



**Introduction to Construction
Plan Implementation**

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INTRODUCTION TO CONSTRUCTION PLAN IMPLEMENTATION

The success of any construction project starts with good construction site management and the use and implementation of the construction plans, including the storm water pollution prevention plan.

Good construction site management is key to the application of the principles and implementation of the storm water management measures specified in the storm water pollution prevention plan. This includes each measure being installed according to the sequence of construction, in the proper location(s), and according to design/installation specifications. Storm water management measures that are improperly installed may have little or no effect and potentially may cause more damage.

Implementation of the construction plans and the storm water pollution prevention plan through good construction site management can be a very cost-effective process. Following is a partial list of construction site management tips that should be implemented on every project site.

- Prior to beginning the project, review all permits and permit conditions associated with the project. It is important that all permits are secured prior to the initiation of any land-disturbing activity. If there are permits that have not been obtained or are in the process of being obtained, do not work in those areas that are directly related to the permit.
- In an effort to ensure construction plans are appropriately implemented it is important that contractors, subcontractors, and others involved in the project understand the objectives of the project. One way to achieve good coordination and communication is to hold a preconstruction meeting. Preconstruction meetings are discussed in more depth in the Preconstruction Meetings section on pages 5-9 in this chapter.
- Preconstruction meetings are an important part of implementing a construction plan. However, it is also important to conduct routine meetings throughout the life of the project to explain issues and coordinate activities associated with the construction process and the implementation of the storm water pollution prevention plan.
- Prior to initiating any land-disturbing activities, a representative for the project should walk the site with the construction plans in hand and mark the limits of construction that were established during the planning phase. Areas to be protected should be marked with rope, safety fencing (commonly orange colored), or surveyor flags. Signage can also be used to identify and explain limits of construction and areas that are to be protected from construction activities.
- Individuals responsible for the installation and maintenance of storm water quality measures must be skilled, experienced, trained, and have an understanding of the purpose and function of storm water quality measures. At a minimum, at least one individual should be assigned the responsibility of overseeing installation and maintenance of the storm water quality measures.
- Each storm water quality measure should be inspected for performance. In fact, the entire project should be monitored to assess the performance of each measure and the effective-

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ness of the storm water pollution prevention plan. When deficiencies are discovered, appropriate steps should be taken to repair, replace, or select alternative measures that adequately address the issue. Additional information for the development of a quality assurance plan and site inspections can be found in Chapter 6, “Developing & Implementing a Quality Assurance Program.”

- The objective of storm water pollution prevention plans is to eliminate or reduce problems associated with storm water runoff. Plan designers do their best to anticipate project activities and site management issues that may be associated with the project. However, the nature of construction and project dynamics can heavily influence the need for modification or an amendment to the plan. It is not practical or possible to anticipate every conceivable situation that may occur during the life of the project. It is for this reason that every project should have a quality assurance plan. A project’s quality assurance plan should outline specific requirements for the inspection and monitoring of the overall effectiveness of the storm water pollution prevention plan.

Storm water pollution prevention plans should be flexible documents and changes to the project should be anticipated. Most corrective actions and modifications will occur in the field. These changes may require modifications to the plans, especially when there is a change in design, construction operations, or maintenance activities that could have a significant effect on the discharge of storm water from the site. Modifications may also be required if an inspection indicates that the plan or a specific storm water quality measure is not effective at addressing storm water discharge or runoff management.

Regulatory agencies may require resubmittal of plans and approvals for plan modifications when changes must be made to a project. Therefore, project site managers and other representatives of the project should become familiar with local regulatory requirements for plan modifications and resubmittal.

PRECONSTRUCTION MEETINGS

Before any land disturbance occurs on a project site, it is important that all participants have a clear understanding of the project and associated construction activities. One method to ensure that the project will run smoothly and that construction activities are coordinated is to hold a preconstruction meeting. The intent of preconstruction meetings is to coordinate project activities in relation to the construction plans.

Typically preconstruction meetings are held after construction plans have been approved by regulatory agencies. This manual is focused on environmental and natural resource issues; however a preconstruction meeting is not limited to this topic alone and can be beneficial to the overall coordination of the project. The intent of this section of the storm water manual is to focus on coordination of storm water issues and environmental aspects of the project.

