



CITY OF KENT
PUBLIC WORKS OPERATIONS FACILITY
&
VACTOR SOLIDS FACILITY

STORMWATER POLLUTION
PREVENTION PLAN

January 2010

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BACKGROUND AND GENERAL REQUIREMENTS

The City of Kent is covered as a permittee under the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Stormwater Permit (Phase II Permit). The NPDES program is a requirement of the federal Clean Water Act and is implemented by the Department of Ecology in Washington State. The Phase II Permit requires that all permittees develop a stormwater management program (SWMP) aimed at reducing the discharge of pollutants into the permittee's municipal separate storm sewer system (MS4).

A required component of the SWMP is the implementation of an operations and maintenance (O&M) program designed to prevent or reduce pollutant runoff from municipal operations and from municipally-owned stormwater facilities. One requirement of the O&M program is the development of a stormwater pollution prevention plan (SWPPP) for all City heavy equipment maintenance and storage yards, and material storage facilities.

This SWPPP has been developed to meet the O&M requirements outlined above. This SWPPP must be implemented at the current City of Kent Operations facility located at 5821 S 240th St. Kent, WA 98032, with certain elements applicable to the Vector-solids facility, located at 6400 SE 226th St. Kent, WA 98032. When the Kent East Hill Operations Facility is completed and operational, this SWPPP will be applied, with necessary adjustments, to that facility, which is located at 12607 SE 248 St. Kent, WA 98032.

SWPPP AVAILABILITY

A copy of this SWPPP will be kept at each applicable City of Kent facility or within reasonable access to the facility. It will be made available to Ecology personnel on request. If requested, a copy of this SWPPP will be made available to the public within a reasonable time frame.

SWPPP UPDATE

This SWPPP will be updated periodically to reflect changed conditions.

OBJECTIVES OF THE SWPPP

This document serves as the Stormwater Pollution Prevention Plan (SWPPP) for the City of Kent Public Works Operations Facility; a heavy equipment maintenance and storage yard, and material storage facility.

The objectives of this SWPPP are:

- To identify locations of all materials that could cause pollution if spilled or otherwise released into the environment;
- To identify all storm sewer conveyances, treatment facilities, and discharge points to aid in the isolation of contaminants should any be spilled into the system;
- To identify locations of spill containment equipment and materials;
- To implement and maintain best management practices (BMPs) that identify, reduce, eliminate, and/or prevent the discharge of stormwater pollutants;
- To prevent violations of State surface water quality, groundwater quality, and sediment management standards; and
- To eliminate unpermitted discharges and other illicit discharges to separate storm drainage systems.
- Provide information to staff on BMP's for the Operations yard.

This document describes the methods and procedures that City of Kent personnel will implement in order to reduce and/or eliminate the contamination of stormwater runoff and discharges of pollutants from City of Kent facilities.

This SWPPP contains BMPs that the Kent Operations and Vector Solids facilities implement to reduce or eliminate the release of pollutants to the MS4 and surface waters. The mechanisms for such a release may include the inadvertent contamination of stormwater from illicit discharges to the MS4 or from spills that reach the MS4.

This document includes the following information:

- Definition of SWPPP Coordinator requirements and responsibilities
- Identification of Pollution Prevention Team personnel
- Facility description and activities
- Description of BMPs
- Description of monitoring, inspection, and recordkeeping requirements

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NPDES PERMIT COVERAGE

The City's stormwater discharges are authorized under the terms and conditions of the Phase II Permit; effective February 16, 2007, through February 15, 2012, or as notified by Ecology. The City of Kent is responsible for the operation and maintenance of the MS4, including all flow control and treatment stormwater BMPs located at its facilities.

INTEGRATION WITH OTHER COVERAGE

This SWPPP is required under the NPDES Municipal Phase II Permit. The Operations and Vector Solids facilities are not subject to coverage under any other NPDES permits. Any construction or industrial activities that occur on these sites will be assessed for NPDES coverage requirements and integrated with this plan as appropriate.

FACILITY ASSESSMENT

The City of Kent facilities requiring this SWPPP, according to NPDES Permit requirements, are:

1. The City of Kent Operations Facility – an operations and maintenance facility that maintains and stores heavy equipment and stores materials used at City facilities and on City property.
2. The City of Kent Vector Solids Facility – a city-owned and operated facility used to sort and store street-waste solids prior to testing and use in other areas of the City.

There are currently no other City-owned or operated facilities required to develop a SWPPP as part of the Phase II Permit requirements.

POLLUTION PREVENTION TEAM

The pollution prevention team is responsible for developing the SWPPP and assisting in its implementation, maintenance, and modification. The activities and responsibilities of the pollution prevention team address all aspects of this SWPPP.

The responsibilities include:

- Assigning one or more individuals by name and title to be responsible for developing the SWPPP and assisting the SWPPP Coordinator in its implementation, maintenance, and modification;
- Holding regular meetings to review the overall operation of the BMPs;
- Establishing responsibilities for inspections, O&M, and emergency situations; and
- Arranging the training of all team members in the operation, maintenance, and inspections of BMPs.

The pollution prevention team consists of management and facility operations personnel and includes a SWPPP Coordinator (the Facility Supervisor) at each facility and other identified individuals responsible for developing the plan and assisting the supervisor in its implementation. A list of team members, contact information, and a brief description of their primary area of responsibility regarding stormwater pollution is identified in Table 1.

Table 1. Pollution Prevention Team

Position	Name(s)	Phone Number(s)	Primary Responsibilities
Facility Supervisor/SWPPP Coordinator	Don Millet – PW Operation Manager	(253)856-5600	Ensure that each facility employee is in compliance with the KENT SWPPP regarding their operations; the Facility Supervisor must certify the completeness and accuracy of the SWPPP by signing a certification statement.
NPDES Coordination	Shawn Gilbertson – NPDES Coordinator	(253)856-5560	Manage NPDES permit requirements (including developing, implementing, maintaining, and revising the SWPPP) and assisting each facility with state and City of Kent regulatory issues pertaining to stormwater pollution prevention.

Applicable Kent Supervisors and Staff	Ron Green (Fleet) Brad Lake (Water) Garin Lee (Parks) Greg Reed (Utilities) Bill Thomas (Street) Charlie Lindsay (Facilities)	(253)856-5600	Ensure that BMPs listed are in place, operative, and effective at all times in and around the areas where activities that impact stormwater are conducted.
City of Kent Trainers	Shawn Gilbertson – NPDES Coordinator	(253)856-5560	Ensure that all applicable staff are trained in relevant stormwater pollution prevention BMPs

OPERATIONS AT CITY OF KENT FACILITIES

The primary uses of the Kent Operations Center include storage and maintenance of City vehicles, a City vehicle fueling station, Vactor truck & heavy equipment storage, mowing and landscape equipment storage, raw and solid materials storage, & liquid storage.

CITY OF KENT OPERATIONS FACILITY

Activities conducted at the City of Kent Public Works Operations facility include:

- Washing and pressure washing of vehicles, equipment and building structures
- Loading and unloading of liquid or solid materials
- Fueling at dedicated stations
- Automotive repair and maintenance
- Landscaping, lawn and vegetation management
- Painting of buildings
- Outdoor storage or transfer of solid raw materials, byproducts or finished products
- Outdoor portable container storage
- Storage of liquids in permanent aboveground tanks
- Parking lot maintenance and storage of vehicles and equipment

Activities conducted at the City of Kent Vactor solids facility include:

- Storage of bulk dirt, sand and rock
- Storage of collected street waste solids and other stormwater facility solids
- Storage of miscellaneous maintenance hand-held tools and equipment
- Screening and sorting of solids

FACILITY PLANS AND MAPS

PUBLIC WORKS OPERATIONS FACILITY MAP & DRAINAGE PLANS

An Operations Facility map is included in Appendix A of this document. The Operations Facility map identifies the facility layout; building spill kit locations; stormwater drainage system; sanitary sewer system; heavy equipment maintenance and storage areas; and material storage areas.

VACTOR SOLIDS FACILITY MAP & DRAINAGE PLANS

A Vactor Solids Facility map is included in Appendix A of this document. The Vactor Solids Facility map identifies the facility layout; building spill kit locations; stormwater drainage system; sanitary sewer system; and material storage areas.

RECEIVING WATERS & WETLANDS

In general, stormwater runoff from the City of Kent Public Works Operations Center facilities includes runoff from buildings, parking lots, a gravel storage yard, and other paved areas. The stormwater runoff discussed in this SWPPP is conveyed to the City's MS4, specifically, the P2 channel to the east of the facility. A map is included in Appendix A that shows the receiving waters in relation to the Operations and Vactor Solids facilities. Facility locations and points of discharge to receiving waters are identified in Table 2.

Table 2. Facility and discharge locations

Facility	Address	Point(s) of Discharge (Latitude / Longitude)
City of Kent Public Works Operations Center	5821 S 240 th St. Kent, WA 98032	P2 Channel (47.386 / -122.254)
City of Kent Public Works Vactor Solids facility	6400 SE 226 th St. Kent, WA 98032	GRNRA (47.402 / -122.260)

POTENTIAL POLLUTANTS

Table 3 below lists activities conducted at the Operations and Vactor solids facilities that have the potential to generate pollution if not managed properly. Proper management requires utilization of the source control BMPs listed in the right column. These BMPs are from Volume IV, Chapter 2 of the 2005 Stormwater Management Manual for Western Washington (WA State Dept of Ecology, 2005). The BMP numbers correspond to the page within the SWMMWW on which the BMP can be found. Table 4 below summarizes each BMP. BMPs identified in Table 3 are included in Appendix B of this document.

Table 3. Potential pollution-generating activities and relevant BMPs

Facility Name	Pollution-generating Activity	Potential Pollutants	Source control BMP¹
Public Works Operations 5821 S 249th St. Kent, WA 98032	Washing and pressure washing of vehicles, equipment, and building structures	Soaps and detergents, oils and greases, suspended solids, metals	BMP 2-64
	Loading and unloading of liquid or solid materials	Fuels, hydraulic fluids, oils, bulk salt, granular de-icing material, mixed rubble	BMP 2-29
	Fueling at dedicated stations	Gasoline or Diesel Fuel	BMP 2-19
	Automotive repair and maintenance	Gasoline or diesel fuel, lubricating oils	BMP 2-34
	Landscaping and lawn and vegetation management	Pesticides, fertilizers	BMP 2-23
	Painting of buildings	Paint, solvents, metals	BMP 2-46
	Outdoor storage or transfer of solid raw materials, byproducts, or finished products	Street sweeping debris, clean asphalt, clean-screened soil, mixed rubble, clean green debris, crushed rock, bulk salt, granular de-icing salt, and sand	BMP 2-60
	Outdoor portable container storage	Crankcase oil, pesticides, lacquers, latex paint, ethyl ether, mercury, and PDBs	BMP 2-55
	Storage of liquids in portable above ground tanks	Crankcase oil, waste oil, mixed fuel	BMP 2-58
	Parking lot maintenance and storage of vehicles and equipment	Oils & greases, suspended solids, metals	BMP 2-48
Vactor Solids Facility 6400 SE 226 th St., Kent, WA 98032	Loading and unloading of liquid or solid materials	Fuels, hydraulic fluids, oils, bulk salt, granular de-icing material, mixed rubble	BMP 2-29
	Outdoor storage or transfer of solid raw materials, byproducts, or finished products	Street sweeping debris, clean asphalt, clean-screened soil, mixed rubble, clean green debris, crushed rock, bulk salt, granular de-icing salt, and sand	BMP 2-60

HISTORICAL SPILLS & LEAKS

The Kent Operations Facility will retain spill history records and maintain a copy of their own spill records for a minimum of five years. A copy of the spill records will be produced if requested by Ecology. Records will include all of the significant spills or leaks of oils and toxic or hazardous pollutants that have occurred at areas either exposed to precipitation or that drain to a stormwater conveyance.

