

Chapter 6 Post-Construction and Operations and Maintenance Guidance

6.0 Introduction

Chapter 6, Post-Construction and Operations and Maintenance Guidance, provides direction for the property owner on how to inspect and maintain stormwater management practices (SMPs) and associated drainage areas ([Section 6.1](#) ¶ p. 2). PWD conducts regular post-construction stormwater management maintenance inspections on private property. Enforcement procedures will be utilized when necessary for deficiencies found during these inspections ([Section 6.2](#) ¶ p. 6). Chapter 6 also provides information on stormwater credits, for which property owners may be eligible following SMP construction, in [Section 6.3](#) ¶ p. 7.

6.1 Property Owner Inspections and Maintenance

Post-construction, the property owner is responsible for inspecting and performing long-term maintenance of all stormwater management practices (SMPs) and the associated drainage areas in accordance with the Operations and Maintenance (O&M) Agreement, the Philadelphia Water Department (PWD) Stormwater Regulations (Stormwater Regulations) ([Section 1.2](#) ☞ water.phila.gov/development/stormwater-plan-review/manual/chapter-1/1-2-stormwater-regulations/) or applicable design criteria for Stormwater Retrofit projects that have received Stormwater Grant funding, and the Philadelphia Property Maintenance Code. SMPs and associated drainage areas must be continually inspected and maintained to ensure long-term functionality in accordance with the approved design function. Property owners are expected to document inspection and maintenance activity for each SMP. Maintenance and inspection records should be submitted when applying for Stormwater Credit renewals ([Section 6.3](#) ☞ p. 7). These records can also assist PWD at the time of PWD inspections. An SMP-specific, site-specific SMP Maintenance Guide, prepared by the designer and submitted to, and reviewed by, PWD during the Post-Construction Stormwater Management Plan (PCSMP) Review Phase, should be provided to and implemented by the property owner as a guide for long-term O&M of the SMPs on-site. A sample of a compiled SMP Maintenance Guide is available in [Appendix G](#) ☞ water.phila.gov/development/stormwater-plan-review/manual/appendices/g-smp-maintenance-guide-documents/ for reference, along with Maintenance Schedule Form templates and related maintenance information.

Operations and Maintenance Agreement

O&M Agreements are created during the development phase of a project and are recorded against the property with the Philadelphia Department of Records. Accordingly, the Agreements run with the land, not the owner, if and when the property is sold or otherwise conveyed. Therefore, when a new owner assumes ownership of the property, they also assume all responsibilities of the property owner, as described in the Agreement. PWD does not take action against property owners for projects that do not advance to construction.

The property owner of record is bound by the O&M Agreement and must maintain the SMPs such that they adequately perform their designed functions. The Agreement also requires the property owner to maintain the site in accordance with the Approved PCSMP, prohibiting alterations including the conversion of pervious areas to impervious cover without authorization from PWD. In certain developments, a Homeowner's Association (HOA) or Condominium Association may assume the responsibility for maintenance. In these instances, PWD recommends that the O&M responsibilities associated with SMPs be incorporated in the declaration for the HOA or Condominium Association.

Property Owner Inspections

As described in [Chapter 4](#) water.phila.gov/development/stormwater-plan-review/manual/chapter-4/4-0-introduction/, SMPs consist of multiple components (e.g., inflow, conveyance, storage, outflow, and vegetation, etc.). Each of these components must be inspected and maintained regularly to properly function. Property owners, or individuals conducting inspections on the property owner's behalf, must have a strong working knowledge and understanding of each SMP and its critical design components prior to conducting inspections ([Chapter 4](#) water.phila.gov/development/stormwater-plan-review/manual/chapter-4/4-0-introduction/).

Frequent SMP inspections performed by the property owner are critical to identifying and remediating small maintenance issues before they have the potential to become large, costly repairs. Routine inspections should be performed by the property owner at least four times per year, preferably at the end of each season but should be modified based on the property owner's findings and frequencies or activities modified as necessary. Property owners should perform additional inspections throughout the year, especially during and after large rain events, to ensure that SMPs are functioning as designed.