As noted above, all projects should start with a preconstruction meeting. Preconstruction meetings can prevent or preempt many problems commonly associated with construction sites. Preconstruction meetings are an opportunity for all interested parties to meet face to face. These meetings help establish working relationships and provide a strong foundation for open communication with all parties involved in the project.

Preconstruction meetings should focus on design components, storm water quality issues, environmental issues, and other project components that warrant interaction and coordination between parties involved in project development and implementation. Plans are often designed without considering the dynamics of a construction site or the manner in which a contractor will approach work at the construction site. From the contractor's perspective, "Does the plan make sense?" There should be dialogue between the plan designer and contractor(s) to exchange ideas and solutions. This dialogue is generally initiated by the plan designer. Project site managers and inspectors also have an interest in these discussions because eventually they will be responsible for implementation of the plan and overall management of the site. The closer the working relationship between all project participants, the more successful the project.

Potential participants in preconstruction meetings include but are not limited to project site owners or their representatives, plan designers, project engineers, site managers, general or primary contractors, construction foremen/managers, subcontractors, key construction staff, utility representatives, and local and state regulatory officials.

Construction plans should be the focal point of a preconstruction meeting. Participants should receive copies of the construction plans and have ample time to review them prior to the meeting. When reviewing the plans, participants should pay special attention to construction phases, design drawings, details and specifications of construction elements, the sequence of construction, and other key elements that are associated with the project.

PRECONSTRUCTION MEETINGS

Preconstruction Meeting Guidance

- Develop a meeting agenda.
- Introduce all attendees and identify their role in the project.
- Hold the meeting at or near the site. It can be advantageous to hold the meeting at a facility that enables formal presentations of project details. However, it is also important that time is spent walking the entire project area to familiarize everyone with the project and the site conditions.
- Take minutes of the meeting and record all issues and decisions. Assign responsibility for each action item and assign one individual to ensure that all actions are addressed according to schedule.
- Changes that are made during the meeting may need approval from the regulating entity. If those changes are required through plan modification or other means the project site owner or their representative should submit the information to the appropriate regulatory authority. Additionally, project changes may also prompt the need for amended or additional permits to conduct a specific activity. It is the responsibility of the project site owner or their representative to investigate the need for additional permits and obtain those permits.
- Develop a directory of all participants (see the Project Resource Directory section on pages 8-9 in this chapter).

Topics & Information to Be Covered

- Discuss the scope of the project, including goals and objectives.
- Designate individuals who will be responsible for critical issues associated with the project.
 - Identify who is responsible for the implementation of the storm water pollution prevention plan, including proper installation and maintenance of storm water quality measures.
 - Identify who will have daily responsibility for inspection of project activities on behalf of the project site owner.
 - Identify a designated individual(s) who will specifically communicate with regulatory agency personnel.
- Review the construction plans, including the storm water pollution prevention plan.

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- Discuss construction operations, including plans and schedules for clearing, grading, and cut and fill operations.
- Identify and discuss the limitations of construction activities.
 - ◆ Identify all buffers and/or natural areas that are to be protected. Discuss the measures that have been identified for protection of these areas and re-enforce that these areas are not to be used for staging, parking, material storage, waste disposal, or other unintended uses.
 - ◆ Discuss all significant resources within the watershed and identify construction limits and storm water quality measures chosen to minimize environmental impacts to these resources.
- Review and discuss storm water quality measures that are to be implemented, including location, design standards, installation procedures, and maintenance requirements.
- Review and discuss the construction sequence, especially the relationship between land disturbance and the installation of appropriate storm water quality measures. All parties should understand the construction sequence. Elements of the construction sequence that may cause conflict in the overall operational procedures of the project should be discussed and addressed so that revisions to the plan can be made.
- Explain phasing of any project operations.
- Identify and locate existing utilities. If utilities are to be relocated, coordinate the operation with the appropriate utility representative.
- Review all permits associated with the project.
 - Ensure that everyone has a clear understanding of permit conditions and requirements.
 - Verify that all appropriate permits have been obtained.
 - Explain the status of any permits that have not been applied for or that are pending approval. Explain the consequences and impact that the permit will have on operations if the permits are not issued before an activity begins.
- Describe the project's quality assurance program.
 - Explain the inspection schedule that will be implemented.
 - Explain the authority of the inspector and how project deficiencies will be addressed.

