parking lots and driveways:

1

Sweep parking lots, storage areas, and driveways as needed to collect dirt, waste, and debris. Do not hose down the area to the storm drainage system.

2

If washing/pressure washing of the parking lot occurs, the wash water must be collected and discharged to a sanitary sewer or other treatment system. There are services that will clean parking lots and collect water for off-site disposal. Never drain washwater to the storm drainage system.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

3

Gravel and dirt lots may require additional BMPs to prevent sediment laden water from leaving your site. Also, vehicles can track dirt out of the parking and storage areas onto public roadways. Basic sediment controls as outlined in Appendix D (“Erosion and Sediment Control Standards”) of the King County Surface Water Design Manual may need to be installed if other BMPs do not adequately control sediment laden water from entering off site storm water conveyance systems. Wheel wash facilities may need to be considered if track out of mud becomes a problem. See Activity Sheet A-41, “Wheel Wash and Tire Bath Operations.”

ADDITIONAL BMPs

The following BMPs are optional, unless the above minimum required BMPs do not provide adequate source control.

-  1 Encourage employees to carpool or use public transit through incentives.
-  2 Encourage customers to use public transit by rewarding valid transit pass holders with discounts.
-  3 A catch basin insert configured for sediment and also oil removal may remove some of the pollutants in runoff from this activity. Catch basin inserts require frequent maintenance to be effective. Carefully consider this when evaluating your options.
-  4 Clean up oil and antifreeze spills with absorbent materials.



See BMP Info Sheet 10 in Chapter 5 for more information.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Sidewalk Maintenance

This activity applies to you if you have sidewalks. Litter accumulation on sidewalks can contribute suspended solids to stormwater runoff; runoff from sidewalks crossing driveways may also have hydrocarbon, oil and grease, and metal contaminants. If herbicides are used on sidewalks, toxic pesticide compounds, oils, and metals may also be introduced into stormwater. If crack sealants or surface coatings are applied, toxic hydrocarbons, oils and greases, and metals may be contributed to stormwater runoff. Sidewalks and driveways are important areas to target for stormwater pollution control because they typically drain directly to stormwater conveyance facilities. Note that BMPs for driveways associated with parking lots are described under Activity Sheet 31, “Vehicle and Equipment Parking and Storage.”

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you are engaged in sidewalk maintenance:

-  Sweep sidewalks as needed to collect loose dirt and debris rather than pushing it into the street or gutter or hosing it down. Collected materials must be disposed of as regular garbage.
-  Conduct spot stain removal instead of washing the entire sidewalk. Do not use soaps and detergents to wash down sidewalks.
-  If pressure washing of sidewalks is needed, and soaps or other cleaners are used, the wash water must be collected and disposed of to the sanitary sewer or taken off site for appropriate disposal. If only water is used, filtering devices at catch basins must be used to collect all solids and debris.

ADDITIONAL BMPs

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



Use deicing salts and sands only when snow or ice is present (not as a preventive measure) and apply sparingly. Shoveling of snow is always preferred to dumping excessive amounts of deicing materials in an effort to avoid shoveling. If deicing salts are used, the residues and remaining granules should be swept up when the snow and ice have melted, and reused or disposed of in your garbage.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Swimming Pool and Spa Cleaning and Maintenance

This activity applies to all municipal swimming pools, commercially owned swimming pools, and commercially owned spas, including Health Department-regulated facilities (general and limited use). Pools and spas at hotels, motels, apartment and condominium complexes, and other private locations, other than single family residences, are also covered here. Older pools and spas must comply with these provisions as well. Improper drainage of these pools can lead to nutrients, suspended solids, chlorine, metals, and abnormal pH entering the surface water environment. Chemicals used in pool and spa maintenance can also contaminate stormwater if they are not stored properly.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required of all businesses, municipalities, and multi-family residential complexes engaged in swimming pool and spa cleaning and maintenance:

1

Dechlorinate pool and spa water if it is to be discharged to the ground. Neutralizing chemicals are available for this. Letting the pool or spa “sit” with no neutralizing chemicals may reduce chlorine levels; the facility should not be used during this period. Test kits should be used to determine disinfectant concentrations. The water must not cross property lines, and a satisfactory means for distributing the water to the ground must be used so there is no runoff or erosive flows from the water discharge. Pool water that has been treated with copper based algaecides may not be discharged to the ground.

