PUBLIC REVIEW DRAFT

Volume 4 – Source Control

CITY OF SEATTLE
SEATTLE PUBLIC UTILITIES
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS

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Note:

Some pages in this document have been purposely skipped or blank pages inserted so that this document will copy correctly when duplexed.

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CHAPTER 1 – Introduction

1.1. What Is the Purpose of This Volume?

This volume is designed to help businesses, individuals, responsible parties, and public agencies in Seattle implement best management practices (BMPs) for source control to prevent pollutants from contaminating stormwater runoff and entering receiving waters, such as rivers, lakes, streams and Puget Sound. Polluted stormwater can pose risks to the health, safety, and welfare of humans and the environment. Source control is the practice of preventing pollution at its source.

This chapter provides a worksheet for use in determining which BMPs are required for specific activities, including activities planned for proposed development sites. As required by the Seattle Municipal Code (SMC), Chapters 22.800 through 22.808 (Stormwater Code), BMPs from this volume must be implemented to minimize contamination and discharge of stormwater from pollution generating activities.

Refer to *Appendix A* for definitions of technical terms used in this volume.

1.2. How Does this Volume Apply to Businesses and Properties?

Some BMPs are required for all real property in Seattle (refer to *Chapter 2*). The implementation of additional BMPs for specific pollution generating activities applies to all businesses and public agencies in Seattle except those that drain to the public combined sewer (refer to *Chapter 3*).

The BMPs in this volume have been integrated from many documents, programs and regulations, including the following:

- Federal Clean Water Act
- Federal Coastal Zone Management Act
- Phase I National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater General Permit
- Washington State Department of Ecology (Ecology) Stormwater Management Manual for Western Washington (SWMMWW)
- Puget Sound Action Agenda
- The City's Stormwater Code (SMC, Chapters 22.800 through 22.808)

Owners, operators, and occupants of property, and anyone causing or contributing to a violation of the City Code are each considered a "responsible party" for purposes of a Code violation (SMC, Section 22.801.190).

If a commercial property is owned, leased, or rented to tenants, the owner is also responsible for any pollution from the property and can be held responsible for water quality problems caused by tenants. Make sure tenants are informed of their responsibilities.

1.3. Which Pollutants Are Targeted in This Volume?

The following provides descriptions of typical pollutants targeted by the source control BMPs outlined in this manual, including explanations of why the pollutants can be harmful and some of the common sources of these pollutants.

1.3.1. pH

The pH value of a substance is a measurement of its acidity or alkalinity. The pH of a body of water is vitally important because most aquatic life survives within a relatively narrow range of pH values (6.5 to 8.5). A pH that is lower than 6.5 can be too acidic to support aquatic life. A pH that is higher than 8.5 can be too alkaline to support aquatic life. Some sources that can contribute to a change in the pH of stormwater and receiving waters are:

- Cement in poured concrete
- Cement dust
- Materials used in paving and recycling operations
- Solutions used in metal plating operations
- Chemicals from printing and other industrial processes
- Common cleaners such as bleaches and deck cleaners
- Calcium chloride

1.3.2. Total Suspended Solids

Total suspended solids can include particles such as sand, silt, soil, iron precipitates, and biological solids, all of which can increase the turbidity in receiving waters (make the water cloudy) and can settle out in streams as sediment. This can destroy fish habitat and other aquatic life because excess sediment has the potential to smother aquatic organisms, including developing fish eggs, and also coat them with toxic substances such as petroleum and metals, which can adhere to the sediment in receiving waters.

1.3.3. Chemical and Biological Oxygen Demanding Substances

Chemical wastes and degradable organic matter (such as landscaping waste and food waste) can drastically affect water quality if allowed to enter stormwater. As these substances are broken down by bacteria, the oxygen in the water is depleted. The resulting decrease in oxygen supply can stress or eventually kill fish and other aquatic species. Chemical oxygen demand (COD) and biological oxygen demand (BOD) are two parameters that indicate the amount of oxygen that is used up by various pollutants.

1.3.4. Metals

Metals are used in many products and include copper, lead, zinc and arsenic. Certain metals wear off vehicle brakes, tires, and galvanized surfaces, and are released from paint, scrap

metal, and protective coatings used on buildings. Metals such as zinc can also be a component in products such as moss killers. These metals can be carried by stormwater runoff into receiving waters where they have been linked to severe health and reproductive problems in fish and other aquatic animals.

1.3.5. Bacteria and Viruses

Bacteria and viruses from animal wastes, wildlife, illicit connections, and leaking sewer lines can contaminate receiving waters and result in the closure of swimming and shellfish areas. Concentrations of bacteria called fecal coliform—enterococci in marine water, and *Escherichia coli* in fresh water—are typically used as indicators of pollution.

1.3.6. Nutrients

In the context of water quality, the nutrients of concern are primarily compounds that contain nitrogen and phosphorus. Excess nutrients allowed to enter receiving waters can lead to overgrowth of algae, depletion of oxygen in the water, and channel clogging due to the overgrowth of vegetation. The water can also become unattractive for recreational use and unsuitable for fish and wildlife. Sources of nutrients include fertilizers, leaking trash containers, leaking sewer lines, yard waste, and animal waste.

1.3.7. Toxic Organic Compounds

A number of organic compounds are toxic to the aquatic environment. Many pesticides, herbicides, rodenticides, and fungicides contain organic compounds that can be deadly to aquatic life. The same is true of organic compounds included in antifreeze, wood preservatives, cleansers, and a host of other more exotic organic compounds that result from industrial operations or past industrial practices (such as phthalates, polychlorinated biphenyls [PCBs], dioxins, and chlordane). These toxic organic compounds can remain in the sediment for a long time.

1.3.7.1. Per- and Polyfluoroalkyl Substances (PFAS)

Per- and Polyfluoroalkyl Substances (PFAS) are manufactured, synthetic substances that include thousands of chemicals. These chemicals have been used in many industry and consumer products since the 1940s. PFAS can enter soil, water, and air from various sources and is being detected in many matrices including municipal and industrial stormwater effluent. Specifically, PFAS has been detected in the stormwater of urban industrial catchments and these discharges are considered to be a pathway for the uncontrolled release of PFAS into surface waters, both fresh and marine.

The science is still evolving on the toxic effects of PFAS exposure to aquatic life. Monitoring data from multiple sources statewide, such as monitoring studies of surface waters, stormwater outfalls and PFAS testing of groundwater, for example, will help Ecology have a clearer understanding of how much PFAS is being discharged via stormwater runoff vs other pathways, and evaluate the possible effects of PFAS on aquatic life as well as human health in receiving waterbodies.

1.3.7.2. Pollutants from Rubber Preservatives (Including 6PPD-q)

6PPD-q is one of several identified organic contaminants originating from rubber manufactured products, primarily vehicle tires ((Klöckner et al., 2021) and (Zhao et al.,

2023)) that can lead to stormwater pollution and possible severe impacts to aquatic life in Washington's surface waters. The parent compound 6PPD is added to tires as a chemical antioxidant preservative for decades.

Currently there is a great deal of effort underway worldwide to better understand the chemical properties of 6PPD-q and other transformation products and the fate and transport in human-made and natural water systems. In addition to Source Control studies, Ecology has multiple studies underway to characterize concentrations of 6PPD in stormwater and determine the effectiveness of Runoff Treatment BMPs to reduce those concentrations.

Best professional judgment of professional scientists and engineers is primarily based on EPA's chemical behavior models and a small handful of published studies. Multiple studies are underway locally and this highly toxic compound has received worldwide attention. Fortunately, a couple studies conducted locally, before 6PPD-q was identified, found that filtering highway runoff through the default bioretention soil mix ~~was~~deemed it no longer toxic to coho (McIntyre et al., 2015) and these researchers theorized the lethal toxicant was bound to organic matter (Spromberg et al., 2016). Studies currently underway are evaluating the potential treatment effectiveness of sorption and other filtration techniques using a variety of medias and BMPs. Implementing a wide range of stormwater management strategies, including source control, runoff treatment, and flow control, across the myriad landscapes with existing urban and roadway development without stormwater management may help to prevent 6PPD-q toxicity to salmon and trout in nearby receiving waters. Recently a review based on best available science and professional judgment was published that ranked over 170 stormwater BMPs on likelihood of reduce concentrations of tire wear particles containing 6PPD and 6PPD-q in stormwater runoff (Navickis-Brasch et al., 2022). The literature review suggested that stormwater source control BMPs, such as street sweeping and cleaning roadside ditches, may have potential to prevent some 6PPD and 6PPD-q from entering stormwater. Source control BMPs aim to separate and prevent sources of pollutants from stormwater runoff. Flow control and runoff treatment BMPs that utilize infiltration, sorption, filtration, and sedimentation may have potential to reduce some 6PPD and 6PPD-q from stormwater. The review indicated that our understanding of the science is continuing to evolve, and our scientific understanding of 6PPD-q behavior in natural and built environments will continue to become clearer.

1.3.7.3. Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs are a class of chemicals that occur naturally and result from burning of natural and manufactured fuels such as wood, gasoline, coal, or wastes. PAHs are considered 'ubiquitous' with concentrations always present in stormwater by the concentrations and rates of detection in stormwater samples vary widely. PAHs were monitored by the Phase I Western Washington municipal stormwater permittees under the 2007 permit and summarized by (Ecology, 2015a). The lower molecular weight compounds are often not found in stormwater. PAHs are more commonly detected in stormwater sediments. Both water and sediment samples show land use differences with higher concentrations in commercial and industrial areas as compared to residential areas.

1.3.7.4. Polychlorinated Biphenyls (PCBs)

PCBs are persistent bioaccumulative chemicals considered to be one of the most significant toxic chemicals in Puget Sound, impacting fish, shellfish, and mammal populations. Between 1929 and 1979, PCBs were added to a range of building materials used on the exterior of industrial, commercial, institutional, and large multi-unit residential buildings to increase the material's longevity. Such materials include some paints, caulking and other joint materials, sealants, roofing, and siding. PCBs are also known to be found in pigments currently manufactured for use in inks, paper and other materials. More information about sources of PCBs can be found in Ecology's PCB Chemical Action Plan (Ecology, 2015b).

PCBs in building materials can be released into the environment during demolition and renovation, routine maintenance (such as cleaning and pressure washing), and contaminated site remediation. Although PCBs are continually released into the environment from exterior PCB-containing building materials exposed to weather, PCBs are likely to be released from buildings in higher quantities when materials are disturbed or degraded. Stormwater is a primary way that PCBs from exterior building materials enter surface waters, where they contaminate fish and shellfish (Ecology, 2024). Several BMPs in this Volume (and Volume 2, BMPs C1.25 and C1.30) contain PCB-specific requirements in order to help prevent PCBs from entering stormwater, stormwater drainage systems and downstream waterbodies.

1.3.8. Other Chemicals and Substances

There are many other chemicals and substances that can cause problems if they are allowed to enter the aquatic environment. Even compounds classified as "biodegradable" or "environmentally friendly" can have devastating effects on aquatic life. Some of the most common chemicals and substances that pollute stormwater are oils, greases, soaps, and detergents.

1.3.9. Oils and Greases

Oil and grease can be generated from either petroleum-based or food-based sources. Oils and greases conveyed in stormwater can accumulate in receiving waters and contaminate soil. Petroleum-based oils and greases can be immediately toxic to fish and wildlife. Food-based oils and greases can coat insects and fish gills, leading to suffocation.

1.3.10. Soaps and Detergents

Vehicles and structures are commonly washed with soaps and other detergents mixed with water. If not managed properly, the resulting washwater can flow to an inlet/catch basin or ditch, which discharges the polluted water directly to the nearest stream or lake, or to Puget Sound. Soaps and detergents, even the biodegradable ones, can have immediate and long-term effects on aquatic life. Sediment and oil released when vehicles and structures are washed with soaps and detergents can also collect in the washwater, causing further harm to fish and other aquatic wildlife. Soaps used on roofs to treat moss can also result in soaps being discharged via roof drains to receiving waters.

The term "biodegradable" on a product label does not mean that the product is safe or environmentally friendly. The product may degrade faster than alternative products but can still be harmful to the environment.

1.4. What Are BMPs?

BMPs for managing stormwater are divided into two broad categories: source control BMPs and treatment BMPs.

1.4.1. Source Control BMPs

Source control BMPs prevent contaminants from entering stormwater runoff by controlling them at their source. Source control can include operational changes (such as sweeping or process changes) or structural changes (such as extending a roof or installing a treatment facility).

Source control requirements are based on the following goals:

1. Prevent stormwater pollution by eliminating pathways that may introduce pollutants into stormwater.
2. Protect soil, groundwater, and receiving waters by capturing acute releases, such as spills, to reduce chronic contamination of the environment.
3. Segregate stormwater and wastewater flows.
4. Direct wastewater discharges and areas with the potential for wastewater discharge (such as vehicle washing facilities) to the sanitary or combined sewer system.
5. Provide an approved method of containment and discharge for areas that have the potential for spills, and are not expected to regularly receive stormwater flow or require water use (such as covered fuel islands or covered containment areas).
6. Create a combination of structural controls and operational procedures to ensure sustainability of the BMPs.

1.4.2. Treatment BMPs

This volume also identifies specific treatment BMPs that apply to particular pollutant sources such as fueling stations, railroad yards, and the outdoor storage and transfer of materials, byproducts, or finished products. Examples of treatment BMPs are oil/water separators, wet vaults, and biofilters. After identifying the required treatment BMPs, refer to *Volume 3 — Project Stormwater Control* for additional information about treatment BMPs.

1.5. Already Implementing Best Management Practices?

Property owners and operators may already be implementing BMPs in accordance with other federal, state, or local requirements (e.g., businesses that have a National Pollutant Discharge Elimination System [NPDES] permit from Ecology). In some cases, the City's requirements may be in addition to, or more stringent than other applicable requirements. Anyone with questions about how to meet all of the source control requirements for stormwater should contact the City of Seattle Stormwater Source Control Unit via the Water Quality Complaints/Reporting Line~~Hotline~~ at (206) 684-7587. City inspectors will work with responsible parties to determine the applicable BMPs.

If it is determined that the BMPs being implemented are not effectively addressing the discharge of contaminants, additional BMPs may be required, including treatment and structural BMPs.

Entities that conduct specific industrial activities are required to obtain an Industrial NPDES Permit for their stormwater discharges. For more information about whether an entity needs an NPDES permit, refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000.

1.6. Getting Started

To understand the source control requirements addressed by this volume, the first step is to determine if the property discharges to the combined sewer, drainage system, or receiving water. If the answer is not clear, call the Water Quality ~~Hotline~~ Complaints/Reporting Line at (206) 684-7587 ~~Option 3 and request assistance~~.

All real property in Seattle must implement BMP 1 through BMP 8 for all real property outlined in *Section 2.1*. BMP 9 through BMP 16 also apply to all real property but are related to specific activities that may occur at a property.

In addition, businesses and public agencies, except those that discharge only to the public combined sewer, must implement the additional BMPs pertinent to site-specific activities outlined in *Chapter 3*.

The worksheet provided below (Table 1) is designed to help identify the appropriate BMPs required. The worksheet contains BMPs organized by the different activities that businesses and public agencies perform. If the listed activity is performed indoors and all discharges (e.g., process water, washwater, lubricants, solvents, fugitive dust, granular material, and blowdown waste) are controlled such that there is no exposure of stormwater to pollutants, then additional BMPs do not have to be implemented for that activity.

1. Complete all sections of the worksheet, checking the appropriate boxes for all activities that occur at the work place.
2. If any of the activities were checked as being performed outdoors (or inside in areas that might spill or flow outside), additional BMPs are required for that activity. Refer to the subsection of this volume identified in the first column of the worksheet for a description of the required BMPs.

Questions can be answered by leaving a message on the Water Quality ~~Hotline~~ Complaints/Reporting Line at (206) 684-7587 or contacting the SPU Green Business Program at (206) 343-8505 or on the City's website (https://www.seattle.gov/utilities/protecting-our-environment/sustainability-tips/green-business-program~~www.seattle.gov/util/ForBusinesses/GreenYourBusiness/index.htm~~).

Table 1a. Worksheet for Identifying Applicable BMPs: Best Management Practices for All Real Property

Section Reference	BMP Number and Name
2.1.1	BMP 1: Eliminate Illicit Connections and Illicit Discharges
2.1.2	BMP 2: Perform Routine Maintenance
2.1.3	BMP 3: Dispose of Fluids and Wastes Properly
2.1.4	BMP 4: Proper Storage of Solid Wastes
2.1.5	BMP 5: Spill Prevention and Cleanup
2.1.6	BMP 6: Provide Oversight and Training for Staff
2.1.7	BMP 7: Property Maintenance
2.1.8	BMP 8: ~~Rooftop~~ Constructed Dog Runs

Table 1b. Worksheet for Identifying Applicable BMPs: Business and Public Entity Best Management Practices For Specific Activities[a]

Section Reference	BMP Number and Name	Is Activity Conducted on the Site?
2.2.1	BMP 9: Fueling at Dedicated Stations ● Applies to gas stations, pumps at fleet vehicle yards or shops, and other privately owned pumps, including construction sites	
2.2.2	BMP 10: Mobile Fueling of Vehicles and Heavy Equipment ● Applies to fleet fueling, wet fueling, and wet hosing	
2.2.3	BMP 11: In-Water and Over-Water Fueling	
2.2.4	BMP 12: Maintenance and Repair of Vehicles and Equipment ● Applies to vehicle maintenance operations and activities where fluids from vehicles and equipment are removed and replaced at permanent or temporary sites	
2.2.5	BMP 13: Concrete and Asphalt Mixing and Production ● Applies to the mixing of raw materials on the site to produce concrete or asphalt or the making of concrete or asphalt products	
2.2.6	BMP 14: Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application ● Applies to construction site, driveway, and parking lot resurfacing and cutting	
2.2.7	BMP 15: Recycling, Wrecking Yard, and Scrap Yard Operations ● Applies to scrapped equipment, vehicles, construction materials, and assorted recyclables	
2.2.8	BMP 16: Storage of Liquids in Aboveground Tanks ● Applies to all liquids in aboveground tanks	

[a] BMP 9 through BMP 16 apply to All Real Property but are related to specific activities that may occur at businesses or be performed by public agencies.

Does site drain only to the public combined sewer?

- If yes, only Chapter 2 BMPs are required.
- If no, fill out the remainder of the worksheet to determine applicable BMPs for site activities per SMC, Section 22.803.040.

If unsure where the site discharges to, call the Water Quality Hotline Complaints/Reporting Line at (206) 684-7587 for assistance.

Table 1c. Worksheet for Identifying Applicable BMPs: Section 3.1 – Cleaning or Washing

Section Reference	BMP Number and Name	Is Activity Conducted in an Area That Could Impact the Drainage System or Receiving Waters?
3.1.1	BMP 17: Cleaning or Washing ● Applies to all outdoor washing activities, including the following: ● Cleaning or washing of tools, engines, manufacturing equipment, vents, filters, pots and pans, grills,, ~~and~~ floor mats, graffiti-covered surfaces, and artificial turf ● Fleet vehicle yards, car dealerships, car washes, and maintenance facilities ● Mobile washing, including carpet cleaning, pressure washing, truck washing, etc. ● Buildings that are confirmed or suspected of containing PCBs on exterior materials.	

Table 1d. Worksheet for Identifying Applicable BMPs: Section 3.2 – Transfer of Liquid or Solid Materials

Section Reference	BMP Number and Name	Is Activity Conducted in an Area That Could Impact the Drainage System or Receiving Waters?
3.2.1	BMP 18: Loading and Unloading of Liquid or Solid Material ● Applies to loading and unloading of liquid or solid materials	

Table 1e. Worksheet for Identifying Applicable BMPs: Section 3.3 - Production and Application

Section Reference	BMP Number and Name	Is Activity Conducted in an Area That Could Impact the Drainage System or Receiving Waters?
3.3.1	BMP 19: Manufacturing and Post-processing of Metal Products ● Applies to machining, grinding, soldering, cutting, welding, quenching, rinsing, etc.	
3.3.2	BMP 20: Processing and Storage of Treated Wood ● Applies to chemical preservative treatment of wood, as well as outdoor storage	
3.3.3	BMP 21: Commercial Composting ● Applies to commercial composting facilities that operate outside without cover	
3.3.4	BMP 22: Landscaping and Vegetation Management ● Applies to grading, storage of landscape materials, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering	
3.3.5	BMP 23: Painting, Finishing, and Coating Activities ● Applies to surface preparation and the application of paints, finishes, and/or coatings	
3.3.6	BMP 24: Commercial Printing Operations ● Applies to materials used in the printing process and waste printing equipment	
3.3.7	BMP 25: Manufacturing Activities ● Applies to manufacturing activities in outdoor areas	

Table 1f. Worksheet for Identifying Applicable BMPs: Section 3.4 – Storage and Stockpiling

Section Reference	BMP Number and Name	Is Activity Conducted in an Area That Could Impact the Drainage System or Receiving Waters?
3.4.1	BMP 26: Storage or Transfer of Leachable or Erodible Materials ● Includes sand, topsoil, lumber, and other products	
3.4.2	BMP 27: Temporary Storage or Processing of Fruits, Vegetables, or Grains ● Applies to storage of fruits, vegetables, or grains; and processing activities at: wineries; breweries; fresh and frozen juice makers; and other food and beverage processing operations	
3.4.3	BMP 28: Portable Container Storage ● Applies to containers used for temporary and permanent storage	

Table 1g. Worksheet for Identifying Applicable BMPs: Section 3.5 – Dust, Soil Erosion, and Sediment Control

Section Reference	BMP Number and Name	Is Activity Conducted in an Area That Could Impact the Drainage System or Receiving Waters?
3.5.1	BMP 29: Dust Control in Disturbed Land Areas and on Unpaved Roadways and Parking Lots ● Applies to dust control measures in disturbed land areas or on unpaved roadways and parking lots	
3.5.2	BMP 30: Dust Control at Manufacturing Sites ● Applies to grain dust, sawdust, coal, gravel, crushed rock, cement, boiler fly ash, and other airborne polluting materials	
3.5.3	BMP 31: Soil Erosion and Sediment Control at Industrial Sites ● Applies to industrial activities that take place on soil	

Table 1h. Worksheet for Identifying Applicable BMPs: Section 3.6 – Other Activities

Section Reference	BMP Number and Name	Is Activity Conducted in an Area That Could Impact the Drainage System or Receiving Waters?
3.6.1	BMP 32: Commercial Animal Care and Handling ● Applies to operations at boarding and day-use kennels, fenced pens, daycares, grooming facilities, shelter and adoption facilities, veterinary clinics, and businesses and public agencies that ~~board~~ store animals.	
3.6.2	BMP 33: Log Sorting and Handling ● Applies to log yards	
3.6.3	BMP 34: Boat Building, Mooring, Maintenance, and Repair ● Applies to all types of maintenance, repair, and building operations at shipyards, ports, and marinas	
3.6.4	BMP 35: Cleaning and Maintenance of Pools, Spas, Hot Tubs, and Fountains ● Applies to cleaning and maintenance of pools, spas, hot tubs, and fountains, including all commercial pool cleaners	
3.6.5	BMP 36: Deicing and Anti-icing Operations for Airports and Streets ● Applies to highways, aircraft, runways and taxiways, and streets	
3.6.6	BMP 37: Maintenance and Management of Roof/~~ and~~ Building ~~Drains~~ Surfaces at Manufacturing and Commercial Buildings ● Applies to maintenance and management of roofs and sides of manufacturing and commercial buildings	
3.6.7	BMP 38: Maintenance and Operation of Railroad Yards ● Applies to cleaning, maintenance, and repair of equipment and engines; fueling; waste disposal; and all other yard maintenance activities	
3.6.8	BMP 39: Maintenance of Public and Private Utility Corridors and Facilities ● Applies to maintenance activities related to public and private utilities, including pipelines, pump stations, rights-of-way, and transmission corridors	
3.6.9	BMP 40: Maintenance of Roadside Ditches ● Applies to activities related to the maintenance of roadside ditches	
3.6.10	BMP 41: Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing	
3.6.11	BMP 42: Urban Streets	
3.6.12	BMP 43: Nurseries and Greenhouses	
3.6.13	BMP 44: Color Events	
3.6.14	BMP 45: Pet Waste	
3.6.15	BMP 46: Labeling Storm Drain Inlets on Your Property	
3.6.16	BMP 47: Well, Utility, Directional, and Geotechnical Drilling	
3.6.17	BMP 48: Goose Waste	

3.6.18	BMP 49: Pesticides and an Integrated Pest Management Program	
3.6.19	BMP 50: Storage of Dry Pesticides and Fertilizers	
3.6.20	BMP 51: Irrigation	
3.6.21	BMP 52: Dock Washing	
3.6.22	BMP 53: Roof Vents	
3.6.23	BMP 54: Streets and Highways	
3.6.24	BMP 55: Fertilizer Application	
3.6.25	BMP 56: Light Rail Washing	

Notes:

If this activity could impact stormwater or receiving waters, refer to the corresponding section of this volume (identified in the first column) for BMP descriptions.

