

POLLUTION PREVENTION AFTER CONSTRUCTION

This chapter describes the pollution prevention measures to be taken once the site has been permanently and finally stabilized and no additional construction activities are anticipated on the site.

10.1 Overview

As noted in Chapter 1, stormwater pollution, or non-point source pollution, comes from many different sources: active construction sites, agricultural practices, forestry practices, and urbanized areas. Some types of urban land uses contribute higher than normal pollutant loadings. Inherent with these types of land uses are the storage, use and/or production of higher amounts of solvents, oils, lubricants, fertilizers, grease, and/or bacteria. If traditional stormwater quality controls are installed in runoff discharges that carry higher pollutant levels, the controls are quickly overwhelmed and stormwater quality downstream suffers. Therefore, for such discharges, additional measures must be taken to protect Knox County's stormwater management system from these higher pollutant loadings.

Pollution prevention begins during active construction, as outlined in Volume 2, Chapter 9 of this manual. However, pollution prevention must be practiced throughout the life of the site and is the responsibility of the property owner and business/activity operator. Pollution prevention activities should be tailored to capture typical pollutants from the land use activity occurring on the site. General guidance for land uses that are often identified as having a higher than normal pollutant potential is presented in the following paragraphs.

- **Vehicle maintenance, washing or storage facilities.** Pollution prevention activities for vehicle maintenance, washing, or storage land uses must focus on spill prevention and cleanup, oil and other fluid and material recycling, pre-treatment of wash water or runoff from maintenance areas, staff education on proper pollution prevention techniques, and customer education about the activities that are or are not acceptable on the premises. For businesses where vehicles will be stored, pollution prevention activities must also include routine inspection of the vehicles for leaks or discharges. Drip pans must be used to capture leaks and discharges until the vehicle can be maintained or fluids should be drained completely from vehicles that will remain unused. Discharges of wash water resulting from the hosing or cleaning of vehicles, equipment and/or facilities is considered an illegal non-stormwater discharge. Therefore, wash water must be prevented from entering the stormwater system. These activities could include blocking the stormwater system or diverting the wash water into a pre-treatment measure and then into the sanitary sewer system.
- **Recycling and salvage yard facilities.** Where the land use is a business that recycles or salvages vehicles or other equipment, the pollution prevention practices for that site should address draining the equipment of all fluids before storage. If the storage area is uncovered, pre-treatment controls are required to treat additional pollutants that could result from the storage or deterioration of the equipment or vehicles before the runoff discharges to traditional best management practices (BMPs), such as those discussed in Chapter 4.
- **Restaurants, grocery stores, and other food service facilities.** Grease and organic pollutants are pollutants that are typically encountered around restaurants, grocery stores, and other food service facilities. Pre-treatment to remove such pollutants prior to discharging to



traditional BMPs is required, in order to prevent clogging of downstream BMPs and the stormwater system. As well, wash water from equipment and/or facility cleaning activities must either be discharged to the sanitary sewer or be pre-treated prior to discharging to a stormwater quality BMP.

- **Facilities that temporarily or permanently house animals outside.** Animal housing facilities, such as veterinary clinics, boarding facilities, livestock stables, hatcheries and animal shelters, have the potential to deliver higher than normal bacterial loadings to the stormwater system. High counts of bacteria in streams and rivers can cause water quality impairments, but can also cause illnesses in people. Pollution prevention practices for these types of facilities must include pet waste management practices, such as collecting and properly disposing of pet waste at landfills or wastewater treatment facilities. Animal bedding should be removed when soiled and properly disposed. Wood shavings or chips must not be allowed to migrate into the stormwater system.

10.2 Special Pollution Abatement Permit

A Special Pollution Abatement Permit (SPAP) may be required for new developments and redevelopments on the basis of: 1) land use or type of business; 2) a history of air or water pollution at a site; 3) a history of air or water pollution by an owner/operator at other sites; 4) the potential to impact environmentally sensitive areas, such as wetlands; or 5) at the discretion of the Director upon sound engineering judgment. A SPAP form is provided in Volume 1, Appendix D of this manual.

As required by Section 4.6 of the Knox County Stormwater Management Ordinance, SPAPs are required for the following hotspot land uses:

- Vehicle, truck or equipment maintenance, fueling, washing or storage areas including but not limited to: automotive dealerships, automotive repair shops, and car wash facilities;
- Recycling and/or salvage yard facilities;
- Restaurants, grocery stores, and other food service facilities;
- Commercial facilities with outside animal housing areas including animal shelters, fish hatcheries, kennels, livestock stables, veterinary clinics, or zoos;
- Other producers of pollutants identified by the Director by information provided to or collected by him/her or his/her representatives, or reasonably deduced or estimated by him/her or his/her representatives from engineering or scientific study.