2

Regardless of the sanitizing agent used (chlorine, bromine, or ozone), all pool and spa drainage must go to a sanitary sewer or water treatment system if it cannot be dechlorinated sufficiently. If a sanitary sewer is available, all Health Department-regulated facilities must be connected to the sanitary sewer for draining and backwash. Prior to draining, the local sewer authority and the King County Wastewater Treatment Division Industrial Waste Program may need to be notified, as there are concerns with the volume of discharge and disinfectant levels. If the pool or spa does not have a drain to accommodate this, water will have

to be pumped or drained to a sanitary sewer or water treatment system inflow pipe connection. If a sanitary sewer is not available, do not discharge pool or spa water to a septic system, as it may cause the system to fail. Alternative draining and backwash procedures must be approved by the Seattle-King County Department of Public Health in this situation.



Diatomaceous earth (commonly used as a filtering agent in pools) cannot be discharged to surface waters, storm drainage systems, septic systems, or on the ground.



Never discharge backwash from filter systems to surface waters or storm drainage systems.

ADDITIONAL BMPs

The following BMPs are optional, unless the above minimum required BMPs do not provide adequate source control:



Managers of pools and spas located in sensitive areas or adjacent to shorelines should check with the King County Department of Development and Environmental Services or the appropriate local building department to determine if other code requirements apply.



Provide drip pans or buckets beneath drain pipe connections to catch leaks. This is especially important if the pool or spa water has not been dechlorinated and is being pumped through piping to an appropriate discharge location.



Hire a professional pool-draining service to collect all pool water for off-site disposal.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Stormwater Services Section at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Keeping Animals in Controlled Areas

This activity applies to outside kennels, fenced pens, and other animal management areas that do not involve livestock. It includes all types of animal maintenance practices other than keeping livestock in stables, fields, and pastures. This activity does not cover sheep, pigs, horses, cows, goats, and other hooved animals. Stormwater runoff from cage areas, pens, and yards can contain coliform bacteria, nutrients, and suspended solids. See Activity Sheet A-35 for keeping livestock in stables, pens, pastures, or fields.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are engaged in management of animals other than livestock:

1

If animals are kept in unpaved and uncovered areas, the ground must either have vegetative cover or some other type of ground cover such as mulch.

2

If animals are not leashed or in cages, the area where animals are kept must be surrounded by a fence or other means that prevents animals from moving away from the controlled area where BMPs are used.

3

Do not allow wash water to be discharged to storm drains or surface waters.

4

Required Routine Maintenance:

- Sweep and clean animal keeping areas as needed to collect and dispose of droppings, uneaten food, and other stray particles. Do not hose down the area to the storm drainage system.

ADDITIONAL BMPs

The following BMPs are optional, unless the above minimum required BMPs do not provide adequate source control:



Septic systems designed for kennels are commercially available and are recommended if the above BMPs are not adequate.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Keeping Livestock in Stables, Pens, Pastures, or Fields

This activity applies to management of all types of livestock, including cows, horses, and other hooved animals. Stormwater runoff from areas where livestock are kept may contain coliform bacteria and nutrients from manure. Suspended solids may be present in runoff from areas that are eroding due to overgrazing and stream bank trampling. The King County Code 21A.30 has specific requirements for livestock management. If livestock management BMPs are implemented in accordance with the livestock management code, additional BMPs will not be necessary unless the BMPs are not adequate to protect King County surface waters.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Logging and Log Yards

This activity covers logging activities that fall under the classification of Class IV general forest practices. These are situations where timber harvesting is done in the process of converting forest lands into other land uses, such as forest cutting for construction of homes. The primary concern with this logging activity in the context of stormwater pollution is the effect of timber cutting and understory clearing on erosion processes. Logging activities can introduce large concentrations of suspended solids and nutrients into stormwater runoff from bare soil and vegetation debris, as well as toxic organic compounds, oils and greases, and metals from vehicles and pesticides.