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- Additional information regarding development of a quality assurance program can be found in the Developing & Implementing a Quality Assurance Program section on pages 11-21 in this chapter.
- Review procedures for handling and storage of on-site construction materials and proper emergency response protocols in the event there is a spill or leak.
- Review other specific items applicable to the project.

Topics & Information to Be Covered by Regulatory Authority

- Emphasize to all parties involved with the project that the storm water regulations are performance based and that they will be enforced.
 - All storm water quality measures should be installed according to the plans and the sequence of construction.
 - Additional storm water quality measures may be required beyond the scope of the plan to address those issues that could not be predicted during plan development.
- Explain the regulatory process to all parties.
- Make sure everyone understands regulatory procedures including submittal of paperwork and official notifications that will occur.
- Explain the process for changing or modifying plans. Discuss pre-approval of plan modifications and who is responsible for approving the modifications.

NOTE: This process may vary based on local and state regulations because it is the responsibility of the regulatory agency to establish criteria and procedures in accordance with their ordinances, rules, and laws that establish their authority. In fact, some regulatory authorities may not require any pre-approval for the change or modification of plans.

- Advise participants that inspections for compliance will be conducted and explain the procedures that will be used to conduct inspections.
- Discuss the consequences of non-compliance.

Project Resource Directory

A project resource directory should be created for every project. A project resource directory is a document containing information that can be used to expedite response times to emergencies, project site problems, and other project-

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related issues. A typical project resource directory includes the names, mailing addresses, phone numbers, e-mail addresses, and fax numbers of various individuals involved in the project. The directory normally includes the project site owner, project engineer, primary contractor, site managers, project inspector, subcontractors, and regulatory and enforcement personnel. In addition to this information, the directory should include the responsibility of each individual.

If plan implementation and the project are to be successful, it is essential that everyone involved with the project understand the construction plans, their role and responsibility in the project, and the roles and responsibilities of others involved with the project.

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Responsibility for storm water management does not end with the installation of storm water measures. Storm water measures require a high level of maintenance if they are to function efficiently. In general, failure to monitor and maintain storm water quality measures is the primary reason for their failure. Therefore, to ensure that the storm water measures function as designed, a quality assurance plan should be developed and implemented on every project.

A quality assurance plan should outline site management strategies, including inspection and maintenance of the individual storm water management measures. It is also important to designate a person or persons responsible for implementing the quality assurance plan. They should be responsible for ensuring that storm water quality measures are installed at appropriate times and in a timely manner, that the measures are functioning properly, and that the measures are properly maintained.

This section of the storm water manual provides insight into the development and implementation of a quality assurance plan, including an inspection and maintenance program for the overall construction project. Maintenance requirements for individual erosion and sediment control/storm water management measures can be found in Chapter 7, and the requirements for individual, structural post-construction storm water management measures can be found in Chapter 8.

Contents of a Quality Assurance Plan

An effective quality assurance plan contains two key components. The first component focuses on coordinating plan implementation. The second component focuses on the inspection and maintenance of each storm water measure. Each of these components has specific criteria that should be included in their respective sections of the quality assurance plan. Following is a brief listing of some of these elements.

Elements that should be included in the plan implementation section of a quality assurance plan includes, but is not limited to:

- A description of the process that will be used to ensure long-term maintenance of storm water measures, including those implemented for erosion and sediment control.
- Backup contingency plans that can be implemented in the event that supplies are unavailable for the timely installation of specific storm water management measures and the name(s) of the individual(s) responsible for authorizing and performing emergency or corrective actions.
- Provisions for educating all parties associated with the project. Contractors will be involved in a wide array of construction activities throughout the project site and may observe deficiencies or problems. They should be aware of the importance of the quality assurance plan and who to contact when they have concerns.

