UNIVERSITY OF MINNESOTA

OSTP Field Evaluation Form

1. Contact Information Project ID: Test 1 v 03.19.15

Property Owner/Client Diane Ripplunger / Joy Borden Client Phone Number: _____

Address 24150 310thPL. Aitkin MN 56431

Date 9/22/2022 Weather Conditions Over-cast

2. Utility and Structure Information

Utility Locations Identified ☐ Gopher State One Call # _____ ☐ Any Private Utilities _____

Property Lines ☐ Determined and Approved by Client _____ *Client's Approval (initial)*

☐ Determined but not Approved

☐ Approximate

☐ Property Lines Surveyed

Locate and Verify (*see Site Evaluation map*)

☑ Existing Buildings ☐ Improvements ☐ Easements ☐ Setbacks

3. Site Information

Percent Slope	3	Slope Direction	south
Landscape Position	summit	Slope Shape	Convex
Vegetation type(s)	Lawn Grasses		

Evidence of cut, fill, compacted or disturbed areas ☐ Yes ☑ No

Discuss the flooding or run-on potential of site All sater to be diverted around mound area

Identify benchmarks and elevations (*Site Evaluation Map*) BM = 100 / Basement Floor

Proposed soil treatment area adequately protected ☑ Yes ☐ No

4. General Soils Information

Original soils ☑ Yes ☐ No

Type of observation ☐ Soil Probe ☑ Soil Boring ☐ Soil Pit

Number of soil observations 2

Soil observations were conducted in the proposed system location ☑ Yes ☐ No

A soil observation was made within the most limiting area of the proposed system ☑ Yes ☐ No

Soil boring log forms completed and attached ☐ Yes ☐ No

Percolation tests performed, forms completed and attached ☐ Yes ☐ No

5. Phase I. Reporting Information

Depth to standing water	24	inches
Flood elevation		feet
Depth to bedrock		inches
Depth to periodically saturated soil	25	inches
Maximum depth of system	Mound	inches
Elevation at system bottom	99	feet
Percolation rate		min/inch
Loading rate	0.78	gpd/ft^2
Contour loading rate	12	gpd/ft

Anticipated construction issues

Differences between soil survey and field evaluation

Soil survey states: C4A, Cebana-Giese

Soils on site are sandy loam soils with stones at 25"

Site evaluation issues / comments

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

Greg Westerlund (Designer) Greg Westerlund (Signature) 6023 (License #) 9/22/22 (Date)

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OSTP Soil Observation Log

Project ID: Test 1 v 03.19.15

Client/ Address:	Joane White / 24150 310th LN, Aitkin	Legal Description/ GPS:	Sw of SW T45, R25, S22

Soil parent material(s): (Check all that apply) ☑ Outwash ☐ Lacustrine ☐ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter

Landscape Position: (check one) ☑ Summit ☐ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope Slope shape: Convex

Vegetation	Lawn Grasses	Soil survey map units	C4A	Slope%	3.0	Elevation:	
Weather Conditions/Time of Day:	Over-cast / 11:00 AM				Date	09/22/22	
Observation #/Location:	Soil Boring #2 / East end of proposed system				Observation Type:	Auger	

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure: Shape	Structure: Grade	Consistence
3	Loam	<35%	10YR 3/1				Single grain	Weak	Friable
14	Sandy Loam	<35%	10YR 4/4				Single grain	Weak	Friable
37	Coarse Sandy Loam	35-50%	10YR 4/4				Granular	Moderate	Friable
36	Coarse Sandy Loam	>50%	10YR 4/4				Granular	Moderate	Firm