The King County Critical Areas Ordinance has requirements for logging near streams, wetlands, and other sensitive areas, and the King County Surface Water Design Manual has requirements for the clearing and grading of sites. Additionally, log yard operations are required to apply for coverage under the State Department of Ecology's National Pollution Discharge Elimination System (NPDES) baseline general permit. Therefore, there are no additional requirements for logging in this manual.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Mining and Quarrying of Sand, Gravel, and Other Materials

This activity applies to surface excavation and on-site storage of sand, gravel, minerals, peat, clay, rock, and other materials that are mined in unincorporated King County. Mining operations have the potential to introduce a variety of pollutants into runoff, including nutrients, suspended solids, abnormal pH, and metals. Precipitation can easily erode cut slope faces and stockpiled materials, causing stormwater contamination problems.

The Washington State Department of Ecology regulates all mining activities in the state for the protection of water quality, and is the authority for enforcement of stormwater requirements related to water quality protection. Ecology has developed the National Pollutant Discharge Elimination System (NPDES) Sand and Gravel General Permit for Sand and Gravel Operations, Rock Quarries, and Similar Mining Facilities, Including Stockpiles of Mined Materials, Concrete Batch Operations, and Hot Mix Asphalt Operations.

The King County Department of Development and Environmental Services (DDES) also has the authority to regulate mining activities under the Stormwater Ordinance (KC Code 9.04 and 9.12) and the Clearing and Grading Ordinance (KC Code 16.82). However, if the DDES permit conditions do not adequately protect surface and groundwater, additional BMPs will be required under KCC 9.12.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Well, Utility, and Geotechnical Drilling

This activity applies to you if you drill water wells and utilities, environmental protection and monitoring wells, and geotechnical borings that use machinery in the drilling. It does not apply to the use of devices such as hand augers. Drilling activities have the potential to impact nearby surface water resources and underlying groundwater resources due to erosion sedimentation, and leaching of contaminants. Stormwater runoff that comes in contact with cuttings and/or spoil piles can carry suspended solids to receiving waters. If cuttings or spoil piles contain material removed from a well or boring that was drilled into contaminated subsoils, stormwater can carry those same contaminants into receiving waters. Similarly, decontamination water and water used in the drilling operation can readily carry pollutants away from the drilling site if controls are not used. Ensure that proper permits are obtained for drilling activities, and for clearing and grading the access routes and the work site. Contact the King County Department of Development and Environmental Services for information.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods or practices are required if you are engaged in mechanical drilling of wells and geotechnical drilling and directional drilling for utilities:

- 1** Determine if environmentally sensitive areas (streams, wetlands, erosion hazards, and landslide hazards) exist at or within the area of influence of the work site. For horizontal directional drilling, take measures to ensure drilling fluids are not inadvertently entering nearby storm drainage systems.
- 2** Develop and implement methods of mitigating potential impacts to surrounding areas and/or the storm drainage system. The driller must be equipped to quickly respond to unusual conditions that may arise.
- 3** Locate and prepare access roadways such that the amount of excavation and the potential for erosion is minimized. See the King County Surface Water Design Manual for information on vehicle access preparation and maintenance and erosion control measures.



Contain accumulated water and sediment on-site and direct through a geotextile filtration system (or equivalent system) before discharging to the surrounding ground surface. Keep all sediment-laden water out of storm drains and surface waters. If sediment-laden water does escape from the immediate drilling location, block any nearby catch basins using fabric, inlet protections, sand bags, erosion fences, or other similar methods. Similarly, block flow into any nearby stream or wetland, and renew efforts to retain all sediment at the drilling location.



During wet weather divert any concentrated flows of water into the site using sandbags or check dams up-slope from the site.



Dispose of soil cuttings and accumulated sediment by appropriate methods. None of this material can be dumped in or near a wetland, stream, lake, or Puget Sound. If cuttings or other soils disturbed in the drilling process are to be temporarily stockpiled on-site, they must be covered and surrounded by a berm or filter device.



See the Activity Sheet A-4, “Storage of Soil, Sand, Salt, and Other Erodible Materials”.



Stabilize exposed soils at the end of the job, using mulch or other erosion control measures.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Roof Vents and Fugitive Emissions

This activity applies if you have a process that vents emissions to the roof and/or if pollutants accumulate on your roof. Stormwater runoff from roofs of manufacturing and commercial buildings can be sources of pollutants if building vents and other air emission sources are not properly treated. Roof surfaces may accumulate hydrocarbons, solvents and other organic compounds, oils and greases, metals, and other toxins and suspended solids. Operations that are of special concern include spray-paint booths, paint-stripping operations, electroplating shops, galvanizing operations, cement kiln dust, and grease from food preparation. BMPs for paint processes are given in this manual under “Painting, Finishing, and Coating of Vehicles, Products, and Equipment.”

