

Section 2 Operational Activities

Municipalities are required to prepare and administer a SWMP when regulated by an MS4 Permit under the NPDES. A key aspect for permit compliance is not only selecting proper BMPs, but also inspecting and documenting activities relative to the selected BMPs for demonstrating effectiveness of the program and obtainment of predetermined goals.

2.1 Selecting BMPs

A municipality's employees perform a variety of functions and tasks associated with operational activities and fixed facilities. These functions and tasks can result in polluting stormwater and the production of non-stormwater discharges. Once certain BMPs are selected and implemented, a BMP will require continuous applications to assure proper function along with compliance.

The process for selecting BMPs should also be documented. This manual provides templates for documenting the process.

2.1.1 Municipal Inventory

A BMP in itself is demonstrating an understanding of municipal operational activities and fixed facilities. This action can be accomplished with the "Municipal Inventory List" found in Appendix A of this manual. The list provides a written database of all municipal activities and facilities. Furthermore, the list will provide the ability to note caveats of a particular activity or facility. It should be noted, PAG-13 requires a permitted entity to document municipal inventory.

Once inventory is taken and considerations are provided, the "BMP Selection Matrix" found in Appendix B will aid in selecting proper BMPs. The matrix will further allow a municipality a centralized location to outline components of a BMP (i.e. inspection frequency, and so on) that are tailored to the municipality. For example, if a municipality operates a wash facility for its fleet of vehicles, selection of BMP GH-16, Vehicle and Equipment Cleaning should be selected. However, the BMP Selection Matrix will allow the municipality to outline a variation of inspection frequencies or items inspected listed in the fact sheet. The matrix further allows a municipality to outline measurable goals and measurements of effectiveness.

The use of these templates is important as it demonstrates an understanding of a municipality's activities and facilities, along with providing documentation relative to the development of a SWMP—specifically MCM #6 for Good Housekeeping.

2.1.2 Considerations

The following items should be considered with selecting BMPs:

- A municipality should provide notification, and training as applicable, to its personnel regarding selected BMPs prior to implementation.
- The inventory list can be as detailed as a municipality so wishes. For example, one municipality may choose to list every storm drain inlet on the list; whereas another may simply list "storm drain inlet" once on the list, and apply the selected BMPs to all.

- Several BMP fact sheets reference “temporary-type” BMPs. These BMPs include, but are not limited to silt fences and check dams. These are generally BMPs that would be observed on construction sites. However, these BMPs can be effective when used in combination with the recommendations outlined in the fact sheets. The Pennsylvania Erosion and Sediment Pollution Control Program Manual (March 2012 edition) provides information and guidance regarding “temporary-type” BMPs.
- BMP selection is not limited to first year permit terms. Iterative reviews should be completed annually to determine effectiveness of implementing BMPs and possibly outline new BMPs for implementation.
- A program does not have to be limited to the recommendations for measurements of effectiveness listed in BMP fact sheets. Develop and list measurements that align with municipal capabilities and individual considerations.
- BMP Fact Sheets will denote “spills” and “discharges.” The difference between these two terms should be noted. A spill can be contained, and the chemical, debris, etc. has not entered the storm sewer or entered a waterway. A discharge is a chemical, debris, etc. that has entered the storm sewer or a waterway. A spill could become a discharge, but a discharge cannot become a spill.

2.1.3 Measurable Goals

Measurable goals are an important aspect of any SWMP. The NPDES requires the establishment of measurable goals for BMPs. Several BMP fact sheets in this manual include recommendations for measurements of effectiveness, but not for measurable goals. It should be noted, these are two separate and distinct items. Measurable goals are highly dependent on the issued MS4 Permit and corresponding requirements, along with capabilities of the municipality. Measurable goals can be, but are not limited to, any of the following relative to MCM #6 (as examples):

- Establish the Annual Training and Education Plan by January 30 of each year.
- Review and update the “Municipal Inventory List” for municipal facilities and operations by March 30 of every year.
- Reduce waste transported from general operations through full implementation of BMP Fact Sheet GH-7 for Waste Handling and Disposal over the life of the permit term (for any goals that encompass the entire permit term, it is recommended to outline interim goals during the permit cycle).
- Implement the recommendations (or set of select recommendations) within a specific fact sheet by a predetermined date.
- Contain every spill encountered, and do not allow spills to become discharges.
- Identify and qualify three “in-house” trainers for stormwater management training.

