6 Post-Construction and Operations and Maintenance Guidance
6.0 Introduction

As with any building system, stormwater management practices (SMPs) require maintenance to ensure long-term function. Post-construction, it is the responsibility of the property owner to maintain all SMPs in perpetuity. As described in Chapter 4, 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. 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, which, in turn, can cause damage to aquatic life, endanger public health and safety, and violate State and Federal water quality laws.

Chapter 6, Post-Construction and Operations and Maintenance Guidance, provides guidance for the property owner on Operations and Maintenance (O&M) requirements in Section 6.1, and on post-construction SMP inspection in Section 6.2. Chapter 6 also provides information on stormwater credits, for which property owners may be eligible following SMP construction. Further information on the Stormwater Credits Program can be found in Section 6.3.
6.1 Operations and Maintenance

6.1.1 Maintenance Requirements for Property Owners

The property owner is responsible for performing long-term maintenance in accordance with the Operation and Maintenance (O&M) Agreement, the Philadelphia Water Department (PWD) Stormwater Regulations (Stormwater Regulations), and Philadelphia Property Maintenance Code. 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 stormwater management practices (SMPs) be incorporated in the declaration for the HOA or Condominium Association. Failure to properly maintain SMPs, or the unauthorized removal of any SMPs installed to achieve compliance with the Stormwater Regulations, will result in enforcement actions by PWD. 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.

Required routine maintenance is SMP- and site-specific. However, typical routine maintenance tasks include the following:

- Removal of sediment and debris from inlets and outlet control structures, storage areas, and pipes;
- 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;
- 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 full excavation, removal, and replacement of permanently clogged media or porous surfaces.
The designer is referred to 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. The process of choosing appropriate maintenance tasks and frequencies is both SMP-specific and site-specific. An SMP-specific, site-specific O&M Schedule, 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. 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.

Property owners are expected to keep an inspection and maintenance log to document inspection and maintenance activity for each SMP. These logs can assist PWD at the time of PWD inspections and be used when applying for stormwater credit renewals (see Section 6.3).

For additional information on detailed maintenance recommendations, the applicant and designer are referred to the *PWD Stormwater Retrofit Guidance Manual* (2015 or later version).

### 6.1.2 Operations and Maintenance Agreements

An O&M Agreement between the property owner and PWD is a component of PCSMP approval and required of any project subject to the Stormwater Regulations. This Agreement requires the property owner to construct SMPs on the listed parcel(s) in strict accordance with the Approved PCSMP and to maintain the SMPs such that they will adequately perform their designed functions. It does not require the property owner to construct the SMPs if the development project associated with the SMPs does not commence or if no earth disturbance takes place. The Agreement is recorded against the property and runs with the land, if and when the property is sold or otherwise conveyed.

Operations and maintenance tasks should be implemented by the property owner according to the project’s O&M Schedule. O&M Schedules are SMP- and site-specific, and they must be prepared by the project’s designer and submitted to PWD as part of the PCSMP Review Phase (see Section 2.3.1) The O&M Schedule should be provided to, and implemented by, the property owner as a guide for long-term O&M of the SMPs on-site.

The standard O&M Agreement consists of:

- Agreement with signature pages;
- Signatory acknowledgement sections;
• Exhibit A, legal description(s) of the property(ies); and

• Exhibit B, a list of SMPs to be installed on the listed parcel(s).

The signatory(ies) for the property owner(s) must be authorized to bind the property owner(s) to legal agreements. The signatory acknowledgement sections must be notarized and serve to verify the identities of all parties signing the Agreement.

Exhibit A contains a metes-and-bounds description for each parcel, in its entirety, on which earth disturbance is proposed, while Exhibit B contains a listing of all the SMPs to be constructed on the listed parcel(s). Should amendments to the O&M Agreement become necessary after execution, the O&M Amendments will be sequentially numbered and will replace and supersede any and all of the project’s previous O&M Agreements and Amendments.
6.2 Stormwater Management Practice Inspection Guidance

6.2.1 PWD Inspections and Enforcement

As a part of the compliance obligations under agreements with the Pennsylvania Department of Environmental Protection (PA DEP), the Philadelphia Water Department (PWD) is required to periodically inspect all stormwater management practices (SMPs) installed on private properties. 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 (PCSMP) and Operations and Maintenance (O&M) Agreement (see Section 6.1.2) and that all SMPs are functioning as designed. If PWD inspections reveal that an SMP is not functioning properly, PWD will notify the property owner and he or she will be required to bring the SMP back into compliance. If the property owner is not responsive to such notice, PWD may proceed with elevated enforcement measures, including fines, court action, and/or abatement proceedings. The property owner can avoid enforcement by implementing a robust SMP maintenance program as early as possible.

6.2.2 Property Owner Inspections

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. 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 (see Chapter 4). 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 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.
6.3 Stormwater Credits Program

All properties within the city of Philadelphia are charged a monthly stormwater fee. To determine a property’s current monthly stormwater charge, the Philadelphia Water Department’s (PWD’s) Stormwater Map Viewer can be used. 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 Program. This program is administered by PWD Stormwater Billing and Incentives, and it provides financial incentives to customers who help the City meet its stormwater management goals by mitigating stormwater runoff using stormwater management practices (SMPs). Property owners who choose to install and maintain functioning SMPs may be eligible for stormwater credits. The Stormwater Credits Explorer can be used to estimate the stormwater credits savings for implementing SMPs. To apply for stormwater credits, a Stormwater Credits Application (Form B) must be completed after construction has concluded.

There is a general application fee; however, for any project that has an Approved PCSMP from PWD, the application fee is waived. Credits expire four years from their effective date. It is the property owner’s responsibility to submit a Stormwater Credits Renewal Application (Form C) at least 30 days before the expiration date. Records of inspections and maintenance activities are required to support credit renewal applications. Applicants are referred to Section 2.2.4 and the PWD Stormwater Retrofit Guidance Manual (2015 or latest version) for more comprehensive guidance.