Ruyak Enterprises, Inc.

6909 State 6 NE
PO Box 156
Remer, MN 56672

Licensed, Bonded, Insured
MPCA Installer L3206, Designer

Date: 11 Aug 2023
Owner: Tony Petroske
PID #: 33-0-035400

The individual sewage treatment system being installed on this property must follow MPCA Chapter 7080 Code or any local zoning codes that may be more restrictive. If the design has to change due to unknown site conditions during construction, please contact me as soon as possible. It is the installers responsibility to call for an inspection on this system and to have it property inspected before backfill.

Maintenance performed on the system over it's life span will provide an individual sewage treatment system with a much better chance of future hydraulic longevity.

Please contact me if you have any questions regarding this design before commencing construction.

The septic tank should be pumped for sludge accumulation at a minimum every 3 years. This must be done by a licensed pumper and records must be kept by the owner. Water conservation is always recommended and a good idea to increase the life of your system.

If the original site soils have been altered, compacted, or disturbed in any way or the drain field areas change location this design is null and void.

It is the owner's responsibility to make sure there is a county permit prior to installation.

Sincerely,

Marc Ruyak
Ruyak Enterprises, Inc.
6909 State 6 NE
Remer, MN 56672
(218) 566-2913
Changemyland@hotmail.com

FIELD EVALUATION SHEET

PRELIMINARY EVALUATION DATE 9 JUN 23, FIELD EVALUATION DATE 10 AUG 23
PROPERTY OWNER: TONY PETROSKE PHONE 641-436-0710
ADDRESS: 60933 240TH AVE CITY,STATE,ZIP: JACOBSON, MN 55752
LEGAL DESCRIPTION: (NE NW) LOT 1
PIN# 33-0-035400 SEC 23 T 51 R 24 TWP NAME VERNDON
FIRE# 60933 LAKE/RIVER MISSISSIPPI RIVER LAKE CLASS _____ OHWL _____ FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2
DISTURBED AREAS	YES ___ NO X	YES ___ NO X
COMPACTED AREAS	YES ___ NO X	YES ___ NO X
FLOODING	YES ___ NO X	YES ___ NO X
RUN ON POTENTIAL	YES X NO ___	YES ___ NO ___
SLOPE %	0	0
DIRECTION OF SLOPE	N/A	N/A
LANDSCAPE POSITION	SUMMIT	
VEGETATION TYPES	GRASS	

REFERENCE BM ELEV. _____ FT.
REFERENCE BM DESCRIPTION

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 6", 1A 8", 2 6", 2A _____

BOTTOM ELEVATION--FIRST TRENCH OR BOTTOM OF ROCK BED: #1 -3 FT., #2 _____ FT.

SOIL SIZING FACTOR: SITE # 1 1.67, SITE #2 _____

CONSTRUCTION RELATED ISSUES: NONE

LIC# L-3206 SITE EVALUATOR SIGNATURE: [signature]

SITE EVALUATOR NAME: MARC RUYAK TELEPHONE# 218 566 2913

LUG REVIEW _____ DATE _____

Comments: MENTORED BY DAN SWITZER

SOIL BORING LOGS ON REVERSE SIDE

Form des 2/20/98

SOILS CHARTS FOR BOTH PROPOSED AND ALTERNATE SITES

1 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	TOPSOIL LOAM	10YR 2/1
6-8	LOAM	• MOTTLES & DEPLETIONS AT BOTTOM OF TOPSOIL
8-	CLAY	

2 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-8	TOPSOIL LOAM	10YR 2/1
8-12	LOAM	• MOTTLES & DEPLETIONS AT BOTTOM OF TOPSOIL
12-	CLAY	

#3

1 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	TOPSOIL LOAM	10YR 2/1
6-12	LOAM	• MOTTLES & DEPLETIONS AT BOTTOM OF TOPSOIL
12-	CLAY	

2 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

ADDITIONAL SOIL BORINGS MAY BE REQUIRED

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

A. Average Design FLOW

Estimated 300 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	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.

B. SEPTIC TANK Capacity

750 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 & 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

C. SOILS *(refer to site evaluation)*

1. Depth to restricting layer = 0 feet
2. Depth of percolation tests = — feet
3. Texture LOAM
   Percolation rate — mpi
4. Soil loading rate 1.67 gpd/sqft *(see figure D-33)*
5. Percent land slope 0 %

D. ROCK LAYER DIMENSIONS

1. Multiply average design flow (A) by 0.83 to obtain required rock layer area.
   300 gpd x 0.83 sqft/gpd = 249 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 =
   249 sqft (D1) ÷ 10 ft (D2) = 24.9 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
   249 sqft x 1 ft = 249 cuft
2. Divide cuft by 27 cuft/cuyd to get cubic yards
   249 cuft ÷ 27 cuyd/cuft = 9.22 cuyd
3. Multiply cubic yards by 1.4 to get weight of rock in tons
   9.22 cuyd x 1.4 ton/cuyd = 12.91 tons

