2011 purple code

Mound Design - Aitkin county

www.SepticResource.com (vers 15.2)

Property Owner: LUCAS SCHOEN **Date:** 9/12/2021

Site Address: 67161B348TH PL **PID:** 12-1-007370

Comments: CLASS 3 MOUND

instructions: [ ] = enter data [ ] = adjust if desired [ ] = computer calculated - DO NOT CHANGE!

1) 3 bedroom Type I Residential System

2) 450 GPD design flow

3) No Garbage disposal or pumped to septic

4) 1000 Gal Septic tank (code minimum) 1000 Gal Septic tank (design size / LUG req'd)
Tank options: none

5) 1.2 GPD/ft^2 mound sand loading rate contour loading rate of 12 req's a min 37.5 ft. long rockbed

6) 10.0 ft rockbed width 37.5 ft rockbed length

7) 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum of 3 for both)
end feed manifold connection

8) 3 laterals 35.5 feet long 12.0 perfs / lateral 36 perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)

9) 1/4" inch perfs at 1 feet residual head gives 0.74 gpm flow rate per perforation

for this perf size & spacing, & pipe size on line 12, max perfs/lateral = 25, line #8 must be less --> OK

10) 4.0 doses per day (4 minimum)

11) 113 gallons per dose (treatment volume)

2.00 5x

12) 2.00 inch diameter laterals must be used to meet "4x pipe volume" requirement

2.00 3x

13) 40 feet of 2.0 inch supply line leads to 7 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)

14) 120 gallons TOTAL pump out volume (treatment + drainback)

15) 5 feet vertical lift from pump to mound laterals, leads to a:

16) 27 GPM @ 11 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)

17) 500 gal Dose tank (code minimum) 1500 gal Dose tank (design size / LUG req'd) at 34.00 gpi
leads to a

18) 3.5 inch swing on Demand float, or timed dosing of 4.4 min ON (confirm pump rate with drawdown
(this delivers Average flow, =70% of Peak design flow) 9 hrs OFF test and adjust as necessary)

19) 12 inches from bottom of tank to "Pump OFF" float

20) 16 inches from bottom of tank to "Pump ON" float, or 12 inches to "Timer ON" float if time dosed

21) 19 inches from bottom of tank to "Hi Level" float, or 29 inches to "Hi Level" float if time dosed

22) 854 gallons reserve capacity (after High Level Alarm is activated)

23) 0.30 gpd/ft^2 Absorption area Soil Loading Rate, which gives a mound ratio of 4 (minimum)

(this must match the soil boring log) desired mound ratio [4.0]

24) [12] percent site slope (0-20% range) [12] (% downslope site slope, if different than upslope)

25) [0] inches, or [0.0] ft. to Redox or other limiting condition (need at least 12" to be a Type I)

Treatment zone contains [0] inches of 0% soil credit, and [0] inches of 50% soil credit. Giving a:

26) [36] inch, or [3.0] ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

27) [40.0] ft. base absorption width (with sand beyond rockbed as follows:)

[60.8] greater of: absorption width OR sand slope

28) [0.0] ft. upslope and sideslope sand upslope [10.8]

[30.0] ft. Downslope sand down slope [40.0]

Individual slope ratios give BERM widths (topsoil beyond rockbed) of:

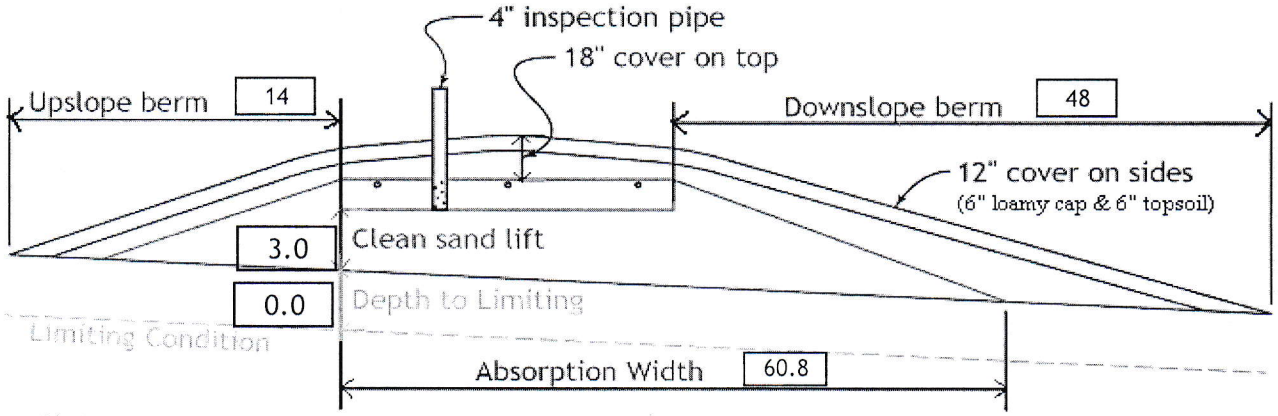
29) [4:1] upslope ratio [14] ft. upslope berm

