

FIELD EVALUATION SHEET

*Handwritten mark*

PRELIMINARY EVALUATION DATE 7-12-21, FIELD EVALUATION DATE 7-12-21  
PROPERTY OWNER: Richard Sheldon, Suzanne Nelson PHONE (651)-470-4164  
ADDRESS: 29744 Parkridge Ave CITY, STATE, ZIP: Littleton Mo 64031  
LEGAL DESCRIPTION: Lot 14 Beaver Bay Acres  
PIN# 07-1-100200.300.400 SEC 29 T 46 R 27 TWP NAME Farm Island  
FIRE# 07-0-063202 LAKE/RIVER Farm Island LAKE CLASS GD OHWL      FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2	REFERENCE BM ELEV. <u>    </u> FT
DISTURBED AREAS	YES <u>    </u> NO <u>X</u>	YES <u>    </u> NO <u>    </u>	REFERENCE BM DESCRIPTION <u>    </u>
COMPACTED AREAS	YES <u>    </u> NO <u>X</u>	YES <u>    </u> NO <u>    </u>	<u>    </u>
FLOODING	YES <u>    </u> NO <u>X</u>	YES <u>    </u> NO <u>    </u>	<u>    </u>
RUN ON POTENTIAL	YES <u>    </u> NO <u>X</u>	YES <u>    </u> NO <u>    </u>	<u>    </u>
SLOPE %	<u>1</u>	<u>    </u>	<u>    </u>
DIRECTION OF SLOPE	<u>    </u>	<u>    </u>	<u>    </u>
LANDSCAPE POSITION	<u>top slope</u>	<u>    </u>	<u>    </u>
VEGETATION TYPES	<u>grass</u>	<u>    </u>	<u>    </u>

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 6', 1A     , 2     , 2A     

BOTTOM ELEVATION--FIRST TRENCH OR BOTTOM OF ROCK BED: #1      FT., #2      FT.

SOIL SIZING FACTOR: SITE #1 1.27, SITE #2     

CONSTRUCTION RELATED ISSUES:     

LIC# 2264 SITE EVALUATOR SIGNATURE: Lou Ann Maschler

SITE EVALUATOR NAME: Lou Ann Maschler TELEPHONE# 218-839-3042

LUG REVIEW      DATE     

Comments:       
      
    

SOIL BORING LOGS ON REVERSE SIDE

# SOILS CHARTS FOR BOTH PROPOSED AND ALTERNATE SITES

1 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
Pit dug		
0-5	Topsoil	10YR $\frac{3}{2}$
5-48	large rock & Sand	10YR $\frac{4}{4}$
48-72	coarse sand loam	10YR $\frac{2}{4}$

2 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

1 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

2 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

ADDITIONAL SOIL BORINGS MAY BE REQUIRED

# TRENCH AND BED WORKSHEET

## 1. AVERAGE DESIGN FLOW

- A. Estimated 450 gpd (see figure A-1)  
 or measured     x 1.5 (safety factor) =     gpd  
 B. Septic tank capacity 1000 gal (see figure C-1)

## 2. SOILS (Site evaluation data)

- C. Depth to restricting layer = 6 ft  
 D. Max depth of system Item 2C - 3 ft = 6 ft - 3 ft = 3 ft  
 E. Texture Sandy loam percolation rate     MPI  
 F. Soil Sizing Factor (SSF) 1.27 sqft/gpd (see figure D-15)  
 G. % Land Slope 1 %