CHAPTER 2 – Best Management Practices for All Real Property

2.1. Required Best Management Practices

All real property must implement and maintain the following source control best management practices (BMPs) to prevent or minimize pollutants from leaving a site or property (Seattle Municipal Code [SMC], Section 22.803.030):

- BMP 1: Eliminate Illicit Connections and Illicit Discharges
- BMP 2: Perform Routine Maintenance
- BMP 3: Dispose of Fluids and Wastes Properly
- BMP 4: Proper Storage of Solid Wastes
- BMP 5: Spill Prevention and Cleanup
- BMP 6: Provide Oversight and Training for Staff
- BMP 7: Property Maintenance
- BMP 8: ~~Rooftop~~ Constructed Dog Runs

Stormwater Code Language	References
SMC, Section 22.803.030 – *For all discharges, responsible parties shall implement and maintain source controls to prevent or minimize pollutants from leaving a site or property.*	• None provided
SMC. Section 22.801.090 – *"Responsible party" means all of the following persons:* 1. *Owners, operators, and occupants of property; and* 2. *Any person causing or contributing to a violation of the provisions of this subtitle.*	• None provided

2.1.1. BMP 1: Eliminate Illicit Connections and Illicit Discharges

Illicit connections and discharges include sanitary or process wastewater connections and unpermitted discharges of pollutants that are improperly ~~discharging to~~impacting a drainage system or receiving water. Illicit connections are infrastructure, such as pipes, that convey pollutants directly into the drainage system or local waters. Illicit discharges can include flow~~s~~ through pipes, overland flow, spills, or dumping of unallowed material into drainage systems or local waters. These improper connections and discharges ~~allow~~ can cause a variety of pollutants to flow directly to receiving waters instead of the sanitary sewer or ~~septic~~ waste holding system. Frequently, such connections and discharges are not intentional but can be ~~very~~ harmful to the environment and must be eliminated.

Unpermitted discharges to the public combined sewer system can also cause impacts to downstream treatment systems and infrastructure. Refer to *Volume 1, Section 3.11* for the minimum requirements to comply with the Seattle Side Sewer Code (SMC, Chapter 21.16). See SMC 21.16.300 for the list of prohibited discharges of certain substances to the public sewer system (or storm drain system or receiving water).

Illicit discharges can include swimming pool water, cleaning solutions/washwater, sewage overflows, greywater, blackwater, cooling water, cooking oils, dirt/sand/silt, etc. A list of prohibited and permissible substances can be found in SMC 22.802.

Required elements of this BMP include:

- For all real properties, responsible parties must examine their plumbing systems to identify any potential illicit connections. A good place to start is with an examination of the site plans. Remodeling and tenant improvement projects are particularly susceptible to inadvertent illicit connections. If an illicit connection is suspected, trace the ~~source~~ conveyance system using closed-circuit television inspection (CCTV), dye test with a nontoxic dye, smoke testing, flow test, or visual reconnaissance. These tests are typically best performed by qualified personnel such as a plumbing contractor. Notify the Washington State Department of Ecology (Ecology) Northwest Regional Office at (206~~425~~) 594~~649~~-07~~0~~00 *and* Seattle Public Utilities (SPU) at (206) 386-1800 prior to performing a dye test that may result in a discharge to the public drainage system, public sewer system, or a receiving water.
- If illicit connections are found, permanently plug or disconnect the connections.
- Discharge from an illicit connection or illicit discharge is considered a spill and requires immediate and proper notification to SPU at (206) 386-1800 and possibly other state and federal agencies. See BMP 5 (Spill Prevention and Cleanup).
- Obtain all necessary permits for altering, ~~or~~ repairing, or capping side sewers and plumbing fixtures. Restrictions on certain types of discharges, particularly industrial process waters, may require pretreatment of discharges before they enter the sanitary sewer. It is the responsibility of the property owner or business operator to obtain the necessary permits and to ~~replace~~ correct the connection.
- The Stormwater Code allows the Director to require that a responsible party provide or create site drainage and sewer system laterals and plumbing maps with verified discharge points to aid in identifying illicit connections and/or to verify that illicit connections are eliminated.

- ~~Eliminate l~~illicit discharges to drainage systems and receiving waters must be stopped and reported (see BMP 5). If these discharges are redirected to the sanitary sewer, check with King County Industrial Waste to ensure the material will not harm the sewage treatment system and if permits, authorizations or pre-treatment are necessary.

2.1.2. BMP 2: Perform Routine Maintenance

Sediment and pollutants can accumulate over time in various components of drainage collection, conveyance, and treatment systems, such as inlets, catch basins, ditches, storm drains, detention structures, and oil/water separators. When a storm event occurs, ~~the excessive~~ debris, leaves, solids/sediment and pollutants can become mobilized and carried into receiving waters, the public drainage system, or a public combined sewer. Performing routine maintenance is required and helps prevent debris, sediment and pollutants from discharging downstream.

Required elements of this BMP include:

- Comply with the maintenance requirements found in *Appendix G -Stormwater Control Operations and maintenance Requirements.*
- Inspect all drainage collection, conveyance, flow control, ~~detention~~ and treatment systems at least annually, and clean or repair structures whenever the condition thresholds described in *Appendix G* are triggered. Systems in industrial areas or areas that receive excessive ~~sediment~~solids, foliage or debris may require more frequent inspection and maintenance.
- Clear away~~If~~ leaves or woody debris that has accumulated on catch basins and inlets~~, clean as needed~~ to prevent localized flooding. Drainage systems must be kept in continuous working order.
- All catch basins are required to have outlet traps (downturned elbows). Outlet traps help to keep oil and other floatables from discharging to the public drainage system, public combined sewer, or receiving waters. Replace or repair outlet traps when missing or damaged. When catch basins lack sufficient depth or room to install an outlet trap, evaluate the drainage system to determine if there is an appropriate downstream location and install an outlet trap at that location.
- Clean catch basins when ~~they are~~the sump is greater than 60 percent full of ~~sediment~~solids (sediment, leaves, trash and other debris), when the solids accumulation in the sump is within 6 inches of the bottom of the lowest pipe, or any time that there are obvious signs of pollution visible. When the catch basin sump is greater than ~~At~~ 60 percent ~~capacity~~full, there is not enough settling space to remove ~~sediment~~ heavier materials from stormwater and they cease to function as designed. At greater than 60% full, solids can block the outlet pipe which can lead to flooding and greater maintenance costs.
- ~~All catch basins are required to have outlet traps (downturned elbow). Outlet traps help to keep oil and other floatables from discharging to the public drainage system, public combined sewer, or receiving waters. Replace or repair outlet traps when missing or damaged. When catch basins lack sufficient depth or room to install an outlet trap, evaluate the drainage system to determine if there is an appropriate downstream location and install an outlet trap at that location.~~
- Properly dispose of all solids, polluted material, and stagnant water collected through system cleaning. Do not decant water back into the drainage system from eductor trucks or vacuum equipment since there may be residual contaminants in the cleaning equipment. ~~Do not decant untreated, treated, or filtered water back into drainage system~~. Do not jet material downstream into the system. In all systems, known or

suspected contaminated material may need to be tested for additional disposal requirements.

- It is the property owner's responsibility to ensure all access points to stormwater facility structures are accessible for inspection at all times.

Suggested elements of this BMP include:

- Consider posting "Dump No Waste" or other warning signs adjacent to inlets/catch basins where possible.
- If these maintenance requirements noted in this BMP and in Appendix G are beyond your abilities, hire a professional contractor. You are responsible for their conduct so please ensure they comply with City code and rules. Several contractors offer cleaning services for drainage systems. A list of contractors may be found on the SPU website, or in search tools (e.g., internet, Yellow Pages) under entries such as "Drainage System Maintenance Contractors."
- A long rod can be used to determine the level of solids in your catch basin sumps, detentions system, or treatment system facilities. Insert the rod into the catch basin or maintenance hole until it rests on the bottom of the sump. Grasp the rod at the top of the grate or lid and lift the rod slowly. Try to swing the rod side to side until it feels free of any solids and measure the depth of solids (the distance between your grip on the rod and the top of the grate or lid). Compare this measurement with the depth of the overall sump beneath the lowest pipe in or out.
- ~~Consider posting "Dump No Waste" or other warning signs adjacent to inlets/catch basins where possible.~~

~~Several contractors offer cleaning services for drainage systems. A list of contractors can be found on the SPU website, online, or in the Yellow Pages under entries such as "Sewer Contractors."~~

2.1.3. BMP 3: Dispose of Fluids and Wastes Properly

For all real properties, responsible parties must properly dispose of solid and liquid wastes and contaminated stormwater and street waste solids. There are generally five options for disposal, depending on the type of waste:

1. Sanitary sewer or combined sewer
2. Recycling facilities
3. Permitted centralized waste treatment facilities
4. Municipal solid waste disposal facilities
5. Hazardous waste treatment, storage, and disposal facilities
6. ~~Sanitary sewer or combined sewer~~

Some liquid wastes and contaminated stormwater (depending on the pollutants and associated concentrations) may be discharged to the sanitary sewer system, but are subject to approval by the City and King County. Restrictions on certain types of discharges may require pretreatment of discharges before they enter the sanitary sewer.

If wastes cannot be legally discharged to a sanitary sewer, one of the other ~~three~~ disposal options must be used. Sumps (with plugged outlets) or holding tanks may be useful for storing liquid wastes temporarily, but ~~. T~~the contents must be disposed of properly.

Contaminated street waste solids must be handled by following either the guidance in Management of Street Waste Solids and Liquids in Appendix IV-B of the *Stormwater Management Manual for Western Washington* (SWMMWW) (Ecology 2024~~19~~) or the Dangerous Waste Regulations (Washington Administrative Code [WAC], Chapter 173-303), if applicable.

For assistance with finding recycling facilities, refer to the King County Green Tools web page (https://kingcounty.gov/depts/dnrp/solid-waste/programs/green-building.aspx).

For assistance in determining where to take motor oil, pesticides, smoke alarms, fluorescent bulbs, and other hazardous materials, refer to the Local Hazardous Waste Management Program website (~~www.hazwastehelp.com~~https://kingcounty.gov/en/dept/dnrp/waste-services/hazardous-waste-program?Go+to+Haz+Waste+Program+website=).

Required elements of this BMP include:

- Do not dispose of prohibited wastes or substances into the drainage system, sewer system, or into local waters. Only clean stormwater and permissible discharges are allowed into the public drainage system. See SMC 22.802 for permissible and prohibited discharges. Also refer to SMC 22.803.020.D related to requirements for disposal of waste from maintenance of drainage control facilities, and SMC 22.803.030.C for disposal of fluids and wastes.
- ~~Dispose of wastes in accordance with applicable solid waste, dangerous waste, industrial waste, and other regulations.~~In the non-combined sewer areas of the City, disposal of liquid from collection of street waste and water removed from stormwater treatment BMPs must follow the procedures described in Appendix 6 of the Phase I NPDES Municipal Stormwater Permit.

Recommended BMPs include:

- Dispose of wastes in accordance with applicable solid waste, dangerous waste, industrial waste, and other regulations in a manner that minimizes the risk of contaminating stormwater. Failure to comply with rules and regulations enforced by other entities can result in violations and penalties issued by those entities.

2.1.4. BMP 4: Proper Storage of Solid Wastes

This BMP applies to owners of used cooking oil (UCO) containers and properties that store solid wastes, including garbage, recyclables, compostable materials, and ~~cooking grease~~accumulate UCO in containers outdoors, or properties that store containers designed for those uses regardless of they are empty or contain waste. If improperly stored, these wastes and containers can contribute a variety of pollutants to stormwater.

Solid waste and recycle piles may be managed under permit by the Public Health District. Piled material that is permitted, will be managed under BMP 26: Storage or Transfer of Leachable or Erodible Materials. Numerous activities associated with recycling or commercial solid waste handling require permit coverage through Seattle & King County Public Health.

Required elements of this BMP include:

"Solid waste", as defined in SMC 21.36.016, means all putrescible and nonputrescible solid, semisolid and liquid wastes, including but not limited to garbage, rubbish, yardwaste, ashes, industrial wastes, infectious wastes, swill, construction, demolition and landclearing wastes, abandoned vehicles or parts thereof, and recyclable materials. This includes all liquid, solid and semisolid materials which are not the primary products of public, private, industrial, commercial, mining and agricultural operations. Solid waste includes, but is not limited to sludge from wastewater treatment plants, seepage from septic tanks, wood waste, dangerous waste, hazardous substances, and problem wastes." Per this definition, UCO is a solid waste because it is not the primary product of operations.

Leaking containers are considered a spill, and cleanup should be managed under BMP 5. Failure to manage and report spills promptly and properly that may enter the drainage system, sewer system, or local waters may be prohibited discharges and can result in a Notice of Violation and penalty.

The SPU Green Business Program can provide information about the best practices for managing used cooking oil. They can be reached by calling (206) 343-8505 or on the City's website (https://www.seattle.gov/utilities/protecting-our-environment/sustainability-tips/green-business-program).

Required elements of this BMP include:

- All waste, recycle, or compost containers must use a tight-fitting lid.
- Store all solid wastes in suitable containers (examples in Figure 1). Check storage containers and trash compactors for damage and replace them if they are leaking, corroded, or otherwise deteriorating. Discontinue use of damaged containers until they are replaced or repaired.
- Waste printing equipment (including ink and other cartridges) must not be stored outdoors. Pigments and dyes used in print production are a source of inadvertent polychlorinated biphenyls (iPCBs), therefore the equipment must not be exposed to rain, run-on, or potentially leak fluids to outdoor ground surfaces. Also see BMP 24.
- Store batteries upright in a secure, contained, and covered location (not outside on the ground), even when staged for recycling. Check to ensure batteries are not

damaged or leaking. Store damaged or leaking batteries in a covered, non-leaking secondary containment system. Keep battery acid neutralizing materials, such as baking soda, available near the storage area.

Figure 1. Covered Outdoor Storage of Solid Wastes in Suitable Containers.

- Ensure that storage containers have leakproof lids or are covered by some other means, and that lids are closed at all times, except when adding wastes. This also applies to empty containers.
- Inspect the waste storage area at least weekly. Sweep the waste storage area or clean frequently to collect all loose solids for proper disposal in a storage container. Liquid spillage should be cleaned up immediately and treated as a spill.
- Contain and properly dispose of washwater pursuant to BMP 17 (Cleaning or Washing) when washing solid waste containers or container storage areas. That washwater is considered process water and must not be discharged to the drainage system.
- Connect trash compactors equipped with a drain hose to the sanitary sewer.
- Isolate drainage around trash compactors to create a spill containment area and connect this drainage to the sanitary sewer.
- Dumpster areas must drain to the sanitary sewer. However, that portion of a dumpster area over 200 square feet requires a roof/cover and the roof runoff must be diverted to the stormwater drainage system. This is to prevent excess stormwater from entering the sanitary sewer and impacting its capacity.

- ~~Connect areas containing dumpsters and trash compactors to the sanitary sewer, unless equipped with a drain hose.~~
- ~~Contain and properly dispose of washwater pursuant to BMP 17 (Cleaning or Washing) when washing dumpsters and used cooking oil containers.~~
- Clean up leaks and spills as they occur. Keep the area around used cooking oil storage containers clean and free of spilled grease, oils, food waste, and debris.
- **Storage Container Requirements for Used Cooking Oil:**
  - Store used cooking oil containers indoors or on private property. ~~When authorized by the Seattle Department of Transportation (SDOT) and SPU Solid Waste, containers can be stored in the right-of-way.~~
  - Used cooking oil containers must be located and positioned to prevent tipping, spillage, vandalism, and vehicle impact. Used cooking oil containers must not be placed on top of, or within 10 ft of, grated metal lids/covers; oil in electrical vaults are serious fire hazards.
  - ***Owners of used cooking oil containers must implement the following:***
    - Label each used cooking oil container with the following:
      - The name and phone number of container owner
      - The words "Contains used cooking oil"
      - Name of the renter/user of the used cooking oil container
      - The words "Report spills by calling SPU at (206) 386-1800"
    - Record all authorized users specific to each container. Make this information available to Seattle Public Utilities upon request.
    - Place and maintain tight-fitting lids on used cooking oil storage containers to prevent rainwater intrusion and leks.
    - Replace damaged containers immediately.
    - Locate used cooking oil containers on a level surface or secure them to prevent tipping.~~Do not fill storage containers beyond 90 percent of their capacity. If accumulated used cooking oil exceeds 90 percent of the capacity of the storage container, obtain and use another suitable storage container.~~
    - ~~**Ensure that screens are kept clean and clear of debris.**~~
  - **Spills resulting from damage, tipping, vandalism, and leaks, and cleanup of those spills, are the responsibility of the owner of the container.** Recommended approaches include:
    - Store used cooking oil in containers inherently resistant to tipping (see Figure 2). ~~see Figure 2).~~ Barrels are not tip resistant.
    - Store used cooking oil containers within a building or in a locked and secure area to prevent unauthorized use or vandalism.
    - Protect used cooking oil containers from vehicle impact by fenced enclosures, bollards, or other physical barriers.
  - ***Generators of used cooking oil (e.g., restaurants) must:***

- Operate in a manner that minimizes the potential to spill used cooking oil when moving containers and transferring oil from one container to another.
- Do not fill storage containers beyond 90 percent of their capacity. If accumulated used cooking oil exceeds 90 percent of the capacity of the storage container, obtain and use another suitable storage container. Call the used cooking oil hauler (container owner) immediately to arrange collection.
- Close lids/covers immediately after use.
- Ensure that screens are kept clean and clear of debris.
- Report spills by calling SPU at (206) 386-1800.

- **Spills resulting from over-filling or improperly transferring used cooking oil, and cleanup of those spills, are the responsibility of the generator of the oil.** Recommended approaches include:
  - Do not attempt to transfer used cooking oil from the kitchen to the used cooking oil container using overfilled small containers.
  - Provide and use a step-stool or other sturdy base to help employees transfer used cooking oil, if needed.
  - Conduct oil transfers over a containment pad.
- ~~Used cooking oil containers must be located to prevent tipping, spillage, vandalism, and vehicle impact. Spills resulting from damage, tipping, vandalism, and leaks are the responsibility of the **owner** of the container. Recommended approaches include:~~
  - ~~Store used cooking oil in containers inherently resistant to tipping. Barrels are not tip resistant.~~
  - ~~Locate used cooking oil containers on a level surface or secure them to prevent tipping.~~
  - ~~Store used cooking oil in containers with a tight-fitting leak-resistant lid.~~
  - ~~Store used cooking oil containers within a building or in a locked and secure area to prevent unauthorized use or vandalism.~~
  - ~~Protect used cooking oil containers from vehicle impact by fenced enclosures, bollards, or other physical barriers.~~
  - ~~Do not attempt to transfer used cooking oil from the kitchen to the used cooking oil container using overfilled small containers.~~

Refer to redlined figure packet for proposed figure revisions for the 2026 Seattle Stormwater Manual

Figure 2. Example of a labeled used cooking oil tote located on a level surface with a secure lid.

2.1.5. BMP 5: Spill Prevention and Cleanup

Leaks and spills can damage public infrastructure, interfere with sewage treatment, and cause a threat to human health or the environment. Spills are often preventable if appropriate chemical and waste handling techniques are practiced effectively and the spill response plan is immediately implemented. Additional spill control requirements may be required based on the specific activity occurring on site.

A spill can be a one-time event, a continuous leak, or frequent small spills. All types must be addressed. Spills resulting from vandalism or inadequate waste management are the responsibility of the waste owner.

Businesses and real properties that load, unload, store, and manage liquids or other erodible materials must implement this BMP.

2.1.5.1. Spill Prevention

Implement the following practices and provide spill cleanup kits (*Section 2.1.5.3*) at activity locations where spills may occur:

- Clearly mark or label, with content descriptions, 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, and where materials are likely to spill or leak. Check drip pans periodically to prevent overflow, especially during rain events.
- 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 used on the site and to check for leaks and spills.

2.1.5.2. Spill Plan

- Develop and implement a spill plan and update it annually or whenever there is a change in activities or staff responsible for spill cleanup.
- Post a written summary of the plan at areas with a high potential for spills, such as loading docks, outside product storage areas, outside waste storage areas, and near a phone (Figure ~~2)~~3. The spill plan may need to be posted at multiple locations at the same facility.
- The spill plan must:
  - ~~D~~describe the facility, including the owner's name, address, and telephone number; the nature of the facility activity; and the general types of chemicals used at the facility.
  - Provide a site plan showing the locations of storage areas for chemicals, inlets/catch basins, surface drainage flow directions, spill kits and other relevant infrastructure or materials information.
  - Describe the emergency cleanup and disposal procedures.
  - List the names and telephone numbers of public agencies to contact in the event of a spill. Refer to *Section 2.1.5.4* for more information.

- For high-risk activities, ~~D~~designate spill response employees to be on the site during business activities. Provide a current list of the names, and telephone numbers (office and home) of designated spill response employee(s) who are responsible for implementing the spill plan.

~~Provide a site plan showing the locations of storage areas for chemicals, inlets/catch basins, spill kits and other relevant infrastructure or materials information.~~
~~Describe the emergency cleanup and disposal procedures. Note the location of the spill kit in the spill plan.~~
~~List the names and telephone numbers of public agencies to contact in the event of a spill.~~

Figure 3~~2~~. Waste Storage Area with Spill Kit and Posted Spill Plan.

2.1.5.3. Spill Kit or Spill Cleanup Kit

Store spill cleanup kits 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 must be appropriate to the types and quantities of materials stored or otherwise used at the facility, and refilled when the materials are used.

Spill kits must be located within 25 feet of all fueling/fuel transfer areas, includ-ing on-board mobile fuel trucks.

A spill kit, contained in an impervious container, may include the following items:

- Absorbent pads
- Sorbent booms or socks
- Absorbent granular material (such as kitty litter)
- Protective clothing (such as latex gloves and safety goggles)
- Thick plastic garbage bags
- Drain cover
- Drain lid removal/pilling tool (e.g., metal hook)
- Shovel
- Broom

2.1.5.4. Spill Cleanup and Proper Disposal of Material

In the event of a spill, implement the following procedures:

- Stop, contain, and clean up all spills immediately upon discovery.
- Implement the spill plan immediately.
- Contact the designated spill response employee(s).
- Block off and seal nearby inlets/catch basins to prevent materials from entering the drainage system or combined sewer.
- At the earliest possible time, but in any case within 24 hours, **report all spills, discharges, or releases that have impacted or could impact a drainage system, a combined sewer, a sanitary sewer, or a receiving water to the SPU Operations Response Center at (206) 386-1800.** This reporting requirement *is in addition to*, and not instead of, any other reporting requirements under federal, state, or local laws. Spill reporting should take priority over the collection of supporting information.
  - **In case of emergency, dial 911.**
  - Other agencies you may need to report to include:
    - ~~-~~Seattle Fire Department (206) 386-1400~~,~~
    - Ecology (~~425~~206) ~~649~~594-~~7000~~ 0000,
    - ~~and the~~ National Response Center (800) 424-8802. ~~Spill reporting should take priority over the collection of supporting information. In case of emergency, dial 911.~~
- Use an appropriate material to clean up spills. Do not use emulsifiers or dispersants such as liquid detergents or degreasers unless they are cleaned up afterwards.
- Do not wash absorbent materials into interior floor drains or inlets/catch basins. Pick up all absorbent materials for proper disposal after application. Spill cleanup is incomplete until all absorbent materials have been recovered.
- Dispose of used spill control materials in accordance with the Seattle Solid Waste Collection Code (SMC, Chapter 21.36), Dangerous Waste Regulations (WAC, Chapter 173-303), and applicable laws.

