

# SOP MASTER LIST



OTHER J-U-B COMPANIES

Standard Operating Procedure	Reference	Permit	Weber/Davis	Cache County	JUB	Appendix A	Appendix B	Appendix C
Tracing the source of illicit discharges	4.2.3.4	x	x	x	x		x	x
Nature of illicit discharge reported through hotline	4.2.3.5	x					x	x
Ceasing/Removal of illicit discharge	4.2.3.6	x	x	x			x	x
Opportunistic illicit discharge observation			x					x
Outfall inspections	4.2.3.4	x	x		x		x	x
Call in inspections			x					x
Compliance from Violators (escalating enforcement)	4.2.4.2.1	x				x	x	
Pre-construction storm water prevention plan review	4.2.4.3	x		x	x	x	x	
Construction site inspection and enforcement	4.2.4.4	x		x	x	x	x	
Site inspection of post-construction storm water control measures	4.2.5.5	x		x		x	x	
Enforcement of post-construction storm water control measures	4.2.5.5	x				x		
High priority facilities (BMP's, LID, Good house keeping)	4.2.6.4	x					x	
Dumpster and other waste management	4.2.6.4.1	x	x			x	x	
Parking lot maintenance	4.2.6.4.1	x	x			x	x	
Material, heavy equipment storage and maintenance areas	4.2.6.4.2	x				x	x	
Chemical application, storage, disposal of pesticides, herbicides, fertilizers	4.2.6.4.3	x	x	x			x	
Proper cleaning of park maintenance equipment	4.2.6.4.3	x	x				x	
Parks- Mowing and trimming	4.2.6.4.3	x	x	x			x	
Parks- Seeding				x				
Management of trash containers	4.2.6.4.3	x				x	x	
Open space management	4.2.6.4.3	x	x				x	
Pet waste			x				x	
Planting vegetation			x	x		x	x	
Transporting Equipment			x			x	x	
Transporting Soil and Gravel			x	x				
Vehicle washing	4.2.6.4.4	x	x			x	x	
Vehicle fueling areas	4.2.6.4.4	x	x			x	x	
Vehicle maintenance and repair	4.2.6.4.4	x		x		x	x	
Vehicle storage			x				x	
Street Sweeping	4.2.6.4.5	x	x	x		x	x	
Road and parking lot maintenance	4.2.6.4.5	x	x	x		x	x	
Snow removal and de-icing	4.2.6.4.5	x	x	x			x	
Righ-of-way maintenance	4.2.6.4.5	x	x				x	
Municipally-sponsored events	4.2.6.4.5	x					x	
Catch basin cleaning	4.2.6.4.6	x	x	x		x	x	
Detention pond cleaning	4.2.6.4.6	x	x	x		x	x	
inspection and cleaning of storm water conveyance pipes	4.2.6.4.6	x		x		x	x	
Sumps and Injection Wells				x				
Ditch management	4.2.6.4.6	x	x	x		x	x	

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OTHER J-U-B COMPANIES

Standard Operating Procedure	Reference	Permit	Weber/Davis	Cache County	JUB	Appendix A	Appendix B	Appendix C
Creek management			x	x			x	
Secondary road maintenace			x	x		x	x	
Salt and Sand, Mixing and Storing				x				
Inspection and cleaning of irrigation canals, culverts, storm water controls	4.2.6.4.6	x					x	
Inspection and cleaning of runoff treatment and/or flow control facilities	4.2.6.4.6	x					x	
Street/storm drain concrete work			x	x		x	x	
Street/storm drain garbage storage			x	x		x	x	
Training to Employees				x				
Weekly and Quarterly Inspections				x				
Flood Control and Water Quality Impacts				x				
Swimming Pools and Spas Discharge to Storm Water System				x				
Water-planned waterline excavation repair/replacement			x	x			x	
Water- Unplanned waterline excavation repair/replacement			x	x			x	
Water- Transporting wet/dry excavated materials and spoils			x	x		x	x	
Water- Waterline flushing for routine mainenance			x	x			x	
Water- Waterline flushing after construction/system disinfection			x	x		x		
Water- Chemical handling/Transporting and spill response			x	x		x	x	

# STANDARD OPERATING PROCEDURES

Weber County Storm Water Coalition

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Davis County Storm Water Coalition  
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## **BUILDINGS – Dumpsters/Garbage Storage**

1. Preparation.
  - a. Train employees on proper trash disposal.
  - b. Locate dumpsters and trash cans in convenient, easily observable areas.
  - c. Provide properly-labeled recycling bins to reduce the amount of garbage disposed.
  - d. Install berms, curbing, or vegetation strips around storage areas to control water entering/leaving storage areas.
  - e. Whenever possible store garbage containers beneath a covered structure or inside to prevent contact with storm water.
2. Process.
  - a. Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.
  - b. Request/use dumpsters, and trash cans with lids and without drain holes.
  - c. Locate dumpsters on a flat, hard surface that does not slope or drain directly into the storm drain system.
3. Clean-up.
  - a. Keep areas around dumpsters clean of all garbage.
  - b. Have garbage bins emptied regularly to keep from overflowing.
  - c. Wash out bins or dumpsters as needed to keep odors from becoming a problem.
4. Documentation
  - a. Document training of employees

## **BUILDINGS – Parking Lot Maintenance**

1. Preparation.
  - a. Conduct regular employee training to reinforce proper housekeeping.
  - b. Restrict parking in areas to be swept prior to and during sweeping using regulations as necessary.
  - c. Perform regular maintenance and services in accordance with the recommended vehicle maintenance schedule on sweepers to increase and maintain efficiency.
2. Process.
  - a. Sweep parking areas, as needed, or as directed by the city's responsible official.
  - b. Hand sweep sections of gutter if soil and debris accumulate.
  - c. Pick-up litter as required to keep parking areas clean and orderly.
3. Clean-up.
  - a. Dispose of sweepings properly (appropriate solid waste facility).
  - b. Street sweepers to be cleaned out in a manner as instructed by the manufacturer and in a location that swept materials cannot be introduced into a stormdrain.
  - c. Swept materials will not be stored in locations where storm water could transport fines into the stormdrain system.
4. Documentation.
  - a. Keep accurate logs to track swept parking areas and approximate quantities.
  - b. Document training of employees.

## **IDDE - Call-in Inspections**

1. Preparation
  - a. Have a system in place to receive phone calls and collect information regarding suspected illicit discharges.
2. Process
  - a. Use the Incident Tracking Sheet to collect the appropriate information from the caller. Then, transfer the Incident Tracking Sheet to the proper authority (ie. department head, stormwater specialist, construction inspector, code enforcement officer, or other assigned personnel).
  - b. Promptly investigate reported incidents.
  - c. If an illicit discharge of unknown source is confirmed, follow the procedure of SOP IDDE - Tracing Illicit Discharges.
  - d. If an illicit discharge known source is confirmed, follow the procedure of SOP IDDE - Removing Illicit Discharges.
3. Clean up
  - a. Clean catch basin, clean storm drain, or initiate spill response, as applicable. Follow relevant SOPs.
4. Documentation
  - a. File all completed forms (ie. incident tracking, catch basins cleaning, storm drain cleaning).
  - b. Document any further action taken.
  - c. Review incidents reported by citizens on an annual basis to look for patterns of illicit discharges and to evaluate the call-in inspection program.



## **IDDE - Opportunistic Illicit Discharge Observation**

1. Preparation
  - a. Be alert for potential illicit discharges to the municipal storm water system while going about normal work activities.
2. Process
  - a. Call the appropriate authority (ie. department head, stormwater specialist, construction inspector, code enforcement officer or a supervisor) if you see evidence of an illicit discharge.
  - b. Assess the general area of the illicit discharge to see if you can identify its source.
  - c. Whenever possible, take photographs of the suspected illicit discharge.
  - d. Responding stormwater department personnel or code enforcement officer will complete the following:
    1. Use the IDDE Incident Tracking Sheet to document observations.
    2. Obtain sample for visual observation and complete an Outfall Inspection Form, if applicable.
    3. Follow the procedure of SOP IDDE - Tracing Illicit Discharges.
3. Clean-up
  - a. Clean catch basin, clean storm drain, or initiate spill response, as needed. Follow relevant SOPs.
4. Documentation
  - a. File all completed forms (ie. Incident Tracking Form, Outfall Inspection Form, Catch Basin Cleaning Form, and Storm Drain Cleaning Log).
  - b. Document any further action taken.

## IDDE - Outfall Inspections

1. Preparation:
  - a. Know the past and present weather conditions. Conduct inspections during dry weather periods.
  - b. Gather all necessary equipment including: tape measure, clear container, clipboard with necessary forms, flashlight, and camera (optional).
  - c. Obtain maps showing outfall locations and identifiers.
  - d. Obtain outfall description and observations from previous inspections, so the outfall can be accurately identified and observations compared.
  
2. Process
  - a. Perform an inspection of each outfall at least once per year. Whenever, possible use the same personnel for consistency in observations.
  - b. Identify each outfall with a consistent and unique identifier. For example “Howard Slough-#13”. Use maps and previous inspection reports to confirm the outfall identity and location.
  - c. If dry weather flow is present at the outfall, then document and evaluate the discharge by completing the following steps:
    1. Collect field samples for visual observations in a clean, clear container and in a manner that avoids stirring up sediment that might distort the observation.
    2. Characterize and record observations on basic sensory and physical indicators (e.g., outfall condition, flow, odor, color, oil sheen) on the Outfall Inspection Form.
    3. Compare observations to previous inspections.
    4. If the flow does not appear to be an obvious illicit discharge (e.g., flow is clear, odorless, etc.), attempt to identify the source of the flow (groundwater, intermittent stream, etc.)
  - d. If an illicit discharge (such as raw sewage, petroleum products, paint, etc.) is encountered or suspected, follow the procedure of SOP IDDE - Tracing Illicit Discharges.
  
3. Cleanup - as necessary
  
4. Documentation
  - a. File completed outfall inspection forms.
  - b. Update maps if new outfalls are observed and inspected.

## **IDDE - Removing Illicit Discharges**

1. Preparation
  - a. Obtain available property ownership information for the source of the illicit discharge.
2. Process
  - a. Determine who is financially responsible; and follow associated procedures as given below.

For Private Property Owner:  
Contact Owner,  
Issue Notice of Violation for violations of the municipal ordinance, and  
Determine schedule for removal.

For Municipal Facility:  
Notify appropriate municipal authority or department head,  
Schedule removal, and  
Remove illicit connection.
  - b. Suspend access to storm drain if threats of serious physical harm to humans or the environment are possible.
  - c. Direct responsible party to initiate repairs/corrections/cleanup. Coordinate with enforcement official for escalating penalties in accordance with the municipal ordinance.
  - d. Repair/correct cause of discharge if municipality is responsible. Schedule the work through the appropriate municipal authority or department head..
  - e. Seek technical assistance from the Weber-Morgan Health Department or Utah Department of Water Quality, if needed.
3. Clean up
  - a. Confirm illicit discharge is removed or eliminated by follow-up inspection.
4. Documentation
  - a. Maintain records of notice of violation and penalties.
  - b. Document repairs, corrections, and any other actions required.