Measurable goals should be defined for every individual BMP. At the same time, a measurement of effectiveness may not be plausible for an individual BMP. A group of BMPs could be “lumped together” where the measurement of effectiveness is improved water quality in adjacent areas. A group of BMPs may be “lumped together” as well for a common measurable goal. Measurable goals are listed in permits from time-to-time as well. Appendix A in PAG-13 lists measurable goals for the broad MCM #6 BMPs found within the permit language. The goals listed are broad in definition. An individual municipal SWMP should provide a more focused goal based on the broad guidance (e.g. PAG-13 contemplates the development and implementation of a written O&M program. A more focused goal would be the establishment of a date(s) for development and maintenance of such a program and the corresponding components).

A measurement of effectiveness could be a measurable goal. For example, a goal that can be established for BMP Fact Sheet GH-15 for Vehicle and Equipment Fueling could be full implementation of the recommendations (or select recommendations) outlined in the fact sheet by January 1, 2014. If the goal is obtained, effectiveness can be demonstrated by this fact. It is important to note the difference between effectiveness and goals. However, both should be addressed in a SWMP. The BMP Selection Matrix found in the appendix of this manual includes sections to outline both measurements of effectiveness and measurable goals. The O&M Program template found within the manual provides the municipality guidance with respect to documentation for establishing measurable goals of selected BMPs, along with considerations for measurements of effectiveness.

When developing measurable goals, consider the following categories for establishing a goal:

- Tracking implementation over time.
- Measure progress (set milestones) in implementing a BMP.
- Track total number of BMPs implemented.
- Track program/BMP effectiveness.
- Track environmental improvements.

2.2 Implementing BMPs

Once BMPs are selected and the municipal employees are initially trained, implementation is required. Implementation may be as simple as just organizing documentation and inspection protocols to as in-depth as building a structure (i.e. vehicle fueling facility) to support a BMP. Implementation is a continuous activity. Training, maintenance, and so on will be required to maintain a selected BMP.

The BMP Selection Matrix should be referenced in establishing the “Annual Municipal Employee Training and Education Plan” found in Appendix C. Certain functions and tasks may be contracted. Therefore, training should be afforded to both municipal employees and contractors for selected BMPs and the associated appropriate applications. When selecting and implementing BMPs, there are certain guidelines that should always be considered:

- Training of municipal employees and contractors
- Regular and documented inspections of BMPs
- Maintenance of selected BMPs
- Recordkeeping protocols
- Periodic evaluations of selected BMPs
- Measurable goals for selected BMPs
- Measurement of effectiveness of BMPs

An implementation schedule should be developed for tracking the development, implementation, and maintenance of selected BMPs. The schedule will also provide a centralized location (in visual format) any measurable goals that are defined by actual dates.

2.2.1 Recommended BMPs

As indicated previously, BMPs selected should match not only municipal operations and facilities but also capabilities. However, there are certain BMPs that should be a part of every MS4 PPGHP. Those BMPs include:

- GH-1 Employee Training and Education

- GH-2 Contractor Training
- GH-5 Non-Stormwater Discharges
- GH-7 Waste Handling and Disposal
- GH-10 Spill Prevention and Control
- GH-12 General Housekeeping
- GH-25 Building and Grounds Maintenance

All other BMPs listed in this manual are recommended. However, they should only be selected if appropriate. For example, If a municipality performs leaf collection activities (or is contracted), then BMP Fact Sheet GH-39, Leaf Collection is recommended and should be selected.

2.2.2 Combination BMPs

Certain BMPs complement each other. If a particular BMP is selected, and another is considered a complement, then the complementary BMP should be selected as a part of the program as well. Examples are as follows:

- GH-1 Employee Training and Education is considered a complement to every other BMP. Selection and/or implementation of any BMPs would require selection and implementation of GH-1.
- GH-10 Spill Prevention and Control is considered a complement to BMP GH-15 Vehicle and Equipment Fueling.
- GH-25 Building and Grounds Maintenance has several complementary BMPs including (but not limited to) BMP GH-15 Vehicle and Equipment Fueling, BMP GH-18 Vehicle and Equipment Storage, and BMP GH-36 Lawn Fertilizers and Pesticides. Whereas, GH-25 is an overview-type BMP and the complementary BMPs are considered specific-type BMPs.
- GH-35 Landscape Maintenance is considered complementary to BMP GH-36 Lawn Fertilizers and Pesticides and GH-39 Leaf Collection whereas these set of BMPs address similar considerations and practices.