The SPU Green Business Program is a free conservation program funded by SPU. The program offers free technical assistance, free spill kits, and assistance in developing a spill plan. They

can be reached by calling (206) 343-8505 or on the City's website (https://www.seattle.gov/utilities/protecting-our-environment/sustainability-tips/green-business-program).~~(www.seattle.gov/util/ForBusinesses/GreenYourBusiness).~~

2.1.5.5. Discharges Associated with Firefighting Activities

- Discharges from emergency firefighting activities to the public drainage system are considered permissible discharges (SMC 22.802.030.B.12); however, those discharges must be reported to Seattle Public Utilities at (206) 386-1800 immediately after the emergency has ceased. Emergency responders are responsible for determining when an emergency has ceased.
    - Individuals/entities must implement procedures to minimize discharges to the public drainage system or receiving waters during post-emergency cleanup and disposal activities. Examples of procedures may include conducting timely cleanup actions especially during wet weather, covering nearby catch basins in close proximity to the cleanup effort, plugging catch basin outlets, employing vactor services to remove foam and debris from drainage structures and roadway surfaces, and installing a containment berm around debris to prevent migration, and others.
- Discharges of firefighting materials (foam, liquids, other types) to drainage system structures (e.g., catch basins, inlets, pipes, ditches) during training activities, equipment testing, or released accidentally or as part of any non-emergency situation are not permissible discharges; these discharges must be prevented from entering drainage structures. All firefighting materials that impact, or have a likelihood of impacting, drainage system structures under non-emergency circumstances must be collected and properly disposed of, or directed to the sanitary sewer, and reported to Seattle Public Utilities at (206) 386-1800 immediately but no later than within 24 hours of the release.
- Public and private entities that store and/or use PFAS-containing aqueous film-forming foam (AFFF) in areas that do, or could, discharge to the public drainage system or receiving waters:
    - Must notify Seattle Public Utilities in accordance with the Seattle Stormwater Code.
    - Must report PFAS-containing AFFF use (emergency or non-emergency situations) to Seattle Public Utilities at (206) 386-1800 no later than 24 hours are use.

2.1.6. BMP 6: Provide Oversight and Training for Staff

The key to sustaining pollution prevention (Source Control) BMPs is to ensure that staff are properly trained in their purpose and maintenance requirements. Assign ~~source control maintenance~~pollution prevention as a job responsibility for staff.

Some businesses require only a single employee to implement and maintain strong pollution prevention best management practices while other facilities will need a team to manage this task. It is important that every involved employee feels confident in performing their part and this requires proper training.

For all businesses and public entities, required elements of this BMP include:

- Assign an employee to oversee implementation and management of stormwater source control BMPs.
- Train all team members annually in their job-appropriate/expected level of contribution to the operation, maintenance, and inspection of stormwater protection BMPs. ~~Keep~~ Retain training ~~records on file~~for a minimum of 5 years, and make them available to Seattle Public Utilities on request.
- Train all spill prevention and cleanup team members annually in how to safely implement the spill ~~cleanup~~plan, and other topics including:
  - Identifying the Pollution Prevention team members and team leader
  - Identifying pollutants sources
  - Understanding the pollutant control measures
  - Material handling practices, such as those related to vehicle and equipment liquids.~~.~~
- When commercial, industrial, institutional, and multi-story buildings built or renovated between 1950 and 1980 are suspected or confirmed to contain PCBs on their exterior in a manner consistent with *Ecology's How to Find and Address PCBs in Building Materials (Ecology, 2024, Publication No. 22-04-024)*, the building owner must ensure that facility maintenance staff have been made aware of the likely or actual presence of PCB-containing materials and any operational BMPs to prevent PCBs from entering the stormwater system.
- ~~Assign an employee to oversee implementation and management of stormwater source control BMPs.~~

The SPU Green Business Program is a free conservation program funded by SPU. The program offers free technical assistance and can assist with employee training. They can be reached by calling (206) 343-8505 or on the City's website https://www.seattle.gov/utilities/protecting-our-environment/sustainability-tips/green-business-program ~~(www.seattle.gov/util/ForBusinesses/GreenYourBusiness).~~

2.1.7. BMP 7: Property Maintenance

~~Good property maintenance reduces the potential for stormwater to come into contact with pollutants and can reduce maintenance intervals for the drainage system and combined sewer.~~Preventive maintenance and good housekeeping practices reduce the potential for stormwater to come into contact with pollutants and can reduce maintenance intervals for the drainage system and sewer system.

Public and commercial parking lots, such as those used for retail stores, fleet vehicles (including rent-a-car lots and car dealerships), ~~and~~ equipment sale and rental businesses; paved equipment storage yards; parking lot driveways; and restaurant drive-throughs can be sources of ~~toxic~~ pollution. Potential pollutants can include, but are not limited to, hydrocarbons and other organic compounds, including oils and greases, metals, and suspended solids. ~~Even sidewalks may need occasional cleaning and could generate pollutants.~~

Parking lots are *not* considered streets; see BMP 54 for streets and highways. For cleaning/washing maintenance of buildings, see BMP 17. For maintenance roof and building drains at industrial and commercial buildings, see BMP 37.

Property maintenance begins with periodic inspections. Take time to walk the property and note signs of possible pollution: stains under equipment; ponding stormwater around drains; excessive surface dirt, leaves, or trash; equipment not stored properly; full spill containment devices; unusual odors; missing spill kits; full or overflowing trash containers; or oil sheens when it rains. Follow up your inspections with spill clean up (see BMP 5) and/or employee training (BMP 6) to reestablish good housekeeping practices.

For all businesses and public entities, required elements of this BMP include:

- Prevent the discharge of unpermitted liquid or solid wastes, process wastewater, and sewage to groundwater or surface water, or to storm drains that discharge to surface water, or to the ground.
- ~~Locate~~ Perform pollution generating activities away from stormwater pathways, such as inlets/catch basins, conveyance pipes, and ditches. Work under cover or use drop cloths or plastic sheeting to make cleanup quicker. Clean these areas after the activity is completed or before the next rain event.
- Sweep or vacuum paved areas used for loading and unloading of materials, outdoor production and manufacturing, driveways, parking lots, sidewalks, and storage areas ~~as needed~~quarterly, or more frequently as needed, to ~~prevent pollutant transport off site or to the drainage system~~remove debris that could contaminate stormwater. Mechanical or hand sweeping may be necessary for areas that a vacuum sweeper cannot reach.
    - If possible, spot clean outdoor surfaces like parking lots and other areas with stains prior to, or instead of, washing to minimize the area washed and amount of washwater generated.

- Do not hose down or otherwise transport pollutants from any area to the ground, drainage system, combined sewer, or receiving water except where permissible pursuant to SMC, Section 22.802.030.
    - Discharges of street and sidewalk washwater may be permitted when surfaces are swept prior to washing, detergents are not used, and water use is minimized. See BMP 17 for more information.
- Promptly contain and clean up solid and liquid leaks and spills (refer to BMP 5 for specific information on spill prevention and cleanup).
- Inspect areas used for loading and unloading, material/waste storage, and vehicle parking as needed to prevent pollutant transport off site or to the drainage system.
    - Take immediate action to correct the problem(s) noted in the inspection.
    - Check your spill supplies when you inspect your property. Make sure spill kits are kept stocked and are undamaged.
    - Inspect and clean around waste storage areas or fence lines. Keeping your property looking tidy can help prevent others from dumping their waste on your property.
    - Look for equipment or containers out of place, uncovered, or leaking. Keep pollution generating parts or containers properly stored under cover and elevated off the ground. Empty containers should be disposed of and containers of liquids in use should be secured or placed into spill containment.
- Place drip pans, absorbent pads, or other containment vessels below leaking vehicles ~~(including inoperable vehicles~~ and equipment (including inoperable vehicles and equipment) in a manner that catches leaks or spills. Drip pans or other containment measures must be managed to prevent overfilling and the contents disposed of properly. Absorbent pads must be weighted down so they do not blow away and must be inspected and changed out and disposed of properly before becoming fully saturated.
- Where exposed to stormwater, use containers, piping, tubing, pumps, fittings, and ~~valves that~~valves that are appropriate for their intended use and for the contained liquid.
- ~~—~~
- For properties other than those that drain only to the combined sewer, an oil removal system such as an American Petroleum Institute (API) oil/water separator, coalescing plate oil/water separator, catch basin filter sock, or equivalent BMP that is approved by SPU is required for parking lots that meet the threshold for vehicle traffic intensity of a "high-use site." Refer to SMC, Section 22.801.090 for the definition of "high-use site."

Recommended BMPs:

- Minimize use of toxic cleaning solvents, such as chlorinated solvents, and other toxic chemicals.
- Use environmentally safe raw materials, products, additives, etc., such as substitutes for zinc used in rubber production.
- Stencil warning signs at catch basins and drains, e.g., "Dump no waste – Drains to stream". See BMP 46.

- Use solid absorbents, e.g., clay and peat absorbents and rags for cleanup of liquid spills/leaks, where practicable.
- Promptly repair/replace/reseal damaged paved areas at industrial facilities.
- Recycle materials, such as oils, solvents, and wood waste, to the maximum extent practicable.
- Encourage employees to repair leaking personal vehicles.

Note: Evidence of stormwater contamination can include the presence of visible sheen, color, ~~or turbidity~~or turbidity in the runoff, or present or historical operational problems at the facility. Operators ~~can use~~can use simple pH tests, for example with litmus or pH paper. These tests can screen for high or ~~low pH~~low pH levels (anything outside the 6.5 to 8.5 range) due to contamination of stormwater.

2.1.8. BMP 8: ~~Rooftop~~ Constructed Dog Runs

~~Rooftop dog runs are sometimes provided as an amenity at large residential and commercial properties. Dog runs are typically constructed with artificial turf and other dog-friendly amenities that can accumulate pet waste. They often have automatic sprinklers to wash down the area.~~

Dog runs are increasingly being constructed as an amenity at residential and commercial properties. Rooftop or plaza-level dog runs on residential or commercial buildings are typically constructed with artificial turf and often have automatic sprinklers to wash down and disinfect the area. At-grade dog runs can include a variety of ground covers such as natural or artificial turf, pavement, gravel, or a layer of wood chips. While dog runs are a pet-friendly amenity valued by pet owners, the accumulated pet waste must be properly managed.

Pet waste that washes into lakes, streams, or Puget Sound begins to decay, depleting oxygen and releasing ammonia. Low oxygen concentrations and ammonia combined with warm water can kill fish. Pet waste also contains nutrients that encourage the growth of weeds and algae and contribute to low oxygen concentrations and high pH in waters we use for swimming, boating, and fishing. Most importantly, pet waste can carry viruses and bacteria that could cause disease and lead to beach closures or bans on shellfish harvesting.

For commercial pet facilities/businesses (e.g., doggy daycares), see BMP 32.

The following required elements of this BMP apply to all dog runs located on rooftops and ~~or~~ above-grade plazas:

- Prevent stormwater discharge from the dog run from flowing directly or indirectly to a public drainage system, private drainage system, drainage control facility, groundwater, or receiving water body.
- Drainage from dog runs on buildings, including overflow drainage, must be plumbed to the building sanitary sewer.
- ~~No~~No ~~-~~more than 200 square feet of uncovered dog run area may discharge to the sanitary sewer. This is to prevent excess stormwater from entering the public sanitary sewer system. The portion of a dog run area draining to sanitary that is greater than 200 square feet must be covered. The cover must be a roof or canopy that prevents stormwater from coming in contact with the dog run area and directs uncontaminated stormwater runoff to the building drainage system per the requirements of the Seattle Plumbing Code.
- In combined sewer areas, dog runs greater than 200 square feet do not require a cover~~, but~~ but all drainage from ~~the~~ dog run areas on building rooftops and plazas must be directed to the building's sanitary sewer system. This contaminated stormwater runoff must not be connected to a combined side sewer until downstream of the entire building drainage system, including all drainage collection and control facilities such as detention vaults. (Note: If the dog run is part of a construction project that requires flow control (refer to Volume 1), the uncovered dog run area must be modeled as an uncontrolled bypass area that connects to the point of compliance and the flow control BMPs must be oversized to account for this bypass area.)

The following required elements of this BMP apply to dog runs at ground level:

- Prevent stormwater discharge from the dog run from flowing directly to a public drainage system, private drainage system, drainage control facility, groundwater, or receiving water.
- Hard surfaces at grade must evenly disperse across a minimum of 10 feet of vegetated area prior to discharging to a storm system. If this is not feasible, the area must discharge to the sanitary sewer.
- No more than 200 square feet of uncovered dog run area may discharge to the sanitary sewer. The 200 square foot limit does not apply in combined sewer service areas.
- Washing down the area with water is not allowed unless the area discharges to the sanitary sewer or the runoff will evenly disperse across a minimum of 10 feet of vegetated area.
- Washing down the area with disinfectant is not allowed unless the area discharges to the sanitary sewer. Disinfectants must not be allowed to enter drainage systems, groundwater, or receiving waters, even if disinfection is a Public Health agency operational requirement.
- Additional requirements for commercial pet facilities (e.g., doggy daycares), are in BMP 32.

2.2. Required Best Management Practices for Specific Activities

For business and public entities with specific pollution-generating activities, the following BMPs must be implemented to prevent or minimize pollutants from leaving a site or property:

- BMP 9: Fueling at Dedicated Stations
- BMP 10: Mobile Fueling of Vehicles and Heavy Equipment
- BMP 11: In-Water and Over-Water Fueling
- BMP 12: Maintenance and Repair of Vehicles and Equipment
- BMP 13: Concrete and Asphalt Mixing and Production
- BMP 14: Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application
- BMP 15: Recycling, Wrecking Yard, and Scrap Yard Operations
- BMP 16: Storage of Liquids in Aboveground Tanks

Stormwater Code Language	References
SMC, Section 22.803.040 – *For all discharges, source controls shall be implemented, to extent allowed by law, by businesses and public entities for the following specific pollution-generating activities as specified in the joint SPU/DPD Directors' Rule titled "Seattle Stormwater Manual" at "Volume 4 – Source Control," to the extent necessary to prevent prohibited discharges as described in subsection 22.802.020.A through subsection 22.802.020.D, and to prevent contaminants from coming in contact with drainage water or being discharged to the drainage system, public combined sewer, or directly into receiving waters:* *1. Fueling at dedicated stations, for new or substantially altered fueling stations.* *2. Mobile fueling of vehicles and heavy equipment.* *3. In-water and over-water fueling.* *4. Maintenance and repair of vehicles and equipment.* *5. Concrete and asphalt mixing and production.* *6. Concrete pouring, concrete/asphalt cutting, and asphalt application.* *7. Recycling, wrecking yard, and scrap yard operations.* *8. Storage of liquids in aboveground tanks.*	• None provided

2.2.1. BMP 9: Fueling at Dedicated Stations

This BMP applies to businesses and public agencies that operate a facility used exclusively for the transfer of fuels from a stationary pumping station to vehicles or equipment. This type of fueling station includes aboveground or underground fuel storage facilities, which may be permanent or temporary. Fueling stations include facilities such as, but not limited to, commercial gasoline stations, 24-hour convenience stores, car washes, warehouses, manufacturing establishments, maintenance yards, port facilities, marinas and boatyards, construction sites, and ~~private~~ fleet fueling stations.

Description of Pollutants

Typically, stormwater contamination at fueling stations is caused by leaks or spills of fuels, lubrication oils, radiator coolants, fuel additives, and vehicle washwater. These materials contain organic compounds, oils and greases, and metals that can be harmful to humans and aquatic life. These pollutants must not be discharged to the drainage system or directly into receiving water.

A spill can be a one-time event, a continuous leak, or frequent small spills. All types must be addressed.

Required BMP Elements

All BMPs related to fueling at dedicated stations must be consistent with the requirements of the Seattle Fire Code (SMC, Chapter 22.600). The water quality requirements presented in this manual are separate from, and in addition to, the requirements of the Seattle Fire Code. These water quality requirements relate to fuel storage tanks, fuel dispensing equipment, area lighting, spill control and secondary containment, signage, maintenance, and operations. For current requirements, refer to the Seattle Fire Code.

New or substantially altered stations* require the following (refer to Figure ~~4~~3):

*Substantial alteration of fueling stations includes removing or replacing the canopy or relocating, replacing, or adding one or more fuel dispensers in such a way that the p~~P~~ortland cement concrete (or equivalent) paving in the fueling area is modified. Addition of fuel tanks to a site also triggers implementation of source control BMPs.

- Construct fueling stations on an impervious concrete pad under a roof to keep out rainfall and to prevent stormwater run-on. Pave the fueling island and containment pad with p~~P~~ortland cement concrete or equivalent. Asphalt is not considered an equivalent material.
- Design the fueling island (Figure 5~~4~~) to minimize stormwater contamination, to control and contain spills, and to collect and direct contaminated stormwater and/or wastewater to ~~a pretreatment facility that will achieve the performance goal per *Section 3.5.2.1 (Oil Control Treatment) in Volume 3 – Project Stormwater Control*.~~an oil/water separator. The oil/water separator must be sized to provide fuel containment in case of spills, as described further below, as well as to provide oil control treatment. The fueling island must be designed in compliance with all applicable codes.

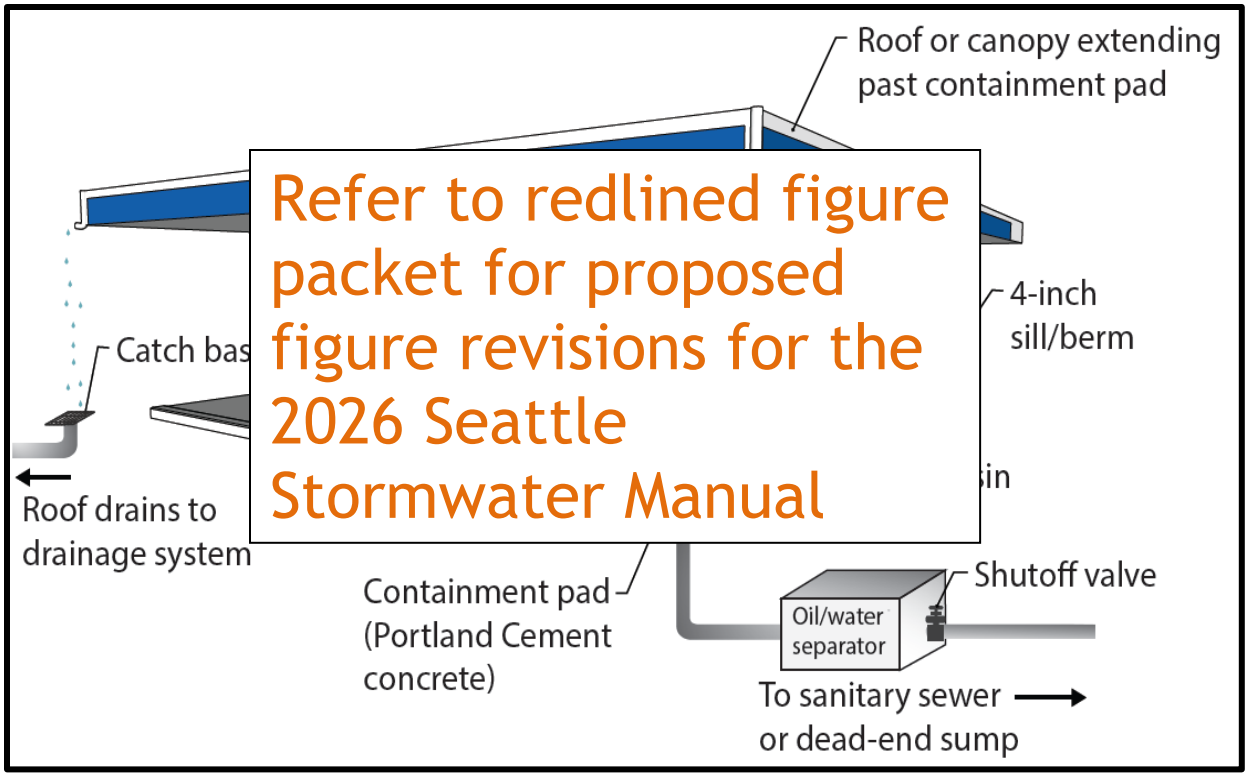

Figure ~~4~~3. Fueling Island Schematic.

Figure 54. Roof at Fueling Island to Prevent ~~Stormwater Run-On~~Contact with Rain.

- The fueling island spill containment pad must be designed with the following:
  - A sill/berm (or equivalent control) raised to a minimum of 4 inches to contain spilled liquids and to prevent the run-on of stormwater from the surrounding area. Raised sills are not required at open-grate trenches that connect to an approved drainage control system.
  - A concrete containment pad around the fueling island that is sloped toward the fuel containment pad drains. The slope of the drains must not be less than 1 percent. Drains from the fueling island containment pad must discharge to the sanitary sewer, combined sewer, or a dead-end sump. Provide drainage using trench drains and/or catch basins to collect spilled liquids and any contaminated stormwater runoff from the fuel island containment pad and convey it to either (1) the sanitary sewer—if approved by SPU and King County—through an approved pretreatment system such as an oil/water separator, or (2) a dead-end sump so that it can be held for proper off-site disposal.
    - For discharges to the sanitary sewer, a catch basin must be installed upstream of the oil/water separator.
    - If a dead-end sump is used, it must be easily inspected.
  - Collected runoff from the fuel island containment pad discharged to the sanitary sewer must comply with SMC, Section 21.16.300 — Prohibited discharge of certain substances. Comply with pretreatment regulations prohibiting discharges that could cause a fire or explosion (WAC, Section 173-216-060).

- The minimum spill retention volume of the oil/water separator or dead-end sump (i.e., volume of spilled fuel contained before the structure overflows) must be sized as follows:
  - ~~-~~For a covered fuel pad: 15 minutes for the flow rate of the dispensing mechanism with the highest through-put rate
  - For an uncovered area or an area that receives run-on from an uncovered area: the 15-minute peak flow rate of the 6-month, 24-hour storm event (or 91 percent of the total runoff volume for the simulation period if using continuous runoff modeling) over the surface of the containment pad, plus the volume required for a covered fuel pad.

  The minimum volume of the spill containment sump must be 50 gallons with an adequate grit sedimentation volume. The spill retention/containment volume of the oil/water separator must retain the required spill volume when the oil/water separator is full of water. Dead-end sumps must not be used when the fuel containment area is uncovered or will receive run-on from other areas unless approved by the Director of SPU.

  Note: To calculate the fuel containment capacity, determine the volume of fuel retention on the basis of the retained water volume in the bottom of the oil/water separator bottom and the density of fuel. Fuel containment will be above the static water level into the normal headspace of the oil/water separator (i.e., floating on top of the retained water volume) when the automatic shutoff valve is closed. Subtract the retained water volume in the oil/water separator from the overall volume of the oil/water separator to determine the spill retention volume (see Figure 6).

- For further requirements and guidance related to the storage of fuel-contaminated stormwater, refer to BMP 16 in *Section 2.1.16*.

- For discharges to the sanitary sewer or combined sewer, an automatic shutoff valve is required at the discharge point of the oil/water separator. The valve at the discharge point must be closed when a ~~in the event of a~~ spill occurs. When an oil-stop valve or resin plug valve is used, it must be engineered to be at least as protective as an automatic shutoff valve.
  - An overflow is not allowed in oil/water separator, vaults, etc. with an oil-stop valve or other shut off valve.
- Construct a roof or canopy over the fueling island to prevent precipitation from falling directly onto the spill containment pad (Figure 54). Removing a canopy without replacement is prohibited. The roof or canopy must:
  - 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.
  - Roofs and canopies 10 feet or less in height must have a minimum overhang of 3 feet on each side. The overhang must be measured relative to the berm or other hydraulic grade break.
  - Roofs or canopies greater than 10 feet in height must have a minimum overhang of 5 feet on each side.