## 3. TRENCH or BED BOTTOM AREA

- H. For trenches with 6 inches of rock below the pipe:  
 $A \times F = \text{   } \text{ gpd} \times \text{   } \text{ sqft/gpd} = \text{   } \text{ sqft}$   
 I. For trenches with 12 inches of rock below the pipe:  
 $A \times F \times 0.8 = \text{   } \text{ gpd} \times \text{   } \text{ sqft/gpd} \times 0.8 = \text{   } \text{ sqft}$   
 J. For trenches with 18 inches of rock below the pipe:  
 $A \times F \times 0.66 = \text{   } \text{ gpd} \times \text{   } \text{ sqft/gpd} \times 0.66 = \text{   } \text{ sqft}$   
 K. For trenches with 24 inches of rock below the pipe:  
 $A \times F \times 0.6 = \text{   } \text{ gpd} \times \text{   } \text{ sqft/gpd} \times 0.6 = \text{   } \text{ sqft}$   
 L. For gravity beds with 6 or 12 inches of rock below the pipe;  
 $1.5 \times A \times F = 1.5 \times \text{   } \text{ gpd} \times \text{   } \text{ sqft/gpd} = \text{   } \text{ sqft}$   
 For pressure beds with 6 or 12 inches of rock below the pipe;  
 $A \times F = \text{450} \text{ gpd} \times \text{1.27} \text{ sqft/gpd} = \text{572} \text{ sqft}$

## 4. DISTRIBUTION (Check all that apply)

- Bed (< 6% slope)     Drop boxes (any slope)     Rock  
 Trenches     Distribution box (< 3%)     Chamber  
 Pressure     Gravity     Gravelless

A-1: Estimated Sewage Flows in Gallons per Day

number of bedrooms	Class I	Class II	Class III	Class IV
2	300	225	180	60%
3	450	300	218	of the
4	600	375	256	values
5	750	450	294	in the
6	900	525	332	Class I,
7	1050	600	370	II, or III
8	1200	675	408	columns.

C-1: Septic Tank Capacities (in gallons)

Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	Liquid capacity with disposal & lift inside
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1500	2250	3000
7, 8 or 9	2000	3000	4000

D-15: Soil Characteristics and Soil Sizing Factor (SSF) (> 3' separation)

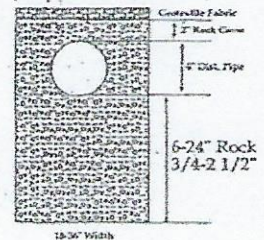
Percolation Rate minutes per inch (mpi)	Soil Texture	Soil Sizing Factor square feet/gallon per day(sqft/gpd)
faster than 0.1*	Coarse sand	0.83
0.1 to 5**	Medium sand	0.83
	Loamy sand	
	Fine sand	1.67
6 to 15	Sandy loam	1.27
16 to 30	Loam	1.67
31 to 45	Silt loam	2.00
	Silt	
46 to 60	Clay loam	2.20
	Sandy clay	
	Silty clay	
over 61 to 120***	Clay	4.20
	Sandy clay	
	Silty clay	

\*Use systems for rapidly permeable soils: pressure distribution or serial distribution with no trench >25% of the total system.  
 \*\*Soil having 50% or more fine sand plus very fine sand  
 \*\*\*A mound must be used.  
 \*\*\*\*An other or performance system must be used

D-9: Soil Characteristics and Soil sizing factors (SSF) for Gravelless Pipe

percolation rate (minutes/inch)	soil texture	lineal feet/gallon/day
Faster than 0.1*	Coarse Sand	—
0.1 to 5	Medium Sand	0.28
	Loamy Sand	
	Fine Sand**	0.6
6 to 15	Sandy Loam	0.42
16 to 30	Loam	0.56
31 to 45	Silt Loam	0.67
	Silt	
46 to 60	Clay Loam (CL)	0.74
	Sandy CL	
	Silty CL	
slower than 60***	Clay	—
	Sandy Clay	
	Silty Clay	

\*Soil too coarse for sewage treatment.  
 Use systems for rapidly permeable soils.  
 \*\*Soil having 50% or more fine sand + very fine sand.  
 \*\*\*Soil with too high a percentage of clay for installation of a standard inground system.



