

Mound Design - Aitkin county

Property Owner: Natalie Cowart

Date: 5/17/2017

Site Address: 15436 120th Street Finlayson, MN 557

PID: 34-0032-102

Comments: _____

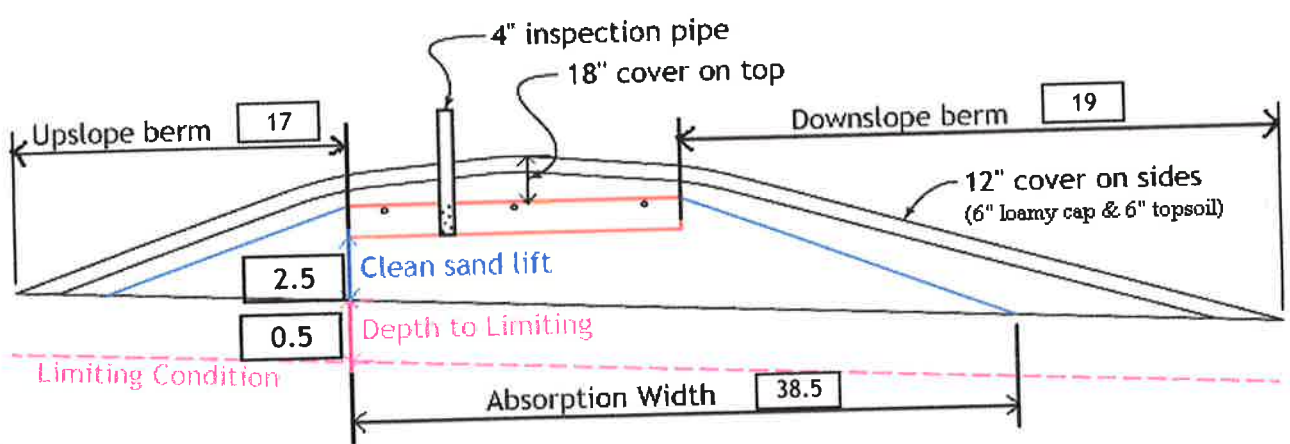
instructions: = enter data = adjust if desired = computer calculated - DO NOT CHANGE!

- 1) 3 bedroom Type III 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) 1.0 GPD/ft² 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) 120 feet of 2.0 inch supply line leads to 20 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)
- 14) 133 gallons TOTAL pump out volume (treatment + drainback)
- 15) 10 feet vertical lift from pump to mound laterals, leads to a:
- 16) 27 GPM @ 18 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) 500 gal Dose tank (code minimum) 650 gal Dose tank (design size / LUG req'd) at 13.00 gpi
leads to a
- 18) 10.2 inch swing on Demand float, or timed dosing of 4.9 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) 22 inches from bottom of tank to "Pump ON" float, or 12 inches to "Timer ON" float if time dosed
- 21) 25 inches from bottom of tank to "Hi Level" float, or 35 inches to "Hi Level" float if time dosed
- 22) 325 gallons reserve capacity (after High Level Alarm is activated)

APPROVED
NO ONSITE INSPECTION
SIGN *[Signature]*
DATE 5/17/17

event counter or water meter required

- 23) **0.50** gpd/ft² Absorption area Soil Loading Rate, (this must match the soil boring log) which gives a mound ratio of **2** (minimum) desired mound ratio **2.0**
- 24) **1** percent site slope (0-20% range) **1** (% downslope site slope, if different than upslope)
- 25) **6** inches, or **0.5** 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) **30** inch, or **2.5** ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) **20.0** ft. base absorption width (with sand beyond rockbed as follows):
38.5 greater of: absorption width OR sand slope
- 28) **5.0** ft. upslope and sideslope sand upslope **13.5**
5.0 ft. Downslope sand down slope **15.0**
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) **4:1** upslope ratio **17** ft. upslope berm
- 30) **4:1** sideslope **18** ft. sideslope berms
- 31) **4:1** downslope **19** ft. downslope berm
- 32) Overall Dimensions: **10.0** ft. wide by **37.5** ft. long Rock bed
46 ft. wide by **74** 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** yd³ 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)
57.2 up + **65.6** downslope + **19.2** ends + **35.4** under rock = **213** yd³ or *1.4= **298** ton plus 20%
- 35) Loamy Cap: **42** ft. by **70** ft. 6" deep, plus 20% gives **65** yd³ or *1.4= **91** ton
- 36) Topsoil: **46** ft. by **74** ft. 6" deep, plus 20% gives **76** yd³ or *1.4= **106** ton

