

Chapter 6 – Source Control Practices and Pollution Prevention

Introduction

Controlling the sources of pollution and preventing pollutant exposure to stormwater is an important aspect of an effective stormwater management strategy. Source control practices and pollution prevention are operational practices that limit the generation of stormwater pollutants at their source. Most are typically non-structural, require minimal or no land area, and can be implemented with moderate cost and effort as compared to structural measures.

Source control practices and pollution prevention should be incorporated, to the maximum extent practicable, into the site design and operational aspects of all land development projects, including but not limited to new development and redevelopment activities associated with:

- Commercial and industrial sites
- Institutional facilities
- Residential development
- Municipal facilities and operations

Over the past several decades, a large amount of information on stormwater source control and pollution prevention practices has been developed and refined as part of the CT DEEP stormwater general permit programs, including the [MS4 General Permit](#) (Good Housekeeping and Pollution Prevention for Municipal Operations), [Industrial Stormwater General Permit](#), and [Commercial Stormwater General Permit](#). Many other Connecticut-specific and regional information sources are available on these topics through organizations such as the [CT Nonpoint Education for Municipal Officials \(NEMO\) Program](#), [UConn Center for Land Use Education and Research \(CLEAR\)](#), and watershed groups throughout the state.

This chapter has been revised and abbreviated to provide basic guidance on the use of source control practices and pollution prevention for common land development activities and land use settings in the State of Connecticut. Website links are provided to other available sources of more detailed information on each topic, rather than duplicating the information in this

What's New in this Chapter?

- ❖ Clarified project types and land use activities for which source control practices and pollution prevention should be implemented
- ❖ Minimum requirements for source control practices and pollution prevention
- ❖ Updated information on source control and pollution prevention practices with website links to sources of additional information

document, which may become outdated over time. CT DEEP may periodically update the website links and add or remove information sources.

Recommended Practices

This section provides guidance on the use of the following source control and pollution prevention practices for development-related activities in commercial, industrial, institutional, residential, and municipal settings. This list of practices is not exhaustive; the use of other source control and pollution prevention practices is also encouraged.

Street and Parking Lot Sweeping. Street and parking lot sweeping helps remove sediment and debris from paved surfaces, reducing exposure of these materials to stormwater runoff and transport to waterbodies.

Winter Road Materials Management. Salts, sand, and other materials are applied to roadways for improved safety during adverse winter weather conditions. Ant-icing and deicing materials can have adverse effects on surface waters, groundwater, drinking water supplies and public health, vegetation, soils, and aquatic life. Proper application and storage of anti-icing/deicing materials is important to avoid or minimize environmental and public health impacts.

Snow Storage and Disposal. Snow accumulated from plowing activities can be a source of contaminants and sediment to surface waters if not properly located and maintained.

Catch Basin Cleaning and Storm Drainage System Maintenance. Regular inspection and cleaning of catch basins and other storm drain system components preserves the stormwater management functions of the drainage system and helps reduce the discharge of pollutants from the drainage system. Inspection and maintenance of structural stormwater BMPs is addressed in other sections of this Manual.

Subsurface Sewage Disposal System Management. Approximately 40 percent of Connecticut's population relies on subsurface sewage disposal systems (also called septic systems). Failing or older, sub-standard systems can be major sources of pollution to surface waters and groundwater.

Illicit Discharge Detection and Elimination. Illicit discharges are unpermitted discharges to waters of the state that do not consist entirely of stormwater or uncontaminated groundwater, except certain allowable non-stormwater discharges. Wastewater connections to the storm drain system and illegal dumping are among the types of illicit discharges that can occur. Depending on the source, an illicit discharge may contain a variety of pollutants that can impact both human health and the aquatic environment. Identifying and eliminating these discharges is an important means of pollution source control in a stormwater drainage system.

Commercial and Industrial Pollution Prevention. Commercial and industrial facilities, including institutional facilities, can potentially contribute point or nonpoint pollution to stormwater through activities associated with operations, maintenance, and storage. CT DEEP provides [general pollution prevention information](#) and fact sheets applicable to a wide variety of industries.

Pet and Waste and Waterfowl Management. The fecal matter of domestic pets and waterfowl can be carried by stormwater runoff into nearby waterbodies or storm drainage systems. In addition to contributing solids to stormwater, animal fecal matter is a source of nutrients and pathogens, such as bacteria and viruses, in stormwater runoff. In Connecticut's coastal watersheds, domesticated animals (dogs and cats) and waterfowl, especially Canada geese, can be significant contributors in parks (including dog parks), landscaped shorelines, golf courses, and commercial areas.