F. SEWAGE ABSORPTION WIDTH

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

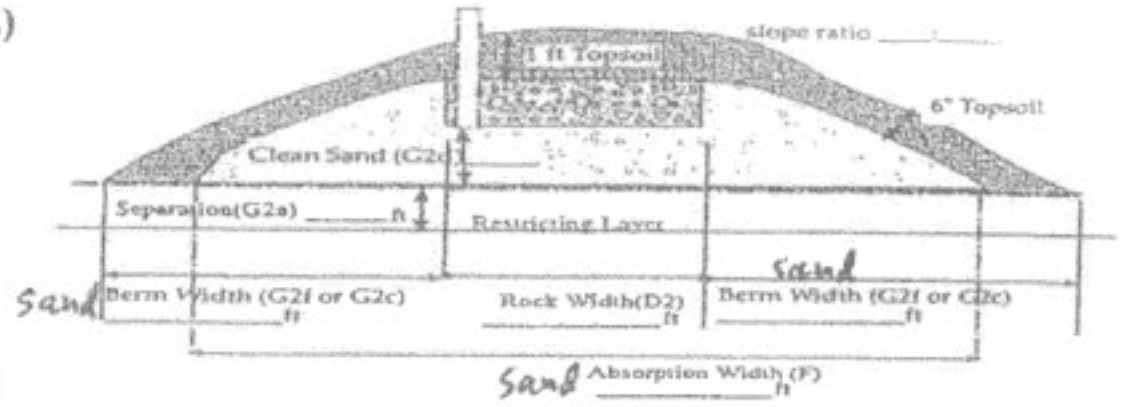
2 x 10 ft = 20 ft

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	Course Sand Medium Sand Loamy Sand Fine Sand	1.20	1.00
6 to 15	Sandy Loam	0.79	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	0.45	2.67
61 to 120	Silty Clay Sandy Clay Clay	0.24	5.00
Slower than 120*			

*System designed for these soils must be other or performance

<=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 - 0 ft = 3 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)

3 ft + 1ft + 1ft = 5 ft

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

5 x 4 = 20 ft

d. The total landscape width is the sum of berm (G2c) width plus rock layer width (D2) plus berm widt (G2c): 20 ft + 10 ft + 20 ft = 50 ft

e. Additional width necessary for absorption = absorption width (F) minus the landscape width (G2d)

_____ft - _____ft = _____ft, *if number is negative (<0) skip to g*

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

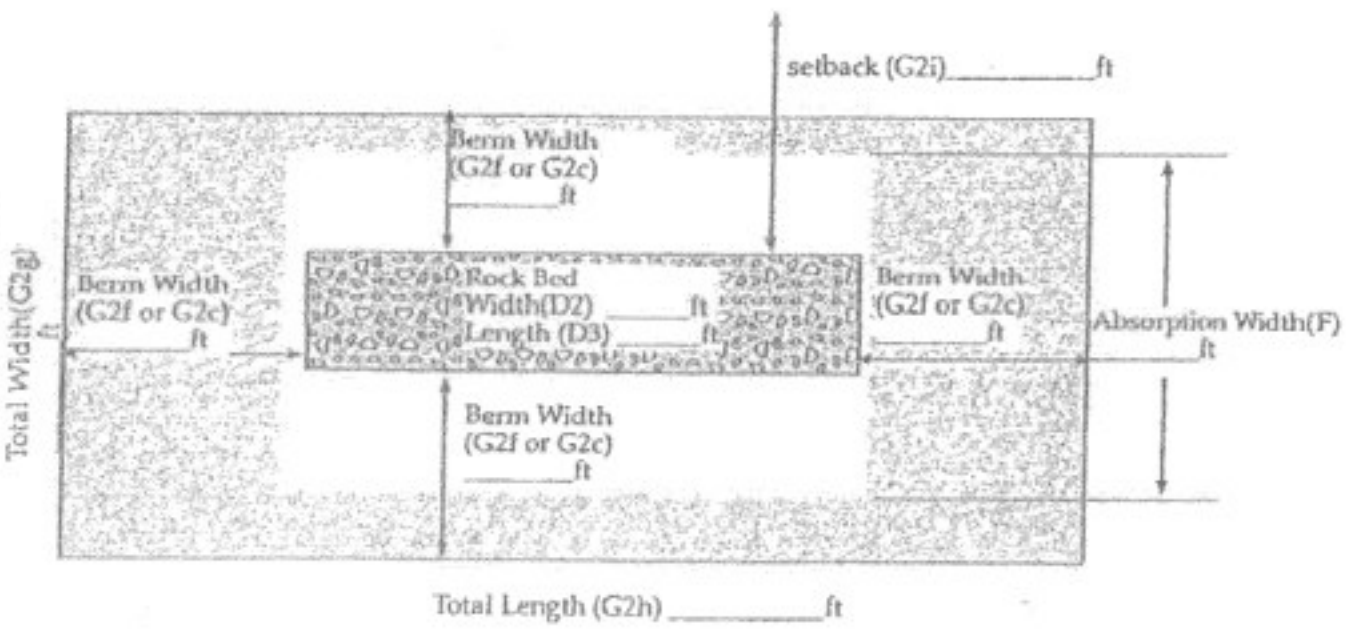
_____ft + _____ft = _____ft

g. Total mound width is the sum of berm width (G2f or G2c) plus rock layer width (D2) plus berm width (G2f or G2c): 20 ft + 10 ft + 20 ft = 50 ft

h. Total mound length is the sum of berm (G2f or G2c) plus rock layer length (D3) plus berm (G2f or G2c): 20 ft + 24.9 ft + 20 ft = 64.9 ft