## IDDE - Tracing Illicit Discharges

1. Preparation
  - a. Review / consider information collected when illicit discharge was initially identified and document using Incident Tracking Form or Outfall Inspection Form.
  - b. Obtain storm drain mapping for the area of the reported illicit discharge.
  - c. Gather all necessary equipment including: tape measure, clear container, clipboard with necessary forms, flashlight, and camera (optional).
2. Process
  - a. Survey the general area / surrounding properties to identify potential sources of the illicit discharge as a first step.
  - b. Trace illicit discharges using visual inspections of upstream points as a second step. Use available mapping to identify tributary pipes, catch basins, etc.
  - c. If the source of the illicit discharge cannot be determined by a survey of the area or observation of the storm drain system, then consider the following additional steps:
    1. Use weirs, sandbags, dams, or optical brightener monitoring traps to collect or pool intermittent discharges during dry weather.
    2. Smoke test or televise the storm drain system to trace high priority, difficult to detect illicit discharges.
    3. Dye test individual discharge points within suspected buildings.
    4. Consider collecting bacterial samples of flowing discharges to confirm/refute illicit discharge.
  - d. If the source is located, follow SOP IDDE - Removing Illicit Discharges.
  - e. If the source cannot be found, add the location to a future inspection program.
3. Clean up
  - a. Clean catch basin, clean storm drain, or initiate spill response, as applicable. Follow relevant SOPs.
4. Documentation
  - a. Document tracing results for future reference.

## **PARKS – Chemical Application Pesticides, Herbicides, Fertilizers**

1. Preparation
  - a. Make sure your state Chemical Handling Certification is complete and up-to-date before handling any chemicals.
  - b. Calibrate fertilizer and pesticide application equipment to avoid excessive application.
  - c. Use pesticides only if there is an actual pest problem and periodically test soils for determining proper fertilizer use
  - d. Time and apply the application of fertilizers, herbicides or pesticides to coincide with the manufacturer's recommendation for best results ("Read the Label").
  - e. Know the weather conditions. Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
  
2. Process
  - a. Always follow the manufacturer's recommendations for mixing, application and disposal. ("Read the Label").
  - b. Do not mix or prepare pesticides for application near storm drains, preferably mix inside a protected area with impervious secondary containment (preferably indoors) so that spills or leaks will not contact soils.
  - c. Employ techniques to minimize off-target application (e.g. spray drift, over broadcasting.) of pesticides and fertilizers.
  
3. Clean-up
  - a. Sweep pavements or sidewalks where fertilizers or other solid chemicals have fallen, back onto grassy areas before applying irrigation water.
  - b. Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
  - c. Always follow all federal and state regulations governing use, storage and disposal of fertilizers, herbicides or pesticides and their containers. ("Read the Label")
  
4. Documentation
  - a. Keep copies of MSD sheets for all pesticides, fertilizers and other hazardous products used.
  - b. Record fertilizing and pesticide application activities, including date, individual who did the application, amount of product used and approximate area covered.

## **PARKS – Cleaning Equipment**

1. Preparation
  - a. Review process with all Parks employees
  
2. Process
  - a. Wipe off dirt, dust and fluids with disposable towel
  - b. Wash equipment in approved wash station
  
3. Clean-up
  - a. Dispose of towels in proper trash receptacle
  - b. Sweep floor and dispose of debris.

## **PARKS – Mowing and Trimming**

1. Preparation
  - a. Process overview with all employees
  - b. Check the oil and fuel levels of the mowers and other equipment; fill if needed.
  
2. Process
  - a. Put on eye and hearing protection
  - b. Mow and trim the lawn
  - c. Sweep or blow clippings to grass areas
  - d. Remove inlet protection
  
3. Clean-up
  - a. Mowers are to be scraped and brushed at shop – dry spoils are dry swept and disposed of properly, or they may be washed down as long as contaminated water does not enter the storm drain system.
  - b. Wash equipment in approved wash station

## **PARKS – Open Space Management**

1. Preparation
  - a. Provide a regular observation and maintenance of parks, golf courses, and other public open spaces.
  - b. Identify public open spaces that are used for stormwater detention and verify that detention areas are included on the storm drain system mapping, inspection schedules, and maintenance schedules.
  
2. Process
  - a. Ensure that any storm drain or drainage system components on the property are properly maintained.
  - b. Avoid placing bark mulch (or other floatable landscaping materials) in stormwater detention areas or other areas where stormwater runoff can carry the mulch into the storm drainage system.
  - c. Follow all SOPs related to irrigation, mowing, landscaping, and pet waste management.
  
3. Clean Up
  - a. Keep all outdoor work areas neat and tidy. Clean by sweeping instead of washing whenever possible. If areas must be washed, ensure that wash water will enter a landscaped area rather than the storm drain. Do not use soap for outdoor washing.
  - b. Pick up trash on a regular basis.
  
4. Documentation
  - a. Document any observed deficiencies for correction or repair.



## **PARKS – Pet Waste**

1. Preparation
  - a. Adopt and enforce ordinances that require pet owners to clean up pet wastes and use leashes in public areas. If public off-leash areas are designated, make sure they are clearly defined. Avoid designating public off-leash areas near streams and water bodies.
  - b. Whenever practical and cost effective, install dispensers for pet waste bags and provide disposal containers at locations such as trail heads or parks where pet waste has been a problem. Provide signs with instructions for proper cleanup and disposal.
2. Process
  - a. Check parks and trails for pet waste as needed.
  - b. Check public open space for pet waste prior to mowing and watering.
  - c. Provide ordinance enforcement as needed.
3. Clean up
  - a. Remove all pet waste, provide temporary storage in a covered waste container, and dispose of properly. Preferred method of disposal is at a solid waste disposal facility.
4. Documentation
  - a. Document problem areas for possible increased enforcement and/or public education signs.

## PARKS – Planting Vegetation (Starters)

1. Preparation
  - a. Call the Blue Stakes Center of Utah at least 2 working days before any digging will be done, to reveal the location of any underground utilities.
  - b. Dial 811 or 1-800-662-4111
  - c. Decide where any spoils will be taken.
  
2. Process
  - a. Dig holes; place spoils near the hole where they may easily be placed back around roots. Avoid placing spoils in the gutter.
  - b. Bring each plant near the edge of the hole dug for it.
  - c. Check the depth of the hole, and adjust the depth if necessary. The depth of the hole for a tree should be as deep as the root ball, so that the top of the root ball is level with the top of the hole.
  - d. Carefully remove pot or burlap.
  - e. Place the plant in the hole.
  - f. Backfill the hole with existing spoils, compost, and a litter fertilizer if desired. Do not use excessive amendments.
  - g. Water the plant.
  - h. Stake the plant, if necessary, to stabilize it.
  
3. Clean-up
  - a. Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is a likelihood that some of the dirt would be lost through openings in the bed.
  - b. Sweep dirt from surrounding pavement(s) into the planter area
  - c. Transport spoils to their designated fill or disposal area.

## **PARKS – Planting Vegetation (Seeds)**

1. Preparation
  - a. Call the Blue Stakes Center of Utah at least 2 working days before any digging will be done, to reveal the location of any underground utilities.
  - b. Dial 811 or 1-800-662-4111
  - c. Decide on the application rate, method, water source, and ensure adequate materials are on hand.
  - d. Grade and prepare the soil to receive the seed. Place any extra soil in a convenient location to collect.
  
2. Process
  - a. Place the seed and any cover using the pre-determined application method (and rate).
  - b. Lightly moisten the seed.
  
3. Clean-up
  - a. Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is a likelihood that some of the dirt would be lost through openings in the bed.
  - b. Sweep dirt, seed, and any cover material from surrounding pavement(s) into the planter area
  - c. Transport spoils to their designated fill or disposal area.

## **PARKS – Transporting Equipment**

1. Preparation
  - a. Determine equipment needed for transport and method (trailer, truck bed) needed to transport equipment.
  - b. Conduct pre- trip inspection of equipment
2. Process
  - a. Load and secure equipment on trailer or truck
  - b. Load and secure fuel containers for equipment usage
3. Clean-up
  - a. Off load equipment
  - b. Store equipment and trailer in proper locate on
  - c. Conduct post-trip inspection of equipment
  - d. Wash equipment, if needed, according to the SOP for Cleaning Equipment SOP

## STREETS/STORM DRAIN – Catch Basin Cleaning

1. Preparation:
  - a. Clean sediment and trash off grate.
  - b. Do visual inspection on outside of grate.
  - c. Make sure nothing needs to be replaced.
  - d. Do inside visual inspection to see what needs to be cleaned.
  
2. Process
  - a. Clean using a high powered vacuum truck to start sucking out standing water and sediment.
  - b. Use a high pressure washer to clean any remaining material out of catch basin, while capturing the slurry with the vacuum.
  - c. After catch basin is clean, send the rodder of the vacuum truck downstream to clean pipe and pull back sediment that might have gotten down stream of pipe.
  - d. Move truck downstream of pipe to next catch basin.
  
3. Clean-up
  - a. When vacuum truck is full of sediment take it to the designated location to dump all the sediment out of truck into a drying bed.
  - b. When it evaporates, clean up solids and dispose of properly.
  
4. Documentation
  - a. Keep logs of number of catch basins cleaned.
  - b. Record the amount of waste collected.
  - c. Keep any notes or comments of any problems.

## STREETS/STORM DRAIN – Curb Painting

1. Preparation
  - a. Calculate the amount of paint required for the job
  - b. Use water based paints if possible.
  - c. Determine whether the wastes will be hazardous or not and the required proper disposal of said wastes
  - d. Determine locations of storm drain inlets and sewer inlets that may need to be protected
  - e. Prepare surfaces to be painted without generating wastewater by sandblasting and/or scraping.
  - f. Thoroughly sweep up all sand, blastings, and/or paint scrapings
  - g. If paint stripping is needed, use a citrus-based paint remover whenever possible, which is less toxic than chemical strippers
  - h. If wastewater will be generated, use curb, dyke, etc. around the activity to collect the filter and collect the debris.
2. Process
  - a. Paint curb.
  - b. Prevent over-spraying of paints and/or excessive sandblasting
  - c. Use drip pans and drop clothes in areas of mixing paints and painting
  - d. Store latex paint rollers and brushes in air tight bags to be reused later with the same color.
  - e. Have available absorbent material and other BMP's ready for an accidental paint spill.
3. Clean-up
  - a. Paint out brushes and rollers as much as possible. Squeeze excess paint from brushes and rollers back into the containers prior to cleaning them.
  - b. Pour excess paint from trays and buckets back into the paint can containers and wipe with cloth or paper towels. Dispose of the towels according to the recommendations on the paint being used.
  - c. Rinse water-based paint brushes in the sink after pre-cleaning. Never pour excess paint or wastewater from cleanup of paint in the storm drain.
  - d. Cleanup oil based paints with paint thinner. Never clean oil based brushes in a sink or over a storm drain. Filter solvents for reuse if possible and/or store in approved drum for recycling.
  - e. Dispose of waste collected by placing it in a garbage container. Left-over paint and solvents should be stored for later use (do not place these liquids in the garbage).

4. Documentation
  - a. Write-up/report of any discharges into storm drain system

## STREETS/STORM DRAIN – Detention Pond Cleaning

1. Preparation:
  - a. Schedule the Pond cleaning work for a time when dry weather is expected.
  - b. Remove any sediment and trash from grates, placing it in a truck for disposal.
  - c. Do a visual inspection to make sure any grates, structures, manholes, boxes, and pipes are in good working order. Remove manhole covers and grates as necessary for inspecting.
  
2. Process
  - a. Provide outlet protection where feasible to minimize the amount of debris that might leave basin during cleaning process.
  - b. Start cleaning basin by using backhoe to remove debris and sediment off the bottom.
  - c. Continue cleaning structures and pond bottom as necessary by sweeping and shoveling.
  - d. Put all material removed from the pond into a dump truck.
  - e. Some structures may require use of a vector truck. If so use the same procedures described for cleaning catch basins.
  
3. Clean-up
  - a. After cleaning basins, clean off the concrete pads using dry methods (sweeping and shoveling).
  - b. Make sure they are swept up and clean.
  - c. Take the material that was removed to the landfill for final disposal.
  
