Good Housekeeping Operation & Maintenance (O&M) Program

Municipal Pollution Prevention/Good Housekeeping Plan
(MS4 ARR040013)

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CONTENTS

Section 5 Best Management Practices

Section 1 Background & Introduction

The Good Housekeeping Operation and Maintenance Program (O&M Program) was developed to outline operational management and maintenance practices, policies, procedures, and protocols (or Best Management Practices ("BMPs")) for reducing and/or preventing pollutants associated with municipal facilities and activities from entering receiving waters as outlined and/or required by the National Pollutant Discharge Elimination System (NPDES) and an issued NPDES Small Municipal Separate Storm Sewer System (MS4) Permit.

Compliance is a broad word with respect to an issued MS4 Permit and corresponding applicable laws and regulations such as Title 40 ("40 CFR") and Cabot Ordinance 13 of 2007, which provide the basis of the permit. There are two primary categories for consideration for an MS4 Permit—documentation and program effectiveness. A program is built to effectively prevent or reduce pollutants from entering receiving waters via stormwater runoff or non-stormwater discharges to meet the requirements of an MS4 Permit. Documentation provides the specifics of the program; along with evidence the permitted entity is addressing not only the requirements of the MS4 Permit, but also the applicable laws and regulations.

The O&M Program specifically addresses the regulatory requirements outlined for municipal good housekeeping practices for operations and maintenance of facilities and activities, and is also known as Minimum Control Measure Number Six ("MCM #6") in the the City of Cabot's MS4 Permit. Specifically, the O&M Program addresses:

- Municipal operations
- The stormwater collection and conveyance system
- Facilities, activities, and land uses that have the potential to generate stormwater runoff
- Facilities, activities, and land uses that may contribute pollutants via stormwater runoff or non-stormwater discharges to receiving waters
- Pollution prevention and good housekeeping control measures for reducing or eliminating the discharge of pollutants from municipal facilities and activities through BMPs such as:
    - practices and procedures
    - maintenance and inspection activities
    - assessing goals and effectiveness
    - training and education (as required by 40 CFR Part 122.34(b)(6)(i))

Section 4 of the O&M Program is the Operational Plan of the program. This section provides the specifics of activities, policies, procedures, and so on. The O&M Program as described in the contents section effectively becomes the MS4 Pollution Prevention/Good Housekeeping Plan ("MS4 ARR040013") for MCM #6 of an issued MS4 Permit.

1.1 OBJECTIVES

The O&M Program has four main objectives:

1. Identify and document all municipal facilities and activities that may contribute pollutants to receiving waters via the regulated MS4 through stormwater runoff or a non-stormwater discharge.
2. Implement, maintain, and document all practices, controls, procedures, and so on for a group of selected BMPs aimed at reducing or preventing pollutants that may result from municipal facilities or activities.
3. Implement, maintain, and document an employee and contractor training program to improve the knowledge of employees and contractors for reducing or preventing pollutants that may result from municipal facilities or activities.
4. Identify and document all other activities, policies, etc. that focus on pollution prevention and good housekeeping for municipal operations.

1.2 APPLICABLE REGULATIONS

The United States Congress established the Federal Water Pollution Control Act in 1948. This law provides the foundation of current water quality and water pollution control regulations. In 1972, Congress passed an amendment to the original act known as the Clean Water Act ("CWA"). The CWA prohibits non-permitted discharges to waters of the United States in Section 301, and also authorized the NPDES in Section 402. The U.S. Environmental Protection Agency ("EPA") developed the NPDES through promulgation of regulations found in 40 CFR. The State of Arkansas issues NPDES permits through an approved program following requirements that meet or exceed 40 CFR §123. In 1987, Congress passed another amendment to the original Federal Water Pollution Control Act, commonly known as the Water Quality Act, and specifically labeled stormwater as a "problem".

1.3 O&M PROGRAM MODIFICATIONS AND ANNUAL REVIEWS

From time-to-time, the language in the O&M Program or a reference for the program may be edited. Such modifications are noted and found in Appendix T, which may also contain changes to the City of Cabot's MS4 NPDES permit number.

The program, along with its components, will be reviewed annually at the end of each calendar year and can be found in Appendix S. Typical components to be reviewed are the BMP Implementation and Maintenance Schedule and selected BMPs. Modifications or revisions to the O&M Program may occur during the annual reviews, which are intended to:

- Ensure that selected BMPs and program information match actual municipal facilities and activities;
- Qualitatively measure effectiveness and goals of the overall program;
- Qualitatively measure effectiveness and goals of individual components of the program; and
- Outline new goals for the program or components of the program.

1.4 EFFECTIVE PERMIT

The O&M Program is developed to address the requirements of MCM #6 in the City of Cabot's NPDES MS4 Permit (Permit No. ARR040013). A copy of the current permit and any future renewal permits can be found in the City's Stormwater Management Program Compliance Documents. The City of Cabot submitted a Notice of Intent to the Arkansas Department of Environmental Quality on 08/01/2014.

Section 2 Purpose & Responsibilities

Cabot, AR is a permitted entity under the Arkansas Department of Environmental Quality NPDES MS4 Permit. Permitted entities are required to develop, implement, and maintain a written O&M Program per MCM #6 as outlined in the MS4 Permit, and further described in applicable federal regulations. The ultimate purpose of the O&M Program is to prevent and/or reduce polluted runoff from municipal operations and activities.

2.1 O&M PROGRAM OVERVIEW

The O&M Program lists procedures and practices (BMPs) intended to minimize pollution to receiving waters conveyed by stormwater runoff or non-stormwater discharges through direct discharge or the regulated MS4. The O&M Program describes the facilities, activities, and land uses that have the potential to generate stormwater runoff along with polluting the runoff. Procedures and practices include, but are not limited to documentation, inspections, monitoring, and training.

Based on the guidance within the *City of Cabot Municipal Operation and Maintenance Good Housekeeping Guidance & Cabot Stormwater Management Plan* and other relevant sources, this O&M Program addresses the six (6) BMPs under MCM #6 of the issued MS4 Permit (ARR040013) and applicable regulations, as follows:

> *BMP #1: Develop and implement an employee training program that addresses appropriate topics to further the goal of preventing or reducing the discharge of pollutants from municipal operations to your regulated small MS4s. The program may be developed and implemented using guidance and training materials that are available from federal, state or local agencies, or other organizations. Any municipal employee or contractor shall receive training. This could include public works staff, building / zoning / code enforcement staff, engineering staff (on-site and contracted), administrative staff, elected officials, police and fire responders, volunteers, and contracted personnel. Training topics should include operation, inspection, maintenance and repair activities associated with any of the municipal operations / facilities identified under BMP #1. Training should cover all relevant parts of the permittee's overall stormwater management program that could affect municipal operations, such as illicit discharge detection and elimination, construction sites, and ordinance requirement.*
>
> *BMP #2: Develop, implement, and maintain a written operation and maintenance (O&M) program for all municipal operations and facilities that could contribute to the discharge of pollutants from the regulated small MS4s, as identified under BMP #1. This program (or programs) shall address municipally owned stormwater collection or conveyance systems, but could include other areas (as identified under BMP #1). The O&M program(s) should stress pollution prevention and good housekeeping measures, contain site-specific information, and address the following areas:*

- *Management practices, policies, procedures, etc. Shall be developed and implemented to reduce or prevent the discharge of pollutants to your regulated small MS4s. You should consider eliminating maintenance-area discharges from floor drains and other drains if they have the potential to discharge to storm sewers.*
- *Maintenance activities, maintenance schedules, and inspection procedures to reduce the potential for pollutants to reach your regulated small MS4s. You should also review your procedures for maintaining your stormwater BMPs.*
- *Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, waste transfer stations, fleet or maintenance shops with outdoor storage areas, and salt / sand (anti-skid) storage locations and snow disposal areas.*
- *Procedures for the proper disposal of waste removed from your regulated small MS4s and your municipal operations, including dredge spoil, accumulated sediments, trash, household hazardous waste, used motor oil, and other debris.*

BMP #3: Develop Pollution Control Guidelines (PCG's) & City-wide Stormwater Facilities Master Plan.

BMP #4: Develop & implement procedures for waste disposal, including street sweepings.

BMP #5: Develop & implement procedures to minimize the use of potential pollutants.

BMP #6: Perform and document open channel assessments, including flood management/water quality projects.

2.1.1 DOCUMENTATION

All documentation relative to good housekeeping and pollution prevention referenced in the O&M Program or as applicable will be centralized into one location. Documentation guidance for selected and implemented BMPs is contained within the BMP Fact Sheets. Persons responsible for the implementation and maintenance of the O&M Program and corresponding activities and procedures of the BMPs outlined in the program are as follows:
William A. Cypert - Mayor
Brian Buroughs – Public Works Director
Norma Naquin – Planning/Zoning Coordinator – Office Manager
Joe Gunderman – Stormwater & MS4 Coordinator/Inspector

The responsible persons, or their successors, assume the following duties:

- Ensure compliance with MCM #6 of the MS4 Permit and applicable laws and regulations as it pertains to pollution prevention and good housekeeping for municipal operations;
- Implement elements of the MS4, such as the O&M Program;
- Inspect Municipal facilities;
- Document activities and inspection results; and
- Correlate activities and procedures with other MS4 Permit requirements.

2.1.2 INSPECTIONS

Inspections of municipal facilities and activities will be conducted in accordance with Section 2 of the City's Stormwater Management Plan and the BMP Fact Sheets. Details on the Fact Sheets include the frequency and methodology of regular inspections for the implemented BMPs. Certain rain events will warrant inspections of certain BMPs outside of the normal regular inspection frequency. A defined rain event that will warrant an inspection of particular BMPs is a rainfall greater than 1.0 inch in a 24-hour period of time[1]. The Manheim rain gauge, as reported by the National Oceanic and Atmospheric Administration, will be used to determine whether a defined rain event has occurred.

For any continuous rain event greater than 24 hours in duration, all BMPs identified for rain event inspections will be inspected after the event has finished. As warranted, City personnel may inspect applicable BMPs prior to a significant and forecasted rain event.

2.1.3 MONITORING AND ANALYTICAL TESTING

General monitoring is a continuous activity, and further described in Section 4 of the O&M Program. Analytical monitoring will be conducted periodically or as warranted, and may be conducted to help determine the effectiveness of the program. Such monitoring may include field testing by qualified municipal employees or a qualified laboratory. Actual analytical monitoring protocols are further described in Section 4 of the O&M Program.

From time to time, analytical testing of samples will be required. These samples should be sent to a qualified laboratory, such as one used for the City's Illicit Discharge Detection & Elimination (IDD&E) Program.

[1] The volume of rainfall resulting from a "2-year storm" for our local region.

2.1.4 TRAINING

Training of employees and relevant contractors will be conducted for both general pollution prevention knowledge and implemented BMPs as it pertains to MCM #6 and good housekeeping. A training plan will be developed annually and documented in Appendix E. More information regarding employee and contractor training is found in Section 4.3 of the O&M Program.

2.2 BMP SELECTION

A primary purpose of the O&M Program is to document the selection, implementation, and maintenance of BMPs to meet the requirements of MCM #6 for the City's MS4 Permit and applicable federal and state regulations and laws. The process for selecting, implementing, and maintaining BMPs is as follows:

- Complete inventories of municipal facilities and activities (Section 3).
- Select BMPs corresponding to the inventory (Section 4).
- Identify BMPs as either existing or proposed.
- Complete and maintain a schedule of inspections, maintenance, and implementation of proposed BMPs, if applicable (Section 4).
- Periodically review implemented BMPs (Section 4).

BMPs are assigned measurable goals with possible measurements of effectiveness, if applicable. Such goals and measurements are further described in Section 4. BMPs selected for implementation are further described in Appendix F.

Section 3 Description of Municipality

Understanding the boundaries, features, and facilities of a municipality aids with establishing a comprehensive and effective program. This section describes not only the geographic features of the municipality for consideration, but also the facilities and activities of the municipality that may contribute to stormwater runoff and water quality.

3.1 MUNICIPAL BOUNDARIES

The municipal boundaries of Cabot, AR, Lonoke County, AR can be generally described by the following:

- East – 4-Mile Creek & Hudson Branch
- North – Magness Creek
- West – Bayou Two Prairie
- South – Bayou Two Prairie & Hudson Branch

A map showing these municipal boundaries can be found in Appendix C.

3.2 MUNICIPAL INVENTORY

The City of Cabot owns several facilities and conducts certain activities at those locations. These facilities and activities have the potential to generate stormwater flows or contribute pollutants to the runoff. In fact, the facilities and activities may contribute pollutants directly through contact with stormwater runoff or non-stormwater discharges.

A complete list of all municipal facilities, activities, and land uses can be found on the Municipal Inventory (Activities) List in Appendix A or the Municipal Facility Detail Sheets in Appendix B. These will be reviewed annually for accuracy or needed modifications by a responsible person noted in Section 2 at the end of each calendar year. An Activity Record will be completed and logged for this action to document the annual review. Activity Records can be found in Appendix H with the corresponding log in Appendix I.

A primary facility of the municipality is the Street/Fleet Maintenance Department. A number of activities are located or conducted within the boundaries of the Street/Fleet Maintenance Department. Appendix B contains a layout of the Street/Fleet Maintenance Department that identifies the structures and activities there, most notably those at the “municipal yard”. A map showing the locations of all municipally-owned or operated sites is also found in Appendix C.

3.3 STORMWATER COLLECTION AND CONVEYANCE SYSTEM

The City of Cabot storm sewer system collects and conveys stormwater to receiving waters using pipes, curbs, ditches, basins, and inlets to do so. A goal of the City of Cabot is to prevent or reduce polluted stormwater in the entire collection and conveyance system. The MS4 NPDES Permit focuses this goal into a regulated area based on criteria established by the U.S. Census Bureau. This regulated area and the corresponding components of the storm sewer system within it are found in Appendix C.

The stormwater collection and conveyance system in the regulated area drains to the following waters:

- Un-named tributary of Bayou Two Prairie
- Hudson Branch
- 4-Mile Creek
- Magness Creek

BMPs addressing components of the collection and conveyance system are further described in Sections 4 and 5. The BMPs are accompanied by practices aimed at reducing or preventing polluted discharges from municipal facilities and activities from entering the regulated MS4.

Section 4 Operational Plan

The Operational Plan outlines the specific practices, controls, and procedures aimed at reducing or eliminating the discharge of pollutants from streets, roads, municipal facilities, municipal activities, storage areas, and any other municipally owned facility or activity as identified in Section 3, the Municipal Inventory List, and the Municipal Facility Detail Sheets. The Operational Plan also addresses training and education of municipal employees and contractors for specified activities.

4.1 BEST MANAGEMENT PRACTICES (BMPs)

Based on the Municipal Inventory List in Appendix A and Municipal Facility Detail Sheets in Appendix B, a set of BMPs have been selected. They are primarily source-control measures related by the goal to reduce or prevent the discharge of pollutants. The selected BMPs are referenced in Appendix F, and were determined by using the BMP Selection Matrix (Appendix D).

The objectives, protocols/practices (including operations and maintenance), inspection procedures, and documentation procedures of selected BMPs can be found within the individual BMP Fact Sheets located in Section 5.3 or noted in the BMP Selection Matrix. The BMP Selection Matrix also provides relevant goals for individual BMPs selected, along with a measurement of effectiveness if applicable. Goals, or milestones, of selected BMPs (including implementation (if applicable) and maintenance practices) will be outlined in a schedule format. The BMP Implementation and Maintenance Schedule can be found in Appendix G.

The BMP Selection Matrix and corresponding Fact Sheets of selected BMPs will be reviewed annually by the Township at the end of each calendar year. Effectiveness, established milestones/goals, and practices will be reviewed. An Activity Record will be completed and logged for this action. Along with this action, the BMP Implementation and Maintenance Schedule will be reviewed and updated to note any changes in the annual review.

4.1.1 WASTE DISPOSAL PLAN

Along with the selection of BMP GH-7, Waste Handling and Disposal, the Waste Disposal Plan addressing collection and disposal of waste removed from the regulated MS4 and as a result of municipal activities is found in Appendix N. The Plan addresses disposal of wastes such as dredge spoil, accumulated sediments, trash, hazardous wastes (including household), used motor oil, and other debris.

4.1.2 SPILL RESPONSE AND CONTROL PLAN

Along with the selection of BMP GH-10, Spill Prevention and Control, the Spill Response and Control Plan addressing spills that may pollute stormwater runoff or contribute pollutants directly to receiving waters via the regulated MS4 is found in Appendix O. The plan outlines such items as spill control materials and responsibilities.

4.2 PROGRAM GOALS

Goals have been identified and established for the facilitation of the O&M Program. Milestones associated with the goals can be found on the BMP Implementation and Maintenance Schedule as well. Goals may be modified, changed, or added during annual reviews. Such modifications will be noted and found in Appendix T. Initial goals associated with the program or components of the program are as follows:

- Promote greater awareness among City Staff regarding actions that promote pollution prevention and water quality improvement.
- Eliminate all pollutants emanating from the City Campus that would have otherwise been introduced into surface waters.
- Reduce the amount of pollutants from other City-owned sites through better institutional controls (i.e. BMPs).

4.3 TRAINING AND EDUCATION

An annual training plan will be developed by City Staff at the beginning of each calendar year. The topics of focus in the training plan are based on selected BMPs or any items relative to stormwater and water quality. The Annual Training and Education Plan can be found in Appendix E, laying out the upcoming year's training opportunities intended for municipal employees and contractors. The following are typical methods of delivery conducted by personnel listed in Section 2, depending on the audience and subject matter:

- Formal or informal
- "Tailgate" training
- On-site
- Classroom or similar

Training Records will be completed and logged documenting training completed, and will include information such as the training date, location, instructor(s)/presenter(s), and subject matter. Training Records can be found in Appendix K, and a log providing a summary overview can be found in Appendix

J. Records will be completed for training activities outlined in the Annual Training Plan and for non-planned activities as well.

4.4 INSPECTIONS

Inspections of facilities and activities as outlined in selected BMPs will be conducted by responsible persons listed in Section 2. Inspection Records are located in Appendix L, and the corresponding log providing a summary of inspections is located in Appendix I. Inspections will be conducted on a regular basis, as set forth by the BMP Fact Sheets for a particular facility or activity.

Inspections will typically involve the following actions:

- Compare the observed facility or activity against the BMP Fact Sheet.
- Note any necessary maintenance or repairs.
- Note if a spill, leak or discharge was observed.
- Address any concerns identified during observation.
- Determine if any follow-up activities are required (e.g., training or spill control).

Monitoring will be conducted in conjunction with inspections to ensure that the O&M Program is effective per Section 4.7.

4.5 BMP IMPLEMENTATION AND MAINTENANCE ACTIVITES

Any activities associated with implementing or maintaining a BMP for a municipal operation or facility will be documented on an Activity Record (Appendix H), and logged in Appendix I. Activities include repairs to a facility or activity, street sweeping, waste transport, modifying a facility or activity to reflect a BMP, illicit discharge or connection to the MS4, etc. The BMP Fact Sheets located in Section 5.3 provide guidance for the activities and associated documentation. Scheduled implementation and maintenance activities can be found on the BMP Implementation and Maintenance Schedule (Appendix G).

4.6 EVENTS

Significant events are recorded on Event Records (Appendix M), and also logged into Appendix I. Such events include defined rain events and detected illicit discharges.

4.7 MEASURING EFFECTIVENESS

The BMP Selection Matrix (Appendix D) provides for the development of measuring the effectiveness of the BMPs. The primary measurement of effectiveness is ensuring proper execution of practices and protocols outlined in the O&M Program (specifically within the BMP Fact Sheets), documentation thereof, and the review of materials reflecting BMP implementation and maintenance.

4.7.1 GENERAL MONITORING

General monitoring entails frequent observations of municipal activities and facilities outside the normal inspection schedule. Municipal employees and contractors will observe potential polluting conditions (e.g., leaks and discharges) during normal operations.

4.7.2 FIELD MONITORING

Field monitoring entails documented observations of municipal facilities and activities. A Monitoring Report (Appendix P) will be completed for field monitoring, and subsequently entered on the summary log in Appendix Q. Locations of field monitoring conducted are further identified on the Municipal Facility Detail Sheets (Appendix B). Field monitoring may include sample acquisition by qualified municipal employees or contractors with a field test kit.

The Pollutant Guidance Table found in Appendix R provides guidelines for field observations and testing of samples, and also contains applicable analytical guidelines. There is no overarching frequency established for field monitoring. Field monitoring will be conducted as needed or as identified as a measurement of effectiveness for selected BMPs.

4.7.3 ANALYTICAL MONITORING

From time to time, analytical monitoring and testing will be conducted to measure the quality of runoff produced by City-owned or operated facilities to ensure selected practices and protocols for good housekeeping are effective. Sampling for laboratory testing will be conducted in locations identified in Section 4.7.2 and the Municipal Facility Detail Sheets (Appendix B). Testing will be conducted by a laboratory listed in Section 2, but sample acquisition may be completed by qualified municipal personnel, contractors, or the laboratory staff. The monitoring report will note the person acquiring the sample, along with proper chain of custody forms and other relevant information to ensure quality control.

There is no overarching frequency identified for analytical monitoring, which will be conducted as needed and for potential pollutants as deemed appropriate to test for, or as identified as a measurement of effectiveness for selected BMPs. Analytical monitoring may also include sample acquisition at other locations in the regulated area of the MS4, as addressed by the Township's *Illicit Discharge Detection & Elimination Program*.

4.8 ANNUAL REPORTS

All activities and items associated with the O&M Program including modifications, training endeavors, goals, etc. will be summarized in Annual Reports. Copies of the Annual Reports are found in Appendix S.

Section 5 Best Management Practices (BMPs)

This section contains a general set of BMP Fact Sheets for municipal operations. The City's operations are not limited to the BMPs contained within this document; however, the City does not need to select and implement those that are not applicable. Most BMPs found within the manual are considered source control BMPs.

5.1 INTRODUCTION

The BMP Fact Sheets contained within this manual offer recommended protocols for a particular municipal activity or facility. Along with those standards, guidance for documentation and inspections is also provided. A BMP Fact Sheet includes only baseline guidance, and can be tailored to meet individual City needs, capacities, and abilities. These elements are considered non-structural BMPs with focus on education and source control of potential pollutants.

When warranted, the Fact Sheets may need to be updated, modified, or removed. At the same time, additional BMP Facts Sheets may be added. Listed protocols are designed to help provide MS4 NPDES Permit compliance guidance to the Maximum Extent Practicable (MEP).

5.2 SELF-ASSESSMENT FOR SELECTING BMPs

As indicated, the selection of BMPs should consider common sense and practicality when looking ahead to implementation. Through the Municipal Inventory List and the Municipal Facility Detail Sheets (Appendices A & B), the City has assessed current facilities and programs (e.g., wash facility, leaf collection, salt storage, etc.). This self-assessment factored both the practices and corresponding requirements of a BMP in conjunction with available resources and capabilities. Along with the BMPs contained in this document, a template is provided in Appendix U for the creation of an additional practice.

5.3 BMP FACT SHEETS

BMP Fact Sheets can be found on the following pages. For the sake of consistency, the general outline of a BMP Fact Sheet will be as follows:

- Objectives of the BMP
- A general description of the focus of the BMP
- Considerations including recommendations for tailoring the BMP to a municipality's needs, if applicable
- Recommendations and Protocols (an explanation of the BMP) including alternative practices
- Documentation guidance
- Measurements and inspection protocols including recommended frequencies (or defined frequencies)
- Additional sources of information for the development of the fact sheet
- Actual outlines may vary for several fact sheets based on the actual BMP.

EMPLOYEE TRAINING AND EDUCATION GH-1

OBJECTIVES

- Increase municipal employee awareness of:
  - Illicit discharges and detection
  - Good housekeeping BMPs and measures
  - Construction site BMPs
  - Structural BMP operation and maintenance
  - General stormwater management
- Prepare municipal employees for:
  - Spill prevention and response
  - Implementation and maintenance of BMPs
  - Point source discharge identification

DESCRIPTION

Municipal employee training activities provide the applicable knowledge and awareness necessary to facilitate a stormwater management program within a municipality. Education and training of employees provides a municipality with an additional level of preparedness with not only properly implementing and maintaining BMPs, but also reacting to situations that require timely attention including spill response and control. A primary goal of this BMP is to increase the knowledge and capabilities of municipal staff with proper stormwater management practices as it relates to the selection of all BMPs in the municipal SWMP.

CONSIDERATIONS

Training and education programs should be developed and reviewed/modified on an annual basis. All municipal employees including public works staff, administrative staff, elected officials, engineering staff, inspection staff, and zoning officials should be considered during development of an annual program.

Training and education pursuits can be administered in a number of ways including in-house training, in-house presentations, joint training sessions, distribution of relevant printed materials, certification programs, informal "round-table" discussions, and seminars.

The training and education BMP is one of the few within an entire SWMP where the overall measurement of effectiveness is dependent on the success or effectiveness of the other BMPs selected and made a part of the overall municipal program.

Materials for training events and sessions conducted in-house can be downloaded from the U.S. EPA and Arkansas Department of Environmental Quality (ADEQ) websites. The Cabot Public Works Department will provide materials and topics for use by the municipalities annually as well.

As a general guideline, training activities should be conducted annually as outlined within this BMP. However, additional focus should be afforded to specific items within the municipal SWMP (i.e. selected BMPs in the SWMP, and so on) during the first two years of the permit cycle.

EDUCATION EVENTS/METHODS

EVENT DESCRIPTION	TARGETED AUDIENCE	FREQUENCY
"Tailgate" Training	Public Works Staff	Monthly
SWMP Review	All Staff	Annually
Targeted BMP Training	Varies by Department	Annually
Illicit Discharge and Detection	Public Works Staff	Annually
Spill Response and Prevention	Public Works Staff	Bi-Annually
SWMP Updates	All Staff	Bi-Annually

"TAILGATE" TRAINING

"Tailgate" training involves on-site, or in-field, training and reviews of specific topics relative to the City O&M Program, selected BMPs, and/or the City SWMP. The primary focus for this type of event is to maintain the installed structural and non-structural BMPs. These training sessions will provide opportunities to review the operation and maintenance of the BMPs, as well as other considerations such as:

- General stormwater awareness
- Vehicle & equipment fueling, cleaning, and repairs
- Illicit discharge and detection
- Storage of materials
- Basin/inlet cleaning and maintenance
- General housekeeping
- Hazardous materials
- Municipal yard maintenance

SWMP REVIEW

Annually, the entire staff should be educated on general stormwater awareness and changes or updates to the municipal SWMP. This type of event can be completed in-house.