A significant spill or leak is defined as any quantity of contaminant that enters a storm drain or receiving water or contaminates soil and/or surface water at levels above state water quality standards. Also, any spill of oil or gas that exceeds the reportable quantity as described by the US Department of Energy is considered significant and will be documented and reported as necessary. Reportable quantities of chemicals used at each facility can be determined by entering the chemical name or chemical abstract service (CAS) number into the reportable quantity calculator on the US Department of Energy website (<http://homer/ornl.gov/rq/>).

There are no records of significant spills at the Operations or Vector Solids facilities since 2005.

MONITORING PLAN

Stormwater monitoring is not required for discharges leaving the Kent Public Works Operations or Vector Solids facility. However, visual observation of stormwater effluent is included in all regular facility inspections.

ILLICIT DISCHARGES

The Public Works department manages the illicit discharge detection and elimination (IDDE) program for the City, which includes an illicit discharge ordinance, spill and illicit discharge hotline, business inspections, and illicit connection investigations.

The City of Kent depends on its employees to implement spill prevention and to supply spill kit materials, clean up leaks and/or spills, and report spills. If the spill enters the separate storm drainage system, the Environmental Engineering Section of Public Works at the City of Kent shall be notified.

All spills must be cleaned up as per the City of Kent Public Works Operations 2010 Spill Plan. Additionally, all spills shall be reported to the SWPPP Coordinator and NPDES Coordinator as identified on the Pollution Prevention Team roster in Table 1. The Kent Fire Department will be called for any spill or illicit discharge significant enough to endanger human health.

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FACILITY BEST MANAGEMENT PRACTICES (BMPS)

BMP'S FOR COMPLIANCE WITH THE NPDES PERMIT

The NPDES Permit requires the implementation of BMPs to comply with Ecology water quality standards; all known, available, and reasonable methods of prevention, control, and treatment (AKART); and federal technology-based treatment requirements will be applied. These standards and technology-based requirements have been adopted by Ecology as rules.

OPERATIONAL BMPS

Operational BMPs are defined by Ecology as a schedule of activities, prohibition of practices, maintenance procedures, employee training, good housekeeping, and other managerial practices to prevent or reduce the contamination of stormwater.

REQUIRED CITYWIDE BMPS

All facilities within the City must implement the following six City-wide operational source control BMPs:

BMP 1 - Eliminate illicit connections to storm drains

Every City facility must examine their plumbing systems to identify any illicit connections. Public Works manages the IDDE program for the City, which includes a spill and illicit discharge hotline, business inspections, and illicit connection investigation.

BMP 2 - Perform routine maintenance for stormwater drainage systems

Sediment and pollutants can accumulate over time in various components of stormwater collection, conveyance, and treatment systems, such as catch basins, ditches, storm drains, and oil/water separators. Regular maintenance of the stormwater drainage system decreases the amount of pollutants that are available to contaminate the stormwater. Routine cleaning of catch basins is one of the most important stormwater source control measures that a facility can implement. When catch basins are about 60 percent full of sediment, sediment removal efficiency drops; thus catch basins must be cleaned when sediment depth reaches 60% of capacity.

BMP 3 - Dispose of fluids and wastes properly

Every City facility must properly dispose of solid and liquid wastes, and contaminated stormwater. There are generally four options for disposal, depending on the type of waste:

- Recycling facilities

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- Municipal solid waste disposal facilities
- Hazardous waste treatment, storage, and disposal facilities
- Sanitary sewer

Many liquid wastes and contaminated stormwater (depending on the pollutants and associated concentrations) can be discharged to the sanitary sewer system, which is subject to approval by the King County Industrial Waste Program. If wastes cannot be legally discharged to a sanitary sewer, one of the three other disposal options must be used. Sumps or holding tanks may be useful for storing liquid wastes temporarily. Dangerous or hazardous wastes must be properly transported to an appropriate hazardous waste treatment, storage, and disposal facility, requiring appropriate documentation.

BMP 4 - Proper storage of solid wastes

City facilities must store wastes in suitable containers with leak-proof lids that are closed at all times. The waste storage area must be swept or otherwise cleaned frequently to collect all loose solids for proper disposal in a storage container. The area should not be hosed to collect or clean solids. Employees should be educated about the need to check for and replace leaking containers. Drains located near dumpsters, dumpster pads, and trash compactors should be connected to the sanitary sewer. Discharges to the sanitary sewer system are regulated by the King County Industrial Waste Program. Accumulated waste should not be allowed to exceed the capacity of the storage container. If this occurs, another storage container should be obtained and used.

BMP 5 - Spill prevention and cleanup

A spill can be a one-time event, a continuous leak, or a frequent small leak. All three types of spills must be prevented. Leaks and spills of solid and liquid pollutants including oils, solvents, fuels, and dust from manufacturing operations on any exposed soil, vegetation, or paved area should be promptly contained and cleaned up. Spill cleanup kits should be available at activity locations where spills may occur. In order to reduce the potential for spills, the following practices should be implemented:

- Clearly label all containers that contain potential pollutants
- Store and transport liquid materials in appropriate containers with tight fitting lids
- Place drip pans underneath all containers, fittings, valves, where materials are likely to spill or leak

- Use tarpaulins, ground cloths, or drip pans in areas where materials are mixed, carried, and applied to capture any spilled materials
- Train employees on the safe techniques for handling materials that are used on the site and encourage them to check for leaks and spills
- Spill cleanup kits should be stored near areas with a high potential for spills, so that they are easily accessible in the event of a spill. The contents of the spill kit should be selected based on the types and quantities of materials stored or used at the facility and refilled when the materials are used.

BMP 6 - Provide oversight and training for staff

All team members should be trained annually in the operation, maintenance, and inspections of BMPs. This training must be documented. Training staff about good housekeeping expectations is one of the most effective methods for keeping sediment and other pollutants out of stormwater and receiving waters.

Further actions include assigning one or more qualified individuals to be responsible for the oversight and training of staff regarding stormwater pollution control. Regular meetings should be held to review the overall operation of the BMPs, establish responsibilities for inspections and O&M, and determine responsibilities for emergency situations.

SCHEDULE FOR IMPLEMENTING ADDITIONAL OR ENHANCED BMP'S

If additional or enhanced BMPs are either ordered by Ecology or are necessary due to facility change or a self-inspection, a schedule for their implementation will be incorporated into this SWPPP within 30 days of the self-determination or Ecology order.

SOURCE-SPECIFIC STRUCTURAL SOURCE CONTROL BMPS

The table below provides source-specific structural source control BMPs for the City of Kent Public Works Operations Center based on outdoor activities that could potentially impact stormwater quality. These are actions required in addition to the operational BMPs.

Table 4. Pollution Prevention BMP summaries

Pollution Generating Activity	Source Control BMPs	BMP Descriptions
Washing, pressure washing, and steam cleaning of vehicles, equipment, and building structures	BMP 2-64	<ul style="list-style-type: none"> • Conduct outside washing operation in a designated paved wash area • Convey the washwater to a sump (like a grit separator) and then to a sanitary sewer • The containment sump must have a positive control outlet valve for spill control • Collect the washwater from building structures and convey it to appropriate treatment such as a sanitary sewer
Loading and unloading of liquid or solid material	BMP 2-29	<ul style="list-style-type: none"> • Sweep outside, uncovered loading/unloading areas frequently to remove material that could otherwise be washed off by stormwater • Place drip pans at locations where leaks or spills may occur such as hose connections, hose reels and filler nozzles • Implement the PW Operations Emergency Spill Cleanup Plan
Fueling at dedicated station(s)	BMP 2-19	<ul style="list-style-type: none"> • Train employees on the proper use of fuel dispensers • Post signs in accordance with the Uniform Fire Code (UFC) • Post "No Topping Off" signs • Cover fueling area • Dead-end sumps or other spill isolation system • Spill containment sill or berm around island (min. 4 inch in height) • Route stormwater from fueling island to sanitary sewer or other approved treatment BMP
Automotive repair and maintenance	BMP 2-34	<ul style="list-style-type: none"> • Inspect for leaks all vehicles, parts, and equipment stored temporarily outside and use drip pans as necessary • Remove batteries and liquids from vehicles in designated areas designed to prevent stormwater contamination • Store cracked batteries in a covered non-leaking secondary containment system • Empty oil and fuel filters before disposal • Provide for proper disposal of waste oil and fuel • Do not pour/convey washwater, liquid waste, or other pollutant into storm drains or to surface water • Do not connect maintenance and repair shop floor drains to storm drains or to surface water • Conduct all maintenance and repair of vehicles and equipment in a building, or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated stormwater • Do not hose down work areas. Use dry methods for cleaning leaked fluids • Recycle greases, used oil, oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, transmission fluids, and engine oils • Dispose of all chemicals, fuels, lubricants and other hazardous materials properly as per Fleet Services SOPs

<p>Landscaping , lawn and vegetation management</p>	<p>BMP 2-23</p>	<ul style="list-style-type: none"> • Implement integrated pest management plan • If pesticides/herbicides are used they must be carefully applied in accordance with label instructions • Do not dispose of collected vegetation into waterways or storm drainage systems • Use erosion control BMPs whenever soil is disturbed • Implement the PW Operations Emergency Spill Cleanup Plan • Maintain a list of selected pesticides and their specific uses; brands, formulations, application methods and quantities to be used; equipment use and maintenance procedures; safety, storage, and disposal methods • Mix pesticides/herbicides and clean the application equipment in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil. • Store pesticides in enclosed areas or in covered impervious containment • Ensure that pesticide contaminated stormwater or spills/leaks of pesticides are not discharged to storm drains • Store and maintain appropriate spill cleanup materials in a location known to all near the storage area • Clean up any spilled pesticides and ensure that the pesticide contaminated waste materials are kept in designated covered and contained areas
<p>Painting, finishing, and coating of vehicles, buildings, and equipment</p>	<p>BMP 2-46</p>	<ul style="list-style-type: none"> • Train employees in the careful application of paints, finishes, and coatings to reduce misuse and over spray • Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work • Wipe up spills with rags and other absorbent materials immediately • Do not hose down the area to a storm drain or receiving water or conveyance ditch to receiving water • Use a storm drain cover, filter fabric, or similarly effective runoff control device if dust, grit, or other pollutants may escape the work area and enter a catch basin • Use a ground cloth, pail, drum, drip pan, tarpaulin, or other protective device for activities such as paint mixing and tool cleaning outside or where spills can contaminate stormwater • Properly dispose of all wastes and prevent all uncontrolled releases to the air, ground or water • Clean brushes and tools covered with non-water-based paints, finishes, or other materials in a manner that allows collection of used solvents (e.g., paint thinner, turpentine, xylol, etc.) for recycling or proper disposal • Store toxic materials under cover during precipitation events and when not in use to prevent contact with stormwater • Enclose and/or contain all work while using a spray gun or conducting sand blasting • Do not conduct outside spraying, grit blasting, or sanding activities during windy conditions • Clean paintbrushes 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 drain