4. Documentation
  - a. Keep a logs of each detention basins/pond cleaned including date, individuals involved in cleaning, and a description of the type of debris removed.
  - b. Record the amount of waste collected.
  - c. Keep any notes or comments of any problems.



## STREETS/STORM DRAIN – Creek Management

1. Preparation
  - a. Monitor streams on a regular basis (Suggested interval?).
  - b. Check culverts and crossings after every storm.
  - c. Maintain access to stream channels wherever possible.
  - d. Identify areas requiring maintenance
  - e. Determine what manpower or equipment will be required.
  - f. Identify access and easements to area requiring maintenance.
  - g. Determine method of maintenance that will be least damaging to the channel.
  - h. Obtain Stream Alteration Permit.
  
2. Process
  - a. Remove unwanted material (debris, branches, soil) from the creek channel and place it in a truck to be hauled away
  
3. Clean-up
  - a. Stabilize all disturbed soils.
  - b. Remove all tracking from paved surfaces near maintenance site, if applicable.
  - c. Haul all debris or sediment removed from area to approved dumping site.
  
4. Documentation
  - a. Keep log of actions performed including date and individuals involved.
  - b. Record the amount of materials removed or imported.
  - c. Keep any notes or comments of any problems.
  - d. Use “before” and “after” photographs to document activities as applicable.

## STREETS/STORM DRAIN – Ditch Management

1. Preparation
  - a. Monitor ditches on a regular basis (Suggested interval?).
  - b. Maintain access to ditch channels wherever possible.
  - c. Contact affected property owners and utility owners.
  
2. Process
  - a. Identify areas requiring maintenance
  - b. Determine what manpower or equipment will be required.
  - c. Identify access and easements to area requiring maintenance.
  - d. Determine method of maintenance that will be least damaging to the channel and adjacent properties or utilities.
  
3. Clean-up
  - a. Stabilize all disturbed soils.
  - b. Remove all tracking from paved surfaces near maintenance site, if applicable.
  - c. Haul all debris or sediment removed from area to approved dumping site.
  
4. Documentation
  - a. Keep log of actions performed including date and individuals involved.
  - b. Record the amount of materials removed or imported.
  - c. Keep any notes or comments of any problems.
  - d. Use “before” and “after” photographs to document activities as applicable.

## STREETS/STORM DRAIN – Chip Seal

1. Preparation
  - a. Clean and dry areas where materials are to be applied.
  - b. Apply temporary covers to manholes and catch basins to prevent oil and materials from getting inside of them.
  
2. Process
  - a. Apply emulsion at recommended rate.
  - b. Spread chips closely behind emulsion distributor, slowly such that the chips do not roll when they hit the surface.
  - c. Roll chips. Rollers follow closely behind the chip spreader. Roll entire surface twice.
  - d. Maximum speed 5 mph.
  
3. Clean-up
  - a. All loose aggregate is removed from the roadway by sweeping it up (see SOP for Street Sweeping).
  - b. Excessive asphalt applications and spills are removed with shovels and scraping tools.
  - c. Remove the temporary covers from manholes and catch basins. If it appears that any chip seal materials have gotten into the inlet boxes, remove the material according to the SOP for inlet boxes.
  - d. Dispose of the waste material that has been swept and scraped up by taking it to the landfill.
  
4. Documentation
  - a. Record location and date on the maintenance database and map

## STREETS/STORM DRAIN – Slurry Seal

1. Preparation
  - a. Remove weeds from the roads. Sweep areas where materials are to be applied, and allow to dry, if necessary. Verify that existing pavement has been inspected for detrimental effects of poor drainage.
  - b. Cover/protect catch basins and manholes.
2. Process
  - a. Apply materials in a smooth and uniform manner. Slurry material should not run onto adjacent pavement surface, curb and gutter or waterways.
3. Clean-up
  - a. If loose aggregate is remaining in street or curb, sweep it up.
  - b. Ensure that excess emulsion materials are removed from the site and stored for later use in an area or container that is not exposed to the weather.
  - c. Remove covers/protection from catch basins and manholes, and valves.
4. Documentation
  - a. Record location and date on the maintenance database and map

## STREETS/STORM DRAIN – Overlays and Patching

1. Preparation
  - a. Measure and mark locations of manholes and valves on the curb
  - b. Manholes and catch basins are covered as needed to prevent oil and materials from getting inside the structures or system.
  - c. Cracks should be properly sealed. Alligator cracks and potholes should be removed and patched. Rutting should be milled.
  - d. Surface should be clean and dry.
  - e. Uniform tack coat applied and cured prior to placement of overlay.
  - f. If milling is required, install inlet protection as needed.
  
2. Process
  - a. Check hot asphalt mix for proper temperature, percentage asphalt, gradation, air voids and any other agency requirements.
  - b. Raise manhole lids and valves to elevation of new asphalt surface with riser rings.
  - c. Surface texture should be uniform, no tearing or scuffing.
  - d. Rolling should be done to achieve proper in-place air void specification.
  
3. Clean-up
  - a. Covering should be removed as soon as the threat of imported materials entering the system is reduced and prior to a storm event.
  - b. After pavement has cooled, sweep gutters to remove loose aggregate.
  
4. Documentation
  - a. Record location and date on the maintenance database and map

## STREETS/STORM DRAIN – Crack Seal

1. Preparation
  - a. Cover Manholes and catch basins to prevent oil and materials from getting inside the structures or system.
  - b. Remove weeds from the road
  - c. Air-blast the cracks to remove sediments from the crack to allow for proper adhesion.
  - d. Ensure that surface is clean and dry.
  
2. Process
  - a. Proper temperature of material should be maintained.
  - b. Sufficient material is applied to form the specified configuration.
  
3. Clean-up
  - a. Excessive sealant application or spills are removed.
  - b. Sweep all loose debris from the pavement and dispose of it properly.
  
4. Documentation
  - a. Record location and date on the maintenance database and map

## **STREETS/STORM DRAIN – Shouldering and Mowing**

1. Preparation
  - a. Set up temporary traffic control devices according to part VI of the MUTCD.
  
2. Process
  - a. Place import material as needed and perform grading to achieve proper drainage.
  - b. Mulch clippings to help reduce the amount of supplemental fertilizer required, or bag and properly dispose of grass clippings.
  
3. Clean-up
  - a. Clean any loose material off asphalt or gutter.
  
4. Documentation
  - a. Record location and date on the maintenance database and map

## **STREETS/STORM DRAIN – Secondary Road Maintenance**

1. Preparation
  - a. Determine length amount and type of roadbase or gravel that will be needed.
  - b. Determine proper equipment to be used and or any safety hazards.
  - c. Design proper drainage: slopes, berms etc.
  
2. Process
  - a. Have truck drivers follow a designated route for hauling in the soil (See SOP for transporting Soil and Gravel).
  - b. If soil is too dry to achieve compaction, loosen surface material and moisture condition.
  - c. Smooth or grade soil with the desired crown or cross-slope.
  - d. Compact soil.
  
3. Clean-up
  - a. Clean up equipment according to the SOP for Cleaning Equipment
  - b. Clean up any debris on traveled roads, and dispose of it in the landfill.
  
4. Documentation
  - a. Fill out daily activity report in log book or journal. Include Date, time, personnel, and location.



## **STREETS/STORM DRAIN – Concrete Work**

1. Preparation
  - a. Store dry and wet materials under cover, away from drainage areas
  - b. Remove any damaged concrete that may need to be replaced.
  - c. Prepare and compact sub-base.
  - d. Set forms and place any reinforcing steel that may be required.
  - e. Determine how much new concrete will be needed.
  - f. Locate or construct approved concrete washout facility.
  
2. Process
  - a. Install inlet protection as needed.
  - b. Moisten subbase just prior to placing new concrete. This helps keep the soil from wicking moisture out of the concrete into the ground.
  - c. Place new concrete in forms.
  - d. Consolidate new concrete
  - e. Screed off surface
  - f. Let concrete obtain its initial set
  - g. Apply appropriate surface finish
  - h. Remove forms when concrete will not slump
  
3. Clean-up
  - a. Perform washout of concrete trucks and equipmet in designated areas only. Do not washout concrete trucks or equipment into stormdrains, open ditches, streets or streams
  - b. Cement and concrete dust from grinding activities is swept up and removed from the site.
  - c. Remove dirt or debris from street and gutter. Do not direct it to the storm drain system.

## STREETS/STORM DRAIN – Garbage Storage

1. Preparation
  - a. Locate dumpsters and trash cans with lids in convenient, easily observable areas.
  - b. Provide properly-labeled recycling bins to reduce the amount of garbage disposed.
  - c. Provide training to employees to prevent improper disposal of general trash.
  
2. Process
  - a. Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.
  - b. Locate dumpsters on a flat, impervious surface that does not slope or drain directly into the storm drain system.
  - c. Install berms, curbing or vegetation strips around storage areas to control water entering/leaving storage areas.
  - d. Keep lids closed when not actively filling dumpster.
  
3. Clean-up
  - a. Keep areas around dumpsters clean of all garbage.
  - b. Have garbage bins emptied as often as needed to keep from overflowing.
  - c. Wash out bins or dumpsters as needed to keep odors from becoming a problem. Wash out in properly designated areas only.

## STREETS/STORM DRAIN – Snow Removal and De-icing

1. Preparation
  - a. Store de-icing material under a covered storage area or in an area where water coming off the de-icing materials is collected and delivered to the sanitary sewer or reused as salt brine.
  - b. Wash out vehicles (if necessary) in approved washout area before preparing them for snow removal.
  - c. Calibrate spreaders to minimize amount of de-icing material used and still be effective
  - d. Provide vehicles with spill cleanup kits in case of hydraulic line rupture or other spills
  - e. Train employees in spill cleanup procedures and proper handling and storage of de-icing materials
  
2. Process
  - a. Load material into trucks carefully to minimize spillage
  - b. Periodically dry sweep loading area to reduce the amount of de-icing materials exposed to runoff
  - c. Distribute the minimum amount of de-icing material to be effective on roads
  - d. Do not allow spreaders to idle while distributing de-icing materials.
  - e. Park trucks loaded with de-icing material inside when possible
  
3. Cleanup
  - a. Sweep up all spilled de-icing material around loading area
  - b. Clean out trucks after snow removal duty in approved washout area
  - c. Provide maintenance for vehicles in covered area
  - d. If sand is used in de-icing operations, sweep up residual sand from streets when weather permits

## STREETS/STORM DRAIN – Street Sweeping

4. Preparation
  - a. Prioritize cleaning routes to use at the highest frequency in areas with the highest pollutant loading.
  - b. Restrict street parking prior to and during sweeping using regulations as necessary.
  - c. Increase sweeping frequency just before the rainy season, unless sweeping occurs continuously throughout the year.
  - d. Perform preventative maintenance and services on sweepers to increase and maintain their efficiency
  - e. Streets are to be swept as needed or specified by the city. Street maps could be used to ensure all streets are swept at a specified interval
  
5. Process
  - a.
  - b. Drive street sweeper safely and pickup debris
  - c. When full, take the sweeper to an approved street sweeper cleaning station.
  
6. Clean-up
  - a. Street sweepers are to be cleaned out in an approved street sweeper cleaning station
  - b. Street sweeping cleaning stations shall separate the solids from the liquids.
  - c. Once solids have dried out, haul them dispose of them properly.
  - d. Decant water is to be collected and routed to an approved wastewater collection system area only.
  - e. Haul all dumped material to the landfill.
  
7. Documentation
  - a. Keep accurate logs to track streets swept and streets still requiring sweeping.
  - b. Log the amount of debris collected and hauled off.

