Clean Streets Clean Waters
Working Together To Protect Our Beaches & Bays

Date	_____
Permit#	_____
Project Name	_____
Address	_____

Ocean City Critical Area 10% Rule Worksheet

Standard Application Process

Calculating Pollutant Removal Requirements

Step 1: Calculating Existing and Proposed Site Impervious

A. Calculate Percent Imperviousness

Site Area within the Critical Area IDA, A= _____ (sf)

B. Site Impervious Surface Area, Existing and Proposed, (See Table 4.1 for detail)

	(1) Existing (sf)	(2) Proposed (sf)
Roads	_____	_____
Parking Lots	_____	_____
Sidewalks/Paths	_____	_____
Rooftops	_____	_____
Decks	_____	_____
Swimming pools/ponds	_____	_____
Other	_____	_____
Impervious surface area (sf)	_____	_____

C. Non-Structural BMP's Applied to the Site

Non-Structural	Disconnected Impervious Area (sf)
a. _____	_____
b. _____	_____
c. _____	_____

Total Disconnected Impervious Area (sf) _____

D. Adjusted Proposed Impervious surface Step B (2) minus total of Step C_____

E. Impervious (I) calculations

Existing Impervious – Ipre = Impervious surface/Site Area
= _____ %

Proposed Impervious - Ipost =Adjusted Proposed Impervious/Site Area
= _____ %

Define development category (circle)

1. **Redevelopment:** Existing Imperviousness greater than 15% I (Go to step 2A)
2. **New Development:** Existing Imperviousness less than 15% I (Go to step 2B)
3. **Single Lot Residential:** Single lot being developed single family residential and more than 250 sf disturbed should submit a Standard SWM plan or Residential Water Quality management plan.

Step 2: Calculated the Predevelopment Phosphorous Pollution Load (Lpre)

A. Redevelopment

Lpre = (Rv) (C) (A) (.000187)

Rv = .05 + .009 (Ipre) **Rv = .05 + .009 (_____)= _____**

Lpre = (Rv _____) x (C.3) x (A _____ sf) (.000187) =_____

= _____ lbs/year of total phosphorus

Where:

Lpre = Average annual load of total phosphorus exported from the site prior to development (lb/year)
Rv = Runoff coefficient, which expresses the fraction of rainfall which is converted into runoff.

Ipre = Predevelopment (existing) site imperviousness
C = Flow-weighted mean concentration of the pollutant (total phosphorous in urban runoff (mg/1) = .3 mg/1xphosphorus
A = Area of site within the IDA (sf)
(.000187) = Includes regional constants and unit conversion factors

B. New Development

Lpre=(0.5) (A/43560) **(0.5) (_____/43560) = _____**

= _____ lbs/year of total phosphorous

Where:

Lpre = Average annual load of total phosphorus exported from the site prior to development (lbs/year)
0.5 = Annual total phosphorus load from undeveloped lands. (lbs/acre/year)
A. = Area of the site within the Critical Area IDA (sf)

Step 3: Calculate the Post-Development Load

A. New Development and Re-Development:

Lpost = (Rv) (C) (A) (.000187)

Rv = .05+.009 (Ipost) **Rv = .05 + .009 (_____) =_____**

Lpost = (Rv_____) x (C.3) x (A_____sf) (.000187) =_____

= _____ lbs/year of total phosphorus

Where:

Lpost = Average annual load of total phosphorus exported from the site prior to development (lb/year)
Rv = Runoff coefficient, which expresses the fraction of rainfall which is converted into runoff.
Ipost = Predevelopment (existing) site imperviousness
C = Flow-weighted mean concentration of the pollutant (total phosphorous in urban runoff (mg/1) = .3 mg/1=phosphorus
A = Area of site within the IDA (sf)
(0000187) = Includes regional constants and unit conversion factors

Step 4: Calculate the Pollutant Removal Requirements (RR)

10% Reduction = 09 x (Lpre) = _____

RR = Lpost – 10% reduction = _____

= _____ lbs/year of total phosphorus

Where:

RR = Pollutant removal requirements (lbs/year of total phosphorus)
Lpost = Average annual load of total phosphorus exported from the post-development site (lbs/year)
Lpre = Average annual of total phosphorus exported from the site prior to development (lbs/year)

Step 5: Identify Feasible BMP(s)

Select BMP Options using the screening matrices provided in the Chapter 4 of the 2000 Maryland Stormwater Design Manual. Calculate the load removed for each option.

BMP type	**(Lpost)**	**X**	**(BMPre) X**	**% Site served =**	**LR**	
_____	_____	X	_____	X _____ =	_____	lbs/year
_____	_____	X	_____	X _____ =	_____	lbs/year
_____	_____	X	_____	X _____ =	_____	lbs/year

Load Removed/LR (total) = _____ lbs/year

Pollutant Removal Requirement RR (from Step 4) = _____ lbs/year

If the load removed is equal to or greater than the Pollutant Removal Requirements computed in Step 4, than the on-site BMP complies with the 10% Rule…else, and more BMPs or Fee-in-Lieu as followed:

RR minus LR = _____(i)_____ lbs/year, Fee-In-lieu at ($20,000 lb per year)

$20,000 x _____(i)_____ = $_____ Fee-In-Lieu owed

Where:

Load Removed	=	Annual total phosphorus load removed by the proposed BMP (lbs/year)
Lpost	=	Average annual load of total phosphorus export from the post-development site development (lbs/year)
BMP Re	=	BMP removal efficiency for total phosphorus, table 4.8 (%)
% DA served	=	Fraction of the drainage area served by the BMP (%)
RR	=	Pollutant removal requirement (lbs/year)
(i)	=	Pollutant load not removed by BMP (lb/year)
Fee-in-Lieu	=	$20,000 per (lb)