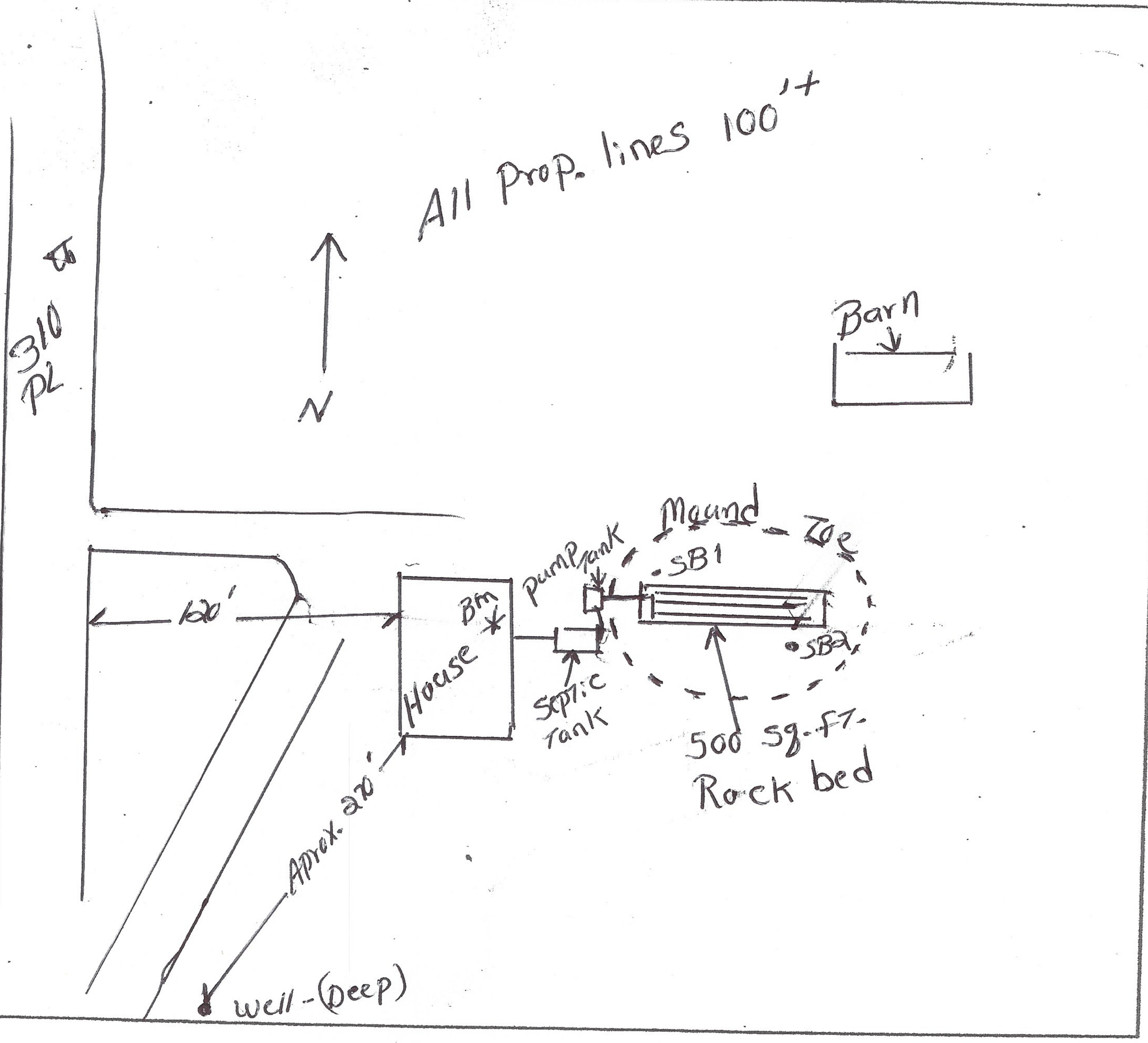
Comments

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

Greg Westerlund (Designer/Inspector)	Greg Westerlund (Signature)	063 (License #)	9/22/22 (Date)

Joane White 21-0-036100 DATE: 9/22/22

MAP DRAWN TO SCALE [redacted] WITH A NORTH ARROW



CHECK OFF LIST--HAVE ALL OF THE FOLLOWING BEEN DRAWN ON THE MAP??

SHOW EXISTING OR PROPOSED

- [ ] WATER WELLS WITHIN 100 FT OF TREATMENT AREAS
- [ ] PRESSURE WATER LINES WITHIN 10 FT OF TREATMENT AREAS
- [ ] STRUCTURES ☐ LOT IMPROVEMENTS
- [ ] ALL SOIL TREATMENT AREAS ☐ ALL ISTS COMPONENTS
- [ ] HORIZONTAL AND VERTICALREFERENCE
- [ ] POINT OF SOIL BORINGS ☐ DIRECTION OF SLOPE
- [ ] LOT EASEMENTS ☐ ALL LOT DIMENSIONS
- [ ] DISTURBED/ COMPACTED AREAS
- [ ] SITE PROTECTION--LATHE AND RIBBON EVERY 15 FT
- [ ] ACCESS ROUTE FOR TANK MAINTENANCE

REQUIRED SETBACKS

STRUCTURES ☐ PROPERTY LINES

OHWL

COMMENTS:

INDICATE ELEVATIONS

BENCHMARK 100

ELEVATION OF SEWER LINE @ HOUSE 99

ELEVATION @ TANK INLET 98

ELEVATION @ BOTTOM OF ROCK LAYER 99

ELEVATION @ BOTTOM OF BORING OR RESTRICTIVE LAYER 96

ELEVATION OF PUMP 93

ELEVATION OF DISTRIBUTION DEVICE 100

DESIGNER SIGNATURE Greg Westerlund

LICENSE# 663 DATE 9/22/22

2011 purple code

Mound Design

www.SepticResource.com (vers 21.2)

Property Owner: Diane Ripplinger/Joy Borden **Date:** 9/22/2022

Site Address: 24150 310th PL, Aitkin MN 56431 **PID:** 21-0-036100

Comments:

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

1) 4 bedroom Type I Residential System

2) 600 GPD design flow

3) No Garbage disposal or pumped to septic

4) 1500 Gal Septic tank (code minimum) 1500 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 50 ft. long rockbed

6) 10.0 ft rockbed width 50.0 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 48.0 feet long 17.0 perfs / lateral 51 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 = 16 , line #8 must be less -->

10) 4.0 doses per day (4 minimum)

11) 150 gallons per dose (treatment volume)

12) 1.50 inch diameter laterals must be used to meet "4x pipe volume" requirement

13) 48 feet of 1.5 inch supply line leads to 5 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)

14) 155 gallons TOTAL pump out volume (treatment + drainback)

15) 7 feet vertical lift from pump to mound laterals, leads to a:

16) 38 GPM @ 21 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)

17) 600 gal Dose tank (code minimum) 600 gal Dose tank (design size / LUG req'd) at 22.00 gpi
leads to a:
Optional Time dosing of:

18) 2.0 inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)

19) 12 inches from bottom of tank to "Pump OFF" float
20) 14 inches from bottom of tank to "Pump ON" float
21) 17 inches from bottom of tank to "Hi Level" float

( ) min ON
( ) hrs OFF
( ) inches to "Timer ON" float
( ) inches to "Hi Level" float

22) 500 gallons reserve capacity (after High Level Alarm is activated-demand dosed)

23) 0.78 gpd/ft^2 Absorption area Soil Loading Rate, which gives a mound ratio of 1.5 (minimum)
(this must match the soil boring log) desired mound ratio 1.5

24) 3 percent site slope (0-20% range) 3 (% downslope site slope, if different than upslope)

25) 24 inches, or 2.0 ft. to Redox or other limiting condition (need at least 12" to be a Type I)
Treatment zone contains 12 inches of 0% soil credit, and 0 inches of 50% soil credit. Giving a:

26) 24 inch, or 2.0 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

27) 15.0 ft.Total ABSORPTION width (with sand beyond rockbed as follows:)