The Puget Sound Clean Air Agency and/or the Washington State Department of Ecology (DOE) may regulate air pollution control measures. If your activities are regulated by either of these agencies, these requirements are supplemental. Additionally, if you are covered under a DOE National Pollution Discharge Elimination System (NPDES) Industrial Permit, and sampling for specific parameters is required, these BMPs may assist you in attaining your permit conditions. The DOE has final approval on meeting your NPDES permit requirements.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices are required if you have vents and/or air emissions:

1

Identify processes that are vented and may contribute pollutants to the roof. Testing runoff from roof drains may be helpful. Install appropriate source control measures such as air pollution control equipment (filters, scrubbers, and other treatment) and operational or process changes. Maintain air filters and pollution control equipment on a regular basis to prevent pollutant fallout on your roof. (If you smell odors from outside the building, the pollution control equipment may need maintenance or evaluation.)

2

If proper installation and maintenance of air pollution control equipment does not prevent pollutant fallout on your roof, additional treatment of the roof runoff may be necessary. Install/provide appropriate devices for roof runoff before it is discharged off site. This may include water quality treatment BMPs such as catch basin filters or structural stormwater treatment systems.



See BMP Info Sheet 8 in Chapter 5 for information on water quality treatment BMPs.



Required Routine Maintenance:

- If maintenance of the roof requires application of chemicals, detergents, or other pollutant sources to remove accumulated emissions, a water collection device that enables collection of wash water and associated solids must be used to prevent pollutants entering the natural and constructed storm drainage system and waterways. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff must be discharged to the sanitary sewer or be removed by a waste disposal company.



See BMP Info Sheet 2 in Chapter 5 for information on disposal options.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Street Deicing Operations

This activity applies to you if you perform deicing and/or anti-icing operations on streets and highways to control ice and snow. Deicers commonly used on highways and streets include sand, calcium magnesium acetate (CMA), calcium chloride, magnesium chloride, sodium chloride, urea, and potassium acetate. These deicing and anti-icing compounds become pollutants when they are conveyed to storm drains or to surface water after application. Leaks and spills of these chemicals can also occur during handling and storage.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you are perform deicing and/or anti-icing operations on streets and highways:

- 1** Select deicers and anti-icing materials that cause the least adverse environmental impact. Apply only as needed using minimum quantities. Always adhere to manufacturers and industry standards of use and application.
- 2** Where feasible and practicable use roadway deicers, such as sand, calcium chloride, magnesium acetate, potassium acetate, or similar materials, that cause less adverse environmental impact than urea, and sodium chloride.
- 3** Store and transfer de/anti-icing materials on an impervious containment area in a manner that ensures the material does not enter storm or natural drainage systems.
- 4** Sweep/clean up accumulated de/anti-icing materials and grit from roads as soon as possible after the road surface clears.
- 5** Minimize use in areas where runoff or spray from the roadway immediately enters sensitive areas such as fish-bearing streams.

ADDITIONAL BMPS

The following BMPs are optional unless the above minimum required BMPs do not provide adequate source control:



Intensify roadway cleaning in early spring to help remove particulates from road surfaces.



Include limits on toxic metals in the specifications for de/anti-icers.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Wheel Wash and Tire Bath Operations

If a site is not paved (e.g. gravel or compacted dirt), sediment and mud on vehicle tires can be transported onto the adjacent paved roads. If track out cannot be controlled by constructing a typical rocked construction entrance, a wheel wash system may need to be installed. See Appendix D, Chapter D.3.4.3 of the King County Surface Water Design Manual for a more detailed description of wheel wash operation requirements.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if are install a wheel wash or tire bath system to control sediment tracking onto adjacent roads:

- 1** The wheel wash area must be paved.
- 2** The water level in the wheel wash should be a minimum of 12 inches deep.
- 3** Spray nozzles may be needed in muddy conditions.
- 4** Wheel wash systems should be designed with a small grade change, e.g. 6 to 12 inches for a 10 foot wide ponding area, to allow sediment to collect in the low side of the ponding area to prevent re-suspension of solids.
- 5** Required Routine Maintenance:
 - A drain pipe with a 2 to 3 foot riser should be installed on the low side of the ponding area to allow for cleaning and refilling.

