

108 ABBOTT RD WELLESLEY 8-1-2022

Existing (Baseline) Phosphorus Load

BMP Sub Area	Land Use Category	Cover Type	Area (Acres)	PLER (lb/acre/yr)*
1	Developed Land Pervious (HSG- C)	Impervious	0.483	0.021
2	Medium-Density Residential (MDR)	Pervious	0.179	0.196

*From NH Small MS4 General Permit, appendix F.

$$\text{BMP}_{\text{Load}} = (0.179 \times 1.96) + (0.483 \times 0.21) = 0.452 \text{ lbs P/yr}$$

Proposed BMP

Infiltration System #1

$$\text{BMP Volume}_{\text{ft}^3} \text{ (see HydroCAD)} = 0.028 \text{ acre-ft} = 1,219.68 \text{ ft}^3$$

$$\begin{aligned} \text{BMP}_{\text{inches of runoff}} &= \text{BMP}_{\text{Volume}} (\text{ft}^3) / \text{IA} \times 12 \text{ in/ft} \times 1 \text{ acre} / 43,560 \text{ ft}^2 \\ &= 1,219.68 \text{ ft}^3 / 0.161 \text{ acre} \times 12 \text{ in/ft} \times 1 \text{ acre} / 43,560 \text{ ft}^2 \\ &= 2.09 \text{ in.} \end{aligned}$$

$$\text{IA} = \text{Contributing area to BMP (7,032 sf per HydroCAD)}$$

In accordance with BMP Curves for Soil Infiltration Rate: Infiltration Basin the BMP will have a 99% load reduction Efficiency for soils with an infiltration rate of 0.27 in/hr. and at least 2.0 inches of runoff.

$$\begin{aligned} \text{BMP}_{\text{load}} &= \text{IA} \times \text{Phosphorus Export Loading Rate for MDR} \\ &= 0.161 \text{ acre} \times 1.96 \text{ lbs./acre/yr.} \\ &= 0.315 \text{ lbs/yr} \end{aligned}$$

$$\begin{aligned} \text{BMP}_{\text{reduction lbs-P}} &= \text{BMP}_{\text{load}} \times (\text{BMP-Reduction \%}/100) \\ &= 0.315 \text{ lbs./yr.} \times (99/100) \\ &= 0.312 \text{ lb/yr} \end{aligned}$$

INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: 108 Abbott Road , Brookline, MA

B BMP ¹	C TSS Removal Rate ¹	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Subsurface Infiltration Structure	0.80	1.00	0.80	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20

Total TSS Removal = 80%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 108 Abbott Rd
Prepared By: VTP
Date: 8/1/2022

*Equals remaining load from previous BMP (E) which enters the BMP