<p>Outdoor storage or transfer of solid raw materials, byproducts, or finished products</p>	<p>BMP 2-60</p>	<ul style="list-style-type: none"> • Do not hose down the contained stockpile area to a storm drain or a conveyance to a storm drain or to a receiving water • Store bulk materials in a building or paved and bermed covered area • Place temporary plastic sheeting (polyethylene, polypropylene, hypalon, or equivalent) over the material as necessary • Place curbs or berms along the perimeter of material storage areas to prevent the run-on of uncontaminated stormwater and to collect and convey runoff to treatment • For large stockpiles that cannot be covered, implement containment practices at the perimeter of the site and at any catch basins as needed to prevent erosion and discharge of the stockpiled material offsite or to a storm drain • Ensure that contaminated stormwater is not discharged directly to catch basins without conveying through a treatment BMP • Sweep paved storage areas regularly for collection and disposal of loose solid materials • Stock cleanup materials, such as brooms, dustpans, and vacuum sweepers near the storage area
<p>Outdoor portable container storage</p>	<p>BMP 2-55</p>	<ul style="list-style-type: none"> • Store containers in impervious containment under a roof or other appropriate cover, or in a building • Place tight-fitting lids on all containers • Place drip pans beneath all mounted container taps and at all potential drip and spill locations during filling and unloading of containers • Inspect container storage areas regularly for corrosion, structural failure, spills, leaks, overfills, and failure of piping systems • Check containers daily for leaks/spills. Replace containers, and replace and tighten bungs in drums as needed • Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code (Appendix IV-D R.2) • Cover dumpsters, or keep them under cover such as a lean-to, to prevent the entry of stormwater • Replace or repair leaking garbage dumpsters • Drain dumpsters and/or dumpster pads to sanitary sewer • Keep dumpster lids closed • Keep containers with Dangerous Waste or other potential pollutant liquids inside a building unless this is impracticable due to site constraints or Uniform Fire Code requirements • Store containers in a designated area, which is covered, bermed or diked, paved and impervious in order to contain leaks and spills. The secondary containment shall be sloped to drain into a dead-end sump for the collection of leaks and small spills • For liquid wastes, surround the containers with secondary containment capable of holding 110 percent of the volume contained in the largest container • For contaminated stormwater in the containment area, connect the sump outlet to a sanitary sewer or other approved treatment facility such as an API or CP oil/water separator, catch basin filter or other appropriate system

		<ul style="list-style-type: none"> Equip the sump outlet with a normally closed valve to prevent the release of spilled or leaked liquids, especially flammables (compliance with Fire Codes), and dangerous liquids. This valve may be opened only for the conveyance of contaminated stormwater to treatment or to a tank truck or other appropriate vehicle for off-site treatment and/or disposal
Parking lot maintenance and storage of vehicles and equipment	BMP 2-48	<ul style="list-style-type: none"> If washing of a parking lot is conducted, discharge the washwater to a sanitary sewer, if allowed by the local sewer authority, or other approved wastewater treatment system, or collect it for off-site disposal Do not hose down the area to a storm drain or to a receiving water Sweep parking lots, storage areas, and driveways, regularly to collect dirt, waste, and debris

REPORTING AND RECORD KEEPING

Records of all inspections, observations, and compliance records, as applicable, will be kept by the City of Kent Public Works Operations facility on-site for a minimum of five years. Copies of these records shall be provided upon request.

INSPECTIONS

Staff identified in the pollution prevention team must regularly inspect all areas on City of Kent-owned sites where heavy equipment maintenance or storage and material storage are exposed to stormwater and assess how well stormwater BMPs are operating. Complete, routine inspections must occur annually; a minimum of one additional inspection, preferably during the wet season (October through April) after trees have lost their leaves, is required to ensure that trash, debris, sediment, and/or vegetation is not blocking more than 10 percent of the inlet capacity.

It is recommended that additional inspections be performed as appropriate after major events (e.g., >1 inch of precipitation in 24 hours or environmental incident that causes contaminant release). Record the results of the inspections on the Public Works Utility Inspection forms.

If at any time a BMP is not effective, it must be repaired or maintained before the next anticipated storm event. If maintenance prior to the next storm event is not possible, maintenance must be completed as soon as possible and documented on the form for the extended repair schedule. In the interim, back-up measures must be implemented to ensure that stormwater quality is not diminished.

CONCLUDING STATEMENT

The intent of this SWPPP is to prevent the introduction of pollutants into stormwater at the Public Works Operations and Vector Solids facilities. However, this SWPPP will not be effective at maximizing pollution reduction unless it is implemented fully. Full implementation of this plan includes regular staff training as well as compliance checks to ensure that BMPs are being utilized consistently and correctly.

This document is considered a "living document", meaning that it can and should be updated as often as necessary to ensure that the State requirements of AKART (All Known And Reasonable Technology) and MEP (Maximum Extent Practicable) are employed to minimize the discharge of pollutants from these facilities.

APPENDIX A – FACILITY MAPS AND PLANS

Figure A.1 – Drainage Map; City of Kent Operations and Vector Solids Facilities



The operations facility drains via closed conveyance to the east for approximately 1000 ft; then into the open P2 channel and north for approximately 1 mile to the Green River Natural Resource Area (GRNRA) regional stormwater treatment facility. The Vector solids facility drains via closed conveyance to the west for 1000 ft; then to the north for 600 ft to the GRNRA. Both of these facilities also have sanitary sewer conveyances and discharges as shown on the site maps for each.

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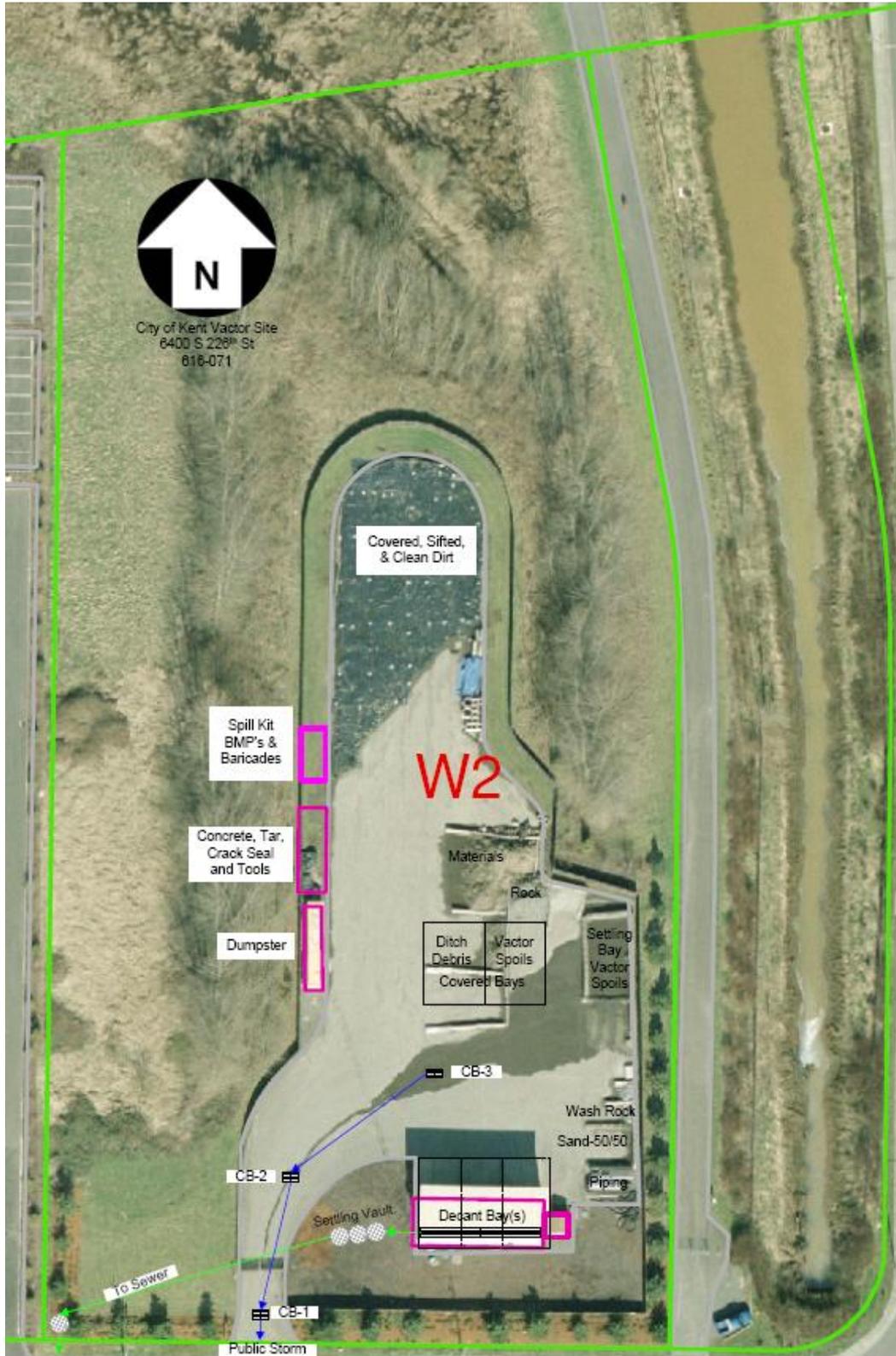
Figure A.2 – Site Map - Operations Facility



- Storm
 - Sewer
 - ~ OWS A & B are not in service
 - ~ Spill Kits in Majority of PWO Vehicles
- | Superintendents | |
|--------------------------------|--|
| Greg Reed - Sewer/Storm X 5630 | |
| Bill Thomas - Street X 5672 | |
| Brad Lake - Water X 5610 | |
| Ron Green - Fleet X 5660 | |
| Steve Craig - Warehouse X 5661 | |
| Garin Lee - Parks X 5126 | |
| Pete Peterson - Off X 5190 | |

Stormwater Pollution Prevention Plan – Operations Facility and Vector Solids Facility – 2010

Figure A.3 – Site Map – Vector Solids Facility



Stormwater Pollution Prevention Plan – Operations Facility and Vector Solids Facility – 2010

APPENDIX B – FACILITY POLLUTION PREVENTION BMPs

The BMPs listed below are from the Washington State Department of Ecology's 2005 Stormwater Management Manual for Western Washington (SWMMWW), Volume IV, Chapter 2. The BMPs listed below are applicable to the City of Kent Public Works Operations or Vector Solids facilities. The BMP numbers are assigned by the corresponding page from the 2005 SWMMWW.

