FIELD EVALUATION SHEET

PRELIMINARY EVALUATION DATE 5/01/2015, FIELD EVALUATION DATE 8/11/2020
PROPERTY OWNER: Scott Rysdl PHONE 612-868-7585
ADDRESS: 16833 332nd St CITY,STATE,ZIP: Isle MN 56342
LEGAL DESCRIPTION: Henry Estates
PIN# 16-1-078700 SEC 32 T 44 R 25 TWP NAME Lake Side
FIRE# LAKE/RIVER Mille Lacs LAKE CLASS Rec OHWL 75 FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2
DISTURBED AREAS	YES X NO	YES NO
COMPACTED AREAS	YES NO X	YES NO
FLOODING	YES NO X	YES NO
RUN ON POTENTIAL	YES NO X	YES NO
SLOPE %	<1%	
DIRECTION OF SLOPE	East	
LANDSCAPE POSITION	Foot Slope	
VEGETATION TYPES	Lawn Grass	

REFERENCE BM ELEV. 100 FT.
REFERENCE BM DESCRIPTION Bottom of Chimney at House.

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 10", 1A 10", 2 ____, 2A ____

BOTTOM ELEVATION-FIRST TRENCH OR BOTTOM OF ROCK BED: #1 +2.5 FT., #2 ____ FT.

SOIL SIZING FACTOR: SITE #1 2.0, SITE #2 ____

CONSTRUCTION RELATED ISSUES: Remove Old Holding Tank Fill w/ Washed Sand

LIC# L2006 SITE EVALUATOR SIGNATURE: Dave Engdahl

SITE EVALUATOR NAME: Dave Engdahl TELEPHONE# 592-3606

LUG REVIEW ____ DATE ____

Comments: ____

SOIL BORING LOGS ON REVERSE SIDE

Form des 2/20/98

MOUND DESIGN WORK SHEET (For Flows up to 1200 gpd)

A. Average Design FLOW

Estimated 450 gpd *(see figure A-1)*
or measured _____ x 1.5 (safety *factor*) = _____ gpd

A-1: Estimated Sewage Flows in Gallons per Day

number of bedrooms	Class I	Class II	Class III	Class IV
2	300	225	150	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.

B. SEPTIC TANK Capacity

1000 gallons *(see figure C-1)*

C-1: Septic Tank Capacities (in gallons)

Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	Liquid capacity with disposal & fifth fixture
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1250	2250	3000
7, 8 or 9	2000	3000	4000

C. SOILS *(refer to site evaluation)*

1. Depth to restricting layer = 5 feet
2. Depth of percolation tests = — feet
3. Texture Loam
   Percolation rate 16-20 mpi
4. Soil loading rate .60 gpd/sqft *(see figure D-33)*
5. Percent land slope <1 %

D. ROCK LAYER DIMENSIONS

1. Multiply average design flow (A) by 0.83 to obtain required rock layer area.
   450 gpd x 0.83 sqft/gpd = 375 sqft
2. Determine rock layer width = 0.83 sqft/gpd x linear Loading Rate (LLR)
   0.83 sqft/gpd x 12 gpd/sqft = 10 ft
3. Length of rock layer = area ÷ width =
   375 sqft (D1) ÷ 10 ft (D2) = 37.5 ft

Mound LLR	
< 120 MPI	≤12
≥ 120 MPI	≤6

E. ROCK VOLUME

1. Multiply rock area (D1) by rock depth of 1 ft to get cubic feet of rock
   375 sqft x 1 ft = 375 cuft
2. Divide cuft by 27 cuft/cuyd to get cubic yards
   375 cuft ÷ 27 cuyd/cuft = 13.9 cuyd
3. Multiply cubic yards by 1.4 to get weight of rock in tons
   _____ cuyd x 1.4 ton/cuyd = 19.5 tons

F. SEWAGE ABSORPTION WIDTH

Absorption width equals absorption ratio (See Figure D-33) times rock layer width (D2)