## 5. SYSTEM WIDTH, LENGTH and VOLUME

- M. Select trench width =     ft  
 N. If using rock, divide bottom area by width: (H, I, J, K or L) ÷ M =  
    sqft ÷     ft =     lineal feet  
 Rock depth below distribution pipe plus 0.5 foot times bottom area:  
 Rock depth in feet + 0.5 feet x Area (H, I, J, K, or L)  
(5 ft + 0.5 ft) x 572 sqft = 318 cuft 572  
 Volume in cubic yards =     cuft ÷ 27  
572 318 cuft ÷ 27 = 11.8 cu yds 21.1  
 Weight of rock in tons = cubic yds x 1.4  
21.1 11.8 cu yds x 1.4 = 29.5 tons 29.5  
 O. If using 10" Gravelless Pipe, Flow (A) x Gravelless SSF (see figure D-9)  
    gpd x     lineal feet/gpd =     lineal feet  
 P. If using Chambers, H, I, J, or K (based on height of chamber slats) ÷  
 width of chamber in feet (M)  
    sqft ÷     ft =     lineal ft

## 6. LAWN AREA

- Q. Select trench spacing, center to center =     feet  
 R. Multiply trench spacing by lineal feet R x Q = sqft of lawn area  
    ft x     ft =     sqft

7. Include a drawing with scale (one inch =     ft). Show pertinent boundaries, right of way, easements, location of house, garage, driveway, all other improvements, existing or proposed soil treatment system, well and dimensions of all elevations, setbacks and separation distances.

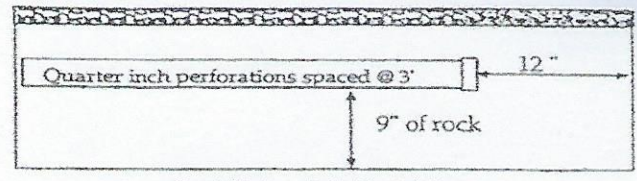
I hereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.

Lou Ann Maschler (signature) 2264 (license #) 7-12-21 (date)

PRESSURE DISTRIBUTION SYSTEM

Geotextile fabric

- Select number of perforated laterals 4
- Select perforation spacing = 3 ft
- Since perforations should not be placed closer than 1 foot to the edge of the rock layer (see diagram), subtract 2 feet from the rock layer length.



Perf Sizing 3/16" - 1/4"  
Perf Spacing 1.5'-5'

$$\frac{39}{\text{Rock layer length}} - 2 \text{ ft} = 37 \text{ ft}$$

- Determine the number of spaces between perforations. Divide the length (3) by perforation spacing (2) and round down to nearest whole number.  
Perforation spacing = 37 ft ÷ 3 ft = 12.33 spaces
- Number of perforations is equal to one plus the number of perforation spaces(4). Check figure E-4 to assure the number of perforations per lateral guarantees <10% discharge variation.

E-4: Maximum allowable number of 1/4-inch perforations per lateral to guarantee <10% discharge variation

perforation spacing (feet)	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	8	14	18	28
3.0	8	13	17	26
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

$$12.33 \text{ spaces} + 1 = 13.33 \text{ perforations/lateral}$$

- A. Total number of perforations = perforations per lateral (5) times number of laterals (1)  
13.33 perfs/lat x 4 lat = 53.22 perforations

E-6: Perforation Discharge in gpm

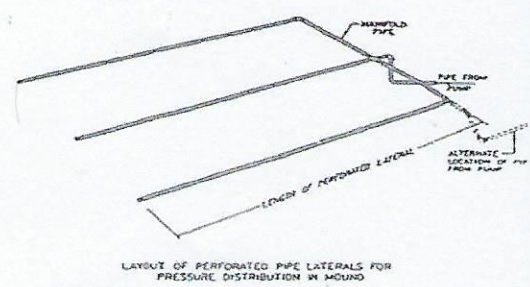
head (feet)	perforation diameter (inches)			
	1/8	3/16	7/32	1/4
1.0 <sup>a</sup>	0.18	0.42	0.56	0.74
2.0 <sup>b</sup>	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

<sup>a</sup> Use 1.0 foot for single-family homes.  
<sup>b</sup> Use 2.0 feet for anything else.

