Guidance and template for Environmental Resource Permit Stormwater Operations & Maintenance Plans

Guidance for applicants to meet the rule requirements within *Section 12.4.1 of ERP Applicant’s Handbook Volume I.* This template provides guidance on the format, organization, and recommended content for an Environmental Resource Permit (ERP) Operation and Maintenance (O&M) Plan. The content of the plan should be site specific, clearly describe the O&M responsibilities, and provide complete instructions for the O&M Entity *other than MS4 Entities*, as well as guidance for inspectors.

Prepared By: Your Engineer of Record

Project No: \_\_\_\_\_\_\_\_\_

Permit No: \_\_\_\_\_\_\_\_\_

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# INTRODUCTION AND BACKGROUND

Provide a brief description of the project site that the stormwater system(s) is servicing. Describe site location(s) in the present tense as if it is already constructed. Include the size, topography, abutting streets and properties, structures, paved areas, underlying soils, and grading*.*

# RESPONSIBLE PARTIES

Provide the following for individual(s) or organization(s) responsible for maintaining the stormwater management system(s) and conducting inspections:

* Name(s);
* Organization(s), if applicable;
* Address(es);
* Phone numbers;
* Email address(es);
* List of after-hours telephone numbers for key maintenance personnel names and job titles in case of emergencies; and
* Manufacture specification or proprietary information necessary for reviewing copies of maintenance and inspection records.
* Copies of or references to the applicable sections of all covenants, conditions, restrictions, and other associated documents, permits, approvals, and agreements that govern the operation and maintenance of the stormwater management system.

# STORMWATER FACILITIES/COMPONENTS

This section should include a list and details of all stormwater system components; details such as the type and location of each component, as well as other information such as normal pool elevation, volume, recovery time, and how all the systems connect in a series should be provided. Location and type of equipment and tool storage that will be used to perform maintenance and operation should also be considered. Provide a map of the site with components labeled, if appropriate.

# DESCRIPTION OF MAINTENANCE ACTIVITIES

This section should include a list of maintenance activities required for all stormwater facilities/components. This includes tasks like mowing, weeding, mulching, shrub and tree trimming, replanting, sediment and debris removal, and inlet/outlet cleaning to prevent clogging and impeded flows. Include any required equipment and maintenance frequencies, location and number of inserts and exhibits of BMP and description of components. Include manufacturer’s maintenance specifications for any proprietary devices, if used.

Example descriptions of component maintenance activities:

* Catch Basins

Typical maintenance of catch basins includes trash removal if a screen or other debris capturing device is used, and removal of sediment using a vacuum truck. Identify obstructions and clear them immediately. Maintenance logs should be maintained that note the amount of sediment collected and the date of removal.

* Infiltration Basin/Dry Retention (*GSI Maintenance and Planting Manual*, 2023)

Remove sediment, debris, and blockages from associated catch basins, curb inlets, and pipes to maintain conveyance. Replace pea gravel or topsoil (when clogged). Ensure inlets are clear of debris, including sediment and oil/grease. Stabilize the surrounding area. Mow grass and remove grass clippings on filter strip areas, if applicable. Repair undercut and erosion areas at inflow/outflow structures. Upon failure, perform total rehabilitation of the basin and restore design storage capacity. Excavate the basin bottom to expose clean soil.

* Bio Retention (GSI *Maintenance and Planting Manual*, 2023)

Repair or replace broken inlet and outlet structures as soon as practicable. Ensure splash blocks or inlet gravel/rock are adequate by checking for signs of erosion. Water levels should recede below the mulched surface within 48 hours (preferably within 24 hours) after a rain event. If surface soils are limiting infiltration and extending ponding, till, amend, or rake soil as needed to ensure ponding water drains within 48 hours. Identify any obstructions to flow and clear them immediately. Remove sediment, debris, and blockages from catch basins, trench drains, curb inlets, and pipes to always maintain flow capacity. Manually remove weeds, invasive species, and dead plant material. Replant per original planting plan, or substitute from the plant list. Irrigate and mulch as needed. Fill in and lightly compact areas of erosion. Replant according to planting plan or substitute from the plant list. Whenever possible, attempt to identify the cause of erosion or sedimentation to address the cause, rather than the effect alone.

* Wet Ponds (Info from *GSI Maintenance and Planting Manual*, 2023)

Routine maintenance is needed during the initial stage after the installation of plants to allow establishment of the desirable plants and control the growth of invasive species. Routine maintenance requirements are generally minimal after plantings become established. Remove undesirable plant species in the shoreline area. Remove roots of undesirable species to prevent regrowth. Repair or replace broken inlet and outlet structures or components as needed. Monitor minor damage such as dents, rust, or minor cracks for indicators of when repair or replacement is required. Erosion at the water line can lead to bank failure by eroding soil from underneath plants. Plantings and, in extreme cases, stone can dissipate wave energy. Remove sediment, debris, and blockages from inlet and outlet structures. Sedimentation in the flow path can clog inlets and outlets and reduce conveyance efficiency and infiltration. Identify obstructions and clear them immediately. Any areas with at least 2 in. of erosion or sedimentation. Immediately remove accumulated sediment of more than 4 in., as this may affect GSI function.