10 x 2.0 ft = 20 ft

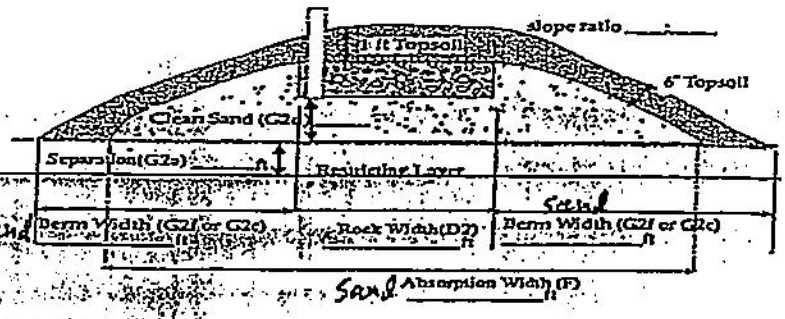
D-33: Absorption Width Sizing Table

Percolation Rate in Minutes per Inch (MPI)	Soil Texture	Loading Rate Gallons per day per square foot	Absorption Ratio
Faster than 5	Coarse Sand, Medium Sand, Loamy Sand, Fine Sand	1.20	1.00
6 to 15	Sandy Loam	0.72	1.50
16 to 30	Loam	0.60	2.00
31 to 45	Silt Loam, Silt	0.50	2.40
46 to 60	Sandy Clay Loam, Silty Clay Loam, Clay Loam	0.43	2.67
61 to 120	Silty Clay, Sandy Clay, Clay	0.24	5.00
Slower than 120*			

*System not approved for these soils except under special circumstances

<=1% land slope

G. Mound.Slope Width and Length
(landslope less than or equal to 1%)



1. Absorption width (F) 20 ft

2. Calculate mound size

a. Determine depth of clean sand fill at upslope edge of rock layer = 3 ft minus the distance to restricting layer (C1)

3 ft - .5 ft = 2.5 ft

b. Mound height at the upslope edge of rock layer = depth of clean sand for separation (G2a) at upslope edge plus depth of rock layer (1 ft) plus depth of cover (1 ft)

2.5 ft + 1ft + 1ft = 4.5 ft

c. Berm width = upslope mound height (G2b) times 4 *(4 is recommended, but could be 3-12)*

4.5 x 4 = 13.5 ft

d. The total landscape width is the sum of berm (G2c) width plus rock layer width (D2) plus berm v (G2c): 13.5 ft + 10 ft + 13.5 ft = 37.0 ft

e. Additional width necessary for absorption = absorption width (F) minus the landscape width (G2

20 ft - 37 ft = <0 ft, *if number is negative (<0) skip to g*

f. Final berm width = additional width (G2e) plus the berm width (G2c)

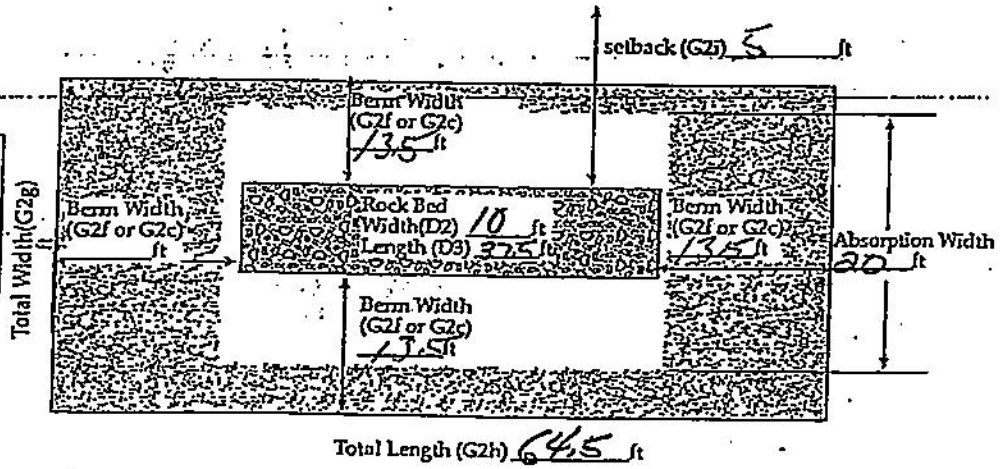
37 ft + 0 ft = 37 ft

g. Total mound width is the sum of berm width (G2f or G2c) plus rock layer width (D2) plus berm width (G2f or G2c): 13.5 ft + 10 ft + 13.5 ft = 37 ft

h. Total mound length is the sum of berm (G2f or G2c) plus rock layer length (D3) plus berm (G2f o G2c): 13.5 ft + 32.5 ft + 13.5 ft = 64.5 ft

i. Setbacks from the rockbed are calculated as follows: the absorption width (F) minus the rock bed w (D2) divided by 2: (20 ft - 10 ft) ÷ 2 = 5 ft

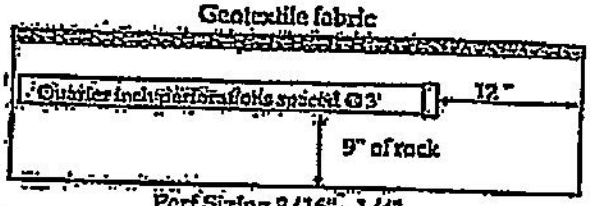
Final Dimensions:
37 x 64.5



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

(signature) <2006 (license #) 8/08/20 (date)

PRESSURE DISTRIBUTION SYSTEM



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

1. Select number of perforated laterals 3

2. Select perforation spacing = 3.0 ft

3. 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.