Lawn and Landscape Management. Lawns and other managed landscape can contribute stormwater runoff pollution, resulting in adverse impacts to surface waters and groundwater, due to overfertilization, overwatering, overapplication of pesticides, and direct disposal of lawn clippings, leaves, and trimmings. The use of alternative landscaping techniques and judicious use of fertilizers and pesticides can reduce stormwater and nonpoint source pollution from lawns and managed landscapes in virtually all land use settings and project types.

[Table 6- 1](#) summarizes the applicability of each type of practice for various land use settings, minimum requirements for use of each practice, and website links to suggested sources of additional information.

Source control and pollution prevention practices selected for a given project or site should be included in the post-construction Operation and Maintenance (O&M) Plan, which is a required element of a Stormwater Management Plan, as described in [Chapter 12 – Stormwater Management Plan](#).

Table 6- 1 Guidance on the Use of Source Control and Pollution Prevention Practices

Practice Type	Land Use					Minimum Requirements	Sources of Additional Information
	Commercial	Industrial	Institutional	Municipal	Residential		
Street and Parking Lot Sweeping	●	●	●	●	●	<ul style="list-style-type: none"> ➤ Required by MS4 regulated municipalities and institutional facilities, and CTDOT, under MS4 General Permits. ➤ Reuse and/or dispose of street sweepings in accordance with CT DEEP guidelines and requirements (see reference). ➤ Minimum frequency of once per year, in spring as soon as possible after snow melt and following winter activities such as sanding to capture sand and debris before it is washed into the storm drainage system. ➤ More frequent sweeping in targeted areas based on consideration of pollutant sources, land use, water quality, and other factors. ➤ Conduct sweeping in dry weather; dry cleaning methods preferable (avoid wet cleaning or flushing of the pavement). ➤ Select sweeping equipment depending on level of debris. 	<p>CT DEEP Guideline for Municipal Management Practices for Street sweepings & Catch Basin Cleanings, as amended</p> <p>https://www.unh.edu/unhsc/news/clean-sweep-tech-memo-outreach-toolkit-developed</p>

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Winter Road Materials Management		●	●	●		<p>Application</p> <ul style="list-style-type: none"> ➤ Minimize the use and optimize the application of chloride-based or other salts and anti-icing/deicing product (while maintaining public safety) and consider opportunities for use of alternative materials ➤ Application rate should be tailored to road conditions (i.e., high versus low volume roads, air & pavement temperature, weather forecast). ➤ Use anti-icing (pre-storm) application ➤ Trucks should be equipped with sensors that automatically control the deicer spread rate. ➤ Drivers and handlers of salt and other deicers should receive training to improve efficiency, reduce losses, and raise awareness of environmental impacts. <p>Storage</p> <ul style="list-style-type: none"> ➤ Salt storage piles should be completely covered, ideally by a roof and, at a minimum, by a weighted tarp, and stored on impervious surfaces. ➤ Runoff should be contained in appropriate areas. ➤ Spills should be cleaned up after loading operations. The material may be directed to a sand pile or returned to salt piles. ➤ Avoid storage in drinking water supply areas, water supply aquifer recharge areas, and public wellhead protection areas. <p>Other</p> <ul style="list-style-type: none"> ➤ Identify ecosystems such as wetlands that may be sensitive to salt. ➤ Use calcium chloride and CMA in sensitive ecosystem areas. ➤ To avoid over-application and excessive expense, choose deicing agents that perform most efficiently according to pavement temperature. ➤ Monitor the deicer market for new products and technology. 	<p>UConn Green SnowPro Program</p> <p>Winter Highway Maintenance Operations: Connecticut, A Report by the Connecticut Academy of Science and Engineering for the Connecticut Department of Transportation (July 2015)</p> <p>Road Salt Use in Connecticut Reference Guide</p> <p>Cary Institute of Ecosystem Studies, Road Salt</p>

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Snow Storage and Disposal	●	●	●	●		<ul style="list-style-type: none"> ➤ Snow disposal and storage activities, including selection of appropriate snow disposal sites, should adhere to CT DEEP guidelines and requirements (see reference). ➤ Snow accumulations removed from roadways, bridges, and parking lots should be placed in upland areas only, where sand and other debris will remain after snowmelt for later removal. ➤ Snow should not be pushed or dumped into waterbodies or wetlands, structural stormwater BMPs, stormwater drainage swales or ditches, or on top of catch basins. ➤ Snow should not be stored near drinking water areas, waterbodies, or wetlands. A minimum of 100 ft is recommended (the review authority may require more if site conditions are not adequate). ➤ Snow should not be stored in areas immediately adjacent to (within at least 100 feet) private or public drinking water well supplies (due to the possible presence of road salt). ➤ Avoid storing snow in areas that are unstable, areas of potential erosion, or high points where snow may melt and collect debris as runoff before it enters the stormwater system. ➤ Consider sun exposure when storing snow. Snow in areas with higher sun exposure will melt faster but may require deicers if the snowmelt refreezes. 	<p>CT DEEP Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots, as amended</p>