- Convey runoff collected in roof or canopy drains to a drainage system or receiving water outside the fueling containment area. This will prevent the mixing of uncontaminated runoff from the roof with contaminated runoff from the fueling island.
- A roof or canopy may not be practical at fueling stations that regularly fuel vehicles 10 feet in height or more, particularly at industrial or transportation sites. Additional BMPs or equivalent measures are required. At these types of fueling facilities, the following BMPs apply, as well as all of the other required BMPs and fire prevention requirements (Seattle Fire Code and Uniform Fire Code):~~.~~
  - The concrete fueling pad must be equipped with an emergency spill control device that includes a shutoff valve for drainage from the fueling area.
  - The shutoff valve must be maintained in the closed position in the event of a spill and its associated cleanup. An automatic shutoff valve is required to minimize the time lapse between spill and containment.
- Obtain all necessary permits for installing, altering, or repairing side sewers. Restrictions on certain types of discharges may require pretreatment before they enter the sanitary sewer.

Figure 6.- Oil/Water Separator with Oil Stop Valve for Spill Containment.

The following BMPs or equivalent measures are required for all fueling stations:

- Implement BMP 1 through BMP 8~~8~~ for all real property (refer to *Section 2.1*).
- Train employees on the proper use of fuel dispensers and on the spill plan (required under BMP 5).
- Do not use dispersants to clean up spills or sheens unless they will be removed for proper disposal. Dispersants are prohibited for use for spills on water or where the dispersant may enter storm drains, sanitary sewers, treatment systems or receiving waters.
- Post signs related to the operation of fuel dispensers in accordance with the Seattle Fire Code. For example, post “No Topping Off” signs near fuel dispensers (topping off gasoline tanks results in spillage and vents gasoline fumes to the air).

- Ensure that the person conducting the fuel transfer is present at the fueling dispenser/fueling pump during fuel transfer, particularly at unattended or self-service stations. Post "Stay with Vehicle during Fueling" signage near fuel dispensers.
- Ensure that the automatic shutoff on the fuel nozzle is functioning properly.
- Ensure that at least one designated trained person is always available either on site or on call ~~at all times~~ to promptly and properly implement spill prevention and cleanup. If the fueling station is unattended by a trained person during operating hours, the spill plan must be visible to all customers and untrained employees using the station, and the spill kit must also be accessible and ~~fully~~ always stocked ~~at all times~~.
- Keep suitable cleanup materials, such as dry adsorbent materials, on site to enable employees to promptly clean up spills. Have proper waste accumulation containers to manage spill cleanup absorbents until they can be disposed
- 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. Cover nearby inlets/catch basins during the filling process and use drip pans under all hose connections.
- Immediately remove and properly dispose of fuel-contaminated soils with visible surface contamination to prevent the spread of chemicals to groundwater or receiving water via stormwater runoff.
- Immediately notify the Seattle Fire Department (911), the Ecology Northwest Regional Office ~~(425) 649-7000~~(206) 594-0000, and SPU (206) 386-1800 in the event of a spill.
    - Establish a "call down list" to ensure the rapid and proper notification of management and government officials if any significant amount of product is discharged from the site. Keep the list in a protected but readily accessible location in the mobile fueling truck.
    - The "call down list" should also identify spill response contractors available in the area to ensure the rapid removal of significant product spills into the environment. Include this bullet item in the fuel operation plan.

2.2.2. BMP 10: Mobile Fueling of Vehicles and Heavy Equipment

This BMP applies to businesses and public agencies that fill fuel tanks of vehicles and equipment by means of portable ~~tank trucks driven~~fuel dispensing systems delivered to ~~sites~~ where the vehicles to be fueled are located (also known as mobile fueling, fleet fueling, wet fueling, or wet hosing).

Description of Pollutants

Typically, stormwater contamination at mobile fueling locations is caused by leaks or spills of fuels and ~~automotive~~ vehicle fluids. These materials contain organic compounds, oils and greases, and metals that can be harmful to humans and to the aquatic environment. These pollutants must not be discharged to the drainage system, sanitary sewer or combined sewer system, the ground, or directly into receiving waters.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses (organizations or individuals) and public agencies that conduct mobile fueling of vehicles and heavy equipment:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Mobile fueling operations must be permitted by the Seattle Fire Department (SFD). The fuel delivery company as well as the site of activity is required to have a SFD permit for mobile fueling.
- In fueling locations near sensitive aquifers, designated wetlands, wetland buffers, or other receiving water, compliance with additional local requirements may be required.
- Train the driver/operator annually in spill prevention and cleanup. Make all delivery employees aware of the significant liability associated with fuel spills. New employees must be trained upon hiring. Document and keep all training records.
- Develop and follow a written fuel operation plan that is:
    - Properly signed and dated by the responsible fuel delivery manager
    - Retained at headquarters and distributed to all delivery operators, along with the spill plan
    - Made available in the event that an authorized government agency requests a review
- Ensure that the driver/operator is present and constantly observing and monitoring the fuel transfer location during fuel transfer. Implement the following procedures at fuel transfer locations:
    - To the extent practical, locate the point of fueling at least 25 feet from the nearest inlet/catch basin or inside an impervious containment area with a volumetric holding capacity equal to or greater than 110 percent of the fueling tank volume, or cover the inlet/catch basin with an impervious material to ensure there is no inflow of spilled or leaked fuel. Before removing the drain cover, check for sheen. Do not remove the drain cover if sheen or product is present and properly dispose of contaminated material.

- Place a drip pan or absorbent materials ~~or an absorbent pad~~ under each fueling ~~location~~ connection prior to and during all dispensing operations. The pan must be watertight and must have a minimum capacity of 5 gallons. There is no need to report spills retained in the drip pan.
- Handle and operate fuel transfer hoses and nozzles, drip pan(s), and absorbent pads to prevent fuel spills and leaks from reaching the ground, receiving waters, and inlets/catch basins.
- Avoid extending the fueling hoses across a traffic lane without a cone barrier and do not allow vehicles to drive over fuel hoses.
- Remove the fill nozzle and cease filling the tank when the automatic shut-off valve engages. Do not lock automatic shutoff fueling nozzles in the open position.
- Do not "top off" fuel tanks.

- Use automatic shutoff nozzles for dispensing the fuel. Replace automatic shutoff nozzles as recommended by the manufacturer.
- Inspect, maintain, and replace equipment on fueling vehicles, particularly hoses and nozzles, at established intervals to prevent failures. Document and keep all inspection records on file.
- Use an adequate lighting system at the filling point~~.~~ so that the driver/operator of the fueling vehicle can properly observe the transfer.
- At a minimum, maintain the following spill cleanup materials in a readily accessible location in all fueling vehicles:
  - Non-water-absorbent materials capable of absorbing 15 gallons of diesel fuel
  - An inlet/catch basin plug or cover
  - A non-water-absorbent containment boom at least 10 feet long with a 12-gallon absorbent capacity
  - A non-spark-generating shovel
  - Adequate means to hold spent absorbents generated by a 15-gallon spill for disposal.
- Immediately remove and properly dispose of fuel-contaminated soils with visible surface contamination to prevent the spread of chemicals to groundwater or receiving waters via stormwater runoff.
- Immediately notify the Seattle Fire Department (911), the Ecology Northwest Regional Office (206~~425~~) 594~~649~~-0~~7~~000, and SPU (206) 386-1800 in the event of a spill.
  - Establish a "call down list" to ensure the rapid and proper notification of management and government officials if any significant amount of product is discharged from the site. Keep the list in a protected but readily accessible location in the mobile fueling truck.
  - The "call down list" should also identify spill response contractors available in the area to ensure the rapid removal of significant product spills into the environment. Include this bullet item in the fuel operation plan.
- Do not use dispersants to clean up spills or sheens unless they will be picked up for proper disposal. Dispersants are prohibited for use for spills on water or where the

dispersant may enter storm drains, sanitary sewers, treatment systems or receiving waters.

2.2.3. BMP 11: In-Water and Over-Water Fueling

This BMP apply to businesses and public agencies that operate a facility used for the transfer of fuels from a stationary station to vehicles or equipment in water. This type of fueling station includes aboveground or underground fuel storage facilities, which may be permanent or temporary. Fueling stations include facilities such as, but not limited to, commercial gasoline stations, port facilities, marinas, private fleet fueling stations, and boatyards.

Spills from this activity are reportable to Federal and State agencies – immediately report a spill of fuel or oil to water to the National Response Center at 1-800-424-8802 and the Washington Emergency Management Division at 1-800-258-5990.

See Ecology's spill reporting web page for more information: https://ecology.wa.gov/footer-pages/report-an-environmental-issue/report-a-spill

Description of Pollutants

In-water and over-water fueling can result in leaks or spills of fuels and associated petroleum products that can be harmful to humans and aquatic life.

Required BMP Elements

Required BMP elements are contained in *S439 — BMPs In-Water and Over-Water Fueling* in Volume IV of the SWMMWW (Ecology 2024~~19~~).

2.2.4. BMP 12: Maintenance and Repair of Vehicles and Equipment

This BMP applies to businesses and public agencies on whose premises oil, fuel, engine oil, and other fluids such as battery acid, coolants, and transmission and brake fluids are removed and replaced in vehicles and equipment. It also applies to mobile vehicle maintenance operations.

Description of Pollutants

Pollutants of concern are total petroleum hydrocarbons, toxic organic compounds, oils and greases, oxygen demanding substances (e.g., antifreeze), sediments, pH, and metals. These pollutants must not be discharged to the drainage system sewer systems, or directly ~~in~~to receiving waters.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in vehicle and equipment repair and maintenance activities:

- Implement BMP 1 through BMP 8 ~~8~~ for all real property (refer to *Section 2.1*).
- The business conducting repair or maintenance is responsible for the condition of all customer vehicles in their care. Spills from customer vehicles awaiting service are the responsibility of the business whether parked on private or public property.
- Inspect all incoming vehicles and equipment for leaks and spills. Clean up all leaks and spills as they occur. Contain leaks with drip pans or other spill capture equipment. Drain all fluids that have the potential to leak from wrecked vehicles and from damaged equipment when they arrive. Empty oil and fuel filters before disposal. Store and dispose/recycle of fluids properly.

A spill can be a one-time event, a continuous leak, or frequent small spills. All types must be addressed as prescribed in BMP 5 (Spill Prevention and Cleanup).

- Maintenance and repair activities must be conducted inside a building or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of spills or contaminated water. If an emergency ~~situation~~ requires immediate repair outside, containment devices must be used for repair of fluid containing components.
- Cover, contain, and mark containers of used oil, antifreeze, and other fluids. Each container must be marked with the name of the contents.
- Remove batteries and liquids from vehicles and equipment in designated areas designed to prevent stormwater contamination. Store batteries upright in a secure, contained, and covered location (not outside on the ground). Check to ensure batteries are not damaged or leaking. Store damaged or leaking batteries in a covered, non-leaking secondary containment system. Keep battery acid neutralizing materials, such as baking soda, available near the storage area.
- Ensure that employees are familiar with the site's spill cleanup plans and are trained in the proper handling, storage, and disposal of all fluids.
- Store and maintain appropriate spill cleanup materials in an easily accessible location.

- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered and contained or moved to an indoor location. Indoor locations that are incapable of preventing spills from reaching outside exposure will be considered covered and contained.
- Inspect parking and outside storage areas daily for leaks and drips or inappropriately stored wastes or materials.
- Sweep paved work areas as needed. Soak up spilled vehicle fluids with rags or other absorbent material immediately. Never wash paved areas to the stormwater drainage system or the street.
- Frequently inspect drains (inside and outside) for evidence of spills or accumulation of pollutants. Clean these drains when pollutants are observed.
- Maintenance and repair areas cannot be ~~hosed~~ washed down. Use dry methods for cleaning up. ~~Instead, they must be swept weekly or more often as needed to collect dirt.~~
- Wastes, ~~such as~~including but not limited to washwater, may not be discharged to the stormwater system or receiving waters, except as conditionally allowed in SMC, Section 22.802.030. Do not discharge vehicle fluids to the drainage system, sanitary sewer, or receiving waters.
- Maintenance and repair shop floor drains must discharge to the sanitary sewer. Do not allow drains inside maintenance buildings to connect to the sanitary sewer without prior approval by SPU, King County, or both.
- If extensive staining and oily sheen are present, absorbent pillows or booms must be used in and/or around catch basins and properly maintained to prevent ~~oil~~ petroleum products from entering the drainage system. If operational BMPs are insufficient to prevent and manage recurrent ~~oily~~ prohibited discharges of pollutants, then structural source control measures may be required.
- Secondary containment requirements found in *BMP 28; Portable Container Storage* apply to this activity conducted in any drainage area including areas with stormwater discharge to the sanitary or combined sewer system.

2.2.5. BMP 13: Concrete and Asphalt Mixing and Production

This BMP applies to businesses and public agencies that mix raw materials onsite to produce concrete or asphalt. See BMP 14 for mobile concrete pouring and asphalt applications.

Description of Pollutants

Pollutants of concern include petroleum hydrocarbons, toxic organic compounds, oils and greases, metals, and pH. Not only can concrete pouring activities severely alter the pH of stormwater runoff, but slurry from aggregate washing can harden in drainage infrastructure, thereby reducing capacity, which can result in flooding. These pollutants must not be discharged to the drainage system, sanitary or combined sewer, or directly into receiving waters.

Required BMP Elements

Activities associated with concrete and asphalt mixing and production may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to concrete and asphalt mixing and production at stationary sites:

- Implement BMP 1 through BMP ~~8~~8 for all real property (refer to *Section 2.1*).
- Cover production areas to protect them from contact with rain and stormwater run-on.
- Recycle all process water from production~~, pouring, and equipment cleaning~~ or discharge it to a dead-end sump, process water treatment system and~~, or~~ the sanitary sewer. Obtain all necessary permits for discharge to the sanitary sewer.
- Never discharge ~~washout~~ process water ~~from fresh concrete or concrete mixing~~ into streets, sidewalks, drainage systems, or receiving waters.
- Segregate production areas from stormwater inputs. Any stormwater that mixes with production areas is considered process water and cannot be discharged to streets, sidewalks, the public drainage system or receiving waters. Obtain all necessary permits for discharge to the sanitary sewer.
- Establish a BMP maintenance schedule and educate employees annually about the need to prevent stormwater contamination through regular BMP maintenance. Document and keep all maintenance training records on hand.
- Use absorbent materials or catch basin filter socks (Figure 7~~5~~) in and around inlets/catch basins to help filter out solids. If catch basin filter socks are used, maintain the filters regularly (weekly or as needed) to prevent plugging. Stormwater contaminated with concrete or asphalt must not enter the drainage system.

Catch basin filter socks only remove solids and do not provide treatment for other pollutants associated with concrete and asphalt mixing and production.

- Sweep the production ~~and pouring area~~, driveways, gutters, and all other outdoor areas ~~daily or more often~~ as necessary to collect fine particles and aggregate for recycling or proper disposal.

Figure 7~~5~~. Commercially Available Catch Basin Filter Sock.

- Do not wash or hose down areas that flow to the drainage system.
- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered, contained, or moved to an indoor location.
- Collect, treat, and properly dispose of runoff that comes in contact with release agents.
- If operational controls do not prevent stormwater contamination, treatment BMPs may be necessary.

For information about water quality treatment BMPs for activities related to concrete and asphalt mixing and production at stationary sites, refer to *Volume 3 — Project Stormwater Control*. For a current list of proprietary and emerging water quality treatment technologies, refer to Ecology's website (https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies).

Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from concrete and asphalt mixing and production activities:

- Pave the mixing and production areas. A sump drain in these areas is not advisable due to potential clogging problems. Sweep these areas to remove loose aggregate and recycle or properly dispose of the aggregate.
- Use catch basin covers or similarly effective containment devices to prevent runoff from entering the drainage system.

2.2.6. BMP 14: Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application

This BMP applies to businesses and public agencies that apply asphalt or pour or cut concrete or asphalt for building construction and remodeling; road construction; repair and construction of sidewalks, curbs, and gutters; sealing of driveways and roofs; and other applications.

Description of Pollutants

Pollutants of concern include petroleum hydrocarbons, toxic organic compounds, oils and greases, metals, suspended solids, and pH. Not only can concrete pouring activities severely alter the pH of stormwater runoff, but slurry from aggregate washing can harden in stormwater pipes, thereby, reducing their capacity and resulting in flooding. These pollutants must not be discharged to the drainage system, sanitary or combined sewers, or directly into receiving waters.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to concrete pouring and cutting and asphalt application:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Use drip pans, ground cloths, heavy cardboard, or plywood wherever concrete, asphalt, asphalt emulsion and drips are likely to spill, such as beneath discharge points from equipment.
- Sweep or shovel and collect loose ~~aggregate chunks~~materials, waste, and dust for recycling or proper disposal at the end of each workday or as needed, especially at work sites such as streets, driveways, parking lots, sidewalks, curbs, and gutters where rain can readily pick up the loose material ~~and carry it to the nearest stormwater conveyance system~~. Never hose down concrete or asphalt waste materials to a public or private drainage system (including inlets, catch basins, and ditches), sanitary or combined sewer, ~~n inlet/catch basin, ditch~~ or receiving waters.
- Place catch basin covers or similarly effective containment devices over all nearby drains at the beginning of each workday.
- Shovel and/or vacuum all waste slurry and remove from the site. All ~~accumulated~~ contaminated runoff and solids must be collected and properly disposed of at the end of each workday, or more often if necessary.
- Make sure all outside materials that have the potential to leach or spill ~~to the drainage system~~ are covered, contained, or moved to an indoor location.
- Use a mechanism for containment and collection of the discarded concrete slurry when performing exposed aggregate washing, where the top layer of unhardened concrete is hosed or scraped off to leave a rough finish. Dispose of the slurry properly.
- Use a catch basin filter sock to remove solid materials from inlets/catch basins. This is not meant as a treatment substitute for keeping pollutants out of the drain. This is intended to be an emergency precaution only. Maintain the filter regularly to prevent plugging. Stormwater contaminated with concrete or asphalt must not enter the drainage system.

- Perform cleaning of concrete application and mixing equipment or concrete delivery vehicles in a designated area where the rinse water can be controlled, contained and properly disposed of.
- Collect, treat, and properly dispose of ~~runoff~~ stormwater that comes in contact with diesel or coatings used in asphalt applications, cleanup, or transportation.
- Collect, treat, and properly dispose of ~~runoff~~ wastes from cutting activities.

Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from concrete pouring and cutting and asphalt application at temporary sites:

- Avoid the activity when rain is falling or expected.
- If possible, portable asphalt mixing equipment should be covered by an awning, a lean-to, or other simple structure to avoid contact with rain.
- Recycle broken concrete and asphalt. Search for “Recycling Services” online to find a local recycler.

2.2.7. BMP 15: Recycling, Wrecking Yard, and Scrap Yard Operations

This BMP applies to businesses and public agencies that store or reclaim various materials for resale, salvaging parts, or for scrap, such as vehicles, parts of vehicles, equipment, construction materials, metals, beverage containers, electronic waste and papers. Activities that can generate pollutants include the following: transfer, dismantling, and crushing of vehicles and scrap metal; transfer and removal of fluids; maintenance and cleaning of vehicles, parts, and equipment; and storage of fluids, parts for resale, solid wastes, scrap parts, materials that are contaminated or contain fluids, equipment, and vehicles that contain fluids.

Description of Pollutants

Potential sources of pollutants include paper, plastic, metal scrap debris, engines, transmissions, radiators, batteries, printing equipment and other materials that contain fluids or are contaminated with fluids. Other pollutant sources include leachate from metal components, contaminated soil, and eroded soil.

Potential pollutants typically found at ~~vehicle~~ recycling and scrap yards include oils and greases, ethylene glycol, propylene glycol, suspended solids, polychlorinated biphenyls (PCBs), phthalates, substances that increase biological oxygen demand (BOD), metals (including mercury and lead), and low (acidic) pH. PCB sources can include lamp ballasts, capacitors from white goods, transformers, ~~or~~ other electrical equipment, printing equipment (associated with the pigments/dyes), and PCB-contaminated building materials such as concrete, masonry, siding, and roofing.

Required BMP Elements

Recycling, wrecking yard or scrap yard activities may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage. If the permit is required, refer to Publication 94-146, Vehicle and Metal Recyclers: A Guide for Implementing the Industrial Stormwater General National Pollutant Discharge Elimination System Permit Requirements (Ecology 2011), for the selection of BMPs.

At a minimum, the following BMPs or equivalent measures are required for activities related to recycling, wrecking yard, and scrap yard operations. Additional BMPs may be required for businesses and public agencies subject to Ecology's Industrial Stormwater General Permit.

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Drain all fluids upon arrival, prior to storage or disposal.
- Inspect all items for leakage or potential leaks. Use drip pans or other containment where necessary to prevent leaks from reaching the ground or drainage systems. Do not hose pollutants from any area to the ground or into drainage systems. Manage collected wastes to prevent stormwater contamination.
- Make sure all outside materials that have the potential to leach or spill pollutants to the drainage system are covered, contained, or moved to an indoor location.

- Keep all containers, including dumpsters and scrap collection bins, under cover or fit them with a lid that must be kept closed when the container is not in use. Empty bins may have residual pollutants from previous contents and must be covered when stored outside.
- Areas used for processing material to be recycled or for draining/transferring fluid should be designed to ~~stop~~ prevent run-on and to contain all fluids that may be spilled or released. Use cover and containment options such as an enclosed building or roof, and berms or dikes. If there is a sump, dispose of waste properly or recycle accordingly. Prevent any run-off from the property to nearby properties or to the public right-of-way or drainage. Maintain this containment in constant working order.
- For fluids stored in containers, the containers must be rigid, durable, resistant to corrosion due to the weather and fluid contents, watertight, and equipped with a tight-fitting lid able to retain the contents in the event of tipping. Place containers in covered impervious secondary containment areas.
- Label or mark all containers/tanks with their contents and identify the hazard they pose. Handle all dangerous and/or hazardous materials and waste in accordance with SPU, King County, and Ecology's requirements.
- Prevent track out from the site onto the adjacent roadway.
- If operational BMPs are not sufficient to prevent stormwater contamination, structural controls must be implemented, including treatment or structural containment. Structural controls must be implemented for new or redeveloped facilities to prevent prohibited discharges to the public drainage system, the private drainage system, receiving waters (refer to SMC, Section 22.802.020), or the public sewer system (refer to SMC, Section 21.16.300).
- For facilities subject to Ecology's Industrial Stormwater General Permit, refer to *Vehicle and Metal Recyclers: A Guide for Implementing the Industrial Stormwater General National Pollutant Discharge Elimination System Permit Requirements* (Ecology 2011). Apply the BMPs in that guidance document to scrap material recycling facilities, depending on the pollutant sources at those facilities.
- Check incoming scrap materials, vehicles, and equipment for ~~potential fluid contents and~~ batteries, mercury switches, liquid tanks, containers, capacitors, switches, or transformers.
- Remove batteries and store them in a safe condition in a leakproof container and under cover.
- Cover and raise above the ground surface any materials that may contaminate stormwater. A tarpaulin and pallet are acceptable.
- Storage of flammable and combustible materials must comply with the appropriate fire codes.
- Develop and implement a BMP inspection log to be used daily. Keep all records on file.
- ~~Inspect storage areas regularly and p~~Promptly clean up any leaks, spills, or contamination.
- Sweep paved storage areas daily or more often as needed to remove accumulated dust, debris, trash and pollutants. Inspect storage areas often and maintain good housekeeping.

- Keep spill cleanup materials in a central location. Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures. Restock spill cleanup supplies after each use.
- PCB-contaminated materials must not be re-used. Keep this waste segregated from other materials and dispose of PCB-contaminated materials including, but not limited to, concrete, masonry, roofing and siding, in accordance with EPA's Toxic Substances Control Act (TSCA) regulations and State waste regulations. Also see Volume 2 BMPs C1.25 and C1.30.

Recommended BMPs

- If your site discharges process waters or contaminated stormwater to the sanitary sewer or combined sewer, contact the King County Industrial Waste Program to complete an Industrial Waste Program Survey to obtain discharge approval.