## STREETS/STORM DRAIN – Transporting Soil and Gravel

1. Preparation
  - a. Dry out wet materials before transporting.
  - b. Spray down dusty materials to keep from blowing.
  - c. Make sure you know and understand the SWPPP requirements for the site you will be working at.
  - d. Determine the location that the truck and other equipment will be cleaned afterwards
  
2. Process
  - a. Use a stabilized construction entrance to access or leave the site where materials are being transported to/from.
  - b. Cover truck bed with a secured tarp before transporting.
  - c. Follow the SWPPP requirements for the specific site to/from which the materials are being hauled.
  - d. Make sure not to overfill materials when loading trucks.
  
3. Clean up
  - a. Use sweeper to clean up any materials tracked out on the roads from site.
  - b. Wash out truck and other equipment when needed in properly designated areas.
  
4. Documentation
  - a. Keep records of any material that is tracked out of site and what was done to clean it up and how long it took to clean up and what the weather conditions were at the time.

## VEHICLES – Fueling

1. Preparation
  - a. Train employees on proper fueling methods and spill cleanup techniques.
  - b. Install a canopy or roof over aboveground storage tanks and fuel transfer areas.
  - c. Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on mobile fueling vehicles and shall be disposed of properly after use.
2. Process
  - a. Shut off the engine.
  - b. Ensure that the fuel is the proper type of fuel for the vehicle.
  - c. Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut off to prevent overfill.
  - d. Fuel vehicle carefully to minimize drips to the ground.
  - e. Fuel tanks shall not be ‘topped off’.
  - f. Mobile fueling shall be minimized. Whenever practical, vehicles and equipment shall be transported to the designated fueling area in the Facilities area.
  - g. When fueling small equipment from portable containers, fuel in an area away from storm drains and water bodies.
3. Clean Up
  - a. Immediately clean up spills using dry absorbent (e.g., kitty litter, sawdust, etc.) sweep up absorbent material and properly dispose of contaminated clean up materials.
  - b. Large spills shall be contained as best as possible and the HazMat team should be notified ASAP.
4. Records
  - a. Comply with underground storage tank records and monitoring requirements.
  - b. Document training of employees.

## VEHICLES – Vehicle and Equipment Storage

1. Preparation
  - a. Inspect parking areas for stains/leaks on a regular basis.
  - b. Provide drip pans or adsorbents for leaking vehicles.
2. Process
  - a. Whenever possible, store vehicles inside where floor drains have been connected to sanitary sewer system.
  - b. When inside storage is not available, Vehicles and equipment will be parked in the approved designated areas.
  - c. Maintain vehicles to prevent leaks as much as possible.
  - d. Address any known leaks or drips as soon as possible. When a leak is detected a drip pan will be placed under the leaking vehicle to collect the drip.
  - e. The shop will provide a labeled location to empty and store drip pans.
  - f. If any leaks are discovered, a drip pan will be used to collect the fluids and vehicle will be scheduled for repairs.
  - g. Clean up all spills using dry methods.
  - h. Never store leaking vehicles over a storm drain.
3. Clean Up
  - a. Any leaks that are spilled on the asphalt will be cleaned up with dry absorbent; the dry absorbent will be swept up and disposed of in the garbage.
  - b. The paved surfaces around the building will be swept every two weeks, weather permitting.

## VEHICLES – Washing

1. Preparation
  - a. Provide wash areas for small vehicles inside the maintenance building that has a drain system which is attached to the sanitary sewer system.
  - b. Provide wash areas for large vehicles on an approved outside wash pad that has a drain system which is attached to the sanitary sewer system.
  - c. No vehicle washing will be done where the drain system is connected to the storm sewer system.
2. Process
  - a. Minimize water and soap use when washing vehicles inside the shop building.
  - b. Soap should not be used when washing vehicles outside the shop building. Water Only.
  - c. Use hoses with automatic shut off nozzles to minimize water usage.
  - d. When washing outside the building, it is the operators' responsibility to make sure all wash water is contained on the wash pad and does not have access to the storm drain.
  - e. Never wash vehicles over or a storm drain.
3. Clean Up
  - a. Sweep wash areas after every washing to collect what solids can be collected to prevent them from washing down the drain system.
  - b. Clean solids from the settling pits on an as needed basis.



# Permittee-Owned Facilities Evaluation Form

**MS4 Name:** Weber County
**Date of Evaluation:** 10/18/2010

Section 4.2.6.3 requires that the "Permittee must identify as "high-priority" those facilities or operations that have a high potential to generate storm water pollutants." Weekly inspections are required (4.2.6.6.1), and Storm Water discharge must be evaluated quarterly at these high priority locations (4.2.6.6.3)

<b>Facility #:</b>	<b>Location:</b> 14735 E Causey Drive, SF	<b>Description:</b> Weber Memorial Park (Campground)						<b>Priority:</b> LOW	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)								minimal	
Exterior Use (Y/N)	N	N	N	Y	N	N	Y	Y	
Proximity to Water (ft)				230'+			varies	varies	
House keeping effectiveness(%)				90			95		
Discharge to impaired waters(Y/N)				N			N		

<b>Facility #:</b>	<b>Location:</b> 1000 N 1200 W, Ogden, UT	<b>Description:</b> Fair Grounds/Event Center						<b>Priority:</b> HIGH	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)									
Exterior Use (Y/N)	Y	Y	Y	Y	N	N	Y	Y	
Proximity to Water (ft)	2160	2160	2800	2160			1630	1100	
House keeping effectiveness(%)	80	90	90	90			95	70	
Discharge to impaired waters(Y/N)	N	N	N	N			N	N	

<b>Facility #:</b>	<b>Location:</b> 2450 A. Avenue, Ogden, UT	<b>Description:</b> Historic/Camping Park						<b>Priority:</b> LOW	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)				minimal					
Exterior Use (Y/N)	N	N	N	Y	N	N	N	N	
Proximity to Water (ft)				80-90					
House keeping effectiveness(%)				90					
Discharge to impaired waters(Y/N)				N					

<b>Facility #:</b>	<b>Location:</b> 6413 N. No Fork Road, Liberty, UT	<b>Description:</b> North Fork (Campground)						<b>Priority:</b> LOW	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)				minimal				minimal	
Exterior Use (Y/N)	N	N	N	Y	N	N	Y	Y	
Proximity to Water (ft)				530			varies		
House keeping effectiveness(%)				90			95		
Discharge to impaired waters(Y/N)				N			N		

## Permittee-Owned Facilities Evaluation Form

**MS4 Name:** Weber County
**Date of Evaluation:** \_\_\_\_\_

Section 4.2.6.3 requires that the "Permittee must identify as "high-priority" those facilities or operations that have a high potential to generate storm water pollutants." Weekly inspections are required (4.2.6.6.1), and Storm Water discharge must be evaluated quarterly at these high priority locations (4.2.6.6.3)

<b>Facility #:</b>	<b>Location:</b> 2380 Washington Blvd	<b>Description:</b> Weber Center (Asphalted Area)						<b>Priority:</b> LOW	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Exterior Use (Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Proximity to Water (ft)	3800	3800	3800	3800	3800	3800	3800	3800	
House keeping effectiveness(%)	85	85	85	85	85	85	85	85	
Discharge to impaired waters(Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	

<b>Facility #:</b>	<b>Location:</b> 477 23rd Street	<b>Description:</b> Health Department (Parking)						<b>Priority:</b> LOW	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Exterior Use (Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Proximity to Water (ft)	4000	4000	4000	4000	4000	4000	4000	4000	
House keeping effectiveness(%)	85	85	85	85	85	85	85	85	
Discharge to impaired waters(Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	

<b>Facility #:</b>	<b>Location:</b> 2700 N	<b>Description:</b> Industrial Park (Landscape Grass)						<b>Priority:</b> LOW	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Exterior Use (Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Proximity to Water (ft)	1400	1400	1400	1400	1400	1400	1400	1400	
House keeping effectiveness(%)	90	90	90	90	90	90	90	90	
Discharge to impaired waters(Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	

<b>Facility #:</b>	<b>Location:</b> 1259 S 1775 W	<b>Description:</b> Shop Warehouse (Asphalt & Dirt)						<b>Priority:</b> LOW	
	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Exterior Use (Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Proximity to Water (ft)	600	600	600	600	600	600	600	600	
House keeping effectiveness(%)	90	90	90	90	90	90	90	90	
Discharge to impaired waters(Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	

# Permittee-Owned Facilities Evaluation Form

**MS4 Name:** Weber County                      **Date of Evaluation:** 5/10/2010

Section 4.2.6.3 requires that the "Permittee must identify as "high-priority" those facilities or operations that have a high potential to generate storm water pollutants." Weekly inspections are required (4.2.6.6.1), and Storm Water discharge must be evaluated quarterly at these high priority locations (4.2.6.6.3)

**Facility #:**                      **Location:** 4390 Harrison Blvd                      **Description:** Ice Sheet (Parking Lot)                      **Priority:** LOW

	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Exterior Use (Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	
Proximity to Water (ft)	4000	4000	4000	4000	4000	4000	4000	4000	
House keeping effectiveness(%)	80	80	80	80	80	80	80	80	
Discharge to impaired waters(Y/N)	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	

**Facility #:**                      **Location:** 1900 W 2222 S                      **Description:** Lower Valley Shop                      **Priority:** HIGH

	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)	5000 T		25 T			500 T			
Exterior Use (Y/N)	Y		N			Y			
Proximity to Water (ft)	5280		5280			5280			
House keeping effectiveness(%)	80		80			80			
Discharge to impaired waters(Y/N)	N		N			N			

**Facility #:**                      **Location:** 4753 E 2650 N, Eden, UT                      **Description:** Upper Valley Shop                      **Priority:** HIGH

	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)	4000 T		3 T			200 T			
Exterior Use (Y/N)	Y		Y			Y			
Proximity to Water (ft)	500		500			500			
House keeping effectiveness(%)	80		80			80			
Discharge to impaired waters(Y/N)	N		N			N			

**Facility #:**                      **Location:**                      **Description:**                      **Priority:**

	Sediments	Nutrients	Metals	Hydrocarbons	Pesticides	Chlorides	Trash	Bacteria	Other
Amount (#)									
Exterior Use (Y/N)									
Proximity to Water (ft)									
House keeping effectiveness(%)									
Discharge to impaired waters(Y/N)									

# BMP Master List

<b><u>BMP's</u></b>	<b><u>Abbreviation</u></b>
<b><i>1- Public Education and Outreach</i></b>	
Building and Grounds Maintenance	BGM
Classroom Education on Storm Water	CESW
Educational Materials	EM
Housekeeping Practice	HP
Materials Use	MU
Public Education / Participation	PEP
Storm Drain System Signs	SDSS
Used Oil Recycling	UOR
Using Media	UM
Watershed Organization	WO
<b><i>2- Public Participation/Involvement</i></b>	
Community Cleanup	CC
Community Hotline	CH
Watershed Organization	WO
Service Group Participation	SGM
Storm Channel / Creek Maintenance	SCCM
Stream Cleanup and Monitoring	SCM
<b><i>3- Illicit Discharge Detection and Elimination</i></b>	
Identify Illicit Connections	IIC
Aboveground Tank Leak & Spill Control	ATL
Illegal Dumping Controls	IDC
Illegal Solid Dumping Control	ISDC
Leaking Sanitary Sewer Control	LSSC
Map Storm Water Drains	MSWD
Non-Storm Water Discharge to Drains	NSWD
Ordinance Development	OD
Used Oil Recycling	UOR