Each BMP Fact Sheet will indicate or list complementary BMPs if applicable and generally in a narrative fashion.

There will also be occasions, depending on the nature of the municipal activity or facility, where a combination of BMPs may be necessary to reduce and/or eliminate the potential to pollute stormwater, where BMP Fact Sheets do not indicate a complementary relationship. For example, a municipality may operate a leaf collection program consistent with BMP GH-39, Leaf Collection. However, and due to monetary restraints, an older collection unit that periodically “leaks” certain fluids is used. The municipality should select and implement BMP GH-17, Vehicle and Equipment Repair to complement the leaf collection program.

2.3 Inspections

Inspections of municipal activities and facilities should be performed to verify BMPs implemented are operating appropriately. Plus, BMPs should continually function as a measure to reduce the discharge of pollutants—whether through stormwater or non-stormwater discharges. Documenting inspections at frequencies selected or determined is critical for compliance with an issued MS4 Permit.

Each BMP Fact Sheet will provide guidance on inspection frequencies, items to be inspected, and documenting the inspection. Guidance for follow-up activities is also provided in the fact sheets. In general, inspections should consist of the following:

- **Operational Activities or Programs:** Check activities are performed in accordance with selected BMPs. Periodically, interviews may be conducted of staff to assure an understanding of BMPs. Usage activities of a fixed facility may also be inspected and is recommended. Inspections are conducted by qualified personnel and are typically program managers or the municipal stormwater manager.
- **Fixed Facilities:** Physical attributes of a facility, and as described in a fact sheet, are inspected. Inspections can be conducted by all personnel familiar with the facility. A program manager or the municipal stormwater manager (qualified personnel) should be the person acknowledging any such inspections.
- **Contractor Activities:** Periodic inspections, and in alignment with a BMP Fact Sheet, should be conducted for activities or facilities operated by a contractor. Such inspection requirements should be outlined in a contract. It is recommended that a contractor complete self-inspections and provide a program manager or municipal stormwater manager the results of such inspections in documented form.
- **Other Facilities:** Periodically, a municipality should conduct inspections of facilities it may not own, but periodically uses. For example, a municipality may use a commercial wash facility to clean its fleet of vehicles. Inspections should be conducted and documented. Notification of the facility owner should be provided of such inspections prior to use.

2.3.1 Frequency

Each BMP Fact Sheet will provide a recommended frequency for inspections. However, it recommended a municipality outline a uniform frequency through the BMP Selection Matrix. For example, if a vehicle fueling facility and wash facility are adjacent to each other, inspect both facilities at the same frequency (e.g. every two weeks).

If particular items are not present for a selected BMP, then inspections can be suspended. For example, BMP GH-23, Salt Storage is a selected BMP due to use of salt in the winter. The supply has been exhausted through use and will not be replenished for several months. Inspections can be suspended until salt is delivered and stored once again.

2.3.2 Monitoring & Sampling

There are three types of monitoring techniques contemplated by this manual: general monitoring, field monitoring & testing, and analytical monitoring & testing. This section explains the difference between the three of them. The O&M Program template allows a user to customize a monitoring and sampling program to individual goals and abilities.

There is a critical difference between general monitoring and inspections. Inspections are in-depth and documented activities. General monitoring is a continuous undocumented activity. For example, if an employee accesses a material storage area every day, look over the area each day for any signs of a leak as materials are acquired. If a leak is detected, activation of spill clean-up protocols and an immediate inspection is warranted. Do not wait until the next inspection cycle to address. Follow-up of an encountered leak, discharge, and so on should include documentation. Every program should consider general monitoring as a standing operational procedure.

Field monitoring & testing and analytical monitoring & testing are essentially the same activity. The primary difference is field monitoring is completed by qualified municipal employees; whereas analytical monitoring is completed by a qualified laboratory or entity. Field monitoring and analytical monitoring may be necessary to demonstrate the effectiveness of a program.

Field monitoring & testing can be conducted by municipal employees. Such monitoring can be completed with a field test kit. Samples are collected and tested in the field as necessary. Field monitoring can be as simple as documenting visual observations as well. Locations may be predetermined or random. Field monitoring can be deemed a support tool for regular inspections along with providing a measurement of effectiveness of a program or components of a program. It is recommended a set of predetermined locations are identified and shown on a map in the MS4 PPGHP.