2.2.8. BMP 16: Storage of Liquids in Aboveground Tanks

This BMP applies to businesses and public agencies that have on their premises aboveground tanks that contain liquids (excluding uncontaminated water). These tanks may be equipped with a valved drain, vent, pump, and bottom hose connection. These include, but are not limited to, commercial aboveground heating oil tanks; gasoline and diesel tanks; food products; fertilizer; stormwater treatment, or process water. Tanks that are mobile but designed to be moved only when empty are covered by this BMP.

Equipment containing fuel tanks or oil reservoirs are not considered liquid storage tanks if the tanks or reservoirs are integral to the equipment function. This may include backup electrical generators, transformers, hydraulic fluids, or boilers. This BMP would also not apply to liquified gases held in pressurized or cryogenic tanks. Though these applications are not tanks, this BMP can be used as recommended controls for this equipment.

For oil containment systems required for transformers that are mounted at-grade or on a pad in the Seattle City Light (SCL) distribution system, refer to SCL Construction Standard 0735.50. https://web8.seattle.gov/city-light-engineering-standards.

Description of Pollutants

Pollutant sources include leaks and spills that can occur at connections and during liquid transfer. Oils and greases, organic compounds, acids, alkalis, turbidity, and dissolved metals ~~in tank water and condensate drainage~~ can also result in stormwater contamination.

Required BMP Elements

The following BMPs or equivalent measures are required for activities related to the storage of liquids in aboveground tanks:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Provide secondary containment or use a double-walled tank.
- Do not discharge contaminated stormwater that may collect within the secondary containment area to the drainage system. Evidence of contamination can include the presence of visible sheen, smell, color or turbidity in the runoff, or existing or historical operational problems at the facility. Check for acceptable pH ranges for areas subject to acid or alkaline contamination. Develop appropriate screening techniques for water-miscible contaminants (alcohols or ketones) such as test strips or laboratory testing.
- Implement the following maintenance activities to prevent and minimize stormwater contamination:
    - Inspect tank containment areas regularly to identify problems (e.g., cracks, corrosion, leaks, open valves, or missing plugs) with components such as fittings, pipe connections, and valves.
    - Replace or repair tanks that are leaking, corroded, or otherwise deteriorating. Document and keep all inspection records. A soundness evaluation by a Professional Engineer may be requested to confirm tank stability.

- Vacuum ~~S~~sweep and clean the tank storage area regularly, if paved.

- For new and redeveloped sites, locate and design tanks to prevent and minimize stormwater contamination:
  - Locate permanent tanks on an impervious (p~~P~~ortland cement concrete or equivalent) spill containment pad. All exposed containment surfaces within the containment area must be impervious to all material in the tanks.
  - Surround the spill containment pad with dikes or walls or provide double-walled tanks approved by the Underwriters Laboratory (UL). Design the dike to be of sufficient height to provide a containment volume of either 10 percent of the total volume of the enclosed tanks or 110 percent of the volume of the largest tank, whichever is greater. If a single tank, the dike must be able to hold 110 percent of the volume of that tank.
  - Slope covered secondary containment pads so they will drain to a dead-end sump or equivalent for the collection of small spills.
  - If the tank containment area is not covered, equip the outlet from the spill-containment sump with a shutoff valve. The valve should only be opened to convey contaminated stormwater to an approved treatment system or disposal facility, or to convey uncontaminated stormwater to the drainage system.
  - Place adequately sized drip pans beneath all mounted taps and locations where drips and spills might occur during the filling and draining of tanks.
  - Include a tank overfill protection system to minimize the risk of spillage during loading.
  - In areas with ~~multiple~~ petroleum product storage tanks (e.g., petroleum tank farms), convey contaminated stormwater with floating oil or debris in the contained area to the sanitary sewer (with the sewer authority's approval), or through an American Petroleum Institute (API) oil/water separator, coalescing plate oil/water separator, or other approved treatment system with an automatic shutoff valve (or similar design) or oil stop valve, prior to discharge to the ~~sanitary sewer~~drainage system. Oil stop valves must be selected on the basis of the type of petroleum product stored in the tank(s).

CHAPTER 3 – Business and Public Entity Best Management Practices for Specific Activities

In addition to BMP 1 through BMP 8 for all real property (*Section 2.1)* and BMP 9 through BMP 16 for specific activities for all real property (*Section 2.2)*, there are many additional source control BMPs that may be required depending on the specific activities that occur or will occur at a business or a public entity, except those that drain only to the combined sewer. Source control requirements are outlined in Seattle Municipal Code (SMC), Section 22.803.040 (Minimum Requirements for Source Controls for All Businesses and Public Entities) and SMC, Section 22.805.020.K (Install Source Control BMPs).

Before reading this chapter, fill out the worksheet in *Section 1.6* to identify which site-specific activities require BMPs.

3.1. Cleaning or Washing

The cleaning or washing of vehicles, aircraft, vessels, engines, tools, cooking equipment, manufacturing equipment, and buildings are pollution generating activities when not conducted properly. When these activities are performed, the resulting washwater usually contains soap or detergents, and can contain a variety of pollutants that contaminate stormwater. The specific BMPs that apply to cleaning and washing are presented in this section.

The discharge from some maintenance activities may be allowed, such as street and sidewalk washing, provided they meet the conditions outlined in the Stormwater Code. ~~Those maintenance activities include street and sidewalk washing and routine external building washdown~~. Refer to the required provisions and conditions outlined in the Stormwater Code (SMC, Chapters 22.800 through 22.808). Refer to Chapter 23.84A of the Seattle Land Use Code for the definitions of street, sidewalk (which is part of a street), and others.

Remember to also implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

3.1.1. BMP 17: Cleaning or Washing

This BMP applies to cleaning, washing, and rinsing activities, including pressure washing and steam cleaning, whether it involves hand cleaning/scrubbing/sanding/washing or uses mechanically-assisted tools. The purpose of cleaning and washing activities is to remove pollutants from equipment, vehicles, boats, ~~and~~ buildings and other structures, and other surfaces where cleaning may dislodge pollutants; these pollutants should not be discharged to the public drainage system or receiving waters (surface water or groundwater). Disposal of washwater to the sanitary sewer may be allowed if authorized by the local sewer authority, however, there are limits on certain pollutants; consultation with the King County Industrial Waste Program is advised for large discharges or washwater exceeding limits found in SMC 21.16.300 - PROHIBITED DISCHARGE OF CERTAIN SUBSTANCES.

The 2024 Phase I Municipal Stormwater Permit prohibits the discharge of building washdown water to municipal stormwater systems from structures suspected or confirmed to have PCB-containing materials on their exterior. Commercial, industrial, institutional, and multi-story residential structures that were constructed or renovated between the years 1950-1980, inclusive, are broadly considered to be most likely to have PCB-containing building materials. The PCB-related BMP elements, below, apply to private and public buildings and are designed to prevent PCBs from entering the stormwater system and local waterbodies.

Description of Pollutants

Source pollutants include surfactants; petroleum hydrocarbons; toxic organic compounds; fats, oils, and grease; soaps; detergents; nutrients; metals; polychlorinated biphenyls (PCBs); pH; suspended solids; paint (e.g., spray-paint as graffiti), solids from artificial turf (e.g., crumb rubber, turf blades), debris, substances that increase biological oxygen demand (BOD); and substances that increase chemical oxygen demand (COD).

Stormwater that commingles with process wastewater (or washwater) is considered process wastewater, and can no longer be managed as stormwater. Rain and stormwater that contact surfaces that have been sanitized or disinfected per Public Health requirements, are also considered process wastewater (see also BMP 32 regarding outdoor yards at pet daycare/boarding facilities).

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in cleaning or washing activities:

- Implement all BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Provide training to employees regarding proper disposal of washte~~te~~water. This training must be documented.
- Depending on the location within Seattle, o~~O~~utside drains discharge to the combined sewer, directly to local waters, or to the public drainage system, ~~depending on the location within Seattle~~. Directing washwater into drains that discharge to the drainage system or local waters is not allowed unless specifically identified as conditionally permitted per SMC 22.802.030. Identify the type of drainage system on your property, including where stormwater enters the system (e.g., catch basins, inlets) and train employees about required BMPs accordingly.

- The following are conditionally permissible washing practices: (1) Discharges of street and sidewalk washwater when the surfaces have been swept prior to washing, detergents are not used, and water use is minimized; and (2) Discharges of water from routine external building washdown for buildings built and renovated before 1950 and after 1980, when detergents are not used and water use is minimized. These conditions must be met or the washing activity is prohibited. Sweep surfaces before cleaning/washing to remove excess sediment and other pollutants.
    - Additionally, though the above conditions are met, cleaning that will result in washwater containing a prohibited substance listed in SMC 22.802.020 is a prohibited discharge. In other words, washing of any surface cannot cause pollution to the drainage system or surface waterbodies.
    - While the definition of street includes the roadway and sidewalk (see SMC 23.84A.036), it does not include parking lots.
    - While a woonerf (see SMC 23.84A.044) is intended and designed to prioritize pedestrian movement and safety (via slower vehicular movement), it is still used for vehicle access and must therefore be considered a roadway and street for the purposes of this BMP.
- Potable water (i.e., treated City-supplied water from faucets and hoses) contains a minimum amount of chlorine to maintain safe consumption and to comply with the Safe Drinking Water Act; however, chlorine can impact aquatic life. Therefore, washing with potable water requires dechlorination if discharges will enter the drainage system. Specifically, discharges of potable water to the drainage system may be conditionally allowed (see SMC, Section 22.802.030) only if they are dechlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the stormwater conveyance system. These discharges must be reported to Seattle Public Utilities at (206) 386-1800 if they impact the City's MS4.
- Discharge wastewater from cleaning or washing activities into the sanitary or combined sewer if ~~properly approved~~permissable, or into a holding tank. ~~It is illegal to discharge washwater to the drainage system or local waters.~~ Authorization for discharge to the sanitary or combined sewer may be required, and pretreatment may be necessary. If using a holding tank, ensure that it is properly sized and does not overfill.
- Collect any washwater generated from hosing down, pressure washing, scrubbing, or otherwise cleaning graffiti-impacted areas, and dispose of it properly, *not* into the stormwater drainage system, local waters or the ground.
- Cover and/or contain the washing activity or wash inside a building having a floor drain that ~~discharges~~ connects to the sanitary sewer.
- If roof equipment or hood vents are cleaned, ensure that no wastewater or prohibited substance (refer to SMC, Chapter 22.802) is discharged to the roof drains or drainage system.
- Label all mobile cleaning equipment as follows: "Properly dispose of all ~~wastewater~~washwater. Do not discharge to an inlet/catch basin, ditch, stream, or on the ground."
- See BMP 32 for information related to commercial pet care facilities such as pet daycares/boarding facilities.

- Building-specific requirements:
  - Commercial, industrial, institutional and multi-story residential buildings constructed or renovated from 1950 through 1980 cannot be washed down in a manner that discharges to the MS4, unless it has been determined that they do not contain PCBs in exterior materials. An assessment to inform this determination must be conducted *prior* to building washdown and following a method consistent with Ecology's Guidance Document "How to Find and Address PCBs in Building Materials (Ecology, 2024). Single-family residential buildings, and buildings built and renovated before 1950 and after 1980, are exempt from PCB assessment prior to washdown.
    - Structures confirmed or suspected to have PCB-containing materials cannot discharge washdown to public or private stormwater drainage systems, the right-of-way and other public spaces, surrounding properties or surface waterbodies. Washdown of these structures is prohibited unless all washwater is collected and disposed of in accordance with a discharge authorization permit. Contact King County for more information about discharge authorizations.
    - Report all structures confirmed or suspected to have PCB-containing materials to Seattle Public Utilities at 206-386-1800.

Ecology Publication WQ-R-95-056, *Vehicle and Equipment Washwater Discharges: Best Management Practices Manual* (Ecology 2012) can be used for guidance on sumps, holding tanks, and the prevention of runoff.

For wash pads discharging directly to the sanitary sewer:

- The uncovered portion of the wash pad must be no larger than 200 square feet or must have an overhanging roof (refer to Figure 8~~6~~). This is to prevent excess stormwater from entering the sanitary sewer and impacting its capacity. Covering may be required in many situations.

Figure 8~~6~~. Car Wash Building with Drain to the Sanitary Sewer.

- If the uncovered wash pad (or uncovered portion of a wash pad) cannot be less than 200 square feet, a shut off valve may be installed which will direct washwater to the sanitary sewer when the wash pad is in use, and stormwater to the drainage system when the wash pad is not in use (refer to Figure 9~~7~~). The valve on the outlet may be manually operated; however, a pneumatic or electrical valve system is preferable. The valve may be on a timer circuit, where it is opened to the drainage system upon completion of a wash cycle. ~~The timer would then close the valve after the sump or separator is drained~~During washing, the valve is open to the sanitary sewer.
- The wash pad must be clearly signed as to the operation and location of the valve.
- Conduct annual training on operation of the valve system.
- If adjacent to a building or constructed over hazardous material storage areas, other regulations, including the Seattle Fire Code, may apply.
- Obtain all necessary permits for installing, altering or repairing onsite drainage and side sewers. Restrictions on certain types of discharges may require pretreatment before they enter the sanitary sewer.

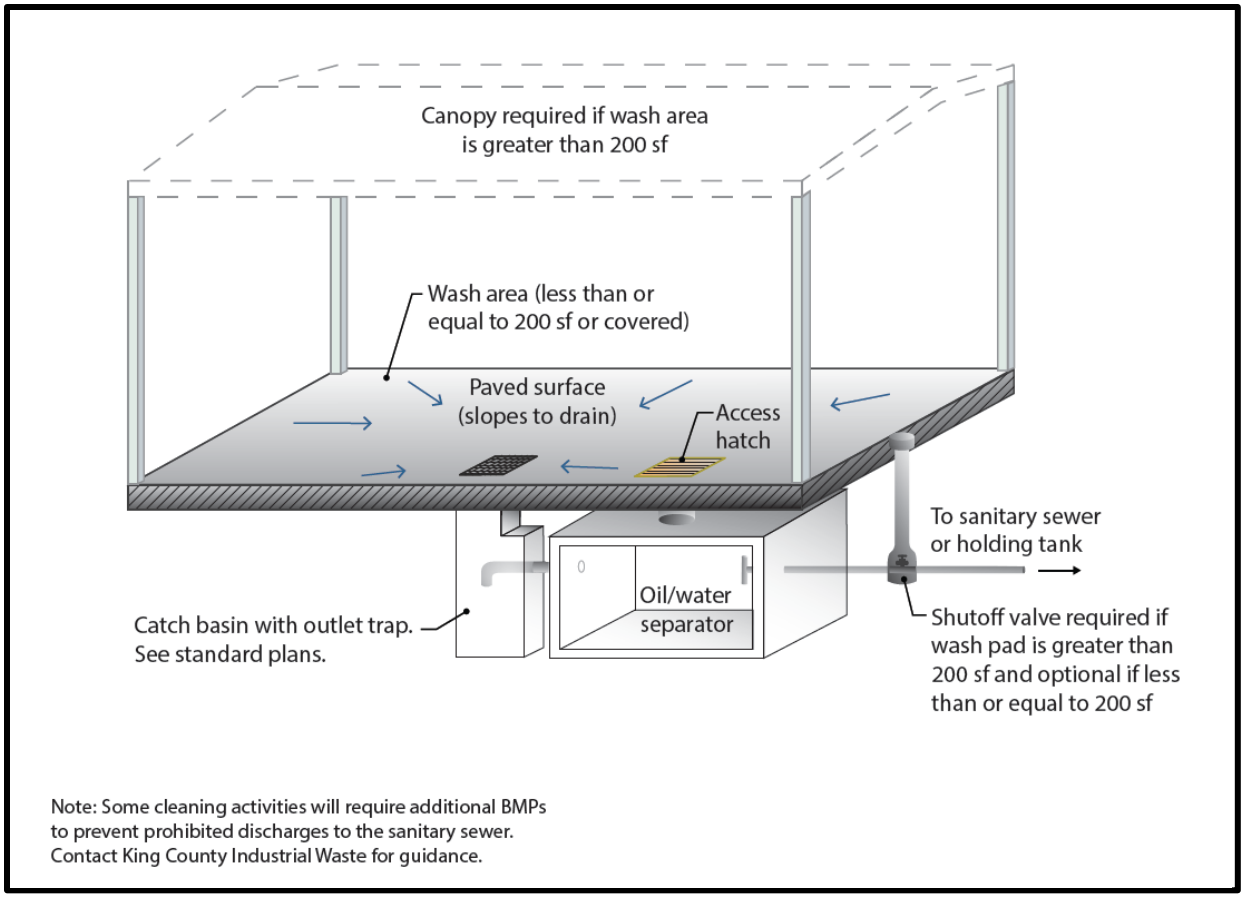

Figure 9~~7~~. Schematic of Wash Pad with Sump.

Recommended BMPs

- Although not required, the following BMPs can provide additional pollution control for washing activities that drain to the sanitary sewer. To reduce the potential overall pollution load to the sanitary sewer from washing operations for tools, vehicles, engines, and manufacturing equipment:
  - Minimize water and detergent use in all washing operations.
  - Use phosphate-free detergents when practical.
  - Consider recycling the washwater by installing a closed-loop water recycling system.
  - Use the least hazardous cleaning products available.
  - For intermittent washing of vehicles, use a car wash that recycles washwater and discharges to the sanitary sewer.
  - Install filter socks in yard drains to capture solids and prevent the need for costly clean out of catch basin sumps.
- Painting over graffiti is preferred over washing it off. Some cleaning systems are equipped with a suction and storage canister (i.e., a closed vacuum system) that removes paint/graffiti without releasing washwater. Captured washwater must not be

discharged to the drainage system or ground. Extra care must be taken when removing graffiti on a surface adjacent to a water body.

- When cleaning artificial turf playfields, artificial turf athletic fields, and synthetic rubber running tracks, work in a manner that prevents the dislodgment of artificial grass blades, crumb rubber, pigments, and other artificial materials. This may mean reducing the water pressure, dry sweeping, or using other means. Avoid the use of chemicals to clean the surfaces, unless required by a Public Health agency; in all cases, collect materials dislodged and dispose of properly, not into the drainage system.
- Consider focused spot cleaning prior to, or instead of, washing to minimize the area washed and amount of washwater generated.

3.2. Transfer of Liquid or Solid Materials

The transfer of liquid or solid materials, including the loading and unloading of such material, fueling of vehicles or equipment at mobile or designated locations, and vehicle and equipment repair and maintenance are activities that have a high risk for spills or leaks of toxic material. Both required and recommended BMPs can help prevent, minimize, and manage the effects of accidental spills or leaks. The specific BMPs that apply to the transfer of particular types of liquid and solid materials are presented in this section.

Remember to also implement BMP 1 through BMP 8 for all real property from *Section 2.1*.

3.2.1. BMP 18: Loading and Unloading of Liquid or Solid Material

This BMP applies to businesses and public agencies engaged in the loading and unloading of liquid or solid materials or the transfer of non-containerized bulk materials. Sources of pollution include loading docks, vehicles, and equipment involved in material handling. These activities are typically conducted at shipping and receiving areas, outside storage areas, and fueling areas.

Description of Pollutants

Leaks and spills of fuels, oils, powders, organic compounds, nutrients, metals, food products, salts, acids, and alkalis during transfer are potential sources of stormwater contamination. Spills from breaks in hydraulic lines and leaking forklifts are common problems at loading docks. Many inlets/catch basins in Seattle discharge directly to local streams and waterways and therefore spilled or leaked products can adversely affect water quality and harm both people and aquatic organisms that come in contact with the contaminated water. These pollutants must not be discharged to the drainage system or directly into receiving waters.

Required BMP Elements

The following BMPs or equivalent measures are required in all loading and unloading areas:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Sweep as often as necessary to prevent material contact with stormwater and to remove accumulated debris and other material that could otherwise be washed off by stormwater. Do not sweep this debris into drainage infrastructure.
- Place drip pans or other appropriate temporary containment devices in locations where leaks or spills may occur, such as hose connections, hose reels, and filler nozzles (Figure 10~~8~~).
- Always use drip pans when making and breaking connections. Clean drip pans after each use to remove any residual material. Dispose of any residual material in accordance with the Seattle Solid Waste Collection Code (SMC, Chapter 21.36) and the state Dangerous Waste Regulations (WAC, Chapter 173-303).
- Inspect loading and unloading areas after each delivery for leaks and spills and clean up immediately.
- Check material handling equipment such as valves, hoses, pumps, flanges, and connections regularly for leaks, and repair as needed. Document and keep all inspection records. Store contaminated equipment inside or under cover to prevent residual material from coming into contact with stormwater.
- Provide impervious containment with berms, dikes, etc., and/or cover the loading/unloading area to prevent run-on and runoff of contaminated stormwater. Maintain drainage areas in and around storage areas for 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 for collection or to internal “alleyways” where no stockpiled material is kept.

Figure 10~~8~~. Temporary Containment Device Placed Under a Hose Connection.

The following BMPs or equivalent measures are required in areas of transfer from tanker trucks and railcars to aboveground or underground storage tanks, containers, or between transport vehicles (rail or highway):

- To minimize the risk of accidental spillage, prepare and follow an "Operations Plan" that describes procedures for loading/unloading. Train employees on the plan.
- For rail facilities, install and maintain a drip pan system within the rails to collect spills and leaks from tank cars, hose connections, hose reels, and filler nozzles.
- If transloading oil products in excess of 1,320 gallons in areas that, if spilled, could reach navigable water, you may be subject to SPCC requirements, 40 CFR Part 112.

The following BMPs or equivalent measures are required in areas of loading and unloading from or to marine vessels:

- Facilities and procedures for the loading or unloading of petroleum products must comply with U.S. Coast Guard requirements.
- For requirements related to the transfer of small quantities from tanks and containers:
- Refer to BMP 28 for storage of portable containers of liquid or dangerous waste containers (*Section 3.4.3*) and BMP 16 for storage of liquids in aboveground tanks (*Section 2.1.16*).

Recommended BMPs

Although not required, the following BMPs can provide additional pollution protection:

- Whenever possible, conduct the activity indoors or under cover to minimize exposure to stormwater.
- For the transfer of liquids in areas that cannot contain a catastrophic spill, install an automatic shutoff system in case of an unanticipated interruption in off-loading (e.g., a coupling break, hose rupture, or overfill).
- Install and maintain overhangs (Figure 11~~9~~) or door skirts that enclose the trailer end to prevent contact with stormwater.

Figure 119. Loading Docks with an Overhang to Prevent Material Contact with Stormwater.

Mobile Fueling of Vehicles and Heavy Equipment (BMP 10) (*Section 2.1.10*) is recommended in areas of transfer from tanker trucks to aboveground or underground storage tanks; it includes:

- Pave the area on which the transfer takes place. If any transferred liquid, such as gasoline, is reactive with asphalt, pave the area with pPortland cement concrete or equivalent.
- Construct a slope, berm, or dike to direct runoff from the transfer area to a dead-end sump, spill containment sump, spill control oil/water separator, or other spill control device. The minimum spill retention time should be 15 minutes for the flow rate of the dispensing mechanism with the highest through-put rate, or at the peak flow rate of the 6-month, 24-hour storm event (or 91 percent of the total runoff volume for the simulation period if using continuous runoff modeling) 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.

3.3. Production and Application

Production and application activities are associated with a high risk for spills or leaks of toxic material. Required and recommended BMPs can help to prevent, minimize, and manage accidental spills or leaks so that there are minimal environmental impacts. The specific BMPs that apply to particular types of production and application activities are presented in this section.

Remember to also implement BMP 1 through BMP 8 for all real property from *Section 2.1*.

3.3.1. BMP 19: Manufacturing and Post-Processing of Metal Products

This BMP applies to businesses and public agencies such as mills, foundries, and fabricators that manufacture or process metal products. A variety of activities such as machining, grinding, soldering, cutting, welding, quenching, etching, bending, coating, cooling, and rinsing may take place.

Description of Pollutants

Pollutants of concern include toxic organic compounds, metals, oils and greases, pH, suspended solids, and substances that increase COD. These pollutants must not be discharged to the drainage system or directly into receiving waters.

