



ENGINEERING AND ENVIRONMENTAL SERVICES

Stormwater Division

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RAINWATER HARVESTING DESIGN SUMMARY

Stormwater Management Construction Plan Review:

A complete Stormwater management construction plan submittal includes a design summary for each Stormwater BMP, design calculations, plans and specifications showing BMP, inlet and outlet structure details.

I. PROJECT INFORMATION

For projects with multiple SCMs, specify which SCM this worksheet applies to:

Project Name: _____ Phase: _____

PIN: _____ Case #: _____

Legal Name of Owner: _____

Owner Contact: _____ Phone: _____

Owner Address: _____

Design Contact Person: _____ Phone: _____

II. GENERAL MINIMUM DESIGN CRITERIA FOR ALL SCMs *(Revised 1/3/2017)*

GENERAL MDC 1: SIZING

Design storm depth	ft	<i>(One year, 24 hour storm event)</i>
Design runoff volume	ft ³	<i>(Min. calculation of entire drainage area)</i>

GENERAL MDC 2: CONTAMINATED SOILS

Contaminated soils within footprint?	Y / N	<i>(Brownfield location?)</i>
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GENERAL MDC 3: SIDE SLOPES

Maximum vegetated side slopes	: 1	<i>(Maximum 3:1 vegetated slopes)</i>
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GENERAL MDC 4: EROSION PROTECTION

10 year storm outlet discharge	cfs	<i>(Must be non-erosive)</i>
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GENERAL MDC 5: EXCESS FLOW

Emergency outlet elevation	ft
Emergency spillway width	ft
Emergency spillway side slopes	: 1
Emergency spillway slope	%

GENERAL MDC 6: DEWATERING

Dewatering method	
Drawdown orifice size	in <i>(If applicable)</i>

GENERAL MDC 7: CLEAN OUT AFTER CONSTRUCTION

Every SCM impacted by sediment and erosion control during the construction phase shall be cleaned out and converted to its approved design state
In addition, installed SCM's should be inspected and cleaned after each heavy rainfall

GENERAL MDC 8: MAINTENANCE ACCESS

Maintenance access width	ft	<i>(Minimum width of 25 feet)</i>
Side slopes within maintenance access	: 1	<i>(Maximum 3:1)</i>
Access extend to public right of way	Y / N	

GENERAL MDC 9: EASEMENTS

All SCMs and associated maintenance accesses located in permanent recorded easement? (shown and labeled in easement)	Y / N	<i>(Does not include single family residential lots)</i>
Maintenance access width around SCM	ft	<i>(Minimum width of 10 feet)</i>

GENERAL MDC 10: SINGLE FAMILY RESIDENTIAL LOTS

Plats for residential lots that contain an SCM shall include:
(a) The specific location of the SCM on the lot
(b) A typical detail for the SCM to be used
(c) A note that the SCM on the property has been required to meet stormwater regulations and that the property owner may be subject to enforcement actions if the SCM is removed, relocated, or altered without prior approval

GENERAL MDC 11: OPERATION AND MAINTENANCE AGREEMENT

Acknowledgement that the association shall continuously operate and maintain the stormwater control and management facilities	<input type="checkbox"/>
Establishment of an escrow account which can be spent solely for sediment removal, structural, biological or vegetative replacement, major repair, or construction of the SCM	<input type="checkbox"/>

(Check box when completed)

GENERAL MDC 12: OPERATION AND MAINTENANCE PLAN

Specify all operation and maintenance work necessary for the function of all SCM components	<input type="checkbox"/>
Specify methods to be used to maintain or restore the SCMs to design specifications in the event of failure	<input type="checkbox"/>
O&M plan shall be signed by the owner and notarized	<input type="checkbox"/>

(Check box when completed)

III. RAINWATER HARVESTING MINIMUM DESIGN CRITERIA *(Revised 11/20/2019)*

RWH MDC 1: MAJOR COMPONENTS OF A RAINWATER HARVESTING SYSTEM

<p>Rainwater harvesting systems shall include the following components:</p> <ul style="list-style-type: none"> (a) a collection system; (b) a pre-treatment device to minimize gross and coarse solids collection in the tank; (c) a cistern or other storage device; (d) an overflow; and (e) a distribution system.
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RWH MDC 2: FATE OF CAPTURED WATER

<p>Captured stormwater shall be used or discharged as follows:</p> <ul style="list-style-type: none"> (a) use to meet a water demand. The usage, type, volume, frequency, and seasonality of water demand shall be established and justified; (b) discharge via a passive drawdown device to a vegetated infiltration area or another SCM; or (c) a combination of use and passive discharge.
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RWH MDC 3: SIZING

RWH system considered primary SCM?	Y / N
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(If yes, must be sized to capture minimum of 85% of the total annual runoff)

RWH MDC 4: WATER BALANCE CALCULATIONS

The water balance shall be calculated using the NCSU Rainwater Harvester model or another continuous-simulation hydrologic model that calculates the water balance on a daily or more frequent time-step using a minimum of five representative years of actual rainfall records.

(Shall include withdrawals from cistern for use, active or passive drawdown, additions to the cistern by rainfall, runoff and a make-up water source if applicable)

RWH MDC 5: DISTRIBUTION SYSTEM

The distribution system shall be tested for functionality prior to the completion of the rainwater harvesting system. The design shall include a protocol for testing the functionality of the distribution system upon completion of the initial system and upon additions to the existing system.

RWH MDC 6: SIGNAGE REQUIREMENTS

All harvested rainwater outlets such as spigots and hose bibs, and appurtenances are labeled as "Non-Potable Water"

Passive drawdown devices, when employed, are marked with identifying signage or labels that are visible to owners and maintenance personnel

IV. REQUIRED ITEMS CHECKLIST

The following checklist outlines design requirements. Initial in the space provided to indicate the following design requirements have been met and supporting documentation is attached.

Applicant's Initials

- _____ a. Rainwater harvesting systems shall include the following components:
- (a) a collection system; (b) a pre-treatment device to minimize gross and coarse solids collection in the tank; (c) a cistern or other storage device; (d) an overflow; and (e) a distribution system.
- _____ b. Captured stormwater shall be used or discharged as follows: (a) use to meet a water demand. The usage, type, volume, frequency, and seasonality of water demand shall be established and justified; (b) discharge via a passive drawdown device to a vegetated infiltration area or another SCM; or (c) a combination of use and passive discharge.

- _____ c. A rainwater harvesting system is considered a primary SCM only if the system is sized and water demand, passive discharge or a combination of the two is provided for 85% of the total annual runoff volume as demonstrated through water balance calculations.
- _____ d. The water balance shall be calculated using the NCSU Rainwater Harvester model or another continuous-simulation hydrologic model that calculates the water balance on a daily or more frequent time-step using a minimum of five representative years of actual rainfall records.
- _____ e. Model accounts for withdrawals from the cistern for use, active or passive drawdown, and additions to the cistern by rainfall, runoff and a make-up water source if applicable.
- _____ f. The distribution system shall be tested for functionality prior to the completion of the rainwater harvesting system.
- _____ g. The design shall include a protocol for testing the functionality of the distribution system upon completion of the initial system and upon additions to the existing system.
- _____ h. All harvested rainwater outlets such as spigots and hose bibs, and appurtenances shall be labeled as “Non-Potable Water” to warn the public and others that the water is not intended for drinking.
- _____ i. Signage required to indicate that the “dripping” from a passive drawdown system is a part of the design and not a defect.

NOTE: Executed Stormwater Facility Operations and Maintenance Permit Agreement and payment of surety are required prior to Stormwater Permit issuance.