28) 0.0 ft. upslope and sideslope
5.0 ft. Downslope

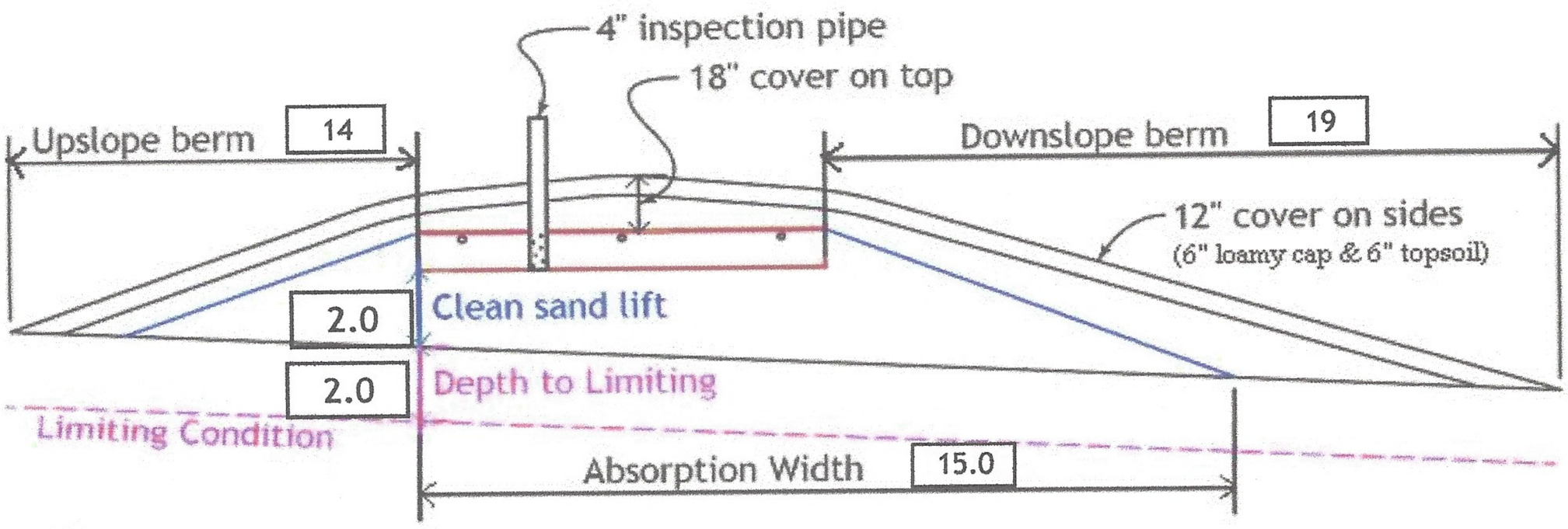
Individual slope ratios give BERM widths (topsoil beyond rockbed) of:

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

30) 4:1 sideslope 16 ft. sideslope berms

31) 4:1 downslope 19 ft. downslope berm

32) Overall Dimensions: 10.0 ft. wide by 50.0 ft. long Rock bed
43 ft. wide by 82 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 50.0 ft. by 6 inches under pipe, plus 20% gives 17 yd^3 or *1.4= 24 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)
44.0 up + 67.8 downslope + 16.1 ends + 39.8 under rock = 201 yd^3 or *1.4= 282 ton
plus 20%

35) Loamy Cap:
39 ft. by 78 ft. 6" deep, plus 20% gives 68 yd^3 or *1.4= 95 ton

36) Topsoil:
43 ft. by 82 ft. 6" deep, plus 20% gives 79 yd^3 or *1.4= 111 ton

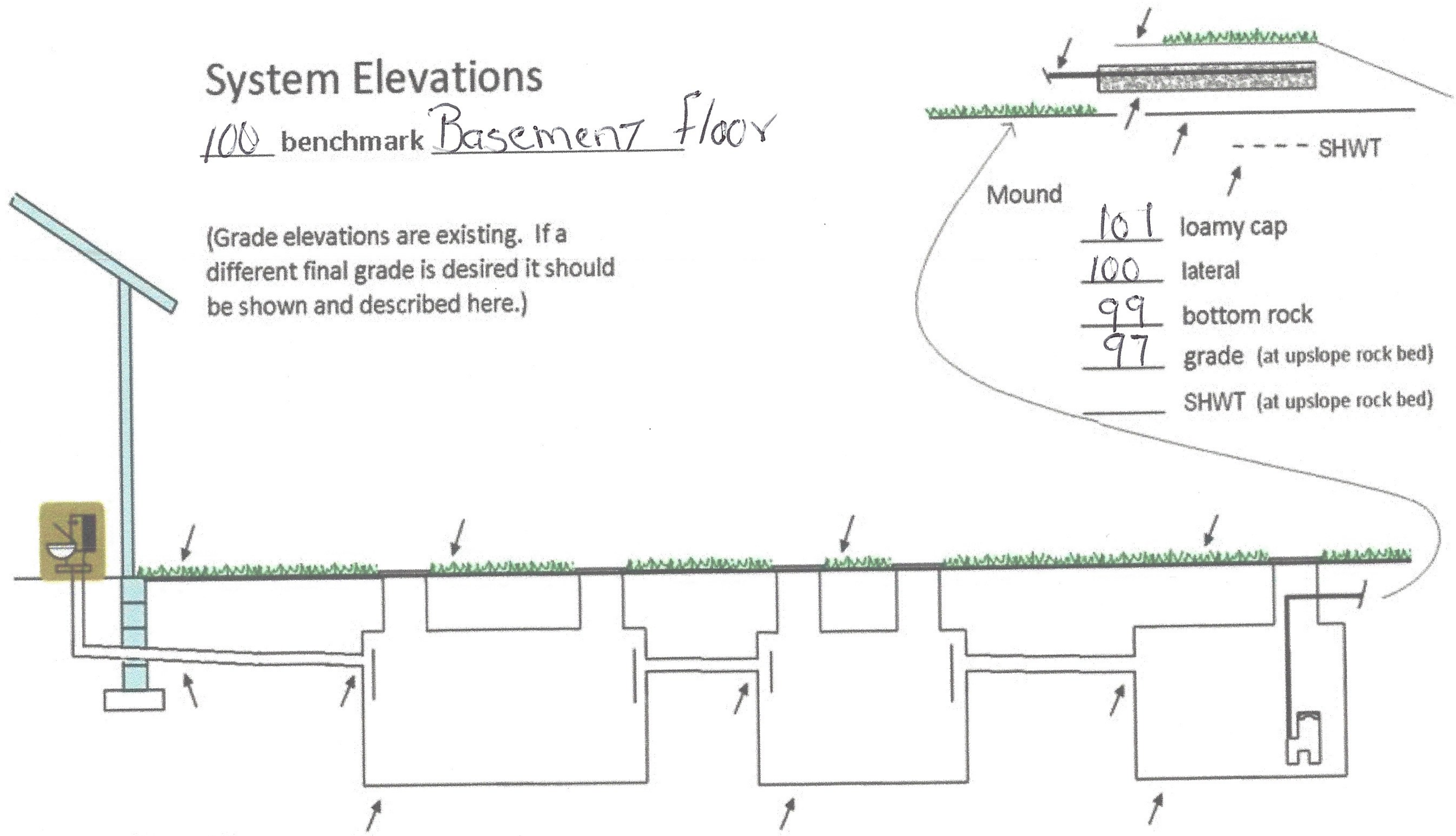
I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Greg Westerlund | Greg Westerlund | 663 | 9/22/2022
Designer Signature | Company | License# | Date

