

Stormwater Facilities Operation and Maintenance Plan (Murfreesboro template) -- Instructions

This is a three-page set of instructions for use with the *Stormwater Facilities Operation and Maintenance Plan (Murfreesboro template)*. Use the template to prepare a maintenance plan for stormwater control measures on a newly developed site. (The Murfreesboro stormwater staff must have a complete plan from you in order for us to issue final approval of a new development project.) Notice that the last section of the form is to be signed by an officer, partner or proprietor representing the owner or operator of the property.

The template is designed with fillable-fields to be filled out electronically with Microsoft Word. An electronic version of this template is on the city's [stormwater web pages](#) for download. To complete the form using Microsoft Word, point your cursor into the boxes (blank spaces labeled "click here," or "enter name," etc.) and type to fill the block with text. Where the form shows check-boxes, you will place a check on a box simply by point-and-click method.

Keep in mind this plan is supposed to serve as a useful reference for the owner, facility operator or property manager.

Section 1. Facility

Site name and address information. Self-explanatory.

Section 2. Personnel

Enter the name of the facility owner and his or her e-mail address and phone number. Do the same for the facility manager. Find out if a person has been designated to inspect the stormwater control measures; if so, enter name and contact information. If the owner or facility manager is not the one who will sign this plan, enter title and name of the person who will (signatory).

Section 3. Map of property

Attach a map to the plan. On the map show the listed features. Here is a link to an [example map](#).

Section 4. Stormwater control measure (SCM) details

Include detailed drawings (e.g. detail sheets) for structures or features listed. These sheets will be helpful to facility management for inspections and when necessary to refurbish or rebuild structures, and for use by engineer during the comprehensive inspection of controls at least once per five years.

Section 5. Inspection checklists

For each type of control measure on site, check the box in the column on left. In second column, enter the number of separate installations of that control measure on the project property. For instance, if three separate bioretention areas are placed on site, enter 3 in the fillable field after the word Bioretention in the second column. In the third column, enter the total size for all installations (length, area, volume) or quantity indicated. Observe the units in the fourth column.

The [Murfreesboro website](#) includes example inspection checklists.

Example:

	Stormwater control measure (no.)	Size/length/no. (total)	Units
<input checked="" type="checkbox"/>	Bioretention (3)	2200	square feet
<input checked="" type="checkbox"/>	Channel, grass (1)	135	linear feet
<input type="checkbox"/>	Cistern (no. of cisterns)	Enter total gallons.	gallons

Section 6. Estimated maintenance costs

In this section, estimate costs for inspecting, cleaning, landscaping and other activities to keep the stormwater quality controls in good working order. Listed in the table are common maintenance activities. Not all of these will apply at every property.

The frequency column contains a drop-down box of frequencies. Select the frequency closest to your planned frequency of that maintenance activity. Figure cost at that frequency. Leave \$0.00 or type NA in the cost column for activities that are not applicable to this facility. Convert frequency costs to an annual cost and total these for each maintenance activity for a total annual cost.

Example: A two acre commercial property has on site three bioretention cells totaling 2200 square feet, underground storage and a manufactured treatment device.

Inspection and maintenance activity	Cost (\$)	Frequency
Routine inspections as shown in checklists	0.00	Choose an item.
Landscaping services ¹	50	Monthly
Litter removal and disposal	5	Weekly
Removal of sediment at entrances to biocells, trenches, etc.	100	Semi-annually
Inspection of manufactured treatment devices (MTDs)	100	Semi-annually
Clean-out of MTDs	500	Annually
Inspection of underground chambers	100	Annually
Annual plan review and update	100	Annually
Inspection by registered engineer (once/five years)	500	Every five years
Space to enter other activity.	0.00	Choose an item.

¹ Cost of maintaining vegetation only within stormwater controls, not cost of landscaping services for entire site.

Annual cost calculation: $(50 \times 12) + (5 \times 52) + (100 \times 2) + (100 \times 2) + 500 + 100 + 100 + (500/5)$
= \$2060 per year

Section 7. Contracted service providers

This question focuses on contracted service providers, whether third party or a subsidiary to your company. Involve the property owner or manager in completing this question and answer the question with up-to-date information.

