

**SDOT BEST MANAGEMENT PRACTICES
(BMP) REFERENCE MANUAL**

**Street Maintenance Surface Repair
Minor Road Maintenance**

December 2008

SDOT BEST MANAGEMENT PRACTICES (BMP) REFERENCE MANUAL

Street Maintenance Surface Repair Minor Road Maintenance

Prepared for

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Contents

Street Maintenance Operations

4. Minor Road Maintenance

RCAT 205 - Temporary Patching of Streets

RCAT 216 - Prepare Oiled Streets

RCATs 217, 221, 222, 250 - Grade Dirt Sheets and Alleys, Reshaping Gravel Shoulder, Gravel Patching, and Other Street Maintenance

RCAT 236 - Dust Palliative Application

RCAT 238 - Remove/Replace Asphalt Pavement with Hot Box

RCAT 801 & 804 - Haul Aggregate and Rubble

This best management practice (BMP) reference manual was written to assist you, an SDOT field crew member, in preventing pollution from impacting stormwater. Your actions in the field contribute significantly to preventing stormwater pollution and keeping our streams, lakes, and Puget Sound clean. These manuals also help SDOT comply with the City of Seattle's Stormwater Permit.

We would like to receive your feedback on the information this manual contains. Direct feedback; questions regarding any of the BMPs listed; and information about missing work tasks, pollution sources, or missing BMPs should be directed to Maureen Meehan (SDOT's NPDES Stormwater Advisor) at (206) 684-8750.

To report a spill or any illegal dumping issues you observe while in the field, please call the SPU Water Quality Hotline at (206) 684-7587.

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 4. Minor Road Maintenance	205	Temporary Patching of Streets

Description of Work

Temporary plant mix or Class B asphalt patching of all paved or oiled streets, asphalt shoulders, and curbs with bituminous patch material.

Objectives

Prevent sediment and pollutants of concern including petroleum hydrocarbons, toxic organic compounds, oils and greases, metals, suspended solids, and water with high pH from entering storm drain systems and sensitive areas or water bodies.

Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Storm Drain Covers and Catch Basin Filter Socks:** Install drain covers (see Figure 1) over any catch basin or storm drain inlets that are connected to the storm drain system and are located downslope or adjacent to the work area. Install catch basin filter socks in any structures that are **greater than 12 inches deep** (see Figure 2).
 - Place the appropriate size filter sock in the storm drain or catch basin.
 - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
 - Trim and remove filter sock material that extends beyond the grate.



Figure 1. Storm drain cover.



Figure 2. Catch basin filter sock.

BMP Maintenance During Site Work

1. Asphalt Paving:

- Vacuum slurry and cuttings during the activity to prevent migration offsite and do not allow the slurry and cuttings to remain on permanent concrete or asphalt paving overnight.
- Collect, treat, and properly dispose of runoff that comes in contact with diesel or coatings used in asphalt applications.
- Continually monitor operations to determine whether cuttings or wastewater could enter the stormwater system. If observations indicate that a violation of water quality standards could occur, stop operations and immediately implement preventative measures such as berms, barriers, secondary containment, and vector trucks.
- Dispose of collected slurry and cuttings in a manner that does not violate groundwater or surface water quality standards.

2. **Catch Basin Filter Socks:** Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

3. **Equipment Maintenance:** Wash off hand tools only into formed areas awaiting installation of asphalt concrete or use a temporary sump to collect and contain wash water.

4. Optional BMPs:

- Avoid the activity when rain is falling or expected, where feasible.
- Cover portable asphalt mixing equipment with an awning, a lean-to, or other simple structure to avoid contact with rain, if possible.
- Use a sandbag barrier or containment berm to direct stormwater run-on around the construction site (see Figure 3).

Site Cleanup

1. **Storm Drain Covers:** Remove drain covers from catch basin or storm drain inlets.

2. **Catch Basin Filter Socks:** Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).



Figure 3. Containment berm example.

3. Waste Disposal:

- Sweep or shovel loose aggregate chunks and dust and collect the material for recycling or proper disposal at the end of each workday (see Figure 4).
- Remove waste materials from the site and dispose of them properly.



Figure 4. Manual sweeping.