Elements that should be included in the inspection and maintenance section of a quality assurance plan include but are not limited to:

- Identification of all storm water measures, including erosion and sediment control measures, and critical areas to be inspected.
- An inspection schedule for each construction activity and each storm water measure.
- Instructions for regularly scheduled maintenance and repair of each storm water measure, including the procedure for the repair, who is responsible for the repair, and who should be notified of the repair.

Responsible Staff or Personnel

The individual or individuals designated as the project manager/inspector responsible for implementing the quality assurance plan should be identified early in the process. This individual(s) should be knowledgeable and experienced in erosion and sediment control principles, storm water management, and the installation, function, and maintenance of all storm water measures. The quality assurance plan project manager/inspector should also be familiar with all environmental permits and permit requirements associated with the project.

The project manager/inspector should have a clear understanding of their responsibility to inspect and document site deficiencies, their authority to initiate changes in the field, and if there is a monetary limit associated with the required corrective actions they can initiate.

Once the authority of the project manager/inspector has been established, it should be made known to all contractors and subcontractors associated with the project. Regulatory inspectors should also be notified who the project site owner has designated as the project manager/inspector and what authorities and responsibilities have been granted to this individual.

Installation & Oversight

Project site management involves more than just implementing the storm water pollution prevention plan. It also requires that someone supervise and oversee the implementation of erosion and sediment control measures, on-site construction activities that may generate other pollutants, and post-construction storm water measures.

Project managers/inspectors should be familiar with the project's storm water pollution prevention plan, including the location of all storm water measures and when they are to be installed. He or she should also be knowledgeable about specific locations within the project site that pose a threat for the discharge of pollutants off-site or to a water of the state. In order to achieve full implementation of the plan, it is necessary for the project manager/inspector to coordinate all construction activities with contractors and subcontractors working on the project site. He or she should ensure that the plan is implemented in accordance with the project's construction sequence schedule and that appropriate storm water management measures are installed in conjunction with associated land-disturbing activities.

The project manager/inspector should oversee the installation of all storm water measures to ensure that they are installed according to the standards and specifications contained in the storm water pollution prevention plan. For the storm water measures to function efficiently and effectively, it is critical that they be continuously monitored and evaluated.

Inspection

It is not uncommon to have an excellent storm water pollution prevention plan only to find that an oversight was made in a specific area. The purpose of on-site inspections is to provide the project site owner and/or their representatives with a process to monitor and manage the construction project and address such oversights. Regularly scheduled inspections are essential to maintaining the efficiency and effectiveness of the construction site storm water measures.

An on-site inspection consists of evaluating all storm water measures to ensure they have been installed correctly and that they are functioning properly. Inspections are also a valuable tool for monitoring the implementation of the construction sequence schedule and ensuring that the storm water measures are installed at appropriate times.

To ensure the integrity of storm water measures, it is critical to identify measures that are in need of repair and to identify any areas where additional measures should be implemented to correct a problem. Installed measures will be of little or no use if they have not been properly maintained. Some common reasons why storm water measures often fail include:

- Measures were not adequately maintained.
- Extreme weather conditions.
- Damage from equipment operated by contractors and/or subcontractors.
- Inadequate analysis of the site.
- The design of the measure does not fit the site conditions.
- Measures were incorrectly installed.
- Measures are inadequately sized.
- Improper materials were used.

When implementing an inspection program, it is important to remember that storm water pollution prevention plans are dynamic documents and that it may be necessary to modify some storm water measures or even add additional measures throughout the life of the project.

One final thing to remember in regard to inspection programs is that they are one of the most effective methods for ensuring that all construction activities are in compliance with local, state, and federal regulations.

Inspection and Maintenance Timeline

Quality assurance plans should include a specific schedule for monitoring activities associated with the construction project. The plan should also outline procedures to assure that soil erosion and sediment control measures and storm water management measures are functioning properly.

Once construction activities have begun at a project site, it is not uncommon to have the focus of on-site personnel shift from the storm water pollution prevention plan to other issues associated with construction activities. Therefore, it is critical to establish and implement a schedule ensuring that routine inspections are completed in a timely manner. There are two types of inspections (routine and non-routine) that are critical to the success of a project.