System Elevations

100 benchmark Basement floor

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



101 loamy cap
100 lateral
99 bottom rock
97 grade (at upslope rock bed)
____ SHWT (at upslope rock bed)

Sewer pipe exiting house
99 Grade
98 Pipe

Septic Tank
98 Grade
97 inlet
93 Tank bottom

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

Pump Tank
98 Grade
96-5 inlet
93 Tank bottom

University of Minnesota Onsite Sewage Treatment Program

Pressure Distribution Design Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

Project ID: v 04.01.2021

1. Media Bed Width: 10 ft

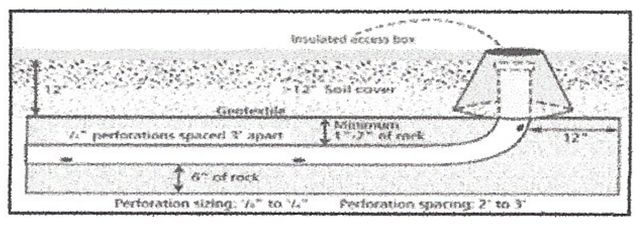
2. Minimum Number of Laterals in system/zone = Rounded up number of [(Media Bed Width - 4) ÷ 3] + 1.

   [(10 - 4) ÷ 3] + 1 = 3 laterals *Does not apply to at-grades*

3. Designer Selected *Number of Laterals*: 3 laterals
   Cannot be less than line 2 (Except in at-grades)

4. Select *Perforation Spacing*: 3.00 ft

5. Select *Perforation Diameter Size:* 1/4 in



6. *Length of Laterals* = Media Bed Length - 2 Feet.

   50.0 - 2ft = 48.0 ft *Perforation can not be closer then 1 foot from edge.*

7. Determine the *Number of Perforation Spaces*. Divide the *Length of Laterals* by the *Perforation Spacing* and round down to the nearest whole number.

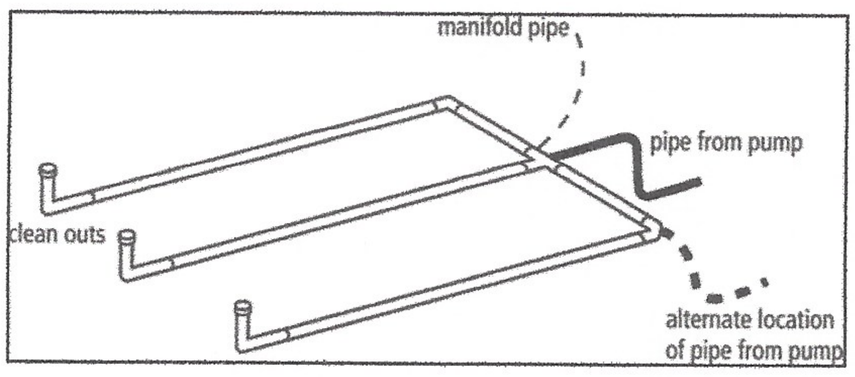
   Number of Perforation Spaces = 48.0 ft ÷ 3.0 ft = 16 Spaces

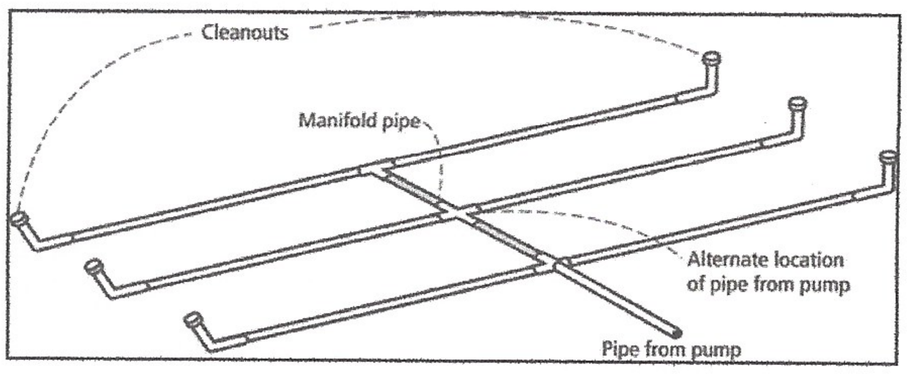
8. *Number of Perforations per Lateral* is equal to 1.0 plus the *Number of Perforation Spaces*. Check table below to verify the number of perforations per lateral guarantees less than a 10% discharge variation. The value is double with a center manifold.

   Perforations Per Lateral = 16 Spaces + 1 = 17 Perfs. Per Lateral

Maximum Number of Perforations Per Lateral to Guarantee <10% Discharge Variation

¼ Inch Perforations						7/32 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1¼	1½	2	3		1	1¼	1½	2	3
2	10	13	18	30	60	2	11	16	21	34	68
2½	8	12	16	28	54	2½	10	14	20	32	64
3	8	12	16	25	52	3	9	14	19	30	60
3/16 Inch Perforations						1/8 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1¼	1½	2	3		1	1¼	1½	2	3
2	12	18	26	46	87	2	21	33	44	74	149
2½	12	17	24	40	80	2½	20	30	41	69	135
3	12	16	22	37	75	3	20	29	38	64	128





9. *Total Number of Perforations* equals the *Number of Perforations per Lateral* multiplied by the *Number of Perforated Laterals.*

   17 Perf. Per Lat. X 3 Number of Perf. Lat. = 51 Total Number of Perf.

10. Spacing of laterals; Must be greater than 1 foot and no more than 3 feet: 2.5 ft

11. Select *Type of Manifold Connection* (End or Center): End

12. *Select Lateral Diameter (See Table)*: 2.00 in

UNIVERSITY OF MINNESOTA
ONSITE SEWAGE TREATMENT PROGRAM

Pressure Distribution Design Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

13. Calculate the *Square Feet per Perforation.*

Recommended value is 4-11 ft2 per perforation, Does not apply to At-Grades

a. *Bed Area* = Bed Width (ft) X Bed Length (ft)