30) [4:1] sideslope [25] ft. sideslope berms

31) [4:1] downslope [48] ft. downslope berm

32) Overall Dimensions: [10.0] ft. wide by [37.5] ft. long Rock bed

[72] ft. wide by [88] ft. long Mound footprint



Note:
For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.
For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

33) Rock Bed:

[10.0] ft. by [37.5] ft. by [6] inches under pipe, plus 20% gives [13] yd^3 or *1.4= [18] ton

34) Mound Sand: (note: volume is based on 3:1/4:1 slope from top of rockbed, Exchange sand for loamy cap if desired)

[63.6] up + [306.1] downslope + [40.1] ends + [50.0] under rock = [552] yd^3 or *1.4= [772] ton
plus 20%

35) Loamy Cap:

[68] ft. by [84] ft. 6" deep, plus 20% gives [127] yd^3 or *1.4= [178] ton

36) Topsoil:

[72] ft. by [88] ft. 6" deep, plus 20% gives [140] yd^3 or *1.4= [196] ton

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Designer Signature	Company	License#	Date
[signature]	LAKE Assoc	1174	9/12/2021

Installer Summary

[1000] gallon Septic tank (minimum) Tank options: none

1500	gallon Dose tank (minimum)			at 34.00	gpi
27	GPM @	11	ft. of head, Pump required		
3.5	inch swing on Demand float	which translates to roughly 2.8	inches of float tether length		
	if time dosing is required -->	4.4	minutes ON time & 9	hours OFF time	
16	inches from bottom of tank to "pump ON" float, or	12	inches to "timer ON" float		
19	inches from bottom of tank to "Hi Level Alarm" or	29	inches to "Hi level alarm" if time dosed		

40	ft. of	2.0	inch supply line	with end feed	manifold connection
					(Tip: "top feed" manifold to control drainback)

36	inch, or	3.0	ft. Sand Lift Mound				
10.0	ft. wide by	37.5	ft. long Rock bed				
3	laterals	2.00	inch diameter	35.5	ft. long	3.0	ft. lateral spacing
1/4"	inch perfs	3.0	ft. perforation spacing				

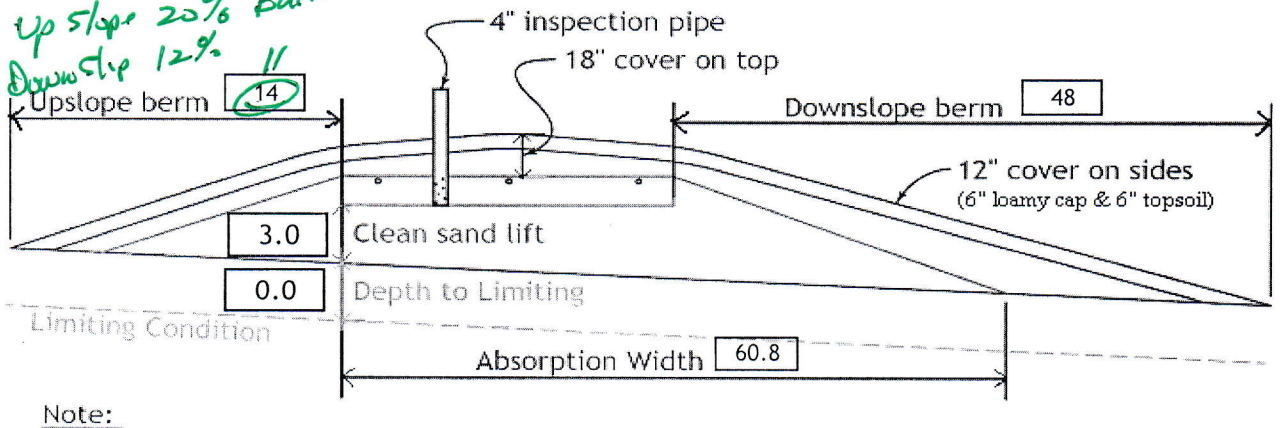
No	Effluent filter & alarm
3	clean out & valve box assemblies