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Catch Basin Cleaning and Storm Drainage System Maintenance	●	●	●	●		<ul style="list-style-type: none"> ➤ Required by MS4 regulated municipalities and institutional facilities, and CTDOT, under MS4 General Permits. ➤ Establish a catch basin cleaning frequency such that no catch basin at any time will be more than fifty (50) percent full ➤ Clean more frequently catch basins with known heavier sediment and debris loads, near sensitive waterbodies, drainage problems, flat grades, etc. ➤ Cleaning should include removal of sediment from sump and removal of trash and debris from grate. ➤ Additional maintenance recommended in the fall to remove trash, leaves, and other debris. In rural areas and areas that experience significant accumulation of leaves, the recommended fall maintenance should be performed after leaf fall and before the first snowfall. ➤ Catch basin cleanings (solid material, such as sand, silt, leaves, and debris removed from storm drainage systems during cleaning operations) should be properly disposed of either via reuse, or via disposal at an approved site. (Note: Before reuse of the sand and organic matter it is recommended the material should be tested as they can carry various contaminants such as heavy metals.) ➤ Handle and dispose of catch basin and storm drainage system cleanings in accordance with CT DEEP guidelines and requirements (see reference) 	<p>CT DEEP Guideline for Municipal Management Practices for Street sweepings & Catch Basin Cleanings, as amended</p>

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Subsurface Sewage Disposal System Management	●	●	●	●	●	<ul style="list-style-type: none"> ➤ Stormwater management plans should describe appropriate operation and management for all subsurface disposal systems on the project site. ➤ Regularly inspect system and pump septic tank every three years by a septic service professional. Refer to CT DPH septic system inspection reporting form for inspection requirements. ➤ Do not park on, plant trees near, or discharge rainwater/stormwater near drain field. ➤ Maintain, upgrade, and repair system. ➤ Use water efficiently and properly dispose of waste (do not flush anything besides human waste and toilet paper). 	CT DEEP Subsurface Sewage Treatment and Disposal System website CT DPH Subsurface Sewage website CT DPH Connecticut Recommended Minimum Existing Septic System Inspection Report CT DPH Septic Systems 101: Operation and Maintenance of a Subsurface Sewage Disposal System US EPA Septic Smart Homeowners

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Illicit Discharge Detection and Elimination	●	●	●	●	●	<ul style="list-style-type: none"> ➤ Required by MS4 regulated municipalities and institutional facilities, and CTDOT, under MS4 General Permits. ➤ Employees, contractors, and property owners should be alert for evidence of illicit discharges or the threat of an illicit discharge into the storm drainage system at any point or any time. ➤ No illicit discharges are allowed as part of new development, redevelopment, or retrofit projects. ➤ Any illicit discharges discovered during site development or ongoing site operations shall be investigated and eliminated consistent with the CT DEEP MS4 General Permits and any local illicit discharge ordinances or regulations. ➤ Include storm drain marking (e.g., stenciling, glue-on or self-adhesive markers, or permanent pre-cast markings) at existing and new catch basin inlets to discourage dumping. 	<p>UConn CLEAR and NEMO, Connecticut MS4 Guide, Illicit Discharge Detection and Elimination</p> <p>Guide to Storm Drain Marking, Town of Wellesley DPW, Engineering Division</p>

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Commercial and Industrial Pollution Prevention	●	●		●		<ul style="list-style-type: none"> ➤ Projects involving commercial businesses/facilities regulated under the CT DEEP Commercial Stormwater General Permit should reference the required Stormwater Management Plan and associated source controls and pollution prevention practices. ➤ Projects involving industrial facilities and activities regulated under the CT DEEP Industrial Stormwater General Permit should reference the required Stormwater Pollution Prevention Plan (SWPPP) and associated source controls and pollution prevention practices. ➤ Commercial businesses and industrial facilities not subject to the CT DEEP Commercial or Industrial Stormwater General Permits should implement source controls and pollution prevention practices to the maximum extent practicable to minimize stormwater pollution. 	CT DEEP Industrial Stormwater General Permit Program UConn CLEAR and NEMO, Industrial Stormwater General Permit CT DEEP Commercial Stormwater General Permit Program UConn CLEAR and NEMO, Construction Stormwater General Permit CT DEEP Pollution Prevention (P2) for Business, Industry, and Healthcare
Pet and Waterfowl Waste Management	●		●	●	●	<ul style="list-style-type: none"> ➤ Required by MS4 regulated municipalities and institutional facilities, and CTDOT, under MS4 General Permits. ➤ Pet waste stations with pet waste bags and waste containers are recommended at municipal parks and open space areas where dog walking occurs, and at residential developments, particularly multi-unit dwellings such as apartments, town houses, and condominiums. ➤ On municipal or privately-owned land where geese or other waterfowl populations could contribute bacteria to the storm drainage system or directly to waterbodies (i.e., land with open water), prohibit the feeding of geese or waterfowl and implement a program to manage geese and waterfowl populations. 	CT DEEP Pet Waste (Feces) Management Pet Waste Management, Think Blue Connecticut River CT DEEP Problems with Canada Geese