10 ft X 50 ft = 500 ft^2

b. *Square Foot per Perforation = Bed Area* ÷ by the *Total Number of Perfs*

500 ft^2 ÷ 51 perf = 9.8 ft^2/perf

14. Select *Minimum Average Head*: 1.0 ft

15. Select *Perforation Discharge* based on Table: 0.74 GPM per Perf

16. *Flow Rate = Total Number of Perfs X Perforation Discharge.*

51 Perfs X 0.74 GPM per Perforation = 38 GPM

17. *Volume of Liquid Per Foot of Distribution Piping (Table II)*: 0.170 Gallons/ft

18. *Volume of Distribution Piping* =

= [*Number of Perforated Laterals* X *Length of Laterals* X (Volume of Liquid Per Foot of Distribution Piping]

3 X 48 ft X 0.170 gal/ft = 24.5 Gallons

19. Minimum Delivered Volume = Volume of Distribution Piping X 4

24.5 gals X 4 = 97.9 Gallons

Perforation Discharge (GPM)				
Head (ft)	Perforation Diameter			
	1/8	3/16	7/32	1/4
1.0[a]	0.18	0.41	0.56	0.74
1.5	0.22	0.51	0.69	0.9
2.0[b]	0.26	0.59	0.80	1.04
2.5	0.29	0.65	0.89	1.17
3.0	0.32	0.72	0.98	1.28
4.0	0.37	0.83	1.13	1.47
5.0[c]	0.41	0.93	1.26	1.65

1 foot	Dwellings with 3/16 inch to 1/4 inch perforations
2 feet	Dwellings with 1/8 inch perforations Other establishments and MSTS with 3/16 inch to 1/4 inch perforations
5 feet	Other establishments and MSTS with 1/8 inch perforations

Table II Volume of Liquid in Pipe	
Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661

Comments/Special Design Considerations:

Effluent pump must supply 38 gallons per minute to rock bed

Greg Westerlund L-6603 9/22/22

University of Minnesota Onsite Sewage Treatment Program

Basic Pump Selection Design Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

v 04.01.2021

1. PUMP CAPACITY

Project ID:

Pumping to Gravity or Pressure Distribution:

A. If pumping to gravity enter the gallon per minute of the pump: GPM *(10 - 45 gpm)*

B. If pumping to a pressurized distribution system: GPM

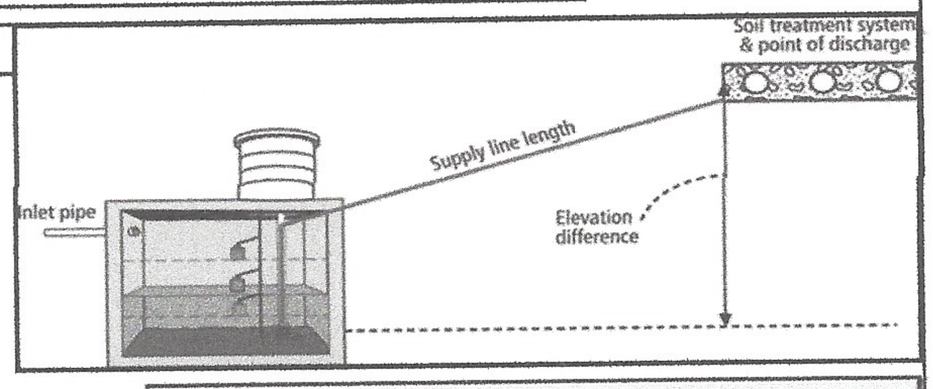
C. Enter pump description: Demand Dosing

2. HEAD REQUIREMENTS

A. Elevation Difference between pump and point of discharge: 7 ft

B. Distribution Head Loss: 5 ft

C. Additional Head Loss: ft (due to special equipment, etc.)



Distribution Head Loss	
Gravity Distribution = 0ft	
Pressure Distribution based on Minimum Average Head Value on Pressure Distribution Worksheet:	
Minimum Average Head	**Distribution Head Loss**
1ft	5ft
2ft	6ft
5ft	10ft

Table I.Friction Loss in Plastic Pipe per 100ft

Flow Rate (GPM)	Pipe Diameter (inches)			
	1	1.25	1.5	2
10	9.1	3.1	1.3	0.3
12	12.8	4.3	1.8	0.4
14	17.0	5.7	2.4	0.6
16	21.8	7.3	3.0	0.7
18		9.1	3.8	0.9
20		11.1	4.6	1.1
25		16.8	6.9	1.7
30		23.5	9.7	2.4
35			12.9	3.2
40			16.5	4.1
45			20.5	5.0
50				6.1
55				7.3
60				8.6
65				10.0
70				11.4
75				13.0
85				16.4
95				20.1

D. 1. Supply Pipe Diameter: 2.0 in

2. Supply Pipe Length: 15 ft

E. **Friction Loss in Plastic Pipe per 100ft** from Table I:

Friction Loss = 4 ft per 100ft of pipe

F. Determine *Equivalent Pipe Length* from pump discharge to soil dispersal area discharge point. Estimate by adding 25% to supply pipe length for fitting loss.
Supply Pipe Length X 1.25 = *Equivalent Pipe Length*

15 ft X 1.25 = 18.8 ft

G. Calculate *Supply Friction Loss* by multiplying *Friction Loss Per 100ft* by the *Equivalent Pipe Length* and divide by 100.

Supply Friction Loss =

4 ft per 100ft X 18.8 ft ÷ 100 = .8 ft

H. *Total Head* requirement is the sum of the *Elevation Difference* + Distribution Head Loss, + Additional Head Loss + Supply Friction Loss

7.0 ft + 5.0 ft + ft + .8 ft = 12.8 ft

3. PUMP SELECTION

A pump must be selected to deliver at least **0.0** GPM with at least **12.8** feet of total head.

Comments:

Greg Westerlund 9/22/22

ONSITE SEWAGE TREATMENT PROGRAM

Pump Tank Design Worksheet (Demand Dose)

MINNESOTA POLLUTION CONTROL AGENCY

DETERMINE TANK CAPACITY AND DIMENSIONS | Project ID: | v 04.01.2021

1. A. *Design Flow (Design Sum.1A)*: 600 GPD C. Tank Use: **Dosing**

   B. Min. required pump tank capacity: 500 Gal D. Recommended pump tank capacity: 800 Gal

2. A. Tank Manufacturer: Cemstone product Inc. B. Tank Model: 800-P

   C. Capacity from manufacturer: 1041 Gallons

   D. Gallons per inch from manufacturer: 22.0 Gallons per inch

   E. Liquid depth of tank from manufacturer: 48.0 inches

   Note: Design calculations are based on this specific tank. Substituting a different tank model will change the pump float or timer settings. Contact designer if changes are necessary.