References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)	Highway Runoff Manual (WSDOT 2008)
2.37 - Concrete Containment (2) 2.79 - Inlet Protection	C1.20 – Use of Chemicals During Construction C1.35 - Sawcutting and Paving Pollution Prevention C1.45 – Solid Waste Handling and Disposal E3.25 - Storm Drain Inlet Protection	BMP16 - Concrete Pouring, Concrete/ Asphalt Cutting, and Asphalt Application	C151 - Concrete Handling C152 - Sawcutting and Surfacing Pollution Prevention	6A-2.33 - Concrete Handling

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 4. Minor Road Maintenance	216	Prepare Oiled Streets

Description of Work

Preparation of streets to be oiled by reshaping and loosening surface prior to the oil application including the re-loosening (tight blading) of streets which were previously torn up but not immediately oiled.

Objectives

Prevent sediment from entering storm drain systems and sensitive areas or water bodies.

Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Storm Drain Covers and Catch Basin Filter Socks:** Install drain covers (see Figure 1) over any catch basin or storm drain inlets that are connected to the storm drain system and are located downslope or adjacent to the work area. Install catch basin filter socks in any structures that are **greater than 12 inches deep** (see Figure 2).
 - Place the appropriate size filter sock in the storm drain or catch basin.
 - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
 - Trim and remove filter sock material that extends beyond the grate.



Figure 1. Storm drain cover.



Figure 2. Catch basin filter sock.

BMP Maintenance During Site Work

1. **Oil Application:** Continually monitor operations to determine whether aggregate or debris could enter the stormwater system. If observations indicate that a violation of water quality standards could occur, stop operations and immediately implement preventative measures such as berms, barriers, secondary containment, and vector trucks.
2. *Optional BMPs:*
 - Avoid the activity when rain is falling or expected, where feasible.
 - Use a sandbag barrier or containment berm to direct stormwater run-on around the construction site (see Figure 3).



Figure 3. Containment berm example.

Site Cleanup

1. **Catch Basin Filter Socks:** Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
2. **Storm Drain Covers:** Remove drain covers from any catch basin or storm drain inlets.
3. **Waste Disposal:** Sweep or shovel loose aggregate chunks and dust and collect the material for recycling or proper disposal at the end of each workday (see Figure 4).



Figure 4. Manual sweeping.

References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)	Highway Runoff Manual (WSDOT 2008)
2.79 - Inlet Protection 2.152 - Sweeping	C1.20 – Use of Chemicals During Construction C1.35 - Sawcutting and Paving Pollution Prevention C1.45 – Solid Waste Handling and Disposal E3.25 - Storm Drain Inlet Protection	BMP16 - Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application	C151 - Concrete Handling C152 - Sawcutting and Surfacing Pollution Prevention	6A-2.33 - Concrete Handling

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations	217	Grade Dirt Streets & Alleys
4. Minor Road Maintenance	221	Reshaping Gravel Shoulders
	222	Gravel Patching
	250	Other Street Maintenance

Description of Work

- RCAT 217 Grading dirt streets and alleys including ripping surface to remove chuck holes, scribing gutter line down both sides of street, and adding ledge rock/asphalt grindings as necessary to reestablish crown.
- RCAT 221 Reshaping gravel shoulders with grader to smooth out chuck holes and edge ruts and bring material up to edge, developing drainage pathways, and eliminating hazards to traffic.
- RCAT 222 Addition of material to shoulders, pathways, and gravel streets to replace lost material including building up shoulders after resurfacing or other asphaltic improvements to the streets to provide lateral support for street.
- RCAT 250 All maintenance, repair, or construction performed that is not covered by a specific RCAT including repairing road base by recompacting disturbed material and/or over digging and replacing with ledge rock, surface leveling, and removal of signal traffic pads.

Objectives

Prevent sediment from entering drainage systems, sensitive areas, and water bodies

Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Storm Drain Covers and Catch Basin Filter Socks:** Install drain covers (see Figure 1) over any catch basin or storm drain inlets that are connected to the storm drain system and are located downslope or adjacent to the work area. Install catch basin filter socks in any structures that are **greater than 12 inches deep** (see Figure 2).
 - Place the appropriate size filter sock in the storm drain or catch basin.
 - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
 - Trim and remove filter sock material that extends beyond the grate.