Required BMP Elements

Activities associated with metal manufacturing and processing may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to manufacturing and processing of metal products:

- Implement BMP 1 through BMP 8~~8~~ for all real property (refer to *Section 2.1*).
- Process wastewater (including contact cooling water, filter backwash, or cooling tower blowdown) from this activity and stormwater runoff from processing or production areas must be discharged to the sanitary sewer or a holding tank. If a holding tank is used for the storage of wastewater, the contents must be pumped out before the tank is full and disposed of appropriately to the sanitary sewer or hauled off site. Obtain all necessary permits for discharge to the sanitary sewer.
- Cover the activity area to prevent rain from contacting the process and to reduce the amount of runoff that may require treatment.
- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered, contained, or moved to an indoor location.
- Sweep the activity area at the end of each workday or more often as needed to collect and properly dispose of metal fragments and product residues. Do not allow metal fragments, residues, or dust to accumulate in areas exposed to stormwater.
- Educate employees about controlling their work with metal products to minimize stormwater pollution. Document and keep all training records on hand.

Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from the manufacturing and processing of metal products:

- Limit the amount of water used in quenching and rinsing. Recycle used water where possible.
- Use a catch basin filter to capture stray metal particles. Maintain the filter regularly (weekly or as needed) to prevent plugging.

For information about water quality treatment BMPs related to concrete and asphalt mixing and production activities, refer to *Volume 3 — Project Stormwater Control*. For a current list of proprietary and emerging water quality treatment technologies, refer to Ecology's website (https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies).

3.3.2. BMP 20: Processing of Treated Wood

This BMP applies to businesses and public agencies that perform wood treatment including both anti-staining and preserving using pressure processes, dipping, or spraying. It also applies to businesses and public agencies that cut treated wood outside.

Description of Pollutants

Pollutant sources include drips of condensate or preservative after pressurized treatment, product washwater (in the treatment or storage areas), spills and leaks from process equipment and preservative tanks, fugitive emissions from vapors in the process, blowouts and emergency pressure releases, and kick-back from lumber (leakage of preservative as it returns to normal pressure).

Potential pollutants typically include wood treating chemicals, substances that increase biological oxygen demand (BOD), suspended solids, oils and greases, benzene, toluene, ethylbenzene, phenol, chlorophenols, nitrophenols, metals such as chromium and zinc, and polycyclic aromatic hydrocarbons (PAHs). Potential pollutants depend on the chemical additive used. Wood preservatives are registered with the U.S. EPA and include oil-borne and water-borne preservatives. Some w~~W~~ood preservatives and anti-staining chemical additives include creosote, creosote/coal tar, pentachlorophenol, copper naphthenate, arsenic trioxide, and inorganic arsenicals. These pollutants must not be discharged to the drainage system or directly into receiving waters.

Required BMP Elements

Activities associated with processing treated wood may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to wood treatment:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

Production Areas:

- Cover and/or enclose the following and contain with impervious surfaces:
  - All wood treatment areas
  - All treated wood
  - All associated wastes
- Segregate clean stormwater from process water. Convey all process water to an approved treatment system and discharge to the sanitary sewer or haul off site. Obtain all necessary permits for discharge to the sanitary sewer.
- Dedicate equipment that is used for treatment activities to prevent the tracking of treatment chemicals to other areas on site.
- For areas around dip tanks, spray booths, and retorts:
  - Eliminate non-process traffic on the drip pad.

- ~~Scrub down~~Clean non-dedicated lift trucks on the drip pad.
- Construct a slope and direct the drainage in a manner that allows treatment chemicals to flow back to the wood treatment process.
- Seal any holes or cracks in the asphalt areas subject to contamination with wood treatment chemicals.

Storage Areas:

- Cover and/or enclose storage areas for treated wood and contain with impervious surfaces. Alternatively, dry lumber stacks may be thoroughly wrapped in plastic to prevent contact with stormwater, elevated, and stored in uncovered areas.
- Immediately remove and properly dispose of soils with visible surface contamination to prevent the spread of chemicals to groundwater or another receiving water from stormwater runoff.

For Treated Wood Products:

- ~~areas~~Freshly treated wood is defined as wood that has not been removed from the drip pad immediately following treatment.
- Elevate treated wood products to prevent contact with stormwater run-on and runoff.
- Place treated wood products over the dip tank or on an inclined ramp for a minimum of 30 minutes to allow excess chemicals to drip back to the dip tank.
- Cover drip pads for freshly treated wood that has not ceased dripping to prevent contact of treated wood products with stormwater. Bulk storage of treated wood is permitted outside only when the units are protected from contact with stormwater by tarpaulins or wraps.
- Ensure that the wood is drip free and dry on the surface before it is moved.
- When cutting treated wood, collect all dust and debris for proper disposal.

3.3.3. BMP 21: Commercial Composting

This BMP applies to commercial composting facilities that operate outside without cover. These facilities require large areas for the decomposition of waste and other feedstock.

Description of Pollutants

When stormwater is allowed to seep through active composting areas—including waste receiving and processing areas—it becomes leachate. Pollutants in leachate include nutrients, substances that increase biological oxygen demand (BOD), organic compounds, coliform bacteria, low (acidic) pH, color, and suspended solids. Runoff from areas at the facility that is not associated with active processing and curing, such as product storage areas, vehicle maintenance areas, and access roads, can also contain contaminants. These pollutants must not be discharged to the drainage system or directly into receiving waters.

Required BMP Elements

Activities associated with commercial composting may require an NPDES permit from Ecology as well as other permits. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage. For state regulations related to composting facilities, refer to WAC, Section 173-350-220.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in commercial composting activities:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Screen incoming wastes for dangerous materials and solid wastes. These materials will not be accepted for composting and must be properly disposed of.
- Clean up and sweep debris from yard areas daily and more often as needed.
- Store finished compost on an impervious surface and in a manner to prevent contamination of stormwater.
- Convey all leachate to the sanitary sewer, a holding tank, or a permitted onsite treatment system that is designed to treat the leachate and remove suspended solids. If a holding tank is used for the storage of leachate, the contents must be pumped out before the tank is full and disposed of appropriately to a sanitary sewer or wastewater treatment system.
- For new and redeveloped facilities, prevent and minimize stormwater contamination by storing finished compost on a concrete pad that is:
  - Curbed to separate leachate from uncontaminated stormwater
  - Sloped sufficiently to direct leachate to the collection device
  - Designed with one or more sumps or catch basins capable of collecting all leachate generated by the design storm and conveying it to the leachate holding structure
- Ponds used to collect, store, or treat leachate and other contaminated waters associated with the composting process must be lined to prevent groundwater contamination. Apply All Known Available and Reasonable Methods of Prevention,

Control, and Treatment (AKART) technologies to all pond liners, regardless of the construction materials.

Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from commercial composting activities:

- Locate stored residues in areas designed to collect leachate and limit storage times to prevent degradation and generation of leachate.

3.3.4. BMP 22: Landscaping and Vegetation Management

This BMP applies to businesses and public agencies that perform landscaping, including grading, storage of landscape materials, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering. Landscaping and vegetation management can include control of objectionable weeds, insects, mold, bacteria, and other pests by means of chemical pesticides and is conducted commercially at commercial, industrial, and residential sites. Examples of landscaping and lawn and vegetation management include weed control on golf courses, access roads, and utility corridors; treatment or removal of moss from rooftops, sidewalks, or driveways; killing of nuisance rodents; application of fungicides on patio decks; and residential lawn and plant care.

Description of Pollutants

Stormwater contaminants from landscaping and vegetation management activities include toxic organic compounds, metals, oils, suspended solids, pH, coliform bacteria, fertilizers, pesticides, and detergents.

Pesticides such as pentachlorophenol, carbamates, and organometallics can be released to the environment as a result of leaching and dripping from treated plants, container leaks, product misuse, and outside storage of pesticide-contaminated materials and equipment. Inappropriate management of vegetation and improper application of pesticides or fertilizers can result in stormwater contamination. These pollutants must not be discharged to the drainage system or directly into receiving waters, except as permitted by Ecology.

The Washington State Department of Agriculture regulates pesticide use and application.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in landscaping and vegetation management activities:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

Landscaping:

- Do not dispose of or store collected vegetation in drainage systems, waterways, receiving waters, or public spaces. Take care to avoid contamination or site disturbance.
- Use mulch or other erosion control measures when soils or erodible materials are exposed for more than 1 week during the dry season (May 1 to September 30) or 2 days during the rainy season (October 1 to April 30).
- Comply with *Appendix I* of this manual and *S435 — BMPs for Pesticides and an Integrated Pest Management Program* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024) (referenced in BMP 49 and BMP 50) for more information.
- Implement the landscaping principles in *Volume 1, Section 7.8*, when planning, constructing, and maintaining landscaped areas.
- Comply with all landscape management plans that apply to the site (refer to *Appendix I* of this manual).

Vegetation Management:

- Fertilizer:
  - Apply all fertilizers using properly trained personnel. Document and keep all training records.
  - For commercial and industrial facilities, do not apply fertilizers to grass swales, filter strips, or buffer areas that drain to receiving waters.
  - Refer to *S443 — BMPs for Fertilizer Application* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024) for additional information (referenced in BMP 55).

Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from landscaping and lawn and vegetation management activities:

- If adjacent to a building or constructed over hazardous material storage areas, other regulations, including the Seattle Fire Code, may apply.
- Install engineered soil and landscape systems to improve the infiltration and regulation of stormwater in landscaped areas.
- Mulch and mow whenever practical.
- Dispose of grass clippings, leaves, sticks, and other collected vegetation by composting, where feasible.
- Till fertilizers into the soil where practical rather than dumping or broadcasting them 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 greater drought-tolerance.
- Use manual and/or mechanical methods of vegetation removal rather than applying herbicides, where practical.

An amended soil and landscape system can preserve both the plant system and the soil system more effectively. This type of approach can provide a soil and landscape system with adequate depth, permeability, and organic matter to sustain itself and continue working to effectively infiltrate stormwater and provide a sustainable nutrient cycle.

Vegetation Management:

- Material:
  - Use topsoil layer that is at least 8 inches thick and consists of at least 8 percent organic matter to provide a sufficient growing medium for the vegetation.
  - Select the appropriate turfgrass mixture for the applicable climate and soil type.

- Fertilizer:
  - Use slow-release fertilizer and organic materials for the best availability for turf grass.
  - Time the fertilizer application to periods of maximum plant uptake. Fertilizers should be applied in amounts appropriate for the target vegetation and at the time of year that minimizes loss to surface water and groundwater.
  - Do not fertilize during a drought or when the soil is dry.
  - Refer to the *S443 — BMPs for Fertilizer Application* in the SWMMWW (~~Ecology 2019~~Ecology 2024) for additional information (referenced in BMP 55).

3.3.5. BMP 23: Painting, Finishing, and Coating Activities

This BMP applies to businesses and public agencies that perform outdoor surface preparation and application of paints, finishes, and coatings to vehicles, boats, buildings, and equipment.

Description of Pollutants

Potential pollutants include organic compounds (including PCBs in some paints), oils and greases, metals, and suspended solids. These pollutants must not be discharged to the drainage system or directly into receiving waters.

Required BMP Elements

Activities associated with boatyard and shipyard operations may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to the painting, finishing, and coating of vehicles, boats, buildings, and equipment outside.

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

Preparation and Application:

- Train employees in the application and cleanup of paints, finishes, and coatings to reduce misuse and overspray. Document and keep all training records.
- Implement BMP 17 (cleaning and washing) during surface preparation activities to prevent PCB-containing solids (e.g., paint chips) from entering stormwater and the drainage system. When working with surfaces suspected or known to contain PCBs, follow Ecology's Guidance Document "How to Find and Address PCBs in Building Materials (Ecology, 2024), avoid working in high wind conditions and construct a wind screen around the surface preparation areas, use a HEPA vacuum below PCB suspected/confirmed walls, seams, windows, doors, downspouts or other exterior features being prepared, and educate staff about the need to control the release of PCB-contaminated dust and solids during surface preparation activities.
- Use ground cloths or drop cloths underneath outdoor painting, scraping, sandblasting work, and properly clean and temporarily store collected debris after each use.
- Use a catch basin cover, filter sock, or similarly effective runoff control device if dust, sediment or other pollutants may escape the work area. If catch basin filter socks are used onsite, maintain the filter regularly to prevent plugging. Stormwater contaminated with pollutants must not enter the drainage system.

Catch basin filter socks only remove solids and do not provide treatment for other pollutants associated with painting, finishing, and coating activities.

- Do not conduct spraying, blasting, or sanding activities over open water or where wind may blow paint into water. If windy conditions are present, use a curtain to contain the activity.

- While using a spray gun or conducting sand blasting, enclose and/or contain all work in compliance with applicable air pollution control requirements and those of the Occupational Safety and Health Administration (OSHA), the Washington Industrial Safety and Health Act, and the Puget Sound Clean Air Agency.

Cleanup:

- Wipe up spills with rags and other absorbent materials immediately. Do not hose down the area.
- On marine dock areas, sweep to collect debris. Do not hose down debris.
- 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. Whenever possible, conduct these activities inside or in an enclosed area.
- Clean paintbrushes and tools covered with water-based paints into drains connected to the sanitary sewer. Verify the discharge point before discharging.
- Collect solvents used to clean brushes and tools covered with non-water-based paints, finishes, or other materials. Safely and properly recycle or dispose of used solvents (e.g., paint thinner, turpentine, and xylol).

Material Storage and Disposal:

- Dispose of all waste properly and prevent all uncontrolled releases to the air, ground, or water.
- Store all paints, finishes, or solvents inside a building or in covered secondary containment.
- All containers must have tight-fitting lids able to retain the contents in the event of tipping.

Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from activities related to the painting, finishing, and coating of vehicles, boats, buildings, and equipment:

- Dispose of water-based paints by drying them out and then placing them in the garbage. Do not dump pollutants collected in portable containers into any drainage system or sanitary sewer drain.
- Recycle paints, paint thinner, solvents, washwater from pressure washers, 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 where feasible.
- Dispose of unused paint promptly.

3.3.6. BMP 24: Commercial Printing Operations

This BMP applies to businesses and public agencies that perform commercial printing. Materials used in the printing process include inorganic and organic acids, resins, solvents, polyester film, developers, alcohol, vinyl lacquer, dyes, acetates, and polymers.

Description of Pollutants

Waste products from commercial printing processes may include waste inks and ink sludge, resins, photographic chemicals, solvents, acid and alkaline solutions, chlorides, chromium, zinc, lead, PCBs, formaldehyde, silver, plasticizers, paper, dust, and used lubricating oils. These pollutants must not be discharged to the drainage system or directly into receiving waters.

Printing operations are conducted indoors; therefore, the likely points of potential contact with stormwater are outside storage areas and the external loading bays where chemicals are offloaded.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in commercial printing activities:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Sweep outdoor areas as necessary to prevent accumulation of dust and debris.
- Discharge process wastewater to the sanitary sewer if approved by SPU and/or King County, or to an approved process wastewater treatment system.
- Determine whether any generated wastes are dangerous wastes and accumulate and dispose of them accordingly.
- Store materials inside a building or in covered secondary containment.
    - Waste printing equipment (including ink and other cartridges) must not be stored outdoors. Pigments and dyes used in print production are a source of inadvertent polychlorinated biphenyls (iPCBs), therefore the equipment must not be exposed to rain, run-on, or potentially leak fluids to outdoor ground surfaces.

3.3.7. BMP 25: Manufacturing Activities

This BMP applies to businesses and public agencies that perform any type of outdoor processing, fabrication, mixing, milling, or refining. This also includes areas where historical contamination may currently be contaminating stormwater.

Description of Pollutants

Pollutant sources from outside manufacturing operations include outside process areas, air pollution control equipment, and areas of historical manufacturing activity. Pollutants can include suspended solids, pH, metals, oils and greases, a variety of organic compounds, and substances that increase chemical oxygen demand (COD). These pollutants must not be discharged to the drainage system or directly into receiving waters.

Required BMP Elements

Outdoor activities associated with industrial manufacturing may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in outdoor manufacturing activities:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Move all or parts of the manufacturing activity into a building or cover (Figure 1~~0~~2), contain the activity, and connect floor drains to the sanitary sewer. Obtain all necessary permits for installing, altering, or repairing side sewers. Restrictions on certain types of discharges may require pretreatment of discharges before they enter the sanitary sewer. Construct a berm or a sloped floor as needed to prevent drainage of pollutants to outside areas and to prevent run-on of uncontaminated stormwater.
- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered, contained, or moved to an indoor location. The cover must not contribute pollutants to the drainage system.
- Sweep paved areas daily or more often as needed to prevent contamination of stormwater.
- Isolate and segregate pollutants where feasible. Convey the segregated pollutants to a sanitary sewer, process treatment, or dead-end sump, depending on the available methods and applicable permit requirements.
- If operational BMPs are not sufficient to prevent stormwater contamination, structural controls must be implemented, including treatment or structural containment.

Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from manufacturing activities:

- Consider modifying the activity to eliminate or minimize the contamination of stormwater.

Figure 12~~0~~. Structure Used To Cover Manufacturing Activities.

3.4. Storage and Stockpiling

Activities related to the storage and stockpiling of liquid or solid materials are potentially associated with a high risk for spillage, leakage, erosion, or leaching of pollutants. Both required and recommended BMPs can help to prevent, minimize, and manage the effects of accidental spills and leaks. The specific BMPs that apply to various types of storage and stockpiling activities are presented below.

Remember to also implement BMP 1 through BMP 8 for all real property from *Section 2.1*.

3.4.1. BMP 26: Storage of Leachable or Erodible Materials

This BMP applies to businesses and public agencies ~~on whose premises~~where there ~~will be~~is storage of leachable and erodible materials, including, but not limited to: gravel, sand, salts, topsoil, compost, logs, sawdust, wood chips, lumber and other building materials, concrete, and non-coated galvanized metal or other leachable metal.

Description of Pollutants

If rain or stormwater run-on comes in contact with stockpiled materials, pollutants may wash away with the stormwater~~be leached or erosion of the stored materials may occur~~. Though these materials are typically destined to be used outside, storage of large quantities of these materials awaiting sale or use can contribute high levels of localized pollutant loading. Potential pollutants include suspended solids, substances that increase biological oxygen demand (BOD), organic compounds, dissolved salts (e.g., sodium chloride, calcium chloride, and magnesium chloride), metals, and oils that may be attached to metal parts. These pollutants must not be discharged to the drainage system or directly into receiving waters. Even low levels of metals such as copper and zinc can have detrimental effects on aquatic life.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in the storage of leachable or erodible materials:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Store the material inside (see Figure 13), or cover and contain the material. The cover must fully prevent wind and weather contact with the polluting material. The cover must not contribute pollutants to the drainage system.
- ~~Do not hose down the contained stockpile area to an inlet/catch basin, ditch, or to receiving waters.~~
- Sweep paved storage areas daily or more often as necessary to collect and dispose of loose solid materials.
- Raise solid material off the ground if possible to prevent stormwater contact beneath the material. Pallets or racks are a good way to keep parts clear of stormwater flow.
- For stockpiles of erodible or water-soluble material (such as soil, road deicing salt, compost, unwashed sand and gravel, and sawdust) and outside storage areas for solid materials (such as logs, bark, lumber, and non-coated galvanized metal products), implement the following:
  - Do not hose down the contained stockpile area to an inlet/catch basin, ditch, or to receiving waters.
  - Store in a covered, paved area, ~~preferably~~ surrounded by a berm~~, as shown in Figure 11~~. The cover must fully prevent wind and weather contact with the polluting material. The cover must not contribute pollutants to the drainage system. Covers must be in place at all times when the stockpile is not in active use.
  - Place temporary plastic sheeting (polyethylene, polypropylene, Hypalon, or equivalent material) over the material as illustrated in Figure 1~~4~~2. Anchor sheeting to prevent contact with rainfall.

- For new or modified areas, pave and install a 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 contaminated runoff to a treatment system.
  - Slope the paved area in a manner that minimizes the contact between stormwater (e.g., pooling) and leachable materials.

Figure 13~~1~~. Covered, Paved and Secured Storage Area for Bulk Solids.

Figure 1~~4~~2. Covered Storage Area for Erodible Material (gravel).

- For large stockpiles that cannot be covered:
  - Install containment devices such as a berm or a low wall around the perimeter of the site and at any catch basins as needed to prevent erosion of the stockpiled material, and to prevent discharge of leachate from the stockpiled material off site ~~or to an inlet/catch basin~~.
  - Ensure that contaminated stormwater is not discharged directly to the drainage system or local waterways without being conveyed through a treatment BMP. *Volume 3 — Project Stormwater Control* presents approved methods, requirements, criteria, details, and general guidance for analysis and design of on-site stormwater management, flow control, and water quality treatment pursuant to SMC, Chapter 22.800 through 22.808 (Stormwater Code).
  - Inspect and maintain catch basins on a regular basis (weekly or more often as needed). Stormwater contaminated with pollutants must not enter the drainage system or local waterways.

- Maintain drainage areas in and around storage areas for solid materials with a minimum slope of 1.5 percent to prevent pooling and minimize leachate formation. Slope storage areas to drain stormwater to a collection area at the perimeter of the storage area or to internal drainage "alleyways" between storage areas, where material is not stockpiled.
- Make cleanup materials, such as brooms, dustpans, and vacuum sweepers, accessible for use near the storage area.

Recommended BMPs

The following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from activities related to the storage or transfer of leachable and erodible materials:

- If and when feasible, collect and recycle materials and leachate to the stockpile.
- Keep the minimum amount of stockpiled materials on site. Smaller piles minimize the loss of materials due to wind and rain and will make the piles more manageable to cover.

3.4.2. BMP 27: Temporary Storage or Processing of Fruits, Vegetables, or Grains

This BMP applies to businesses and public agencies that temporarily store fruits, vegetables, and grains outdoors before processing or sale, or that crush, cut, or shred for wines, beer, frozen juices, or other food and beverage products.

Description of Pollutants

Activities involving the storage or processing of fruits, vegetables, and grains can potentially result in the delivery of pollutants to stormwater. Potential pollutants of concern from all fruit and vegetable storage and processing activities include nutrients, suspended solids, substances that increase biological oxygen demand (BOD), and color. These pollutants must not be discharged to the drainage system or directly into receiving waters.

Required BMP Elements Outdoor activities associated with food processing (examples include brewing activities, grape crushing at wineries, and fresh fruit packing) may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in the temporary storage or processing of fruits, vegetables, and grains:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Do not allow water used to clean produce to enter the drainage system.
- Sweep paved storage areas daily or more often as needed. Inspect storage areas often and maintain good housekeeping.
- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered, contained, or moved to an indoor location.
- Enclose the processing area in a building or shed, or cover the area with provisions for stormwater run-on prevention. If less than 200 square feet, alternatively, pave and slope the area to drain to the sanitary sewer, a holding tank, or a process treatment system collection drain. Prevent stormwater run-on from entering the processing area. If a holding tank is used for the storage of wastewater, pump out the contents before the tank is full and dispose of it properly.
- Keep cleanup materials, such as brooms and dustpans, near the storage area.

3.4.3. BMP 28: Portable Container Storage

The BMPs specified below apply to businesses and public agencies that keep containers (e.g., jugs, pails, drums, totes, and others) outside on their premises that may include, but are not limited to, used automotive fluids, liquid feedstock, cleaning compounds, chemicals, dangerous wastes (liquid or solid), and contaminated stormwater. For outside storage of used cooking oil containers, refer to BMP 4. Responsible parties must also comply with all requirements of state Dangerous Waste Regulations, as applicable.

Description of Pollutants

Leaks and spills during handling and storage of portable containers are the primary sources of pollutants. Potential pollutant constituents are oils and greases, low (acid) or high (alkaline) pH, surfactants, substances that increase biological oxygen demand (BOD), substances that increase chemical oxygen demand (COD), and toxic organic compounds.