A SPAP is not required for outfalls that have been previously permitted through the state's NPDES program. A copy of the NPDES permit must be submitted to Knox County Engineering. Typically, the need for a SPAP is identified during grading permit application review.

To obtain coverage under a SPAP, the property or business owner must submit a SPAP application form and the appropriate application fee. In the event that a SPAP is required for a new development or redevelopment site, grading and/or stormwater management plans will not be approved until the SPAP application form and any appropriate application fee has been received and approved by Knox County. The SPAP application requires supporting documentation for the proposed BMP(s), including BMP specifications and maintenance information. An As-Built Certification must be included for any structural BMPs installed at the site.

Once issued, the SPAP will be valid for five (5) years and must be renewed prior to the expiration date. SPAP renewal requires completion and submittal of an updated application form, including supporting documentation for the stormwater BMP(s) installed at the site, and payment of any appropriate application fee.



Coverage under a SPAP must be renewed if, at any time during the five-year permit period, pollution pre-treatment devices or stormwater BMPs that are reflected in the current SPAP are removed or otherwise significantly altered. A SPAP application that reflects the proposed modifications, along with a SPAP application fee, must be submitted to and approved by Knox County Engineering prior to instituting the changes. Renewal of a SPAP is not required for routine BMP maintenance and repair activities or for replacement of poorly functioning or failed BMPs as long as the replacement is similar to, in form and function, and serves the same purpose as the original BMP.

The following minimum standards shall be addressed in the SPAP application form:

- **Employees and/or staff of the business or land use type shall be trained annually on the requirements of the SPAP**, specifically addressing pollution source controls such as spill control and cleanup, proper waste management, chemical storage, and fluids management with vehicle servicing. The type of training shall be tailored to and appropriate for the land use or business. Documentation of the training shall be maintained with the SPAP and made available to Knox County upon request.
- **Parking lots shall be swept monthly to remove gross solids.** Waste gathered during sweeping activities shall be disposed of properly.
- **Animal waste shall be prevented from entering streams, sinkholes, wetlands, ponds or any other component of the storm drain system.** Controls shall be instituted to collect the animal waste and properly treat or dispose of it.
- **Structural BMPs that have been designed to specifically address the target pollutants associated with the land use shall be utilized where appropriate to reduce pollutant loadings.** This requirement does not alleviate new developments and redevelopments from water quality treatment design criteria for total suspended solids (TSS), as discussed in Volume 2, Chapter 3. BMPs that are implemented to comply with SPAP minimum standards can factor into the % TSS calculation, provided that they have TSS removal capabilities. Percent TSS removal values and policies for stormwater treatment BMPs are presented in Volume 2, Chapter 3 of this manual. Table 10-1 presents target pollutants for the land uses required to obtain coverage under a SPAP.
- **Structural BMPs shall be inspected and maintained by the owner/permittee.** Inspections must be conducted at least annually. Maintenance shall be conducted as needed and as required by the manufacturer of the structural BMP or by Knox County. Documentation of such inspections shall be maintained by the owner and made available to Knox County upon request.

Table 10-1. Target Pollutants for SPAP Permitted Land Uses

Land use	Target Pollutant
Vehicle, truck or equipment maintenance, fueling, washing or storage areas including but not limited to: automotive dealerships, automotive repair shops, and car wash facilities	Oil, grease, detergents, solids, metals
Recycling and/or salvage yard facilities	Oil, grease, metals
Restaurants, grocery stores, and other food service facilities	Oil, grease, trash
Commercial facilities with outside animal housing areas including animal shelters, fish hatcheries, kennels, livestock stables, veterinary clinics, or zoos	Bacteria, nutrients
Other producers of pollutants identified by the Director by information provided to or collected by him/her or his/her representatives, or reasonably deduced or estimated by him/her or his/her representatives from engineering or scientific study	As identified by the Director



10.3 Sediment Disposal for Structural BMP Maintenance

Many of the structural BMPs (presented in detail in Volume 2, Chapter 4 of this manual) that are utilized to prevent stormwater pollutants from entering the waters of the state will accumulate sediment deposits over time and will require maintenance and cleaning to ensure that they continue to work at optimum efficiency. Depending on the characteristics of the drainage area to each structural BMP, there could be a wide nature of substances contained within the sediments. The appropriate sediment disposal method will depend on the type of contamination, if any, in the soil. Proper assessment and disposal of accumulated sediment is necessary to ensure that the sediment removed from structural BMPs does not cause discharge of pollutants to the environment. The text in this section shall be regarded as Knox County policy for proper assessment and disposal of accumulated sediments that are removed from structural BMPs. (Note: the text below was adapted for Knox County from the City of Knoxville Land Development Manual – Policy 11, June 2003.)