Figure 1. Storm drain cover.



Figure 2. Catch basin filter sock.

3. **Straw Wattles:** Install straw wattles (see Figure 3) if warranted by the size of the project, if the project will last multiple days, or if the project is located adjacent to a sensitive area.



Figure 3. Straw wattle used for erosion control.

4. **Other Related BMPs:** Filter fences, coir logs, or other BMPs may be appropriate depending on the size and location of the project.

BMP Maintenance During Site Work

1. **Catch Basin Filter Socks:** Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).
2. **Grading and Patching:** Continually monitor operations to determine whether aggregate or debris could enter the stormwater system. If observations indicate that a violation of water quality standards could occur, stop operations and immediately implement preventative measures such as berms, barriers, secondary containment, and vector trucks.
3. **Straw Wattles:** Remove sediment around straw wattles when deposits reach one-half the height of the wattle.

4. **Sweeping:** Frequently sweep paved surfaces directly adjacent to the work area to remove accumulated debris and other material that could otherwise be washed off by stormwater. Do not sweep this debris into storm drains.
5. *Optional BMPs:*
 - Avoid the activity when rain is falling or expected, where feasible.
 - Use a sandbag barrier or containment berm to direct stormwater run-on around the construction site (see Figure 4).



Figure 4. Containment berm example.

Site Cleanup

1. **Storm Drain Covers:** Remove drain covers from catch basin or storm drain inlets.
2. **Catch Basin Filter Socks:** Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
3. **Straw Wattles:**
 - Evaluate site to determine if straw wattles are no longer needed (the area has stabilized; potential of sediment laden water exiting the area has passed).
 - Remove sediment buildup in front of straw wattles before removing them.
4. **Waste Disposal:**
 - Sweep or shovel loose aggregate chunks and dust and collect the material for recycling or proper disposal at the end of each workday (see Figure 5).
 - Remove waste materials from the site and dispose of them properly.



Figure 5. Manual sweeping.

References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)
2.31 - Coir Log 2.79 - Inlet Protection 2.152 - Sweeping	E3.25 - Storm Drain Inlet Protection E3.35 - Straw Wattles E3.70 - Street Sweeping and Vacuuming	BMP32 - Dust Control at Manufacturing Sites	C220 - Inlet Protection

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 4. Minor Road Maintenance	236	Dust Palliative Application

Description of Work

Apply a dust palliative to previously prepared dirt streets for the purpose of limiting the emission of dust into the air and eliminating the need for constant restoration with grader.

Objectives

Prevent sediment and oil from palliative application from entering drainage systems, sensitive areas, and water bodies.

Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Storm Drain Covers and Catch Basin Filter Socks:** Install drain covers (see Figure 1) over any catch basin or storm drain inlets that are located downslope or adjacent to the work area. Install catch basin filter socks in any structures that are **greater than 12 inches deep** (see Figure 2).
 - Place the appropriate size filter sock in the storm drain inlet or catch basin.
 - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
 - Trim and remove filter sock material that extends beyond the grate.



Figure 1. Storm drain cover.

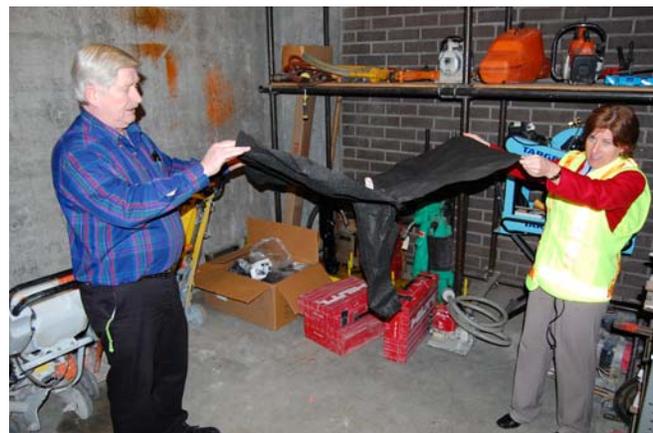


Figure 2. Catch basin filter sock.

3. **Loading and Unloading:** Check loading and unloading equipment such as valves, hoses, pumps, flanges, and connections regularly for leaks when loading

tanker truck with water and CMS-2 and repair as needed. Document and keep all inspection records.