# BMP Master List

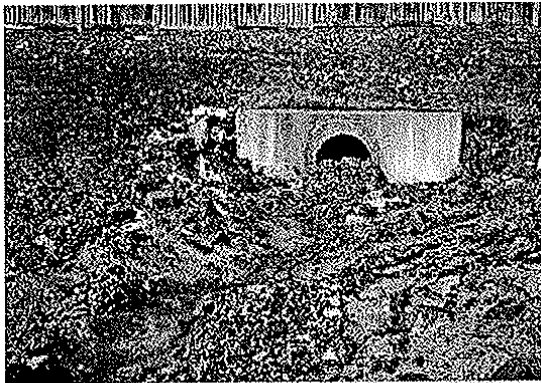
<b><u>BMP's</u></b>	<b><u>Abbreviation</u></b>
<b><i>4- Construction Site Runoff Control</i></b>	
Benching	BE
Brush or Rock Filter	BRF
Building, Repair, Remodeling, & Construction	BRRC
Chemical Mulching	CM
Compaction	CP
Concrete Waste Management	CWM
Construction Road Stabilization	CR
Construction Sequencing	CS
Contaminated or Erodible Surface Areas	CESA
Contractor Certification and Inspector Training	CCIT
Diversion Dike	DD
Dust Controls	DC
Earth Berm Barrier	EB
Equipment & Vehicle Wash Down Area	EVWA
Erosion Control Blankets	ECB
Erosion Control Plan	ECP
Establish/Compile Design Standards	ECDS
Extended Detention Basins	EDB
Filter Strips	FS
Flotation Silt Curtain	FSC
Geotextiles and Mats	GM
Grassed Swales	GS
Infrastructure Planning	IPL
Inlet Protection	IP
Landscape & Irrigation Plan	LIP
Materials Storage	MS
Mulching	ML
Ordinance Development	OD
Outlet Protection	OP
Portable Toilets	PT
Preservation of Existing Vegetation	PEV
Riprap	RR
Rock Check Dams	CD
Sand Bag Barrier	SBB
Sediment Basin	SB
Sediment Trap	ST
Silt Fence	SF
Slope Drain	SD
Spill Clean-Up	SCU
Stabalized Construction Enterance	SCE
Straw Bale Barrier	STB
Surface Roughening	SR
Temporary and Permanent Seeding	TPS
Temporary Drains and Swales	TDS
Temporary Stream Crossing	TSC
Vehicle and Equipment Cleaning	VEC
Veheil and Equipment Fueling	VEF
Waste Disposal	WD

# BMP Master List

<b><u>BMP's</u></b>	<b><u>Abbreviation</u></b>
<b><i>5- Post-Construction Runoff Control</i></b>	
Alternative Turnarounds	AT
Bioengineering	BIO
Biofilters	BF
Conservation Easements	CE
Constructed Wetlands	CW
Double Trench Sand Filter	DTSF
Extended Detention Basins	EDB
Filter Strips	FS
Floatable Skimmers	FS
Grassed Swales	GS
Hydromulching	HM
Infiltration	IN
Infrastructure Planning	IPL
In-line Storage	ILS
Land Use Planning / Management	LIP
Level Spreaders	LS
Map Storm Water Drains	MSWS
Media Filtration	MF
Minimizing DCIA's	DCIA
Oil/Water Separators & Water Q Inlets	OWS
Open Space Design	OSD
Ordinance Development	OD
Outlet Protection	OP
Peat-Sand Filter System	PSFS
Riprap	RR
Rock Check Dams	CD
Seeding and Planting	SP
Surface Sand Filter System	SSFS
Trench Sand Filter System	TSFS
Urban Forestry	UF
Wet Ponds	WP
Zoning	ZO

# BMP Master List

<b><u>BMP's</u></b>	<b><u>Abbreviation</u></b>
<b><i>6- Pollution Prevention/Good Housekeeping</i></b>	
Above Tank Leak & Spill Control	ATL
Alternative Discharge of Chlorinated Water	ADCW
Alternative Products	AP
Animal Carcass Removal	ACR
Area Control Procedures	ACP
BMP Inspection and Maintenance	BMPIM
Building and Grounds Maintenance	BGM
Catch Basin Cleaning	CBC
Concrete Waste Management	CWM
Containment Dikes	CD
Covering	CO
Curbing	CU
De-Icing Chemical Use Storage	DCUS
Detention/Infiltration Device Maintenance	DIDM
Drip Plans	DP
Employee Training	ET
Establish/Compile Design Standards	ECDS
Gelling Agents	GA
Hazardous Waste Management	HWM
Housekeeping Practices	HP
Illegal Dumping Control	IDC
Infrastructure Planning	IPL
Long Term Operation and Maintenance	LTOM
Map Storm Water Drains	MSWD
Manure Composting Program	MCP
Outdoor Container Storage of liquids	OCSL
Outdoor Loading/Unloading of Materials	OLUM
Outdoor Process Equipment Operations	OPE
Outdoor Storage of Raw Materials	OSRM
Pest Control	PC
Portable Toilets	PT
Roadway/Bridge Maintenance	RBM
Sediment Basin	SB
Septic System Controls	SSC
Signs & Labels	SL
Sorbents	SO
Spill Clean-Up	SCU
Storm Drain Flushing	SDF
Street Cleaning	SC
Sumps	S
Used Oil Recycling	UOR
Vehicle and Equipment Cleaning	VEC
Vehicle and Equipment Maintenance & Repair	VEMR
Vehicle Use Reduction	VUR
Waste Handling and Disposal	WHD
Watershed Organization	WO



Regular inspection and maintenance of storm water best management practices is important to ensure that the practices are functioning properly and to remove trash and organic debris

## DESCRIPTION:

To maintain the effectiveness of post-construction storm water control best management practices (BMPs), regulation inspection of control measures is essential. Inspection and maintenance can be categorized into two groups – expected routine maintenance and nonroutine (repair) maintenance.

## APPROACH:

- ▶ Curbing can be used at all industrial facilities. It is particularly useful in areas where liquid materials are transferred and as a stormwater runoff control.
- ▶ As with diking, common materials for curbing include earth, concrete, synthetic materials, metal, or other impenetrable materials. Asphalt is also a common material used to curbing. For maximum efficiency, spilled materials should be removed immediately, to allow spaced for future spills.
- ▶ Curbs should have pumping systems, instead of drainage systems, for collecting spilled materials.
- ▶ Curb systems should be maintained through curb repair (patching and replacement).
- ▶ To minimize the amount of spilled material tracked outside of the area by personnel, grade within the curbing to direct the spilled materials to a down-slope side of the curbing, thus keeping the spilled materials away from personnel and equipment. Grading will also facilitate clean-up.

## LIMITATIONS:

- ▶ Curbing is not effective for holding large spills.
- ▶ May require more maintenance than diking.

## MAINTENANCE:

- ▶ Inspection should be conducted before and after storm events.

## OBJECTIVES

- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
- Commercial Activities
- Roadways
- Waste Containment
- Housekeeping Practices



# WEBER COUNTY

## ENGINEERING DEPARTMENT

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## TARGETED POLLUTANTS

- Sediment
- Nutrients
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substance
- Oil & Grease
- Floatable Materials
- Bacteria & Viruses
- High Impact
- Medium Impact
- Low or Unknown Impact

## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low





Municipalities can establish training programs to educate contractors about erosion and sediment control practices



Construction reviewers periodically inspect construction sites to ensure that contractors have installed and maintained their erosion and sediment controls properly (Source: University of Connecticut Cooperative Extension System, 2000)

## OBJECTIVES

- Manufacturing
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## DESCRIPTION:

One of the most important factors determining whether or not erosion and sediment controls will be properly installed and maintained on a construction site is the knowledge and experience of the contractor. Many communities require certification for key on-site employees who are responsible for implementing the ESC plan. Several states have contractor certification programs. The State of Delaware requires that at least one person on any construction project be formally certified. The Delaware program requires certification for any foreman or superintendent who is in charge of onsite clearing and land-disturbing activities for sediment and runoff control associated with a construction project.

## APPLICATION:

- ▶ Training and certification will help to ensure that the plans are properly implemented and that best management practices are properly installed and maintained.
- ▶ Inspector training programs are appropriate for municipalities with limited funding and resources for ESC program implementation.
- ▶ Contractor certification can be accomplished through municipally sponsored training courses, or more informally, municipalities can hold mandatory pre-construction or pre-wintering meetings and conduct regular and final inspection visits to transfer information to contractors (Brown and Caraco, 1997).
- ▶ To implement an inspector training program, the governing agency would need to establish a certification course with periodic recertification, review reports submitted by private inspectors, conduct spot checks for accuracy, and institute fines or other penalties for noncompliance.
- ▶ Curb systems should be maintained through curb repair (patching and replacement).
- ▶ To minimize the amount of spilled material tracked outside of the area by personnel, grade within the curbing to direct the spilled materials to a down-slope side of the curbing, thus keeping the spilled materials away from personnel and equipment. Grading will also facilitate clean-up.

## LIMITATIONS:

- ▶ Contractor certification and inspector training programs require a substantial amount of effort on the part of the municipality or regulatory agency.
- ▶ They need to develop curricula for training courses, dedicate staff to teach courses, and maintain a report review and site inspection staff to ensure that both contractors and inspectors are fulfilling their obligations and complying with the ESC program.

## TARGETED POLLUTANTS

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- Medium Impact
- Low or Unknown Impact

## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



## DESCRIPTION:

Classroom education is an integral part of any storm water pollution outreach program. Providing storm water education through schools exposes the message not only to students but to their parents as well. Topics can include Water conservation, proper lawn and garden care, and proper disposal of hazardous household wastes.

## APPLICATION:

- ▶ Building a strong relationship with the school district is the most important step in getting storm water education into the schools.
- ▶ When developing an outreach message for children, choose the age ranges to target.
- ▶ Many additional classroom materials are available for use free of cost. Educational materials available for downloading from the Internet at [www.csu.org/water/watereducation/watereducation.html](http://www.csu.org/water/watereducation/watereducation.html).
- ▶ Should make students aware of the potential impacts of hazardous household materials on water quality and inform residents of ways to properly store, handle, and dispose of the chemicals
- ▶ Water usage in the home can easily be reduced by 15 to 20 percent—without major discomfort—by implementing a program to conserve water in the home.
- ▶ Lawn and garden activities can result in contamination of storm water through pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff and enhance the aesthetics of a property.

## LIMITATIONS:

- ▶ One of the limitations of classroom education is being able to incorporate storm water issues into the school curricula. With so many subjects to teach, environmental issues might be viewed as less important.

## MAINTENANCE:

- ▶ Programs and educational materials can be re-used, but they must be presented on a continual basis.

## OBJECTIVES

- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
- Commercial Activities
- Roadways
- Waste Containment
- Housekeeping Practices



# WEBER COUNTY

## ENGINEERING DEPARTMENT

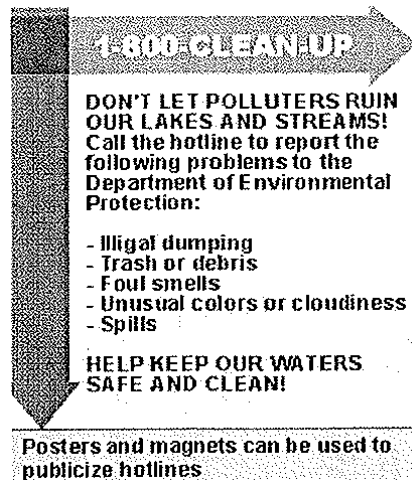
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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



**DESCRIPTION:**

Because regulators and authorities cannot monitor all water bodies at once, they sometimes rely on the public to keep them informed of water polluters. Community hotlines provide a means for concerned citizens and agencies to contact the appropriate authority when they see water quality problems.