You may check more than one box. For instance, if you already have identified a landscaping company for bioretention cell and pond, then check the first box and type in the contact information for the landscaping. But if you have not yet identified a service company for cleaning an underground stormwater treatment vault, type “not yet identified” in the table and check the second box.

Section 8. Owner’s certification

If this document is being submitted to the City as a hard copy, this section must be signed by proprietor, partner or officer of the company that owns or will own or operate the development property.

You may submit this form electronically (e.g. as attachment to an e-mail). If so, it must be submitted by owner, proprietor, partner or officer, and the body of the e-mail should include the certification statement that you see in this section of the form. Copy the certification statement from the form and paste it into the body of e-mail.

Section 9. List of attachments to this maintenance plan

Check the boxes indicating the different items attached to this plan.

Note that one of the attachments may be an [Inspection and Maintenance Agreement for Private Stormwater Management Facilities](#). Whether it is submitted with this plan or not, the owner must sign and have notarized this Maintenance Agreement and submit it to the City’s stormwater staff. In fact, the Agreement document makes reference to this maintenance plan. For Murfreesboro, the plan is assigned a number that matches the Water and Sewer Department’s file number for the development. You may contact us at 615-848-3200 for the number.

Section 10. Further explanation

Type in this space to clarify any element of the plan and/or to provide further explanation or instruction to the owner or operator of the storm water control measures.

Section 11. Submittal instructions

You may submit a paper copy or an electronic copy. The default, best format for electronic copies is an Adobe pdf file with the Maintenance Plan and its attachments. (You must submit the notarized Maintenance Agreement as a hard copy.)

Space is given in this section for signature and stamp by Tennessee-registered professional engineer. The city does not require that plans be prepared by P.E., even though attachments or parts include engineering information. The space is provided for signature and stamp by engineer (or landscape architect) if this plan has been prepared by same as a part of engineering services.

End of instructions – see next page for start of plan form.

Stormwater Facilities Operation and Maintenance Plan (Murfreesboro template)

Prepared by: Click here to enter text. Click here to enter text.
 Name Company

Prepared for: Click here to enter text. Click here to enter text.
 Name Company

This plan describes how the owner and operator should inspect and maintain the stormwater facilities at the property identified below. In addition to facility and personnel information, we are including a diagram showing the stormwater control measures; detail sheets for certain controls; and cost estimates of the maintenance tasks. The last section is signed by an officer, partner or proprietor representing the owner or operator of the property.

1. Facility

Site name	Click here to enter text.	
Physical address	Click here to enter text.	Murfreesboro, TN
Mailing address	Input street no., street name; and/or P.O. box no.	
City: Enter City	State: Enter City	Zip: Enter City

2. Personnel

Key personnel with respect to operation and maintenance of the stormwater control measures.

Facility owner	Enter name.	e-mail: Click here to enter text.
		phone: Click here to enter text.
Facility/property manager	Enter name.	e-mail: Click here to enter text.
		phone: Click here to enter text.
Maintenance inspections will be responsibility of	Enter name.	e-mail: Click here to enter text.
		phone: Click here to enter text.
Enter title of signatory to this plan.	Enter name.	e-mail: Click here to enter text.
		phone: Click here to enter text.
Enter title of any other key personnel.	Enter name.	e-mail: Click here to enter text.
		phone: Click here to enter text.

3. Map of the property with stormwater control measures shown

Attached is a map [[here's an example](#)] of the property showing:

- boundary of the lot
- name of facility, or name of lot

- a nearby roadway/right of way, showing name of road
- outline of paved areas, building footprint, and landscaped areas on the lot
- outline of stormwater control measures, with callouts or legend identifying the control measures (give manufacturer's name for manufactured devices)
- proper direction of stormwater flow in channels, underground pipes and detention spaces
- outfall/s where stormwater exits the site

4. Stormwater Control Measures Details

Details (e.g. detail sheets) are included in this plan for the following storm water control measures to show outfall boxes, weirs, orifices; underground storage chambers and associated access ports; layers of stone and soil media in infiltration trenches, swales, and bioretention areas; layers of stone and paving material in pervious concrete or paver blocks; etc.