The primary purpose of an inspection is to make sure an SMP is properly functioning and, if not, to identify corrective actions that are required to restore proper function. A properly functioning SMP allows water to freely enter at each inflow point, collect within the storage areas, infiltrate into the soil or, depending on the design, freely drain through an outlet control structure to a downstream conveyance system. During inspections, owners are to note the following conditions:

- Emergency spillways and overflows are clear of debris;
- Plants within properly functioning SMPs are healthy and thriving;
- Bare soil or areas of active erosion are not present;
- Structures appear to be sound and in good condition, with no signs of settlement; and
- Storage areas are slowly draining after significant rain events (in no more than 72 hours) and are free of significant accumulations of sediment, debris, and trash that would substantially reduce the available storage volume.

If any of these conditions are not true, maintenance is most likely required. More detailed information on conducting inspections for different SMP types is found in [Chapter 4](#) water.phila.gov/development/stormwater-plan-review/manual/chapter-4/4-0-introduction/ within each SMP section.

Owners should note that proper and thorough inspection may require special certifications for confined space entry and/or special equipment such as closed-circuit television systems required to inspect pipes. It is the property owner's responsibility to make sure that all inspections are conducted in a safe manner, according to applicable regulations, and using appropriate equipment.

Property Owner Maintenance

By conducting routine maintenance, property owners identify and address minor maintenance tasks that ensure the proper functioning of an SMP and reduce the need for larger, more expensive repairs over time. If SMPs begin to fail, the subsequent increase in stormwater loading on the sewer systems may contribute to backups and combined sewer overflows into nearby rivers. This can cause damage to aquatic life, endanger public health and safety, and violate State and Federal water quality laws.

Required routine maintenance is SMP- and site-specific. The property owner is referred to [Chapter 4](https://www.water.phila.gov/development/stormwater-plan-review/manual/chapter-4/) [water.phila.gov/development/stormwater-plan-review/manual/chapter-4/](https://www.water.phila.gov/development/stormwater-plan-review/manual/chapter-4/) for specific maintenance guidance for individual SMPs. The maintenance guidelines included in Chapter 4 represent typical, basic maintenance tasks and frequencies for the SMPs in each of the sections. SMP Maintenance Guides, however, are SMP- and site-specific. Prepared by the project's designer, they should be provided to, and implemented by, the property owner as a guide for long-term O&M of the SMPs on-site.

While maintenance is SMP- and site-specific, typical routine maintenance tasks include, but are not limited to, the following:

- Removal of sediment and debris from inlets and outlet control structures, storage areas, and conveyance pipes;
- Jetting/flushing and vacuuming subsurface basin pipes;
- Regular maintenance of pre-treatment structures including removal of sediment and debris from permanent filter bags and resetting dislodged pre-treatment hoods;
- Establishment watering for new plantings (during the first two to three years after the initial planting);
- Emergency watering during prolonged dry periods;
- Removal of invasive plants or weed species;
- Mulching;
- Replacement of worn bolts, latches, and other appurtenances;
- Minor asphalt or concrete patching/repair;
- Maintenance of porous pavement;
- Minor erosion repairs including slope stabilization;
- Minor replanting, reseeding, and re-grading; and
- Pruning of trees and shrubs, as appropriate, prior to winter months.

These tasks are associated with SMPs that are generally in good condition and properly functioning. If SMPs are not properly functioning, more extensive maintenance or repairs may be needed, which may include, but is not limited to, full excavation, removal, and replacement of permanently clogged media, porous surfaces, or subsurface components.

Proper execution of routine maintenance tasks may require confined space entry and/or the use of specialized equipment. Property owners are responsible for safely conducting maintenance activities in accordance with applicable regulations and using appropriate equipment and properly trained personnel. Some SMPs, such as porous pavement and subsurface basins, require special equipment and/or training to maintain. PWD has a list of **local contractors** water.phila.gov/pool/files/smp-maintenance-contractors.pdf who provide these maintenance services. This list is not all-inclusive and does not constitute a recommendation of the companies listed. This list is merely a collection of businesses that have performed the type of work that is typically required in stormwater management maintenance. The property owner may hire any qualified stormwater professional of their choice.

Site Modifications

Any proposed changes to SMPs, drainage configurations, or cover type must be approved by PWD to confirm that the change will not affect the property's continued compliance with the Stormwater Regulations or approved stormwater management design. This includes notifying PWD if any site improvements are planned to the property that could affect SMP functionality or regulatory compliance, such as changes in site grading or stormwater drain location/configuration, as well as the addition of new impervious areas, such as walkways, patios, decks, driveways, parking lots, sheds, or buildings. Unauthorized removal or modifications of any SMPs or drainage areas will result in enforcement actions by PWD.