- The wheel wash should start out with fresh water each day.

ALTERNATIVE DESIGNS



Closed loop wheel wash systems are preferred with the wastewater discharged to a sanitary sewer.



Polymers for flocculation may be used in closed loop systems that discharge to the sanitary sewer. Contact your local sewer district and/or the King County Industrial Waste Program for authorization.

Note: See Appendix D of the Surface Water Design Manual for additional information on wheel wash systems.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Potable Water Line Flushing or Tank Maintenance

Line flushing and tank maintenance typically uses chemicals such as chlorine to disinfect drinking water systems. These chemicals are highly toxic to aquatic organisms. Line flushing and tank maintenance also creates suspended solids and metals that can degrade receiving waters.

MINIMUM REQUIREMENTS

The following BMPs, or equivalent measures, methods, or practices, are required if you perform potable water line flushing or tank maintenance operations:

1

When flushing, filter water through sediment traps. If super chlorination is part of flushing, the water must be discharged to the sanitary sewer (with applicable permits) or if a sanitary sewer is not available, the water must be collected and disposed of appropriately. Water cannot be discharged directly to stormwater systems unless treated and water quality standards are met. Discharging treated water to stormwater systems requires approval from the Washington State Department of Ecology. In some cases, flushing water can be infiltrated in well-vegetated areas.

2

Tank cleaning water must go to the sanitary sewer or be infiltrated into the ground. No erosive flows can occur and water must not cross property lines. If tanks are simply drained, infiltration is an acceptable BMP.

For more information or assistance in implementing these best management practices, contact the King County Department of Natural Resources and Parks Water and Land Resources Division at 206-296-1900.

Reader Note: The above requirements are the minimum required BMPs. If these BMPs fail to prevent discharges to the storm drainage system, you will be asked to take additional measures to correct the continued pollution discharges.

Use of Soil Amendments on Construction Sites

The use of soil amendments (including cement treated base (CTB) and cement kiln dust (CKD)) on development sites must be approved by King County. The approval process is described in BMP Info Sheet #11, "Processing Requirements for Use of Soil Amendments on Construction Sites".

Note: Additional BMPs may be required to prevent adverse impacts to the public and/or the environment. It is the responsibility of the permit holder to remain in compliance with all other applicable local, state, and federal regulations.

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| 1. Materials Source Analysis | Solubility Testing & Specifications | <ul style="list-style-type: none"> A. If CKD is proposed, a chemical analysis of soluble pollutants of the product to be used will be provided to the Washington State Department of Ecology (DOE) and the King County Department of Development and Environmental Services (DDES) in advance of any product is applied. B. CTB/CKD mixing percentage is anticipated to be approximately 3 percent to 5 percent. C. A Geotechnical Engineer will establish the mixing percentage for the on-site soils. D. All treatment procedures shall be directed, monitored, and verified by a Geotechnical Engineer. E. Soil amendments will never occur in excess of the ability of the on-site equipment and resources to meet all BMP requirements specified herein. |
| 2. Site Preparation | Runoff Collection System | <ul style="list-style-type: none"> A. Areas that are to be treated as shown on the plan are flagged off to prevent equipment from leaving treated area and going onto untreated areas, and to prevent unauthorized equipment from entering the treated area. B. Assessment of surface runoff collection points are noted. C. Cutoff trenches, collection sumps, and pumps are installed. D. Sealed storage tanks will be properly sized to contain all runoff from treated areas. E. Sealed storage tanks shall be set up and ready for use to treat contact water. F. An approved wheel wash will be constructed at the construction exit, typically a paved ramp sump that utilizes high-pressure washers. G. Copies of Treatment Plan, Approval, and Contingency Plan area are required to be located on site. |
| 3. Lay-down Mixing Equipment | | <ul style="list-style-type: none"> A. Exposure of CTB/CKD materials to air to be minimized. Delivery tankers shall be set up to place CTB/CKD directly into spreading trucks or equipment. B. CTB/CKD operations are only allowed during daylight hours. C. Tarps or dust bags will be used over the discharge truck hose at |