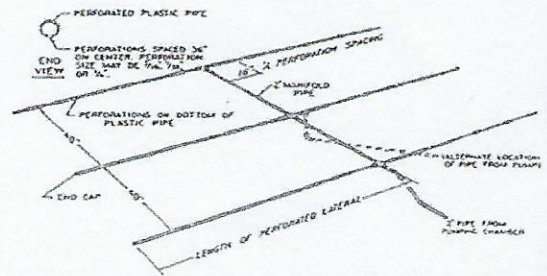
- B. Calculate the square footage per perforation. Should be 6-10 sqft/perf. Does not apply to at-grades.  
Rock bed area = rock width (ft) x rock length (ft)  
15 ft x 39 ft = 572 sqft  
Square foot per perforation = Rock bed area ÷ number of perfs (6)  
572 sqft ÷ 53.22 perfs = 11 sqft/perf

MANIFOLD LOCATED AT END OF PRESSURE DISTRIBUTION SYSTEM

- Determine required flow rate by multiplying the total number of perforations (6A) by flow per perforation (see figure E-6)  
53.22 perfs x .74 gpm/perfs = 39 gpm



- If laterals are connected to header pipe as shown on upper example, to select minimum required lateral diameter; enter figure E-4 with perforation spacing (2) and number of perforations per lateral (5) Select minimum diameter for perforated lateral = 1 1/2 inches.



- If perforated lateral system is attached to manifold pipe near the center, lower diagram, perforated lateral length (3) and number of perforations per lateral (5) will be approximately one half of that in step 8. Using these values, select minimum diameter for perforated lateral = \_\_\_\_\_ inches.

I hereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.  
Lou Ann Maschler (signature) 2264 (license #) 7-12-21 (date)

1. Determine pump capacity:

A. Gravity distribution

1. Minimum required discharge is 10 gpm
2. Maximum suggested discharge is 45 gpm. For other establishments at least 10% greater than the water supply rate, but no faster than the rate at which effluent will flow out of the distribution device.

B. Pressure distribution

See pressure distribution work sheet

From A or B Selected pump capacity: 39 gpm

2. Determine pump head requirements:

A. Elevation difference between pump and point of discharge?

12 feet

B. Special head requirement? (See Figure at right - Special Head Requirements)

5 feet

C. Calculate Friction loss

1. Select pipe diameter 2 in

2. Enter Figure E-9 with gpm (1A or B) and pipe diameter (C1).

Read friction loss in feet per 100 feet from Figure E-9

Friction Loss = 2.06 ft/100ft of pipe

3. Determine total pipe length from pump discharge to soil treatment discharge point. Estimate by adding 25 percent to pipe length for fitting loss. Total pipe length times 1.25 = equivalent pipe length

85 feet x 1.25 = 106 feet

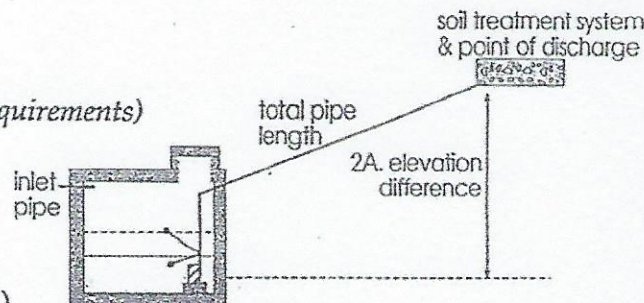
4. Calculate total friction loss by multiplying friction loss (C2) in ft/100 ft by the equivalent pipe length (C3) and divide by 100.

= 2.06 ft/100ft x 106 ÷ 100 = 2.18 ft

D. Total head required is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4)

17 ft + 5 ft + 2.18 ft =

Total head: 19.18 feet



Special Head Requirements	
Gravity Distribution	0 ft
Pressure Distribution	5 ft

flow rate gpm	E-9: Friction Loss in Plastic Pipe Per 100 feet		
	nominal pipe diameter		
	1.5"	2"	3"
20	2.47	0.73	0.11
25	3.73	1.11	0.16
30	5.23	1.55	0.23
35	6.96	2.06	0.30
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.70
60		5.60	0.82
65		6.48	0.95
70		7.44	1.09