4. Dust Palliative Application:

- Do not apply oil on a wet surface or when the temperature is below 60°F.
- Use only the recommended amounts of chemical materials and apply them in a proper manner to reduce the potential for polluting stormwater and surface waters.

BMP Maintenance During Site Work

1. **Catch Basin Filter Socks:** Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).
2. *Optional BMPs:* Avoid the activity when rain is falling or expected, where feasible.

Site Cleanup

1. **Catch Basin Filter Socks:** Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
2. **Storm Drain Covers:** Remove drain covers from catch basin or storm drain inlets.

References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)	Highway Runoff Manual (WSDOT 2008)
2.61 - Dust Control 2.152 - Sweeping	E2.45 – Dust Control E3.25 - Storm Drain Inlet Protection C1.20 – Use of Chemicals During Construction	BMP 11 - Loading and Unloading of Liquid or Solid Material BMP 32 - Dust Control at Manufacturing Sites	C140 – Dust Control	6A-2.15 – Dust Control

SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations 4. Minor Road Maintenance	238	Remove/Replace Asphalt Pavement with Hot Box

Description of Work

Pothole repairs, temporary repair for concrete spalls, shim concrete sidewalks, or any asphaltic repairs with Hot Box.

Objectives

Prevent sediment and pollutants of concern including petroleum hydrocarbons, toxic organic compounds, oils and greases, metals, suspended solids, and water with high pH from entering drainage systems, sensitive areas, and water bodies.

Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Storm Drain Covers and Catch Basin Filter Socks:** Install drain covers (see Figure 1) over any catch basin or storm drain inlets that are connected to the storm drain system and are located downslope or adjacent to the work area. Install catch basin filter socks in any structures that are **greater than 12 inches deep** (see Figure 2).
 - Place the appropriate size filter sock in the storm drain or catch basin.
 - Place the storm drain or catch basin grate on top of the filter sock to hold it in place.
 - Trim and remove filter sock material that extends beyond the grate.



Figure 1. Storm drain cover.



Figure 2. Catch basin filter sock.

BMP Maintenance During Site Work

1. **Catch Basin Filter Socks:** Clean or remove and replace filter sock when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).
2. **Hot Box Application:**
 - Vacuum slurry and cuttings during the activity to prevent migration off site and do not leave slurry or cuttings permanent concrete or asphalt paving overnight (see Figure 3).
 - Collect, treat and properly dispose of runoff that comes in contact with diesel or coatings used in asphalt applications.
 - Continually monitor operations to determine whether cuttings or wastewater could enter the stormwater system. If observations indicate that a violation of water quality standards could occur, stop operations and immediately implement preventative measures such as berms, barriers, secondary containment, and vector trucks.
 - Wash off hand tools only into formed areas awaiting installation of asphalt concrete or use a temporary sump to collect and contain wash water.

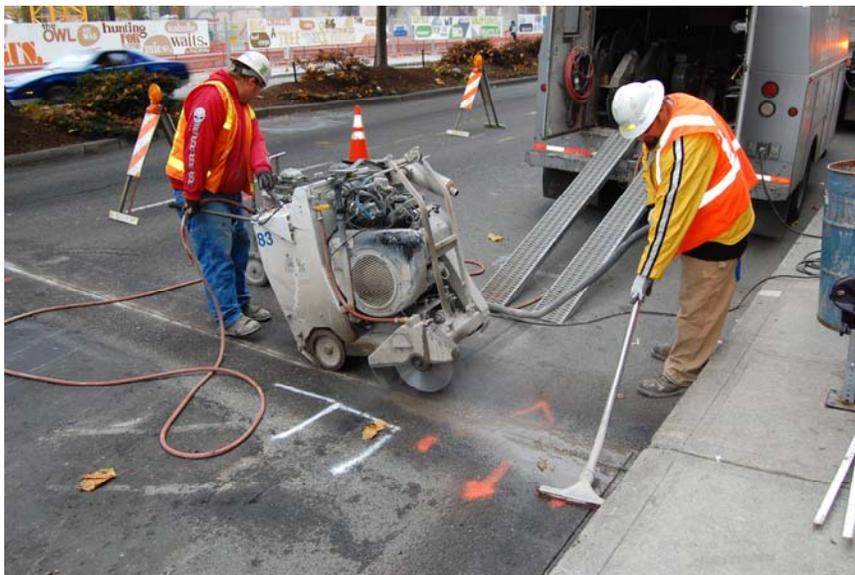


Figure 3. Sawcutting and vacuuming.