* Pervious Pavers (Info from *GSI Maintenance and Planting Manual*, 2023)

Inspect pavement regularly for settlement and structural defects. Replace broken pavers immediately to prevent structural instability. Pavers can be removed individually and

replaced during utility work. Pavement sections can be cut out and replaced with permeable or conventional pavement materials. At least annual vacuum sweeping is recommended to remove clogging material from the pavement surface. Pressure washing is discouraged, except as a

last option. Check drainage area for bare soil or erosion, and replant or stabilize adjacent areas as necessary. Check to see whether underdrains are clogged by inspecting cleanouts or observation wells and looking for extended water storage. For smaller areas, remove the damaged pavers, check and fill the underlying gravel. Repair as per manufacturer specification. Do not apply sealants to pervious pavement. Sweep leaf litter and sediment regularly to prevent surface clogging and ponding. Prevent large root systems from damaging subsurface structural components. Manually remove, mow, or torch weeds. Use an herbicide only if it is approved for use in or near water (check with your local Extension Office for suggestions). Replace paver pore space with aggregate per original design.

# MAINTENANCE SCHEDULES

A timetable outlining when maintenance activities occur should be included. Identify whether additional maintenance is required before or after storm events. Make notes if certain activities or frequencies increase or decrease based on season. It could be formatted by BMP, what tasks maintenance is required and the timing of each task, by overall tasks and their frequency, or seasons and what tasks are needed for each season.

| **Activity** | **Frequency** | **Additional Note** |
| --- | --- | --- |
| Clean out catch basin | As needed | Check after heavy rainfall events |
| Rake Around Trees | Bi-weekly or as necessary | Increase during Fall |
| Weed Raingardens | Bi-weekly | Increase/decrease seasonally  |
| Vacuum Sweep Permeable Pavers | Annually | N/A |

# INSPECTION REQUIREMENTS

Entities of stormwater management system shall conduct inspections as needed to ensure that the stormwater management system, and each component thereof, continues to function as designed and permitted. This section should detail the inspection process, including specific inspection items for all components of the stormwater management system. If testing or sampling is conducted, the acceptable range, or minimum/maximum values established within the stormwater management report should be listed.

# FREQUENCY OF INSPECTIONS

This section should identify the inspection frequency. An example table with common BMPs and Accepted Inspection Frequencies is listed below, Table 12-1: Inspection frequencies for common BMPs. These frequencies can be altered by the permitting Agency based on the considerations in subsection 12.5 (h) of AH Volume I. Inspection Frequency should be no longer than five years.

Table 12-1: Inspection Frequencies for common BMPs

| **TYPE OF SYSTEM**  | **INSPECTION FREQUENCY**  |
| --- | --- |
| Dry Retention basins  | Once every 3 years  |
| Exfiltration trenches  | Once every 2 Years  |
| Underground retention  | Once every Year  |
| Sand or Media Filters  | Once every Year  |
| Underdrain System  | Once every 2 Years  |
| Underground vault/chambers  | Once every Year  |
| Pump Systems  | Twice every Year  |
| Swales (treatment)  | Once every 3 years  |
| Wet Detention systems  | Once every 3 years  |
| Wet Detention systems with littoral zones  | Once every 2 years  |
| Vegetated Natural Buffers  | Once every 5 years  |
| Manufactured Devices  | As manufacturer recommends in specifications, minimum once every year  |
| Dam Systems  | Once every Year  |
| All other  | Once every Year  |

# EASEMENTS OR COVENANTS FOR MAINTENANCE

A summary of the rights and responsibilities of all parties involved in the maintenance of the stormwater management system(s) in regards to easements or covenants, as well as reference to the appendix (or appendices) where these documents are located, should be included in this section. If a party(ies) is not known at the time of application, then this should be noted and updated when the permit is transferred to the permanent operation and maintenance entity.

# FUTURE CAPITAL AND MAINTENANCE EXPENDITURES

This section should identify future capital and maintenance expenditures that are required to ensure that the stormwater management system continues to function as designed and permitted. Please note that the future capital and maintenance expenditures requirement should be consistent with the requirements in Section 12.3.5 Cost Estimate.

* Estimated cost of operating and maintaining the system annually. This estimated cost does not have to be an itemized list;
* Estimated cost of repair/replacement of the expected useful life of the system.

Optional (if known at time of application):

This section should identify the source of funding for maintenance activities. Describe how facility operation and maintenance is funded on an ongoing basis in the present tense as if it is already constructed and all agreements are executed. Include descriptions and references for agreements or associations among homeowners or other property owners, budget line items, sources and expenditures of operating funds and reserve funds, administration, and oversight. Describe the personnel positions or contracts used to conduct maintenance, and oversight of these personnel or contracts. Include or attach an organization chart.

## APPENDICES

APPENDIX: Form 62-330.311(3) - Inspection Checklists

* Submittal of the Operation and Maintenance Inspection Certification, form 62.330.331(1) including the inspection checklist form [62.330.311(3)] or the equivalent to the applicable permitting agency.
* Only need to attach the sections of this form that are relevant to the project site.

APPENDIX: Copies of or references to the pertinent sections of all covenants, conditions, restrictions, and other association documents, permits, approvals, and agreements that govern the operation and maintenance of the stormwater management system.

* May not be applicable to every project.
* Should be cross referenced to ensure nothing in this O&M plan conflicts with the other permits, approvals, or agreements.

APPENDIX: Manufacturers product data sheet minimum recommended maintenance.

* Only required when manufactured devices are used.

APPENDIX: Maintenance Log

* Example form below to be kept with the maintenance plan to maintain record of operation.
* Not required.

|  |  |
| --- | --- |
| Site Name |  |
| Address |  |
| Begin Date | End Date |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | BMP ID | BMP Description | Maintained By | Maintenance Done | Comments Or Repair Actions Taken |
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