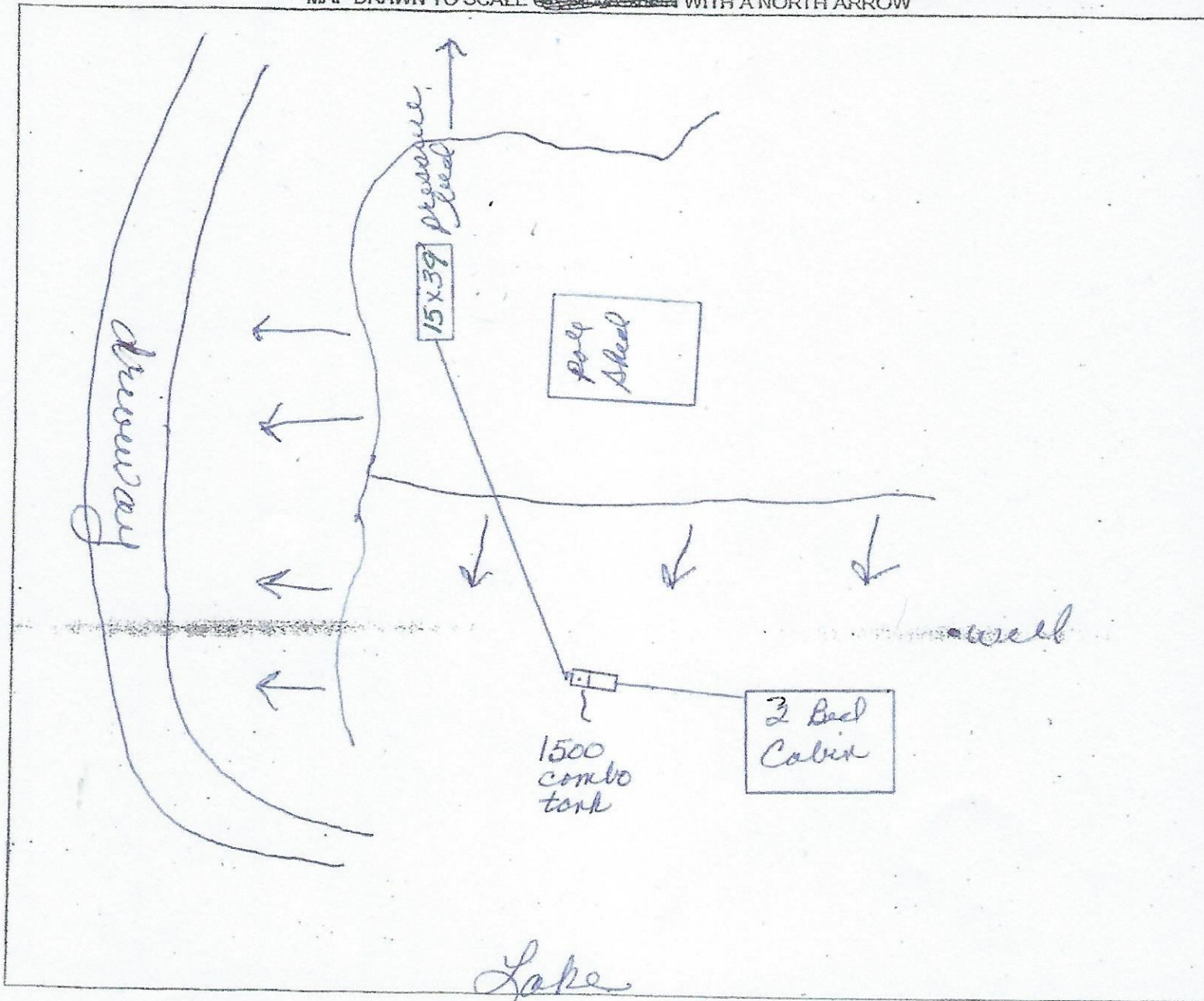
3. Pump selection

A pump must be selected to deliver at least 39 gpm (1A or B) with at least 19.18 feet of total head (2D)

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

Lou Ann Maschler (signature) 2264 (license #) 7-12-21 (date)

MAP DRAWN TO SCALE ~~1"=100'~~ 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
  - ALL SOIL TREATMENT AREAS
  - HORIZONTAL AND VERTICAL REFERENCE
  - POINT OF SOIL BORINGS
  - LOT EASEMENTS
  - DISTURBED/ COMPACTED AREAS
  - SITE PROTECTION--LATHE AND RIBBON EVERY 15 FT
  - ACCESS ROUTE FOR TANK MAINTENANCE
  - REQUIRED SETBACKS
  - STRUCTURES
  - OH/WL
  - LOT IMPROVEMENTS
  - ALL ISTS COMPONENTS
  - DIRECTION OF SLOPE
  - ALL LOT DIMENSIONS
  - PROPERTY LINES