37.5 (Rock layer length) - 2 ft = 35.5 ft

4. Determine the number of spaces between perforations. Divide the length (3) by perforation spacing (2) and round down to nearest whole number.

Perforation spacing = 35.5 ft ÷ 3 ft = 12 spaces

5. 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.*

12 spaces + 1 = 13 perforations/lateral

6. A. Total number of perforations = perforations per lateral (5) times number of laterals (1)

13 perfs/lat x 3 lat = 39 perforations

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)
10 ft x 37.5 ft = 375 sqft
Square foot per perforation = Rock bed area ÷ number of perfs (6)
375 sqft ÷ 39 perfs = 9.6 sqft/perf

7. Determine required flow rate by multiplying the total number of perforations (6A) by flow per perforation *(see figure E-6)*

39 perfs x .74 gpm/perfs = 28.86 gpm

8. 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 = 1¼ inches.

9. 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.

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	25
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

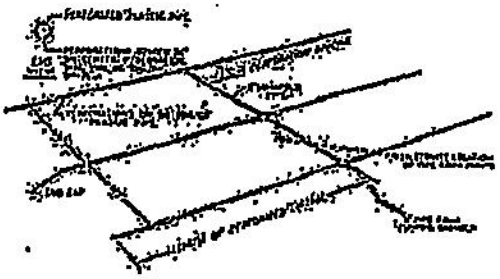
E-6: Perforation Discharge in gpm

head (feet)	perforation diameter (inches) 1/8	3/16	7/32	1/4
1.0[a]	0.18	0.42	0.66	0.74
2.0[b]	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

[a] Use 1.0 foot for single-family homes.
[b] Use 2.0 foot for anything else.

MANIFOLD LOCATED AT END OF PRESSURE DISTRIBUTION SYSTEM

LAYOUT OF PERFORATED PIPE LATERALS FOR PRESSURE DISTRIBUTION SYSTEMS



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Bruce Lindahl (signature) <2006 (license #) 8/8/20 (date)

PUMP SELECTION PROCEDURE

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

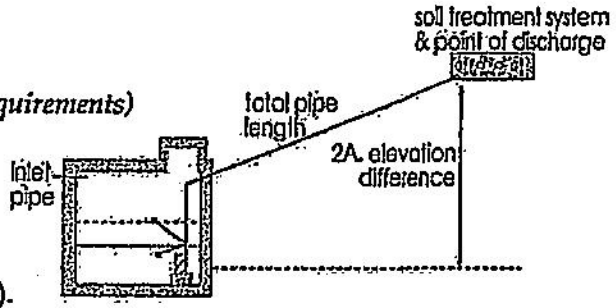
See pressure distribution work sheet

From A or B Selected pump capacity: 28.86 gpm

2. Determine pump head requirements:

A. Elevation difference between pump and point of discharge?
7.4 feet

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



Special Head Requirements	
Gravity Distribution	0 ft
Pressure Distribution	5 ft

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 = 5.23 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
   150 feet x 1.25 = 19 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.
   = 19 ft/100ft x 1.55 ÷100 = .3 ft

D. Total head required is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4)
7.4 ft + 5 ft + .3 ft =

Total head: 12.7 feet

E-9: Friction Loss in Plastic Pipe Per 100 feet			
	nominal pipe diameter		
flow rate gpm	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