DETERMINE DOSING VOLUME

3 Calculate *Volume to Cover Pump* (The inlet of the pump must be at least 4-inches from the bottom of the pump tank & 2 inches of water covering the pump is recommended)

(Pump and block height + 2 inches) X *Gallons Per Inch*

(14 in + 2 inches) X 22.0 Gallons Per Inch = 352 Gallons

4 ***Minimum Delivered Volume*** = 4 X Volume of Distribution Piping:

-Item 18 of the Pressure Distribution or Item 11 of Non-level 98 **Gallons (Minimum dose)** 4.5 inches/dose

5 Calculate ***Maximum Pumpout Volume*** (25% of Design Flow)

Design Flow: 600 GPD X 0.25 = 150 **Gallons (Maximum dose)** 6-8 inches/dose

6 *Select a pumpout volume that meets both Minimum and Maximum:* 150 Gallons

7 Calculate *Doses Per Day* = Design Flow ÷ *Delivered Volume*

600 gpd ÷ 150 gal = 4 *Doses*

8 Calculate Drainback:

A. *Diameter of Supply Pipe* = 2 inches

B. Length of Supply Pipe = 15 feet

C. *Volume of Liquid Per Lineal Foot of Pipe* = .17 Gallons/ft

D. *Drainback = Length of Supply Pipe X Volume of Liquid Per Lineal Foot of Pipe*

15 ft X .17 gal/ft = 2.55 Gallons

9. *Total Dosing Volume = Delivered Volume* plus *Drainback*

150 gal + 2.5 gal = 152.5 Gallons

10. Minimum Alarm Volume = Depth of alarm (2 or 3 inches) X gallons per inch of tank

2 in X 22.0 gal/in = 44.0 Gallons

Volume of Liquid in Pipe	
Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661

DEMAND DOSE FLOAT SETTINGS

11. Calculate *Float Separation Distance* using *Dosing Volume*.

Total Dosing Volume /Gallons Per Inch

152.5 gal ÷ 22.0 gal/in = 6.9 Inches

12. Measuring from bottom of tank:

A. *Distance to set Pump Off Float* = Pump + block height + 2 inches

14 in + 2 in = 16 Inches

B. *Distance to set Pump On Float=Distance to Set Pump-Off Float + Float Separation Distance*

16 in + 6.9 in = 22.9 Inches

C. *Distance to set Alarm Float = Distance to set Pump-On Float + Alarm Depth* (2-3 inches)

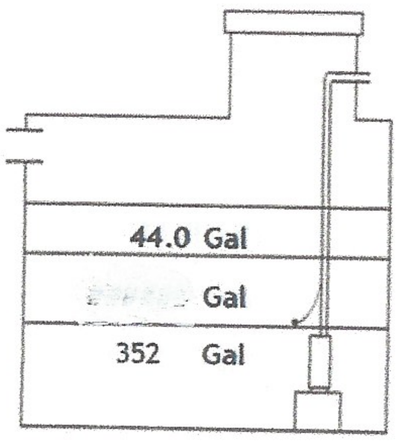
in + 2.0 in = 24.9 Inches

Inches for Dose: 6.9 in

Alarm Depth 24.9 in

Pump On 22.9 in

Pump Off 16.0 in



UNIVERSITY OF MINNESOTA

Septic System Management Plan for Above Grade Systems

The goal of a septic system is to protect human health and the environment by properly treating wastewater before returning it to the environment. Your septic system is designed to kill harmful organisms and remove pollutants before the water is recycled back into our lakes, streams and groundwater.

This **management plan** will identify the operation and maintenance activities necessary to ensure long-term performance of your septic system. Some of these activities must be performed by you, the homeowner. Other tasks must be performed by a licensed septic maintainer or service provider. However, it is YOUR responsibility to make sure all tasks get accomplished in a timely manner.

The University of Minnesota's *Septic System Owner's Guide* contains additional tips and recommendations designed to extend the effective life of your system and save you money over time.

Proper septic system design, installation, operation and maintenance means safe and clean water!

Property Owner Joane White

Property Address 24150 310th Pl, Aitkin Property ID 21-0-036100

System Designer Greg Westerlund License # 663

System Installer Westerlund Constr. License # 663

Service Provider/Maintainer Licensed Professional Phone

Permitting Authority Phone

Permit # Date Inspected

Keep this Management Plan with your *Septic System Owner's Guide*. The *Septic System Owner's Guide* includes a folder designed to hold maintenance records including pumping, inspection and evaluation reports. Ask your septic professional to also:

- Attach permit information, designer drawings and as-builts of your system, if they are available.
- Keep copies of all pumping records and other maintenance and repair invoices with this document.
- Review this document with your maintenance professional at each visit; discuss any changes in product use, activities or water-use appliances.

For a copy of the *Septic System Owner's Guide*, call 1-800-876-8636 or go to http://shop.extension.umn.edu/

