# BACKYARD RAIN GARDEN

**RAIN GARDEN SITE REQUIREMENTS**

1. DISTANCE TO BUILDING FOUNDATION: _____ (*10 FEET MINIMUM*)
2. DISTANCE TO SEPTIC SYSTEM DRAINFIELD: _____ (*25 FEET MINIMUM*)
3. DISTANCE TO WELL HEAD: _____ (*25 FEET MINIMUM*)
4. UPSLOPE DOWNSLOPE FROM WELL HEAD (*CIRCLE ONE, DOWNSLOPE RECOMMENDED*)
5. UPSLOPE DOWNSLOPE LATERAL TO SEPTIC DRAINFIELD (*CIRCLE ONE, LATERAL RECOMMENDED*)
6. SUN EXPOSURE IS FULL PARTIAL (*CIRCLE ONE*)
7. DEPTH TO SEASONAL HIGH WATER TABLE: _____ (*>30 INCHES RECOMMENDED*)

**SOIL DATA**

1. PREDOMINANT SOIL TYPE: _____ (FROM SOIL SURVEY)
2. POST RAINFALL CONDITION OF PROPOSED RAIN GARDEN LOCATION ACCORDING TO LANDOWNER:
   WET OR SATURATED 1.5 DAYS AFTER RAINFALL? _____ IF YES, SELECT ALTERNATE SITE.
3. DEPTH TO WETLAND SOILS IN 24-INCH DEPTH TEST PIT: _____ INCHES
   IF WETLAND SOILS (GREY WITH RIBBONS OF BROWN) ARE OBSERVED WITHIN 12 INCHES OF SURFACE, SITE IS UNSUITABLE FOR RAIN GARDEN.
4. IS WATER PRESENT IN TEST PIT, 36 HOURS AFTER COMPLETE FILLING WITH WATER? YES NO (CIRCLE ONE).

   ANY WATER PRESENT WITHOUT ADDITIONAL RAINFALL INDICATES POORLY DRAINED SITE. IF PIT DRAINS COMPLETELY, REFILL AND CHECK AFTER 12 HOURS. A COMPLETELY DRAINED PIT CHARACTERIZES A WELL DRAINED SITE.

**RUNOFF VOLUME**

TOTAL WATERSHED AREA (A) = _____ SQUARE FEET

AREA OF IMPERVIOUS SURFACES (Ai) = _____ SQUARE FEET

IMPERVIOUS PERCENTAGE OF WATERSHED (I) = Ai/A = _____

RUNOFF COEFFICIENT (Rv) = 0.05 + [0.009 * (I * 100)] = _____

STORM PRECIPITATION (P): _____ (1.5 INCHES FOR CAMA COUNTIES, 1.0 INCH FOR ALL OTHERS)

RUNOFF VOLUME (V) = Rv * A * (P/12) = _____ CUBIC FEET**

*** REFER TO **APPENDIX D** OF CCAP STORMWATER BMP DESIGN MANUAL FOR RAIN GARDEN SIZING CHARTS.*

SITE MAP

SCALE: _____

NORTH CAROLINA SOIL&WATER CONSERVATION

FIELD OFFICE: _____

ADDRESS: _____

_____

PHONE: _____

LANDOWNER: _____

ADDRESS: _____

_____

REVISIONS

| NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | JLY | 12-03-08 | MODIFIED RUNOFF (Rv) EQUATION |
| 2 | JMZ | 08-11-10 | MINOR EDITS |
| 3 | | | |
| 4 | | | |
| 5 | | | |

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| PROJECT #: | SCALE: |
| DRAWN BY: | DATE: |
| CHECKED BY: | DATE: |
| SHEET NO. 1 OF 3 | FILENAME: RAINGARDEN1.DWG |

**RAIN GARDEN SIZE**

RAIN GARDEN PONDING DEPTH (Dp): _____ (3, 6 OR 9-INCHES RECOMMENDED)

SURFACE AREA = RUNOFF VOLUME (V) / PONDING DEPTH (FEET) = V/(Dp/12) = _____ SQUARE FEET

*NOTE: BOTTOM OF RAIN GARDEN MAY HAVE VARYING DEPTHS IF WATER DRAINS FROM TEST PIT BETWEEN 12 AND 36 HOURS. GRADE BOTTOM WITH ZONES AT DIFFERENT ELEVATIONS TO IMPROVE SURVIVAL OF BIORETENTION PLANTS THAT CANNOT TOLERATE WET CONDITIONS FOR EXTENDED PERIODS. DETERMINE AVERAGE DEPTH TO CALCULATE REQUIRED SURFACE AREA. FOR EXAMPLE, 50% OF CELL HAS 9-INCH DEPTH AND 50% OF CELL HAS 6-INCH DEPTH; THE AVERAGE DEPTH IS 7.5-INCHES.*

**PEAK STORMWATER RUNOFF USING RATIONAL METHOD**

C = RUNOFF COEFFICIENT = [(IMPERVIOUS AREA x 0.95) + ( PERVIOUS AREA x 0.25)] / DRAINAGE AREA= _____

I = STORM INTENSITY (10-YEAR STORM EVENT, 5-MINUTE DURATION) FROM TABLE 3.1 OF CCAP BMP DESIGN MANUAL = _____ INCHES/HOUR