- | | | |
|--|---|--|
| <input type="checkbox"/> Bioretention | <input type="checkbox"/> Inlet filter | <input type="checkbox"/> Sand filter |
| <input type="checkbox"/> Cistern | <input type="checkbox"/> Paver blocks | <input type="checkbox"/> Swale (weirs and/or underdrain) |
| <input type="checkbox"/> Filter strip | <input type="checkbox"/> Pervious concrete | <input type="checkbox"/> Wetland |
| <input type="checkbox"/> Infiltration trench | <input type="checkbox"/> Rain garden | <input type="checkbox"/> Manufactured device |
| <input type="checkbox"/> Detention pond/s | Outfall box, orifice, weir, key elevations | |
| <input type="checkbox"/> Underground detention | Inlet points, layout, outfall box, weir, elevations; access ports | |
| <input type="checkbox"/> Other: | Type of other control, if any; attach details. | |
| <input type="checkbox"/> Other: | Type of other control, if any; attach details. | |

5. Maintenance Checklists

We have attached checklist/s for each type of stormwater control measures (SCMs) on this site. The checklists will be used by the facility operator as a guide to inspecting the various SCMs. Note that the checklists show a recommended inspection frequency.

	Stormwater control measure (no.)	Size/length/no. (total)	Units
<input type="checkbox"/>	Bioretention (no. of cells)	Enter total sq ft.	square feet
<input type="checkbox"/>	Channel, grass (no. of separate channels)	Enter total linear feet.	linear feet
<input type="checkbox"/>	Cistern (no. of cisterns)	Enter total gallons.	gallons
<input type="checkbox"/>	Filter strip (no. of filter strips)	Enter total sq ft.	square feet
<input type="checkbox"/>	Green roof	Enter sq ft.	square feet
<input type="checkbox"/>	Infiltration trench (no. of trenches)	Enter total sq ft.	square feet
<input type="checkbox"/>	Inlet filter	Enter no. of filters.	no. of units
<input type="checkbox"/>	Paver blocks	Enter sq ft.	square feet
<input type="checkbox"/>	Pervious concrete	Enter sq ft.	square feet
<input type="checkbox"/>	Rain garden (no. of cells)	Enter sq ft.	square feet
<input type="checkbox"/>	Sand filter (no. of units)	Enter sq ft.	square feet
<input type="checkbox"/>	Swale (crosstie weirs and/or underdrain)	Enter linear ft.	linear feet
<input type="checkbox"/>	Wetland	Enter sq ft.	square feet

<input type="checkbox"/>	Manufactured treatment device*	Enter no. of units.	no. of units
<input type="checkbox"/>	Pond, dry	Enter cu ft.	cubic feet
<input type="checkbox"/>	Pond, extended detention	Enter cu ft.	cubic feet
<input type="checkbox"/>	Pond, wet	Enter cu ft.	cubic feet
<input type="checkbox"/>	Detention, underground	Enter cu ft.	cubic feet
<input type="checkbox"/>	Enter type of other control, if any.	Enter quantity.	Units
<input type="checkbox"/>	Enter type of other control, if any.	Enter quantity.	Units

* We have included the manufacturer's recommended inspection and service protocols as a part of this maintenance plan.

6. Expected maintenance practices and estimated costs

We expect to perform the following activities to maintain the stormwater control measures on site and will use the attached inspection checklists to monitor the condition of the control measures. Our estimate of cost to inspect and perform routine maintenance is given.

Inspection and maintenance activity	Cost (\$)	Frequency
Routine inspections as shown in checklists	0.00	Choose an item.
Landscaping services ¹	0.00	Choose an item.
Litter removal and disposal	0.00	Choose an item.
Repairing areas of erosion	0.00	Choose an item.
Debris removal (blocked outlets, pipes, etc.)	0.00	Choose an item.
Removal of sediment at entrances to biocells, trenches, etc.	0.00	Choose an item.
Removal of sediment from pond forebay	0.00	Choose an item.
Removal of sediment from whole pond	0.00	Choose an item.
Inspection of manufactured treatment devices (MTDs)	0.00	Choose an item.
Clean-out of MTDs	0.00	Choose an item.
Inspection of underground chambers	0.00	Choose an item.
Replacing inlet filters	0.00	Choose an item.
Replacing cartridge filters	0.00	Choose an item.
Annual plan review and update	0.00	Choose an item.
Inspection by registered engineer (once/five years)	0.00	Choose an item.
Space to enter other activity.	0.00	Choose an item.
Space to enter other activity.	0.00	Choose an item.