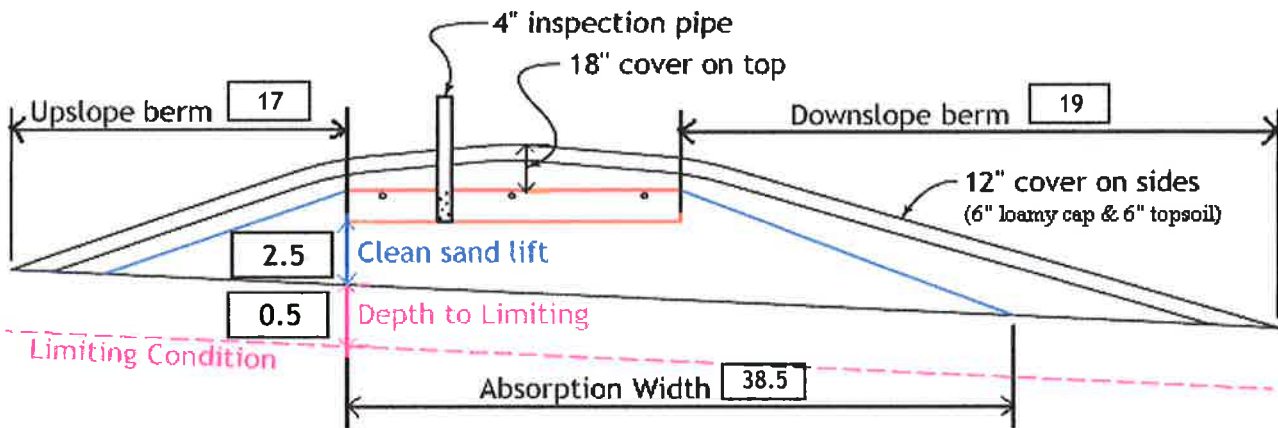
I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Robert P. Roberts Designer Signature Roberts Excavating LLC. Company 1572 License# 5/17/2017 Date

Installer Summary

- 1000 gallon Septic tank (minimum) Tank options: none
- 650 gallon Dose tank (minimum) at 13.00 gpi
- 27 GPM @ 18 ft. of head, Pump required
- 10.2 inch swing on Demand float which translates to roughly 6.1 inches of float tether length
if time dosing is required --> 4.9 minutes ON time & 9 hours OFF time
- 22 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float
- 25 inches from bottom of tank to "Hi Level Alarm" or 35 inches to "Hi level alarm" if time dosed
- 120 ft. of 2.0 inch supply line with end feed manifold connection
(Tip: "top feed" manifold to control drainback)
- 30 inch, or 2.5 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
- 38.5 ft. Total sand ABSORPTION width (minimum)
 - 13.5 ft. upslope and sideslope (sand beyond rockbed, minimum)
 - 15.0 ft. Downslope (sand beyond rockbed, minimum)
- Specific slope ratios give BERM widths (topsoil beyond rockbed) of:

4:1 upslope ratio	17 ft. upslope berm
4:1 sideslope	18 ft. sideslope berms
4:1 downslope	19 ft. downslope berm



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*.