TARGETED BMP TRAINING

It is important to note that targeted BMP training should focus on items of issue affecting the municipal SWMP. A specific structural or non-structural BMP should be identified for training purposes, especially those that are determined to require additional focus. This training is likely specific to segments of City Staff depending on subject matter, and could vary from workshops open to the public to in-house presentations. Recommended target BMPs (with target audience) include, but are not limited to:

- Public education planning workshops (administrative staff)
- Innovative BMP design (planning staff, zoning officials)
- General stormwater management awareness (all staff)
- Construction site BMPs (public works staff, inspectors, planning staff)
- Good Housekeeping BMPs (public works staff)
- Basin and outfall cleaning & maintenance (public works staff)
- Ordinance review (elected officials, administrative staff)

ILLICIT DISCHARGE AND DETECTION

These training events are designed to increase the knowledge and response capabilities of the Public Works Staff. Training events are recommended to be held annually, including an in-the-field "mock" review or exercise to outline recognition of illicit discharges and reporting requirements. Another training session should include a review of all the outfalls within the municipality where an illicit discharge will affect the MS4, held at least once per NPDES permit cycle. This type of training event can be a combined in-the-field review of outfall locations, in-house review of the outfall map, and discussion of types of point source discharges.

SPILL RESPONSE AND PREVENTION

This training event follows the same idea as the Illicit Discharge and Detection Training, utilizing an in-the-field session covering hands-on procedures for identifying a spill and proper procedures for control and containment. Municipal employees will be better prepared for proper implementation and maintenance of BMPs. A comprehensive review should be completed during this training session to outline prevention techniques, as detailed in BMP Fact Sheet GH-10: Spill Prevention and Control.

SWMP UPDATES

Updates on SWMP changes or events of note (e.g., illicit discharges, flooding, ordinance changes, etc.) should be reviewed annually with all Staff. This can take place via meeting or internal memo to ensure

that the common message is conveyed to all personnel. Other topics may include changes to the City's SWMP or regulation changes that will affect it.

DOCUMENTATION

Proper documentation is essential to demonstrate compliance with the Clean Water Act, NPDES, and general requirements of the issued MS4 permit. As with all elements of an MS4 permit, all documentation should be centralized. The following templates can be used to help achieve compliance:

- **Annual Municipal Employee Training and Education Plan:** This template is used to develop a training and education program on an annual basis, prior to the upcoming year's activities. The plan is a guidance document and does not need updated (unless absolutely necessary) through the year. Additional training events not outlined in this plan need only to be documented through a Training Record and entered into the Training and Education Log.

- **Training Record:** This document is used to provide record of a training event or session. An attendee's log is required to be attached to all records completed.

- **Training and Education Log:** The log provides a general summary of all training activities relative to the SWMP for municipal employees (or as outlined within a selected BMP). Logs can be "renewed" on an annual basis or become a comprehensive list over the life of the permit cycle. It is imperative the log is kept up-to-date and complete.

MEASUREMENT OF EFFECTIVENESS

Effectiveness can be demonstrated by properly conducting and documenting training activities as recommended in this Fact Sheet.

CONTRACTOR TRAINING GH-2

OBJECTIVES

- Increase contractor awareness of:
  - Illicit discharges and detection
  - Good housekeeping BMPs and measures
  - General stormwater management
- Prepare contractors for:
  - Spill response and prevention
  - Responsibilities toward the Clean Water Act

DESCRIPTION

Contractor training distributes important knowledge and awareness necessary to facilitate the City's SWMP to contractors and associated personnel. This provides the City with an additional level of preparedness not only for proper implementation and maintenance of BMPs, but also for reacting to situations that require timely attention like spill response and control. A primary goal of this BMP is to increase the knowledge and capabilities of contractors with proper stormwater management practices in regard to the role of municipal operations and maintenance in the Township SWMP.

CONSIDERATIONS

The term "contractors" refers to any entity or the personnel of such entity that performs work on municipal property or for the municipality and is not an employee of the municipality. Contractors can include, but are not limited to, general contractors, plumbing contractors, landscape contractors, engineers, and inspectors. More specifically, training is intended for contractors with an executed contract or agreement with the municipality.

The City of Cabot is the operator of the MS4, and any contractors completing work that will affect the MS4 should be educated in the goals and requirements of the SWMP in order to reduce the potential of discharges to receiving waters. The City of Cabot is responsible for its MS4 whether it completes work with its own forces or contracts the work to a private entity. The contractor training BMP is one of the few where the overall measurement of effectiveness is dependent on the success or effectiveness of other BMPs made a part of the overall program.

RECOMMENDATIONS AND PROTOCOLS

The templates provided within this manual can be used to guide contractor training activities, as detailed in the "Documentation" section of this Fact Sheet. A degree of responsibility should be extended to a contractor for proper stormwater management practices. This can be achieved through awareness of contract language or information reviews. Based on the objectives listed within this Fact Sheet, the following represents more detailed guidance regarding contractor training:

ILLICIT DISCHARGES AND DETECTION

Contractors should be aware and knowledgeable of the Township's *Illicit Discharge Detection & Elimination Program*. Liability specified in contractual language should be extended to a contractor for self-produced illicit discharges. Notification protocol should also be established between the contractor and the City of Cabot if the contractor observes an illicit discharge. This protocol should include initial response measures by the contractor and follow-up by Cabot Public Works staff.

GENERAL STORMWATER MANAGEMENT

A contractor should be aware and knowledgeable of proper stormwater management practices as it pertains to the goals and objectives of the City of Cabot's SWMP and the contractor's operations on City of Cabot property.

GOOD HOUSEKEEPING BMPs AND MEASURES

A contractor should be aware of the Good Housekeeping BMPs that the City is implementing, and educated on its responsibilities for such BMPs. For example, if a contractor will use hazardous materials for the completion of their work and the City has chosen and follows a hazardous materials BMP, the contractor should follow practices for proper storage, inspections, etc. as they pertain to the activity.

SPILL PREVENTION AND RESPONSE

Contractors should be aware and knowledgeable to the municipality's spill response and prevention initiatives. A contractor should be required to have a Spill Response and Prevention Plan that aligns with the City's objectives and plans. As with illicit discharges, a notification protocol should be established between the contractor and City for spills, with the contractor being expected to produce employee spill prevention and response training documentation to the City. If a contractor has not completed spill prevention and response training, this training should be completed in order to be consistent with the SWMP. A contractor can be invited to municipal training exercises as it pertains to spill prevention and response.

RESPONSIBILITIES TOWARD THE CLEAN WATER ACT

Contractors should be made aware of responsibilities to conduct its operations in conjunction with the City of Cabot SWMP. This can be achieved through contractual language and training. A contractor can become the "operator" and complete a pollution prevention plan that aligns with the City of Cabot SWMP. A review of site plans, if applicable, should be completed (and as required by MCM #4 of the MS4 permit) during the preconstruction period to ascertain any potential impacts by contractor activities.

DOCUMENTATION

Proper documentation is essential to demonstrate compliance with the Clean Water Act, NPDES, and general requirements of the issued MS4 permit. As with all elements of an MS4 permit, all documentation should be centralized. The following templates can be used to help achieve compliance:

- **Contractor Training Record:** This document is used to provide record of a training event or session. An attendee's log is required to be attached to all records completed. This template can be used to document a preconstruction review of site plans with a contractor to ascertain potential impacts and outline plans to address such potential impacts.

- **Training and Education Log:** The log provides a general summary of all training activities relative to the SWMP. The log is generally used for municipal employee training and education activities. However, contractor training activities can be noted on this log.

Forwarding relevant information to the contractor for review and understanding in lieu of training sessions may be an acceptable practice. It is important for the contractor to acknowledge acceptance of the information in written form, then attached to a training record and entered into the log.

MEASUREMENT OF EFFECTIVENESS

Effectiveness can be demonstrated by properly conducting and documenting training activities as recommended in this Fact Sheet.

NON-STORMWATER DISCHARGES GH-5

OBJECTIVES

- Reduce or prevent the following pollutants contributed to receiving waters from non-storm water discharges through observations and properly maintained BMPs:
    - Nutrients (e.g., nitrogen and phosphorus)
    - Oil and grease
    - Trash
    - Sediment
    - Organic and inorganic chemicals (e.g., pesticides)
    - Bacteria
    - Metals
    - Oxygen-demanding substances
- Identify and correct potential/observed non-stormwater discharges through:
    - Training
    - Spill response and prevention
    - Inspections

DESCRIPTION

Non-stormwater discharges generally have no or minimal stormwater runoff included. A non--stormwater discharge can originate from illegal dumping activities, accidental spills, poor BMPs at or adjacent to storm drains and waterways, wash water, and improperly connected drainage systems. Non-stormwater discharges can also pollute aquifer recharge areas and wetlands through these activities. A combination of source control and treatment BMPs may be necessary to prevent pollutants associated with non-stormwater discharges.

CONSIDERATIONS

Potential pollutants from non-stormwater activities can be caused by standard municipal activities including street sweeping, landscape maintenance, and sidewalk repairs. The EPA developed a list of potential pollutants associated with municipal activities and can be found within the appendix of the City of Cabot Good Housekeeping BMP Manual.

Routine inspections and knowledge of potential sources are essential for the success of managing non-stormwater discharges.

Confined space entry training should be considered due to inspections or necessary corrective measures that may be required.

A non-stormwater discharge is different than a spill. A spill is "contained" within an area and has not discharged into a drain or receiving waterway. A non-stormwater discharge is a pollutant discharged to a drain or waterway without necessarily the help of the stormwater.

Illegal dumping activities that can result in non-stormwater discharges are generally due to the absence of a proper disposal location. Assure proper disposal locations exist and are known.

Most BMPs within the manual reference non-stormwater discharges and associated pollutants (i.e. organic/inorganic chemicals, oil and grease, and so on). Most of these types of pollutants can be discharged directly or discharged with stormwater.

Non-stormwater discharges primarily originate from fixed facilities operated and maintained by a municipality such as wash bays, storage areas, and fueling stations. However, discharges can result from activities such as pesticide applications and saw cutting concrete.

RECOMMENDATIONS AND PROTOCOLS

It is recommended to sub-divide non-stormwater management programs into fixed facility and field operations. Fixed facilities will have a concentration of actual BMPs, whereas field operations are more dependent on training initiatives.

For the objectives listed, the following represent further recommendations and protocols for non-stormwater discharges:

REDUCE OR PREVENT SPECIFIC POLLUTANTS

General

- Ensure proper BMPs are implemented and maintained for facilities and operational activities (i.e. Vehicle and Equipment Cleaning, Landscape Maintenance, and so on).
- Continually train personnel on potential pollutants with specific activities or at fixed facilities.
- Identify and catalog specific pollutants associated with fixed facilities or operational activities.
- Post "No Dumping" signs at potential discharge locations along with contact information to report observed discharges.

Illicit Connections

- Complete or confirm "as-built" plans of drains and piping within fixed facilities to help identify discharge destinations (i.e. storm drain, sanitary sewer, or other).
- If the origin of a recurring non-stormwater discharge is unknown, complete dye or TV testing to identify the source and correct.
- Enforce correction measures for improper connections to the MS4 including, but not limited to, toilets and car wash drains.
- Consider smoke testing to confirm improperly connected wastewater and stormwater piping connections.

Illegal Dumping

- Regularly inspect "hot spots" where dumping activities have occurred.
- Ensure enforcement action protocols for illegal dumping activities is set in place including BMP information, fines (as applicable), and offender training.
- Build and maintain a field investigation kit for observed or reported dumping activities. Pre-developed stormwater pollutant kits are available. Kits should contain protective gloves, sample jars, field testing materials (pH meter/paper, etc.), and sample acquisition tools.
- Never hose down with water spills, leaks, or other observed potential non-stormwater discharges. Implement proper spill prevention and control techniques (see BMP Fact Sheet GH-10: Spill Prevention and Control).
- Post "No Dumping, Drains to Waterways" or similar stamp/sign at storm drains and "hot spot" locations.

NOTE: Illegally dumped pollutants include all specific listed pollutants in the objective section of this fact sheet (i.e. allowing sediment in an uncontrolled fashion into drains and waterways is an illegal dumping activity).

IDENTIFY AND CORRECT POTENTIAL/OBSERVED NON-STORMWATER DISCHARGES

General

- Implement a notification protocol for encountered non-stormwater discharges (i.e. who to report to, who documents the report, and so on).

Training

- Educate employees on recognizing dry weather flows and non-stormwater discharges.
- Continually provide training for spill response and control.
- Employees should be trained on use of field investigation kits.

- Training should include identifying proper clean-up materials if hazardous materials are a part of a non-stormwater discharge (see BMP Fact Sheet GH-8: Hazardous Materials) (i.e. understanding of incompatible materials).
- Instruct proper documentation of non-stormwater discharges, including citations (if applicable).

Spill Response and Prevention

- Well-trained employees understand the tools and necessary response procedures for spills that may result in non-stormwater discharges.
- See BMP Fact Sheet GH-10: Spill Prevention and Control.

Inspections

- All fixed facilities and operational activities are inspected. Observation of a non- stormwater discharge is a standard inspection activity.
- Inspect "hot spots" for illegal dumping activities and signs of potential non-stormwater discharges on a regular basis.
- Complete annual inspections with the goal of identifying illicit connections to the storm drain system.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For non-stormwater discharges, the following templates are provided within the BMP manual to assist the municipality with documentation compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to non-stormwater discharges.
- **Training and Education Log:** Enter a completed training record for nonstormwater discharges into the log.
- **Event Record:** If a non-stormwater discharge is observed, an event record should be executed that also outlines the nature of the discharge, location, offender (if known), and response and remediation procedures.
- **Activity Record:** Complete an activity record for activities completed that would eliminate a non-stormwater discharge, corrects an issue that caused a nonstormwater discharge, or was

specifically acted to identify a potential source of non-stormwater discharges (i.e. dye testing, TV testing, etc.).

- **Inspection, Event, and Activity Log:** Enter an activity or event record for nonstormwater discharges into the log.

ADDITIONAL DOCUMENTATION CONSIDERATIONS

Inspection record templates are set up that consideration is provided toward non-stormwater discharges during an inspection of fixed facilities and operational activities.

The pollutant (i.e. pesticides, sediment, oil, and so on) should be entered into the event record along with the nature of the determination.

If a non-stormwater discharge is observed or reported, create an event record. The event record should include planned remediation and enforcement activities (if applicable).

Consider organizing an enforcement protocol that includes citations and reporting requirements.

INSPECTIONS AND MEASUREMENTS

All BMPs inspected are provided consideration for observation of non-stormwater discharges. A check box for non-stormwater discharges is provided on the inspection record template. If checked and a non-stormwater discharge is observed during a scheduled inspection, an event record should be generated.

If a discharge is reported, investigate the reported location as a fixed facility (if applicable). If a non-stormwater discharge can be identified during the follow-up, generate an event record.

Effectiveness can be demonstrated by documenting implementation and maintenance of practices and protocols associated with this BMP.

WASTE HANDLING AND DISPOSAL GH-7

OBJECTIVES

- Understand proper handling and disposal of waste materials, including:
  - Storage and transport
  - Reuse and recycling
  - Documentation
  - Solid and liquid waste
- Implement and conduct activities aimed at pollution prevention, such as:
  - Training
  - Waste management
  - Inspections
  - Spill response and prevention
- Reduce the potential for specific pollutants discharging to waterways:
  - General trash
  - Metals
  - Oil and grease
  - Bacteria
  - Sediment
  - Organic/inorganic chemicals

DESCRIPTION

Improper storage and handling of waste materials can allow a number of pollutants including oils and greases, toxic and chemical compounds (including nutrients), bacteria, metals, and other wastes to enter waterways through stormwater runoff and non-stormwater discharges. Proper handling, along with recycling and waste reduction will reduce the potential for polluting waterways, groundwater, and recharge points.

CONSIDERATIONS

Hazardous waste cannot be reused or recycled. It must be disposed of by a licensed hazardous waste hauler. Refer to BMP Fact Sheet GH-8: Hazardous Materials for more specific information regarding hazardous materials.

Consider disposal with organizations such as the Two Pine Landfill with an established and certified Environmental Management System (EMS) designed to manage impacts on the environment.

Reuse and recycling will reduce the potential for waste storage areas (and waste transport and disposal) from polluting waterways and ground water.

RECOMMENDATIONS AND PROTOCOLS

A properly designed waste storage area is crucial for managing the potential for waste products to pollute waterways.

For the objectives listed, the following represent further recommendations and protocols for waste handling and disposal:

PROPER HANDLING AND DISPOSAL OF WASTE MATERIALS

- Store waste in trash storage areas that are secure, yet accessible for transport.
- Document disposal operations if transported to a waste facility. See section regarding DOCUMENTATION below.
- Separate out materials of different types (e.g., general trash, used oil, etc.), specifically isolate materials to be recycled or reused.
- Provide cover over storage areas, if feasible.
- Do not mix liquid wastes with solid waste.
- Obtain documentation from waste haulers and waste facilities establishing they are an approved hauler or disposal facility.
- Dispose of rinse or wash water into sanitary sewers if approved by sewer authority.

TRAINING

- Train employees on proper storage and handling practices of waste materials.
- Train employees on clean-up procedures specific to waste materials.
- See BMP Fact Sheet GH-1: Employee Training and Education for more information.
- If a Waste Management Program is established, make employees knowledgeable of the program through training activities.

SPILL RESPONSE AND PREVENTION

- See BMP Fact Sheet GH-10: Spill Prevention and Control for more information.
- Provide additional training measures/notes for waste materials for employees.

INSPECTIONS

- See "Inspections and Measurements" section within this Fact Sheet.

WASTE MANAGEMENT PROGRAM

- Establish a Waste Management Plan/Program that addresses production planning and sequencing, storage and disposal, close loop recycling, loss prevention and housekeeping, waste segregation, and reuse procedures.
- Establish a material tracking system.
- Program should outline storage and disposal procedures for segregated materials (e.g., used oil, batteries, general waste, liquids, etc.).

GENERAL POLLUTION PREVENTION PROTOCOLS

- Recycle materials wherever possible.
- Keep storage areas clean. If paved area, do not clean with water via hose if storm drains are nearby.
- Storage containers should be structurally sound and free of defects. Transfer any waste from damaged containers to new or sound containers.

REDUCE THE POTENTIAL OF SPECIFIC POLLUTANTS

- Post "No Littering" signs; consider enforcement of violations.
- Provide sufficient number of trash receptacles; clean out receptacles regularly.
- Prevent stormwater from entering waste storage areas.
- Prevent waste materials from directly contacting rain water.
- Provide covers on dumpsters or other storage devices to reduce the potential for specific pollutants discharging with stormwater.
- Do not dispose of sediment with general trash. Store as appropriate in separate areas (see BMP Fact Sheet GH-21: Outdoor Storage of Materials).

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For waste handling and disposal, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to waste handling and disposal.
- **Training and Education Log:** Enter a completed training record for waste handling and disposal into the log.
- **Waste Management Plan:** Establish a centralized plan that outlines waste storage areas, disposal facilities, waste haulers, recycling and reuse procedures, waste reduction, disposal frequencies, and waste segregation techniques and procedures.
- **Event Record:** If a discharge is observed, an event record should be executed that also outlines response and remediation procedures.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP for waste handling and disposal.
- **Activity Record:** Complete an activity record when remediation occurs or waste is transported to a facility. Attach "truck tickets" establishing waste transport and destination.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for waste handling and disposal into the log.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the hazardous waste material storage area(s) on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the waste storage area after a defined rain event (if storage area is located outside).
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the waste storage area on a monthly basis (outdoor storage areas follow a different timeline. See BMP Fact Sheet GH-20: Outdoor Container Storage and BMP Fact Sheet GH-21: Outdoor Storage of Materials for more information).

Items that should be inspected and maintained in waste material storage areas (and recommended maintenance actions):

- *Integrity of storage containers:* replace/repair leaking or cracked containers.
- *Evidence of leaks:* isolate and clean-up leaks; replace leaking containers.
- *Cleanliness:* Sweep and remove debris or trash; do not hose down.
- *Tarps or plastic sheets (if applicable):* repair or replace torn or damaged tarps or plastic sheets.
- *Storage area layout:* assure area is accessible for haulers and "isolated" from run-on or runoff.

- *Solid Waste Trash Containers:* assure liquid materials are not leaking; assure containers are structurally sound.
- *Miscellaneous:* observe and correct any signs of corrosion, pest damage, or other observed item that may result in leaking containers, spills, etc.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials.

MEASUREMENT OF EFFECTIVENESS

Effectiveness can be measured by establishing and maintaining a written waste disposal plan and documenting waste transport disposal destinations and inspections.

HAZARDOUS MATERIALS GH-8

OBJECTIVES

- Conduct proper storage and maintenance of storage facilities for hazardous materials:
  - Storage area considerations
  - Hazardous substance identification
  - Documentation
- Implement and conduct activities to reduce the potential for polluted/illicit discharges:
  - Training
  - Spill response and prevention
  - Inspections
  - Contaminated soil/materials

DESCRIPTION

Illicit discharges of hazardous materials are generally a result of improper storage practices and use of such materials. An effective storage area and inspection/training program is necessary to help reduce the potential for illicit discharges from hazardous materials.

CONSIDERATIONS

Improper handling of hazardous materials may leave residue exposed to rainfalls, hence a potential discharge of pollutants to receiving waterways. Hazardous materials should be kept "isolated" to the maximum extent practicable (MEP) to reduce the potential for discharges.

It is assumed a municipality has an established Hazardous Waste Operations and Emergency Response Plan (or similar plan) in place. This fact sheet focuses on storing hazardous materials relative to preventing discharges to receiving waterways.

A storage area for hazardous materials should be confined to hazardous materials only. Storage procedures need to consider the manufacturer's recommendations, and an understanding of incompatible materials should be achieved when storing hazardous materials. The appendix of this BMP Manual includes an Incompatible Materials Chart along with a list of highly hazardous chemicals.

A release of a reportable quantity (RQ) of an extremely hazardous chemical (or CERCLA substance) requires a release notification. If any chemicals are stored that can be found on the list of such chemicals, a written release notification protocol—as required by law—should be developed and easily accessible for reporting purposes. A current list of extremely hazardous chemicals can be found in 40 CFR 355, Appendix A.

Procedures should also be identified for household hazardous wastes as, from time to time, a municipality may need to provide consideration for such materials. Procedures can be incorporated into the waste management and disposal plan or O&M manual.

Hazardous materials stored directly on floors can become wet if the floor becomes wet. This action can lead to corrosion of materials and adjacent structures.

An inventory list along with Materials Safety Data Sheets (MSDS) should be kept to have an understanding of the hazardous materials stored. A possible consideration, with the goal of reducing paper, is selecting an electronic MSDS system. Such systems are deemed acceptable by the Occupational Health and Safety Administration (OSHA).

RECOMMENDATIONS AND PROTOCOLS

Storage facilities for hazardous materials should be dedicated areas. These areas can be storage sheds, buildings, "lean-to" structures, identified locations within a building, and so on.

For the objectives listed, the following represent further recommendations and protocols for hazardous materials:

STORAGE AREA CONSIDERATIONS

- Ensure sufficient access for material procurement and inspections.
- Store materials away from high-traffic areas.
- Store materials on pallets or in storage lockers off the ground. This practice will facilitate inspections for leaking containers and can reduce pest damage.
- Do not place storage areas over or immediately adjacent to drains or waterways.
- Storage areas should be located on highly impervious surfaces such as concrete.

- Cover material containers with tarps or similar acceptable materials if not stored in a locker or similar storage facility.
- Provide consideration for household hazardous materials (document such wastes as applicable).
- Identify a disposal storage area within the designated hazardous material storage area until the materials are properly disposed.
- Assure storage facility is constructed of proper materials and meets local fire and building codes
- Equip storage areas with the appropriate spill clean-up materials. See BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

HAZARDOUS MATERIALS IDENTIFICATION

- Place and update placards at the storage area indicating the dangers associated with chemicals currently stored.
- Store hazardous materials in the appropriate container and clearly label.
- Assure MSDS accompanies any new material deliveries. The MSDS will identify the level of hazard associated with the material.
- Review the chemical composition of a material and cross-reference with the U.S. Dept. of Labor, OSHA highly hazardous chemical list. If a material contains a chemical listed, mark the container to denote this fact.

DOCUMENTATION

- Keep an updated inventory list of hazardous materials. The inventory list should be checked during regular inspections.
- Keep an Incompatible Materials Chart relatively close to the storage area for easy reference.
- Keep MSDS sheets readily available for the stored hazardous materials.
- See "Documentation" section within this fact sheet for more information.

TRAINING

- Depending on the types and operational uses of hazardous materials stored, additional training activities may be required per OSHA's Hazardous Waste Operations and Emergency Response final rule (29 CFR 1910.120).
- See BMP Fact Sheet GH-1: Employee Training and Education for more information.
- Train employees on proper storage and handling practices of hazardous materials.
- Train employees on clean-up procedures specific to hazardous materials.
- Notify employees to any changes in the inventory of stored hazardous materials.

SPILL RESPONSE AND PREVENTION

- See BMP Fact Sheet GH-10: Spill Prevention and Control for more information.
- Dry cleanup methods should be used for containing and cleaning up hazardous materials if applicable and safe.

- Provide additional training measures/notes for hazardous chemicals for employees specific to stored hazardous materials (i.e., incompatible chemicals).

INSPECTIONS

- See "Inspections and Measurements" section within this Fact Sheet.