Analytical monitoring & testing involves a certified laboratory or similar type of entity, along with a more rigorous set of quality control standards. Analytical monitoring involves periodic sample collection and analysis, and can be based on a predetermined set of locations. Results are considered a support tool to regular inspections. For example, samples may be periodically collected downstream of a vehicle wash facility. If analysis shows chemical composition within acceptable ranges, BMPs for vehicle wash facilities can be considered effective. The BMP fact sheets also provide recommendations involving analytical monitoring as a method to establish effectiveness of implemented BMPs. At the same time, analytical monitoring can be a measurable goal. A municipality can indicate analytical monitoring will occur biannually, annually, monthly, once a permit term, and so on. Furthermore, improvements in results from analytical monitoring can be listed as a measurable goal or can demonstrate effectiveness of an O&M program.

Successful or comprehensive programs generally employ all three types of monitoring. The monitoring and sampling activities within the IDD&E Program could be used in lieu of a separate analytical monitoring program for good housekeeping as well. Templates are provided in the appendix for tracking and documenting sampling and testing activities. The relevant templates provide the user the ability to further distinguish between field monitoring and analytical monitoring.

2.3.3 Enforcement

To ensure proper BMP operations, protocols for failed inspections or procedures should be developed and enforced. Different types of mechanisms can be instituted for enforcement. Mechanisms should be dependent on the failure or violation. Mechanisms can include, but are not limited to verbal warnings, written warnings, retraining, fines and/or penalties, and termination.

2.4 Municipal Pollution Prevention/Good Housekeeping Plan(MS4 PPGHP)

The Municipal Pollution Prevention/Good Housekeeping Plan (MS4 PPGHP) encompasses all facets of requirements and municipal responsibilities for MCM #6 of an issued MS4 Permit. The plan demonstrates the municipality understands the requirements of MCM #6, while outlining how the municipality will address those requirements. The MS4 PPGHP is divided into sections. From an administrative standpoint, it is recommended to keep a binder tabbed into the following sections:

- Narrative
 - General Overview and Regulations
 - This section should include references to the NPDES, issued permit and MCM #6, Clean Water Act, and so on. This part of the narrative demonstrates an

- Summaries for each Annual Report as it relates to the MS4 PPGHP should be found in this section.
- Additional tabbed sections as required
 - Additional tabs are dependent on selected BMPs and particulars of an individual program. For example, a Municipal Yard Map is referenced in several BMP Fact Sheets. Another section containing the list of hazardous chemicals stored by the municipality can be included as well.

Financial data could also be a separate tabbed section within the MS4 PPGHP. Depending on capabilities, costs for each MCM could be tracked separately for reviewing historic costs and developing annual budgets. No matter where the costs are “filed,” every municipality should track costs associated with the SWMP.

BMP Fact Sheets will outline templates to be used for documentation purposes. There are other important items that require documentation and not found within a BMP Fact Sheet. One item includes recording “major” rain events. An Event Record should be completed for “major” rain events as defined by the plan.

The binder outlined should contain all documentation relative to municipal endeavors for MCM #6 compliance for an issued MS4 Permit.

2.4.1 Operational Plan

A key component of the MS4 PPGHP is the Operational Plan. Similar to the subsections of the narrative demonstrating certain understandings, the Operational Plan demonstrates how the municipality will address the requirements. Every plan or program (for each MCM) within an SWMP should contain an operational plan. It is important to demonstrate an understanding of municipal activities and facilities as it relates to the MS4 Permit. The Operational Plan should be found within the written O&M Program.

The Operational Plan will also outline the analytical monitoring laboratory or testing agency, measurable goals, and proposed plan effectiveness review cycles.

2.5 Recordkeeping and Reporting

A municipality should maintain organized and complete records for implemented BMPs. Section 2.4 provided an overview of tabbed sections of the MS4 PPGHP, including logs and records. It is important to keep up to date and current records of all activities associated with the plan.

Permit holders are required to file Annual Reports associated with an SWMP. A section should be afforded within the documentation as a summary of the information to be provided in an Annual Report. Information for Annual Reports should include at a minimum:

- Changes to the written O&M Program
- Status of program relative to MCM #6 (implementation status, current timelines, etc.)
- Summary of activities completed
- Summary of analytical monitoring results
- Summary of proposed activities for the next reporting cycle
- Selected BMPs (including changes in BMPs used)
- Changes in personnel

- Results of measurable goals (including changes in measurable goals)
- Summary notes (including plan effectiveness reviews)

2.5.1 Templates

The manual also provides a number of templates provided in the appendix. A description of each template, uses, and examples (as applicable) are as follows:

- **Municipal Inventory List:** The list is used to centralize all municipal activities and facilities. The template allows a user to indicate if the activity is contracted. If the activity or facility is a new or planned item, and a section to provide notes to outline any special characteristics or considerations. It is recommended the list includes activities such as vehicle cleaning, mowing, and inlet cleaning. It is recommended the list includes facilities such as inlets (only need to list once, as an indication the municipality has inlets), municipal yard, and vehicle wash facility. Examples of facilities that should be listed on the Municipal Inventory List include, but are not limited to:
 - Paint storage location(s) (facility)
 - Equipment fueling location(s) (facility)
 - Equipment fueling practices (activity)
 - Park and Open Space mowing (activity)
 - Wastewater Treatment Plant (facility)
 - A wastewater treatment plant will most likely be regulated under a separate NPDES permit. However, list as facility and note it is regulated under a separate permit.
 - Pothole patching (activity)
 - Inlets (facility)
- **BMP Selection Matrix:** In conjunction with the inventory list, the matrix provides the user the ability to identify and select BMPs for activities and facilities. The template also provides the user the ability to note modifications to recommendations that may be in the fact sheet, inspection frequencies, measurable goals, effectiveness, and training notes.
- **Annual Municipal Employee Training and Education Plan:** This template allows the user to plan training events for the year. When used in conjunction with the selection matrix, training subjects can be outlined.
- **Training Record:** This template is used to document a training activity, whether planned or not.
- **Contractor Training Record:** This template is used to document training activities that are provided for contractors.
- **Training and Education Log:** All training records and contractor training records are noted in a summary format in the log.
- **Inspection Record:** This template is a uniform BMP Inspection Record. The template also provides the user the ability to note follow-up if required and the reasoning for an inspection.
- **Activity Record:** This template provides a record of any activities associated with selected BMPs. Examples for use of this template include, but are not limited to: waste disposal action, remedial work that corrects an insufficient BMP, analytical monitoring, and any action that may be conducted to identify a source of a non-stormwater discharge (i.e. dye testing or TV inspection). Examples of activities that should be recorded include, but are not limited to:
 - Implementing a BMP
 - Restocking spill control materials that may “expired” or defunct
 - Repairing or correcting an implemented BMP
 - Road repair activity that included protection of inlets or similar structures
 - Street sweeping

- **Event Record:** This template provides a record for an event that affects the conditions of your permit or BMPs. Examples of an event that should be recorded, but not limited to include: a major rain event, observation of an illicit discharge or non-stormwater discharge, and a spill response event. Examples of events that should be recorded include, but are not limited to:
 - A major rain event
 - A spill that was controlled
 - A “polluted” discharge
- **Inspection, Event, and Activity Log:** All records for inspections, activities, and events are noted in a summary format in the log.
- **BMP Development Sheet:** This template is used to outline and document a BMP either developed by the municipality or implemented from another source. The template allows the user to outline goals of the BMP, source (if applicable), and guidelines for inspections.
- **Monitoring Activity Log:** All records for field and/or analytical monitoring samples are noted in a summary format in the log.
- **Monitoring Report:** A record for a collected sample either through field monitoring or analytical monitoring, along with summary of results for tested samples. The report provides further guidance with respect to quality control and chain of custody.
- **Pollutant Guidance Table:** Guidance for visual and analytical limitations and considerations for testing collected samples for corresponding pollutants. The template is populated with guidance for selected standard pollutants. However, the table allows the user to populate with more information for focus on individual objectives or pollutants for consideration.

The templates provided in the appendix are designed to be used in conjunction with the O&M Program template found within this manual, specifically as most of the attachments referenced in the O&M Program template.

2.6 Iterative Reviews

All permits issued under the NPDES follow an iterative review process. Iterative reviews allow for changes during the permit cycle to identify weaknesses in the program and make corresponding changes to improve effectiveness. Reviews should be conducted annually in conjunction with the preparation of Annual Reports. Measurable goals should be reviewed at the same time. During the review process (and with annual reports), notations should be provided if a goal was met or not. If a pre-determined goal is not met, a description should be provided of why and how the municipality will address. If a BMP is determined as ineffective during a review, it is acceptable to modify or even eliminate the BMP as long as a new BMP or changes are provided in documented form if the municipal activity or facility continues to operate. Effectiveness can be determined through a review of records through a reporting cycle. As a rule of thumb, an activity record should be completed when reviews are completed.