A = WATERSHED AREA DRAINING INTO BMP = _____ ACRES

PEAK FLOW FROM WATERSHED DURING 10-YEAR STORM EVENT = **Q = C x I x A**

Q = PEAK FLOW = _____ CUBIC FEET PER SECOND

**OUTLET WEIR DESIGN**

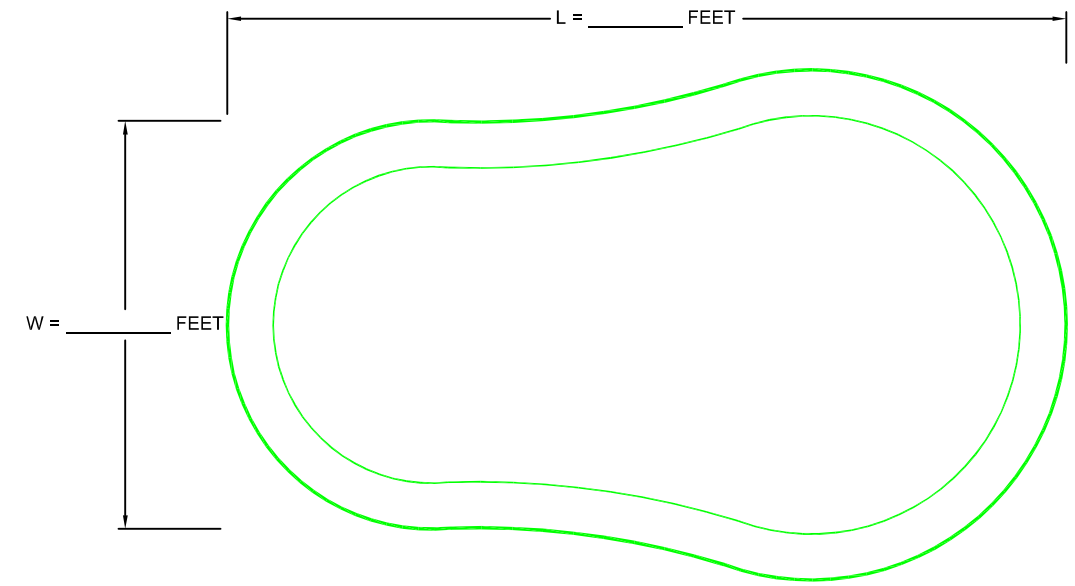
Cw = WEIR COEFFICIENT = 3.0

H = HEIGHT OF WATER OVER TOP OF WEIR = _____ FEET (*0.5 FEET MAXIMUM*)

Q = PEAK FLOW = _____ CUBIC FEET PER SECOND

L = LENGTH OF WEIR = Q / (Cw x $H^{1.5}$) = _____ FEET

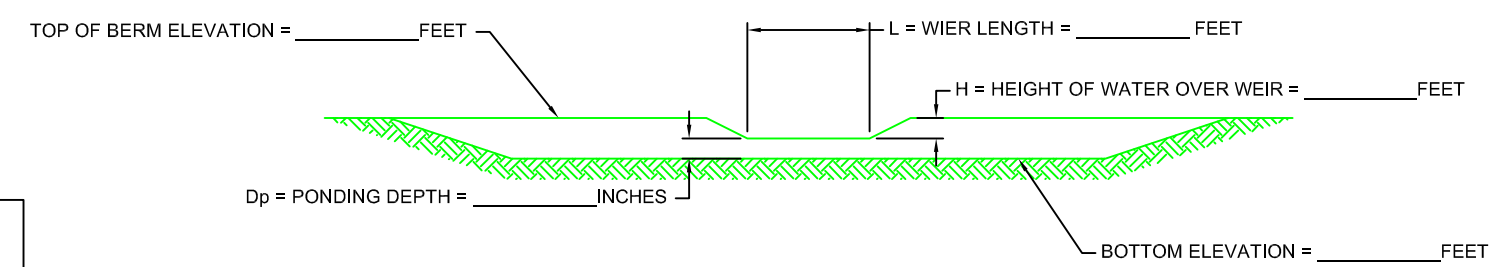
NOTES:




NOTE: LOCATE ALL INLET AND OUTLET LOCATION(S)
MARK ANY ZONES OF VARYING BOTTOM ELEVATIONS

# PLAN

NOT TO SCALE




# CROSS SECTION

NOT TO SCALE

**WARNING:**

LOCATE ALL UNDERGROUND UTILITIES BEFORE DIGGING. CALL **1-800-632-4949** FOR BURIED UTILITY LOCATION SERVICE.

NORTH CAROLINA SOIL&WATER CONSERVATION

FIELD OFFICE: _____
ADDRESS: _____
PHONE: _____

LANDOWNER: _____
ADDRESS: _____

| REVISIONS | | | |
|---|---|---|---|
| NO. | BY | DATE | DESCRIPTION |
| 1 | | | |
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| PROJECT #: | SCALE: |
| DRAWN BY: | DATE: |
| CHECKED BY: | DATE: |
| SHEET NO. 2 OF 3 | FILENAME: RAINGARDEN2.DWG |