Routine Inspections

Routine inspections are performed at regularly scheduled intervals to ensure that each storm water measure is functioning properly and that construction activities at the project site are in conformance with the storm water pollution prevention plan. At a minimum the entire project site should be inspected weekly during active construction. While this is the minimum requirement, there are several storm water measures that may require more frequent inspection. To maintain the integrity of these later measures, it may be necessary to adjust or increase the frequency of the inspection intervals. Inspection and maintenance guidelines for individual erosion and sediment control measures are provided in Chapter 7 of this manual. Structural post-construction storm water quality measure inspection and maintenance guidelines are provided in Chapter 8.

Non-Routine Inspections

Non-routine inspections are inspections that are conducted in response to a rainfall event or in anticipation of a rainfall event. Non-routine inspections should be conducted following each measurable rainfall event. As a general rule, measurable rainfall events are defined as one-half inch or more of precipitation. In some jurisdictions, the local regulatory authority may have more stringent rules that require more frequent inspections.

Non-routine inspections conducted following a measurable rainfall event are done to ensure that all storm water measures are performing adequately. The inspection should focus on identifying measures that need to be repaired or replaced and areas within the project site that may be contributing to off-site discharge of sediment or other pollutants.

Non-routine inspections conducted prior to a predicted storm event are done as a precautionary measure to ensure that all storm water quality measures are in

working order. In most situations, it is easier to take corrective action before a rainfall event rather than following the event.

Conducting non-routine inspections requires monitoring rainfall events. The easiest way to achieve this is to install a rainfall gauge on the project site. Rainfall gauges should be unobstructed and located away from trees, buildings, and construction equipment. The gauge should be placed atop a sturdy stake or pole and should be emptied after each rainfall event. Rainfall records should be maintained as part of the quality assurance plan and project files. Rainfall data can either be entered directly on the inspection report or tracked on a separate data log.

In addition to routine and non-routine inspections consideration should be given to inspecting the project site after each phase of construction. Below is a list of general guidelines for establishing a construction phase inspection schedule.

- Initial inspections should be performed prior to land grading to ensure all required storm water quality measures have been installed according to the plan.
- Rough grading inspections typically occur during land grading operations and the installation of infrastructure.
- Storm water pollution prevention plan compliance inspections are conducted after sediment traps and other storm water management control measures have been installed and during seeding operations.
- Final grading inspections are conducted when all grading has been completed and drainage systems, paving, and infrastructure have been installed.
- Final stabilization inspections are completed to ensure that all temporary storm water quality measures have been removed, permanent vegetation is established, and permanent storm water quality measures are installed and functioning properly.

Conducting Inspections

Inspection programs can be implemented once an inspection schedule has been finalized and appropriate personnel are in place.

The quality assurance plan project manager/inspector should be familiar with the overall project site and the implementation of the storm water pollution prevention plan, including when all storm water measures are to be installed in relation to grading activities and other construction activities associated with the project. It is especially important that the project manager/inspector be familiar with areas of the project where there is potential for sediment and other pollutants to discharge from the site. This should include areas of concentrated flow or dis-

charge points that have the potential to impact sensitive resources or adjacent properties. Areas of ingress/egress to the project site are another area that needs to be closely monitored and maintained to ensure that tracking of soil material from the site is minimized.

Following is a list of key elements that should be monitored and evaluated when conducting on-site inspections.

- Evaluate the overall effectiveness of each storm water measure and that it meets the design criteria established in the storm water pollution prevention plan. The effectiveness of erosion control measures should be evaluated based on the condition of vegetative cover or evidence of erosion. Effectiveness of sediment control measures will be based on the presence of sediment behind or within the sediment control measure. Each storm water measure should be evaluated to ensure that:
 - Each measure has been installed correctly and to the standards and specifications outlined in the storm water pollution prevention plan.
 - Each measure is functioning and/or performing properly.
 - Measures have not been damaged.
 - Each measure has not exceeded its maintenance requirements.
 - Deficient measures noted on prior inspection reports have been appropriately addressed and corrective actions taken.
 - Measures posing an off-site pollutant discharge threat are identified.
- Evaluate construction activities that may impact the implementation of the storm water pollution prevention plan. Construction and land-disturbing activities are dynamic processes. Sites subject to grading and earthmoving operations can drastically change drainage patterns and increase the size of the drainage area above a storm water management measure. If it is anticipated that the drainage area above a storm water management measure will increase significantly once construction activities begin, the measure within the watershed should be designed to accommodate the additional storm water runoff. If the increased size in the drainage area was not anticipated, it will most likely be necessary to adjust or modify the design of the existing storm water measure and/or install new or additional measures. The project manager/inspector must be cognizant of all land-disturbing activities and must be prepared to make field modifications as the situation warrants.
- Assess areas left void of protective cover. Erosion control is the most effective form of sediment control. Areas that have been brought to final grade or that will remain idle for a period of time (e.g., 15 days or more; local ordi-