Required BMP Elements

The following required BMPs apply to all portable containers:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Store materials in a leakproof container with a tight-fitting lid able to contain the material in the event of tipping.
    - For the storage of liquids, use containers such as steel and plastic drums, that are rigid and durable, corrosion resistant to the weather and fluid content, non-absorbent, water tight, and rodent-proof.
- Label/mark all containers to identify their contents. Position containers so that labels/markings are clearly visible.
- Place drip pans beneath all taps on mounted containers and at all potential drip and spill locations during the filling and draining of containers. Maintain this spill control routinely to keep it functional.
- Inspect container storage areas regularly for corrosion, structural failure, spills, leaks, and overfills. Check containers daily for leaks and spills. Replace containers and replace and tighten bungs in drums as needed.
- Secure containers in a manner that prevents accidental spillage, pilferage, or any unauthorized use (Figure 15~~3~~ and Figure 16~~4~~).

The following BMPs or equivalent measures are required for activities related to outside storage of containers of hazardous or dangerous material or wastes, and liquids except potable water:

- Store containers in a designated area. Provide covered secondary containment that is capable of holding a volume of either 10 percent of the total volume of the enclosed containers or 110 percent of the volume of the largest container, whichever is greater. Provide a portable secondary containment unit or cover and pave the storage area with an impervious surface and install a berm or dike to surround the area. Slope the area to drain into a dead-end sump for the collection of leaks and small spills.
- Store containers that do not contain free liquids in a designated sloped area with the containers elevated or otherwise protected from stormwater run-on.

- Elevate metal drums off the ground to prevent corrosion from trapped moisture.
- Ensure that the storage of hazardous, reactive, ignitable, or flammable liquids complies with the Seattle Fire Code and Washington State Fire Code.
-

Figure 153. Covered and Secured Storage Area for Containers.

Figure 164. Containers Surrounded by a Berm in an Enclosed Area.

Recommended BMP Elements

- Wherever possible, store containers on a paved surface under a roof or other appropriate cover or in a building. Storage inside must prevent all possible exposure to the outside from spills to qualify as not covered under this BMP.

~~The following BMPs or equivalent measures are required for activities related to outside storage of containers of hazardous or dangerous material or wastes and liquids except potable water:~~

- ~~Store containers in a designated area. Provide covered secondary containment that is capable of holding a volume of either 10 percent of the total volume of the enclosed containers or 110 percent of the volume of the largest container, whichever is greater. Provide a portable secondary containment unit or cover and pave the storage area with an impervious surface and install a berm or dike to surround the area. Slope the area to drain into a dead-end sump for the collection of leaks and small spills.~~
- ~~Store containers that do not contain free liquids in a designated sloped area with the containers elevated or otherwise protected from stormwater run-on.~~
- ~~Elevate metal drums to prevent corrosion and leakage.~~
- ~~Ensure that the storage of reactive, ignitable, or flammable liquids complies with the Seattle Fire Code and Washington State Fire Code.~~

3.5. Dust, Soil Erosion, and Sediment Control

Construction, manufacturing, and industrial activities have the potential to generate significant amounts of dust, soil, and sediment, which can pollute both air and stormwater. Control measures for dust, soil, and sediment are necessary to prevent pollution, but BMPs that are not properly implemented can be harmful to stormwater and the environment.

The required and recommended BMPs for these activities are presented below. First, prevent the production of dust, soil, and sediment. Then, implement BMPs to minimize their production. Finally, manage dust, soil, and sediment so that contaminated stormwater is not conveyed to the drainage system or receiving waters.

Remember to also implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

3.5.1. BMP 29: Dust Control in Disturbed Land Areas and on Unpaved Roadways and Parking Lots

This BMP applies to businesses and public agencies that pursue dust control measures in disturbed land areas or on unpaved roadways and parking lots. All land-disturbing activity must comply with the erosion and sediment controls described in the Stormwater Code (SMC, Chapters 22.800 through 22.808).

Description of Pollutants

Dust can result in air and water pollution, particularly at demolition sites, in disturbed land areas, and on unpaved roadways and parking lots. Chemicals applied to dust-prone areas to minimize dust production also have the potential to pollute stormwater and receiving waters if they are not properly selected or applied.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities that generate dust:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Protect inlets/catch basins during application of dust suppressants. Prevent liquid dust suppressants from flowing into the drainage system during application.
- Sprinkle or wet down soil or dust with water as long as it does not result in a discharge to inlets/catch basins or receiving waters.
- Only use local and/or state government approved dust suppressant chemicals, such as those listed in Publication No. 96-433, *Methods for Dust Control* (Ecology 2016a).
- Avoid excessive and repeated application of dust suppression chemicals. Time the application of dust suppressants to avoid or minimize their wash off by rainfall or human activity (such as irrigation).
- Street gutters, sidewalks, driveways, and other paved surfaces in the immediate area of the activity must be swept regularly to collect and properly dispose of dust, dirt, loose debris, and garbage.
- Install catch basin filter socks on site and in surrounding catch basins to collect sediment and debris. Maintain the filters regularly to prevent plugging.

BMPs required for construction dust control, such as dust suppression by water spray, are provided in *Volume 2 — Construction Stormwater Control*.

3.5.2. BMP 30: Dust Control at Manufacturing Sites

This BMP applies to all businesses and public agencies, but particularly industrial and manufacturing facilities that have the potential to generate dust, including gravel, crushed rock, cement, fly ash, and other airborne pollutants.

Description of Pollutants

Industrial material handling activities can generate a considerable amount of dust, which is typically removed by means of exhaust systems. The exhaust systems can generate air emissions and can contaminate stormwater. Dust can be generated by mixing cement and concrete products and handling powdered materials. Particulate materials that can cause air pollution are sawdust, coal, boiler fly ash, and dust from grain, coal, gravel, crushed rock, and cement. Air emissions can contaminate stormwater if not properly managed and controlled.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities that can generate dust:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Clean accumulated dust and residue from powdered material handling equipment and vehicles as needed.
- Maintain onsite controls so that no vehicle track-out occurs.
- Regularly sweep areas of accumulated dust that can contaminate stormwater. Sweeping should be conducted with vacuum-filter equipment to minimize dust generation and ensure optimal dust removal.
- Maintain dust collection devices on a regular basis.
- Where feasible, periodically wash surfaces, such as roofs and yards, to prevent buildup. Discharge washwater to the sanitary sewer, if authorized, or recover for proper off-site treatment or disposal.
- If operational BMPs are not sufficient to prevent stormwater contamination, structural controls must be implemented, including treatment or structural containment.

Facility operations that create or have the potential to create air pollution are regulated by the Puget Sound Clean Air Agency. For more information on necessary permits, contact the Puget Sound Clean Air Agency at (800) 552-3565.

3.5.3. BMP 31: Soil Erosion and Sediment Control at Industrial Facilities

This BMP applies to business and public agency industrial facilities that operate in areas with exposed or disturbed soils, areas with steep grades, or as deemed necessary to prevent sediment transport. For information on construction related soil erosion and sediment control, refer to *Volume 2 — Construction Stormwater Control*.

Description of Pollutants

Industrial activities in areas with exposed or disturbed soils or areas with steep grades can be sources of sediment that can contaminate stormwater runoff. Pollutants include suspended solids, oils and greases, metals, and other industrial contaminants from onsite activities.

Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies to deal with soil erosion and sediment control:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Limit the exposure of erodible soil.
- Stabilize or cover erodible soil to prevent erosion.
- Stabilize entrances/exits to prevent track-out.
- Install one or more of the following cover practices:
  - Vegetative cover, such as grass, trees, or shrubs, in erodible soil areas
  - Covering with mats, such as clear plastic, jute, or synthetic fiber
  - Preservation of natural vegetation, including grass, trees, shrubs, and vines
- If operational BMPs are not sufficient to prevent stormwater contamination, structural controls must be implemented, including treatment or structural containment, which may include paving.

Washington State Water Quality Standards have specific limits on turbidity discharges. For specific information, reference WAC, Chapter 173-201A.

3.6. Other Activities

Several activities that do not fall into the previously described categories have a high risk for generating pollutants and contaminating stormwater and receiving waters. The required and recommended BMPs for these activities are presented as follows, according to the type of activity and the potential pollutants. Regardless of the activity, an overall approach to pollutant control should first emphasize pollution prevention, then the minimization of pollution, followed by pollution management.

Remember to also implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

3.6.1. BMP 32: Commercial Animal Care and Handling

This BMP applies to businesses and public agencies that perform animal care and handling including, but not limited to, the management of animals at racetracks, kennels, day kennels, fenced pens, and veterinary offices and hospitals. It encompasses businesses or public agencies that provide services such as boarding, daycare, grooming, shelter and adoption services, and health services for horses, dogs, cats, and other animals.

Refer to Seattle & King County Public Health's (Public Health's) Pet Business Program for their requirements https://kingcounty.gov/en/dept/dph/health-safety/environmental-health/pet-business . Following Public Health's requirements are in addition to, or not in place of, Seattle's Stormwater Code and the BMPs contained in this Manual. Since January 2023, for businesses regulated by Public Health, new installation of artificial turf for outdoor pet areas is no longer allowed (see King County Board of Health Title 8, Section 8.03.210 for more information).

Description of Pollutants

Examples of animal handling activities that can generate pollutants are the cleanup of manure deposits, ~~and~~ animal washing and outdoor exercise area washing/maintenance. Potential pollutants include fecal coliform bacteria, nutrients, soap, disinfectants, substances that increase biological oxygen demand (BOD), hair, and suspended solids.

Required BMP Elements

The following source control BMPs or equivalent measures are required for all commercial animal handling activities:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Regularly sweep and clean outside animal-keeping areas to collect and properly dispose of droppings, uneaten food, and other potential stormwater contaminants. Do not discharge pollutants associated with these activities to the drainage system or receiving waters.
    - Check with Seattle & King County Public Health regarding required maintenance for this outside activity.
- ~~If inlets/catch basins are in~~Runoff from uncovered outside areas~~with hard surfaces subject to animal access~~~~areas where animals are concentrated, close these drains and~~ must not be allowed to enter the ~~redirect~~ stormwater drainage system or receiving waters ~~to~~.
    - New connections to the sanitary or combined sewers require City side sewer permits.~~an~~ Contact Seattle Department of Construction and Inspections (SDCI) for more information (sidesewerinfo@seattle.gov).~~appropriate treatment area, or cover area to prevent contact with stormwater.~~
- No more than 200 square feet of uncovered outside animal-keeping areas may discharge to the sanitary sewer. This is to prevent excess stormwater from entering the public sanitary sewer system. The portion of outside area that is greater than 200 square feet that drains to the sanitary sewer must be covered. The cover must be an impermeable roof or canopy that prevents rain and stormwater from coming in contact

with the animal-keeping area and directs uncontaminated stormwater runoff to the drainage system.

- In combined sewer areas, outside animal-keeping areas greater than 200 square feet do not require a cover.
- Do not ~~hose~~ wash or disinfect outside~~down~~ areas that contain potential stormwater contaminants if the water will infiltrate into the ground or drain to a public drainage system, a private drainage system, ~~inlets/catch basins~~ or receiving waters.
  - Although disinfection and washing of outside animal handling areas is required by Seattle & King County Public Health, it would be in violation of Seattle's Stormwater Code to allow any of the washwater to discharge to anything other than the sanitary sewer system.~~Do not allow washwater to be discharged to inlets/catch basins or receiving waters without proper treatment.~~
  - Infiltrating disinfectant washwater is never allowed.
  - Check with the Seattle Department of Construction and Inspection (SDCI) for permit requirements before changing drainage or sewer connections or installing infiltration improvements. Contact SDCI at sidesewerinfo@seattle.gov or call 206-684-5362.
- If animals are not leashed or in cages, the animal-keeping area must be surrounded by a fence or other means of preventing animals from moving out of the controlled area where BMPs are used.
- Do not stockpile manure in areas where runoff is allowed to flow into a storm drain or to nearby receiving waters or wetlands.
- ~~For outside surface areas that must be disinfected, use an unsaturated mop to spot clean the area. Do not allow wastewater runoff to enter the drainage system.~~

Recommended BMPs

- For outside surface areas that must be disinfected, use an unsaturated mop to spot clean the area, minimizing the amount of washwater that would carry pollutants to the sanitary sewer system. (The required BMP prohibiting ~~Do not allow~~ wastewater runoff ~~to~~from entering the drainage system still applies).

~~Areas where animals are kept or exercised should be located where runoff will infiltrate and not where it will flow to drainage systems or receiving waters.~~

3.6.2. BMP 33: Log Sorting and Handling

This BMP applies to businesses and public agencies with paved or unpaved areas where logs are transferred, sorted, debarked, cut, and stored to prepare them for shipment; or for the production of dimensional lumber, plywood, chips, poles, or other products. Log yards are generally maintained at sawmills, shipping ports, and pulp mills.

Log sorting and handling activities may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage. Required and recommended source control and treatment BMPs are described in detail in Publication No. 04-10-031, *Industrial Stormwater General Permit Implementation Manual for Log Yards* (Ecology 2016b).

Refer to *S413 — BMPs for Log Sorting and Handling* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024) for a description of the pollutants associated with this activity and the required BMP elements.

3.6.3. BMP 34: Boat Building, Maintenance, and Repair

This BMP applies to businesses and public agencies that perform activities related to boat and shipbuilding and their repair and maintenance at boatyards, shipyards, ports, and marinas. Activities that can generate pollutants include pressure washing, surface preparation, paint removal, sanding, painting, engine maintenance and repairs, and material handling and storage. If conducted outdoors, all of these activities are associated with a high risk for contaminating receiving water.

Description of Pollutants

Potential pollutants include spent abrasive grits, solvents, oils, ethylene glycol, washwater, paint overspray, cleaners and detergents, anticorrosion compounds, paint chips, scrap metal, welding rods, resins, glass fibers, dust, and miscellaneous trash. Pollutant constituents include suspended solids, oils and greases, organic compounds, copper, lead, tin, and zinc.

Required BMP Elements

Activities associated with boatyard and shipyard operations may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required for boat and ship building, maintenance, and repair activities:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- In addition to the BMP 5 spill control requirements, include a marine containment boom in spill kits for shipyards, boatyards, and marinas.
- Locate spill kits on all piers or docks.
- Immediately clean up any spills on dock, boat, or ship deck areas and dispose of the wastes properly.
- Immediately repair or replace leaking connections, valves, pipes, hoses, and equipment that can result in the contamination of stormwater.
- Relocate maintenance and repair activities onshore if feasible to reduce the potential for direct pollution of receiving waters.
- Perform paint and solvent mixing, fuel mixing, and similar handling of liquids onshore or in a location with proper containment so that nothing can spill directly into receiving waters.
- All liquids stored over water or on docks must have covered secondary containment.
- Store all batteries and oily parts in a covered container with a tight-fitting lid.
- Store materials such as paints, tools, and ground cloths indoors or in a covered area when not in use.
- Collect spent abrasives regularly and contain or store them under cover until they can be disposed of properly.
- Sweep and clean yard areas, docks, and boat ramps at least once each week or more often as needed. Do not hose them down. Properly dispose of the collected materials. Sweep dry docks before flooding.

- When washing, do not allow any pollutants, including soap, to enter the drainage system or receiving water.
- Use fixed platforms with appropriate plastic or tarpaulin barriers as work surfaces and for containment when work is performed on a vessel in the water to prevent material or overspray from contacting stormwater or receiving water. Use of the platform approach should be kept to a minimum. Only work that is done in compliance with NPDES requirements should be done over water.

The following BMPs or equivalent measures are required for boat and ship blasting and spray painting activities:

- Move the activity indoors or enclose, cover, and contain the activity. Prohibit outside spray painting, blasting, or sanding activities during windy conditions that render containment ineffective.
- Store materials such as paints, tools, and ground cloths indoors or in a covered area when not in use.
- Contain blasting and spray painting activities by hanging tarpaulins to block the wind and prevent dust and overspray from escaping. Do not perform uncontained spray painting, blasting, or sanding activities over open water without proper protection (e.g., overspray collection, drop clothes, booms).
- Use plywood and/or plastic sheeting to cover open areas between decks when sandblasting.
- Use ground cloths to collect drips and spills during painting and finishing operations, paint chips, and used blasting sand during sand blasting.
- Do not paint or use spray guns on or above the deck.

In the event of an accidental discharge of oil or hazardous material into receiving water or onto land if there is a potential for entry into receiving water, the responsible party must meet all notification requirements including, but not limited to, notifying the yard, port, or marina owner or manager; Ecology's Northwest Regional Office at (206425) 594649-0000700; and the National Response Center at (800) 424-8802 (24-hour). If the spill can reach or has reached marine water, call the U.S. Coast Guard at (206) 217-6232.

Recommended BMPs

Although not required, the following BMPs are encouraged to further reduce the potential for stormwater contamination:

- Select the least toxic antifouling paint available.
- Routinely clean boat interiors and properly dispose of collected materials so that accumulated water, which must be drained from the boat, does not become contaminated.

3.6.4. BMP 35: Cleaning and Maintenance of Pools, Spas, Hot Tubs, and Fountains

This BMP applies to all public and commercial swimming pools and spas, hot tubs, and fountains that use chemicals and/or are heated. Pools and spas at hotels, motels, apartments, and condominium complexes are also covered.

Owners and operators of water recreation facilities must also comply with State and local Public Health agency regulations, policies and procedures.

Description of Pollutants

Pollutants of concern include nutrients, bacteria, suspended solids, chlorine, bromine, pH, and substances that increase chemical oxygen demand (COD). Elevated temperatures found in these waters can also impact aquatic life in receiving waters.

Required BMP Elements

The following BMPs or equivalent measures are required for all pool, spa, hot tub, and fountain cleaning and maintenance activities:

- Implement BMP 1 through BMP ~~8~~8 for all real property (refer to *Section 2.1*).
- Discharge wastewater from backwashing and other maintenance activities related to cleaning to the sanitary sewer. Obtain all necessary permits for discharge to the sanitary sewer.
- For pool, spa, hot tub, and fountain draining, discharge to the sanitary sewer is the preferred method. Obtain all necessary permits for discharge to the sanitary sewer.
- —
- If discharging to the ground, the discharge must comply with Ecology's Groundwater Quality Standards (WAC, Chapter 173-200). Discharge must be moderated to allow infiltration of all water into the ground and not produce surface runoff.
- If discharge to the sanitary sewer or ground is not possible for draining a pool, spa, hot tub, or fountain, water may be discharged to a ditch or drainage system, provided that the following conditions have been met:
  - Dechlorinated/debrominated to a total residual concentration of 0.1 parts per million (ppm) or less
  - Adjusted to a pH between 6.5 and 8.5
  - Adjusted to a temperature and dissolved oxygen concentration that will prevent an increase in temperature or a decrease in dissolved oxygen concentration in the downstream receiving water
  - Released at a controlled flow rate to prevent erosion and high flow impacts in the drainage ditch or downstream receiving water
  - Free of any coloration, sodium chloride, dirt, cleaning chemicals (including, but not limited to, copper-based algaecides), algae, filter media, suds,cleaning wastes, or otherwise prohibited wastes.

Recommended BMP

- Maintain proper chlorine levels, water filtration, circulation to minimize the need to drain the structures.

Guidance on dechlorination is provided in the Department of Health's Water System Design Manual, Publication 331-123 (DOH 2020~~09~~). The Department of Health manual further references the American Water Works Association (AWWA) Standard for Disinfecting Water Mains (C651) and Standard for Disinfecting Water Storage Facilities (C652). Contact AWWA for more information. Contact a pool chemical supplier to obtain the neutralizing chemicals needed.

3.6.5. BMP 36: Deicing and Anti-icing Operations for Airports and Streets

This BMP applies to businesses and public agencies that perform deicing and anti-icing operations used on highways, streets, airport runways, airport taxiways and ramp/gate areas, and aircraft to control ice and snow.

Description of Pollutants

Typically, ethylene glycol and propylene glycol are used on aircraft as deicers. The deicers commonly used on highways and streets include calcium magnesium acetate, calcium chloride, magnesium chloride, sodium chloride, urea, and potassium acetate.

Deicing and anti-icing chemicals become pollutants when they are conveyed to inlets/catch basins or to receiving water after application. Leaks and spills of these chemicals can also occur during their handling and storage. These chemicals can reduce the oxygen availability for aquatic life.

Discharges of spent glycol in aircraft application areas are process wastewaters regulated under ~~the~~ Ecology's Industrial Stormwater General Permit ~~NPDES permit~~. (Contact Ecology at (360) 407-6000 for details.) BMPs for aircraft deicers and anti-icers must be consistent with aviation safety requirements and the operational needs of the aircraft operator.

Required BMP Elements

The following BMPs or equivalent measures are required for deicing and anti-icing activities related to **aircraft**:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Conduct aircraft deicing and anti-icing applications in impervious containment areas. Collect spent deicing liquids (e.g., ethylene and propylene glycols) and anti-icing chemicals (e.g., urea) that drain from aircraft in deicing or anti-icing application areas and convey them to a sanitary sewer, treatment facility, or other approved disposal or recovery method. These chemicals must not enter the drainage conveyance system. Divert runoff of deicing chemicals from paved gate areas to appropriate collection areas or conveyances for proper treatment or disposal.
- Do not allow spent deicing and anti-icing chemicals or contaminated stormwater to be discharged directly or indirectly from application areas, including gate areas, to a receiving water or groundwater.
- Transfer deicing and anti-icing chemicals on an impervious containment pad, or an equivalent spill/leak containment area, and store them in secondary containment areas.

The following BMPs or equivalent measures are required for deicing and anti-icing activities related to **runways and taxiways**:

- Avoid excessive application of de/anti-icing chemicals, which could contaminate stormwater.
- Store and transfer de/anti-icing materials on an impervious containment pad or an equivalent containment area.

The following BMPs or equivalent measures are required for deicing and anti-icing activities related to **streets and highways**:

- Select deicers and anti-icers that result in the least adverse environmental impact. Apply only as needed using minimum quantities.
- Where feasible and practical, use roadway deicers, such as calcium magnesium acetate, potassium acetate, or similar materials that cause less adverse environmental impact than urea and sodium chloride.
- Store and transfer deicing and anti-icing materials on an impervious containment pad.
- Sweep or clean up accumulated deicing and anti-icing materials and grit from roads as soon as possible after the road surface clears.
- Increase maintenance of stormwater structures as necessary.

Recommended BMPs

Although not required, the following BMPs are recommended to further reduce the potential for the contamination of stormwater and receiving waters:

Aircraft:

- Establish a centralized aircraft deicing and anti-icing facility, if feasible and practical, or conduct deicing and anti-icing in designated areas of the tarmac equipped with separate collection drains for the spent deicing liquids.
- Consider installing a recovery system for aircraft deicing and anti-icing chemicals, or contract with a chemical recycler, if practical.

Airport Runways and Taxiways:

- Include limits on toxic materials and phosphorus in the specifications for deicers and anti-icers, where applicable.
- Consider using anti-icing materials rather than deicers if they will result in less adverse environmental impact.
- Select cost-effective deicers and anti-icers that cause the least adverse environmental impact.

Streets and Highways:

- Intensify roadway cleaning in early spring to help remove particulates from road surfaces.
- Include limits on toxic metals in the specifications for deicers and anti-icers.

3.6.6. BMP 37: ~~Maintenance and Management of Roof and Building Drains~~ Maintenance and Management of Roofs/Building Surfaces at Industrial and Commercial Buildings

This BMP applies to businesses and public agencies where the roofs and sides of industrial or ~~or~~ commercial ~~-~~buildings can be sources of pollutants when stormwater runoff results in the leaching of roofing materials, materials from building vents, air emissions, flashing, cleaning agents, ~~and~~ applied moss killers, ~~. F~~flaking paint, ~~and~~ caulking, and other joint materials. ~~can also be sources of pollutants~~.

Description of Pollutants

Vapors and entrained liquid and solid droplets and particles have been identified as potential pollutants in roof and building runoff. The pollutants identified include metals, solvents, low (acidic) and high (alkaline) pH, substances that increase biological oxygen demand (BOD), and organic compounds. Flaking paint or caulking may be a source of metals and organic compounds. PCBs may leach out of old paint, coatings, siding, roofing and caulking materials from buildings, such as those built or renovated between 1950 and 1980, which are considered to be the years when certain building materials were most likely to have contained PCBs.