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| | | <p>unloading to prevent dust particles for becoming airborne.</p> <p>D. Unloading will occur at the lowest possible pump pressure.</p> <p>E. Unloading and mixing will be avoided on high wind days. PSAPCA Section 9.15 prohibits visible emissions of fugitive dust.</p> <p>F. CTB/CKD to be placed on ground by large wheeled spreaders designed for this purpose capable of measuring application.</p> <p>G. When spreading CTB/CKD it shall be kept 2-3 feet away from untreated areas boundaries to prevent the material from migration and contaminating outside the treatment zone.</p> <p>H. Treatment area will be kept damp/wet at all times CTB/CKD is being spread and mixed. Skirting around applicator/spreader and mixer is required to minimize CTB/CKD dust.</p> <p>I. CTB/CKD is to be roto-tilled into soil immediately after being spread onto soils and shall be done with a skirted tiller.</p> <p>J. Direct auguring machine that measures, spreads, and mixes CTB/CKD in one operation is preferred.</p> <p>K. Compaction will be complete within 2 hours after CTB/CKD application.</p> |
| 4. Site Management | Work Progress and Weather Conditions | <p>A. Dust suppression by use of water trucks shall be used on areas where work on dry soil is performed and potential airborne contamination may occur.</p> <p>B. The volume of CTB/CKD allowed on site will be limited to the amount that can be used within a normal workday. Every effort will be made to forecast the daily delivery rate to match the daily on-site use rate.</p> <p>C. CTB/CKD will not be added to soils at a rate that exceeds the ability of on-site resources to immediately commence mixing and compacting.</p> <p>D. No work will occur in rain heavier than drizzle, or under drizzle that exceeds 6 hours duration, or under any rainfall which generates runoff from the areas being worked.</p> <p>E. Should the weather change to stop the application, remaining CTB/CKD will be covered and contained to prevent stormwater from entering storage containment, and causing runoff .</p> <p>F. All vehicles and equipment leaving the treatment area/site must be cleaned/washed to prevent CTB/CKD from leaving site. Wash water will be contained and treated as needed.</p> <p>G. CTB/CKD contact water in the wheel wash will be removed from the site via a vactor truck for transport to an approved off-site treatment or disposal facility in accordance with all federal, state, and local laws and regulations; or, if permitted, to the sanitary sewer system.</p> |
| 5. Surface Water Collection | | <p>A. Surface runoff from the treated areas is to be collected and stored in onsite sealed treatment tanks.</p> <p>B. A rigid schedule of TESC inspection, maintenance, and drainage controls will be maintained.</p> <p>C. Temporarily plugging and using detention facilities is not allowed as a storage practice.</p> <p>D. Runoff from compacted areas amended with CTB/CKD will be directed to previously sealed tank(s) until pH levels of water are verified to be within acceptable background water limits. No uncontrolled discharge or infiltration from the sealed tank(s) will be allowed.</p> <p>E. Drainage from areas amended with CTB/CKD within the past 72 hours will be prevented from co-mingling with any other project drainage.</p> |
| 6. Discharge | Applicable | <p>A. Any and all discharges from this site will be in compliance with all</p> |