6.2 Post-Construction Stormwater Management Maintenance Inspections and Enforcement

As a part of the compliance obligations under agreements with the Pennsylvania Department of Environmental Protection, the Philadelphia Water Department (PWD) is required to periodically inspect and ensure proper operation and maintenance of all stormwater management practices (SMPs) and associated drainage areas installed on private properties.

6.2.1 PWD Post-Construction Inspections

PWD periodically inspects properties to check the functionality of the SMPs and associated drainage areas. PWD will contact the property owner of record to schedule these inspections. Inspections will generally occur during normal business hours. During an inspection, PWD inspectors check to see that SMPs are being maintained in accordance with the approved Post-Construction Stormwater Management Plan and Operations and Maintenance Agreement, and that all SMPs and drainage areas are functioning as designed. After inspection, PWD will provide the property with a Post-Construction Stormwater Management Maintenance Inspection Report detailing the results of the inspection and identifying any SMPs or features requiring maintenance or corrective action. The property owner is responsible for addressing all required corrective actions by the deadline indicated in the report. If a project remains noncompliant due to unresponsiveness, or has not reached compliance by a communicated deadline, the project will be referred to Post-Construction Enforcement. Certain site conditions may warrant immediate referral to Post-Construction Enforcement.

6.2.2 PWD Post-Construction Enforcement

Deadlines to submit documentation or complete required corrective actions will be provided during the Post-Construction Enforcement process, which must be complied with in order to avoid escalated enforcement action, which may include, but is not limited to, the issuance of a Notice of Violation and Order to Correct (NOV), suspension of stormwater billing credits, daily fines, issuance of an administrative order, filing of an enforcement action in court, and abatement by the City and billing for expenses (including administrative expenses).

6.3 Stormwater Credits

All properties within the city of Philadelphia are charged a monthly **Stormwater Management Service Charge** water.phila.gov/stormwater/billing/ (Stormwater Charge). Residential customers are charged a flat rate, and non-residential, condominium, and multi-family residential customers (more than four dwelling units per parcel) are charged by the amount of gross and impervious areas on the parcel. To determine a property's current monthly Stormwater Charge, the Philadelphia Water Department's (PWD's) **Stormwater Parcel Viewer** stormwater.phila.gov/parcelviewer/map can be used. If a parcel appears to be charged incorrectly, the applicant may contact pwd.stormwaterappeals@phila.gov or refer to the **Stormwater Management Service Charge Credits and Appeals Manual** water.phila.gov/pool/files/stormwater-credits-appeals-manual.pdf (*Credits and Appeals Manual*) for more information on how to adjust the charge.

To assist non-residential, condominium, and multi-family residential customers (more than four dwelling units per parcel) in reducing their stormwater fees, PWD has implemented the **Stormwater Credits** water.phila.gov/stormwater/incentives/credits/. This program is administered by PWD **Stormwater Billing** water.phila.gov/stormwater/billing/ and **Incentives** water.phila.gov/stormwater/incentives/ and provides financial incentives to customers who help the City meet its stormwater management goals by mitigating stormwater runoff using stormwater management practices (SMPs) and preserving existing conditions on the parcel that are favorable for stormwater management, such as high-quality vegetated areas and disconnecting impervious areas from the sewer system. Building and maintaining these stormwater-friendly characteristics on a site is one way for property owners to play a part in the City's climate change adaptation efforts. In addition, property owners who choose to install and maintain functioning SMPs, retain pervious open space, and/or incorporate stormwater disconnections on their site may be eligible for stormwater credits. The **Stormwater Credits Explorer** stormwater.phila.gov/explore/ can be used to estimate the stormwater credits savings for implementing SMPs. To apply for stormwater credits, a **Stormwater Credits Application (Form B)** water.phila.gov/pool/files/form-b.pdf must be completed after construction has concluded, PWD has approved the submitted Record Drawings, the property has a recorded O&M Agreement, and all water accounts and applicable fines associated with the property are brought up to date.

There is no fee to apply for stormwater credits with a Form B. Credits expire four years from their effective date. It is the property owner's responsibility to submit a **Stormwater Credits Renewal Application (Form C)** water.phila.gov/pool/files/form-c.pdf at least 30 days before the expiration date, along with a Renewal Fee. Records of inspections and maintenance activities are required to support credit renewal applications. Applicants are referred to the **Credits and Appeals Manual** water.phila.gov/pool/files/stormwater-credits-appeals-manual.pdf for more comprehensive guidance.