BMPs for Fueling At Dedicated Stations

Description of Pollutant Sources: A fueling station is a facility dedicated to the transfer of fuels from a stationary pumping station to mobile vehicles or equipment. It includes above or under-ground fuel storage facilities. In addition to general service gas stations, fueling may also occur at 24-hour convenience stores, construction sites, warehouses, car washes, manufacturing establishments, port facilities, and businesses with fleet vehicles. Typically, stormwater contamination at fueling stations is caused by leaks/spills of fuels, lube oils, radiator coolants, and vehicle washwater.

Pollutant Control Approach: New or substantially remodeled* fueling stations must be constructed on an impervious concrete pad under a roof to keep out rainfall and stormwater run-on. A treatment BMP must be used for contaminated stormwater and wastewaters in the fueling containment area.

** Substantial remodeling includes replacing the canopy, or relocating or adding one or more fuel dispensers in such a way that the Portland cement concrete (or equivalent) paving in the fueling area is modified.*

For new or substantially remodeled Fueling Stations:

Applicable Operational BMPs:

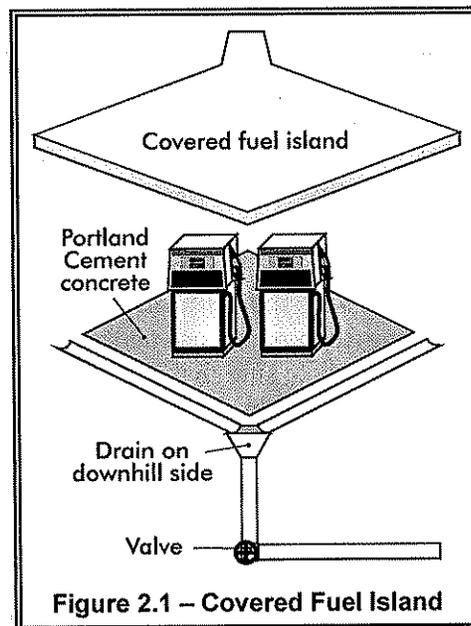
- Prepare an emergency spill response and cleanup plan (per BMPs for Spills of Oil and Hazardous Substances) and have designated trained person(s) available either on site or on call at all times to promptly and properly implement that plan and immediately cleanup all spills. Keep suitable cleanup materials, such as dry adsorbent materials, on site to allow prompt cleanup of a spill.
- Train employees on the proper use of fuel dispensers. Post signs in accordance with the Uniform Fire Code (UFC). Post "No Topping Off" signs (topping off gas tanks causes spillage and vents gas fumes to the air). Make sure that the automatic shutoff on the fuel nozzle is functioning properly.
- The person conducting the fuel transfer must be present at the fueling pump during fuel transfer, particularly at unattended or self-serve stations.
- Keep drained oil filters in a suitable container or drum.

Applicable Structural Source Control BMPs:

- Design the fueling island to control spills (dead-end sump or spill control separator in compliance with the UFC), and to treat collected stormwater and/or wastewater to required levels. Slope the concrete containment pad around the fueling island toward drains; either trench drains, catch basins and/or a dead-end sump. The slope of the drains shall not be less than 1 percent (Section 7901.8 of the UFC). Drains to

treatment shall have a shutoff valve, which must be closed in the event of a spill. The spill control sump must be sized in compliance with Section 7901.8 of the UFC; or

- Design the fueling island as a spill containment pad with a sill or berm raised to a minimum of four inches (Section 7901.8 of the UFC) to prevent the runoff of spilled liquids and to prevent run-on of stormwater from the surrounding area. Raised sills are not required at the open-grate trenches that connect to an approved drainage-control system.
- The fueling pad must be paved with Portland cement concrete, or equivalent. Asphalt is not considered an equivalent material.
- The fueling island must have a roof or canopy to prevent the direct entry of precipitation onto the spill containment pad (see Figure 2.1). The roof or canopy should, at a minimum, cover the spill containment pad (within the grade break or fuel dispensing area) and preferably extend several additional feet to reduce the introduction of windblown rain. Convey all roof drains to storm drains outside the fueling containment area.



- Stormwater collected on the fuel island containment pad must be conveyed to a sanitary sewer system, if approved by the sanitary authority; or to an approved treatment system such as an oil/water separator and a basic treatment BMP. (Basic treatment BMPs are listed in Volume V and include media filters and biofilters) Discharges from treatment systems to storm drains or surface water or to the ground must not display ongoing or recurring visible sheen and must not contain greater than a significant amount of oil and grease.

- Alternatively, stormwater collected on the fuel island containment pad may be collected and held for proper off site disposal.
- Conveyance of any fuel-contaminated stormwater to a sanitary sewer must be approved by the local sewer authority and must comply with pretreatment regulations (WAC 173-216-060). These regulations prohibit discharges that could "cause fire or explosion. An explosive or flammable mixture is defined under state and federal pretreatment regulations, based on a flash point determination of the mixture. If contaminated stormwater is determined not to be explosive, then it could be conveyed to a sanitary sewer system.
- Transfer the fuel from the delivery tank trucks to the fuel storage tank in impervious contained areas and ensure that appropriate overflow protection is used. Alternatively, cover nearby storm drains during the filling process and use drip pans under all hose connections.

Additional BMP for Vehicles 10 feet in height or greater

A roof or canopy may not be practicable at fueling stations that regularly fuel vehicles that are 10 feet in height or greater, particularly at industrial or WSDOT sites. At those types of fueling facilities, the following BMPs apply, as well as the applicable BMPs and fire prevention (UFC requirements) of this BMP for fueling stations:

- If a roof or canopy is impractical the concrete fueling pad must be equipped with emergency spill control, which includes a shutoff valve for the drainage from the fueling area. The valve must be closed in the event of a spill. An electronically actuated valve is preferred to minimize the time lapse between spill and containment. Spills must be cleaned up and disposed off-site in accordance with BMPs for Spills of Oil and Hazardous Substances.
- The valve may be opened to convey contaminated stormwater to a sanitary sewer, if approved by the sewer authority, or to oil removal treatment such as an API or CP oil/water separator, catchbasin insert, or equivalent treatment, and then to a basic treatment BMP. Discharges from treatment systems to storm drains or surface water or to the ground must not display ongoing or recurring visible sheen and must not contain greater than a significant amount of oil and grease.

An explosive or flammable mixture is defined under state and federal pretreatment regulations, based on a flash point determination of the mixture. If contaminated stormwater is determined not to be explosive or) then it could be conveyed to a sanitary sewer system.

BMPs for Landscaping and Lawn/Vegetation Management

Description of Pollutant Sources: Landscaping can include grading, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering. Stormwater contaminants include toxic organic compounds, heavy metals, oils, total suspended solids, coliform bacteria, fertilizers, and pesticides.

Lawn and vegetation management can include control of objectionable weeds, insects, mold, bacteria and other pests with chemical pesticides and is conducted commercially at commercial, industrial, and residential sites. Examples include weed control on golf course lawns, access roads, and utility corridors and during landscaping; sap stain and insect control on lumber and logs; rooftop moss removal; killing nuisance rodents; fungicide application to patio decks, and residential lawn/plant care. Toxic pesticides such as pentachlorophenol, carbamates, and organometallics can be released to the environment by leaching and dripping from treated parts, container leaks, product misuse, and outside storage of pesticide contaminated materials and equipment. Poor management of the vegetation and poor application of pesticides or fertilizers can cause appreciable stormwater contamination.

Pollutant Control Approach: Control of fertilizer and pesticide applications, soil erosion, and site debris to prevent contamination of stormwater.

Develop and implement an Integrated Pest Management Plan (IPM) and use pesticides only as a last resort. If pesticides/herbicides are used they must be carefully applied in accordance with label instructions on U.S. Environmental Protection Agency (EPA) registered materials. Maintain appropriate vegetation, with proper fertilizer application where practicable, to control erosion and the discharge of stormwater pollutants. Where practicable grow plant species appropriate for the site, or adjust the soil properties of the subject site to grow desired plant species.

Applicable Operational BMPs for Landscaping:

- Install engineered soil/landscape systems to improve the infiltration and regulation of stormwater in landscaped areas.
- Do not dispose of collected vegetation into waterways or storm drainage systems.

Recommended Additional Operational BMPs for Landscaping:

- Conduct mulch-mowing whenever practicable
- Dispose of grass clippings, leaves, sticks, or other collected vegetation, by composting, if feasible.

- 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.
- If oil or other chemicals are handled, store and maintain appropriate oil and chemical spill cleanup materials in readily accessible locations. Ensure that employees are familiar with proper spill cleanup procedures.
- Till fertilizers into the soil rather than dumping or broadcasting onto the surface. Determine the proper fertilizer application for the types of soil and vegetation encountered.
- Till a topsoil mix or composted organic material into the soil to create a well-mixed transition layer that encourages deeper root systems and drought-resistant plants.
- Use manual and/or mechanical methods of vegetation removal rather than applying herbicides, where practical.

Applicable Operational BMPs for the Use of Pesticides:

- Develop and implement an IPM (See section on IPM at end of BMP) and use pesticides only as a last resort.
- Implement a pesticide-use plan and include at a minimum: a list of selected pesticides and their specific uses; brands, formulations, application methods and quantities to be used; equipment use and maintenance procedures; safety, storage, and disposal methods; and monitoring, record keeping, and public notice procedures. All procedures shall conform to the requirements of Chapter 17.21 RCW and Chapter 16-228 WAC (Appendix IV-D R.7).
- Choose the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment and/or have properties that strongly bind it to the soil. Any pest control used should be conducted at the life stage when the pest is most vulnerable. For example, if it is necessary to use a Bacillus thuringiensis application to control tent caterpillars, it must be applied before the caterpillars cocoon or it will be ineffective. Any method used should be site-specific and not used wholesale over a wide area.
- Apply the pesticide according to label directions. Under no conditions shall pesticides be applied in quantities that exceed manufacturer's instructions.
- Mix the pesticides and clean the application equipment in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil.

- Store pesticides in enclosed areas or in covered impervious containment. Ensure that pesticide contaminated stormwater or spills/leaks of pesticides are not discharged to storm drains. Do not hose down the paved areas to a storm drain or conveyance ditch. Store and maintain appropriate spill cleanup materials in a location known to all near the storage area.
- Clean up any spilled pesticides and ensure that the pesticide contaminated waste materials are kept in designated covered and contained areas.
- The pesticide application equipment must be capable of immediate shutoff in the event of an emergency.
- Do not spray pesticides within 100 feet of open waters including wetlands, ponds, and streams, sloughs and any drainage ditch or channel that leads to open water except when approved by Ecology or the local jurisdiction. All sensitive areas including wells, creeks and wetlands must be flagged prior to spraying.
- As required by the local government or by Ecology, complete public posting of the area to be sprayed prior to the application.
- Spray applications should only be conducted during weather conditions as specified in the label direction and applicable local and state regulations. Do not apply during rain or immediately before expected rain.