http://septic.umn.edu

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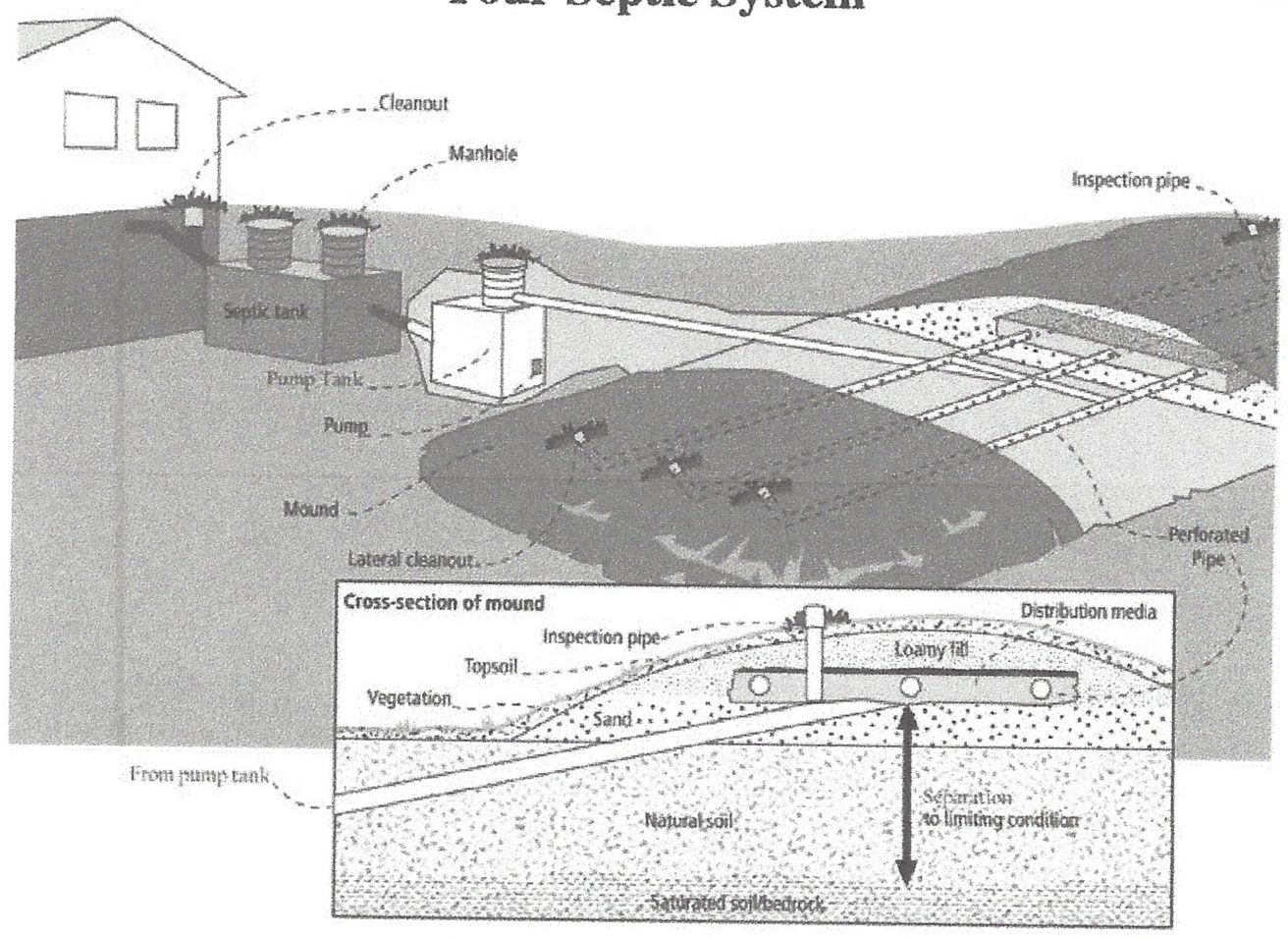
Septic System Management Plan for Above Grade Systems

Your Septic System



Septic System Specifics	
System Type: (I) II III IV* V* *(Based on MN Rules Chapter 7080.2200 – 2400)*	❑ System is subject to operating permit* ❑ System uses UV disinfection unit* Type of advanced treatment unit _____ **Additional Management Plan required*

Dwelling Type	Well Construction
Number of bedrooms: 4 System capacity/ design flow (gpd): 600 Anticipated average daily flow (gpd): <600 Comments _____ In-home business? N What type? _____	Well depth (ft): Deep ❑ Cased well Casing depth: _____ ❑ Other (specify): _____ Distance from septic (ft): 100' + Is the well on the design drawing? (Y) N

Septic Tank	
❑ One tank *Tank volume:* _____ *gallons* Does tank have two compartments? (Y) N ❑ Two tanks *Tank volume:* 1,600 *gallons* ❑ Tank is constructed of Precast ❑ Effluent Screen *type*: N	❑ Pump Tank (*if one*) 800 gallons ❑ Effluent Pump *type*: Zoeller TDH 12 Feet of head Pump capacity 38 GPM ❑ Alarm ✓ visual ✓ audible

Soil Treatment Area	
Mound/At-Grade area (length x width): 43 ft x 82 ft Rock bed size (length x width): 10 ft x 50 ft	❑ Cleanouts or Inspection Ports ❑ Surface Water Diversions

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Septic System Management Plan for Above Grade Systems

Homeowner Management Tasks

These operation and maintenance activities are your responsibility. Use the chart on page 6 to track your activities.

Identify the service intervals recommended by your system designer and your local government. The tank assessment for your system will be the shortest interval of these three intervals. Your pumper/maintainer will determine if your tank needs to be pumped.

System Designer: check every 36 months
Local Government: check every _____ months
State Requirement: check every 36 months

My tank needs to be checked every _____ months

Seasonally or several times per year

- ❑ *Leaks*. Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.
- ❑ *Surfacing sewage*. Regularly check for wet or spongy soil around your soil treatment area. If surfaced sewage or strong odors are not corrected by pumping the tank or fixing broken caps, call your service professional. *Untreated sewage may make humans and animals sick.*
- ❑ *Alarms*. Alarms signal when there is a problem; contact your maintainer any time the alarm signals.
- ❑ *Lint filter*. If you have a lint filter, check for lint buildup and clean when necessary. Consider adding one after washing machine.
- ❑ *Effluent screen*. If you do not have one, consider having one added the next time the tank is cleaned.

Annually

- ❑ *Water usage rate*. A water meter can be used to monitor your average daily water use. Compare your water usage rate to the design flow of your system (listed on the next page). Contact your septic professional if your average daily flow over the course of a month exceeds 70% of the design flow for your system.
- ❑ *Caps*. Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.
- ❑ *Water conditioning devices*. See Page 5 for a list of devices. When possible, program the recharge frequency based on *water demand (gallons)* rather than *time (days)*. Recharging too frequently may negatively impact your septic system.
- ❑ *Review your water usage rate*. Review the Water Use Appliance chart on Page 5. Discuss any major changes with your pumper/maintainer.

During each visit by a pumper/maintainer

- ❑ Ask if your pumper/maintainer is licensed in Minnesota.
- ❑ Make sure that your pumper/maintainer services the tank through the manhole. (NOT though a 4" or 6" diameter inspection port.)
- ❑ Ask your pumper/maintainer to accomplish the tasks listed on the Professional Tasks on Page 4.