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| Compliance | Regulations | <p>applicable federal, state, and local laws and regulations pertaining to health and safety, water, air, waste, and wildlife, including the Federal Clean Water Act, Clean Air Act, and Endangered Species Act. Laboratory analysis of water is required prior to discharge to verify compliance.</p> <p>B. No infiltration is allowed to occur if pH readings are above 8.5 standard pH units, or below 6.5 standard pH units.</p> <p>C. A pH meter must be used to determine levels. pH meter is to be calibrated following proper QA/QC procedures. Fresh buffers are to be available to re-calibrate as needed.</p> <p>D. A log of turbidity and pH readings will be kept on site for inspection.</p> <p>E. All treatment of water must be directed, bench tested, monitored and verified by a qualified water quality specialist.</p> <p>F. Treated area water runoff shall not enter the permanent stormwater system.</p> <p>G. Stormwater drainage system within treatment area is to be cleaned out prior to use for regular water runoff conveyance from untreated areas. Water from cleanout is to be tested and treated following the approved treatment criteria.</p> |
| 7. Natural Treatment and Discharge | | <p>A. The preferred method of disposal of the treatment water will be discharge to the sanitary sewer, provided a permit is obtained to do so.</p> <p>B. If infiltration is proposed, the area of infiltration is to be identified, capacity confirmed, and a contingency discharge plan in place in the event facilities fail to infiltrate.</p> <p>C. For infiltration, pH limits shall be strictly adhered to.</p> <p>D. If a permit to discharge to the sanitary sewer is not obtained, a National Pollutant Discharge Elimination System (NPDES) discharge permit is required from DOE. The retention volume of the lined pond(s) will also be increased to ensure complete control of the retained volume. Monitoring, bench testing, and controlled discharge rates, with prior approval by DOE, would be needed prior to discharge to an approved off-site surface drainage system. Sites that currently have NPDES permits will need to amend permit prior to discharge to cover this action. County approval is still required.</p> <p>E. Per KCC 9.12, discharges into receiving drainage systems shall not have acid or basic pH levels.</p> <p>F. Sealed storage tanks shall be used to reduce turbidity and pH before discharge.</p> |
| 8. Chemical Treatment | | <p>A. Carbon dioxide sparging (dry ice pellets) may be used as the chemical treatment agent to reduce the water pH.</p> <p>B. Any means of water treatment to reduce pH will require an NPDES discharge permit from DOE. Permit would only be granted after bench testing performed by an independent qualified party.</p> <p>C. Active mixing will cease if the residual retention water volume falls below the ability to treat and properly dispose of contact storm water.</p> <p>D. Discharge would only occur after the approval of DOE, following bench testing and consultation with DOE.</p> <p>E. All materials for chemical treatment will be on site and property stored, during all phases of CTB/CKD treatment.</p> |
| 9. Water Quality | Monitoring | <p>A. Turbidity and pH will be monitored on a twice-daily basis, prior to operations and immediately upon ceasing operations, and these measurements will be recorded. Monitoring will also occur immediately after any storm event of ½ inch in 24 hours, or water</p> |

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| | | <p>migration to the retention pond(s), and the measurements recorded. If the pH approaches 8.0, monitoring frequency will increase.</p> <p>B. Turbidity and pH monitoring will occur in all treatment facilities, stormwater detention facilities, infiltration areas (if infiltration is used), and in all surface water areas adjacent to site where stormwater potentially discharges. Additional upstream surface water sites will be established to determine background levels of turbidity and pH.</p> <p>C. All water quality monitoring data will be conducted and evaluated by an independent, qualified party and conducted using professionally supportable test protocols and QA/QC procedures.</p> |
| 10. Reporting | Ecology and DDES | <p>A. All water quality monitoring data will be included in weekly DDES TESC reports to DDES, and in weekly NPDES reports to DOE.</p> <p>B. All work, testing, and monitoring associated with the application of CTB/CKD shall be observed by engineer. The engineer shall prepare and submit a report to the assigned DDES project inspector indicating BMPs were/were not being met.</p> <p>C. Copies of all reports and logs will be available on site during the soil and surface runoff treatment activities.</p> |
| Other elements to consider: | | |
| 11. Water Quality – Soils | Source Controls | <p>A. There may be very small amounts of concrete washout produced on-site as a result of construction of erosion control measures during reclamation. Concrete washout, if any, would be retained in a lined enclosure of at least 6-mil visqueen or plastic sheeting, with no outlet. The washout retention enclosure would be isolated and separate from any CTB/CKD area runoff. Contents of the lined concrete washout enclosure will be removed from the site via a vector truck for disposal in an approved off-site treatment or disposal facility in accordance with all federal, state, and local laws and regulations. Signed trip tickets, as proof of proper disposal, will be provided to DOE and DDES.</p> |
| B. Water Quality – pH | Cover Measures | <p>A. Areas amended with CTB/CKD for compaction after CTB/CKD addition will be covered with plastic or visqueen sheeting, or other impervious material by the end of each working day.</p> <p>B. Temporary cover will be maintained over all compacted areas amended with CTB/CKD until testing confirms that pH levels are stabilized to background measurements. [Note: Curing to avoid pH effects has no relationship to the rate at which material can be compacted in multiple lifts. Compaction will commence immediately after application and mixing, and multiple lifts will occur as quickly as each lift is compacted and ready to accept the next.]</p> <p>C. Should weather conditions prevent mixing, any unmixed CTB/CKD remaining on site will be enclosed in a sealed containment, such as portable silo, or removed from site.</p> |