Recommended Additional Operational BMPs for the use of pesticides:

- Consider alternatives to the use of pesticides such as covering or harvesting weeds, substitute vegetative growth, and manual weed control/moss removal.
- Consider the use of soil amendments, such as compost, that are known to control some common diseases in plants, such as Pythium root rot, ashy stem blight, and parasitic nematodes. The following are three possible mechanisms for disease control by compost addition (USEPA Publication 530-F-9-044):
 1. Successful competition for nutrients by antibiotic production;
 2. Successful predation against pathogens by beneficial microorganism; and
 3. Activation of disease-resistant genes in plants by composts.

Installing an amended soil/landscape system can preserve both the plant system and the soil system more effectively. This type of approach provides a soil/landscape system with adequate depth, permeability, and organic matter to sustain itself and continue working as an effective stormwater infiltration system and a sustainable nutrient cycle.

- Once a pesticide is applied, its effectiveness should be evaluated for possible improvement. Records should be kept showing the applicability and inapplicability of the pesticides considered.
- An annual evaluation procedure should be developed including a review of the effectiveness of pesticide applications, impact on buffers and sensitive areas (including potable wells), public concerns, and recent toxicological information on pesticides used/proposed for use. If individual or public potable wells are located in the proximity of commercial pesticide applications contact the regional Ecology hydrogeologist to determine if additional pesticide application control measures are necessary.
- Rinseate from equipment cleaning and/or triple-rinsing of pesticide containers should be used as product or recycled into product.
- The application equipment used should be capable of immediate shutoff in the event of an emergency.

For more information, contact the WSU Extension Home-Assist Program, (253) 445-4556, or Bio-Integral Resource Center (BIRC), P.O. Box 7414, Berkeley, CA.94707, or the Washington Department of Ecology to obtain "Hazardous Waste Pesticides" (Publication #89-41); and/or EPA to obtain a publication entitled "Suspended, Canceled and Restricted Pesticides" which lists all restricted pesticides and the specific uses that are allowed. Valuable information from these sources may also be available on the internet.

Applicable Operational BMPs for Vegetation Management:

- Use at least an eight-inch "topsoil" layer with at least 8 percent organic matter to provide a sufficient vegetation-growing medium. Amending existing landscapes and turf systems by increasing the percent organic matter and depth of topsoil can substantially improve the permeability of the soil, the disease and drought resistance of the vegetation, and reduce fertilizer demand. This reduces the demand for fertilizers, herbicides, and pesticides. Organic matter is the least water-soluble form of nutrients that can be added to the soil. Composted organic matter generally releases only between 2 and 10 percent of its total nitrogen annually, and this release corresponds closely to the plant growth cycle. If natural plant debris and mulch are returned to the soil, this system can continue recycling nutrients indefinitely.
- Select the appropriate turfgrass mixture for your climate and soil type. Certain tall fescues and rye grasses resist insect attack because the symbiotic endophytic fungi found naturally in their tissues repel or kill common leaf and stem-eating lawn insects. They do not, however, repel root-feeding lawn pests such as Crane Fly larvae, and are toxic to ruminants such as cattle and sheep. The fungus causes no known

adverse effects to the host plant or to humans. Endophytic grasses are commercially available and can be used in areas such as parks or golf courses where grazing does not occur. The local Cooperative Extension office can offer advice on which types of grass are best suited to the area and soil type.

- Use the following seeding and planting BMPs, or equivalent BMPs to obtain information on grass mixtures, temporary and permanent seeding procedures, maintenance of a recently planted area, and fertilizer application rates: Temporary Seeding, Mulching and Matting, Clear Plastic Covering, Permanent Seeding and Planting, and Sodding as described in Volume II).
- Selection of desired plant species can be made by adjusting the soil properties of the subject site. For example, a constructed wetland can be designed to resist the invasion of reed canary grass by layering specific strata of organic matters (e.g., compost forest product residuals) and creating a mildly acidic pH and carbon-rich soil medium. Consult a soil restoration specialist for site-specific conditions.
- Aerate lawns regularly in areas of heavy use where the soil tends to become compacted. Aeration should be conducted while the grasses in the lawn are growing most vigorously. Remove layers of thatch greater than ¾-inch deep.
- Mowing is a stress-creating activity for turfgrass. When grass is mowed too short its productivity is decreased and there is less growth of roots and rhizomes. The turf becomes less tolerant of environmental stresses, more disease prone and more reliant on outside means such as pesticides, fertilizers and irrigation to remain healthy. Set the mowing height at the highest acceptable level and mow at times and intervals designed to minimize stress on the turf. Generally mowing only 1/3 of the grass blade height will prevent stressing the turf.

Irrigation:

- The depth from which a plant normally extracts water depends on the rooting depth of the plant. Appropriately irrigated lawn grasses normally root in the top 6 to 12 inches of soil; lawns irrigated on a daily basis often root only in the top 1 inch of soil. Improper irrigation can encourage pest problems, leach nutrients, and make a lawn completely dependent on artificial watering. The amount of water applied depends on the normal rooting depth of the turfgrass species used, the available water holding capacity of the soil, and the efficiency of the irrigation system. Consult with the local water utility, Conservation District, or Cooperative Extension office to help determine optimum irrigation practices.

Fertilizer Management:

- Turfgrass is most responsive to nitrogen fertilization, followed by potassium and phosphorus. Fertilization needs vary by site depending on plant, soil and climatic conditions. Evaluation of soil nutrient levels through regular testing ensures the best possible efficiency and economy of fertilization. For details on soils testing, contact the local Conservation District or Cooperative Extension Service.
- Fertilizers should be applied in amounts appropriate for the target vegetation and at the time of year that minimizes losses to surface and ground waters. Do not fertilize during a drought or when the soil is dry. Alternatively, do not apply fertilizers within three days prior to predicted rainfall. The longer the period between fertilizer application and either rainfall or irrigation, the less fertilizer runoff occurs.
- Use slow release fertilizers such as methylene urea, IDBU, or resin coated fertilizers when appropriate, generally in the spring. Use of slow release fertilizers is especially important in areas with sandy or gravelly soils.
- Time the fertilizer application to periods of maximum plant uptake. Generally fall and spring applications are recommended, although WSU turf specialists recommend four fertilizer applications per year.
- Properly trained persons should apply all fertilizers. At commercial and industrial facilities fertilizers should not be applied to grass swales, filter strips, or buffer areas that drain to sensitive water bodies unless approved by the local jurisdiction.

Integrated Pest Management

An IPM program might consist of the following steps:

Step 1: Correctly identify problem pests and understand their life cycle

Step 2: Establish tolerance thresholds for pests.

Step 3: Monitor to detect and prevent pest problems.

Step 4: Modify the maintenance program to promote healthy plants and discourage pests.

Step 5: Use cultural, physical, mechanical, or biological controls first if pests exceed the tolerance thresholds.

Step 6: Evaluate and record the effectiveness of the control and modify maintenance practices to support lawn or landscape recovery and prevent recurrence.

For an elaboration of these steps refer to Appendix IV-F.

BMPs for Loading and Unloading Areas for Liquid or Solid Material

Description of Pollutant Sources: Loading/unloading of liquid and solid materials at industrial and commercial facilities are typically conducted at shipping and receiving, outside storage, fueling areas, etc. Materials transferred can include products, raw materials, intermediate products, waste materials, fuels, scrap metals, etc. Leaks and spills of fuels, oils, powders, organics, heavy metals, salts, acids, alkalis, etc. during transfer are potential causes of stormwater contamination. Spills from hydraulic line breaks are a common problem at loading docks.

Pollutant Control Approach: Cover and contain the loading/ unloading area where necessary to prevent run-on of stormwater and runoff of contaminated stormwater.

Applicable Operational BMPs:

At All Loading/ Unloading Areas:

- A significant amount of debris can accumulate at outside, uncovered loading/unloading areas. Sweep these surfaces frequently to remove material that could otherwise be washed off by stormwater. Sweep outside areas that are covered for a period of time by containers, logs, or other material after the areas are cleared.
- Place drip pans, or other appropriate temporary containment device, at locations where leaks or spills may occur such as hose connections, hose reels and filler nozzles. Drip pans shall always be used when making and breaking connections (see Figure 2.2). Check loading/unloading equipment such as valves, pumps, flanges, and connections regularly for leaks and repair as needed.

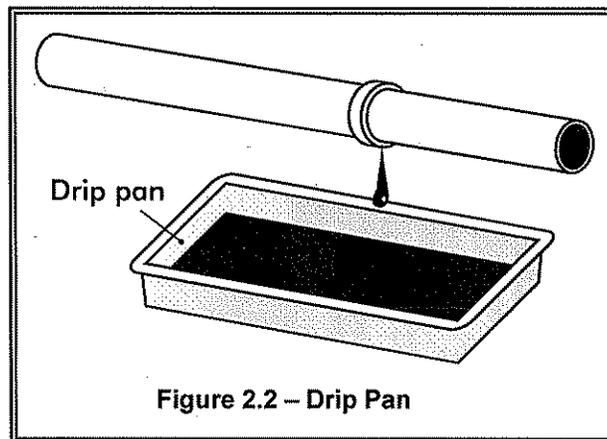
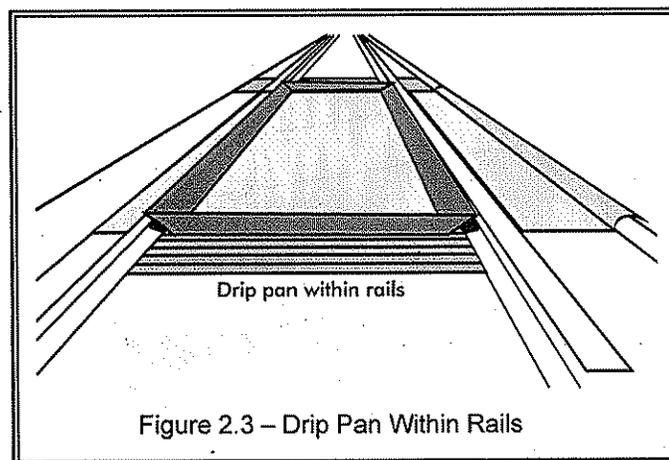


Figure 2.2 – Drip Pan

At Tanker Truck and Rail Transfer Areas to Above/Below-ground Storage Tanks:

- To minimize the risk of accidental spillage, prepare an "Operations Plan" that describes procedures for loading/unloading. Train the employees, especially fork lift operators, in its execution and post it or otherwise have it readily available to employees.
- Report spills of reportable quantities to Ecology (refer to Section 2.1 for telephone numbers of Ecology Regional Offices).
- Prepare and implement an Emergency Spill Cleanup Plan for the facility (BMP Spills of Oil and Hazardous Substances) which includes the following BMPs:
 - Ensure the clean up of liquid/solid spills in the loading/ unloading area immediately, if a significant spill occurs, and, upon completion of the loading/unloading activity, or, at the end of the working day.
 - Retain and maintain an appropriate oil spill cleanup kit on-site for rapid cleanup of material spills. (See BMP Spills of Oil and Hazardous Substances).
 - Ensure that an employee trained in spill containment and cleanup is present during loading/unloading.