60.8	ft.	Total sand ABSORPTION width (minimum)
10.8	ft.	upslope and sideslope (sand beyond rockbed, minimum)
40.0	ft.	Downslope (sand beyond rockbed, minimum)

Specific slope ratios give BERM widths (topsoil beyond rockbed) of:

4:1	upslope ratio	14	ft. upslope berm
4:1	sideslope	25	ft. sideslope berms
4:1	downslope	48	ft. downslope berm

Upslope 25% Built AT Toe
Downslope 12% II



Note:
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For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

Rock Bed:	13.0	yd^3 or *1.4=	18	ton	6 inches under pipe
Mound Sand:	552	yd^3 or *1.4=	772	ton	calculation based on 3:1/4:1 slope from top of rockbe
Loamy Cap:	127	yd^3 or *1.4=	178	ton	6" deep
Topsoil:	140	yd^3 or *1.4=	196	ton	6" deep

INSPECTOR CHECKLIST - mound

6/16/13 3481 H PL

☐	WELL setbacks:	20' to pressure tested sewer line (5 psi for 15 min)
		50' to everything 100' to dispersal area with shallow well
☐	PROPERTY LINES setback:	10' to everything
☐	Road setback:	platted: 10' prop line. Metes & bounds: out of road easement, or outer ditch.
☐	LAKE / BLUFF setback:	20' for bluff. Lakes: GD ___, RD ___, NE ____. Protected wetland ___.
☐	Building setbacks:	10' for everything, 20' for dispersal area.

☐ WATER LINE under pressure se 10' to bed, tank & sewer line. (else sewer line > 12" below, else ok w/pvc)

☐ Sewer line & baffle connection (no 90's, 3' between 45's, slope min 1" in 8', max 2" in 8')
(no depth req's, clean out every 100', Sch 40 pipe)

☐ Septic tank and risers (water tight, insulated, proper depth, existing verified by pumping)
mfg_____ 1000 gallons none

☐ Riser over outlet, riser over inlet or center, and 6"+ inspection pipe over any remaining baffles.
☐ No effluent filter & alarm
☐ Dose tank risers and piping (water tight, insulated, proper depth, drainback)
mfg_____ 1500 gallons

☐ dose pump _____ 27 gpm 11 head VERIFY PUMP CURVE 4.4 min ON 9 hr OFF

☐ float setting drop 3.5 inches at 34.0 gpi "DESIGNED" 2.8 inches approx float tether length
120.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected
LABEL pump requirements and drawdown on riser or panel

☐ Cam lock reachable from grade - 30" max. J-hook weep hole. Supply line access (no hard 90's)
☐ 2.0 inch supply pipe: Sch40, sloped 1/8"+, supported by 4" sch40 sleeve or compacted, and buried 6"+.
☐ splice box / control panel / electrical connections
☐ flow measurement: CT, ETM, time dosed, home water meter
☐ mound absorption area rough up
☐ mound rock dimensions 10.0 X 37.5
☐ Sand lift depth 36 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

☐ Absorption Sand beyond rock 10.8 upslope 40.0 downslope

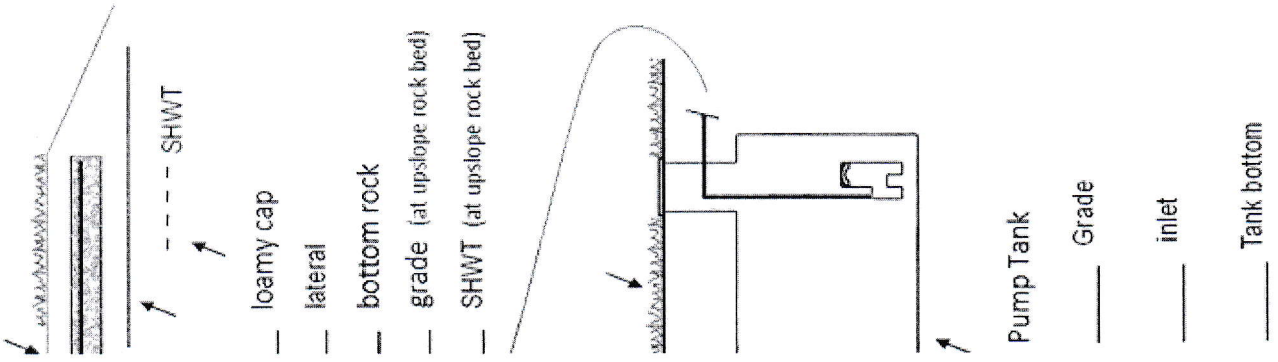
☐ Bermed topsoil beyond rockbed 14 upslope 25 sideslope 48 downslope