CONTAMINATED SOIL/MATERIALS

- Soils and materials may be contaminated from leaking containers storing hazardous materials. These contaminated items should be isolated and securely stored until proper disposal techniques are identified.
- For contaminated soils, stockpile in a separate location. Cover the soil with tarps or plastic sheets and install a berm around stockpile to prevent runoff and run-on. Locate stockpiles away from drains and receiving waters.
- Contaminated materials (i.e. cardboard) can be installed in the hazardous materials storage area; as long as the contaminated materials poses no fire or health hazards and will not result in polluted discharges or further contamination until proper disposal is achieved.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For hazardous materials, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to hazardous materials.
- **Training and Education Log:** Enter a completed training record for hazardous materials into the log.
- **Hazardous Materials Inventory List:** Keep an updated inventory of stored hazardous materials. This can also be a section of a master material inventory list.
- **Activity Record:** Complete a record if materials are transported for disposal or remediation is completed due to an event or note from an inspection.
- **Event Record:** If a discharge is observed, an event record should be executed that also outlines response and remediation procedures.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP for hazardous materials.

- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for hazardous materials into the log.
- **MSDS**
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the hazardous materials storage area on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for hazardous materials is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the storage after a defined rain event (if storage area is located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the storage area on a monthly basis (if inside) or every two weeks (if outside).

Items that should be inspected and maintained in hazardous materials storage areas (and recommended maintenance actions):

- *Integrity of storage containers:* replace leaking or cracked containers.
- *Evidence of leaks:* isolate and clean-up leaks; replace leaking containers.
- *Cleanliness:* Sweep and remove debris or trash.
- *Inventory:* assure inventory matches records and is accounted for.
- *Tarps or plastic sheets (if applicable):* repair or replace torn or damaged tarps or plastic sheets.
- *Contaminated soils/materials (if applicable)*: inspect contaminated soil stockpiles and materials. until proper disposal. Assure contaminated soil stockpiles are intact and no run-on or runoff is observed.
- *Storage layout:* assure containers and materials are neatly stored and as recommended by the manufacturer.
- *Miscellaneous:* observe and correct any signs of corrosion, pest damage, or other observed item that may result in leaking containers, spills, etc.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials.
- *Signs:* Assure placards properly represent the hazardous materials stored.

SPILL PREVENTION AND CONTROL GH-10

OBJECTIVES

- Utilize proper spill prevention and control techniques and procedures:
  - Spill control materials
  - Documentation
  - Reporting
  - Pollution prevention
- Implement and conduct activities to reduce pollutants from spills:
  - Training
  - Inspections
  - Planning and actions
  - Contaminated soil/materials

DESCRIPTION

Spills and leaks, if not properly controlled, can adversely impact receiving waters. Due to the type of work or the materials involved, many activities that occur either at a facility or as a part of a field program have the potential for accidental spills and leaks. Proper spill response planning and preparation will lead to spill prevention and control, and can enable employees to effectively respond to problems when they occur and minimize the discharge of pollutants to the environment.

CONSIDERATIONS

Spill Prevention and Control is a complement to most BMP Fact Sheets. It is a source control measure that should be considered for any Best Management Practice where spills or leaks can occur, and cause harm or damage to the environment or receiving waterways.

A Spill Prevention Control and Countermeasure Plan (SPCC) is required for facilities that are subject to the oil pollution regulations specified in Part 112 of Title 40 of the Code of Federal Regulations or if they have a storage capacity of 10,000 gallons or more of petroleum. (Health and Safety Code 6.67)

An initial Spill Prevention Response Plan (Plan) and any future updates, which address the requirements described in Chapter 9 of the act (35 P. S. § § 6021.901— 6021.904) and the corresponding chapter, shall be submitted to ADEQ for aboveground storage tank facilities. A current copy of the Plan shall be readily available at the facility at all times.

If a Spill Response Plan is developed, clearly identify the persons responsible for implementing the plan. Outline notification protocols, safety measures, and address federal and state regulations.

If a spill or leak discharges into the storm sewer, monitor and test downstream to assess any impacts or additional remediation that may be needed.

When collecting information for building the Municipal Inventory List, assess facilities and programs against federal and state requirements for outlining spill response protocols. Such protocols may include pre-plan testing and testing as during a spill response event.

Costs associated with Spill Prevention Control can vary widely and should be considered extensively when developing and implementing a Spill Control Plan.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for spill prevention and control:

SPILL CONTROL MATERIALS

- Identify locations for the placement of spill control stations. Such areas include vehicle/equipment fueling locations, storage locations, and waste storage locations. Stations would include a variety of kits relative to the station's purpose (e.g., control drums, absorbent pads, chemical neutralizers, etc.).
- Identify locations for placement of spill control kits. Such locations include municipal vehicles or on municipal equipment.
- Spill Control materials include, but are not limited to: chemical neutralizers, drip diverters, pans (for oil drips), pipe repair materials, absorbent pads, particulate absorbents, gels, sealing bags/wraps, rags, brooms, and containment devices.

POLLUTION PREVENTION

- General Monitoring
- Develop and implement a Spill Response and Control Plan (or similar title). Such a plan should address, but not limited to: description of facilities and activities, personnel, material handling procedures, response protocols, and control materials.
- Material handling procedures should be clearly defined for pollution prevention. Such procedures should address, but not limited to: recycling, material transfer protocols, designated handling areas.
- Do not hose off areas with water where spills were contained and cleaned up.
- Consider substituting products where efficient or applicable.

- Keep inlet protection materials readily available in case a spill response requires "isolating" or protecting an inlet from a spill.
- Reduce the potential for pollutants into storm drains by storing away from such drains, or protecting such drains from runoff.

DOCUMENTATION

- See "Documentation" section within this fact sheet for more information.

REPORTING

- Establish notification protocols for reporting observed spills or leaks.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24-hour line).
- For recordkeeping purposes, a report (Event Record) should include, but not limited to: date and time of incident/observation, weather conditions, cause of spill or leak (if known), response procedures implemented, follow-up actions, and persons/entities notified.

TRAINING

- See BMP Fact Sheet GH-1: Employee Training and Education for more information.
- Training regarding spills and prevention control should be conducted on a regular basis. Focus should be provided on spill prevention and control when training is conducted for other BMPs where spills or leaks can occur.
- Training should include field exercises.

INSPECTIONS

- See "Inspections and Measurements" section within this Fact Sheet.

PLANNING AND ACTIONS

- Locate spill control materials in readily accessible areas and ensure all municipal employees understand where the locations are and how to use.
- If a Spill Response Plan is developed, ensure it is easily accessible.
- Consider leak detection devices and diversion berms in handling areas for potential spills or leaks.
- Perform preventative maintenance on tanks, pumps, valves, or any similar equipment.
- Post spill response procedures in activity areas.
- Develop a notification protocol system and outline through a plan the follow-up procedures for a spill or leak.

CONTAMINATED SOIL/MATERIALS

- Contaminated materials can still pollute through discharge or exposure to runoff. Assure contaminated materials are properly stored (and ultimately disposed of).

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For spill prevention and control, templates are provided within the BMP manual to assist the municipality with documentation compliance. Training can be specific to spill prevention and control. However, inspections and other associated record templates are considered complementary as other BMP Fact Sheets will outline the necessity for monitoring and addressing leaks and spills. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to spill prevention and control. For other training exercises where spill prevention and control should be considered, indicate the topic was reviewed.
- **Training and Education Log:** Enter a completed training record for spill prevention and control into the log.
- **Spill Response and Control Plan**
- **Event Record:** If a discharge is observed, an event record should be executed that also outlines response and remediation procedures. An Event Record for a discharge should be more detailed than a normal Event Record as outlined above in this Fact Sheet.
- **Activity Record:** Record any activities associated with improving or addressing spill response controls and procedures.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record into the log.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the locations of spill response kits or stations on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for spills and leaks is recommended as follows:

- *All Inspections:* For all inspections conducted, observations should include signs of spills and leaks. At the same time, spill response kits and stations should be reviewed to assure proper materials are readily available, and in good working order.

Essentially, every inspection should include reviews for spills, discharges, or leaks.

Items that should be reviewed during an inspection for spill control and prevention:

- *Integrity of storage containers:* replace leaking or cracked containers.
- *Evidence of leaks:* isolate and clean-up leaks; replace leaking containers.
- *Cleanliness:* Sweep and remove debris or trash.
- *Inventory:* assure inventory matches records and is accounted for.
- *Tarps or plastic sheets (if applicable):* repair or replace torn or damaged tarps or plastic sheets.
- *Contaminated soils/materials (if applicable):* inspect contaminated soil stockpiles and materials until proper disposal. Assure contaminated soil stockpiles are intact and no run-on or runoff is observed.
- *Storage layout:* assure containers and materials are neatly stored and as recommended by the manufacturer.
- *Collection devices:* Assure collection devices (i.e. drip pans) are properly placed and no leaks are observed from such devices.
- *Miscellaneous:* observe and correct any signs of corrosion, pest damage, or other observed item that may result in leaking containers, spills, etc.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials.

Measurement of effectiveness can be calculated in several ways. The recommended measurement is a ratio of total spills/leaks observed/encountered versus successful spill control. Successful spill control means the spill was contained in a timely manner, cleaned up, and no discharge (non-stormwater discharges, and so on) was observed or measured. Self-identify a tracking mechanism for collecting such data. Repetitive training geared towards spill prevention and response is generally viewed as a successful tool for effectiveness as well.

OBJECTIVES

- Practice efficient and safe housekeeping practices through:
  - Planning
  - Training
  - General practices

DESCRIPTION

An entire program is dependent on basic general practices as a foundation. Following certain efficient and safe practices as a guide for all BMPs will increase the effectiveness of a program and reduce the potential for pollutants to enter receiving waters.

CONSIDERATIONS

At times, efficient housekeeping practices generally rely on behavioral changes in personnel. Through training and exercises, general practices that are safe and protect the environment can become normal operating procedures.

There are no limitations to this BMP or its effectiveness. This BMP provides baseline practices that establish a strong, safe, and efficient program for normal municipal operations and the reduction of potential pollutants discharging into receiving waters.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for general housekeeping:

PLANNING

- Identify and assess current operations against proposed or wanted practices.
- Develop a comprehensive MS4 Pollution Prevention/Good Housekeeping Plan that addresses all operations and facilities. Outline planned operating procedures to increase the effectiveness of a program.

- Address all operations and facilities including, but not limited to: construction, training, "hotspots," storm drain conveyance system, street sweeping, spill response, waste disposal, and building maintenance.
- Identify products or materials that will aid in increasing the effectiveness of general housekeeping practices.
- Outline costs associated with a planned program. Understanding monetary limitations will improve the effectiveness of chosen BMPs.

TRAINING

- See BMP Fact Sheet GH-1: Employee Training and Education for more information.
- Provide training for all BMPs selected.
- Provide or assure training for regulated activities including, but not limited to: pesticides, confined space entry, and hazardous material handling.
- Train personnel in general practices as noted within this fact sheet or as developed within your plan.

GENERAL PRACTICES

- Keep work sites and operating areas clean of debris and trash.
- Keep and maintain cleaning equipment and materials.
- Follow procedures or protocols outlined in selected or developed BMPs.
- Provide employees a summary of BMPs, and continually update on changes.
- Establish daily "close-out" checklists that address, but not limited to: cleaning, storing materials, securing areas, and general monitoring.
- Assure employees are knowledgeable and capable with respect to spill prevention and control, hazardous materials, and illicit discharges (non-stormwater discharges).
- Develop contingency plans addressing weather extremes and spills with a written organizational structure that further describes notification protocols and responsibilities for selected BMPs.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For general housekeeping, documentation is only relevant for training purposes. Training will build a foundation, and improve the effectiveness of the overall program and selected BMPs. For General Housekeeping, the following templates may be used for documentation purposes:

- **Operation and Maintenance Program (O&M Program)**
- **Training Record:** This document is used to provide record of a training event or session relative to general housekeeping.
- **Training and Education Log:** Enter a completed training record for general housekeeping into the log.

INSPECTIONS AND MEASUREMENTS

Every inspection will address general housekeeping to a degree. The effectiveness of BMPs is dependent on baseline practices outlined in this fact sheet (i.e. keep operating areas clean, remove litter, observe for leaks/spills, train, and so on).

GENERAL MATERIAL STORAGE GH-13

OBJECTIVES

- Properly store materials:
  - Storage areas
  - Documentation
- Maintain storage areas and handling procedures:
  - Training
  - General practices
  - Inspections
- Reduce potential for specific pollutants:
  - Non-stormwater discharges
  - Hazardous materials

DESCRIPTION

Responsible management of common chemicals, such as fertilizers, solvents, paints, cleaners, and automotive products, can significantly reduce polluted runoff. Such products must be handled properly in all stages of development, use, and disposal. Material storage encompasses the selection of the individual product, the correct use and storage of the product, and the responsible disposal of associated waste(s).

CONSIDERATIONS

Consider the proper use and storage of all materials used including, but not limited to: soil, salt, hazardous chemicals (acids, paints, and so on), fertilizers, detergents, asphalt, pesticides, petroleum products, and so on. Compatibility should be considered when outlining storage locations.

Storage locations (if indoors) need to meet building and fire code requirements.

A storage area for hazardous materials should be confined to hazardous materials only. Storage procedures need to consider the manufacturer's recommendations, and an understanding of incompatible materials should be achieved when storing hazardous materials. The appendix of this BMP Manual includes an Incompatible Materials Chart along with a list of highly hazardous chemicals. See BMP Fact Sheet GH-8: Hazardous Materials for more information.

RECOMMENDATIONS AND PROTOCOLS

Storage areas should be dedicated areas. These areas can be storage sheds, buildings, "lean-to" structures, identified locations within a building, and so on. For the objectives listed, the following represent further recommendations and protocols for general material storage:

STORAGE AREAS

- Ensure sufficient access for material procurement and inspections.
- Store materials away from high-traffic areas.
- Consider "isolation" measures such as berms, containment devices, and similar to reduce the potential for runoff from leaks or spills.
- Do not place storage areas over or immediately adjacent to drains or waterways.
- Storage areas should be located on highly impervious surfaces such as concrete.
- Outdoor stockpile areas shall be provided protective measures to reduce run-on and runoff, including diversion berms and covers.
- Do not store incompatible materials with each other.
- Cover material containers with tarps or similar acceptable materials if not stored in a locker or similar storage facility.
- Ensure proper spacing of materials in storage areas to allow access for addressing spills or leaks.
- Assure storage facility is constructed of proper materials and meets local fire and building codes.
- Equip storage areas with the appropriate spill clean-up materials. See BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

DOCUMENTATION

- Keep an updated inventory list of stored materials. The inventory list should be checked during regular inspections.
- Label all containers with contents and proper handling instructions. At times, insufficient labeling will lead to improper use or disposal.
- Keep an Incompatible Materials Chart relatively close to the storage area for easy reference.
- Keep MSDS sheets readily available for all materials.
- See "Documentation" section within this fact sheet for more information.

TRAINING

- Train employees on material usage and incompatibilities.
- Train employees on spill response procedures; see BMP Fact Sheet GH-10: Spill Prevention and Control for more information.
- Train employees on understanding MSDS.
- See BMP Fact Sheet GH-1: Employee Training and Education for more information.
- Notify employees to any changes in the inventory of stored hazardous materials.

INSPECTIONS

- See "Inspections and Measurements" section within this Fact Sheet.

GENERAL PRACTICES

- Store bagged and boxed materials on pallets.
- Keep ample supply of appropriate spill cleanup material near storage areas.
- Do not "overload" storage areas. Provide ample room for access and inspections.
- Inspect outdoor storage areas after a defined rain event.
- Keep storage areas clean and free of debris.
- Remove and dispose expired materials.

REDUCE POTENTIAL FOR SPECIFIC POLLUTANTS

- Secondary containment should be provided for hazardous chemicals and chemicals identified as specific pollutants.
- Highly hazardous chemicals can be placed in appropriate lockers to help contain any leaks.
- Consider secondary containment for material handling procedures for hazardous or toxic chemicals.
- Refer to BMP Fact Sheet GH-5 for non-stormwater discharges and recommended practices for preventing/reducing polluted discharges.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For general material storage, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to material storage or use.
- **Training and Education Log:** Enter a completed training record for general material storage and use into the log.
- **Hazardous Materials Inventory List:** Keep an updated inventory of stored hazardous materials. This may be a section of a master material inventory list.
- **Event Record:** If a discharge is observed in a storage area, an event record should be executed that also outlines response and remediation procedures.
- **Activity Record:** Complete when remediation is conducted or improvements are made to storage areas.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for material storage or use into the log as outlined within this BMP. A record (and corresponding log entry) is not necessary for each and every time material is stored or used.
- **MSDS**
- **Master Material Inventory List**
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the material storage areas on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for storage areas is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the storage after a defined rain event (if storage area is located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the storage area on a monthly basis (if inside) or every two weeks (if outside). See BMP Fact Sheet GH-21 for more information regarding outdoor storage.

Items that should be inspected and maintained in material storage areas (and recommended maintenance actions):

- *Integrity of storage containers:* replace leaking or cracked containers.
- *Evidence of leaks:* isolate and clean-up leaks; replace leaking containers.
- *Cleanliness:* Sweep and remove debris or trash.
- *Inventory:* assure inventory matches records and is accounted for.
- *Isolation measures:* assure implemented measures (e.g., berms, containment devices, etc.) are sound and in working order.
- *Tarps or plastic sheets (if applicable):* repair or replace torn or damaged tarps or plastic sheets.
- *Contaminated soils/materials (if applicable)*: inspect contaminated soil stockpiles and materials until proper disposal. Assure contaminated soil stockpiles are intact and no run-on or runoff is observed.
- *Storage layout:* assure containers and materials are neatly stored and as recommended by the manufacturer.
- *Miscellaneous:* observe and correct any signs of corrosion, pest damage, or other observed item that may result in leaking containers, spills, etc.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials *Signs:* Assure placards properly represent the hazardous materials stored.

Effectiveness can be demonstrated by following the recommendations of this fact sheet. Specifically, effectiveness can be established if discharges are not observed from storage areas.

VEHICLE AND EQUIPMENT FUELING GH-15

OBJECTIVES

- Reduce specific pollutants that can contaminate stormwater runoff or discharge into waterways:
  - Oil and grease
  - Organic chemicals/compounds
  - Inorganic chemicals/compounds
  - Non-stormwater discharges
- Implement and conduct activities to reduce the potential for polluted/illicit discharges:
  - Training
  - Spill response and prevention
  - Fuel area design
  - General practices

DESCRIPTION

Activities associated with fueling municipal vehicles and equipment can easily contribute pollutants to stormwater discharges or directly discharge to the municipal separate storm sewer (MS4). Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oils, grease, metals, and other toxic chemicals to stormwater runoff or discharge directly into storm sewers or receiving waters. Properly designed and constructed fueling areas will reduce the potential for contaminated discharges. Training and inspections will add a further level of compliance and assurance for reducing polluted discharges into the MS4 and waterways.

CONSIDERATIONS

Following the recommendations within this BMP Fact Sheet in conjunction with associated BMPs for Good Housekeeping, along with proper documentation practices, will reduce the potential of polluted discharges into the MS4, local waterways, and groundwater.

A Spill Prevention Control and Countermeasure Plan (SPCC) is required for facilities that are subject to the oil pollution regulations specified in Part 112 of Title 40 of the Code of Federal Regulations or if they have a storage capacity of 10,000 gallons or more of petroleum. (Health and Safety Code 6.67)

An initial Spill Prevention Response Plan (Plan) and any future updates, which address the requirements described in Chapter 9 of the act (35 P. S. § § 6021.901— 6021.904) and the corresponding chapter, shall be submitted to the ADEQ for aboveground storage tank facilities with an aggregate above ground

storage capacity greater than 21,000 gallons. A current copy of the Plan shall be readily available at the facility at all times.

Observe all federal, state, and local requirements and/or regulations with above ground and below ground storage tanks.

Consider using a commercial fueling center in lieu of a self-maintained facility. Commercial fueling stations tend to be better equipped to handle fuel and spills.

A top-tier municipal vehicle and equipment fueling program and facility generally entails the use of vapor recovery nozzles, dedicated and "isolated" fueling depots, spill response station, impervious surfaces, and containment devices. This program is not necessarily the best option as costs for constructing and maintaining such a facility can be a burden on municipal budgets. For implementing a program, consider the practices that reduce pollutants to the Maximum Extent Practicable (MEP) while considering budget constraints.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for vehicle and equipment fueling:

REDUCTION OF SPECIFIC POLLUTANTS

Oil & Grease and Inorganic/Organic Chemicals

- Do not allow oil changing in fueling area.
- "Spot clean" leaks and drips regularly to remove specific pollutants.
- Design fueling area to prevent stormwater runoff and discharges from spills.
- Inspect all components (i.e. tanks, nozzles, etc.) for corrosion, leaks, damage, etc. Repair/replace as necessary.
- Keep ample spill response materials available; recommend spill response station.

Other considerations

- Place signs in fueling area indicating that fueling of vehicles and equipment is the only acceptable activity in the area.
- Report and address leaking vehicles.
- Do not wash down fueling areas; use dry cleaning methods such as rags and brooms.
- Refer to BMP Fact Sheet GH-5: Non-stormwater discharges for preventing/reducing potential polluted discharges.
- Identify and mark drains where discharges are prohibited in the immediate area.

IMPLEMENTATION AND ACTIVITY PROTOCOLS FOR REDUCTION OF POTENTIAL DISCHARGES

Training

- Provide employees with training and exercises on proper fueling techniques. Provide additional focus on containment of spills or leaks.
- Revisit and conduct "refresher" training.

Spill Response and Prevention

- Place spill clean-up materials in readily available locations by the fueling area (clearly mark location of spill clean-up materials).
- Clean up spills or any wash water that may improperly discharge and contaminate
- Train employees on Spill Prevention and Control (see BMP Fact Sheet GH-10) relative to cleaning vehicles and equipment.

Fuel Area Design

- Consider berms or dikes to prevent runoff and run-on with stormwater or spills.
- Consider an overhang roof structure or canopy to reduce the potential for rain to contact the fueling area.
- Consider reduction or prevention of runoff and run-on in design (such as an extruded curb "upstream" of fueling area to reduce run-on).
- Install impervious surfaces in lieu of permeable surfaces to reduce ground infiltration.
- Consider rigid inlet protection devices for nearby inlets.
- "Hold-open latches" unless prohibited by the fire department.
- Emergency shut-off switch.
- Install a spill response station in the fueling area (or adjacent).
- Consider oil/water separators.

General Practices

- Place drip pans or absorbent pads under direct fueling location if fueling will occur over a permeable surface.
- Do not "top off" fuel tanks.
- Do not place used spill response materials in adjacent trash receptacles. Dispose in a proper manner.
- Do not leave active fueling operations unattended.

OTHER RECOMMENDATIONS AND PROTOCOLS

A spill prevention plan dedicated to the fueling area can be used as a training guide and reference during a spill event.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For vehicle and equipment fueling, templates are provided within the BMP manual to assist the municipality with documentation compliance. Consider the following templates for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to vehicle and equipment fueling.
- **Training and Education Log:** Enter a completed training record for vehicle and equipment fueling into the log.
- **Event Record:** Complete an event record for a major spill/leak or a considerable discharge is observed in a fueling area.
- **Activity Record:** Complete an activity record for remediation efforts or implementation of activities that increase the effectiveness of the BMP.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP for vehicle and equipment fueling areas.
- **Inspection, Event, and Activity Log:** Enter an inspection record for vehicle and equipment fueling into the log.
- **Spill Prevention Plan:** A dedicated plan for spill response in the fueling area.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the vehicle and equipment fueling area on the map along with emergency shut-off valves (if applicable). Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

According to the EPA, it is difficult to quantify the effectiveness of vehicle and equipment fueling BMPs. However, it has been demonstrated that implementation of such practices has decreased the concentration of pollutants in stormwater runoff.

Frequency of inspections for vehicle and equipment fueling is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the fueling area after a defined rain event (if fueling area is located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the fueling area every two weeks.
- *Operator Inspection:* Conduct an inspection periodically when the fueling area is in use by a trained employee.

Items that should be inspected and maintained in vehicle and equipment fueling areas (and recommended maintenance actions):

- *Containment berms (if applicable):* Repair and patch broken or missing berm sections.
- *Cleanliness:* Sweep and remove debris or trash.
- *Paving surface:* check for leaks or spills.
- *Tanks/Containers:* check fittings, foundations, connections, integrity of unit, or other structural component for leaks, cracks, failures, or damage. Replace as necessary.
- *Piping Systems:* Check for failures, extensive cracking, or leaks.
- *Oil/water separators, holding tanks, filters:* replace broken or leaking units; replace and/or clean debris build-up (includes drain grates).
- *Operating equipment:* Replace or repair broken hoses and nozzles.
- *Drains/inlets:* Check for discharges and integrity of units.
- *Special Equipment (i.e. oil/water separator, basin inserts, etc.):* Clean or replace as necessary.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials.
- *Signs:* Replace missing signs identifying restrictions and allowances in fuel area.

Effectiveness can be demonstrated by several means. Two specific types of measurements include:

(1) Properly implementing and maintaining practices (and documentation of implementation and maintenance) recommended in this fact sheet

(2) Including fueling activities as a part of an analytical monitoring program. A successful analytical monitoring program will require collecting and testing samples prior to implementation of the practices, and continually collecting and analyzing samples after implementation of the practices. The BMP would be considered effective (as a part of larger collection of BMPs listed for improvements) if reductions in particular pollutants or chemicals are observed.

VEHICLE AND EQUIPMENT CLEANING GH-16

OBJECTIVES

- Reduce specific pollutants that can contaminate stormwater runoff or discharge into waterways:
  - Oil and grease
  - Sediment
  - Trash
  - Metals
  - Inorganic chemicals/compounds
  - Organic chemicals/compounds
- Implement and conduct activities to reduce the potential for polluted/illicit discharges:
  - Phosphate-free detergents
  - Training
  - Trash containers
  - Spill response and prevention
  - Wash area design
  - Commercial car washes

DESCRIPTION

Activities associated with cleaning municipal vehicles and equipment can easily contribute pollutants to stormwater discharges or directly discharge to the municipal separate storm sewer (MS4) through the wash water discharges. Pollutants can vary from engine oil to chemicals within detergents such as phosphates. Properly designed and constructed wash areas will reduce the potential for contaminated discharges. Training and inspections will add a further level of compliance and assurance for reducing polluted discharges into the MS4 and waterways.

CONSIDERATIONS

Following the recommendations within this BMP Fact Sheet in conjunction with associated BMPs for Good Housekeeping, along with proper documentation practices, will reduce the potential of polluted discharges into the MS4, local waterways, and groundwater.