At Rail Transfer Areas to Above/below-ground Storage Tanks: Install a drip pan system as illustrated (see Figure 2.3) within the rails to collect spills/leaks from tank cars and hose connections, hose reels, and filler nozzles.



Loading/Unloading from/to Marine Vessels: Facilities and procedures for the loading or unloading of petroleum products must comply with Coast Guard requirements specified in Appendix IV-D R.5.

Transfer of Small Quantities from Tanks and Containers: Refer to BMPs Storage of Liquids in Permanent Above-Ground Tanks, and Storage of Liquid, Food Waste, or Dangerous Waste Containers, for requirements on the transfer of small quantities from tanks and containers, respectively.

Applicable Structural Source Control BMPs:

At All Loading/ Unloading Areas:

- Consistent with Uniform Fire Code requirements (Appendix IV-D R.2) and to the extent practicable, conduct unloading or loading of solids and liquids in a manufacturing building, under a roof, or lean-to, or other appropriate cover.
- Berm, dike, and/or slope the loading/unloading area to prevent run-on of stormwater and to prevent the runoff or loss of any spilled material from the area.
- Large loading areas frequently are not curbed along the shoreline. As a result, stormwater passes directly off the paved surface into surface water. Place curbs along the edge, or slope the edge such that the stormwater can flow to an internal storm drain system that leads to an approved treatment BMP.
- Pave and slope loading/unloading areas to prevent the pooling of water. The use of catch basins and drain lines within the interior of the paved area must be minimized as they will frequently be covered by material, or they should be placed in designated "alleyways" that are not covered by material, containers or equipment.

Recommended Structural Source Control BMP: For the transfer of pollutant liquids in areas that cannot contain a catastrophic spill, install an automatic shutoff system in case of unanticipated off-loading interruption (e.g. coupling break, hose rupture, overfill, etc.).

At Loading and Unloading Docks:

- Install/maintain overhangs, or door skirts that enclose the trailer end (see Figures 2.4 and 2.5) to prevent contact with rainwater.
- Design the loading/unloading area with berms, sloping, etc. to prevent the run-on of stormwater.
- Retain on-site the necessary materials for rapid cleanup of spills.

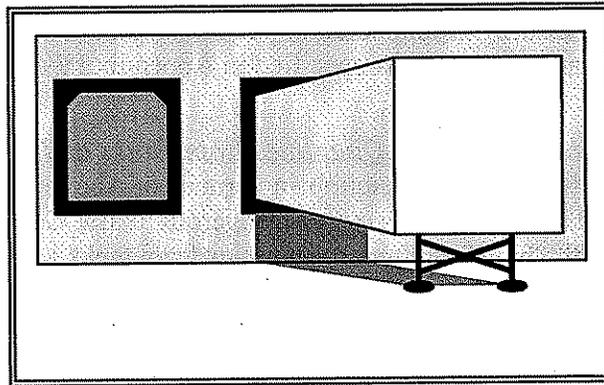


Figure 2.4 – Loading Dock with Door Skirt

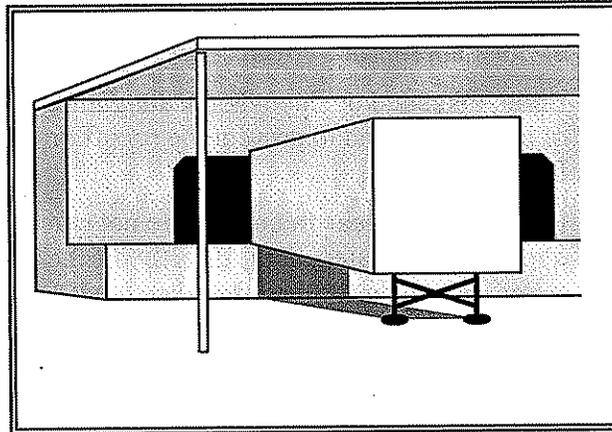


Figure 2.5 – Loading Dock with Overhang

At Tanker Truck Transfer Areas to Above/Below-Ground Storage Tanks:

- Pave the area on which the transfer takes place. If any transferred liquid, such as gasoline, is reactive with asphalt pave the area with Portland cement concrete.
- Slope, berm, or dike the transfer area to a dead-end sump, spill containment sump, a spill control (SC) oil/water separator, or other spill control device. The minimum spill retention time should be 15 minutes at the greater flow rate of the highest fuel dispenser nozzle through-put rate, or the peak flow rate of the 6-month, 24-hour storm event over the surface of the containment pad, whichever is greater. The volume of the spill containment sump should be a minimum of 50 gallons with an adequate grit sedimentation volume.

**BMPs for
Maintenance and
Repair of
Vehicles and
Equipment**

Description of Pollutant Sources: Pollutant sources include parts/vehicle cleaning, spills/leaks of fuel and other liquids, replacement of liquids, outdoor storage of batteries/liquids/parts, and vehicle parking.

Pollutant Control Approach: Control of leaks and spills of fluids using good housekeeping and cover and containment BMPs.

Applicable Operational BMPs:

- Inspect for leaks all incoming vehicles, parts, and equipment stored temporarily outside.
- Use drip pans or containers under parts or vehicles that drip or that are likely to drip liquids, such as during dismantling of liquid containing parts or removal or transfer of liquids.
- Remove batteries and liquids from vehicles and equipment in designated areas designed to prevent stormwater contamination. Store cracked batteries in a covered non-leaking secondary containment system.
- Empty oil and fuel filters before disposal. Provide for proper disposal of waste oil and fuel.
- Do not pour/convey washwater, liquid waste, or other pollutant into storm drains or to surface water. Check with the local sanitary sewer authority for approval to convey to a sanitary sewer.
- Do not connect maintenance and repair shop floor drains to storm drains or to surface water. To allow for snowmelt during the winter a drainage trench with a sump for particulate collection can be installed and used only for draining the snowmelt and not for discharging any vehicular or shop pollutants.

Applicable Structural Source Control BMPs:

- Conduct all maintenance and repair of vehicles and equipment in a building, or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated stormwater.
- The maintenance of refrigeration engines in refrigerated trailers may be conducted in the parking area with due caution to avoid the release of engine or refrigeration fluids to storm drains or surface water.
- Park large mobile equipment, such as log stackers, in a designated contained area.

For additional applicable BMPs refer to the following BMPs: Fueling at Dedicated Stations; Washing and Steam Cleaning Vehicle/Equipment/Building Structures; Loading and Unloading Areas for Liquid or Solid Material; Storage of Liquids in Permanent Above-Ground Tanks; Storage of Liquid, Food Waste, or Dangerous Waste Containers;

Storage or Transfer (Outside) of Solid Raw Materials, By-Products, or Finished Products; Spills of Oil and Hazardous Substances; Illicit Connections to Storm Drains; and other BMPs provided in this chapter.

Note that a treatment BMP is applicable for contaminated stormwater.

Applicable Treatment BMPs: Contaminated stormwater runoff from vehicle staging and maintenance areas must be conveyed to a sanitary sewer, if allowed by the local sewer authority, or to an API or CP oil and water separator followed by a basic treatment BMP (See Volume V), applicable filter, or other equivalent oil treatment system.

Recommended Additional Operational BMPs:

- Consider storing damaged vehicles inside a building or other covered containment, until all liquids are removed. Remove liquids from vehicles retired for scrap.
- Clean parts with aqueous detergent based solutions or non-chlorinated solvents such as kerosene or high flash mineral spirits, and/or use wire brushing or sand blasting whenever practicable. Avoid using toxic liquid cleaners such as methylene chloride, 1,1,1-trichloroethane, trichloroethylene or similar chlorinated solvents. Choose cleaning agents that can be recycled.
- Inspect all BMPs regularly, particularly after a significant storm. Identify and correct deficiencies to ensure that the BMPs are functioning as intended.
- Avoid hosing down work areas. Use dry methods for cleaning leaked fluids.
- Recycle greases, used oil, oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, transmission fluids, and engine oils (see Appendix IV-C).
- Do not mix dissimilar or incompatible waste liquids stored for recycling.

**BMPs for
Painting/Finishing/
Coating of
Vehicles/Boats/
Buildings/
Equipment**

Description of Pollutant Sources: Surface preparation and the application of paints, finishes and/or coatings to vehicles, boats, buildings, and/or equipment outdoors can be sources of pollutants. Potential pollutants include organic compounds, oils and greases, heavy metals, and suspended solids.

Pollutant Control Approach: Cover and contain painting and sanding operations and apply good housekeeping and preventive maintenance practices to prevent the contamination of stormwater with painting oversprays and grit from sanding.

Applicable Operational BMPs:

- Train employees in the careful application of paints, finishes, and coatings to reduce misuse and over spray. Use ground or drop cloths underneath outdoor painting, scraping, sandblasting work, and properly clean and temporarily store collected debris daily.
- Do not conduct spraying, blasting, or sanding activities over open water or where wind may blow paint into water.
- Wipe up spills with rags and other absorbent materials immediately. Do not hose down the area to a storm drain or receiving water or conveyance ditch to receiving water.
- On marine dock areas sweep rather than hose down debris. Collect any hose water generated and convey to appropriate treatment and disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control device if dust, grit, washwater, or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the workday. Collect contaminated runoff and solids and properly dispose of such wastes before removing the containment device(s) at the end of the workday.
- Use a ground cloth, pail, drum, drip pan, tarpaulin, or other protective device for activities such as paint mixing and tool cleaning outside or where spills can contaminate stormwater.
- Properly dispose of all wastes and prevent all uncontrolled releases to the air, ground or water.
- Clean brushes and tools covered with non-water-based paints, finishes, or other materials in a manner that allows collection of used solvents (e.g., paint thinner, turpentine, xylol, etc.) for recycling or proper disposal.
- Store toxic materials under cover (tarp, etc.) during precipitation events and when not in use to prevent contact with stormwater.

Applicable Structural Source Control BMPs: Enclose and/or contain all work while using a spray gun or conducting sand blasting and in compliance with applicable air pollution control, OSHA, and WISHA requirements. Do not conduct outside spraying, grit blasting, or sanding activities during windy conditions which render containment ineffective.

Recommended Additional Operational BMPs:

- Clean paintbrushes 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 drain.
- Recycle paint, paint thinner, solvents, pressure washwater, and any other recyclable materials.
- Use efficient spray equipment such as electrostatic, air-atomized, high volume/low pressure, or gravity feed spray equipment.
- Purchase recycled paints, paint thinner, solvents, and other products if feasible.

BMPs for Parking and Storage of Vehicles and Equipment

Description of Pollutant Sources: Public and commercial parking lots such as retail store, fleet vehicle (including rent-a-car lots and car dealerships), equipment sale and rental parking lots, and parking lot driveways, can be sources of toxic hydrocarbons and other organic compounds, oils and greases, metals, and suspended solids caused by the parked vehicles.