Entities that conduct specific industrial activities are required to obtain an Industrial NPDES Permit for their stormwater discharges. For more information about whether an entity needs an NPDES permit, refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000.

Required BMP Elements

The following BMPs or equivalent measures are required for all commercial and industrial buildings to prevent and reduce stormwater pollution:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- If leachates or emissions from buildings are suspected sources of stormwater pollutants, sample and analyze the stormwater draining from the building and sediment from nearby catch basins.
- Do not wash roofs and sides of commercial, industrial, institutional and multi-story residential structures constructed or renovated between 1950 and 1980 where the washwater would discharge to the MS4, unless the external materials have been determined to be without PCB-containing materials, using evaluation tools consistent with Ecology's guidance document *How to Find and Address PCBs in Building Materials* (Ecology, 2024).
    - If PCBs in external building materials are suspected or confirmed, implement BMPs to prevent building runoff from discharging to the public stormwater system, right-of-way, adjacent properties, and surface waterbodies.
- If a roof or building is identified as a source of stormwater pollutants, implement appropriate operational source control measures, such as air pollution control equipment, selection of alternative materials, operational changes, material recycling, process changes, remediation, removal/abatement or treatment.

- Sweep areas routinely to remove pollutant residues.
- If operational methods do not prevent or reduce zinc pollution from galvanized roofing or siding, paint/coat the galvanized surfaces as described in Publication 08-10-025, *Suggested Practices to Reduce Zinc Concentrations in Industrial Stormwater Discharges* (Ecology 2008) or treat the stormwater runoff.
- If operational BMPs are not sufficient to prevent stormwater contamination, structural controls must be implemented, including treatment or containment. If roofs are confirmed or suspected to contain PCBs, structural controls must address runoff directed through roof drains in a manner that prevents discharges entering a storm drain or leaving the site.

3.6.7. BMP 38: Maintenance and Operation of Railroad Yards

This BMP applies to businesses and public agencies that perform activities at railroad yards not otherwise covered in this manual, including cleaning, maintenance, and repair of equipment and engines; fueling; waste disposal (including human waste); and all other yard maintenance activities (including vegetation management).

Description of Pollutants

Pollutant sources can include: litter; cleaning areas for locomotives, rail cars, and equipment; fueling areas; rail cargo; human waste disposal; outside material storage areas; erosion and loss of soil particles from the railroad bed; maintenance and repair activities at railroad terminals, switching yards, and maintenance yards; and herbicides used for vegetation management. Potential pollutants include oils and greases, suspended solids, substances that increase biological oxygen demand (BOD), fecal coliform, organic compounds, pesticides, and metals.

Required BMP Elements

The following BMPs or equivalent measures are required for railroad yards:

- Implement BMP 1 through BMP ~~8~~ 8 for all real property (refer to *Section 2.1*).
- Implement the applicable BMPs in this volume specific to the activity that is occurring.
- Do not allow discharge from toilets to outside areas. Pump-out facilities should be used to service these units.
- Use drip pans at hose and pipe connections during liquid transfer and other leak-prone areas.
- During maintenance, do not discard debris or waste liquids along the tracks or in railroad yards.
- In areas subject to leaks or spills of oils or other chemicals, convey the contaminated stormwater to an appropriate treatment system such as the sanitary sewer, if approved by SPU and/or King County, or to an American Petroleum Institute (API) oil/water separator, coalescing plate oil/water separator for floating oils, or an appropriate treatment BMP (refer to *Volume 3 — Project Stormwater Control*).
- Place drip pans, absorbent pads/mats, or other containment measures below leaking vehicles (including inoperable vehicles and equipment) in a manner that catches leaks or spills. Drip pans or other containment measures must be managed to prevent overfilling or pass-through, and the contents must be disposed of properly. Absorbent pads or mats must be weighted down or secured so as not to be blown away by the wind, and changed out prior to becoming fully saturated.
- During routine maintenance, discharge locomotive cooling systems only after the locomotive has stopped and at a location where the coolant can be collected, managed, and then disposed of properly.
- Handle wastes generated from large-scale equipment cleaning, such as locomotive, track equipment, or axle-cleaning operations, properly to avoid harming the environment and to comply with state and federal environmental regulations.
- Store any metal scrap generated from metal punching or other mechanical operations where it will not come in contact with stormwater.

- Place track mats under each rail/flange lubricator that is in service where track mats can be safely installed and maintained without danger to rolling stock or personnel.
- Install track mats at designated engine tie-up and/or outdoor locomotive parking locations (e.g., service tracks) in SWPPP-permitted areas when locomotives are unattended and idle for extended periods of time.
- Inspect and replace track mats, as necessary. Routinely inspect all track mats for tears or saturation and replace as necessary.
- Install spill containment pans/trays or track mats at designated locomotive and railcar maintenance facilities and fixed fueling areas to reduce environmental impacts due to potential spills under locomotives and other track equipment. Direct spill containment pans/trays to an oil/water separator where feasible for treatment or collect spilled chemicals for proper disposal.
- During locomotive fueling operations use drip pans or secondary containment to capture any fuel or oil seepage.
- Select cost-effective rail/flange lubricant that provides safe and effective rail operation while considering adverse environmental impacts. Consider both the chemical composition of the lubricant and the likelihood of off-rail transfer during rain events.
- Do not conduct heavy/major locomotive engine repairs on the rail line. Conduct heavy/major engine repairs at an established railroad maintenance facility.
- Store creosote-treated railroad ties in locations that reduce the potential to impact stormwater runoff.

3.6.8. BMP 39: Maintenance of Public and Private Utility Corridors and Facilities

This BMP applies to businesses and public agencies that maintain utility corridors and associated equipment at petroleum product pipelines, natural gas pipelines, water pipelines, pump stations, electrical power transmission corridors, and rights-of-way.

Description of Pollutants

Corridors and facilities can be sources of pollutants, such as herbicides used for vegetation management and eroded soil particles generated from unpaved access roads. At pump stations, waste materials generated during maintenance activities are often temporarily stored outside, and thus can be a source of pollution into inlets/catch basins and receiving waters.

Additional potential pollutant sources include the leaching of preservatives from wood utility poles, polychlorinated biphenyls (PCBs) in older transformers, water that is removed from underground transformer vaults, and leaks or spills from petroleum pipelines. Potential pollutants are oils and greases, suspended solids, substances that increase biological oxygen demand (BOD), organic compounds, ~~polychlorinated biphenyls~~PCBs, pesticides, and metals.

Required BMP Elements

The following BMPs or equivalent measures are required for activities related to the maintenance of public and utility corridors and facilities:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Implement BMP 22 (Landscaping and Vegetation Management) in this Manual, and integrated pest management (IPM) following~~. Implement~~ BMP *S435 — BMPs for Pesticides and an Integrated Pest Management Program* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024) (referenced in BMP 49). *Appendix I* of this manual contains information on developing an integrated pest management plan.
- When water or sediments are removed from electric transformer vaults, determine whether contaminants are present before disposing of the water and sediments.
    - This includes inspecting for the presence of oil or oil sheen and determining from records or testing whether the transformers contain or contained polychlorinated biphenyls (PCBs).
    - If work is occurring in a vault that has an oil leak and/or a known PCB-containing transformer, or if non-stormwater is encountered (e.g., there is evidence of foam, debris, odors etc.) containerize the water/materials removed and dispose of it appropriately in accordance with Federal and State regulations; do not discharge the materials into the drainage system or a receiving water body.
    - If records or tests indicate that the sediment or water could contain PCBs, manage the sediment or water in accordance with applicable federal and state regulations, including the federal rules for polychlorinated biphenyls (Code of Federal Regulations, Title 40, Part 761) and the state Model Toxics Control Act cleanup regulations (WAC, Chapter 173-340).
    - Water removed from the vaults can be discharged in accordance with the Code of Federal Regulations, Title 40, Section 761.79, and state regulations (Washington

Administrative Code, Chapters 173-201A and 173-200), or via the sanitary sewer if the requirements, including applicable permits, for such a discharge are met.

- Provide maintenance practices to prevent stormwater from accumulating and draining across and/or onto roadways. Stormwater should be conveyed through roadside ditches and culverts. The road should be crowned, outsloped, water barred, or otherwise left in a condition that is not conducive to erosion.
- Maintain ditches and culverts at an appropriate frequency to prevent plugging and flooding across the roadbed, with resulting overflow erosion.
- Apply the appropriate BMPs in this volume for the storage of waste materials that can contaminate stormwater.
- Stabilize access roads or areas of bare ground with gravel, crushed rock, or another method to prevent erosion. Use and manage vegetation to minimize bare ground/soils that may be susceptible to erosion. ~~Within utility corridors, prepare maintenance procedures to minimize the erosion of soil. An implementation schedule may provide for a vegetative, gravel, or equivalent cover that minimizes thinly vegetated ground surfaces within the corridor.~~

Recommended BMPs

Although not required, the following BMPs can further prevent and minimize stormwater contamination:

- Maintain vegetation in roadside ditches that discharge to receiving waters to remove some pollutants associated with sediments carried by stormwater.
- When selecting utility poles for a specific location, consideration should be given to the potential environmental effects of the pole or poles during their storage, handling, and end use.
- If a wood product treated with chemical preservatives is used, it should be made in accordance with generally accepted industry standards such as the American Wood Preservers Association Standards.
- If the pole or poles will be placed in or near a drinking water well or a critical area, consider alternative materials or technologies. These include poles made of material(s) other than wood, such as fiberglass composites, metal, or concrete.
- Consider the use of other technologies and materials, such as sleeves or caissons for wood poles, when they are determined to be practical and available.
- As soon as practical, remove all litter from wire cutting and replacement operations.

3.6.9. BMP 40: Maintenance of Roadside Ditches

This BMP applies to businesses and public agencies that perform activities related to the maintenance of roadside ditches, which can present a high risk of polluting stormwater because the ditches in which work is performed flow into the drainage system. Roadside ditches also play an important role in conveying runoff and preventing localized flooding.

Ditches owned or operated by a state, city, town, county or other public body that is designed or used for conveying stormwater are included in the definition of a Municipal Separate Storm Sewer System (MS4) (see MS4 definition in Ecology's 2024 Phase I MS4 Permit).

Description of Pollutants

Common road debris including particles from tire wear, dripped oil and other fluids; chemicals used in deicing; pesticides; herbicides; eroded or contaminated soil; and metals can be sources of stormwater pollutants.

Required BMP Elements

The following BMPs or equivalent measures are required for activities related to the maintenance of roadside ditches:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Implement BMPs for Landscaping and Vegetation Management (BMP 22) and integrated pest management (IPM) following ~~. Implement~~ *S435 — BMPs for Pesticides and an Integrated Pest Management Program* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024) (referenced in BMP 49).
- Inspect roadside ditches regularly~~, as needed~~ to identify sediment accumulations and areas of localized erosion.
- Clean ditches on a regular basis, as needed:
  - Keep ditches free of rubbish and debris.
  - Conduct ditch maintenance (seeding, fertilizer application, and harvesting) when most effective, usually in late spring and/or early fall and avoid conducting maintenance during heavy rainfall. This allows re-establishment of vegetative cover by the next wet season, thereby minimizing erosion of the ditch.
  - Do not apply fertilizer unless needed to maintain vegetative growth.
  - Do not leave material from the ditch cleaning on roadway surfaces.
  - Sweep and remove dirt and debris that remains on the pavement at the completion of ditch cleaning operations.
  - Segregate clean/uncontaminated roadside ditch cleaning materials from suspect or contaminated materials. Non-contaminated soils may be handled as "clean soils" and non-contaminated vegetative matter can be composted or disposed of in a municipal waste landfill, if permitted. Suspected contaminated or contaminated material removed from ditches must be tested and handled according to the Dangerous Waste Regulations (WAC, Chapter 173-303) unless testing indicates that it is not dangerous waste.
- Vegetation in ditches often prevents erosion and cleanses runoff:
  - Remove vegetation only when flow is blocked or excess sediments have accumulated.
  - Use grass vegetation, unless specified otherwise by SPU.

  - Establish vegetation from the edge of the pavement if possible or at least from the top of the slope of the ditch.
  - Use temporary erosion and sediment control measures or re-vegetate as necessary to prevent erosion during ditch reshaping.
- Diversion ditches on top of cut slopes that are constructed to prevent slope erosion by intercepting surface drainage must be maintained to retain their diversion shape and capability.
- Inspect culverts on a regular basis for scour or sedimentation at the inlet and outlet, and repair as necessary. Give priority to culverts that are conveying perennial or salmon-bearing streams and to culverts near streams in areas of high sediment load, such as those near subdivisions during construction. Maintain trash racks to avoid damage, blockage or erosion of culverts.
- Waste generated from ditch maintenance, i.e., spoils and debris, may be contaminated and require specialized disposal. ~~Refer to BMP 3 for waste disposal guidelines~~Consult Dangerous Waste Regulations found in WAC 173-303.
- Note: Work in wet areas may be regulated by local, state, or federal laws that impose obligations on the responsible party.

3.6.10. BMP 41: Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing

This BMP applies to businesses and public agencies that perform activities related to potable water line flushing, water tank maintenance, and hydrant testing.

Description of Pollutants

Improper water line flushing, water tank maintenance, and hydrant testing may result in the discharge of sediments and materials to water bodies. Chemicals associated with water line flushing and water tank maintenance may be harmful to aquatic organisms and have an adverse effect on receiving water bodies.

Required BMP Elements

Required BMP elements are contained in *S441 — BMPs for Potable Water Line Flushing, Water Tank Maintenance and Hydrant Testing* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

Discharges from potable water sources to drainage systems may be conditionally allowed (see SMC, Section 22.802.030) if they are de-chlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the stormwater conveyance system. These discharges must be reported to Seattle Public Utilities at (206)386-1800 if they impact the City's MS4.

3.6.11. BMP 42: Urban Streets

This BMP applies to businesses and public agencies that perform activities on urban streets.

Description of Pollutants

Urban streets can be a source of pollutants such as soil, fine dust, vegetation, nutrients, trash, oil and grease, vehicle combustion products, ice control salts, and pollutants that wash onto roadways from other areas.

Required BMP Elements

Required BMP elements are contained in *S430 — BMPs for Urban Streets* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.12. BMP 43: Nurseries and Greenhouses

This BMP applies to businesses and public agencies that operate nurseries and greenhouses.

Description of Pollutants

Nurseries and greenhouses can be a source of nutrients (phosphorus, nitrogen, etc.), sediment, bacteria, and organic matter that can degrade water quality.

Required BMP Elements

Required BMP elements are contained in *S449 — BMPs for Nurseries and Greenhouses* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.13. BMP 44: Color Events

This BMP applies to the general public, businesses, and religious and commercial entities that participate in, host, or sponsor color events.

Description of Pollutants

The dye materials used in color events can degrade water quality and impact aquatic life. Even if the dye is labeled "biodegradable" or "nontoxic," it is not allowed to be discharged into storm drains or water bodies.

> The term "biodegradable" on a product label does not mean that the product is safe or environmentally friendly. The product may degrade faster than alternative products but can still be harmful to the environment.

Required BMP Elements

Required BMP elements are contained in *S436 — BMPs for Color Events* in Volume IV of the SWMMWW (Ecology 2024~~19~~).

3.6.14. BMP 45: Pet Waste

This BMP applies to the general public, businesses, and public agencies.

Description of Pollutants

Pet waste can carry viruses and bacteria that could cause disease and lead to beach closures or bans on shellfish harvesting.

Required BMP Elements

Required BMP elements are contained in *S440 — BMPs for Pet Waste* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.15. BMP 46: Labeling Storm Drain Inlets on Your Property

This BMP applies to businesses and public agencies.

Description of Pollutants

Storm drain inlets themselves are not a source of pollutants; however, they can be used to discharge pollutants. Labels on storm drains can educate the public about prohibitions against dumping materials in storm drains.

Required BMP Elements

Required BMP elements are contained in *S442 — BMPs for Labeling Storm Drain Inlets on Your Property* in Volume IV of the SWMMWW (Ecology 2024~~19~~).

3.6.16. BMP 47: Well, Utility, Directional, and Geotechnical Drilling

This BMP applies to businesses and public agencies that are involved with drilling activities.

Description of Pollutants

Drilling activities can allow exposed soil and contaminated soil to wash into the drainage system.

Required BMP Elements

Required BMP elements are contained in *S446 — BMPs for Well, Utility, Directional and Geotechnical Drilling* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.17. BMP 48: Goose Waste

This BMP applies to the general public, businesses, and public agencies.

Description of Pollutants

Goose waste can contribute to algae growth in water due to its high nutrient content. Goose feces may contain pathogens that can affect people who use the water bodies.

Required BMP Elements

Required BMP elements are contained in *S452 — BMPs for Goose Waste* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.18. BMP 49: Pesticides and an Integrated Pest Management Program

This BMP applies to businesses and public agencies that use pesticides.

Description of Pollutants

Inadequate management of pesticides can allow them to enter stormwater and receiving water bodies, resulting in impacts on non-targeted organisms.

Required BMP Elements

Required BMP elements are contained in *Appendix I* of this manual and *S435 — BMPs for Pesticides and an Integrated Pest Management Program* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.19. BMP 50: Storage of Dry Pesticides and Fertilizers

This BMP applies to businesses and public agencies that store dry pesticides and fertilizers.

Description of Pollutants

Inappropriate management of pesticides and fertilizers results in contamination of stormwater and receiving water bodies, which can degrade water quality and adversely affect fish and other aquatic life.

Required BMP Elements

Required BMP elements are contained in *S435 — BMPs for Pesticides and an Integrated Pest Management Program* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.20. BMP 51: Irrigation

This BMP applies to businesses and public agencies that have irrigation systems.

Description of Pollutants

Improper irrigation can encourage pest problems, leach nutrients, and make a lawn completely dependent on artificial watering.

Required BMP Elements

Required BMP elements are contained in *S450 — BMPs for Irrigation* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.21. BMP 52: Dock Washing

This BMP applies to the general public, businesses, and public agencies that are involved in dock washing.

Description of Pollutants

Washing docks can result in the discharge of dirt and other pollutants that may be toxic to aquatic life.

Required BMP Elements

Required BMP elements are contained in *S434 — BMPs for Dock Washing* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.22. BMP 53: Roof Vents

This BMP applies to businesses and public agencies that have roof vents.

Description of Pollutants

This BMP applies to processes that vent emissions to the roof, result in the accumulation of pollutants on roofs, or both. Pollutants from these processes may build up on roofs and may pollute stormwater runoff. Also see BMP 37.

Required BMP Elements

Required BMP elements are contained in *S447 — BMPs for Roof Vents* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.23. BMP 54: Streets and Highways

This BMP applies to businesses and public agencies that maintain and apply deicers/anti-icers to streets and highways.

Streets include sidewalks, roadways, woonerfs, and other parts of the right-of-way, but do not include parking lots (see SMC 23.84A.036).

Description of Pollutants

This BMP applies to maintenance and deicing/anti-icing of streets and highways. Chemicals used for deicing/anti-icing may be harmful to aquatic organisms.

Required BMP Elements

Required BMP elements are contained in *S406 — BMPs for Streets and Highways* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.24. BMP 55: Fertilizer Application

This BMP applies to businesses and public agencies that use fertilizers.

Description of Pollutants

Improper application of fertilizer can be a source of nutrients (phosphorus, nitrogen, etc.) that can degrade water quality.

Required BMP Elements

Required BMP elements are contained in *S443 — BMPs for Fertilizer Application* in Volume IV of the SWMMWW (~~Ecology 2019~~Ecology 2024).

3.6.25. BMP 56: Light Rail Washing

This BMP applies to washing light rail elevated guideways and light rail vehicles.

Description of Pollutants

Potential pollutant sources are from the light rail electrical and mechanical components which may include metals, dust and hydrocarbons. Improper washing of light rail guideways and vehicles will result in contributions of pollutants to the area surrounding the elevated guideways.

Required BMP Elements

Required BMP elements are contained in ***S453 — BMPs for Washing Light Rail Elevated Guideways*** and ***S454* — BMPs for Washing Light Rail Vehicles** (Ecology 2024)

CHAPTER 4 – References

DOH. 202009. *Water System Design Manual*. Publication 331-123. Washington Department of Health, Olympia, Washington. https://doh.wa.gov/sites/default/files/2022-02/331-123.pdf Originally published December 2009, last revised June 2020.

Ecology. 2016a. *Methods for Dust Control*. Publication No. 96-433. Washington State Department of Ecology, Olympia, Washington. https://fortress.wa.gov/ecy/publications/summarypages/96433.html. Revised in July 2016.

Ecology. 2016b. *Industrial Stormwater General Permit Implementation Manual for Log Yards*. Publication No. 04-10-031. Washington State Department of Ecology, Olympia, Washington. https://fortress.wa.gov/ecy/publications/summarypages/0410031.html. Revised in December 2016.

Ecology. 2008. *Suggested Practices to Reduce Zinc Concentrations in Industrial Stormwater Discharges*. Publication No. 08-10-025. Washington State Department of Ecology, Olympia, Washington. https://fortress.wa.gov/ecy/publications/summarypages/0810025.html.

Ecology. 2011. *Vehicle and Metal Recyclers: A Guide for Implementing the Industrial Stormwater General National Pollutant Discharge Elimination System Permit Requirements*. Publication No. 94-146. Washington State Department of Ecology, Olympia, Washington. https://fortress.wa.gov/ecy/publications/summarypages/94146.html. Revised in March 2011.

Ecology. 2012. *Vehicle and Equipment Washwater Discharges: Best Management Practices Manual*. Publication No. WQ-R-95-56. Washington State Department of Ecology, Olympia, Washington. https://fortress.wa.gov/ecy/publications/SummaryPages/95056.html. Revised in November 2012.

Ecology. 2015a. Western Washington NPDES Phase I Stormwater Permit: Final S8.D Data Characterization, 2009-2013, Ecology Publication Number 15-03- 001, February 2015. https://apps.ecology.wa.gov/publications/documents/1503001.pdf

Ecology. 2015b. PCB Chemical Action Plan. Publication 15-07-002. Washington State Department of Ecology, Olympia, Washington. February 2015. https://apps.ecology.wa.gov/publications/SummaryPages/1507002.html

Ecology. 2024. How to Find and Address PCBs in Building Materials. Publication No. 22-04-024. Washington State Department of Ecology, Olympia, Washington. Originally published October 2022, March updated 2024. https://apps.ecology.wa.gov/publications/SummaryPages/2204024.html .

Ecology. 2024. Phase I Municipal Stormwater Permit. Issued 7/1/2024, effective 8/1/2024, expires 7/31/2029. https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4_2024_Phase%20I_FinalPermit.pdf

Ecology. ~~2019~~2024. *Stormwater Management Manual for Western Washington*. 5 vols. Publication No. 24~~19~~-10-0132~~1~~. Washington State Department of Ecology, Olympia, Washington. July 2024~~19~~. https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals.

Klöckner et al. 2021. Comprehensive Characterization of Tire and Road Wear Particles in Highway Tunnel Road Dust by Use of Size and Density Fractionation, Chemosphere, 2021.

McIntyre et al. 2015. Soil Bioretention Protects Juvenile Salmon and Their Prey from the Toxic Impacts of Urban Stormwater Runoff, Chemisphere, Volume 132, pages 213-219, August 2015.

Navickis-Brasch et al. 2022. Stormwater Treatment of Tire Contaminants Best Management Practices Effectiveness, Final Report, June 2022.

Seattle City Light. 2024. Construction Standards – Oil Containment Systems (Standard Nu,ber 0735.50). Last updated 10/17/2024. https://web8.seattle.gov/city-light-engineering-standards/Home/GetPDF?libId=ConstructionStandards&searchForfileName=0735.50F2024.10.17.pdf

Spromberg et al. 2016. Coho Salmon Spawner Mortality in Western US Urban Watersheds: Bioinfiltration Prevents Lethal Storm Water Impacts, Journal of Applied Ecology, Volume 53, Issue 2, April 2016.

Zhao et al. 2023. Transformation Products of Tire Rubber Antioxidant 6PPD in Heterogeneous Gas-Phase Ozonation: Identification and Environmental Occurrence, Environmental Science & Technology, March 2023.

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