Where applicable, consider using off-site commercial wash facilities in lieu of constructing or operating a facility on municipal property. Do not assume a commercial facility either collects wash water and recycles or discharges into the sanitary sewer system for treatment at a treatment plant. If commercial wash facilities are identified for use, obtain a letter from the operator regarding discharge practices to assure the facility is in compliance with planned vehicle and equipment cleaning.

A top-tier municipal vehicle and equipment cleaning program generally entails a self-sustained system on municipal property that is indoors, collects & filters wash water, and reuses wash water. This type of program is not necessarily the best option as costs for constructing and maintaining such a facility can be a burden on municipal budgets. For implementing a program, consider the practices that reduce pollutants to the Maximum Extent Practicable (MEP) while considering budget constraints.

RECOMMENDATIONS AND PROTOCOLS

Depending on the size of the municipal fleet, a decision to construct and maintain a self-operated facility or use a commercial facility should be common sense.

If the fleet only has several vehicles or pieces of equipment (less than five), use of a commercial wash facility would make the most sense. A municipality with a relatively high number of vehicles should consider a self-contained system. A cost comparison with constructing and operating a facility should be compared to the costs for use of a commercial wash facility to help in the determination.

For the objectives listed, the following represent further recommendations and protocols for vehicle and equipment cleaning:

REDUCTION OF SPECIFIC POLLUTANTS

Trash

- Place trash receptacles immediately near wash facilities.
- Empty trash receptacles on a regular basis.
- Sweep wash area to collect and dispose of trash and debris into receptacles on a regular basis (inlcudes metals that may have detached from vehicle or equipment).

Oil & Grease, Sediment, and Inorganic/Organic Chemicals

- Do not allow oil changing in wash area.
- Assure wash water is contained within the wash area and collected by the proper drains or storage facility.
- Do not leave hoses running that may cause overflow in wash area and result in runoff from the contained wash area.

Other considerations

- Place signs in wash area indicating that washing of vehicles and equipment is the only acceptable activity in the area.
- Identify drains or wash water storage facilities where wash water may discharge.
- Identify and mark drains where discharges are prohibited in the immediate area.

- If the wash area is outdoors, consider covering when not in use to reduce contact with rain water.

IMPLEMENTATION AND ACTIVITY PROTOCOLS FOR REDUCTION OF POLLUTANTS

Phosphate-free detergents

- Whether the wash facility is indoors or outdoors; discharges to sanitary sewer or is contained in a recycling storage unit; consider using biodegradable, phosphate-free detergents.

Trash Receptacles

- Place trash receptacles in the delineated wash area.
- Empty and inspect receptacles regularly.
- Replace damaged receptacles where a discharge could be contaminated by debris or trash in the receptacle.

Wash Area Design

- The optimal location for a wash area is indoors where connection to the sanitary sewer is more easily achieved and exposure to rain events are essentially eliminated.
- Consider collecting, filtering, and reusing wash water. This type of system is considered a closed loop system.
- Slope wash area paving to assure collection into the determined drain line.
- Construct berms and identify delineation of wash area to assure containment of wash water.
- If draining to the sanitary sewer, obtain letter of authorization from the treatment plant.
- Consider draining to sump with a filter prior to discharge. Clean filter on a regular basis and dispose debris in the proper locations.
- First paving option should be Portland concrete cement.
- Consider an oil/water separator.

Training

- Provide employees with training and exercises on proper cleaning and wash water disposal practices.
- Revisit and conduct "refresher" training.

Spill Response and Prevention

- Place spill clean-up materials in readily available locations by the wash area (clearly mark location of spill clean-up materials).
- Clean up spills or any wash water that may improperly discharge and contaminate.

- Train employees on Spill Prevention and Control (see BMP Fact Sheet GH-10) relative to cleaning vehicles and equipment.

Commercial wash facilities

- In lieu of constructing and maintaining a municipal wash facility, consider a commercial wash facility that meets the guidelines outlined within this BMP Fact Sheet.
- Obtain a letter from the commercial wash facility outlining operations relative to discharging wash water or collection & recycling practices.

OTHER RECOMMENDATIONS AND PROTOCOLS

If discharging to the sanitary sewer system, clarify with the treatment facility if pre-treatment is required. Posting signs that provide direction and identify restrictions are highly recommended.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For vehicle and equipment cleaning, templates are provided within the BMP manual to assist the municipality with documentation compliance. The following templates can be used for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to vehicle and equipment cleaning.
- **Training and Education Log:** Enter a completed training record for vehicle and equipment cleaning into the log.
- **Activity Record:** Complete a record if washing at a commercial facility or implementing improvements for new design considerations or remediation.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP for vehicle and equipment cleaning wash areas.
- **Inspection, Event, and Activity Log:** Enter an inspection record for vehicle and equipment cleaning into the log.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the vehicle and equipment cleaning wash area on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

According to the EPA, studies have yet to show the effectiveness of vehicle and equipment cleaning Best Management Practices with respect to reducing pollutants to stormwater. However, individual contaminants identified as potential pollutants should be reduced to the Maximum Extent Practicable (MEP).

Frequency of inspections for vehicle and equipment cleaning is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the wash area after a defined rain event (if wash area is located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the wash area on a monthly basis (if inside) or every two weeks (if outside). This frequency is assuming regular weekly use of six or more times per week. Adjust inspection frequency based on actual use.
- *Operator Inspection:* Conduct an inspection periodically when the wash area is in use by a trained employee.

Items that should be inspected and maintained in vehicle and equipment cleaning wash areas (and recommended maintenance actions):

- *Integrity of wash area paving:* patch and repair missing or extensively cracked paving.
- *Containment berms:* Repair and patch broken or missing berm sections that delineate the wash area (and contain wash water).
- *Cleanliness:* Sweep and remove debris or trash.
- *Sumps, oil/water separators, holding tanks, filters:* replace broken or leaking units; replace and/or clean debris build-up (includes drain grates).
- *Operating equipment:* Replace or repair broken hoses, nozzles, recycling units, treatment units, etc.
- *Spill Prevention and Control Materials:* Replace used or defunct clean-up materials.
- *Signs:* Replace missing signs identifying restrictions and allowances in wash area.

Effectiveness can be demonstrated by several means. Two specific types of measurements include:

(1) Properly implementing and maintaining practices (and documentation of implementation and maintenance) recommended in this fact sheet
(2) Including cleaning activities as a part of an analytical monitoring program. A successful analytical monitoring program will require collecting and testing samples prior to implementation of the practices, and continually (at defined frequencies) collecting and analyzing samples after implementation of the practices. The BMP would be considered effective (as a part of larger collection of BMPs listed for improvements) if reductions in particular pollutants or chemicals are observed.

VEHICLE AND EQUIPMENT REPAIR AND STORAGE GH-17

OBJECTIVES

- Reduce specific pollutants that can contaminate stormwater runoff or discharge into waterways:
  - Oil and grease
  - Organic chemicals/compounds
  - Inorganic chemicals/compounds
  - Non-stormwater discharges
- Implement and conduct activities to reduce the potential for polluted/illicit discharges:
  - Training
  - Spill response and prevention
  - Repair activities
  - General practices
  - Commercial repair facility

DESCRIPTION

Vehicles and equipment can easily contribute pollutants to stormwater runoff or discharge directly to receiving waters (or conveyances that discharge to waters). Vehicle or equipment maintenance and repair is potentially a significant source of stormwater pollution. This is primarily due to the use of materials and wastes generated that are harmful to humans and the environment. Engine repair (e.g. parts cleaning) and replacement of fluids (e.g. oil changes) can impact receiving waters through stormwater runoff. Implementation of a select group of practices will prevent or reduce the potential discharge of pollutants through stormwater, along with non-stormwater discharges. Spills and leaks can be common or occur when vehicles and equipment are parked or stored. Uncontained spills and leaks can result in polluted discharges.

CONSIDERATIONS

Following the recommendations within this BMP Fact Sheet in conjunction with associated BMPs for Good Housekeeping, along with proper documentation practices, will reduce the potential of polluted discharges into the MS4, local waterways, and groundwater.

Wastes that can be generated in vehicle and equipment repair and storage locations include, but are not limited to: solvents, antifreeze, brake fluid, oils, petroleum products, battery fluids, lubrication fluids, metals, and brake pad dust.

Consider using a commercial repair center in lieu of a self-maintained facility for vehicle and equipment repairs. Commercial repair stations tend to be better equipped to handle wastes and spills associated with repairing vehicles.

Individual vehicles and equipment should be consistently stored or parked in the same locations. This would allow consistent controls for specific vehicles and equipment including drip pans or "isolation" from drains.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for vehicle and equipment repair:

REDUCTION OF SPECIFIC POLLUTANTS

Oil & Grease and Inorganic/Organic Chemicals

- Recycle used motor oil, diesel oil, and other vehicle fluids whenever possible. Use secondary containment when transferring to storage containers.
- "Spot clean" leaks and drips regularly to remove specific pollutants.
- Choose cleaning agents that can be recycled.
- Do not pour liquid waste to drains, sinks, or storm sewer inlets.
- Dry sweep and do not hose down work areas.
- Keep drip pans or other containment devices under stored vehicles or working area of vehicles and equipment.
- Parts cleaning should be conducted at a centralized station with adequate containment.
- Conduct repairs and maintenance indoors to reduce potential exposure to rain.
- Keep ample spill response materials available.

Other considerations

- Place signs in repair area in locations such as at sinks, reminding employees not to pour waste material or hazardous chemicals into drains.
- Other items such as oil filters can be recycled - recycle whenever possible.
- If steam cleaning or pressure washing is necessary, "isolate" area and collect into a containment unit or blind sump (if installed).
- Report and address leaking vehicles.
- Dispose of all waste materials according to applicable laws and regulations.
- If repairs or maintenance is conducted outdoors, use a tarp or drip pans beneath the vehicle or equipment to capture all spills and drips.
- Identify and mark drains where discharges are prohibited in the immediate area.

IMPLEMENTATION AND ACTIVITY PROTOCOLS FOR REDUCTION OF POTENTIAL DISCHARGES

Training

- Provide employees with training and exercises on proper handling and disposal of engine fluids and waste materials.
- Ensure employees are aware of locations and use of spill control and containment materials.

Spill Response and Prevention

- Place spill clean-up materials in readily available locations in repair and storage areas (clearly mark location of spill clean-up materials).
- Clean spills with rags or other absorbent materials.
- Refer to BMP Fact Sheet GH-5: Non-stormwater Discharges and recommended practices for preventing/reducing polluted discharges.
- Train employees on Spill Prevention and Control (see BMP Fact Sheet GH-10) relative to vehicles and equipment.

Repair Activities

- Make sure incoming vehicles and equipment are inspected for leaking fluids and oil.
- Consider drain boards or sinks to solvent or fluid holding tanks and containers for proper disposal at a later time.
- Designate specific areas for replacing motor oil, coolant, and other fluids.
- Drain all fluids from wrecked or heavily damaged vehicles and equipment.
- Consider using recycled materials.
- Consider water-based or detergent-based cleaning systems in lieu of organic solvents for parts cleaning.
- Ensure an adequate supply of absorbent materials and drip pans to reduce down time looking for materials (including spill response materials).

General Practices

- Place drip pans or absorbent pads under observed leaks.
- Do not wash down areas where leaks have collected on ground surfaces; use dry cleaning methods such as rags and brooms.
- If parking areas warrant a wash down, do not hose down. Follow proper procedures for steam cleaning or pressure washing. Install containment devices to collect wash water from pressure washing. Protect adjacent inlets even with containment devices installed with temporary-type BMPs.

- Inspect ground surfaces around parked vehicles and equipment prior to use for signs of leaks.
- It is acceptable to mop a floor after dry absorbent materials have been used to clean up a spill. Do not dispose of mop water to storm sewer or other related types of drainage channels that would affect receiving waterways. Use of non-caustic detergents is recommended.
- Store collected fluids and oils in appropriate containers and place in proper material storage locations. See BMP Fact Sheet GH-13: General Material Storage and BMP Fact Sheet GH-8 Hazardous Materials for more information.
- Separate waste oils and fluids and consider disposal to recycling entities.

Commercial Repair Facility

- If a commercial facility is used for repairs, obtain a letter from the facility outlining its practices including spill prevention and response and waste disposal procedures.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For vehicle and equipment repair and storage, templates are provided within the BMP manual to assist the municipality with documentation compliance. Consider the following templates for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to vehicle and equipment repair or storage.
- **Training and Education Log:** Enter a completed training record for vehicle and equipment repair and storage into the log.
- **Event Record:** Complete an event record for a major spill/leak or a considerable discharge is observed.
- **Activity Record:** Complete an activity record for remediation efforts or implementation of activities that increase the effectiveness of the BMP. An activity record should be completed in conjunction with BMP Fact Sheet GH-7: Waste Handling and Disposal for disposal of collected oils and fluids.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP for vehicle and equipment repair and storage areas.

- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for vehicle and equipment repair and storage into the log.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the vehicle and equipment repair and storage areas on the map. Locations for general parking of vehicles and equipment should also be on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

According to the EPA, it is difficult to quantify the effectiveness of vehicle and equipment repair BMPs. However, it has been demonstrated that implementation of such practices has decreased the concentration of pollutants in stormwater runoff.

Frequency of inspections for vehicle and equipment repair and storage is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the repair and storage areas after a defined rain event (if areas are located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the repair and storage areas once a month.

Items that should be inspected and maintained in vehicle and equipment repair and storage areas (and recommended maintenance actions):

- *Containment berms (if applicable):* Repair and patch broken or missing berm sections.
- *Cleanliness:* Sweep and remove debris or trash.
- *Paving surface:* check for leaks or spills.
- *Vehicles and Equipment:* check for leaks; address as applicable.
- *Tanks/Containers:* check fittings, connections, integrity of unit, or other structural components for leaks, cracks, failures, or damage. Replace as necessary.
- *Oil/water separators, holding tanks, filters:* replace broken or leaking units; replace and/or clean debris build-up (includes drain grates).
- *Drains/inlets:* Check for discharges and integrity of units.
- *Special Equipment (i.e. oil/water separator, basin inserts, etc.):* Clean or replace as necessary.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials. Ensure adequate quantity of materials is readily available.
- *Signs:* Replace missing signs identifying restrictions and allowances in repair area.

Effectiveness can be demonstrated by several means. Two specific types of measurements include:

(1) Properly implementing and maintaining practices (and documentation of implementation and maintenance) recommended in this Fact Sheet

(2) Including relative activities as a part of an analytical monitoring program. A successful analytical monitoring program will require collecting and testing samples prior to implementation of the practices, and continually (at defined frequencies) collecting and analyzing samples after implementation of the practices. The BMP would be considered effective (as a part of larger collection of BMPs listed for improvements) if reductions in particular pollutants or chemicals are observed.

OUTDOOR STORAGE OF MATERIALS GH-21

OBJECTIVES

- Properly store materials:
  - Storage areas
  - Special considerations
  - Container units
- Maintain storage areas and handling procedures:
  - Training
  - Inspections
- Reduce or prevent polluted discharges:
  - Spill response and control
  - General practices
  - Monitoring

DESCRIPTION

Materials such as street sweeping debris, soil, asphalt materials, rubble, crushed rock, yard and organic wastes, road salt, sand, petroleum products, solvents, pesticides, and so on (whether stored in bulk, containers, etc.) exposed to rain and runoff can pollute stormwater and receiving waterways. Implementation for certain protocols including enclosures and secondary containment, along with proper training and regular inspections, will reduce or eliminate the potential for polluted discharges. Accidental releases of materials from above ground storage tanks and containers present a high potential for contaminating stormwater runoff of discharging directly to receiving waterways.

CONSIDERATIONS

Materials can be stored in one of three ways: On a paved surface with a roof or other covering so that no rain directly contacts the materials, on a specially constructed paved area with a dedicated drainage system, or unpaved surface with no roof-type structure but covered with tarps or sheeting secured with weights.

See other appropriate BMP fact sheets for further information regarding hazardous materials and general material storage practices.

Keep outdoor stockpile and storage areas away from waterways or drains to the Maximum Extent Practicable (MEP). Add secondary containment devices and berms/dikes/etc. to reduce the potential for run-on and runoff.

Consult local fire departments for clearance limitations of roof covers or overhangs over containers with flammable materials.

Common causes of unintentional or accidental leaks or releases related to container units include, but are not limited to: improper installation of containment devices, insufficient installation of protection measures, corrosion or failure of units, connection failures (pipes, flanges, couplings, etc.), and overfilling a container.

Storage of particular materials, such as reactive and flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Consider all regulatory requirements for final outdoor storage areas.

Secondary containment systems are recommended for outdoor container storage areas—specifically for those areas with hazardous, flammable, or toxic products.

A storage area for hazardous materials should be confined to hazardous materials only. Storage procedures need to consider the manufacturer's recommendations, and an understanding of incompatible materials should be achieved when storing hazardous materials. The appendix of this BMP Manual includes an Incompatible Materials Chart along with a list of highly hazardous chemicals. Depending on specific federal and state regulations or standards, an SPCC Plan or leak detection monitoring may be required. See BMP Fact Sheet GH-8: Hazardous Materials for more information.

RECOMMENDATIONS AND PROTOCOLS

Outdoor storage areas for materials and containers should be dedicated areas. These areas can be storage sheds, bunkers, "lean-to" structures, identified locations, etc.

For the objectives listed, the following represent further recommendations and protocols for outdoor storage of materials:

STORAGE AREAS

General

- Ensure sufficient access for material procurement and inspections.
- Store materials away from high-traffic areas.
- Cover treated wood products with tarps or plastic sheeting.
- Do not place storage areas over or immediately adjacent to drains or waterways.
- Keep liquids and dry materials in separate areas.
- Ensure that contaminated stormwater is not discharged directly to waterways, inlets, catch basins, etc.

Paved surface with overhang

- Sweep loose materials for collection or disposal on a regular basis. Keep clean up materials (brooms, dustpans, flat shovels, etc.) readily available.
- Ensure overhang is structurally sound and reduces contact with rain.
- Consider berms or similar to channel runoff to containment or treatment devices.
- Types of materials generally stored in such a location include, but are not limited to: road salt, treated wood products, mulch, sand, and bagged materials.

Special paved area

- Consider "isolation" measures such as berms, containment devices, and similar to reduce the potential for runoff or run-on with raw materials.
- Drainage should be channeled to containment or treatment devices.
- Types of materials that may be stored in such a location include, but are not limited to: compost, mulch, dumpsters, and containers.
- Place tarps or sheeting secured with weights or anchors over materials as necessary.

No overhang on unpaved surface

- Consider "isolation" measures such as berms, containment devices, and similar to reduce the potential for runoff or run-on with raw materials.
- Place tarps or sheeting secured with weights or anchors over materials as necessary.
- Types of materials that may be stored in such a location include, but are not limited to: soil, mulch, organic debris (lawn clippings, leaves, etc.), and construction-type of raw materials.
- For large stockpiles that cannot be covered with tarps, implement containment devices and/or temporary-type BMPs such as silt fences, straw "wattles," check dams, etc.

CONTAINER UNITS

- An automatic shear valve with shut-off located within a container or tank is more ideal than a simple shut-off valve in-line on a supply pipe.
- Place tight-fitting lids on all containers.
- Repair or replace leaking dumpster containers.
- Keep dumpster lids closed.
- Make sure containers are kept in designated areas.
- Replace containers that are deteriorating where leaking is a constant action.
- Drums should be stored under lean-to type structures if stored outside.
- Utilize impervious surfaces under a roof or other appropriate cover for container storage.
- Provide barriers or posts (bollards), where tanks are exposed to collisions with vehicles or equipment.

- Provide container tank piping below product level with a shut-off valve at the tank.
- Consider pre-built or structurally sound units that keep the containers off the ground; place drip pans or absorbent pads under the containers as a containment device. Pallets or similar are also acceptable keeping containers off of the ground.
- Provide berms, dikes, curbs, or similar around specific containers or the container storage area as secondary containment.
- Provide readily accessible location for spill response materials.
- Consider "spill ponds" as a collection device for spills and leaks, or collection of runoff if exposure to rainwater is inevitable.
- Storage areas should be designed to minimize or eliminate run-on, runoff, wind dispersal, and exposure to rainwater.

GENERAL PRACTICES

- Check containers and tanks daily as a part of a general monitoring plan. Review containers, fittings, connections, containments devices, and signs of leaks.
- Store bagged and boxed materials on pallets.
- Keep ample supply of appropriate spill cleanup material near storage areas.
- Do not "overload" storage areas. Provide ample room for access and inspections.
- Inspect outdoor storage areas after a defined rain event.
- Keep storage areas clean and free of debris.
- Stockpiles or stored materials with nutrients and toxic chemicals should have a containment device (berms, dikes, etc.) installed to prevent runoff or discharge.
- If temporary-type erosion and control BMPs (silt fence, check dams, etc.) are used, they need to be maintained for proper operation and replaced as necessary to ensure proper operation.

SPILL RESPONSE AND CONTROL

- Secondary containment should be provided for hazardous chemicals and chemicals identified as specific pollutants.
- Containment devices and temporary-type BMPs (silt fence, straw "wattles," etc.) are considered spill control techniques for outdoor material storage.
- Refer to BMP Fact Sheet GH-5 for non-stormwater discharges and recommended practices for preventing/reducing polluted discharges.
- Refer to BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For outdoor material storage, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to outdoor material storage or use.
- **Training and Education Log:** Enter a completed training record for outdoor material storage and use into the log.
- **Event Record:** If a discharge or leak is observed in a storage area or from a container, an event record should be executed that also outlines response and remediation procedures. Exposed outdoor storage areas should be noted after major rain events requiring an event record.
- **Activity Record:** Complete when remediation is conducted or improvements are made to outdoor storage areas, such as replacement of tarps (if outlined in an inspection) and installation of containment devices and temporary-type BMPs (silt fence, straw bales, etc.).
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for outdoor material storage or use into the log as outlined within this BMP. A record (and corresponding log entry) is not necessary for each and every time material is stored or used.
- **Master Material Inventory List**
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the outdoor material storage areas—and specifically stockpile locations with containment devices or temporary-type BMPs marked out and containers—on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for storage areas is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the storage areas and containers after a defined rain event (if storage area is located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the storage area every two weeks.

Items that should be inspected and maintained in material storage areas (and recommended maintenance actions):

- *Cleanliness:* Sweep and remove debris or trash *Inventory:* assure inventory matches records and is accounted for *Isolation measures:* assure implemented measures (i.e. berms, containment devices, and so on) are sound and in working order.
- *Tarps or plastic sheets (if applicable):* repair or replace torn or damaged tarps or plastic sheets. Ensure tarps are not "flapping" in the wind.
- *Contaminated soils/materials (if applicable)*: inspect contaminated soil stockpiles and materials until proper disposal. Assure contaminated soil stockpiles are intact and no run-on or runoff is observed.
- *Temporary-type BMPs:* Silt fences, straw "wattles, check dams, and so on should properly installed and functioning. Remove built-up debris or sediment as necessary. Replace defunct or damaged materials.
- *Integrity of storage containers:* replace leaking or cracked containers.
- *Evidence of leaks:* isolate and clean-up leaks; replace leaking containers.
- *Stockpiles:* Ensure stockpiles have proper coverage and material/debris is not "washing away."
- *Containment devices:* assure implemented measures (i.e. berms, dikes, pans, collection units, and so on) are sound and in working order. Inspections should include secondary containment devices as well.
- *Storage layout:* Ensure materials are neatly stored and as recommended by the manufacturer (if applicable). Different materials should be separated.
- *Storage area:* Ensure overhangs or structural delineation items are sound.
- Impervious ground surfaces should be free of cracks that could channel leaks.
- *Labels:* Ensure containers are fitted with proper labels.
- *Miscellaneous:* observe and correct any signs of corrosion, pest damage, or other observed item that may result in leaking containers, spills, etc. Look for corrosion and failures on pipes, connections, and so on and repair.
- *Signs:* Assure placards properly represent the hazardous materials stored.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials.

Effectiveness can be demonstrated by several means. Two specific types of measurements include:

(1) Properly implementing and maintaining practices (and documentation of implementation and maintenance) recommended in this Fact Sheet.
(2) Establish sample sites as part of a monitoring program. A successful monitoring program will require collecting and testing samples of stormwater runoff at or near storage locations (within containment boundaries) and simultaneously collecting and testing samples outside of the containment boundaries. If a reduction is observed or specific pollutants are not observed, the BMP controls can be considered effective.

SALT STORAGE GH-23

OBJECTIVES

- Properly store and use materials:
    - Storage of road salt
    - Alternative materials
    - General practices

DESCRIPTION

Road salts are an inevitable part of municipal activities in locales which receive snow and ice precipitation. Salts are soluble in water and can contaminate receiving waters and groundwater through runoff and infiltration.

CONSIDERATIONS

Road salt is the least expensive material for deicing operations; however, once the full costs are taken into account, alternative products and better management and application of salts become increasingly attractive options.

The application and storage of deicing materials, most commonly salts such as sodium chloride, can lead to water quality problems for surrounding areas.

RECOMMENDATIONS AND PROTOCOLS

Storage areas for road salts should be dedicated areas. These areas should be enclosed areas that protect materials from the environment and runoff/run-on.

For the objectives listed, the following represent further recommendations and protocols for salt storage:

STORAGE

- Cover piles and store on impervious surfaces with runoff controls.
- Load salt in covered areas.
- Consider enclosed structures for storage.
- With proper controls and protection, salt can be stored in bunker type areas.

- Do not place storage areas over or immediately adjacent to drains or waterways.
- Piles should be located outside the 100-year floodplain to reduce groundwater contamination.

ALTERNATIVE MATERIALS

- Consider alternative materials such as calcium chloride, magnesium chloride, and potassium chloride.
- Due to costs, if the use of road salt is inevitable, consider minimal amounts of alternative products (near/adjacent to environmentally sensitive areas or waterways. Sand and gravel are acceptable alternatives as well.
- Sand and gravel will aid in increasing traction on roadways.