Pollutant Control Approach: If the parking lot is a **high-use site** as defined below, provide appropriate oil removal equipment for the contaminated stormwater runoff.

Applicable Operational BMPs:

- If washing of a parking lot is conducted, discharge the washwater to a sanitary sewer, if allowed by the local sewer authority, or other approved wastewater treatment system, or collect it for off-site disposal.
- Do not hose down the area to a storm drain or to a receiving water. Sweep parking lots, storage areas, and driveways, regularly to collect dirt, waste, and debris.

Applicable Treatment BMPs: An oil removal system such as an API or CP oil and water separator, catch basin filter, or equivalent BMP, approved by the local jurisdiction, is applicable for parking lots meeting the threshold vehicle traffic intensity level of a *high-use site*.

Vehicle High-Use Sites

Establishments subject to a vehicle high-use intensity have been determined to be significant sources of oil contamination of stormwater. Examples of potential high use areas include customer parking lots at fast food stores, grocery stores, taverns, restaurants, large shopping malls, discount warehouse stores, quick-lube shops, and banks. If the PGIS for a high-use site exceeds 5,000 square feet in a threshold discharge area, and oil control BMP from the Oil Control Menu is necessary. A high-use site at a commercial or industrial establishment has one of the following characteristics: (Gaus/King County, 1994)

- Is subject to an expected average daily vehicle traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area: or
- Is subject to storage of a fleet of 25 or more diesel vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.).

BMPs for Storage of Liquid, Food Waste, or Dangerous Waste Containers

Description of Pollutant Sources: Steel and plastic drums with volumetric capacities of 55 gallons or less are typically used at industrial facilities for container storage of liquids and powders. The BMPs specified below apply to container(s) located outside a building used for temporary storage of accumulated food wastes, vegetable or animal grease, used oil, liquid feedstock or cleaning chemical, or Dangerous Wastes (liquid or solid) unless the business is permitted by Ecology to store the wastes (Appendix IV-D R.4). Leaks and spills of pollutant materials during handling and storage are the primary sources of pollutants. Oil and grease, acid/alkali pH, BOD, COD are potential pollutant constituents.

Pollutant Control Approach: Store containers in impervious containment under a roof or other appropriate cover, or in a building. For roll-containers (for example, dumpsters) that are picked up directly by the collection truck, a filet can be placed on both sides of the curb to facilitate moving the dumpster. If a storage area is to be used on-site for less than 30 days, a portable temporary secondary system like that shown in Figure 2.8 can be used in lieu of a permanent system as described above.

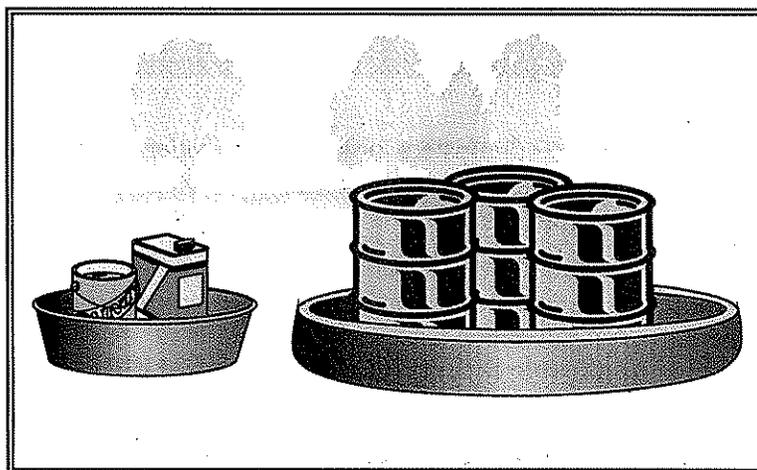


Figure 2.8 – Secondary Containment System

Applicable Operational BMPs:

- Place tight-fitting lids on all containers.
- Place drip pans beneath all mounted container taps and at all potential drip and spill locations during filling and unloading of containers.
- Inspect container storage areas regularly for corrosion, structural failure, spills, leaks, overfills, and failure of piping systems. Check containers daily for leaks/spills. Replace containers, and replace and tighten bungs in drums as needed.
- Businesses accumulating Dangerous Wastes that do not contain free liquids need only to store these wastes in a sloped designated area with

the containers elevated or otherwise protected from storm water run-on.

- Drums stored in an area where unauthorized persons may gain access must be secured in a manner that prevents accidental spillage, pilferage, or any unauthorized use (see Figure 2.9).

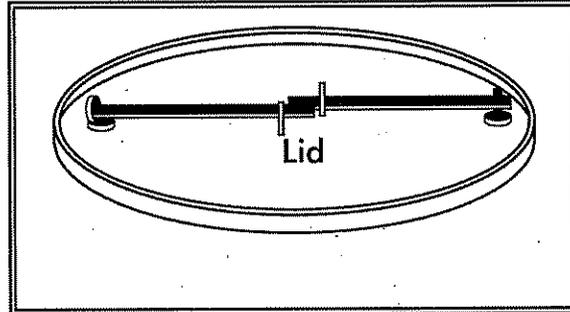


Figure 2.9 – Locking System for Drum Lid

- If the material is a Dangerous Waste, the business owner must comply with any additional Ecology requirements as specified in Appendix IV-D R.3.
- Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code (Appendix IV-D R.2).
- Cover dumpsters, or keep them under cover such as a lean-to, to prevent the entry of stormwater. Replace or repair leaking garbage dumpsters.
- Drain dumpsters and/or dumpster pads to sanitary sewer. Keep dumpster lids closed. Install waterproof liners.

Applicable Structural Source Control BMPs:

- Keep containers with Dangerous Waste, food waste, or other potential pollutant liquids inside a building unless this is impracticable due to site constraints or Uniform Fire Code requirements.
- Store containers in a designated area, which is covered, bermed or diked, paved and impervious in order to contain leaks and spills (see Figure 2.10). The secondary containment shall be sloped to drain into a dead-end sump for the collection of leaks and small spills.
- For liquid wastes, surround the containers with a dike as illustrated in Figure 2.10. The dike must be of sufficient height to provide a volume of either 10 percent of the total enclosed container volume or 110 percent of the volume contained in the largest container, whichever is greater, or, if a single container, 110 percent of the volume of that container.

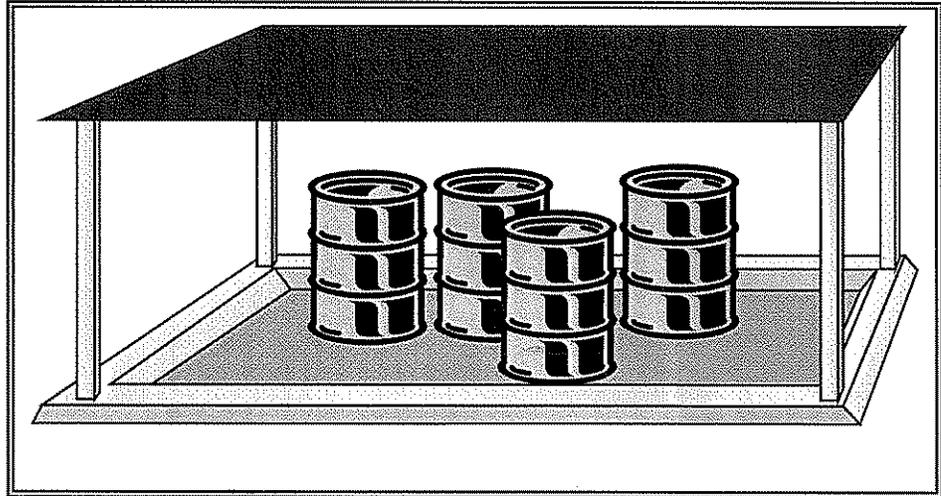


Figure 2.10 – Covered and Bermed Containment Area

- Where material is temporarily stored in drums, a containment system can be used as illustrated, in lieu of the above system (see Figure 2.8).
- Place containers mounted for direct removal of a liquid chemical for use by employees inside a containment area as described above. Use a drip pan during liquid transfer (see Figure 2.11).

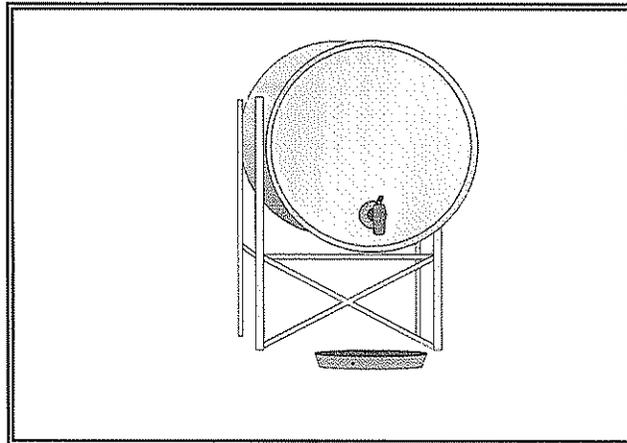


Figure 2.11 – Mounted Container - with drip pan

Applicable Treatment BMP:

- For contaminated stormwater in the containment area, connect the sump outlet to a sanitary sewer, if approved by the local Sewer Authority, or to appropriate treatment such as an API or CP oil/water separator, catch basin filter or other appropriate system (see Volume V). Equip the sump outlet with a normally closed valve to prevent the release of spilled or leaked liquids, especially flammables (compliance with Fire Codes), and dangerous liquids. This valve may be opened only for the conveyance of contaminated stormwater to treatment.
- Another option for discharge of contaminated stormwater is to pump it from a dead-end sump or catchment to a tank truck or other appropriate vehicle for off-site treatment and/or disposal.

Note that a treatment BMP is applicable for contaminated stormwater from drum storage areas.

BMPs for Storage or Transfer (Outside) of Solid Raw Materials, By-Products, or Finished Products

Description of Pollutant Sources: Solid raw materials, by-products, or products such as gravel, sand, salts, topsoil, compost, logs, sawdust, wood chips, lumber and other building materials, concrete, and metal products sometimes are typically stored outside in large piles, stacks, etc. at commercial or industrial establishments. Contact of outside bulk materials with stormwater can cause leachate, and erosion of the stored materials. Contaminants include TSS, BOD, organics, and dissolved salts (sodium, calcium, and magnesium chloride, etc).

Pollutant Control Approach: Provide impervious containment with berms, dikes, etc. and/or cover to prevent run-on and discharge of leachate pollutant(s) and TSS.

Applicable Operational BMP: Do not hose down the contained stockpile area to a storm drain or a conveyance to a storm drain or to a receiving water.

Applicable Structural Source Control BMP Options: Choose one or more of the source control BMP options listed below for stockpiles greater than 5 cubic yards of erodible or water soluble materials such as soil, road deicing salts, compost, unwashed sand and gravel, sawdust, etc. Also included are outside storage areas for solid materials such as logs, bark, lumber, metal products, etc.

