

DEQ Certification Class Presentations

Class presentations are provided for study/review purposes only. Printouts of these PowerPoint slides will not be allowed into the exam testing centers.

August 2024



Exercise 1A

Simple Site Design

- Turn to Exercise 1A in the back of your participant guide (after appendices)
- Open the Virginia Runoff Reduction Method (VRRM) 4.1 New Development Spreadsheet

Exercise 1A Materials

In your participant guide:

- Exercise 1A Instructions
 - Use this sheet to jot down your results and notes

Exercise 1A: Instructions

SIMPLE SITE DESIGN

Follow the instructions below to evaluate the provided site for water quality compliance. Assume "C" soils throughout and use the New Development Compliance spreadsheet.

Site Information

- Project area = 6.7 acres
- Post-development land cover:
 - Managed turf = 4.75 acres
 - Impervious cover = 1.95 acres
 - Assume "C" soils throughout

EVALUATE FOR WATER QUALITY COMPLIANCE

- Determine the total post-development phosphorus load.
- Determine the site treatment volume.
- Determine the pollutant removal requirement (load reduction required).
- Determine the average efficiency needed for water quality compliance (removal requirement/total load).

Instructions:

1. Use the site information above to enter the land cover data into the Site tab of the spreadsheet.
2. Determine the results using the summary information at the bottom of the Site tab.
3. Save the spreadsheet as "EX1A.xls" or similar for a later exercise.

Helpful Hints: Make sure you are using the New Development Spreadsheet and refer to Module 4 of this Participant Guide for a description of the Site tab.

Exercise 1A Materials

Virginia Runoff Reduction Methodology (VRRM) 4.1 New Development Spreadsheet

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 4.1

Project Name:
Date:

BMP Design Specifications List: 2024 Stds & Specs

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) – undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) – undisturbed/frequently maintained grass or					0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be mowed/managed					4.75
Impervious Cover (acres)					1.95
					6.70

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)

LAND COVER SUMMARY – POST DEVELOPMENT

Land Cover Summary	
Forest Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Mixed Open (acres)	0.00
Weighted Rv (mixed open)	0.00
% Mixed Open	0%
Managed Turf Cover (acres)	4.75
Weighted Rv (turf)	0.22
% Managed Turf	71%
Impervious Cover (acres)	1.95
Rv (impervious)	0.95
% Impervious	29%
Site Area (acres)	6.70
Site Rv	0.43

Treatment Volume and Nutrient Loads	
Treatment Volume (acre-ft)	0.2415
Treatment Volume (cubic feet)	10,518
TP Load (lb/yr)	5.21
TN Load (lb/yr)	61.71

data input cells
constant values
calculation cells
final results

Exercise 1A

Simple Site Design

Site Information:

- Project area = 6.7 acres
- Post-development land cover
 - Managed turf = **4.75 acres**
 - Impervious cover = **1.95 acres**
 - Assume “C” soils

Determine:

- ☐ Total phosphorus load
- ☐ Site treatment volume (Tv)
- ☐ Pollutant removal requirement
- ☐ Average efficiency required for removal requirement

Enter site data

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed			4.75		4.75
Impervious Cover (acres)			1.95		1.95
					6.70

Site

D.A. A

D.A. B

D.A. C

D.A. D

D.A. E

Water Quality Compliance

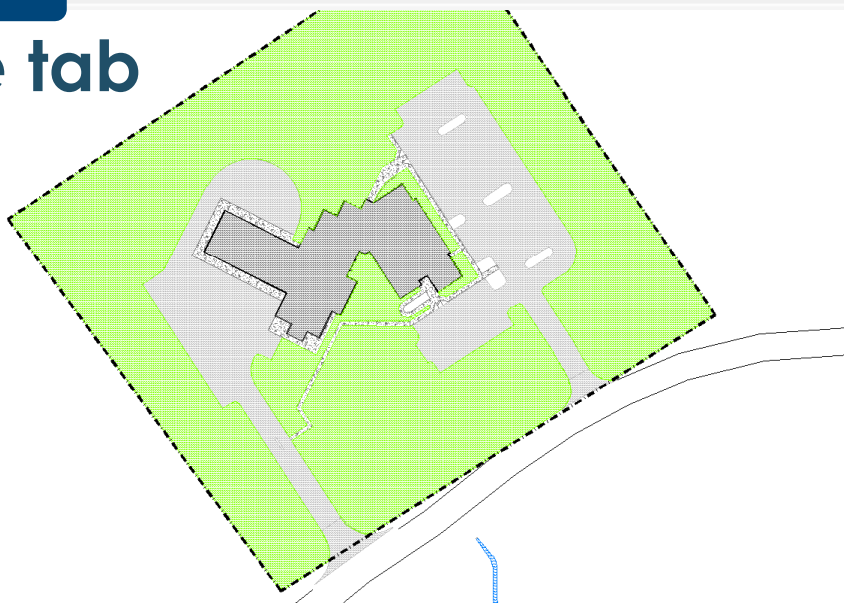
Runoff Volume and CN

Summary

Constants

Notes

Site tab



Light green = Managed turf
 Dark gray = Building
 Light gray = Parking and sidewalks

Results

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)

3.47

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary

Forest Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Mixed Open (acres)	0.00
Weighted Rv (mixed open)	0.00
% Mixed Open	0%
Managed Turf Cover (acres)	4.75
Weighted Rv (turf)	0.22
% Managed Turf	71%
Impervious Cover (acres)	1.95
Rv (impervious)	0.95

Treatment Volume and Nutrient Loads

Treatment Volume (acre-ft)	0.2415
Treatment Volume (cubic feet)	10,518
TP Load (lb/yr)	5.21
TN Load (lb/yr)	61.71

Save results as: EX1A.xlsm

Overall efficiency required = $100 \times (3.47 \div 5.21) = 67\%$

High overall reduction efficiency for a 30% impervious site

Questions?