GENERAL PRACTICES

- Consider a road salt management plan with realistic salt reduction goals.
- Consider devices that automatically control application rates.
- Sweep loading areas after use.
- Be aware of locally sensitive areas including, but not limited to: recharge areas, shallow water tables, sources of drinking water, wetlands, and streams.
- Refer to BMP Fact Sheet GH-21 for outdoor storage of materials for more information and recommendations.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For salt storage, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to road salt storage or use.
- **Training and Education Log:** Enter a completed training record into the log.
- **Event Record:** If a discharge or leak is observed in a storage area, an event record should be executed that also outlines response and remediation procedures. Exposed outdoor storage areas should be noted after major rain events requiring an event record.
- **Activity Record:** Complete when remediation is conducted or improvements are made to outdoor storage areas, such as replacement of tarps.

- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for salt storage or use into the log as outlined within this BMP. A record (and corresponding log entry) is not necessary for each and every time material is stored or used.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the locations road salt is stored on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for storage areas is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the storage after a defined rain event (if storage area is located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the storage area containing road salt once a month.

Items that should be inspected and maintained in material storage areas (and recommended

- *Cleanliness:* Sweep and remove debris or trash. Ensure loading area is free of debris and material.
- *Storage structure:* Ensure structure is sound and no run-on/runoff is observed.
- *Isolation measures:* assure implemented measures (i.e. berms, containment devices, and so on) are sound and in working order (if applicable).
- *Tarps or plastic sheets (if applicable):* repair or replace torn or damaged tarps or plastic sheets. Ensure tarps are not "flapping" in the wind.
- *Stockpiles:* Ensure stockpiles have proper coverage and material/debris is not "washing away."

BUILDING AND GROUNDS MAINTENANCE GH-25

OBJECTIVES

- Develop a comprehensive O&M Program and pollution prevention plan:
  - Training
  - Documentation
  - Pollution prevention
  - Maintenance activities

DESCRIPTION

Municipalities generally possess a number of facilities and open space (including parks and roadways) that requires maintenance activities (e.g. mowing, painting, cleaning, repairs, etc.). Maintenance activities associated with municipal buildings and grounds can contribute to polluted stormwater runoff or directly discharge as a non-stormwater discharge. A comprehensive Operation and Maintenance Program, including corresponding O&M Manuals and/or Stormwater Pollution Prevention Plans (SWPPP) can reduce the potential for polluted discharges to receiving waterways.

CONSIDERATIONS

Complete an inventory list of all municipal facilities (buildings and grounds) and activities that may or may not be associated with such facilities (mowing, asphalt repairs, etc.). The appendix of this manual includes a template for completing a municipal inventory list.

From time-to-time, municipal operations may include special or infrequent activities such as fire sprinkler line flushing, pesticide applications, and HAZMAT operations. Plans should provide a note or consideration to such special activities including responsible parties and response protocols.

When developing a comprehensive pollution prevention plan, consider descriptive overviews of selected Best Management Practices (BMPs) such as outlined in this manual or developed individually.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for building and grounds maintenance:

TRAINING

- Ensure training components have the ultimate goal of reducing or preventing polluted discharges from operational activities and facilities.
- Each BMP selected for an O&M Program should include training for municipal employees and/or contractors.
- Frequency of training should consider the complexity of particular operations and the nature/size of staff.

DOCUMENTATION

Operation and Maintenance Program (O&M Program)

Should include descriptions of maintenance activities and corresponding schedule of maintenance actions:

- Can be the Operational Plan within the Municipal Pollution Prevention/Good Housekeeping Plan.
- Identify and list responsibilities for maintenance actions including training actions
- Consider the BMPs selected for development.

Municipal Pollution Prevention/Good Housekeeping Plan

- Plan and organize the content of the plan along with responsible persons for the implementation of the plan.
- Assess operations and inventory facilities and activities.
- Consider and outline regulatory requirements.
- Identify BMPs for implementation including training components.
- Implement BMPs and conduct training to assure proper practices.
- Evaluate the plan periodically for improvements, along with reviews of documented activities.

General Documentation

- Most regulatory requirements (such as an MS4 Permit) require extensive documentation practices. The documentation "proves" you are implementing and maintaining your goals and objectives of your plan(s).
- Documentation should be centralized.

POLLUTION PREVENTION

When developing the operation and maintenance component of plans for building and grounds, establish a balance between capabilities and good practices to reduce and/or prevent pollution to the Maximum Extent Practicable (MEP).

- Ensure pollution prevention measures for municipal operations complement the goals and objectives of the entire SWMP.
- Ensure spill response and prevention measures (including plans) are up to date and accessible.
- Follow recommendations outlined in selected or developed BMPs for reducing the potential for polluted discharges.
- Ensure BMPs selected correspond to actual municipal activities and facilities.

MAINTENANCE ACTIVITIES

Buildings

- When pressure washing buildings or similar structures use waste water collection devices if soap or detergents are used, filter the water if soap or detergents are not used, and ensure sheet flow in lieu of a concentrated stream if washing in a grassed area.
- Use drop cloths or other collection devices for painting, sandblasting, or similar activities.
- Provide temporary-type BMPS such as filter fabric and straw wattles to control runoff from wash water.
- Refer to appropriate BMP fact sheets for guidance on specific activities such as waste management & disposal, hazardous materials, and training.
- Use common sense for protecting waterways, storm drains, or storm sewer systems during building maintenance activities especially when activities occur on or adjacent to impervious paving or inlets.

Grounds

- Refer to appropriate BMP fact sheets for more specific guidance regarding landscape maintenance, street sweeping, material storage, and lawn fertilizers.
- Ensure use of mulch or other erosion control measures for exposed soils and/or Disturbed Soil Areas (DSAs).
- Develop protocols and training schedules for fertilizer and pesticide management.
- Provide temporary-type BMPs if recommended by a fact sheet or developed BMP, or as a result of a common sense approach to protecting receiving waters.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For building and grounds maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance. There are no specific templates recommended for this BMP, as specific BMP Fact Sheets should be referenced for an O&M program for buildings and grounds. However, the following documents should be a part of a municipal program subject to an NPDES permit at a minimum:

- **Municipal Pollution Prevention/Good Housekeeping Plan** (Sometimes referred to as a Stormwater Pollution Prevention Plan (SWPPP).
- **Operation and Maintenance Program** (O&M Program): Includes the operational plan(s) of an MS4 Facility.
- **Records:** Documentation of all maintenance activities should be kept centralized including training records, schedules, reports, maps, activity records, event records, MSDS, etc.

MUNICIPAL YARD MAINTENANCE GH-26

Sediment

- For certain facilities that cannot be covered with tarps, implement containment devices and/or temporary-type BMPs such as silt fences, straw "wattles," check dams, etc. to control sediment runoff.

Metals

- Metal scraps stored in the yard and contribute pollutants to stormwater if exposed to rain.
- Follow protocols established in BMP fact sheets for vehicles & equipment and non-stormwater discharges to reduce the potential of pollutants.

Oil & Grease and Inorganic/Organic Chemicals

- Facilities and activities associated with vehicles & equipment and material storage can contribute to polluted discharges and non-stormwater discharges.
- Through design considerations, reduce the potential of polluted discharges by placing items away from waterways or conveyances that may carry pollutants to waterways.
- Consider containment devices for individual facilities or locations designated for certain activities in locations in the yard that may contain items that may pollute waterways with oil, grease, or chemicals.

REDUCE OR PREVENT POLLUTED DISCHARGES FROM MUNICIPAL YARDS

Design considerations

- After development of a map outlining natural (trees, waterways, etc.) and artificial (storm drains, fences, etc.) features, place individual (fueling area, storage areas, etc.) facilities in locations that will reduce the potential for polluted discharges to receiving waters.
- Consider containment devices around the defined boundaries of the yard including berms, "isolated" catch basins, silt fence, straw wattles, check dams, infiltration devices, oil/water separators, etc. in locations that follow natural drainage patterns.

Spill Response and Control

- Individual facilities may contain a spill response kit. However, at a minimum, a spill response station should be located within the boundaries of a municipal yard.
- Train employees on spill response procedures; see BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

General Practices

- Store bagged and boxed materials on pallets.
- Keep ample supply of appropriate spill cleanup material near storage areas.
- Provide general monitoring of the yard area on a daily basis.
- Do not organize yard in a compacted manner.
- Refer to BMP Fact Sheet GH-5 for non-stormwater discharges and recommended practices for preventing/reducing polluted discharges.
- If temporary-type erosion and control BMPs (silt fence, check dams, etc.) are used, they need to be maintained for proper operation and replaced as necessary to ensure proper operation.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges

through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For municipal yard maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to the municipal yard where a separate BMP Fact Sheet providing training guidance does not exist.
- **Training and Education Log:** Enter a completed training record for municipal yard maintenance into the log.
- **Event Record:** If a discharge is observed in the municipal yard area, an event record should be executed that also outlines response and remediation procedures. Exposed outdoor areas should be noted after major rain events requiring an event record.
- **Activity Record:** Complete when remediation is conducted or improvements are made the municipal yard. Specific remediation will depend on the individual facilities located in the yard.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" of BMP fact sheets of facilities or activities located within the boundaries of the yard.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record into the log as outlined within this BMP.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the natural and artificial features on the map. Include individual facilities or locations for certain activities on the map as recommended in other BMP fact sheets. Place a copy of the map within your SWMP documentation.

Effectiveness can be demonstrated by several means. Two specific types of measurements include:

(1) Properly implementing and maintaining practices (and documentation of implementation and maintenance) recommended in this fact sheet and the specific BMP fact sheets for facilities located within the yard.

(2) Establish sample sites as part of a monitoring program. A successful monitoring program will require collecting and testing samples of stormwater runoff at or near runoff/run-on locations at identified boundaries of the yard. Absence of specific pollutants in tested samples would demonstrate effectiveness of implemented BMPs.

PARKING AND STORAGE AREA MAINTENANCE GH-27

OBJECTIVES

- Reduce or prevent polluted discharges:
  - Specific pollutants
  - Spill response and control
  - Standard & alternative practices

DESCRIPTION

Municipal parking and storage areas outside of municipal yards generally possess the greatest potential for contributing pollutants to stormwater runoff or result in non-stormwater discharges. Specific consideration to these types of areas in maintenance programs will reduce/prevent pollutants from entering waterways.

CONSIDERATIONS

In lieu of curb-enclosed islands in parking lots, consider non-curbed landscaped islands including rain gardens. Bioretention or filter devices should be designed into areas surrounding parking lots.

Add municipal parking lots to street sweeping activities if possible. See BMP Fact Sheet GH-33: Street Sweeping for more information.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for parking and storage area maintenance:

SPECIFIC POLLUTANTS

- Keep parking and storage areas free from litter and trash by following a general cleaning schedule.
- Maintain trash receptacles to discourage litter.
- Post "No Littering" signs and consider enforcement abilities (such as fines).
- Use absorbent materials for oily discharges or spots.
- Municipal parking lots can be added to the street sweeping schedule of work.

- Build-up of oil & grease, organic/inorganic chemicals, metals, and sediment can occur in parking and storage areas. Follow recommendations in corresponding BMP fact sheets for additional measures to reduce/prevent polluted discharges.

STANDARD & ALTERNATIVE PRACTICES

- Allow sheet runoff to flow to biofilters or containment devices.
- Minimize inventory of raw materials in storage areas
- Utilize dry cleaning methods before wet methods
- For wet cleaning procedures, block off storm drain inlets/basins and contain runoff
- Train employees on material storage and pollution prevention goals and techniques.
- Consider pervious paving surfaces in the parking lot areas
- For surface repairs, utilize temporary-type BMPs (filter fabric, sand bags, etc.) to protect nearby inlets
- If dust is an issue with storage areas, use only minimal amounts of water for dust control-ensure temporary-type BMPs or containment devices are operating prior to dust control operations
- Keep ample supply of appropriate spill cleanup materials near storage areas.
- Complete a cleaning activity of storage and parking lot areas prior to projected rain events that would most likely produce stormwater runoff
- Remove sediment build-up along curbs or in/adjacent to inlets
- Repair surfaces or features in dry weather conditions.
- Monitor and remove miscellaneous debris (leaves, twigs, etc.) in a timely manner
- If temporary-type erosion and control BMPs (silt fence, check dams, etc.) are used, they need to be maintained for proper operation and replaced as necessary to ensure proper operation.

SPILL RESPONSE AND CONTROL

- Containment devices and temporary-type BMPs (silt fence, straw "wattles," etc.) are considered spill control techniques for outdoor material storage.
- Train employees on spill response procedures
- Refer to BMP Fact Sheet GH-10: Spill Prevention and Control for more information

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For parking and storage area maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to parking lot and storage area maintenance.
- **Training and Education Log:** Enter a completed training record into the log.
- **Event Record:** If a discharge is observed in a parking lot or storage area, an event record should be executed that also outlines response and remediation procedures.
- **Activity Record:** Complete when remediation is conducted or improvements are made to parking lot and storage areas, such as replacement of paving and installation of temporary-type BMPs.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for storage areas is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the storage after a defined rain event (if storage area is located outside). A defined rain event is determined in the SWMP. It is recommended to complete an inspection and remediation prior to a forecasted "major" rain event.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the parking lot and storage areas every two weeks.
- Items that should be inspected and maintained in parking lot and storage areas (and recommended maintenance actions)(see corresponding BMP fact sheets outlining additional recommendations for storage areas for additional guidance):
- *Cleanliness:* Sweep and remove debris or trash *Trash Receptacles:* Empty on a regular basis. Replace damaged receptacles *Isolation measures:* assure implemented measures (i.e. berms, containment devices, and so on) are sound and in working order
- *Filters and/or containment devices:* ensure devices are in sound working order
- *Tarps or plastic sheets (if applicable):* repair or replace torn or damaged tarps or plastic sheets. Ensure tarps are not "flapping" in the wind.
- *Paving surface:* "Isolate" and clean-up oily discharges (or other types of potential pollutants)
- *Temporary-type BMPs:* Silt fences, straw "wattles, check dams, and so on should properly installed and functioning. Remove built-up debris or sediment as necessary. Replace defunct or damaged materials.
- *Stockpiles:* Ensure stockpiles have proper coverage and material/debris is not "washing away."

FACILITY MAINTENANCE GH-28

OBJECTIVES

- Reduce or prevent polluted discharges associated with building and structural facility maintenance:
  - Operational protocols
  - Specific pollutants
  - Other NPDES permits
  - General practices
  - Spill response and control
  - Special maintenance considerations

DESCRIPTION

Materials and activities associated with the maintenance of municipal buildings and facilities can contribute pollutants to stormwater runoff or non-stormwater discharges. Certain facilities require a separate NPDES industrial permit based on functions from time-to-time. Observing proper and safe practices for reducing or preventing polluted discharges will protect receiving waterways and the environment.

CONSIDERATIONS

Municipalities may own and operate a variety of facilities and buildings including, but not limited to municipal offices, park offices, community facilities, wastewater treatment facilities, swimming pools, and miscellaneous structures (stadiums, play equipment, public-use equipment, and so on). Application of this BMP should consider all municipal owned and maintained buildings and facilities.

Consider Low Impact Development (LID) design and implementation which provides consideration to "green" practices that generally incorporate stormwater management BMPs for new municipal facilities or renovations to existing facilities.

Each facility and building will have a different set of pollutants of concern based on operational activities, purpose, and location.

Certain maintenance activities may be subject to an NPDES Construction Permit—specifically for earth disturbance activities.

Generally, contractors are involved with facility maintenance activities. Follow recommendations outlined in BMP Fact Sheet GH-2 for contractor training. This ensures contractors are afforded an

opportunity to understand the goals and objectives of your SWMP relative to pollution prevention and municipal operations.

Facility maintenance requires a variety of materials and activities including, but not limited to paints, pest control materials, treated lumber, roofing materials, landscape materials, HVAC fluids, and concrete. Control of materials and proper application procedures will reduce/prevent polluted discharges.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for facility maintenance:

OPERATIONAL PROTOCOLS

- Identify material staging areas away from storm drains and waterways. Provide containment devices for sloped and paved areas.
- Do not apply paints, caulks, and so on during wet weather or immediately prior to forecasted rain events where materials would not be allowed to dry.
- Provide and maintain concrete washout areas for concrete (or similar) operations.
- Provide containment or filtering devices for pressure-washing activities.
- Remove sediment from impervious pathways during earthwork operations.
- Filter or contain by-products from saw-cutting or masonry cutting operations. Do not allow runoff into storm drains.
- Store raw materials (e.g., treated lumber, roofing materials, etc.) in contained locations (recommend off the ground and under an overhead structure).
- Store materials with greased components indoors prior to replacement.
- Secure general materials in pre-identified staging areas at the end of a work day.
- Periodically inspect building components (e.g. roof, rain barrels (if applicable), downspouts, exterior HVAC components, etc.) for leaks and damage.

SPECIFIC POLLUTANTS

- Sweep areas to collect and properly dispose of litter and maintenance debris.
- Ensure spill response materials are readily available for operations where spills have an increased possibility (i.e. generator fueling, Freon changes, etc.).
- Monitor spills or leaks from maintenance material containers daily.

GENERAL PRACTICES

- Properly secure and store work materials at the end of work days.

- Clean up work areas on a daily basis.
- Clean material application devices (e.g., paint brushes) in proper disposal/containment areas/sinks.
- Follow procedures for specific BMPs such as waste disposal and hazardous materials storage as it applies to facility maintenance activities.
- Do not apply pest control materials in wet weather.
- Establish maintenance procedures and protocols for specific facility components (e.g. green roofs, regular roofs, clean-outs, exterior paintable materials, etc.). Keep copies of the procedures and schedules in the O&M Plan (or SWPPP).
- Maintain temporary-type BMPs (e.g., check dams, concrete washout, silt fence, etc.) if used during maintenance or renovation operations.

SPILL RESPONSE AND CONTROL

- Secondary containment should be provided for hazardous chemicals and chemicals identified as specific pollutants
- Refer to BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

OTHER NPDES PERMITS

- Activities outlined in 40 CFR 122.26(b)(14)(i)-(xi) require the operator to obtain an NPDES industrial stormwater permit. Such activities include, but are not limited to steam electric generating plants, salvage yards, certain transportation facilities, and certain hazardous material storage facilities.
- Conditional exclusions are sometimes provided for certain "industrial" operations, and coverage is provided under the MS4 Permit.
- Wastewater treatment facilities generally require a separate NPDES permit.

SPECIAL MAINTENANCE CONSIDERATIONS

Green Roof

- Inspect and maintain the roof membrane as recommended by the installer and material manufacturer.
- Intensive systems require weeding on a regular basis.
- Limit fertilization to reduce potential of polluted discharges if runoff occurs.

Swimming Pools

- Do not discharge chlorinated swimming pool water. Stop adding chemicals, wait approximately one week (or as recommended by your chemical supplier), test for chemical levels and pH prior to emptying the pool.

Rain barrels

- Inspect for sediment or debris build-up.
- Ensure structurally sound and no leaks. Seals and spigots should be operational.
- Do not collect rainwater from "hotspots" for direct use to pervious areas or washing.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For facility maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to general facility maintenance.
- **Training and Education Log:** Enter a completed training record into the log. Include contractor training records as applicable.
- **Event Record:** If a discharge is observed during a facility maintenance activity, an event record should be executed that also outlines response and remediation procedures.
- **Activity Record:** Complete when remediation is conducted or improvements are made to facilities, such as adding rain barrels or removing debris from clean-outs.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for facility maintenance into the log as outlined within this BMP.
- **Facility Maintenance Schedule:** Include an annual schedule of regular (cleaning gutters, painting, etc.) maintenance events and special (re-roofing, sidewalk replacement/addition, etc.) maintenance events for facilities and buildings.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for storage areas is recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of facilities based on an applicable frequency. An applicable frequency should be determined based on the function of the facility or building.

For example: municipal offices can be inspected once a year; whereas clean-outs should be inspected bi-annually at a minimum.

Items that should be inspected and maintained (and recommended maintenance actions):

- *Cleanliness:* Sweep and remove debris or trash.
- *Structure:* Ensure components (roof, sidewalks, façade, etc.) are sound and secure and paint is not chipping off.
- *Clean-outs:* Ensure structurally sound, remove debris and sediment (if applicable) build-up. Replace cracked or leaking clean-outs.
- *Staging areas (if applicable):* Materials should be secure and water-tight as applicable in defect-free containers.
- *Special Components:* Inspect special components such as rain barrels, downspouts, and drainage channels. Ensure structurally sound and operating as intended. Repair/replace damaged components.
- *Temporary-type BMPs:* Silt fences, straw "wattles, concrete washouts, and so on should properly installed and functioning. Remove built-up debris or sediment as necessary. Replace defunct or damaged materials.
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials.

ROAD AND STREET MAINTENANCE GH-30

OBJECTIVES

- Reduce or prevent polluted discharges associated with roads and streets:
  - Operational protocols
  - General practices
  - Specific pollutants
  - Spill response and control
  - Non-stormwater discharges
  - Special considerations
- Make considerations for specific activities associated with roads and streets:
  - Repairs
  - Sidewalks
  - Street sweeping
  - Other considerations
  - Unpaved pathways
- Implement and conduct activities aimed at pollution prevention:
  - Training
  - Enforcement

DESCRIPTION

Daily use of roads and streets within a municipality can generate a build-up of pollutants including sediment. Along with certain maintenance activities (e.g., asphalt repairs), an increase in the potential for polluted discharges can occur. Most pollutants associated with streets and roads include, but are not limited to hydrocarbons, sediment, debris (e.g., litter), and metals. Implementation of certain practices including street sweeping will reduce pollutants in stormwater runoff and polluted discharges.

CONSIDERATIONS

Roads and streets generally comprise a majority portion of municipal infrastructure. Coupled with the fact a majority of a storm sewer system is located within defined boundaries of roads and streets with definitive points of entry (e.g., inlets) for stormwater, a large portion of focus should be afforded to proper road and street maintenance to reduce the potential of polluted runoff and direct polluted discharges that would be conveyed to receiving waterways.

Surrounding land use should be considered when developing site-specific road and street maintenance programs. Activities on adjacent lands can result in pollutants being conveyed by roads and streets and ultimately discharge into receiving waterways via the storm sewer or directly to waterways.

Consider incorporating pervious pavement into the roadway system through a transportation improvement plan or green infrastructure plan. Pervious pavements tend to reduce the runoff potential of polluted stormwater and runoff in general. Consider locations where relative large amounts of runoff are observed. Requirements for allocating a certain amount of pervious pavement with development or repair projects can be defined in the ordinance as well.

Toxic substances or chemicals (including metals, oils, etc.) can easily bind to sediment. Protecting inlets from sediment-rich runoff will reduce the potential of pollutant loads to receiving waterways.

Certain maintenance activities may be subject to an NPDES Construction Permit—specifically for earth disturbance activities.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for road and street maintenance:

REDUCE OR PREVENT POLLUTED DISCHARGES ASSOCIATED WITH ROADS AND STREETS

Operational Protocols

- Install containment or temporary-type BMP devices at inlets or locations that could convey polluted water prior to any repair or maintenance activities.
- Schedule pavement marking activities for dry weather periods.
- Do not apply paints, caulks, and so on during wet weather or immediately prior to forecasted rain events where materials would not be allowed to dry.
- Do not load hot paint or thermoplastic materials near drain inlets for line painting activities.
- Schedule asphalt and concrete activities for dry weather.
- Install temporary-type BMPs (inlet covers, containment berms, etc.) prior to maintenance activities with inlets (and waterways) in the vicinity.
- Wash concrete trucks off site or in designated areas.
- Store repair materials under cover and away from inlets and waterways.
- Prevent excess materials (concrete, asphalt, stone, etc.) from entering inlets.
- Sweep, do not wash down, streets and roads with tracked dirt or sediment.

Specific Pollutants

- Sweep areas to collect and properly dispose of litter and debris.
- Use filter socks, gravel bags, and other temporary-type BMPs to control the potential for sediment or debris from entering inlets and drains.
- Do not maintain repair equipment or store repair materials near inlets.

Non-stormwater discharges

- Sweep areas to collect and properly dispose of litter and debris.
- Refer to BMP Fact Sheet GH-5 for non-stormwater discharges and associated considerations.

General Practices

- Use the least toxic materials available for any practices associated with road and street maintenance.
- Sweep debris up from maintenance activities such as thermoplastic grindings.
- Thoroughly clean up areas of repair and maintenance at the end of the work day or the end of maintenance/repair activities.
- Do not allow water from saw cut operations (or similar) to enter inlets and drains unabated.
- Complete general observations of road and street areas (including areas where repairs are being conducted) for sediment build-up, etc.

Spill Response and Control

- Have spill clean-up materials readily available.
- Refer to BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

Special Considerations

- Maintain repair and application equipment to reduce the potential of leaks from such equipment.
- Vegetation along roadsides should be maintained in an appropriate manner to reduce pollutant loads in stormwater runoff.
- Water is generally used for dust control activities. Use minimal amounts of water for dust control. Ensure inlets or waterways are protected from potential runoff.

CONSIDERATIONS FOR SPECIFIC ACTIVITIES ASSOCIATED WITH ROADS AND STREETS

Repairs

- Provide and maintain concrete washout areas for concrete (or similar) operations.
- Limit amount of fresh concrete or asphalt prepared, prepare only what is needed.
- Consider alternative patching materials than concrete or asphalt.
- For slurry seal, seal coats, and so on, cover and seal off (waterproof materials) nearby inlets or drains prior to commencing activities.
- Thoroughly clean up repair area sites when work is complete.

Street Sweeping

- Maintain a consistent street sweeping schedule.
- Refer to BMP Fact Sheet GH-33 for street sweeping for more information.
- Increase street sweeping activities (including hand sweeping) in actual maintenance areas.

Unpaved pathways

- Stabilize exposed soils or gravel pathways to reduce erosion potential.
- Maintain vegetation adjacent to unpaved pathways. If vegetation cannot be established, consider temporary-type BMPs as semi-permanent controls.

Sidewalks

- Provide and maintain concrete washouts for concrete operations.
- Ensure sidewalks are routinely swept or cleaned.
- Consider vegetated buffers between sidewalks and roadways to reduce the potential of pollutants being conveyed by roads or streets.

Other Considerations

- Refer to BMP Fact Sheet GH-32 for winter road maintenance for other considerations including road salt applications.
- See BMP Fact Sheet GH-47 for considerations regarding Bridge Maintenance.
- Schedule repair activities associated with graffiti removal, paint removal, or similar during dry weather.

IMPLEMENT AND CONDUCT ACTIVITIES AIMED AT POLLUTION PREVENTION

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.
- Train employees regarding proper maintenance activities and recommendations outlined in this BMP fact sheet and related fact sheets.