nances may be more restrictive) should be stabilized as quickly as possible. If areas can not be stabilized quickly because of weather, construction activities, or other site conditions, the project manager/inspector should be prepared to offer alternatives to address the area of concern.

- Evaluate areas that have been stabilized. Vegetative measures should be evaluated in the early stages of growth to determine the viability of the stand. Evaluate vegetation to determine if there is a need for reseeding, application of fertilizer or lime, or other maintenance items.
- Good housekeeping is another important aspect to any project. The project manager/inspector should always be aware of the other activities at the site that may generate pollutants. This includes but is not limited to chemical storage, waste disposal, concrete washout, and on-site fuel storage. An effective approach to evaluating these types of pollutants includes verifying the adequacy of trash receptacles, reviewing waste disposal practices and procedures (recycling, hazardous waste bins, etc.), reviewing spill prevention plans, and checking the use and integrity of containment systems.

Once deficiencies and issues have been identified and documented, corrective actions need to be taken to ensure the integrity of the storm water measures. Some of these actions include:

- Removal of sediment from sediment control structures.
- Replacement or repair of damaged measures.
- Repair of damaged surface stabilization measures.
- Revised or modified procedures for clean-up of spills and improper handling of project site waste.

Follow-Up and Corrective Actions

One of the most critical steps of any inspection is follow-up and implementation of corrective actions. An inspection may indicate that an existing storm water quality measure is ineffective. A measure that is ineffective or has failed requires immediate corrective action(s). Depending on the severity of the situation corrective actions may require a re-assessment of the impacted area and modification of an existing measure or selection and design of a new measure. The project manager/inspector is the best qualified individual to oversee and coordinate corrective actions. In most situations, he or she can identify who is responsible for taking actions to correct the deficiencies, provide guidance and direction in correcting the deficiency(ies), select alternative measures, and make recommendations. This individual should also be available to meet on site with the project engineer, site designer, and/or contractors to clarify documented deficiencies

and resolve issues that may be associated with the required corrective actions. However, not every situation will warrant a field meeting. Often, issues can be resolved through a telephone call or e-mail.

Some corrective actions may require engineering and design. Therefore, the project manager/inspector may need to coordinate with the project engineer and or site designer to make the appropriate changes. These design changes may also require modification to the construction plans and/or storm water pollution prevention plan.

Corrective actions should be scheduled within 24 hours of an inspection. This is especially true in situations where pending storm conditions are apparent. Deficiencies should be prioritized and corrective actions planned for the most serious deficiencies first, followed by corrective actions for all areas of concern. It is very important to have routine maintenance materials and supplies available at the project site if corrective actions are to be made in a timely manner. Items and materials that should be readily available to project personnel include but are not limited to seed, mulch, and silt fence. Some structural repairs are not always easily corrected, but these types of situations should be anticipated and procedures in place for addressing the area of concern.

Inspection & Project Documentation

When conducting an inspection it is important that the project manager/inspector document his or her findings through a written inventory report or an inspection log.

Information included in the inspection report should include but is not limited to:

- The name of the project manager/inspector.
- Qualifications of the project manager/inspector (may be required by local regulating authorities).
- Date and time of the inspection.
- Weather conditions at the time of the inspection.
- A record of storm events (0.5 inches or more) that have occurred since the last inspection.
- Overall condition of the construction site.
- The condition of each storm water measure and/or area of the project.
- Identification of project areas that may require an alternative storm water quality measure(s) or installation of a measure(s) that had not been identified on the original plan.