☐ cover depth of 12-18"+ VERIFY
☐ 3 laterals (1-2' from edge of rock)
☐ 2.00 inch pipe size (Sch40 pipe & fittings)
☐ 3.0 ft lateral spacing

☐ 1/4" inch perforations
☐ 3.0 ft perforation spacing

☐ Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
☐ clean outs (no hard 90's)
☐ 4" inspection pipe to bottom of rock, anchored VERIFY

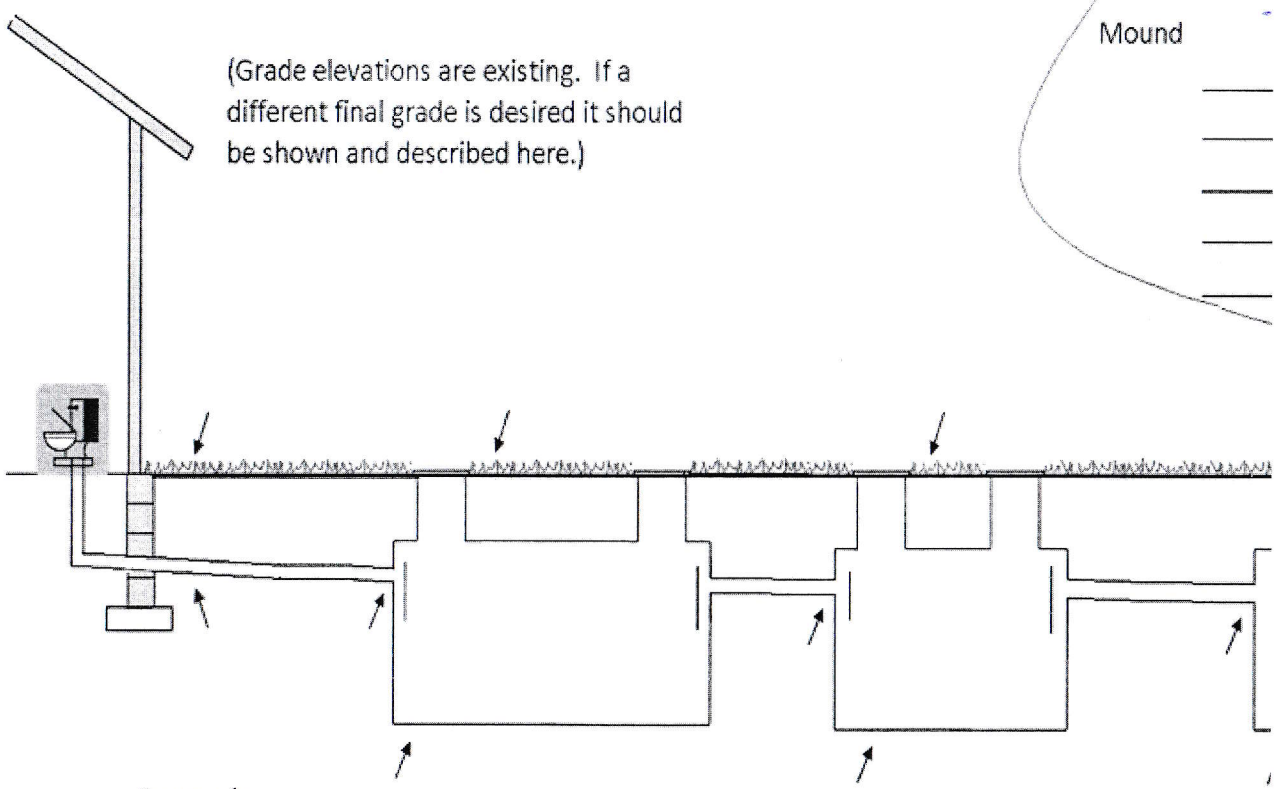
☐ Abandon existing system - if necessary ☐ Re-use existing tank certification
☐ monitoring plan and type _____
☐ well abandonment form - if necessary



System Elevations

_____ benchmark _____

(Grade elevations are existing. If a different final grade is desired it should be shown and described here.)



Sewer pipe exiting house

_____ Grade

_____ Pipe

Septic Tank

_____ Grade

_____ inlet

_____ Tank bottom

Septic Tank (if applicable)

_____ Grade

_____ inlet

_____ Tank bottom