

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name:

Biroet Pond /3P

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a). 0.16 ac A = Area draining to the practice 0.06 ac A₁ = Impervious area draining to the practice, in decimal form 0.37 unitless I = Percent impervious area draining to the practice, in decimal form 0.37 unitless Rv = Runoff coefficient = 0.05 + (0.9 x I) WQV = 1" x Rv x A WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") 53 cf 25% x WQV (check calc for sediment forebay volume) 160 cf 75% x WQV (check calc for surface sand filter volume) Method of Pretreatment? (not required for clean or roof runoff) vsep = Sediment forebay volume, if used for pretreatment ≥ 25%WQV Calculate time to drain if system IS NOT underdrained: 1,855 sf AsA = Surface area of the practice 3.00 iph Ksat_DESIGN = Design infiltration rate¹ If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?
0.06 ac A₁ = Impervious area draining to the practice 0.35 decimal 0.37 unitless Rv = Runoff coefficient = 0.05 + (0.9 x I) 0.06 ac-in WQV= 1" x Rv x A 213 cf WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") 53 cf 25% x WQV (check calc for sediment forebay volume) 160 cf 75% x WQV (check calc for surface sand filter volume) Method of Pretreatment? (not required for clean or roof runoff) cf V _{SED} = Sediment forebay volume, if used for pretreatment ≥ 25%WQV Calculate time to drain if system IS NOT underdrained: 1,855 sf A _{SA} = Surface area of the practice 3.00 iph Ksat _{DESIGN} = Design infiltration rate ¹
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If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?
Yes/No (Use the calculations below)
0.5 hours $T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})$ \leq 72-hrs
Calculate time to drain if system IS underdrained:
ft E _{WQV} = Elevation of WQV (attach stage-storage table)
cfs Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)
- hours T_{DRAIN} = Drain time = $2WQV/Q_{WQV}$ \leq 72-hrs
224.00 feet E_{FC} = Elevation of the bottom of the filter course material ²
feet E_{UD} = Invert elevation of the underdrain (UD), if applicable
222.67 feet E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)
219.33 feet E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)
215.55 reet LROCK - Elevation of bearbork (if notice round, effect the lowest elevation of the test pit)
224.00 feet $D_{FC \text{ to UD}} = Depth \text{ to UD from the bottom of the filter course}$ $\geq 1'$
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224.00 feet $D_{FC to UD}$ = Depth to UD from the bottom of the filter course $\geq 1'$ 4.67 feet $D_{FC to ROCK}$ = Depth to bedrock from the bottom of the filter course $\geq 1'$ 1.33 feet $D_{FC to SHWT}$ = Depth to SHWT from the bottom of the filter course $\geq 1'$ 224.00 ftPeak elevation of the 50-year storm event (infiltration can be used in analysis)226.00 ftElevation of the top of the practiceYES50 peak elevation \leq Elevation of the top of the practice \leftarrow yesIf a surface sand filter or underground sand filter is proposed:
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224.00 feet 4.67 feet D _{FC to ROCK} = Depth to bedrock from the bottom of the filter course 1.33 feet D _{FC to SHWT} = Depth to SHWT from the bottom of the filter course 224.00 ft Peak elevation of the 50-year storm event (infiltration can be used in analysis) Elevation of the top of the practice YES 50 peak elevation ≤ Elevation of the top of the practice YES Drainage Area check. Cf V = Volume of storage ³ (attach a stage-storage table) NOV 2 1 2022 ≥ 1' ⇒ 2' ⇒ 3' ⇒ 4' ⇒ 4' ⇒ 5' ⇒

If a biorete	ntion ar	ea	is proposed:				
YES	ac	Drainage Area no larger than 5 ac?					
1,855	cf		V = Volume of storage ³ (attach a stage-storage table)	≥ WQV			
18.0	inches		D _{FC} = Filter course thickness	18", or 24" if within GPA			
Sheet	72 7	5	Note what sheet in the plan set contains the filter course specification				
3.0	:1		Pond side slopes	<u>> 3</u> :1			
Sheet		5	Note what sheet in the plan set contains the planting plans and surface cover				
If porous pavement is proposed:							
			Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)				
	acres		A _{SA} = Surface area of the pervious pavement				
	:1		Ratio of the contributing area to the pervious surface area	≤ 5:1			
	inches		D _{FC} = Filter course thickness	12", or 18" if within GPA			
Sheet			Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)			

- 1. Rate of the limiting layer (either the filter course or the underlying soil). Ksat_{design} includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
- 2. See lines 34, 40 and 48 for required depths of filter media.
- 3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:	 		
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NHDES Alteration of Terrain



Last Revised: January 2019

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Prepared by Beals Associates, PLLC
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Stage-Area-Storage for Pond 3P: Bioretention Pond 3

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Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
223.00	1,088	0	225.60	1,361	1,047
223.05	1,088	22	225.65	1,510	1,119
223.10	1,088	44	225.70	1,665	1,198
223.15	1,088	65	225.75	1,829	1,285
223.20	1,088	87	225.80	2,000	1,381
223.25	1,088	109	225.85	2,179	1,486
223.30	1,088	131	225.90	2,365	1,599
223.35	1,088	152	225.95	2,559	1,722
223.40	1,088	174	226.00	2,761	1,855
223.45	1,088	196			
223.50	1,088	218			
223.55	1,088	239			
223.60	1,088	261			
223.65	1,088	283			
223.70	1,088	305			
223.75	1,088	326			
223.80	1,088	348			
223.85	1,088	370			
223.90	1,088	392			
223.95 224.00	1,088 1,088	413			
224.05	1,088	435 452			
224.10	1,088	468			
224.15	1,088	484			
224.20	1,088	500			
224.25	1,088	517			
224.30	1,088	533			
224.35	1,088	549			
224.40	1,088	566			
224.45	1,088	582			
224.50	1,088	598			
224.55	1,088	615			
224.60	1,088	631			
224.65	1,088	647			
224.70	1,088	664			
224.75	1,088	680			
224.80	1,088	696			
224.85	1,088	713			
224.90	1,088	729			
224.95	1,088	745			
225.00	1,088	762			
225.05	1,088	778			
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225.50	1,088	925			2 1 2022
225.55	1,221	982			The Charles
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