Enforcement

- Ensure inlets or drains are protected near repair or construction activity sites, including activities by others.
- Consider monetary fines for illegal dumping or pollutant loads generated by others that result in conveyance of pollutants on municipal roads and streets.
- Ensure roads and streets are cleaned near repair or construction activity sites, including activities by others.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For road and street maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to road and street maintenance.
- **Training and Education Log:** Enter a completed training record into the log.
- **Event Record:** If a discharge or is observed during a repair or maintenance activity, an event record should be executed that also outlines response and remediation procedures. Furthermore, since the road and street system is generally one of the largest portions of infrastructure (and conveyor of stormwater), an event record should be completed for major rain events. Other events such as observed polluted discharges or illicit discharges should be recorded.
- **Activity Record:** Complete when remediation is conducted or improvements are made to roads and streets. Note protection measures of inlets, waterways, etc. that were implemented.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for road and street maintenance into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for roads and streets is recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of roads and streets based on an applicable frequency. An applicable frequency should be determined based on the use of the road or street. Focus should be afforded to roads and streets with inlets or direct points of entry to waterways.

Items that should be inspected and maintained (and recommended maintenance actions):

- *Cleanliness:* Sweep and remove debris or trash *Inlets:* Ensure clean and free of sediment and debris. *Clean-outs:* Ensure structurally sound, remove debris and sediment (if applicable) build-up. Replace cracked or leaking clean-outs.
- *Integrity of roads/streets:* Ensure structurally sound and proper drainage is achieved.
- *Operational reviews:* Ensure observed practices are in line with recommendations outlined in this fact sheet.
- *Temporary-type BMPs:* Silt fences, straw "wattles", concrete washouts, and so on should properly installed and functioning. Remove built-up debris or sediment as necessary. Replace defunct or damaged materials.

Effectiveness can be demonstrated through a combination of appropriate documentation practices and in conjunction with a monitoring program. Analytical monitoring conducted under the requirements of Minimum Control Measure (MCM) #3 can be used to measure effectiveness of this BMP. Improved analytical results can be attributed to proper implementation and maintenance of the practices recommended in this Fact Sheet.

The EPA provides numerical effectiveness values for certain practices outlined within this fact sheet including maintaining roadside vegetation and street sweeping.

WINTER ROAD MAINTENANCE GH-32

OBJECTIVES

- Reduce or prevent polluted discharges associated with winter activities:
  - Road salt application
  - General practices
  - Roadway repairs
  - Spill response and control
- Implement and conduct activities aimed at pollution prevention:
  - Training
  - Other considerations

DESCRIPTION

Application of deicing materials and roadway maintenance activities during the winter season can result in increased pollutant loads in surrounding waterways. Proper planning and practices will help reduce or prevent polluted runoff from snow melt and rainwater or direct discharges.

CONSIDERATIONS

Due to costs associated with alternative deicing materials, better management and full implementation of salt management practices can be a more attractive option.

Toxic substances or chemicals (including metals, oils, etc.) can easily bind to sediment or gravel. Protecting inlets from sediment-rich runoff will reduce the potential of pollutant loads to receiving waterways.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for winter road maintenance:

REDUCE OR PREVENT POLLUTED DISCHARGES ASSOCIATED WITH WINTER ACTIVITIES

Road Salt Application

- Calibrate salt spreaders to ensure proper application.

- Only apply the amount of salt needed to get the job done.
- Follow the proper application guidelines.
- Consider temperature when determining volume of salt to apply.
- Contain wash water from trucks used for salting and sanding in a holding tank for disposal or discharge into sanitary sewers.
- Consider alternative materials such as calcium chloride and magnesium chloride.

Roadway Repairs

- Follow guidelines outlined in BMP Fact Sheet GH-30: Road and Street Maintenance.
- Debris and sediment can be carried by snowmelt as well as stormwater.

General Practices

- Use the least toxic materials available for any practices associated with road and street maintenance.
- Thoroughly clean up areas of repair and maintenance at the end of the work day or the end of maintenance/repair activities.
- Complete general observations of road and street areas (including areas where repairs are being conducted) for sediment build-up, etc.

Spill Response and Control

- Have spill clean-up materials readily available.
- Refer to BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

IMPLEMENT AND CONDUCT ACTIVITIES AIMED AT POLLUTION PREVENTION

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.
- Train employees regarding proper winter maintenance activities outlined in this BMP fact sheet and related fact sheets.

Other Considerations

- Ensure inlets or drains are protected near repair or construction activity sites, including activities by others.
- Alternative materials are generally more environmentally friendly.
- Refer to BMP Fact Sheet GH-23 for storing salt.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For winter road maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to winter road maintenance—specifically with road salt applications.
- **Training and Education Log:** Enter a completed training record into the log.
- **Activity Record:** Complete when road salt applications (or alternative materials) are completed.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for winter road maintenance into the log as outlined within this BMP.

Road and street maintenance activities (even during winter months) can be documented through the guidelines and recommendations outlined in BMP Fact Sheet GH-30 for road and street maintenance.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for winter road maintenance should follow recommendations outlined in BMP Fact Sheet GH-30 for roads and streets.

Items that should be inspected and maintained (and recommended maintenance actions):

- *Application Equipment:* Ensure proper function and cleanliness.

Effectiveness can be demonstrated through a combination of appropriate documentation practices and in conjunction with a monitoring program. Analytical monitoring conducted under the requirements of Minimum Control Measure (MCM) #3 can be used to measure effectiveness of this BMP. Improved analytical results can be attributed to proper implementation and maintenance of the practices recommended in this Fact Sheet.

STREET SWEEPING GH-33

OBJECTIVES

- Reduce polluted discharges associated with roads and streets via sweeping:
  - Operational protocols
  - General practices
  - Special considerations
- Reduce specific pollutants that may contribute to receiving waters through proper street sweeping practices:
  - Trash
  - Sediment
  - Road salt
  - Metals
  - Other considerations
- Implement and conduct activities aimed at pollution prevention:
  - Training
  - Enforcement

DESCRIPTION

Daily use of roads and streets (and parking lots) within a municipality can generate a build-up of pollutants including litter and sediment. Regular street sweeping can reduce the amount of pollutants, as well as improve aesthetics of streets.

CONSIDERATIONS

Roads and streets generally comprise a majority portion of municipal infrastructure. Coupled with the fact a majority of a storm sewer system is located within defined boundaries of roads and streets with definitive points of entry (inlets, etc.) for stormwater, a large portion of focus should be afforded to proper road and street maintenance—including street sweeping—to reduce the potential of polluted runoff and direct polluted discharges that would be conveyed to receiving waterways.

A street sweeping program can be limited due to costs associated with equipment. Street sweepers can cost between $60,000 and $180,000, based on type.

Consider land uses (e.g. industrial versus residential) along with proximity to waterways when developing schedules (frequency) and observed accumulation of potential pollutants.

A street sweeping program may require any of the following: operators, maintenance of equipment, administration, traffic control officers, waste disposal of hazardous materials, and cleaning route design & notifications.

The average life span of a sweeper is approximately five years. If a new sweeper is needed an array of new technology advanced sweepers are now available, including regenerative air sweepers that maximize pollutant removal. However, there is no data yet to support what is the "best" sweeping equipment or method.

Despite sweepings having the ability to contain pollutants, regulations may allow the reuse of collected sweepings for general fill, road shoulders, ad other applications that may not threaten local waterways.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for street sweeping:

REDUCE POLLUTED DISCHARGES ASSOCIATED WITH ROADS AND STREETS VIA SWEEPING

Operational Protocols

- Avoid wet cleaning or flushing (unless combined sewer), and utilize dry methods as possible.
- Conduct sweeping during dry weather.
- Consider traffic volumes when scheduling sweeping activities.
- Keep accurate logs of street sweeping activities.
- Properly dispose of collected sweepings. Refer to BMP Fact Sheet GH-7 for waste handling and disposal for more information.
- When developing a street sweeping program and schedule: plan for frequency, volume projections, timing, quality, storage of sweepings (including reuse, if applicable), routing, and disposal at a minimum.

General Practices

- Maintain sweepers or cleaning equipment; repair if leaks are observed.
- Maintain a consistent sweeping schedule.
- Institute a parking policy to restrict parking in problematic areas to allow full access.
- Publish street sweeping schedules; a plausible approach is also providing direct notice to residents or businesses in street sweeping areas.
- Do not store sweepings adjacent to waterways or storm drains.
- Do not "push" sweepings to storm drains or inlets.

Special Considerations

- Increase frequency of sweeping for streets with high pollutant loads.
- Vacuum or regenerative air sweepers generally provide more effective pollutant removal in high sediment and trash areas.
- A log should be kept calculating debris load intake.
- Post permanent signs outlining street sweeping schedules.

REDUCE SPECIFIC POLLUTANTS

Trash

- Ensure equipment can handle debris and trash and properly remove such items.
- In heavy litter areas, follow-up crews may need to be considered to ensure all trash is removed.

Metals

- Metals are effectively a part of sediment and debris. Removal of sediment and debris can effectively reduce the potential of certain pollutants such as copper, zinc, and lead from entering receiving waterways.

Sediment

- Areas of observed sediment should be treated frequently to reduce the potential of polluting via sediment (including nitrogen, lead, etc.).

Road Salt

- Consider additional sweeping in early spring to remove road salt accumulated through the winter months.

Other Considerations

- Contain sweeping debris piles (with temporary-type BMPs if applicable) and away from drains and waterways.
- Sweepings may contain hazardous materials due to gasoline spills or similar chemicals.

IMPLEMENT AND CONDUCT ACTIVITIES AIMED AT POLLUTION PREVENTION

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.
- Additional training considerations should be afforded to operators of equipment.

- Train employees regarding proper maintenance activities and recommendations outlined in this BMP fact sheet and related Fact Sheets.

Enforcement

- Consider monetary fines for parking violations in problem areas where frequent sweeping is required.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For street sweeping, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to street sweeping. Two plausible training activities include operator training and recognition of problem areas.
- **Training and Education Log:** Enter a completed training record in the log.
- **Street Sweeping Schedule and Program:** Keep a planned schedule of sweeping activities. Modify as necessary based on observations or load intake.
- **Activity Record:** Complete when maintenance is conducted on sweeping equipment and to note completion of a sweeping activity. When noting sweeping activities, enter a load removed value as well.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection or activity record for street sweeping into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for roads and streets is recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of roads and streets based on an applicable frequency. An applicable frequency should be determined based on the use of the road or street. Focus should be afforded to roads and streets with inlets or direct points of entry to

waterways. Inspections will help determine problem areas or if adjustments to frequencies of sweeping is needed.

Items that should be inspected and maintained:

- *Roads and Streets:* Ensure free of "build-up" of debris, sediment, and so on.
- Schedule sweeper or adjust frequency if necessary.
- *Street Sweeper:* Ensure properly operating and free of leaks.
- *Operational reviews:* Ensure observed practices are in line with recommendations outlined in this fact sheet.
- *Temporary-type BMPs:* Silt fences, straw "wattles", covers, and so on associated with sweeping storage areas are in working order.

Effectiveness can be demonstrated in several ways. Two primary types include "ton per street mile" basis and "pounds per capita" basis. The first method may be easier to calculate, and is generally a more acceptable method to demonstrate effectiveness. A plausible method of calculation includes direct weighing of a sweeper before and after collections or simply calculating the approximate loads removed.

LANDSCAPE MAINTENANCE GH-35

OBJECTIVES

- Prevent or reduce polluted discharges associated with landscape maintenance activities:
  - Operational protocols
  - General practices
  - Chemical applications
  - Waste management
  - Other considerations
- Implement and conduct activities aimed at pollution prevention:
  - Training
  - Material storage
  - Spill response and control
  - Special considerations

DESCRIPTION

Landscape Maintenance includes a number of activities such as vegetation removal, pesticide/fertilizer applications, pet waste removal, pruning, watering, mowing, etc. All such maintenance practices have the potential to contribute pollutants to receiving waterways or establishing a "channel" for pollutants to reach waterways or storm sewer systems.

CONSIDERATIONS

Consider an integrated pest management (IPM) program that is developed with a combination of biological, physical, and holistic approaches and tools.

Consider a comprehensive landscape management plan that addresses an IPM program, planning & design, plant selection, soil analysis, maintenance schedules, TMDL BMPs, and water use.

Alternative landscaping techniques such as xeriscaping may be more cost effective and allow incorporation of alternative filtering methods to reduce the potential of polluted stormwater runoff to receiving waterways or recharge areas.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for landscape maintenance:

PREVENT OR REDUCE POLLUTED DISCHARGES ASSOCIATED WITH LANDSCAPE MAINTENANCE ACTIVITIES

Operational Protocols

- Consider native vegetation where feasible.
- Avoid placing landscape waste at or near inlets.
- Perform mowing at optimal times, which does not include prior to significant forecasted rain events.
- Consider low water-use groundcovers when planting in large areas as a cost effective solution as well.
- Promote environmentally friendly landscape practices that include all or several of the following:
    - public education
    - planning & design that recognizes regional and climatic conditions and caveats
    - soil analyses to better address proper fertilizer practices or soil retention
    - native plant selections
    - practical turf selections that can resist drought
    - proper irrigation (if applicable)
    - use of mulch, fertilizer/pesticide management (IPM), and maintenance requirements & schedules
- Protect lakes, ponds, wetlands, and/or lagoons adjacent to landscape maintenance activities.

General Practices

- Use mechanical methods for vegetation removal where possible.
- Avoid loosening soil when removing weeds or vegetation.
- Use mulch or a temporary-type binder on exposed soils until permanent landscape is installed.
- Collect and dispose lawn trimmings, clippings, vegetation, etc.
- Do not conduct landscape equipment fueling at or near inlets or waterways.
- Reduce or prevent exposed soil areas.

Chemical Applications

- See BMP Fact Sheet GH-36 for lawn fertilizers and pesticides for more information.
- Reduce the use of high nitrogen fertilizers.

- Use pesticides only if there is an actual problem or presence of pests.

Waste Management

- Consider pet waste stations or bags as necessary for problem areas or dog parks.
- Properly dispose of collected lawn/yard waste. See BMP Fact Sheet GH-7 regarding waste handling and disposal.

Other Considerations

- If irrigation systems are used, only irrigate as needed and ensure minimal runoff.
- Consider Green Infrastructure for stormwater management.
- Consider ordinances outlining effective and environmentally friendly landscape maintenance practices.
- Do not allow dumping of lawn/yard waste at unauthorized locations.

IMPLEMENT AND CONDUCT ACTIVITIES AIMED AT POLLUTION PREVENTION

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.
- Ensure contractors are trained for services provided by other entities.
- Obtain pesticide applicator licenses as necessary.
- Train employees regarding proper maintenance activities and recommendations outlined in this BMP Fact Sheet and related fact sheets.

Material Storage

- Place landscape material stockpiles away from waterways. Install temporary-type BMPs (e.g. silt fence, straw wattles, etc.) as applicable and if necessary.
- Keep liquid landscaping materials in designated areas.
- Cover wood-treated products in storage with tarps or similar plastic coverings.
- See BMP Fact Sheet GH-21 regarding Outdoor Storage of Materials for more information.

Spill Response and Control

- See BMP fact Sheet GH-10 regarding spill prevention and response for more information.
- Keep spill control materials readily available with landscape maintenance crews.

Special Considerations

- During design and planning phases, consider required maintenance practices prior to implementation or acceptance of a design to minimize excessive maintenance operations or create a potential to produce polluted discharges.
- All employees handling pesticides should be familiar with the most recent MSDS.
- Consider monetary fines for dumping violations in problem areas where frequent dumping is observed.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For landscape maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to landscape maintenance.
- **Training and Education Log:** Enter a completed training record in the log.
- **Event Record:** Complete an event record if landscape maintenance activities resulted in an observed polluted discharge.
- **Activity Record:** Complete only for significant improvements to the landscape maintenance program such as the installation of pet waste control stations in a park.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection or activity record for landscape maintenance into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for parks and open spaces is recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of parks and open spaces based on an applicable frequency. An applicable frequency should be determined based on the use of the park or open space along with required maintenance activities. Focus should be afforded to

parks and open spaces with inlets or direct points of entry to waterways for illegal dumping activities or exposed soils.

Items that should be inspected, observed, and maintained:

- *Parks and Open Spaces:* generally clean and free of dumping sites, remove litter.
- *Erosion and Sediment:* look for signs of erosion or sediment build-up; address with temporary-type BMPs until a permanent fix is implemented.
- *Pet Waste:* remove excessive waste, stock waste stations and ensure receptacles are structurally sound and emptied on a frequent basis *Special Maintenance Considerations:* develop an inspection checklist for special items as a result of green infrastructure or IPMs.
- *Inlets or Drains:* structurally sound, remove landscape debris if applicable.
- *Mowing/Landscape Equipment:* ensure in proper working order; repair any observed leaks.
- *Exposed soils:* immediate response should be temporary-type BMPs (especially with forecasted rain events), plan for permanent coverage.
- *Temporary-type BMPs:* Silt fences, straw "wattles, covers, and so on installed as applicable are in working order.

Effectiveness is difficult to measure with landscape maintenance. However, improved landscapes generally increase land values (as well as adjacent lands). A combination of appropriate documentation practices and in conjunction with a water quality monitoring program, effectiveness may be attributed to implemented recommendations and protocols of this Fact Sheet.

LAWN FERTILIZERS AND PESTICIDES GH-36

OBJECTIVES

- Prevent or reduce polluted discharges associated with fertilizer and pesticide activities:
  - Operational protocols
  - General practices
  - Specific pollutants
  - Other considerations
- Implement and conduct activities aimed at pollution prevention:
  - Training
  - Material storage
  - Spill response and control
  - Special considerations

DESCRIPTION

Fertilizers, herbicides, and pesticides possess a relatively high potential for contributing pollutants to stormwater runoff and non-stormwater discharges both through storage and application. Proper management of materials, effective training, and proper use of materials will reduce the potential of polluting receiving waterways.

CONSIDERATIONS

Pesticide applicators of any local government agency in the State of Arkansas must be certified by the Arkansas State Plant Board. Technicians may complete applications under the supervision of a certified applicator.

Consider frequent soil analyses to ascertain the proper amount of nutrients for application in fertilizers.

Consider an Integrated Pest Management (IPM) Program to plan effective and appropriate pesticide applications.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for landscape fertilization and pesticides:

PREVENT OR REDUCE POLLUTED DISCHARGES ASSOCIATED WITH FERTILIZER AND PESTICIDE ACTIVITIES

Operational Protocols

- Mulching can reduce weed growth and reduce the need for herbicides.
- Promote bats (bat houses), birds, and similar species with appropriate habitats that reduces the need for pesticides.
- Follow all applicable regulations and laws for the storage, transport, and use of fertilizers, herbicides, and pesticides.
- Fertilizers should be worked into soils rather than dumped or broadcast.
- Do not apply fertilizers, herbicides, or pesticides adjacent to waterways or inlets.

General Practices

- Use pesticides only when there is an actual problem.
- Do not mix or prepare pesticides at or near drains or waterways.
- Do not apply pesticides or herbicides in windy conditions.
- Ensure fertilizer application equipment is properly calibrated to avoid excessive applications.
- Conduct soil analyses.
- Do not use pesticides if rain is forecasted.
- Post application notification signs before and after applications.
- Sweep and remove fertilizer or dry pesticides from sidewalks and similar surfaces.

Specific Pollutants

- Fertilizers generally contain nitrogen and phosphorus. Careful consideration should be provided regarding need versus want when applying fertilizers.

Other Considerations

- Consider alternative products (e.g., vinegar and water) for spot-treating weeds.
- Consider alternative products (e.g., soapy water) for pest control.
- Over application can "burn" turf or vegetation, thus resulting in exposed soil areas.
- Slugs can be captured in small cups filled with beer and recessed into the ground.

IMPLEMENT AND CONDUCT ACTIVITIES AIMED AT POLLUTION PREVENTION

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.

- Obtain pesticide applicator licenses as necessary.
- Train employees regarding proper maintenance activities and recommendations outlined in this BMP Fact Sheet and related fact sheets.

Material Storage

- Properly store materials as directed per applicable labels or as required by applicable laws and regulations.
- See BMP Fact Sheet GH-13 and GH-21 regarding proper storage of materials for more information.

Spill Response and Control

- See BMP fact Sheet GH-10 regarding spill prevention and response for more information.
- Keep spill control materials readily available with applicator personnel.

Special Considerations

- Consider the residual effects of chosen pesticides.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For fertilizers and pesticides, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to pesticides and fertilizers. Note a certification as an applicator with a training record.
- **Training and Education Log:** Enter a completed training record in the log.
- **Applicator Certifications:** Keep copies of applicator certifications in the SWMP.
- **Event Record:** Complete an event record if fertilizer and pesticide application activities resulted in an observed polluted discharge and a spill or leak.
- **Activity Record:** Complete when applications are completed. Note cleanup, weather conditions, application rates, and locations.

- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection or activity record for fertilizer and pesticide applications into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for fertilizer and pesticide applications is recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of parks and open spaces based on fertilizer and pesticide applications.

Items that should be inspected, observed, and maintained:

- *Parks and Open Spaces:* signs of burn spots, material in inlets or basins; remove or repair as necessary.
- *Application Equipment:* in sound working order, repair as required.

Effectiveness is difficult to measure with fertilizers and pesticide applications. However, documented reduced usage of fertilizers demonstrates an improvement and effective program. A combination of appropriate documentation practices and in conjunction with a water quality monitoring program, effectiveness may be attributed to implemented recommendations and protocols of this fact sheet.

LEAF COLLECTION GH-39

OBJECTIVES

- Prevent or reduce polluted discharges associated with leaves and similar debris:
  - Operational protocols
  - General practices
  - Training
  - Other considerations

DESCRIPTION

Leaves and similar materials can not only inhibit the proper function of a drainage system, but can also contribute pollutants to stormwater or snow melt runoff. Proper collection and disposal from municipal facilities including roads and streets will recue the potential to inhibit system function and pollutants to receiving waters.

CONSIDERATIONS

Leaf collection can be accomplished by several means. Mechanical collection is an efficient method to collect from municipal roads and streets in residential and commercial districts. A cost-effective approach may be to require the "bagging" of leaves in residential districts to reduce equipment costs. Collection at municipal facilities can be incorporated into a mechanical collection method or completed by municipal employees.

Particulates and similar pollution-causing chemicals—specifically metals and hydrocarbons—can attach to leaves, especially in highly travelled areas.

Consider a comprehensive street sweeping after leaf collection activities are completed.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for leaf collection:

PREVENT OR REDUCE POLLUTED DISCHARGES ASSOCIATED WITH LEAVES AND SIMILAR DEBRIS

Operational Protocols

- Consider a leaf collection activity in the spring as well.
- Collection schedules should depend on canopy coverage (heavy canopy coverage will generally require more frequent collection activities).

General Practices

- Conduct street sweeping activities after completion of all scheduled leaf collection activities; perform an inspection prior to scheduling street sweeping.
- Provide notification to residents and businesses prior to collection activities.
- Do not dump or store collected leaves at or adjacent to inlets or waterways.
- Properly dispose of collected leaf waste.
- Do not "push" leaves to inlets or waterways during collection.

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.
- For mechanical methods of collection, consider equipment operator training.
- Train employees regarding proper maintenance activities and recommendations outlined in this BMP Fact Sheet and related fact sheets.

Other Considerations

- Consider recycling collected leaves for compost.
- A written leaf/debris collection and disposal program should be provided to not only municipal employees, but all residents and businesses in the municipality.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For leaf collection, templates are provided within the BMP manual to assist the municipality:

- **Training Record:** This document is used to provide record of a training event or session relative to leaf collection.
- **Training and Education Log:** Enter a completed training record in the log.

- **Leaf/Debris Collection and Disposal Program:** a written program for the municipality outlining requirements and schedules (can be a section of the waste management plan).
- **Activity Record:** Complete when mechanical leaf collection activities are conducted. Note locations of activities.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection or activity record for leaf collection into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for leaf collection is recommended as follows:

- *Regular Inspection:* Conduct inspections prior, during, and after scheduled leaf collection activities. Frequency will depend on schedule of activities.

Items that should be inspected, observed, and maintained:

- *Mechanical Equipment:* in proper working condition; repair or correct as required.
- *Roads and Streets:* Observe leaf load before and after activities. Consider additional collections if developed schedule is ineffective.
- *Parks and Open Spaces:* leaves removed.

Effectiveness is difficult to measure with leaf collection. However, removal of leaves and similar debris during the autumn months will provide a level of system functionality.

FOUNTAIN AND POOL MAINTENANCE GH-40

OBJECTIVES

- Prevent or reduce polluted discharges associated with maintaining fountains, pools, etc.:
  - General practices
  - Other considerations
  - Specific pollutants
- Implement and conduct activities aimed at pollution prevention:
  - Training
  - Material storage
  - Spill response and control
  - Special considerations

DESCRIPTION

Chlorine, algaecides, and other chemicals used to treat swimming pools, fountains, lakes, and so on can harm the environment and pollute waterways if discharged through the storm drain system. Proper maintenance and neutralization practices will aid in pollution prevention practices.

CONSIDERATIONS

Prevent backflow during pool drainage operations to a sanitary sewer by maintaining an "air gap" between the discharge line and the sewer line. Confirm flow rates and special waste requirements (e.g., acid wash) with local wastewater treatment facilities. Discharge flows should be at a low rate, and actual rate limits may be determined by local ordinances.

Certain maintenance activities around water bodies (such as lake or lagoon that may be recognized as a wetland) may be subject to additional regulations and permitting.

Code requirements should be confirmed for pools and fountains located adjacent or near to environmentally sensitive areas.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for pool and fountain maintenance:

PREVENT OR REDUCE POLLUTED DISCHARGES ASSOCIATED WITH MAINTAINING POOLS AND FOUNTAINS

General Practices

- Reduce fertilizer use around pools, fountains, lakes, etc.
- Pick up and remove landscape waste in and around lakes (or fountains).
- Maintain waste receptacles near relevant water bodies including pools and fountains.
- De-chlorinate water prior to removal, if necessary.
- Neutralize water and chemicals prior to removal, if necessary.
- De-chlorinated water can be drained gradually to landscaped areas. If de-chlorination cannot be obtained, contact the local wastewater treatment facility for approval to drain to sanitary sewer. Test de-chlorinated water to ensure removal of chemical.
- Do not clean filters on streets or near inlets.
- Provide drip pans beneath pipe connections to catch leaks.
- Rinse cartridge filters onto dirt areas and spade filter residue into soil. Properly dispose of contaminated soil if build up is observed.
- Do not apply pesticides or herbicides in windy conditions near water bodies.
- Mechanically remove pond scum if necessary using a 60 micron net.
- Apply and maintain proper chemical levels for pools, fountains, ponds, lakes, etc.