When properly designed, structural BMPs will accumulate significant quantities of sediment over time. Sediment gradually reduces the available stormwater storage capacity. A rule of thumb for BMPs such as detention ponds, extended detention ponds and stormwater ponds is that approximately 1% of the storage volume capacity associated with the 2-year design storm can be lost annually due to accumulated sediment. Therefore, approximately 20% of a pond's total storage capacity can be lost within 20 years.

The actual sediment accumulation rate is dependent upon a number of factors including watershed size, facility sizing, upstream construction, nearby industrial activities and land uses, numbers of leaking vehicles, use of sand and salt during winter, etc. Thick grass and vegetation will retain sediment and silt at a faster rate.

In addition to long-term maintenance, sediment disposal is usually necessary during the construction process. Erosion prevention and sediment control practices and devices are not 100% effective at reducing and eliminating all sediment. Therefore, the developer must ensure that the designed detention volume has been restored and that all graded surfaces have been completely stabilized at the end of construction.

Structural BMPs shall be inspected on a regular basis to determine the impact of existing sedimentation on the capacity. The frequency of inspection is dependant upon the upstream land use(s), type of BMP, and other factors. Inspections should occur during dry weather and wet weather conditions. In general, remove sediment prior to significant accumulations using a combination of equipment methods and hand shoveling. Typical intervals for sediment removal will be every 5 to 7 years for some BMP types, 10 to 20 years for others. Typical intervals for sediment removal for sediment forebay or other pretreatment settling basin will be once a year. Detailed guidance on the frequency of inspection and maintenance activities relating to sediment accumulation specific to each structural BMP that is presented in this manual is provided in Chapter 4. This guidance must be included in the Operations and Maintenance plan for each development and must be followed by the owner of the structural BMP.

Guidance for Assessment and Disposal:

1. If the structural BMP meets any of the following criteria, then the structural BMP owner must contact the Tennessee Department of Environment and Conservation (TDEC) for further regulations and recommended disposal guidelines.
 - a. known contaminants are contained in the stormwater runoff that discharges to the structural BMP or in the sediment that has accumulated in the structural BMP.
 - b. the structural BMP receives stormwater runoff from an industrial site.



- c. the structural BMP receives stormwater runoff from a fueling center.
- d. The structural BMP receives stormwater runoff from one or more commercial businesses with a total parking area of at least 120,000 square feet or 400 parking spaces.
- e. the Director has reason to believe that contaminants are present based upon scientific or engineering information.

In all cases, treat sediment from structural BMPs as potentially hazardous soil until proven otherwise. Sediments should be sampled and identified before removal and disposal operations proceed. Contact the local office of TDEC – Division of Water Pollution Control (865-594-6035) to discuss special disposal procedures.

2. If the structural BMP does not meet any of the above criteria, or if the sediment has been tested and is determined to be free of contamination, then the following disposal practices are allowed:
 - a. disposal at a Class III or Class IV landfill.
 - b. use for fill material, cover material or land spreading on the project site.
 - c. other disposal materials as approved by the Engineering Director.

All sediment which is disposed onsite must be prevented from re-entering the structural BMP, or entering any other BMP, drainage channel or culvert, natural creeks or streams, or any other component of the stormwater drainage system.

Table 10-2 is a list of local landfills that may accept sediment. Contact each landfill for costs and regulations associated with sediment disposal. This list is not intended to be complete or inclusive.

Table 10-2. Local Landfills for Sediment Disposal

Landfill	Location	Phone	Type
Burnett-Armstrong Demolition Landfill	3330 Delrose Avenue Knoxville, Tennessee	865-525-6645	Demolition
Poplar View Class III/IV Landfill	7826 Rutledge Pike Knoxville, Tennessee	865-525-7720	Demolition
Ridgeview Demolition Landfill	8723 Oak Ridge Highway Knoxville, Tennessee	865-690-9436	Demolition
Yarnell Demolition Landfill, LLC	1550 Lamon Quarry Road Knoxville, Tennessee	865-470-0023	Demolition
Chestnut Ridge Landfill & Recycling Center	240 Fleenor Mill Road Heiskell, Tennessee (Anderson County)	865-457-7810	Sanitary

References

City of Knoxville. *Land Development Manual*. City of Knoxville Engineering Department, Stormwater Division, June 2006.



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