¹ Cost of maintaining vegetation only within stormwater controls, rather than the cost of landscaping services for entire site.

Total annual cost, based on above cost-frequency figures: \$annual cost per year

Note: In addition to routine inspections, at least once every five years we (facility owner/operator) will perform a comprehensive inspection of all stormwater management facilities and practices, to

be performed by a registered professional engineer or landscape architect. These inspections will include, at a minimum:

- Facility type,
- Inspection date,
- Latitude and longitude and nearest street address,
- SCM owner information (e.g. name, address, phone number, fax, and email),
- A description of SCM condition including: vegetation and soils; inlet and outlet channels and structures; embankments, slopes, and safety benches; spillways, weirs, and other control structures; and any sediment and debris accumulation, photographic documentation of SCMs, and
- Specific maintenance items or violations that need to be corrected by the owner along with deadlines and reinspection dates.

7. Contracted service providers

We have contracted or will contract with the following companies or persons to provide maintenance of stormwater control measures.

Inspection services	Enter name or "not yet identified."	e-mail: Click here to enter text.
		phone: Click here to enter text.
Landscape services	Enter name or "not yet identified."	e-mail: Click here to enter text.
		phone: Click here to enter text.
Underground chambers, vault, etc.	Enter name or "not yet identified."	e-mail: Click here to enter text.
		phone: Click here to enter text.
Other maintenance service	Enter name.	e-mail: Click here to enter text.
		phone: Click here to enter text.

We expect to contract with service provider(s) for maintenance of stormwater control measures but have not identified the particular contractor(s). When we do, we will update this plan with the companies and contact persons, in the table above or by attachment to this plan.

We do not plan to contract inspection or maintenance of stormwater control measures; rather we will perform these activities with in-house staff.

Note: Click here to enter explanatory notes.-----

8. Owner’s certification

As proprietor, or as partner or officer of the company that owns or will own or operate the above-described facility, I understand that I am responsible to perform inspection and preventative maintenance activities in accord with this plan, and to provide adequate long term maintenance and continuation of the stormwater control measures on site, to ensure that all stormwater facilities are and remain in proper working condition.

Printed Name Title

Signature Date

9. List of attachments to this maintenance plan

Attached as a part of this plan are the following items.
Check the box in column at left for the items you are attaching.

- Map of property with stormwater control measures, etc. (no. 3. above)
- Detail sheets for each stormwater treatment control (no. 4. above)
- Inspection and maintenance checklists (no. 5. above)
- Manufacturer’s inspection and maintenance instructions for proprietary, manufactured treatment devices (MTDs)

Signed and notarized maintenance agreement with facility location:

- Attached
- To be submitted later

The owner of the property must complete and sign an Inspection and Maintenance Agreement and have it notarized and submitted to the City. Forms available on the [City’s stormwater web page](#).

10. Further explanation

Type here to clarify any of the information above and/or to provide further explanation or instruction to the owner or operator of the storm water control measures. _____

11. Submittal instructions

1) *Hard copy submittal*

Submit this plan and its attachments and the Inspection and Maintenance Agreement to this address.

*Stormwater Processing
City of Murfreesboro, Engineering Department
111 Vine Street
Murfreesboro, Tennessee 37130*

2) *Electronic submittal*

The plan may be submitted via e-mail, provided that the certification language in item no. 8 above is included in the body of the e-mail and the e-mail is submitted by proprietor, partner or officer, from his or her business e-mail address, with name and title in the signature block of the e-mail.

Submit either to cchase@murfreesborotn.gov and kkline@murfreesborotn.gov.

For questions about this form, call Robert Haley at (615) 848-3200 or Cey Chase or Katie Kline at (615) 893-6441.

It is not required that this plan be prepared by a licensed engineer – though elements of it incorporate engineering information. This space is provided for signature and stamp by engineer or landscape architect if this plan has been prepared by engineer as a part of engineering services.



Name: _____ P.E.# _____ Date: _____

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