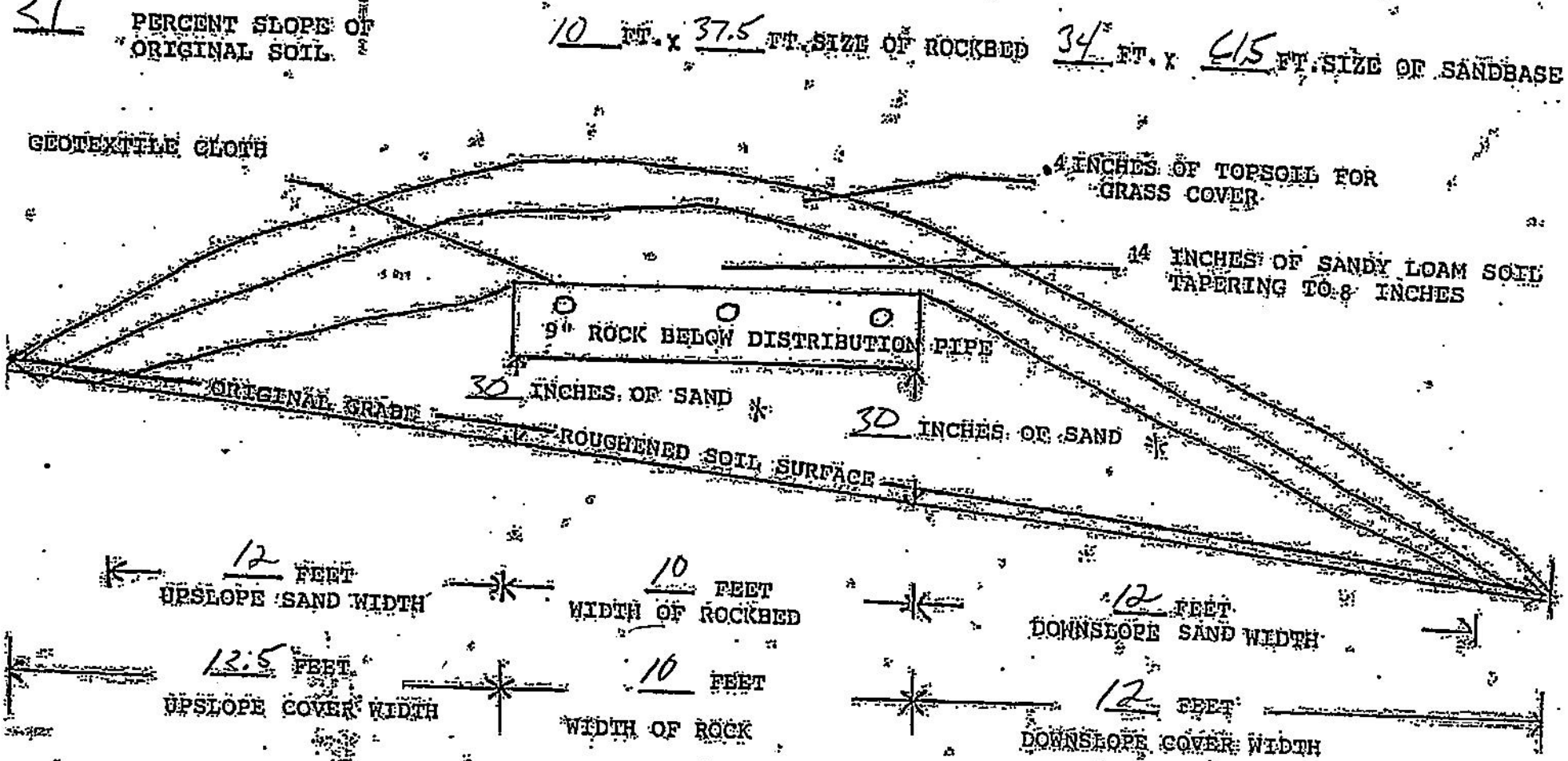
3. Pump selection

A pump must be selected to deliver at least 28.86 gpm (1A or B) with at least 12.7 feet of total head (2D)

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

[signature] (signature) L2006 (license #) 8/8/20 (date)

MOUND CROSS-SECTION



SOILS CHARTS FOR BOTH PROPOSED AND ALTERNATE SITES

1 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
B1 0-9	T.S Sandy Loam	7.5YR 3/1
9-15	Fill Mix of Soil Some Sandy Some Loam	7.5YR 5/3 4/4 5/2 3/3

2 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
B2 0-10	B.S Sand Loam	7.5YR 3/1
10-14	Fill Mixed Soil Some Sand Some Loam	7.5YR 4/4 5/3 4/6