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Septic System Management Plan for Above Grade Systems

Professional Management Tasks

These are the operation and maintenance activities that a pumper/maintainer performs to help ensure long-term performance of your system. Professionals should refer to the O/M Manual for detailed checklists for tanks, pumps, alarms and other components. Call 800-322-8642 for more details.

- ❑ Written record provided to homeowner after each visit.

Plumbing/Source of Wastewater

- ❑ Review the Water Use Appliance Chart on Page 5 with homeowner. Discuss any changes in water use and the impact those changes may have on the septic system.
- ❑ Review water usage rates (if available) with homeowner.

Septic Tank/Pump Tanks

- ❑ *Manhole lid.* A riser is recommended if the lid is not accessible from the ground surface. Insulate the riser cover for frost protection.
- ❑ *Liquid level.* Check to make sure the tank is not leaking. The liquid level should be level with the bottom of the outlet pipe. (If the water level is below the bottom of the outlet pipe, the tank may not be watertight. If the water level is higher than the bottom of the outlet pipe of the tank, the effluent screen may need cleaning, or there may be ponding in the drainfield.)
- ❑ *Inspection pipes.* Replace damaged caps.
- ❑ *Baffles.* Check to make sure they are in place and attached, and that inlet/outlet baffles are clear of buildup or obstructions.
- ❑ *Effluent screen.* Check to make sure it is in place; clean per manufacturer recommendation. Recommend retrofitted installation if one is not present.
- ❑ *Alarm.* Verify that the alarm works.
- ❑ *Scum and sludge.* Measure scum and sludge in each compartment of each septic and pump tank, pump if needed.

Pump

- ❑ *Pump and controls.* Check to make sure the pump and controls are operating correctly.
- ❑ *Pump vault.* Check to make sure it is in place; clean per manufacturer recommendations.
- ❑ *Alarm.* Verify that the alarm works.
- ❑ *Drainback.* Check to make sure it is operating properly.
- ❑ *Event counter or run time.* Check to see if there is an event counter or run time log for the pump. If there is one, calculate the water usage rate and compare to the anticipated average daily flow listed on Page 2.

Soil Treatment Area

- ❑ *Inspection pipes.* Check to make sure they are properly capped. Replace caps that are damaged.
- ❑ *Surfacing of effluent.* Check for surfaced effluent or other signs of problems.
- ❑ *Lateral flushing.* Check lateral distribution; if cleanouts exist, flush and clean as needed.
- ❑ *Ponding.* Check for ponding. Excessive ponding in at-grade and mound beds indicates problems.

All other components – inspect as listed here:

_____

_____

_____

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Septic System Management Plan for Above Grade Systems

Water-Use Appliances and Equipment in the Home

Appliance	Impacts on System	Management Tips
Garbage disposal	• Uses additional water. • Adds solids to the tank. • Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area.	• Use of a garbage disposal is not recommended. • Minimize garbage disposal use. Compost instead. • To prevent solids from exiting the tank, have your tank pumped more frequently. • Add an effluent screen to your tank.
Washing machine	• Washing several loads on one day uses a lot of water and may overload your system. • Overloading your system may prevent solids from settling out in the tank. Unsettled solids can exit the tank and enter the soil treatment area.	• Choose a front-loader or water-saving top-loader, these units use less water than older models. • Limit the addition of extra solids to your tank by using a liquid or easily biodegradable detergents. • Install a ling filter after the washer and an effluent screen on your tank. • Wash only full loads. • Limit use of bleach-based detergents. • Think even – spread your laundry loads throughout the week.
2nd floor laundry	• The rapid speed of water entering the tank may reduce performance.	• Install an effluent screen in the septic tank to prevent the release of excessive solids to the soil treatment area. • Be sure that you have adequate tank capacity.
Dishwasher	• Powdered and/or high-phosphorus detergents can negatively impact the performance of your tank and soil treatment area. • New models promote "no scraping". They have a garbage disposal inside.	• Use gel detergents. Powdered detergents may add solids to the tank. • Use detergents that are low or no-phosphorus. • Wash only full loads. • Scrape your dishes anyways to keep undigested solids out of your septic system.
Grinder pump (in home)	• Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area.	• Expand septic tank capacity by a factor of 1.5. • Include pump monitoring in your maintenance schedule to ensure that it is working properly. • Add an effluent screen.
Large bathtub (whirlpool)	• Large volume of water may overload your system. • Heavy use of bath oils and soaps can impact biological activity in your tank and soil treatment area.	• Avoid using other water-use appliances at the same time. For example, don't wash clothes and take a bath at the same time. • Use oils, soaps, and cleaners in the bath or shower sparingly.
Clean Water Uses	**Impacts on System**	**Management Tips**
High-efficiency furnace	• Drip may result in frozen pipes during cold weather.	• Re-route water into a sump pump or directly out of the house. Do not route furnace recharge to your septic system.
Water softener Iron filter Reverse osmosis	• Salt in recharge water may affect system performance. • Recharge water may hydraulically overload the system.	• These sources produce water that is not sewage and should not go into your septic system. • Reroute water from these sources to another outlet, such as a dry well, draintile or old drainfield. • When replacing consider using a demand-based recharge vs. a time-based recharge. • Check valves to ensure proper operation; have unit serviced per manufacturer directions
Surface drainage Footing drains	• Water from these sources will likely overload the system.	

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Septic System Management Plan for Above Grade Systems

Maintenance Log

Track maintenance activities here for easy reference. See list of management tasks on pages 3 and 4.

Activity	Date accomplished									
Check frequently:										
Leaks: check for plumbing leaks										
Soil treatment area check for surfacing										
Lint filter: check, clean if needed										
Effluent screen: if owner-maintained										
Check annually:										
Water usage rate (monitor frequency____)										
Caps: inspect, replace if needed										
Water use appliances – review use										
Other:										

Notes: _____

_____

Mitigation/corrective action plan: _____

_____

_____

_____

_____

"As the owner of this SSTS, I understand it is my responsibility to properly operate and maintain the sewage treatment system on this property, utilizing the Management Plan. If requirements in this Management Plan are not met, I will promptly notify the permitting authority and take necessary corrective actions. If I have a new system, I agree to adequately protect the reserve area for future use as a soil treatment system."

Property Owner Signature: Joy White (JW) Date 9/22/22

Management Plan Prepared By: Greg Westerlund Certification # 827

Permitting Authority: _____