Rock Bed:	13.0 yd ³ or *1.4=	18 ton	6 inches under pipe
Mound Sand:	213 yd ³ or *1.4=	298 ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	65 yd ³ or *1.4=	91 ton	6" deep
Topsoil:	76 yd ³ or *1.4=	106 ton	6" deep

INSPECTOR CHECKLIST - mound

15436 120th Street Finlayson, MN 55135

- 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 set 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 _____ 650 gallons

- dose pump _____ 27 gpm 18 head VERIFY PUMP CURVE 4.9 min ON 9 hr OFF

- float setting drop 10.2 inches at 13.0 gpi "DESIGNED" 6.1 inches approx float tether length
133.0 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 30 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- Absorption Sand beyond rock 13.5 upslope 15.0 downslope

- Bermed topsoil beyond rockbed 17 upslope 18 sideslope 19 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

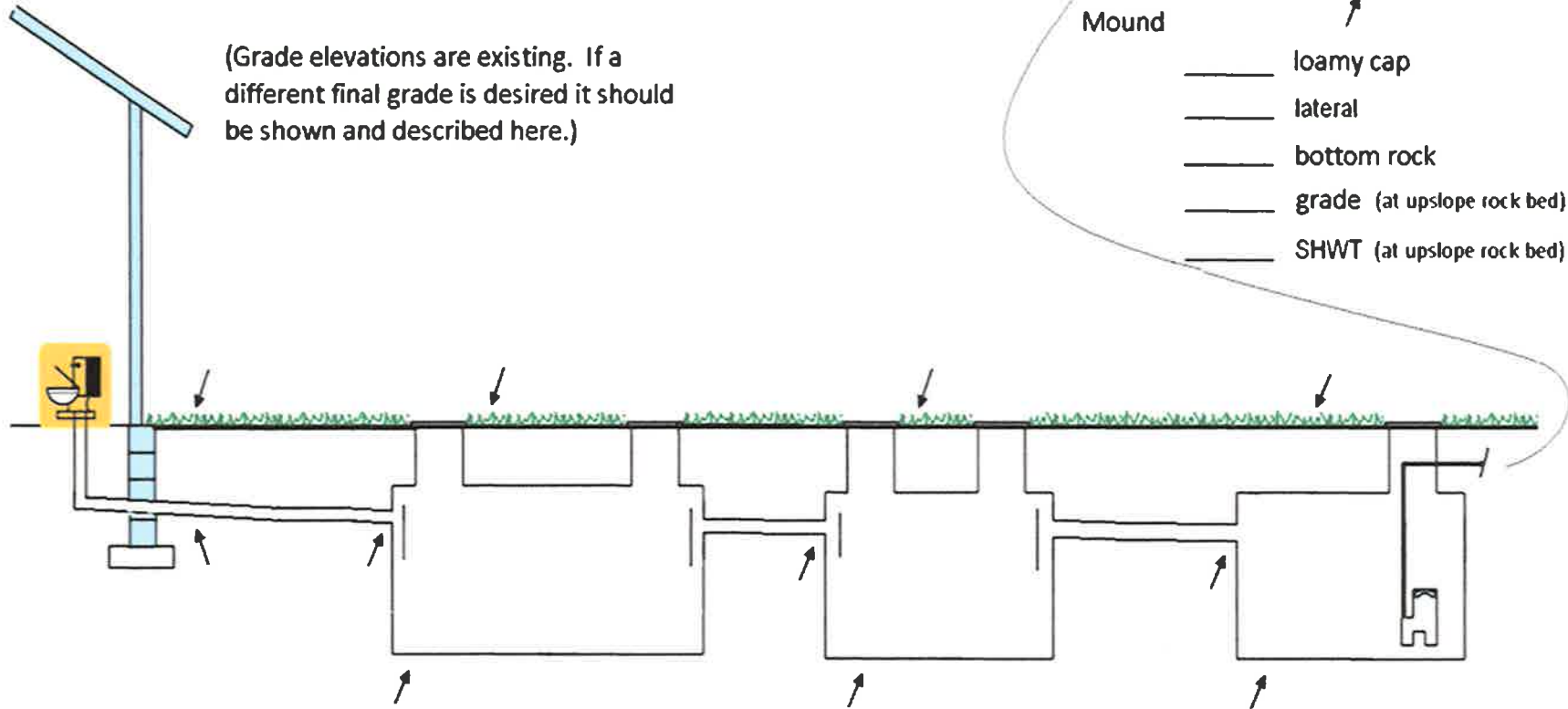
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY

- 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.)