Specific Pollutants

- Chlorine or chloramine (used as a disinfectant) is primary pollutants of concern associated with swimming pools. Following the recommendations outlined in this fact sheet will aid in minimizing the chance of polluting waterways.
- Algaecides are primary pollutants of concern associated with fountains, ponds, and lakes.

Other Considerations

- Use chlorine to control algae if necessary in lieu of copper-based algaecides, or alternative products such as sodium bromide.
- Manage pH and water hardness to minimize corrosion of copper pipes. Inspect relative areas for signs of illegal dumping.
- For lakes and fountains, introducing fish to the system can aid in reducing algae.

IMPLEMENT AND CONDUCT ACTIVITIES AIMED AT POLLUTION PREVENTION

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.

- Train personnel in proper chemical applications, testing chemical levels, and neutralization of chemicals.
- Train employees regarding proper maintenance activities and recommendations outlined in this BMP Fact Sheet and related fact sheets.

Material Storage

- Properly store materials as directed per applicable labels or as required by applicable laws and regulations.
- See BMP Fact Sheet GH-13 and GH-21 regarding proper storage of materials for more information.

Spill Response and Control

- See BMP fact Sheet GH-10 regarding spill prevention and response for more information
- Neutralize spills if possible.
- Keep spill control materials readily available with applicator personnel.

Special Considerations

- Feeding of wildlife may contribute to bacteria growth.
- Erosion control can be improved with vegetative cover or rip rap along banks of lakes.
- Dredge with shovels when laying/maintaining pipes for pools, fountains, etc.
- For large lakes, dredge every ten years or as determined by regulatory authorities.
- To determine amount to dredge, determine rate of volume loss due to sediments.
- When dredging large lakes, use vacuum equipment.
- For small lakes, drain lake prior to dredging. Contact relevant entities and regulatory entities for further requirements.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For pool and fountain maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to pool and fountain maintenance.

- **Training and Education Log:** Enter a completed training record in the log.
- **Event Record:** Complete an event record if discharged water from pools, fountains, and so on are polluted or contain specific pollutants of concern.
- **Activity Record:** Complete an activity record for appropriate items such as dechlorination of a pool, testing chemical levels, or draining the water body.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection or activity record for pool and fountain maintenance into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for pools and fountains are recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of pools, fountains, lakes, and similar structures during appropriate seasons and at a predetermined regular frequency.
- *Rain Event Inspection:* Conduct inspections after major or significant rain events for overflows or damage.

Items that should be inspected, observed, and maintained:

- *"Integrity" of water:* check for smells, color of water, and other signs of possible contamination (e.g. bacteria) of irregular chemical levels.
- *Integrity of structures:* inspect for cracks, leaking points, etc. in swimming pools, fountains, and so on. Repair as applicable.
- *Filtering equipment:* inspect connections and equipment for leaks and proper operation. Repair as applicable.
- *Sediment build-up:* inspect and measure (if applicable) sediment build-up for appropriate waterbodies such as lakes. Adjust dredging timeframes if necessary.
- *General surroundings:* ensure immediate areas are free of debris and trash, and "developed" as intended (e.g. rip rap in place).
- *Chemical levels:* ensure proper chemicals are applied and at appropriate levels, adjust levels as necessary.

Documented efforts associated with maintaining pools and fountains can adequately demonstrate an effective program. A lack of polluted discharges or a sound ecosystem demonstrated through documentation such as sample analysis and biological reviews can further aid in establishing an effective program.

DRAINAGE SYSTEM MAINTENANCE GH-50

OBJECTIVES

- Ensure functionality of storm drain system through maintenance and monitoring:
  - General overview
  - Operational protocols
  - General practices
  - Specific pollutants
  - Limitations
  - Spill response and control
  - Other considerations
- Implement and conduct activities aimed at pollution prevention:
  - Training
  - Special considerations

DESCRIPTION

The stormwater conveyance system provides transport of urban/suburban stormwater runoff, snow melt runoff, and non-stormwater discharges generally to receiving waters. Most BMPs provide recommendations and protocols to reduce the potential of polluted runoff through source controls. Treatment-control BMPs are also effective in reducing pollutants prior to entry to the conveyance system or waterways. However, the conveyance system is generally the "last hurdle" prior to runoff entering receiving waterways. Proper maintenance of the system provides both functionality and the reduction of pollutants entering waterways.

CONSIDERATIONS

The stormwater conveyance system is generally comprised of catch basins, inlet structures, channels, miscellaneous drains, pump stations (possibly), pipes, culverts, detention ponds, and outfalls. Curbs and gutters are generally associated as a part of conveyance system; however, for the purposes of this fact sheet, focus is afforded the "concealed" drainage system.

Professional plumbing contractors and specialized services contractors can be hired to flush the storm sewer system in lieu of self-flushing activities.

Consider stenciling drain inlets notifying the public the inlet is a part of conveyance system draining to waterways. This can be achieved through MCM #1 and Public Education as well.

Confined space training may be required for access to deep basins.

Protocols and recommendations outlined in this fact sheet can be implemented and maintained through the Post-Construction Stormwater Management Plan (PCSM Plan) for MCM #5 compliance including a proper and compliant PCSM O&M Program for permanent structural and non-structural BMPs for further water quality protection initiatives.

If a municipality only has a few basins, manually clean the basins. Mechanical cleaners such as vacuums should be used otherwise.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for road and street maintenance:

REDUCE OR PREVENT POLLUTED DISCHARGES ASSOCIATED WITH ROADS AND STREETS

General Overview

As the final part of conveyance for both stormwater and non-stormwater, a number of common pollutants can be found in the system:

- Trash and similar debris
- Sediment
- Oils and greases
- Paints, antifreeze, and similar products
- Cleaners and solvents
- Fertilizers and pesticides
- Animal waste
- Other items such as leaves, vegetation, and manufactured items (e.g. car parts, etc.) can be in the conveyance system that will pollute runoff in the system itself
- Foreign objects in a system will inhibit the functionality

Operational Protocols

- Regular inspections of the complete system.
- Keep accurate records regarding the number of times a basin has been cleaned.
- Record amount of waste collected.
- Store wastes from cleaning activities in appropriate containers and store in a manner that does not allow discharge back into the system or to receiving waterways.
- Identify and monitor known problem areas.
- Develop a regular schedule for cleaning system components.

General Practices

- Catch basins and inlets
    - Sumps should be cleaned prior to 40% fill.
    - Inlet covers should be free of debris and sediment build-up.
    - Dewater wastes with outflow in to the sanitary sewer if allowed (however, water should be filtered prior to discharge into the sanitary sewer).
    - If dewatering to sanitary sewers is not allowed, water should be pumped or vacuumed to a tank and properly disposed of.
    - Remove sediment, debris, litter, etc.
- Channels
    - Remove sediment, debris and trash build-up.
    - Observe for hydraulic functionality. Consider modifications to improve hydraulics or increase ability for pollutant removals.
- Pipes
    - Develop a flushing schedule for identified problem areas with repeated excessive build-up.
    - Collect flushed effluent and pump to sanitary sewer or dispose properly.
    - Refer to INSPECTIONS AND MEASUREMENTS section of this Fact Sheet regarding information for illicit connections.
- Detention Ponds/Basins
    - Remove sediment, debris and trash build-up.
    - Observe for hydraulic functionality. Consider modifications to improve hydraulics or increase ability for pollutant removals.
- Outfalls
    - Observe for non-stormwater discharges.
    - Inspect for functionality and structural integrity.
    - Focus towards outfalls and illicit discharges is provided under MCM #3 of the MS4 Permit.
- Pump Stations
    - Clean pump station storm drains regularly to remove silt and trash.
    - Clean outlet structures as necessary.

Limitations

- A vactor truck for flushing can cost upwards of $200,000.
- A water source is necessary for cleaning or flushing pipes and the system. Wastewater must be collected and treated from cleaning.
- Flushing is considered more successful with pipes with less than a 36" diameter.
- Certain components of the system may be "deeded" to residential homeowners for maintenance purposes.

Spill Response and Control

- Have spill clean-up materials readily available.
- Refer to BMP Fact Sheet GH-10: Spill Prevention and Control for more information.

Other Considerations

- Establish a system for tracking illegal dumping hot spots at locations within the system.
- Cleaning and maintenance activities may disturb local aquatics.
- Maintenance of components located within defined boundaries of wetlands may be subject to additional regulations and requirements.
- Private property access may be needed to track illegal discharges up a gradient.
- Methods for tracking or identifying illicit connections include dye testing, smoke testing, flow monitoring, TV inspections, and visual inspections.
- Using the outfall map required under MCM #3 and corresponding requirement for a grid on the map can aid in developing a realistic maintenance schedule.
- Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediment.

IMPLEMENT AND CONDUCT ACTIVITIES AIMED AT POLLUTION PREVENTION

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information.
- Train employees regarding proper maintenance activities and recommendations outlined in this and other related BMP Fact Sheets.

Special Considerations

- Ensure inlets or drains are protected near repair or construction activity sites, including activities by others.
- Consider debris capture systems, especially for problem areas.

- Flow management must be compatible with stormwater quality goals in a stream corridor.
- Consider corridor reservations, corridor restorations, bank treatment, geomorphic restoration, grade control, and buffer systems when planning an entire stream corridor that may or may not include drainage system components. This will aid in reducing cleaning and maintenance frequency of drainage systems. Such systems may be a part of Green Infrastructure Plans. Plus such systems generally improve water quality and aquatics. Entities such as LandStudies can aid in design and installations.
- Treatment control BMPs in conjunctions with source control BMPs will reduce build-up in drainage systems.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For drainage system maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to drainage system maintenance.
- **Training and Education Log:** Enter a completed training record for drainage systems into the log.
- **Drainage System Maintenance Schedule**
- **Event Record:** If a discharge is observed during a repair or maintenance activity, an event record should be executed that also outlines response and remediation procedures. Major rain events, encountered illicit discharges, observed discharges that may associated with an illicit connection, and encountered dumped materials are all items that should be recorded as an event.
- **Activity Record:** Complete when remediation is conducted or improvements are made to roads and streets. Note protection measures of inlets, waterways, etc. that have been implemented. Complete activity records for remediation or investigation of encountered events. Complete activity records for maintenance activities such as pipe flushing or basin cleaning. Note loads removed or disposal methods.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP.
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for drainage system maintenance into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for drainage systems is recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of drainage systems based on an applicable frequency and ability. An applicable frequency should be determined based on the use of the drainage system and known problem areas. Frequencies (with cleaning recommendations) are recommended as follows:
    - *Basins/inlets:* inspect all inlets/basins every 1-2 years (at least 50% of system inspected and cleaned each year; inspect inlets/basins in known problem areas every 6 months - 1 year (clean as needed).
    - *Pipes/Lines:* inspect pipes at least once every year (clean as needed); inspect known problem areas twice a year (clean as needed).
    - *Detention basins/pump stations/channels/other:* inspect throughout the year (clean as needed).
    - *Special:* facilities such as Green Infrastructure or Corridor Reservations can be inspected every 2-3 years or as recommended by consultants/ architects/engineers associated with such systems. New systems should be inspected on a more frequent basis (such as quarterly) until the system is established.
- *Rain Event Inspection:* Inspect and clean as needed after major rain events and all facilities affected by emergency response activities. Initial inspections should be focused on known problem areas. Develop inspection protocol that includes at least 25% of the system after "defined" rain events.

Items that should be inspected and maintained (and recommended maintenance actions):

- *Evidence of pollutants:* observe for evidence of pollutants such as sediment, paints, trash, etc.
- *Basins/Inlets:* Structurally sound and ensure clean and free of sediment and debris.
- *Pipes:* structurally sound and free of build-up or debris.
- *Clean-outs:* Ensure structurally sound, remove debris and sediment (if applicable) build-up. Replace cracked or leaking clean-outs.
- *Other:* inspect detention basins, culverts, outfalls, pump stations, and so on for integrity; remove sediment and debris build-up.
- *Cleaning equipment:* proper operation and free of leaks; repair as required.
- *Special:* develop items for inspection for special components of systems such as filtering devices, separators, debris capture systems, and so on. A recommendation for frequency of inspections may be provided by a manufacturer in certain instances.
- *Corridor Reservations:* free of debris and litter.

Effectiveness can be measured a number of ways. Ultimate effectiveness may be dependent on analytical monitoring of surrounding waterways. Documenting effective load removals in the system against a calculated load can demonstrate effectiveness. Proper documentation practices can further provide a level of demonstrating effectiveness (such as documentation relative to identifying and remediation of illicit connections, cleaning activities, and training).

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Appendix B	Municipal Facility Detail Sheets
Appendix C	Municipal Map
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Appendix O	Spill Response and Control Plan
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Appendix Q	Monitoring Log
Appendix R	Pollutant Guidance Table
Appendix S	Annual Reports

Appendix T	O&M Program Modifications
Appendix U	BMP Development Sheet

Appendix A

Municipal Inventory List

Permit #: ____________________

Date of Inventory: ____________________________ ◻ Updated List

This list provides a centralized location of all municipal operational activities, fixed facilities, and land uses that may contribute pollution to receiving waters. The purpose of the list is to provide a starting point in BMP selection.

Activity, Facility, or Land Use	Self-performed or contracted	Planned or Existing	Notes
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	
	◻ Self-Perfomed ◻ Contracted Note: ____________________	◻ Planned ◻ Existing	

Appendix A

Activity or Facility	Self-performed or contracted	Planned or Existing	Notes
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	
	□ Self-Perfomed □ Contracted Note: ____________________	□ Planned □ Existing	

Appendix B

Municipal Facility Detail Sheet

Cabot Water Treatment Facility

76 Marshall Lane

Cabot Water/Wastewater Treatment plant is a 48.2 acre site that contains the City's water/wastewater treatment facilities.

Notable activities conducted here with potential impact upon stormwater runoff and/or water quality:

- ***All*** stormwater is contained onsite and treated by the treatment facility.

Municipal Facility Detail Sheet

2601 Willie Ray Drive Water Tank

- 2 Million Gallon Elevated Water Tank

Municipal Facility Detail Sheet

19 Panther Trail

- 1 Million Gallon Elevated Water Tank

Municipal Facility Detail Sheet

31 Bellamy Street

- 500,000 Gallon Elevated Water Tank

Municipal Facility Detail Sheet

1212 S. 2nd Street

- 100,000 Gallon Elevated Water Tank

Municipal Facility Detail Sheet

Cabot Community Park & Pond

Campground Rd. & Kerr Station Rd.

CITY OF CABOT, ARKANSAS
PARKS&REC
TOGETHER EVERYONE ACHIEVES MORE

- 27 Acre Site Overall
- 8 Acre Water Area
- 10 Acres of Open Space
- Disk Golf Course
- 3 Multi-Station Structures
- Playground Equipment
- Paved Walking Trail (.39 Miles)
- 3 Pavilions
- 60 Parking Spaces, Including ADA Parking
- ADA Accessible Fishing Areas
- Public Fishing
- Restroom Facilities


PAVILION W/ PLAYGROUND
DISK GOLF COURSE
PUBLIC COMMUNITY POND
WALKING TRAIL
A.D.A ACCESSIBLE FISHING AREA
PAVILION W/ PLAYGROUND
Kerr Station Rd
Campground Rd
N
W
E
S
SCALE: 1" = 150'
© 2015 Google

Municipal Facility Detail Sheet

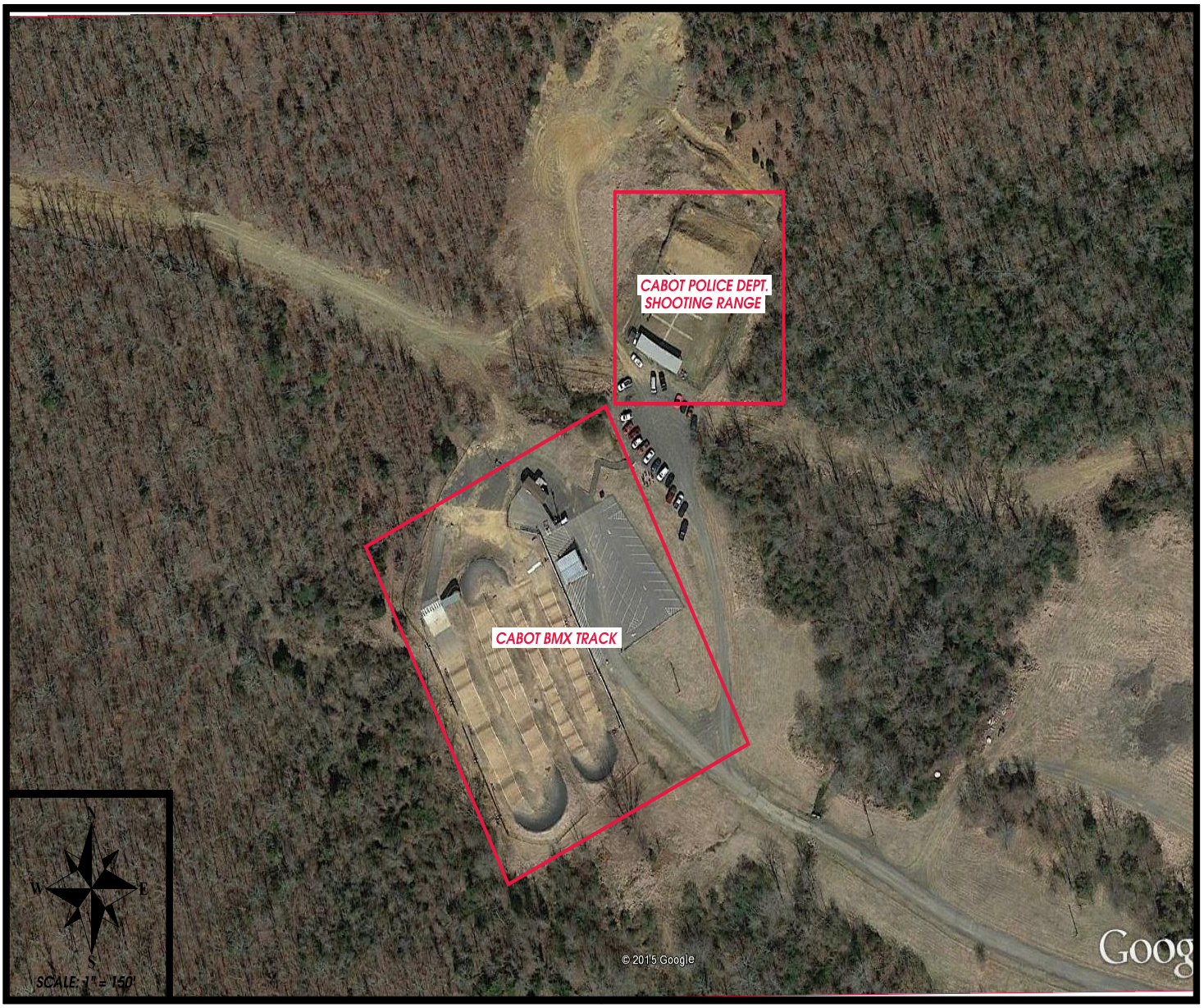
Lonoke County Regional Park

2351 Willie Ray Drive

- 168 Total Acres
- Location of the Cabot BMX Track
- 30 Paved Parking Spaces
- 100 Additional Parking Spaces
- Also Contains the Cabot Police Department Shooting Range

Aerial View of BMX Track.

Entry gate, concessions and restroom facilities for the BMX track.


CABOT POLICE DEPT.
SHOOTING RANGE
CABOT BMX TRACK
N
W
E
S
SCALE: 1" = 150'
© 2015 Google

Municipal Facility Detail Sheet

Cabot Community Center/Veteran's Memorial Park

508 N. Lincoln Street

- 10 Acre Recreational Area
- 2 Swimming Pools
- 4,500 Total Sq. Ft. of Swimming Pools
- Picnic Area
- Skate Park
- 148 Paved Parking Spaces With ADA Accessible Spaces.


COMMUNITY CENTER
SKATE PARK
VETERAN'S MEMORIAL
N Jackson St
S Polk St
N
W
E
S
SCALE: 1" = 100'

Municipal Facility Detail Sheet

Allman/Bevis Sports Complex

3001 S. 1st Street

- 40 Acre Recreational Site
- 4 Softball Fields
- 14 Soccer Fields
- Multi-Structure Playground
- 1-mile Paved Walking Trail
- Multiple Pavilions
- 300+ Parking Spaces
- 2 Youth Football Fields
- 2 Batting Cages
- 5 Restroom Facilities
- 3 Concession Areas
- Parks & Recreation Maintenance Facility


CENTENNIAL
BANK
SOCCER COMPLEX


DAKOTA HAWKINS
FOOTBALL COMPLEX


PAVILION
SOFTBALL FIELDS
YOUTH FOOTBALL FIELDS
PAVILION W/
PLAY EQUIP.
MAINT. BLDG.
SOCCER FIELDS
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S
SCALE: 1" = 300'

Municipal Facility Detail Sheet

Richie Road Park/Sports Complex

502 Richie Road

- 20 Acre Recreational Site
- 6 Baseball Fields
- 1 Tennis Court
- 2 Basketball Courts
- 2 Swimming Pools
- 3,120 Total Sq. Ft. of Swimming Pools
- 3 Multi-Station Play Structures
- 6 Individual Pieces of Play Equipment
- 1 Mile of Paved Walking Trails
- 2 Picnic Pavilions
- 3 Batting Cages
- 4 Concession/Restroom Facilities
- 1 Multi-Purpose Building
- 1 Maintenance Building

Pavilion/Picnic Area

Multiple Playgrounds

1 Mile of Paved Walking Trails

Municipal Facility Detail Sheet

Richie Road Park/Sports Complex

502 Richie Road

Municipal Facility Detail Sheet

Crouch Flag Football Complex

Panther Trail

- 15 Acre Recreational Facility
- Pavilion/Picnic Area
- 20 Parking Spaces
- 5 Flag Football Fields
- Restroom facilities
- Concession Area


Rodney Guthrie Dr
YOUTH BASEBALL
YOUTH BASEBALL
Jacob Cove
Park Cir
Richie Rd
Brookwest Cove
Sharon Cove
Ghale
TEE-BALL FIELDS
PICNIC W/ PLAYGROUD
BASEBALL
Parkview Dr
WALKING TRAIL
YOUTH BASEBALL
N
W
E
S
SCALE: 1" = 250'
© 2015 Google
Google


FLAG FOOTBALL FIELDS
Panther Trail
Vicki Lynn St
N
W
E
S
SCALE: 1" = 100'
© 2015 Google
Google

Municipal Facility Detail Sheet

Cabot Animal Shelter

2951 S. 1st Street

- 34 Outside Dog Kennels
- 34 Inside Dog Kennels
- 3 Free Roaming Cat Rooms Facilitating Up to 40 Cats
- Average Annual Intake of 2,300 Animals
- With a Large Adoption Rate, Animals Being Returned to Their Owners & Working With Animal Rescue Facilities, Over 2,200 Animals Leave Cabot Animal Shelter Annually
- Offers Low Cost Spay/Neuter Clinics Each Tuesday With An Annual Average of 700 Animals
- 2 Vaccination Clinics Annually – 700 Animals Served
- 2 Microchip Clinic Annually – 250 Animals Served

Municipal Facility Detail Sheet

Cabot Street Department

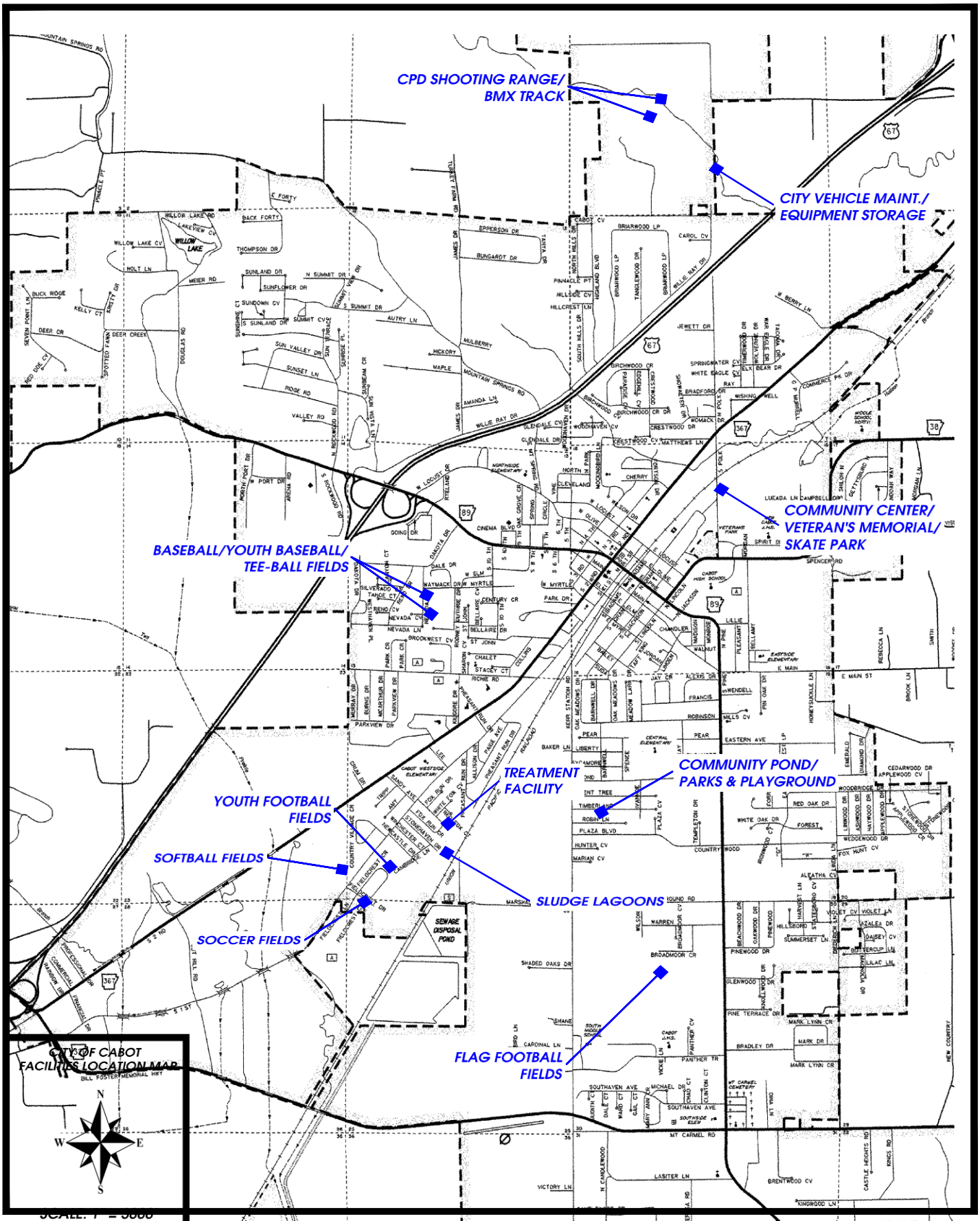
Vehicle/Equipment Maintenance Facility

2301 Willie Ray Drive

- Approximately 20 Acres Facility
- Storage of All Materials For Street Repair & Maintenance
- Storage of All Equipment Related to Street Repair & Maintenance
- Vehicle & Equipment Maintenance & Repair Performed at Facility
- Fully Contained Fuel Storage Facility