**INDICATE ELEVATIONS**

- \_\_\_\_ BENCHMARK
- \_\_\_\_ ELEVATION OF SEWER LINE @ HOUSE
- \_\_\_\_ ELEVATION @ TANK INLET
- \_\_\_\_ ELEVATION @ BOTTOM OF ROCK LAYER
- \_\_\_\_ ELEVATION @ BOTTOM OF BORING OR RESTRICTIVE LAYER
- \_\_\_\_ ELEVATION OF PUMP
- \_\_\_\_ ELEVATION OF DISTRIBUTION DEVICE

DESIGNER SIGNATURE Lou Ann Maschler  
LICENSE# 2264

DATE 7-12-21

07-0-063200

PARTRIDGE AVE

07-0-063201

29730

29734

07-1-100500

07-1-100400

07-1-100300

07-1-100600

07-1-100700

Map may not be valid at this scale. Data was mapped at an accuracy of 1:24000 so any representation of the data at a larger scale is not advised.

07-0-063202

*Handwritten: 36' x 36' area*

29

07-1-100200

*Handwritten: 36' x 36' area*

44563

298TH LN

07-0-063204

07-0-063200

07-1-100100

07-1-100000

07-1-099800

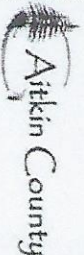
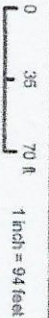
07-1-099700

nelson



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.

1:1,128



Date: 7/11/2021

# Subsurface Sewage Treatment System Management Plan

Property Owner: Suzanne Nelson Phone: 651-470-4164 Date: 7-12-21  
Mailing Address: \_\_\_\_\_ City: \_\_\_\_\_ Zip: \_\_\_\_\_  
Site Address: 29744 Partridge Ave City: Littleton Zip: 56431

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 service provider.

System Designer: check every \_\_\_\_\_ months.  
Local Government: check every \_\_\_\_\_ months.  
State Requirement: check every 36 months.

**My System needs to be checked every 36 months.**

## Homeowner Management Tasks

- Leaks* - Check (look, listen) for leaks in toilets and dripping faucets. Repair leaks promptly.
- Surfacing sewage* - Regularly check for wet or spongy soil around your soil treatment area.
- Effluent filter* - *Inspect and clean twice a year or more.*
- Alarms* - Alarm signals when there is a problem. Contact a service provider any time an alarm signals.
- Event counter or water meter* - Record your water use.  
-recommend meter readings be conducted (choose one: Daily  Monthly  Yearly

## Professional Management Tasks

- € Check to make sure tank is not leaking
- € Check and clean the in-tank effluent filter
- € Check the sludge/scum layer levels in all septic tanks
- € Recommend if tank should be pumped
- € Check inlet and outlet baffles
- € Check the drainfield effluent levels in the rock layer
- € Check the pump and alarm system functions
- € Check wiring for corrosion and function
- € Check dissolved oxygen and effluent temperature in tank
- € Provide homeowner with list of results and any action to be taken
- € Flush and clean laterals if cleanouts exist

"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 the 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 Name: \_\_\_\_\_

Designer Signature: Sue Ann Maschke

See Reverse Side for Home Owner Management Log



## Maintenance Log

Activity	Date Accomplished
<b><i>Check frequently:</i></b>	
Leaks: check for plumbing leaks	
Soil treatment area check for surfacing	
Lint filter: check, clean if needed	
Effluent screen: if owner-maintained	
Water usage rate (monitor frequency _____)	
<b><i>Check annually:</i></b>	
Caps: inspect, replace if needed	
Sludge & Scum/Pump	
Inlet & Outlet baffles	
Drainfield effluent leaks	
Pump, alarm, wiring	
Flush & clean laterals if cleanouts exists	
Other: _____	
Other: _____	

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Mitigation/corrective action plan: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_