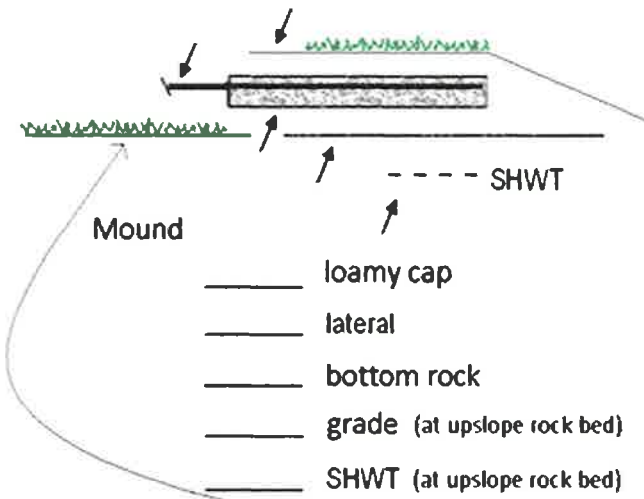


Sewer pipe exiting house
 _____ Grade
 _____ Pipe

Septic Tank
 _____ Grade
 _____ inlet
 _____ Tank bottom

Septic Tank (if applicable)
 _____ Grade
 _____ inlet
 _____ Tank bottom

Pump Tank
 _____ Grade
 _____ inlet
 _____ Tank bottom



UNIVERSITY
OF MINNESOTA

OSTP Soil Observation Log



Date 6/25/2010

Time 9am

Client/ Address: DUANE L. ERICKSON 15436 120TH ST FINLAYSON MN 55735

Landscape position Summit

Legal Description/ GPS PID# 34-0-032102

Vegetation hay field

Soil parent materials (Check all that apply) Outwash Lacustrine Loess Till Alluvium Bedrock Organic

Observation #/Location: b1 Slope% 2.0

Soil survey map units Slope shape

Depth (in)	Texture	Coarse Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure		
							Shape	Grade	Consistence
0-6	sandy clay loam		7.5YR 3/4				Blocky	Moderate	Friable
6-9	clay loam		7.5YR 3/4	7.5YR 5/2		S1	Blocky	Moderate	Friable

Comments

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

JEFF BURGER

(Designer)

(Signature)

2151

(License #)

6/25/2010

(Date)

OSTP Soil Observation Log



Date 6/25/2010

Time 9am

Client/ Address: DUANE L. ERICKSON 15436 120TH ST FINLAYSON MN 55735

Legal Description/ GPS PID# 34-0-032102

Landscape position

Summit

Vegetation

hay field

Soil parent materials (Check all that apply) Outwash Lacustrine Loess Till Alluvium Bedrock Organic

Observation #/Location: B2

Slope% 2.0

Soil survey map units

Slope shape

Depth (in)	Texture	Coarse Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure		
							Shape	Grade	Consistence
0-6	sandy clay loam		7.5YR 3/4				Blocky	Moderate	Friable
6-9	clay loam		7.5YR 3/4	7.5YR 5/2		S1	Blocky	Moderate	Friable

Comments

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(Designer)

Jeff Burger
(Signature)

2151

(License #)

6/25/2010

(Date)

OSTP Soil Observation Log



Date 6/25/2010

Time 9am

Client/ Address: DUANE L. ERICKSON 15436 120TH ST FINLAYSON MN 55735

Landscape position

Summit

Legal Description/ GPS PID# 34-0-032102

Vegetation

hay field

Soil parent materials (Check all that apply)
 Outwash Lacustrine Loess
 Till Alluvium Bedrock Organic

Observation #/Location:

B3

Slope%

2.0

Soil survey map units

Slope shape

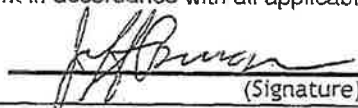
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6-9	clay loam		7.5YR 3/4	7.5YR 5/2		S1	Blocky	Moderate	Friable

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These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

0 50 100 ft 1 inch = 139 feet



Date: 5/17/2017