1 (ALTERNATE) SOILS DATA

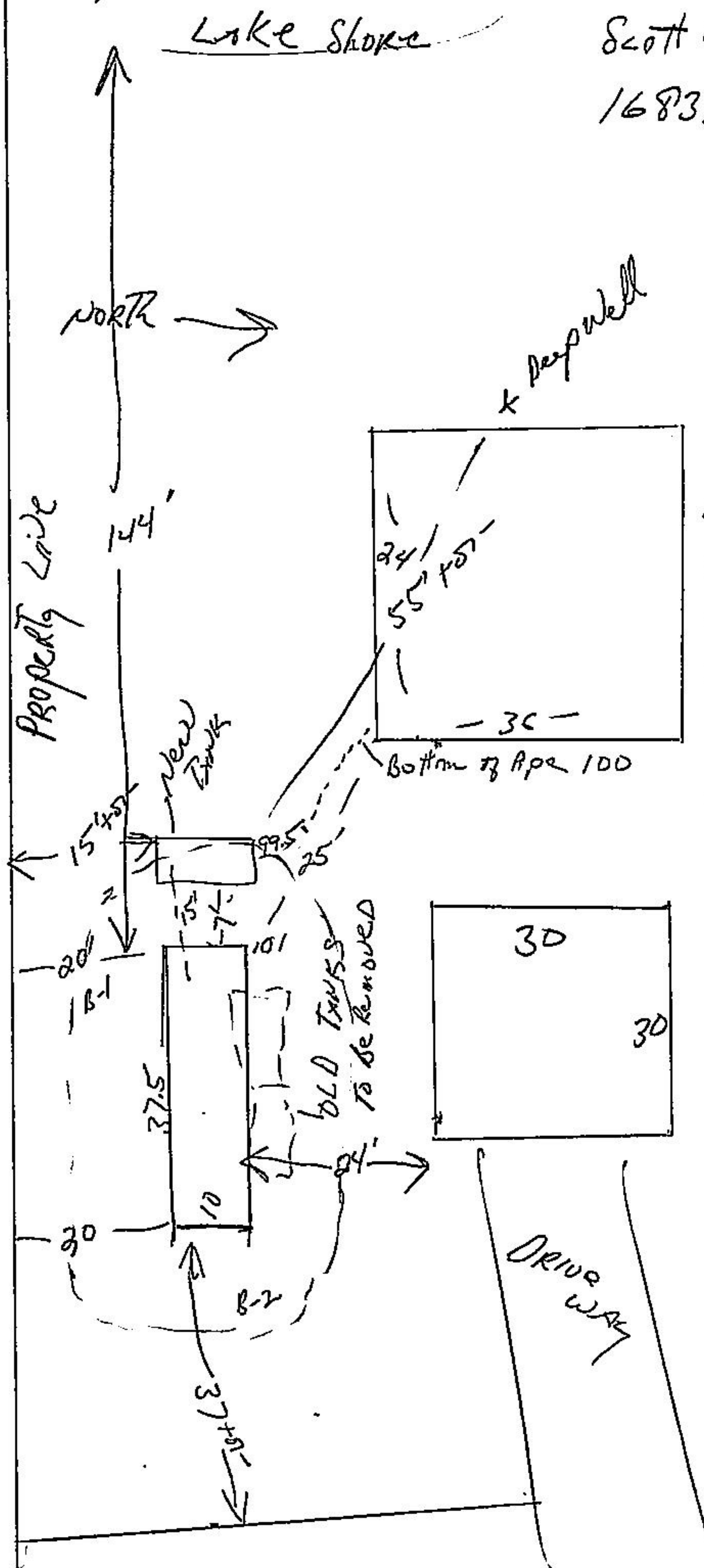
DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

2 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

ADDITIONAL SOIL BORINGS MAY BE REQUIRED

Scott Rogers
16833 332pL.



Line at home 100
Line at Tank 99.5
G.L at Mound 101
Hgt of Sand 103.5
Line Discharge 104.4
Pump Lift 97.0
Pump Discharge 7.4

Dave Engdahl
L2006 8/8/20

Subsurface Sewage Treatment System Management Plan

Property Owner: Scott Rogers Phone: 612-867-7585 Date: 8/8/2020

Mailing Address: 3126 8th Ave N City: Anoka Zip: 55303

Site Address: 16833 332nd St City: Isle Zip: 56342

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 or maintenance provider.

System Designer: Recommends SSTS check every 24 months.
Local Government: Recommends SSTS check every 24 months.
State Requirement: Requires SSTS check every 36 months.
(State requirements are based on MN Rules Chapter 7080.2450, Subp. 2 & 3)

My System needs to be checked every 24 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 or maintenance provider any time an alarm signals.
- ☑ *Event counter or water meter* – Record your water use.
  - ☑ -recommend meter readings be conducted (*circle one:* DAILY WEEKLY **MONTHLY** N/A)

Licensed septic service provider or maintenance provider (Check all that apply):

- ☒ Check to make sure tank is not leaking
- ☒ Check and clean the in-tank effluent filter (if exists)
- ☒ 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 Signature: [signature] Date: 8/6/20

Designer Signature: Dave Engstrom Date: 8/08/2020

See Reverse Side for Management Log