GRAVEL, SAND, DIRT, ASPHALT, ETC. STORAGE
VEHICLE/EQUIP. WASH STATION
EQUIP. STORAGE
FUEL STORAGE TANKS
EQUIP. STORAGE
EQUIP. STORAGE
NON COMMISSIONED VEHICLE/EQUIP. STORAGE AREA
N
W
E
S
SCALE: 1" = 80'

Appendix C


CPD SHOOTING RANGE/
BMX TRACK
CITY VEHICLE MAINT./
EQUIPMENT STORAGE
COMMUNITY CENTER/
VETERAN'S MEMORIAL/
SKATE PARK
BASEBALL/YOUTH BASEBALL/
TEE-BALL FIELDS
TREATMENT
FACILITY
COMMUNITY POND/
PARKS & PLAYGROUND
YOUTH FOOTBALL
FIELDS
SOFTBALL FIELDS
SLUDGE LAGOONS
SOCCER FIELDS
FLAG FOOTBALL
FIELDS
SEWAGE
DISPOSAL
POND
CITY OF CABOT
FACILITIES LOCATION MAP
N
W
E
S

Appendix D

BMP SELECTION MATRIX

BMP	DATE	Activities, Facilities, or Land Uses BMP is applied to	REGULAR INSPECTION FREQUENCY	MEASUREMENT OF EFFECTIVENESS
	□ Addition to original matrix		circle one: days _____ weeks months	
Noted Variations from Fact Sheet			**Inspection Notes**	**MEASURABLE GOAL(s)**
		TRAINING PLAN □ Training event added to plan		
BMP	**DATE**	**Activities or Facilities BMP is applied to**	**REGULAR INSPECTION FREQUENCY**	**MEASUREMENT OF EFFECTIVENESS**
	□ Addition to original matrix		circle one: days _____ weeks months	
Noted Variations from Fact Sheet			**Inspection Notes**	**MEASURABLE GOAL(s)**
		TRAINING PLAN □ Training event added to plan		
BMP	**DATE**	**Activities or Facilities BMP is applied to**	**REGULAR INSPECTION FREQUENCY** circle one: days weeks months	**MEASUREMENT OF EFFECTIVENESS**
	□ Addition to original matrix			
Noted Variations from Fact Sheet			**Inspection Notes**	**MEASURABLE GOAL(s)**
		TRAINING PLAN □ Training event added to plan		

Appendix E

Annual Municipal Employee Training and Education Plan

Date of Plan: _____

Plan Dates: _____ Permit #: _____

Permit Cycle Year: _____

This plan provides an outline of training and education activities for the municipality's employees (and contractors as applicable) for the dates indicated. This plan does not inhibit the potential to pursue and/or conduct other training activities the municipality may deem necessary during the permit cycle year. This plan is developed to help document the municipality's compliance efforts with the selected and implemented Best Management Practice (BMP) GH-1 "Employee Training and Education."

Training Event	Target Employee Audience	Planned Frequency (if applicable)	Topic(s)/Description

Training Event	Target Employee Audience	Planned Frequency (if applicable)	Topic(s)/Description

The municipality will conduct operations with the goal of completing all events listed to the Maximum Extent Practicable (MEP).

Signature of Authorized Municipal Representative

Date

Printed Name of Authorized Municipal Representative

Appendix F

Implemented BMPs

RESERVED FOR FUTURE USE

Appendix G

BMP Implementation & Maintenance Schedule

RESERVED FOR FUTURE USE

Appendix H

Activity Record

Record A-

Permit #: _____

Activity Description: _____

Activity Date: _____ □ Planned Activity

Activity Performed by: _____ □ Result of an Inspection

Purpose of Activity:

Details of Activity: □ Information attached (i.e. photos, truck tickets, etc.)

Follow-up information or additional notes:

_____ _____

Signature of Authorized Municipal Representative Date

_____

Printed Name of Authorized Municipal Representative

Appendix I

Inspection, Event, and Activity Log

Permit #: _____ Page #: _____

Record #	Date	Description	Record Type			Associated Records (by Record #)	Note(s)
			Inspection	Event	Activity		

Appendix J

Training and Education Log

Permit #: _____ Page #: _____

Record #	Date	Description	Items Reviewed			Location			Note(s)
			BMPs	SWMP	Other	In-House	In-Field	Other	

Appendix K

Training Record

Record:

Permit #: _____

Training Event Title/Description: _____

_____

Training Event Date: _____ □ Planned Event

Training Event Location: _____

General Topic(s) Reviewed:

□ General Stormwater Awareness □ Other: _____

□ Good Housekeeping BMPs □ Other: _____

□ Illicit Discharge & Detection □ Other: _____

□ Other: _____ □ Other: _____

Specific Topic(s) Reviewed (if applicable): □ Information attached

Attendance Log: □ Attendance Log attached

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Signature of Authorized Municipal Representative Date

Printed Name of Authorized Municipal Representative

_____

Appendix K

MCM #6 Contractor Training Record

Municipality: _____ **Record:**

Permit #: _____

Contractor Name & Address: _____

Contractor Responsible Person: _____

Training Event Title/Description: _____

_____

Training Event Date: _____ □ Planned Event

Training Event Location: _____

General Topic(s) Reviewed:

□ General Stormwater Awareness □ Other: _____

□ Good Housekeeping BMPs □ Other: _____

□ Illicit Discharge & Detection □ Other: _____

□ Other: _____ □ Other: _____

Specific Topic(s) Reviewed (if applicable): □ Information attached

Attendance Log: □ Attendance Log attached

_____ _____

_____ _____

_____ _____

_____ _____

Printed Name of Authorized Municipal Representative

Signature of Authorized Municipal Representative Date

Printed Name of Authorized Municipal Representative

Appendix L

City of Cabot

Construction Site Runoff Control

Construction Site Assessment		
Permit #	**Contractor:**	
Inspection Date:	**Address:**	
ADEQ Permit: □ Yes □ No	**Notice Posted: □ Yes □ No**	**ADEQ Mailbox: □ Yes □ No**
SWPPP: □ Yes □ No □ Incomplete	**Grading Permit: □ Yes □ No □ N/A**	
Receptacle For Solid Waste: □ Yes □ No □N/A	**Trash On-Site: □ Yes □ No □ N/A**	
Concrete Washout Area: □ Yes □ No □ N/A		
Condition of Concrete Washout Area : □ Good □ Fair □ Poor □ N/A		
Stabilization & Erosion Control Measures : □ Good □ Fair □ Poor		
List deficiencies, if any (silt fence, seeding, etc.)		
Sediment Leaving Site: □ Yes □ No	**Evidence of Off-Site Tracking: □ Yes □ No**	
Sediment Entering Waters of the State: □ Yes □ No	**On-Site Restroom: □ Yes □ No**	
Are Inspections Conducted & Records Kept as Required in the Permit: (i.e. Weekly Inspection Sheets) □ Yes □ No Date of Last Inspection:		
Rain Gauge Present: □ Yes □	**Are Rainfall Totals Recorded: □ Yes □ No**	

No	
Stop Work Order Issued: □ Yes □ No	**Code Violation Issued: □ Yes □ No**
Deadline for Corrections to be Made:	
Other Comments:	
Inspector:	

Appendix M

Event Record

Record E-

Permit #: _____

Event Description: _____

Event Date: _____ Observed by: _____

Type of Event (select all applicable items):

- □ Rain Event
- □ Illicit Discharge
- □ Non-stormwater Discharge
- □ Emergency Spill Response
- □ BMP Failure
- □ Other: _____

Details of Event:

□ Information attached (i.e. photos, etc.)

Planned Follow-up Action:

- □ Inspection
- □ Activity
- □ Enforcement
- □ Remediation

Other Notes:

_____

Signature of Authorized Municipal Representative

Date

_____

Printed Name of Authorized Municipal Representative

Appendix N

Waste Disposal Plan

RESERVED FOR FUTURE USE

Appendix O

Spill Response and Control Plan

RESERVED FOR FUTURE USE

Appendix P

Monitoring Report

Report #: _____

Permit #: _____

Monitoring Date: _____

Sample(s) collected

□ Yes □ No

□ Field Monitoring □ Analytical Monitoring (attach report)

Only complete the general information, general observations, summary of monitoring and follow-up actions, and signatory sections

General Information		**Sample Information (if applicable)**
Weather Condition(s) □ Clear □ Partly Cloudy □ Cloudy	Precipitation □ Misty □ Light Rain □ Rain □ Heavy Rain □ Snow □ Hail □ Other: _____	Sample Acquisition Location
Wind Condition □ None □ 1 to 10 mph □ Greater than 10 mph		Location ID (if applicable) Sample ID # Sample Collected By:
Were additional samples collected in immediate area? □ Yes □ No Report#: _____		

General Observations	
□ Odor □ Foam □ Color □ Other: _____	DESCRIPTION

Appendix P

Analysis Summary-Sample Testing (Field Monitoring)

Meter/Kit(s) Used: _____

Sample analyzed for (indicators): _____

Testing Results:

Indicator	Result

Analysis Summary-Visual Observations (Field Monitoring)

Observation Results:

Indicator	Probable Pollutant

Summary of Monitoring and Follow-Up Actions

_____ _____

Signature of Monitor Date

_____

Printed Name of Monitor

_____ _____

Signature of Authorized Municipal Representative Date

_____

Printed Name of Authorized Municipal Representative

Appendix Q

Monitoring Activity Log

Permit #: _____ Page #: _____

Sample ID #	Report #	Date of Sample Acquisition	Observations and Results	Report Type		Location	Note(s)
				Field	Analytical		

Appendix R

Pollutant Guidance Table

This table is designed to provide overview guidance of possible pollutants along with sample testing indicators and observable pollutants.

Permit #: _____ Page #: _____

CATEGORY	CHEMICAL/MATERIAL	OBSERVATIONS	ANALYSIS INDICATORS	NOTES
Asphalt	Hot Asphalt	Visually Observable: Rainbow surface and/or brown suspension	No testing required (visually observable)	
	Liquid Asphalt			
	Cold Mix			
	Asphalt Concrete			
Cleaning Products	Acids	Not Visually Observable	High pH and acidity	pH meter
	Bleaches		Chlorine	Chlorine test kit
	Solvents		VOC & SVOC	EPA methods req.
	Detergents	Foam	No testing required (visually observable)	
	Ammonia	Strong smell	Ammonia	Ammonia meter
Concrete and Masonry Products	Portland Cement (PCC)	Milky liquid	No testing required (visually observable)	
	Mortar			
	Concrete Rinse Water			
	Masonry Products	Not Visually Observable	Low pH and alkalinity	pH meter
	Concrete/Masonry Sealants	Not Visually Observable	Methyl Methacrylate, Cobalt, Zinc	EPA methods req.
Landscaping Products	Soil Amendments	Not Visually Observable	Nitrates, Phosphates, Sulfates, Other Metals	EPA methods req.
	Fertilizers			
	Herbicides & Pesticides		Herbicide and pesticide chemicals	Per lab
	Lime		alkalinity	pH meter
	Soil & Sediment	Cloudiness, muddy, turbidity	No testing required (visually observable)	
Other	Petroleum, Fuels, & Oils	Rainbow Surface, Sheen, and Odor	No testing required (visually observable)	
	Chlorinated Water	Not Visually Observable	Total Chlorine	Chlorine test kit
	Adhesives		Phenols, SVOC	EPA methods req.
	Salts (Magnesium Chloride, Calcium Chloride, and Natural Brines)		Chloride, Cations, TDS	TDS Meter, EPA methods req.
	Antifreeze and similar	Colored liquid	No testing required (visually observable)	
	Batteries	Not Visually Observable	Lead, sulfuric acid, pH	pH meter & other

Appendix R

Paint Products	Paint	Colored liquid/paint	No testing required (visually observable)	
	Paint Strippers	Not Visually Observable	VOC, SVOC, COD	EPA methods req.
	Sealants			
	Lacquers, Varnish, etc.			
	Thinners & Solvents			
Special	Sewage	Odor (and floatables at times)	Ammonia (>1 mg/L)	Ammonia meter
	Mining Waste	Generally not observable	Contaminant Specific	Per lab
	Industrial Waste			
	Treated Wood Products	Not Visually Observable	Arsenic, Copper, Zinc	EPA methods req.
	Bacteria	Generally not observable	Bacteria Specific	Per lab

NOTES

1. A note of "EPA methods req." indicates an approved EPA method for testing for a specific pollutant is required (e.g. Method EPA 625 is used for testing SVOC).

2. A note of "Per lab" indicates there may a wide range of potential pollutants and may require multiple testing methods.

3. Potential pollutants to be tested may not be limited to the items in the table. Add additional sheets to this table outlining guidance for testing.

4. In a sampling report, note if pollutants tested were field tested or lab (or similar) tested. Provide proper chain-of-custody forms for analytical lab testing.

5. Primary source of information in the table provided by California Department of Transportation Construction Site Monitoring Program Guidance Manual, 2012 edition

6. Explanation of Acronyms:

COD: Chemical Oxygen Demand

EPA: United States Environmental Protection Agency

SVOC: Semi-volatile organic compounds

TDS: Total Dissolved Solids

VOC: Volatile Organic Compounds

7. Contact a certified laboratory or similar type entity for additional or specific guidance if necessary or applicable, including analytical guidelines for specific pollutants.

8. Hazardous or similar materials will provide specific pollutants of concern in Material Safety Data Sheets (MSDS).

- **Part Number:** 1910
- **Part Title:** Occupational Safety and Health Standards
- **Subpart:** H
- **Subpart Title:** Hazardous Materials
- **Standard Number:** 1910.119 App A
- **Title:** List of Highly Hazardous Chemicals, Toxics and Reactives (Mandatory).

This Appendix contains a listing of toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity.

CHEMICAL NAME	CAS*	TQ**
Acetaldehyde	75-07-0	2500
Acrolein (2-Popenal)	107-02-8	150
Acrylyl Chlorde	814-68-6	250
Allyl Chlorid	107-05-1	1000
Allylamine	107-11-9	1000
Alkylaluminum	Varies	5000
Ammonia, Anhydrous	7664-41-7	10000
Ammonia solutions (greater than 44% ammonia by weight)	7664-41-7	15000
Ammonium Perchlorate	7790-98-9	7500
Ammonium Permanganate	7787-36-2	7500
Arsine (also called Arsenic Hydride)	7784-42-1	100
Bis(Chloromethyl) Ether	542-88-1	100
Boron Trichloride	10294-34-5	2500
Boron Trifluoride	7637-07-2	250
Bromine	7726-95-6	1500
Bromine Chloride	13863-41-7	1500
Bromine Pentafluoride	7789-30-2	2500
Bromine Trifluoride	7787-71-5	15000
3-Bromopropyne (also called Propargyl Bromide)	106-96-7	100
Butyl Hydroperoxide (Tertiary)	75-91-2	5000
Butyl Perbenzoate (Tertiary)	614-45-9	7500
Carbonyl Chloride (see Phosgene)	75-44-5	100
Carbonyl Fluoride	353-50-4	2500
Cellulose Nitrate (concentration greater than 12.6% nitrogen	9004-70-0	2500
Chlorine	7782-50-5	1500
Chlorine Dioxide	10049-04-4	1000
Chlorine Pentrafluoride	13637-63-3	1000
Chlorine Trifluoride	7790-91-2	1000
Chlorodiethylaluminum (also called Diethylaluminum Chloride)	96-10-6	5000
1-Chloro-2,4-Dinitrobenzene	97-00-7	5000
Chloromethyl Methyl Ether	107-30-2	500
Chloropicrin	76-06-2	500
Chloropicrin and Methyl Bromide mixture	None	1500
Chloropicrin and Methyl Chloride mixture	None	1500
Cumene Hydroperoxide	80-15-9	5000
Cyanogen	460-19-5	2500
Cyanogen Chloride	506-77-4	500
Cyanuric Fluoride	675-14-9	100
Diacetyl Peroxide (concentration greater than 70%)	110-22-5	5000
Diazomethane	334-88-3	500
Dibenzoyl Peroxide	94-36-0	7500
Diborane	19287-45-7	100
Dibutyl Peroxide (Tertiary)	110-05-4	5000

Dichloro Acetylene	7572-29-4	250
Dichlorosilane	4109-96-0	2500
Diethylzinc	557-20-0	10000
Diisopropyl Peroxydicarbonate	105-64-6	7500
Dilauroyl Peroxide	105-74-8	7500
Dimethyldichlorosilane	75-78-5	1000
Dimethylhydrazine, 1,1-	57-14-7	1000
Dimethylamine, Anhydrous	124-40-3	2500
2,4-Dinitroaniline	97-02-9	5000
Ethyl Methyl Ketone Peroxide (also Methyl Ethyl Ketone Peroxide; concentration greater than 60%)	1338-23-4	5000
Ethyl Nitrite	109-95-5	5000
Ethylamine	75-04-7	7500
Ethylene Fluorohydrin	371-62-0	100
Ethylene Oxide	75-21-8	5000
Ethyleneimine	151-56-4	1000
Fluorine	7782-41-4	1000
Formaldehyde (Formalin)	50-00-0	1000
Furan	110-00-9	500
Hexafluoroacetone	684-16-2	5000
Hydrochloric Acid, Anhydrous	7647-01-0	5000
Hydrofluoric Acid, Anhydrous	7664-39-3	1000
Hydrogen Bromide	10035-10-6	5000
Hydrogen Chloride	7647-01-0	5000
Hydrogen Cyanide, Anhydrous	74-90-8	1000
Hydrogen Fluoride	7664-39-3	1000
Hydrogen Peroxide (52% by weight or greater)	7722-84-1	7500
Hydrogen Selenide	7783-07-5	150
Hydrogen Sulfide	7783-06-4	1500
Hydroxylamine	7803-49-8	2500
Iron, Pentacarbonyl	13463-40-6	250
Isopropylamine	75-31-0	5000
Ketene	463-51-4	100
Methacrylaldehyde	78-85-3	1000
Methacryloyl Chloride	920-46-7	150
Methacryloyloxyethyl Isocyanate	30674-80-7	100
Methyl Acrylonitrile	126-98-7	250
Methylamine, Anhydrous	74-89-5	1000
Methyl Bromide	74-83-9	2500
Methyl Chloride	74-87-3	15000
Methyl Chloroformate	79-22-1	500
Methyl Ethyl Ketone Peroxide (concentration greater than 60%)	1338-23-4	5000
Methyl Fluoroacetate	453-18-9	100
Methyl Fluorosulfate	421-20-5	100
Methyl Hydrazine	60-34-4	100
Methyl Iodide	74-88-4	7500
Methyl Isocyanate	624-83-9	250
Methyl Mercaptan	74-93-1	5000
Methyl Vinyl Ketone	79-84-4	100
Methyltrichlorosilane	75-79-6	500
Nickel Carbonly (Nickel Tetracarbonyl)	13463-39-3	150
Nitric Acid (94.5% by weight or greater)	7697-37-2	500
Nitric Oxide	10102-43-9	250
Nitroaniline (para Nitroaniline	100-01-6	5000
Nitromethane	75-52-5	2500
Nitrogen Dioxide	10102-44-0	250
Nitrogen Oxides (NO; NO(2); N2O4; N2O3)	10102-44-0	250
Nitrogen Tetroxide (also called Nitrogen Peroxide)	10544-72-6	250
Nitrogen Trifluoride	7783-54-2	5000
Nitrogen Trioxide	10544-73-7	250
Oleum (65% to 80% by weight; also called Fuming Sulfuric Acid)	8014-94-7	1000
Osmium Tetroxide	20816-12-0	100
Oxygen Difluoride (Fluorine Monoxide)	7783-41-7	100
Ozone	10028-15-6	100
Pentaborane	19624-22-7	100
Peracetic Acid (concentration greater 60% Acetic Acid; also called Peroxyacetic Acid)	79-21-0	1000
Perchloric Acid (concentration greater than 60% by weight)	7601-90-3	5000
Perchloromethyl Mercaptan	594-42-3	150
Perchloryl Fluoride	7616-94-6	5000
Peroxyacetic Acid (concentration greater than 60% Acetic Acid; also called Peracetic Acid)	79-21-0	1000
Phosgene (also called Carbonyl Chloride)	75-44-5	100

Phosphine (Hydrogen Phosphide)	7803-51-2	100
Phosphorus Oxychloride (also called Phosphoryl Chloride)	10025-87-3	1000
Phosphorus Trichloride	7719-12-2	1000
Phosphoryl Chloride (also called Phosphorus Oxychloride)	10025-87-3	1000
Propargyl Bromide	106-96-7	100
Propyl Nitrate	627-3-4	2500
Sarin	107-44-8	100
Selenium Hexafluoride	7783-79-1	1000
Stibine (Antimony Hydride)	7803-52-3	500
Sulfur Dioxide (liquid)	7446-09-5	1000
Sulfur Pentafluoride	5714-22-7	250
Sulfur Tetrafluoride	7783-60-0	250
Sulfur Trioxide (also called Sulfuric Anhydride)	7446-11-9	1000
Sulfuric Anhydride (also called Sulfur Trioxide)	7446-11-9	1000
Tellurium Hexafluoride	7783-80-4	250
Tetrafluoroethylene	116-14-3	5000
Tetrafluorohydrazine	10036-47-2	5000
Tetramethyl Lead	75-74-1	1000
Thionyl Chloride	7719-09-7	250
Trichloro (chloromethyl) Silane	1558-25-4	100
Trichloro (dichlorophenyl) Silane	27137-85-5	2500
Trichlorosilane	10025-78-2	5000
Trifluorochloroethylene	79-38-9	10000
Trimethyoxysilane	2487-90-3	1500

Footnote* Chemical Abstract Service Number
Footnote** Threshold Quantity in Pounds (Amount necessary to be covered by this standard.)

[57 FR 7847, Mar. 4, 1992]

Next Standard (1910.119 App B)

Regulations (Standards - 29 CFR) - Table of Contents

Potential Pollutants Likely Associated With Specific Municipal Activities Appendix R

Municipality Facility Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil/Grease	Organics	Pesticides	Oxygen Demanding Substances
Building & Grounds Maintenance & Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling & Disposal	X	X	X	X	X	X	X	X	X
Vehicle & Equipment Fueling			X	X		X	X		
Vehicle & Equipment Maintenance & Repair				X		X	X		
Vehicle & Equipment Washing/Steam Cleaning	X	X	X	X		X	X		
Outdoor Loading & Unloading of Material	X	X	X	X		X	X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Overwater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X

Appendix R

Potential pollutants likely associated with municipal activity

Municipal Program	Activities	Potential Pollutants								
		Sediment	Nutrients	Trash	Metals	Bacteria	Oil/Grease	Organics	Pesticides	Oxygen Demanding Substances
Water & sewer utility operation & maintenance	Water line maintenance	X				X	X			
	Sanitary sewer maintenance	X				X	X			X
	Spill/leak/overflow control, response & containment	X	X			X		X		X
Waste handling & disposal	Solid waste collection		X	X	X	X	X	X		X
	Waste reduction & recycling			X	X					X
	Household hazardous waste collection			X	X		X	X	X	
	Controlling litter			X	X	X		X		X
	Controlling illegal dumping	X		X		X	X		X	X
Drainage system operation and maintenance	Inspection & cleaning of stormwater conveyance structures	X	X	X		X		X		X
	Controlling illicit connections & discharges	X	X	X	X	X	X	X	X	X
	Controlling illegal dumping	X	X	X	X	X	X	X	X	X

	Maintenance of inlet & outlet structures	X		X	X		X			X
Landscape maintenance	Mowing/trimming/planting	X	X	X		X			X	X
	Fertilizer & pesticide management	X	X						X	
	Managing landscape wastes			X					X	X
	Erosion control	X	X							
Fountains, pools, lakes and lagoons maintenance	Fountain & pool draining		X					X		
	Lake & lagoon maintenance	X	X	X		X			X	X
Plaza, sidewalk and parking lot maintenance & cleaning	Surface cleaning	X	X			X	X			X
	Graffiti cleaning	X	X		X			X		
	Sidewalk repair	X		X						
	Controlling litter	X		X		X	X			X
Roads, streets and highway operations & maintenance.	Sweeping & cleaning	X		X	X		X			X
	Street repair, maintenance, and striping/painting	X		X	X		X	X		
	Bridge & structure maintenance	X		X	X		X	X		

Appendix S

Annual Reports

RESERVED FOR FUTURE USE

Appendix T

O&M Program Modifications

RESERVED FOR FUTURE USE

Appendix U

BMP Development Sheet

ID #:

Permit #: _____

BMP Title: _____

BMP Description (Protocols, Considerations, etc.):

Measurable Goals:	Measurement of Effectiveness:

Notes

Implementation Schedule and Responsibilities