**APPROACH:**

- ▶ Once a city has determined that they need a hotline, they should chose between a telephone or an e-mail hotline.
- ▶ A party or agency responsible for maintaining the hotline and responding to incoming complaints must first be identified. The responsible party could be a division of local government, a water quality board, a public utility, or an environmental agency
- ▶ All distributed materials should include pollution hotline numbers and information.
- ▶ Curbs should have pumping systems, instead of drainage systems, for collecting spilled materials
- ▶ Generally, an investigation team promptly responds to a hotline call and, in most cases, visits the problem site.
- ▶ If a responsible party can be identified, the team informs the party of the problem, offers alternatives for future disposal, and instructs the party to resolve the problem.

**LIMITATIONS:**

- ▶ The community's ability to pay for it.
- ▶ The ability of the community to keep the hotline staffed

**MAINTENANCE:**

- ▶ The most important part is the responsiveness of the hotline. If a citizen reports an illegal dumping but no action is taken by the appropriate authority, that citizen could lose faith in the hotline and might not call back with future information.

**OBJECTIVES**

- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
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**IMPLEMENTATION REQUIREMENTS**

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



**Diversion dikes can be used to contain storm water onsite**

**DESCRIPTION:**

Erosion and sediment control are generally two of the biggest problems on construction sites. Erosion control measures must be taken during a construction project. An Erosion Control Plan will be submitted and approved before work can begin on the project. An Erosion Control Plan describes what erosion control BMPs will be implemented, when and where, during the project. Erosion and sediment control measures should be installed before other construction activities begin.

**APPLICATION:**

- ▶ Create a list of possible erosion control BMPs that could be implemented in any given project.
- ▶ Require submittal of erosion & sediment control plans for projects that are on 1 acre and larger sites.
- ▶ Develop a review checklist for plan review personnel.
- ▶ Provide the review checklist to contractors/developers so they know what is expected.
- ▶ Provide inspectors with a copy of the approved plans.  
Check to make sure erosion control measures are properly installed before beginning other construction activities.

**LIMITATIONS:**

- ▶ Must be enforced to be affective.
- ▶ Sometimes site conditions are different than planned on and the plans have to be modified.
- ▶ The erosion control measures have to be maintained.
- ▶ The BMPs have to be installed early on in the project.
- ▶ The BMPs have to be removed after the threat of erosion is no longer present.

**OBJECTIVES**

- Manufacturing
- Material Handling
- Vehicle Maintenance
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- Low or Unknown Impact

**IMPLEMENTATION REQUIREMENTS**

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



**DESCRIPTION:**

Educational Materials to present information to the public on storm water issues and water quality awareness is an integral part of any storm water education program. Providing storm water education by sending out information with bills, newsletters, or presented at city activities, in city offices, schools, and fair booths, exposes the message to a wide variety of people, if not city-wide. Topics can include Water conservation, proper lawn and garden care, and proper disposal of hazardous household wastes. Many educational materials can be used for city personnel, contractors as well as homeowners or businesses.

**APPLICATION:**

- ▶ Building a strong relationship with citizens is the most important step in getting storm water education city-wide.
- ▶ Educational materials can be tailored to all different age groups and technical background.
- ▶ Should make people aware of the potential impacts of hazardous household materials on water quality and inform residents of ways to properly store, handle, and dispose of the chemicals
- ▶ Water usage in the home can easily be reduced by 15 to 20 percent—without major discomfort—by implementing a program to conserve water in the home.
- ▶ Lawn and garden activities can result in contamination of storm water through pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff and enhance the aesthetics of a property.

**LIMITATIONS:**

- ▶ Not everyone will actually read or incorporate the information into their lives.
- ▶ Budgets need to have sufficient funds to obtain educational materials and their distribution.

**MAINTENANCE:**

- ▶ Programs and educational materials can be re-used, but they must be presented on a continual basis.

**OBJECTIVES**

- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
- Commercial Activities
- Roadways
- Waste Containment
- Housekeeping Practices



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- Medium Impact
- Low or Unknown Impact

**IMPLEMENTATION REQUIREMENTS**

- Capital Costs
- O&M Costs
- Maintenance
- Training
  
- High
- Medium
- Low



## OBJECTIVES

- New Development
- Residential
- Commercial Activities
- Industrial Activities
- Municipal Facilities
- Illegal Discharges



# WEBER COUNTY

## ENGINEERING DEPARTMENT

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## DESCRIPTION:

Employee training, like equipment maintenance, is a method by which to implement BMPs. Employee training should be used in conjunction with all other BMPs as part of the facility's SWPPP.

The specific employee training aspects of each of the source controls are highlighted in the individual information sheets. The focus of this information sheet is more general, and includes the overall objectives and approach for assuring employee training in stormwater pollution prevention. Accordingly, the organization of this information sheet differs somewhat from the other information sheets in this chapter.

## OBJECTIVES:

Employee training should be based on four objectives:

- ▶ Promote a clear identification and understanding of the problem, including activities with the potential to pollute stormwater;
- ▶ Identify solutions (BMPs);
- ▶ Promote employee ownership of the problems and the solutions; and
- ▶ Integrate employee feedback into training and BMP implementation.

## APPROACH:

- ▶ Integrate training regarding stormwater quality management with existing training programs that may be required for other regulations.
- ▶ Employee training is a vital component of many of the individual source control BMPs included in this manual.

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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Regulatory
- Training
- Staffing
- Administrative
- High
- Medium
- Low



## OBJECTIVES

- New Development
- Residential
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- Illegal Discharges



# WEBER COUNTY

## ENGINEERING DEPARTMENT

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## DESCRIPTION:

Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals.

## APPROACH:

- ▶ Pattern a new program after the many established programs from municipalities around the country. Integrate this best management practice as much as possible with existing programs at your municipality.
- ▶ This BMP has two key audiences: municipal employees and the general public.
- ▶ For the general public, municipalities should establish a public education program that provides information on such items as storm water pollution and beneficial effects of proper disposal on water quality; reading product labels; safer alternative products; safe storage, handling, and disposal of hazardous products; list of local agencies; and emergency phone numbers. The programs listed below have provided this information through brochures or booklets that are available at a variety of locations including municipal offices, household hazardous waste collection events or facilities, and public information fairs.

Municipal facilities should develop controls on the application of pesticides, herbicides, and fertilizers in public right-of-ways and at municipal facilities.

Controls may include:

- ▶ List of approved pesticides and selected uses.
- ▶ Product and application information for users.
- ▶ Equipment use and maintenance procedures.
- ▶ Record keeping and public notice procedures.

## LIMITATIONS:

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

## TARGETED POLLUTANTS

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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Regulatory
- Training
- Staffing
- Administrative
- High
- Medium
- Low



## HAZARDOUS MATERIAL

### DESCRIPTION:

Prevent or reduce the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

### APPLICATION:

Many of the chemicals used on-site can be hazardous materials which become hazardous waste upon disposal. These wastes may include:

- ▶ Paints and solvents; petroleum products such as oils; fuels and greases; herbicides and pesticides; acids for cleaning masonry; and concrete curing compounds.

In addition, sites with existing structures may contain wastes which must be disposed of in accordance with federal, state and local regulations, including:

- ▶ Sandblasting grit mixed with lead, cadmium or chromium based paints, asbestos, and PCBs.

### INSTALLATION/APPLICATION CRITERIA:

The following steps will help reduce stormwater pollution from hazardous wastes:

- ▶ Use the entire product before disposing of the container.
- ▶ Do not remove the original product label; it contains important safety and disposal information.
- ▶ Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried off-site by runoff. Do not apply these chemicals just before it rains. People applying pesticides must be certified in accordance with federal and state regulations.

### LIMITATIONS:

- ▶ Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste collector.

### MAINTENANCE:

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

### OBJECTIVES

- New Development
- Residential
- Commercial Activities
- Industrial Activities
- Municipal Facilities
- Illegal Discharges



## WEBER COUNTY

### ENGINEERING DEPARTMENT

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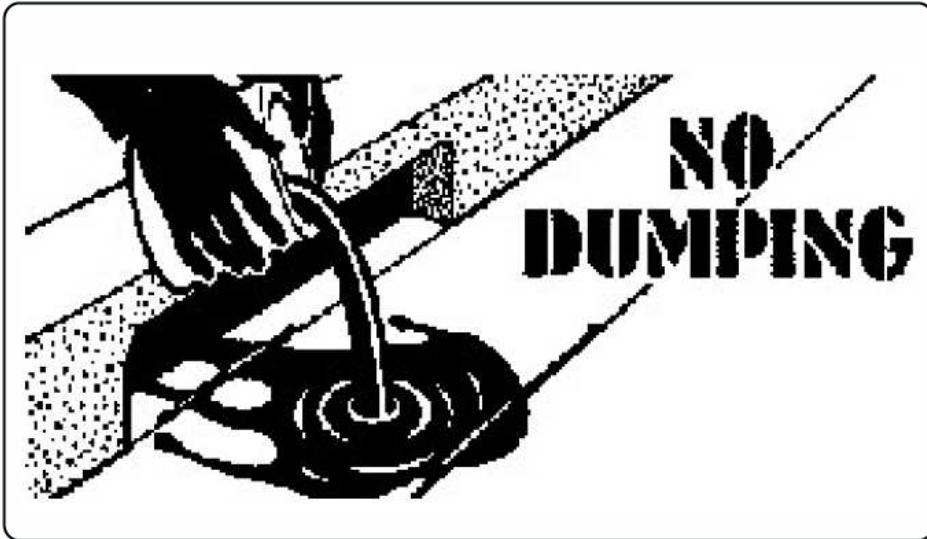
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### IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Regulatory
- Training
- Staffing
- Administrative
- High
- Medium
- Low





## DESCRIPTION:

Implement measures to detect, correct, and enforce against illegal dumping of pollutants on streets, into the storm drain system, and into creeks. Substances illegally dumped on streets, into the storm drain system, and into creeks include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. All of these wastes can cause storm water and receiving water quality problems as well as clog the storm drain system.

## APPROACH:

One of the keys to success is increasing the general public's awareness of the problem and to at least identify the incident, if not correct it. There are a number of ways of accomplishing this:

- ▶ Train municipal staff from all departments to recognize and report incidents.
- ▶ Deputize municipal staff that may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act.
- ▶ Educate the public.
- ▶ Provide the public with a mechanism for reporting such as a hot line.

Establish system for tracking incidents which will identify:

- ▶ Illegal dumping "hot spots",
- ▶ Types and quantities (in some cases) of wastes,
- ▶ Patterns in time of occurrence (time of day/night, month, or year),
- ▶ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accident/spills), and
- ▶ Responsible parties.

A tracking system also helps manage the program by indicating trends, and identifying who, what, when, and where efforts should be concentrated.

## LIMITATIONS

- ▶ The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal.

## OBJECTIVES

- New Development
- Residential
- Commercial Activities
- Industrial Activities
- Municipal Facilities
- Illegal Discharges



# WEBER COUNTY

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## TARGETED POLLUTANTS

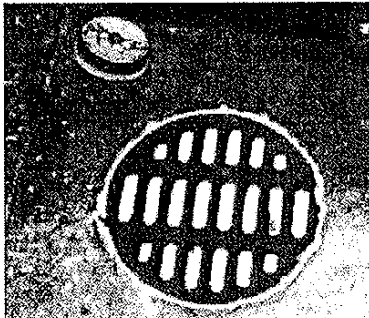
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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
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One of the ways to identify illicit connections is by inspecting storm drain system using video equipment (Source: Drain Patrol, no date)



A common source of pollution from businesses is a floor drain that is improperly connected to a storm drain (Source: Petro-Marine Company, Inc., no date)

## DESCRIPTION:

Involves the identification and elimination of illegal or inappropriate connections of industrial and business wastewater sources to the storm drain system. It attempts to prevent contamination of ground and surface water supplies by regulation, inspection, and removal of these connections. The large amount of storm and sanitary sewer pipes in a community creates a complex and often confusing system of utilities, so it is not unusual for improper connections to occur.