3. *Optional BMPs:*

- Avoid the activity when rain is falling or expected, where feasible.

- Cover portable asphalt mixing equipment with an awning, a lean-to, or other simple structure to avoid contact with rain, if possible.
- Use a sandbag barrier or containment berm to direct stormwater run-on around the construction site (see Figure 4).



Figure 4. Containment berm example.

Site Cleanup

1. **Storm Drain Covers:** Remove drain covers from the catch basin or storm drain inlets.
2. **Catch Basin Filter Socks:** Remove the filter sock and dispose of the collected sediment in a suitable container to be hauled off site. Reuse the filter sock at another site if it remains in good condition (e.g., no rips, tears, or visible staining).
3. **Waste Disposal:**
 - Sweep or shovel loose aggregate chunks and dust collect the material for recycling or proper disposal at the end of each workday (see Figure 5).
 - Remove waste material from site and dispose of properly.
 - Dispose of collected slurry and cuttings in a manner that does not violate groundwater or surface water quality standards.



Figure 5. Manual sweeping.

References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)	Stormwater Management Manual for Western Washington (Ecology 2005)	Highway Runoff Manual (WSDOT 2008)
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SDOT Manual Name	RCAT	RCAT Description
Street Maintenance Operations	801	Haul Aggregate
4. Minor Road Maintenance	804	Haul Rubble

Description of Work

RCAT 801 Hauling of aggregate from vendors to stockpile in the maintenance yards.

RCAT 804 Hauling of debris from the maintenance transfer sites to permanent dump sites or landfill.

Objectives

Prevent aggregate and debris from entering the storm drain system and surface water bodies.

Site Preparation

1. **Spill Kit:** Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.
2. **Storm Drain Covers:** Install drain covers (see Figure 1) over any catch basin or storm drain inlets that are connected to the storm drain system and are located downslope or adjacent to the work area.



Figure 1. Storm drain cover.

BMP Maintenance During Site Work

1. **Loading and Unloading:**
 - Continually monitor operations to determine whether aggregate or debris could enter the stormwater system. If observations indicate that a violation of water quality standards could occur, stop operations and immediately implement preventative measures such as berms, barriers, secondary containment, and vector trucks.

- Cover the load with a tarp or temporary plastic sheeting to keep aggregate and debris inside the truck during transportation between sites.
2. **Sweeping:** Frequently sweep surfaces; including those that have been covered with containers, logs, or other material; to remove accumulated debris and other material that could otherwise be washed off by stormwater (see Figure 2). Do not sweep this debris into storm drains.



Figure 2. Mechanical street sweeping.

Site Cleanup

1. **Storm Drain Covers:** Remove drain covers from any catch basin or storm drain inlets.
2. **Sweeping:** Sweep or shovel loose aggregate chunks and dust collect the material for recycling or proper disposal at the end of each workday (see Figure 3).



Figure 3. Manual sweeping.

3. **Material Storage:** Cover stockpiles containing more than 5 cubic yards of erodible or water-soluble materials with tarps or temporary plastic sheeting and anchor to prevent contact with rainfall (see Figure 4). Store stockpiled materials in a building or a covered, paved area, if possible.



Figure 4. Example of a covered stockpile.

References

Regional Road Maintenance Endangered Species Act Program Guidelines (Regional Road Maintenance Technical Working Group 2002)	Construction Stormwater Control Technical Requirements Manual (Seattle 2009)	Source Control Technical Requirements Manual (Seattle 2009)
2.79 - Inlet Protection 2.152 - Sweeping	C1.45 - Solid Waste Handling and Disposal E3.25 - Storm Drain Inlet Protection E3.70 - Street Sweeping and Vacuuming	BMP 11 - Loading and Unloading of Liquid or Solid Material BMP 24 - Outdoor Storage or Transfer of Solid Raw Materials, Byproducts, or Finished Products