- Store in a building or paved and bermed covered area as shown in Figure 2.13, or;

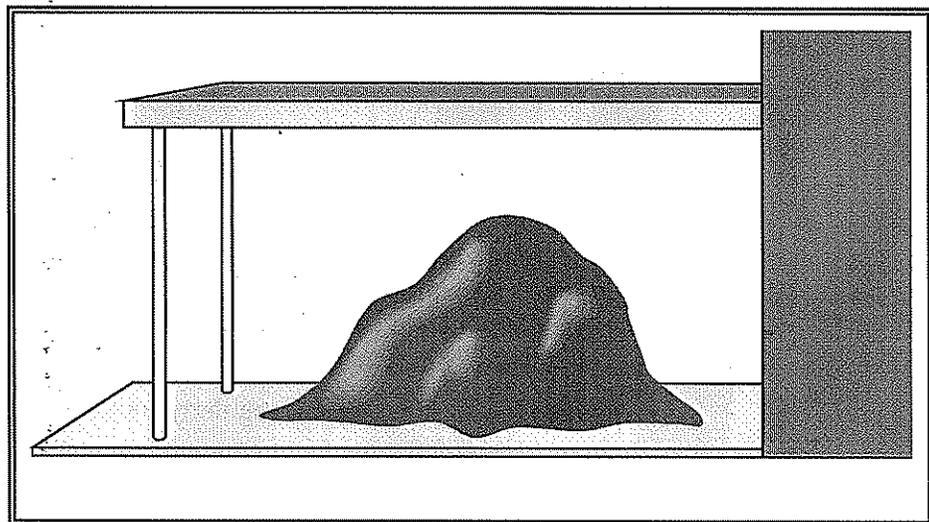


Figure 2.13 – Covered Storage Area for Bulk Solids (include berm if needed)

- Place temporary plastic sheeting (polyethylene, polypropylene, hypalon, or equivalent) over the material as illustrated (see Figure 2.14), or;

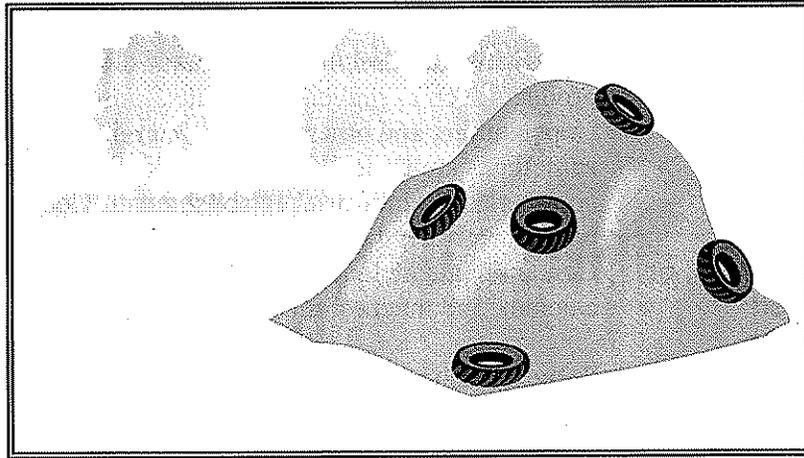


Figure 2.14 – Material Covered with Plastic Sheeting

- Pave the area and install a stormwater drainage system. Place curbs or berms along the perimeter of the area to prevent the run-on of uncontaminated stormwater and to collect and convey runoff to treatment. Slope the paved area in a manner that minimizes the contact between stormwater (e.g., pooling) and leachable materials in compost, logs, bark, wood chips, etc.
- For large stockpiles that cannot be covered, implement containment practices at the perimeter of the site and at any catch basins as needed to prevent erosion and discharge of the stockpiled material offsite or to a storm drain. Ensure that contaminated stormwater is not discharged directly to catch basins without conveying through a treatment BMP.

Applicable Treatment BMP: Convey contaminated stormwater from the stockpile area to a wet pond, wet vault, settling basin, media filter, or other appropriate treatment system depending on the contamination.

Recommended Additional Operational BMPs:

- Maintain drainage areas in and around storage of solid materials with a minimum slope of 1.5 percent to prevent pooling and minimize leachate formation. Areas should be sloped to drain stormwater to the perimeter where it can be collected, or to internal drainage “alleyways” where material is not stockpiled.
- Sweep paved storage areas regularly for collection and disposal of loose solid materials.
- If and when feasible, collect and recycle water-soluble materials (leachates) to the stockpile.
- Stock cleanup materials, such as brooms, dustpans, and vacuum sweepers near the storage area.

**BMPs for
Washing and
Steam Cleaning
Vehicles/
Equipment/
Building
Structures**

Description of Pollutant Sources: Vehicles, aircraft, vessels, and transportation, restaurant cooking, carpet cleaning, and industrial equipment, and large buildings may be commercially cleaned with low or high pressure water or steam. This includes frequent "charity" car washes at gas stations and commercial parking lots. The cleaning can include hand washing, scrubbing, sanding, etc. Washwater from cleaning activities can contain oil and grease, suspended solids, heavy metals, soluble organics, soaps, and detergents that can contaminate stormwater.

Pollutant Control Approach: The preferred approach is to cover and/or contain the cleaning activity, or conduct the activity inside a building, to separate the uncontaminated stormwater from the pollutant sources. Washwater must be conveyed to a sanitary sewer after approval by the local sewer authority, temporarily stored before proper disposal, or recycled, with no discharge to the ground, to a storm drain, or to surface water. Washwater may be discharged to the ground after proper treatment in accordance with *Ecology guidance WQ-95-056, "Vehicle and Equipment Washwater Discharges," June 1995*. The quality of any discharge to the ground after proper treatment must comply with Ecology's Ground Water Quality Standards, Chapter 173-200 WAC. Contact the local Ecology Regional Office for an NPDES Permit application for discharge of washwater to surface water or to a storm drain after on-site treatment.

Applicable Structural Source Control BMPs: Conduct vehicle/equipment washing in one of the following locations:

- At a commercial washing facility in which the washing occurs in an enclosure and drains to the sanitary sewer, or
- In a building constructed specifically for washing of vehicles and equipment, which drains to a sanitary sewer.

Conduct outside washing operation in a designated wash area with the following features:

- In a paved area, constructed as a spill containment pad to prevent the run-on of stormwater from adjacent areas. Slope the spill containment area so that washwater is collected in a containment pad drain system with perimeter drains, trench drains or catchment drains. Size the containment pad to extend out a minimum of four feet on all sides of the vehicles and/or equipment being washed.
- Convey the washwater to a sump (like a grit separator) and then to a sanitary sewer (if allowed by the local Sewer Authority), or other appropriate wastewater treatment or recycle system. An NPDES permit may be required for any washwater discharge to a storm drain or receiving water after treatment. Contact the Ecology regional office for NPDES Permit requirements.

Note that the purpose of the valve is to convey only washwater and contaminated stormwater to a treatment system.

- The containment sump must have a positive control outlet valve for spill control with live containment volume, and oil/water separation. Size the minimum live storage volume to contain the maximum expected daily washwater flow plus the sludge storage volume below the outlet pipe. The outlet valve will be shut during the washing cycle to collect the washwater in the sump. The valve should remain shut for at least two hours following the washing operation to allow the oil and solids to separate before discharge to a sanitary sewer. (See Ecology Publication WQ-95-056)
- The inlet valve in the discharge pipe should be closed when washing is not occurring, thereby preventing the entry of uncontaminated stormwater into the pretreatment/ treatment system. The stormwater can then drain into the conveyance/discharge system outside of the wash pad (essentially bypasses the washwater treatment/conveyance system). Post signs to inform people of the operation and purpose of the valve. Clean the concrete pad thoroughly until there is no foam or visible sheen in the washwater prior to closing the inlet valve and allowing uncontaminated stormwater to overflow and drain off the pad. (See Figure 2.15)
- Collect the washwater from building structures and convey it to appropriate treatment such as a sanitary sewer system if it contains oils, soaps, or detergents, where feasible. If the washwater does not contain oils, soaps, or detergents then it could drain to soils that have sufficient natural attenuation capacity for dust and sediment.

Recommended Additional BMPs:

- The wash area should be well marked at gas stations, multi-family residences and any other business where non-employees wash vehicles.
- For uncovered wash pads, the positive control outlet valve may be manually operated, but a pneumatic or electric valve system is preferable. The valve may be on a timer circuit where it is opened upon completion of a wash cycle. The timer would then close the valve after the sump or separator is drained (Figure 2.15).
- Use phosphate-free biodegradable detergents when practicable.
- Consider recycling the washwater.

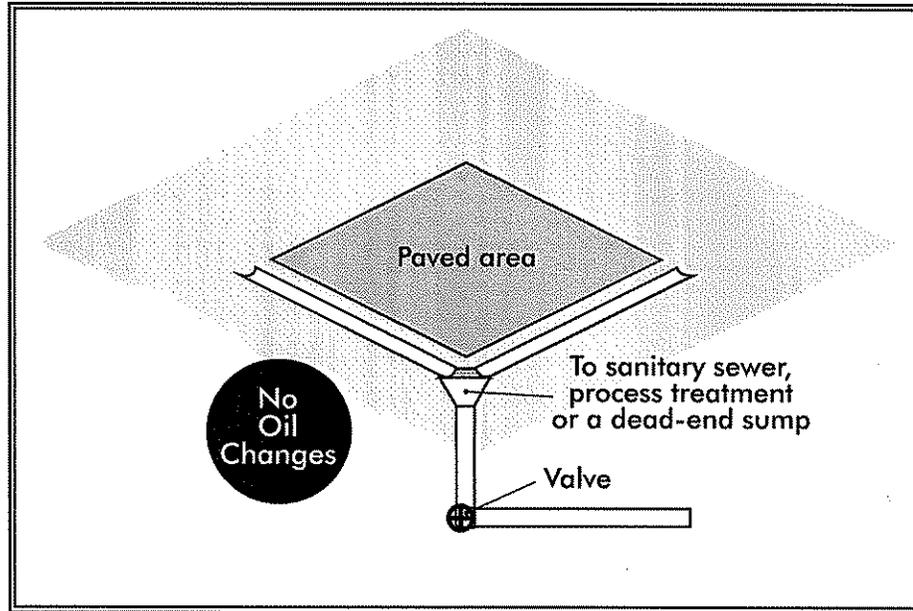


Figure 2.15 – Uncovered Wash Area

- Because soluble/emulsifiable detergents can be used in the wash medium, the selection of soaps and detergents and treatment BMPs should be considered carefully. Oil/water separators are ineffective in removing emulsified or water soluble detergents.

Exceptions

- At gas stations (for charity car washes) or commercial parking lots, where it is not possible to discharge the washwater to a sanitary sewer, a temporary plug or a temporary sump pump can be used at the storm drain to collect the washwater for off-site disposal such as to a nearby sanitary sewer.
- New and used car dealerships may wash vehicles in the parking stalls as long as a temporary plug system is used to collect the washwater for disposal as stated above, or an approved treatment system for the washwater is in place.

At industrial sites contact the local Ecology Regional Office for NPDES Permit requirements even if soaps, detergents, and/or other chemical cleaners are not used in washing trucks.