## APPROACH:

- ▶ Discharges from industry and business may come from variety of sources including process wastewater, wash waters, and sanitary wastewater. The following methods are often used for identifying improper industrial discharges to the storm drain system.
- ▶ Visual Inspection. A physical examination of piping connections or analysis by closed circuit camera is used to identify possible illicit connection sites.
- ▶ Piping schematic Review. Architectural plans and plumbing details are examined for potential sites where improper connections have occurred.
- ▶ Smoke Testing. Smoke testing used to locate connections by injecting a non-toxic vapor (smoke) into the system and following its path of travel.
- ▶ Dye Testing. Colored dye is added to the drain water in suspect piping. Dyed water appearing in the storm drain system indicates an illegal connection, possibly between the sanitary sewer system and the storm drain.
- ▶ Instituting building and plumbing codes to prevent connections of potentially hazardous pollutants to storm drains.
- ▶ Flow Monitoring. Monitoring increases in storm sewer flows during dry periods can also be lead investigators to sources of infiltration due to improper connections.
- ▶ Inspection using video equipment
- ▶ Instituting building and plumbing codes to prevent connections of potentially hazardous pollutants to storm drains.

## LIMITATIONS:

- ▶ A local ordinance is necessary to provide investigators with access to private property in order to perform field tests (Ferguson et al. 1997)
- ▶ Rain fall can hamper efforts to monitor flows and visual inspections

## MAINTENANCE:

- ▶ Identifying illicit discharges requires teams of at least two people (volunteers can be use), plus administrative personnel, depending on the complexity of storm sewer system.

## OBJECTIVES

- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
- Commercial Activities
- Roadways
- Waste Containment
- Housekeeping Practices



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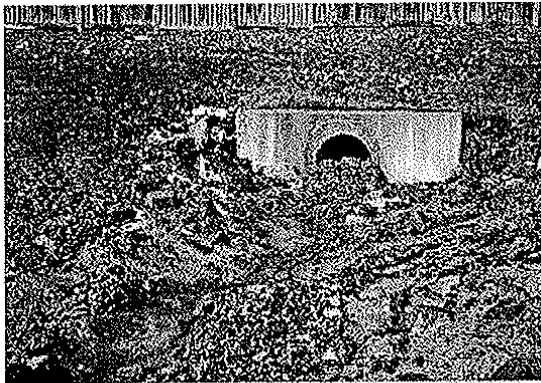
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Regular inspection and maintenance of storm water best management practices is important to ensure that the practices are functioning properly and to remove trash and organic debris

## DESCRIPTION:

This practice requires changes in the regional growth planning process to contain sprawl development. Sprawl development is the expansion of low-density development into previously undeveloped land. The American Farmland Trust has estimated that the United States is losing about 50 acres an hour to suburban and exurban development (Longman, 1998). This sprawl development requires local governments to extend public services to new residential communities whose tax payments often do not cover the cost of providing those services. For example, in Prince William County, Virginia, officials have estimated that the costs providing services to new residential homes exceeds what is brought in from taxes and other fees by \$1,600 per home (Shear and Casey, 1996).

Infrastructure planning makes wise decisions to locate public services – water, sewer, roads, schools, and emergency services – in the suburban fringe and direct new growth into previously developed areas, discouraging.

Low-density development, Generally, this is done by drawing a boundary or envelope around a community, beyond which major public infrastructure investments are discouraged or not subsidized. Meanwhile, economic and other incentives are provided within the boundary to encourage growth in existing neighborhoods.

## APPROACH:

- ▶ Sprawl development negatively impacts water quality in several ways. The most significant impact comes from the increase in impervious cover that is associated with sprawl growth. In addition to rooftop impervious area from new development, extension of road systems and additions of paved surface from driveways create an overall increase in imperviousness
- ▶ Urban Growth Boundaries. This planning tool establishes a dividing line that defines where a growth limit is to occur and where agricultural or rural land is to be preserved. Often, an urban services area is included in this boundary that creates a zone where public services will not be extended.
- ▶ Infill/Community Redevelopment. This practice encourages new development in unused or underutilized land in existing urban areas. Communities may offer tax breaks or other economic incentives to developers to promote the redevelopment of properties that are vacant or damaged.

## LIMITATIONS:

- ▶ Intense development of existing areas can create a new set of challenges for storm water program managers. Storm water management solutions are often more difficult and complex in ultra-urban areas than in suburban areas
- ▶ Infrastructure planning is often done on a regional scale and requires a cooperative effort between all the communities within a given region in order to be successful.

## OBJECTIVES

- Manufacturing
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Signs can be used to discourage dumping in sensitive areas (Source: NCDENR, 2000)

## DESCRIPTION:

By locating and correcting illegal dumping practices through education and enforcement measures, the many risks to public safety and water quality associated with illegal disposal actions can be prevented. Illegal dumping control is important to preventing contaminated runoff from entering wells and surface water, as well as averting flooding due to blockages of drainage channels for runoff.

## APPLICATION:

- ▶ Illegal dumping can occur in both urban and rural settings and can happen in all geographic regions.
- ▶ Illegal dumping control programs focus on community involvement and targeted enforcement to eliminate or reduce illegal dumping practices.
- ▶ Control programs use a combination of public education, citizen participation, site maintenance, and authorized enforcement measures to address illegal waste disposal.
- ▶ Issues that need to be examined when creating a program include the following:
  - ▶ The locations of persistent illegal dumping activity
  - ▶ Types of waste dumped and the profile of dumpers
  - ▶ Possible driving forces behind illegal dumping such as excessive user fees, restrictive curbside trash pickup, or ineffective recycling programs, Previous education and cleanup efforts, Current control programs and local laws or ordinances addressing the problem, Sources of funding and additional resources that may be required.

## LIMITATIONS:

- ▶ Illegal dumping is often spurred by cost and convenience considerations, and a number of factors encourage this practice
- ▶ A lack of understanding regarding applicable laws or the inadequacy of existing laws may also contribute to the problem.

## MAINTENANCE:

- ▶ Efforts need to be continual

## OBJECTIVES

- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
- Commercial Activities
- Roadways
- Waste Containment
- Housekeeping Practices



# WEBER COUNTY

## ENGINEERING DEPARTMENT

2380 Washington Blvd., Suite 240  
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(801) 399-8374

## TARGETED POLLUTANTS

- Sediment
- Nutrients
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substance
- Oil & Grease
- Floatable Materials
- Bacteria & Viruses
  
- High Impact
- Medium Impact
- Low or Unknown Impact

## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
  
- High
- Medium
- Low



## DESCRIPTION:

All developers are required to submit a landscape and irrigation plan for their developments. Lawn and garden activities can result in contamination of storm water through pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff as well as enhance the aesthetics of a property.

## APPLICATION:

- Develop landscape and irrigation plan preparation guidelines.
- Require a landscape and irrigation plan for each new commercial development.
- Educate local developers on how to create effective landscape and irrigation plans for their new developments.
- Educate municipal staff to review property landscape and irrigation plans to minimize runoff.
- Check all new irrigation plans to ensure that there will be no overspray onto impervious surfaces and that the irrigation water will be contained on site.
- Uniform coverage for sprinkler systems should be checked to help minimize over watering.

## LIMITATIONS:

- More time and effort will be required of the municipal staff to review new development plans.
- Some communities do not have the expertise to complete proper reviews in-house.

## MAINTENANCE:

- Programs and educational materials can be repeatedly sent out or emphasized. Extension service continues to research and provide current data.

## OBJECTIVES

- Manufacturing
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# WEBER COUNTY

## ENGINEERING DEPARTMENT

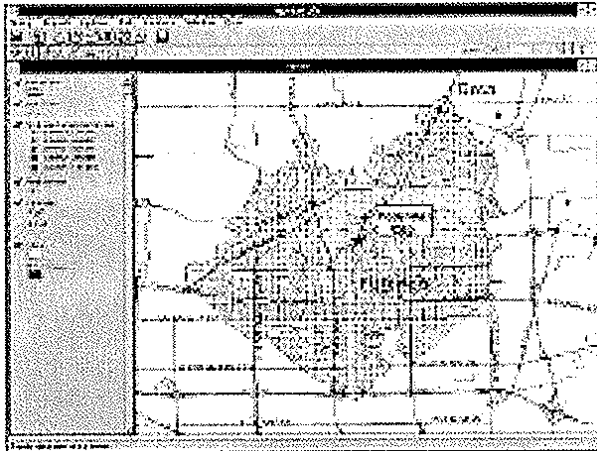
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- Low or Unknown Impact

## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Staffing
- High
- Medium
- Low



## DESCRIPTION:

Develop an integrated storm water sewer system map that identifies existing piping, open channels, storm drain outfalls, receiving water bodies and retention/detention basins.

## APPROACH:

- ▶ Determine if effort will be out-sourced or completed in-house
- ▶ Compile existing drawings
- ▶ Gather drawings of new developments
- ▶ Convert drawing to a GIS program
- ▶ Identify any possible illegal discharges
- ▶ Use in determining possible causes of a pollution
- ▶ Require new developments to supply city with updated drainage maps to be integrated into the system.

## LIMITATIONS:

- ▶ Some additional surveying may need to be done on existing structures
- ▶ Training may be required to familiarize with software

## MAINTENANCE:

- ▶ Map will need to be updated constantly as new developments arise
- ▶ Checks and changes may be necessary as as-builds and differences are discovered
- ▶ Inspection

## OBJECTIVES

- Manufacturing
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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



## DESCRIPTION:

Eliminate non-stormwater discharges to the stormwater collection system. Nonstormwater discharges may include: process wastewaters, cooling waters, wash waters, and sanitary wastewater.

## APPROACH:

The following approaches may be used to identify non-stormwater discharges:

- ▶ Visual inspection: the easiest method is to inspect each discharge point during dry weather. Keep in mind that drainage from a storm event can continue for three days or more and groundwater may infiltrate the underground stormwater collection system.
- ▶ Piping Schematic Review: The piping schematic is a map of pipes and drainage systems used to carry wastewater, cooling water, sanitary wastes, etc... A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system. Inspect the path of floor drains in older buildings.
- ▶ Smoke Testing: Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems. During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.
- ▶ Dye Testing: A dye test can be performed by simply releasing a dye into either the sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

## LIMITATIONS:

- ▶ Many facilities do not have accurate, up-to-date schematic drawings.
- ▶ Video and visual inspections can identify illicit connections to the storm sewer, but further testing is sometimes required (e.g. dye, smoke) to identify sources.

## OBJECTIVES

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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



## DESCRIPTION:

By locating and correcting illegal dumping practices through education and enforcement measures, the many risks to public safety and water quality associated with illegal disposal actions can be prevented. Illegal dumping control is important to preventing contaminated runoff from entering wells and surface water, as well as averting flooding due to blockages of drainage channels for runoff.

## APPLICATION:

- ▶ Review existing storm drain ordinances for consistency and compliance with state and federal regulations and make improvements, if necessary. Ensure that no conflicts will occur with new ordinances that will be written and adopted.
- ▶ Write and adopt an ordinance that prohibits (to the extent allowable under State, Tribal, or local law) the discharge of non-storm water discharges into the MS4 with appropriate enforcement procedures and actions.
- ▶ Write and adopt an ordinance, with sanctions to ensure compliance, requiring the implementation of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites.
- ▶ Write and adopt an ordinance requiring the implementation of post-construction runoff controls to the extent allowable under State, Tribal, or local law.
- ▶ Educate the public about the new ordinances.
- ▶ Enforce the new ordinances.