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- Required or recommended maintenance actions needed for each storm water measure.
- Actions taken to address deficiencies.
 - Recommendations for corrective action; and/or
 - Corrective action implemented to address the deficiencies.
- Maintenance and repair activities that were performed since the last inspection, who they were performed by, and the condition of the measure.
- Recommendations to amend the plan if unexpected conditions are present that require attention.
- Documentation showing who was given responsibility to address each deficiency.
- Documentation showing who received copies of the report.
- Statement of certification by the inspector that the report is accurate and true.

As the project manager/inspector evaluates a project, he or she should record all their observations. For ease of recording, site inspections can be documented using a standard inspection form or using a small tape recorder. If a tape recorder is used during the evaluation, the information should be transcribed into a written report as soon as possible after the inspection is completed.

A camera can be an invaluable tool for documenting activities and problems observed during the inspection. Digital cameras are particularly well suited for use on construction site inspections. They are small, easy to use, and can provide immediate visual documentation. Pictures should clearly show the deficiency(ies) observed and there should be a clear cross-reference between the photographs and the inspection report.

It is important that inspection logs and/or reports used on the project site meet the individual needs of the project manager/inspector and the project site owner. Reports should adequately represent the project site and should be written in a clear, concise manner. References, deficiencies, and corrective action should be recorded in adequate detail and at a level that is easily understood by project site owners, contractors, and others who need to understand the corrective actions recommended. In some situations, inspection reports may include specific standards and specifications that provide maintenance and/or installation requirements for storm water management measures.

Retention of Project Records

From the very start of a project, all reports and correspondence should be filed in a project site logbook or project file. The purpose of a logbook or project file is to maintain a written record of all correspondence, telephone logs, site inspections, corrective actions and other documents related to the project. Project logbooks or project files should also include all correspondence and inspection reports received from the local regulatory authority, including all corrective actions taken in response to deficiencies noted on the local regulatory authority's on-site inspection reports. A well-maintained logbook or project file will serve as a record of performance and compliance with the storm water pollution prevention plan and local, state, or federal regulations applicable to the project.

It is recommended that all project site records be maintained for a minimum of three years following termination of the project, unless specified otherwise by a regulatory requirement or legal counsel. On some projects it may be necessary to maintain project site records for longer periods of time, especially if there is a pending enforcement or legal action against the project.

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PROJECT CLOSURE

Project closure is the culmination of construction activities and the final step associated with a project. As construction activities are brought to a close it is important to verify that the project has been built as designed and that any outstanding issues are resolved prior to equipment being removed from the project site.

One of the first steps in the project closure process is to review all project documentation, including project logs and inspection reports, to ensure that all requirements, conditions, and specifications have been met. If there are any outstanding issues, they should be addressed and appropriate actions or measures taken.

In addition to reviewing project documentation, project representatives should make a field assessment of the project and develop and implement a final closure plan for the project site. The field assessment should include the following:

- An assessment of the overall condition of the project, including but not limited to density of vegetation, proper disposal of all accumulated waste and debris, and removal of accumulated sediment.
- All storm water management systems (e.g., storm sewer systems) should be in working order.
- All storm water measures that will remain as permanent features at the site should be evaluated to ensure that they will function according to design standards. This may require the removal of sediment and other debris from the system.
- Any measures that were modified to treat runoff during construction should be returned to the original design specifications so that they function to meet the objectives of post-construction treatment.
- Once construction and all land-disturbing activities have been completed and the area has been stabilized, remove all temporary erosion and sediment control measures in a manner that minimizes land disturbance. Areas left void of protective cover due to the removal of a measure should be stabilized immediately.

The process used to verify a site is properly closed is primarily left to the project site owner and/or their representatives. One option is to hold a closeout meeting at the site with key individuals that have been involved with the project. Attendance at this meeting should include but is not limited to the owner of the project, design engineer, contractors, local planning, staff, and regulatory inspectors.

While the overall purpose of project closure is to ensure that all construction activities are complete, areas are stable, and everything is in working condition, there may also be regulatory requirements that need to be met. Regulatory agencies may require an on-site inspection to ensure that permit conditions have been met before they sign off on a project. If a final inspection is required, it is important that all regulatory requirements be fulfilled prior to scheduling the inspection.

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