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Lawn and Landscape Management	●	●	●	●	●	<ul style="list-style-type: none"> ➤ Required by MS4 regulated municipalities and institutional facilities, and CTDOT, under MS4 General Permits. ➤ Use alternatives to managed turf. Use native plants that are adapted to Connecticut’s climate and that require minimal watering, fertilizer, and pesticide application. Choose vegetation that is best suited to the local conditions and desired level of maintenance. ➤ Improve soils by adding soil amendments or using mulches to reduce the need for watering by increasing the moisture retained in the soil. ➤ Test soils every 1 to 3 years to determine suitability for supporting a lawn, and to determine how to optimize growing conditions. ➤ Use efficient irrigation techniques, watering only when needed and allowing the water to penetrate deeper into the soil will encourage deeper root growth. Consider use of rain barrels or rain gardens for stormwater reuse. ➤ Mow high and keep mower blades sharp. Lawns should not be cut shorter than 3 inches. Keep clippings on the lawn to release stored nutrients back into the soil. ➤ Mulch mow grass clippings into the lawn in order to help soil retain moisture and to recycle nutrients, which can help reduce need for future fertilizer applications. ➤ Most lawns require little or no fertilizer to remain healthy. Avoid the use of conventional fertilizers and pesticides. Use organic lawn care methods to the maximum extent practicable (see references on organic lawn care practices). If fertilizer is to be used, follow best management practices to minimize and optimize fertilizer usage (see sources to right): <ul style="list-style-type: none"> ○ Fertilize no more than twice a year - once in May-June (not before spring green up), and once in September 	<p>CT DEEP, Organic Lawn Care website</p> <p>CT DEEP, Transitioning to Organic Land Care (OLC) In Your Town</p> <p>CT DEEP, Sustainable Practices and Resources for the Landscaping and Lawn Care Industry</p> <p>Connecticut Chapter of the Northeast Organic Farming Association:</p> <p>Final Report to the New England and New York State Environmental Agency Commissioners: Regional Clean Water Guidelines for Fertilization of Urban Turf (NEIWPC)</p> <p>University of Connecticut, New England Regional Nitrogen and Phosphorus Fertilizer and Associated Management Practice Recommendations</p> <p>University of Massachusetts Cooperative Extension, Best Management Practices for Lawn and Landscape Turf</p>

Practice Type	Land Use					Minimum Requirements	Sources of Additional Information
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Lawn and Landscape Management (continued)						<ul style="list-style-type: none"> ○ Use slow-release formulations (50 percent or more water-insoluble nitrogen) to encourage more complete uptake. ○ Fertilize at a rate of no more than ½ pound of nitrogen per 1000 square feet. Typically apply one-half to one-third (or less) of that recommended on the fertilizer bag label and then monitor lawn response and adjust as needed. ○ Use a phosphorus-free fertilizer on lawns near or bordering waterbodies, unless soil tests indicate that the soils are low in phosphorus. ○ Do not apply fertilizer prior to when rain is forecast, which can reduce fertilizer effectiveness and increase the risk of surface and groundwater contamination. ○ Do not apply fertilizer to saturated or frozen ground. Avoid spreading fertilizer on impervious surfaces (sidewalks, patios, driveways, etc.). ○ Leave a buffer strip of unfertilized grass or other vegetation around waterbodies. 	University of Connecticut Cooperative Extension, Sustainable Landscapes CT DEEP, BMPs for Grass Clipping Management University of Connecticut - Soil Nutrient Analysis Laboratory: UConn Cooperative Extension System's Home & Garden Education Center:
General Pollution Prevention and Good Housekeeping Practices	●	●	●	●	●	➤ Refer to requirements listed above	UConn CLEAR and NEMO, Connecticut MS4 Guide, Pollution Prevention & Good Housekeeping