## LIMITATIONS:

- ▶ Wording of ordinances is often difficult. It should be specific to serve the intended purpose, but not too specific to cause potential conflicts with other ordinances or situations.
- ▶ Once an ordinance is adopted, it can be difficult to modify ordinances to meet changing needs.
- ▶ Ordinances have to be enforced to be beneficial.
- ▶ Ordinances take time to change.

## OBJECTIVES

- Manufacturing
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- Vehicle Maintenance
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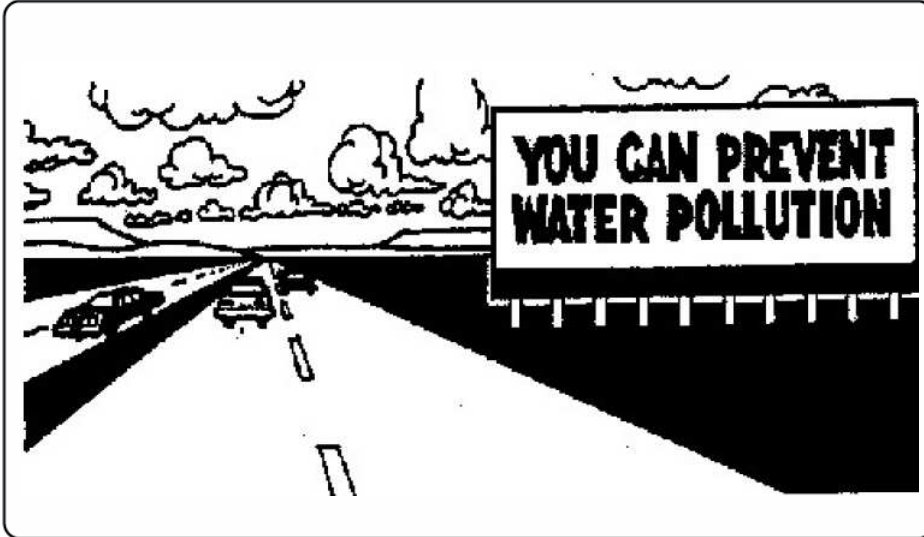
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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low





**DESCRIPTION:**

Public education/participation, like an ordinance or a piece of equipment, is not so much a best management practice as it is a method by which to implement BMPs. This information sheet highlights the importance of integrating elements of public education and participation into a municipality's overall plan for stormwater quality management.

A public education and participation plan provides the municipality with a strategy for educating its employees, the public, and businesses about the importance of protecting stormwater from improperly used, stored, and disposed of pollutants. Municipal employees must be trained, especially those that work in departments not directly related to stormwater but whose actions affect stormwater. Residents must become aware that a variety of hazardous products are used in the home and that their improper use and disposal can pollute stormwater. Increased public awareness also facilitates public scrutiny of industrial and municipal activities and will likely increase public reporting of incidents.

**APPROACH:**

- ▶ Pattern a new program after the many established programs around the country.
- ▶ Implement public education/participation as a coordinated campaign in which each message is related to the last.
- ▶ Present a clear and consistent message and image to the public regarding how they contribute to stormwater pollution and what they can do to reduce it.
- ▶ Utilize multi-media to reach the full range of audiences.
- ▶ Translate messages into the foreign languages of the community to reach the full spectrum of your populace and to avoid misinterpretation of messages.
- ▶ Create an awareness and identification with the local watershed.
- ▶ Use everyday language in all public pieces. Use outside reviewers to highlight and reduce the use of technical terminology, acronyms, and jargon.
- ▶ Make sure all statements have a sound, up-to-date technical basis. Do not contribute to the spread of misinformation.
- ▶ Break complicated subjects into smaller more simple concepts. Present these concepts to the public in a metered and organized way to avoid "overloading" and confusing the audience.

**LIMITATIONS:**

- ▶ None.

**OBJECTIVES**

- New Development
- Residential
- Commercial Activities
- Industrial Activities
- Municipal Facilities
- Illegal Discharges



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**IMPLEMENTATION REQUIREMENTS**

- Capital Costs
- O&M Costs
- Regulatory
- Training
- Staffing
- Administrative
- High
- Medium
- Low



**Television can be an effective means of informing the public about storm water problems and outreach events**

**DESCRIPTION:**

The media can be strong allies to a storm water pollution prevention campaign in educating the public about storm water issues. Through the media, a program can educate targeted or mass audiences about problems and solutions, build support for remediation and retrofit projects, or generate awareness and interest in storm water management. Best of all, packaging a storm water message as a news story is virtually free.

**APPROACH:**

- ▶ Newspapers and Magazines. Newspapers are powerful vehicles for delivering educational information, policy analyses, public notices, and other messages. Many displays at watershed seminars proudly post newspaper articles on the projects being presented in recognition of the importance and impact of newspaper coverage.
- ▶ Newspapers can be accessed in several ways. Depending on the message or event, the appropriate format might be a news release, news advisory, query letter, letter to the editor or (for urgent, timely information) a news conference.
- ▶ Magazines. Magazines, like newspapers, allow for greater length and analysis that television and provide the additional benefit of targeting specific audiences (e.g., landscapers, automobile mechanics, farmers, or recreationists).
- ▶ Radio. In spite of the popularity of video, radio remains a strong media contender due to its affordable production costs and creative possibilities. Further, commuters who drive to work spend much time in their vehicles.
- ▶ Television. Television is the primary source of news for the majority of the population, and local reporters are generally interested in covering environmental stories that pertain to their area.
- ▶ Issues will attract television coverage if they involve local people or issues. Focus on unique or unusual attributes. Affect many people throughout a region, involve controversy or strong emotions.
- ▶ Internet Message. Increasingly, the Internet is becoming a powerful means of communication. It provides worldwide access to hundreds of thousands of sites containing millions of documents, chat rooms for special interest groups, and incredible database/mapping features.

**LIMITATIONS:**

- ▶ Working with the media is essentially free, but not always.

**OBJECTIVES**

- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
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**IMPLEMENTATION REQUIREMENTS**

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



Used oil can be disposed of at a waste collection facility, where it will be collected and later sent to a recycling facility

## DESCRIPTION:

Used motor oil is a hazardous waste because it contains heavy metals picked up from the engine during use. Since it is toxic to humans, wildlife, and plants, it should be disposed of at a local recycling or disposal facility.

## APPROACH:

- ▶ When establishing oil recycling programs, municipalities should provide the public with the proper informational resources.
- ▶ The public can also call 1-800-RECYCLE or contact Earth's 911 at [www.1800cleanup.org](http://www.1800cleanup.org) for more information.
- ▶ Municipalities also need to address oil filter recycling in their recycling programs.
- ▶ To make recycling motor oil more convenient for the do-it-yourselfers, oil recycling programs should be located throughout all communities.
- ▶ Two types of programs currently in use are drop-off locations and curbside collection. Drop-off locations include service stations, recycling centers, auto parts retail stores, quick lubes, and landfills.

## LIMITATIONS:

- ▶ If oil is mixed with other substances or if storage containers have residues of other substances, this can contaminate oil and make it a hazardous waste.
- ▶ It is often difficult to effectively educate the public and convince them of the importance of recycling oil. This limitation can be addressed if municipalities include recycling information in utility bill inserts, newspaper ads, and mailings.

## MAINTENANCE:

- ▶ Costs for used motor oil recycling programs vary depending on whether a community has already established similar types of recycling programs.
- ▶ Major costs associated with oil recycling programs include advertisement costs and oil collection costs.

## OBJECTIVES

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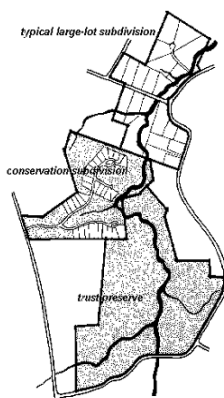
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## IMPLEMENTATION REQUIREMENTS

- Capital Costs
- O&M Costs
- Maintenance
- Training
- High
- Medium
- Low



Property boundaries differ widely between traditional large-lot zoning, which maximizes the acreage of individual properties, and conservation zoning, which maximizes the amount of shared open space (Source: Arendt, 1996)

**DESCRIPTION:**

Zoning is a classification scheme for land use planning. Zoning can serve numerous functions and can help mitigate storm water runoff problems by facilitating better site designs. By correctly applying the right zoning technique, development can be targeted into specific areas, limiting development in other areas and providing protection for the most important land conservation areas.

**APPLICATION:**

- Impervious Overlay Zoning: This type of overlay zoning limits future impervious areas.
- Incentive Zoning: This planning technique relies on bonuses or incentives for developers to encourage the creation of certain amenities or land use designs. A developer is granted the right to build more intensively on a property or given some other bonus in exchange for an amenity or a design that the community considers beneficial.
- Performance Zoning: Performance zoning is a flexible approach that has been employed in a variety of fashions in several different communities across the country. Some performance factors include traffic or noise generation limits, lighting requirements, storm water runoff quality and quantity criteria, protection of wildlife and vegetation, and even architectural style criteria
- Urban Growth Boundaries: Urban growth boundaries are sometimes called development service districts and include areas where public services are already provided (e.g., sewer, water, roads, police, fire, and schools).

**LIMITATIONS:**

Some zoning techniques may be limited by economic and political acceptance and should be evaluated on these criteria as well as storm water management goals.

**OBJECTIVES**

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**IMPLEMENTATION REQUIREMENTS**

- Capital Costs
- O&M Costs
- Maintenance
- Staffing
- High
- Medium
- Low

## **NOTICE OF TERMINATION PROCESS**

The Notice of Termination has been a topic of discussion for some time on the State level. The Notice of Termination formally brings to a close the temporary permit to discharge stormwater from construction sites. This is a permit issued by the State and as such the State of Utah is the entity that grants a termination to that permit. However, the State of Utah does not have the resources or man-power required to ensure that all construction sites meet the requirements necessary to obtain an NOT and are leaning on MS4s state-wide to aid in the process. In this light the 2010 MS4 permit states:

4.2.4.4.2 The Permittee must inspect all phases of construction: prior to land disturbance, during active construction, and following active construction. The Permittee must include in its SWMP document a procedure for being notified by construction operators/owners of their completion of active construction so that verification of final stabilization and removal of all temporary control measures may be conducted.

### **Possible Steps for Terminating the Discharge of Water Associated with Construction Activities**

When a Construction Site is nearing completion and the permittee is desirous of terminating their permit with the State of Utah for discharging water associated with construction activities the following steps should be taken:

1. The Contractor's SWPPP coordinator for the project should notify the city storm water inspector that they are ready for final inspection.
2. The city storm water inspector visits the site to determine if the site has reached final stabilization as determined by the UPDES Storm Water General Permit for Construction Activities, UTR300000. The city storm water inspector also checks to see if all temporary BMP have been removed.
3. If there is work still to be completed they are included in the Additional Comments and Corrective Actions for SWPPP Compliance portion of the State's UPDES Storm Water Inspection Evaluation Form for SWPPP Compliance (State's inspection form) and provides a copy for the SWPPP coordinator.
4. When the city storm water inspector is satisfied that all requirements have been met, the city storm water inspector uses the State's inspection form and completes the Notice of Termination (NOT) Inspection section of that form and sends a copy to the State for their records.
5. *(This step is not currently needed, but may become effective in January 2011).* The city storm water inspector or designated individual then needs to log into the State's database and change the status of the permit for the given permit.
6. Once the State has received confirmation that the site meets all the requirements the NOT is granted.