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

Final Dimensions:
64.9 x 50



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

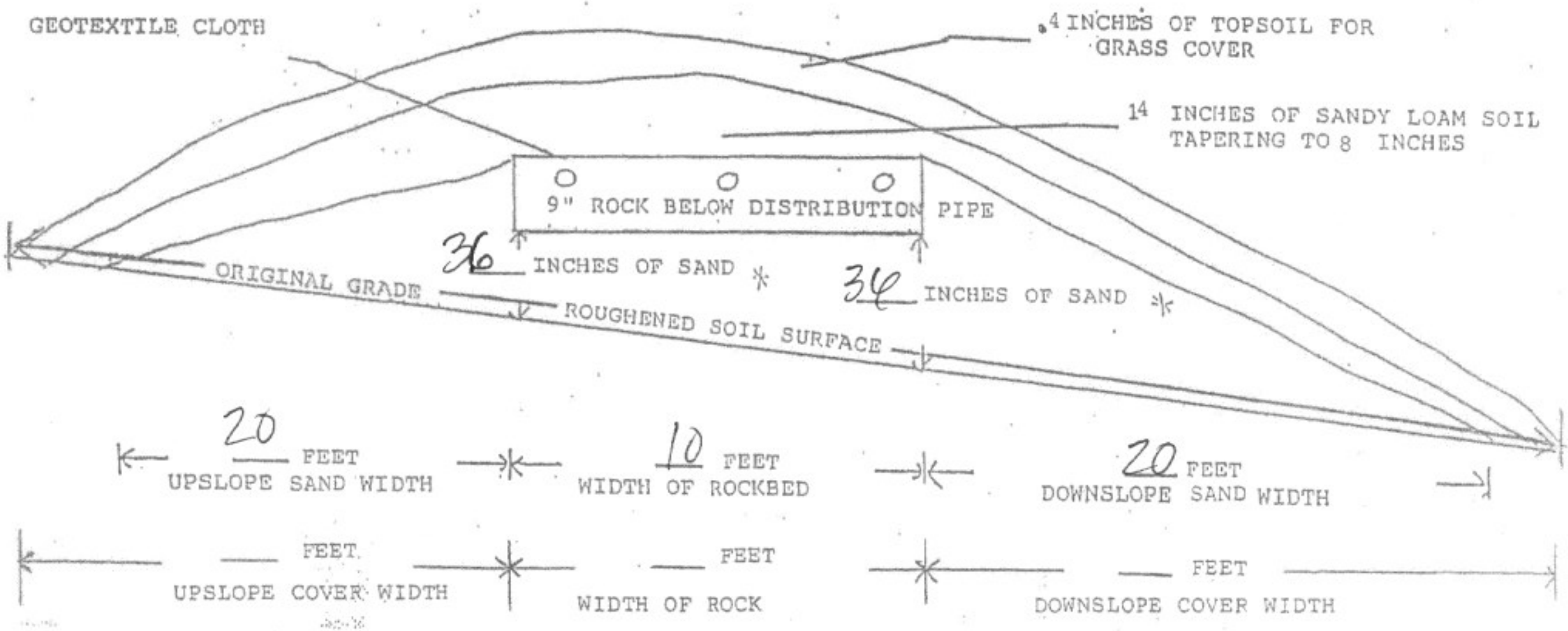
_____(signature) L3206 (license #) 11 AUG 23 (date)

MENTORED BY DAN SWITZER

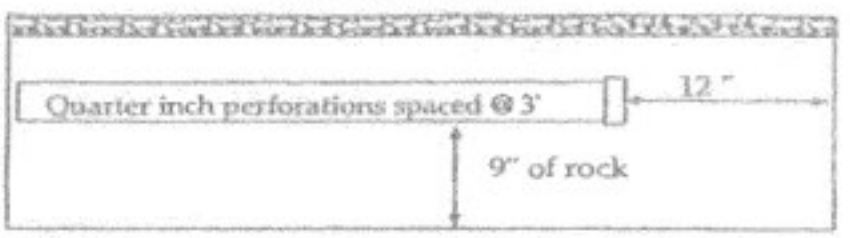
MOUND CROSS-SECTION

0 PERCENT SLOPE OF ORIGINAL SOIL

10 FT. x 24.9 FT. SIZE OF ROCKBED 50 FT. x 64.9 FT. SIZE OF SANDBASE



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 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.

   24.9 (Rock layer length) - 2 ft 22.9 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 = 22.9 ft ÷ 3 ft = 7 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.*

   7 spaces + 1 = 8 perforations/lateral

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

   8 perfs/lat x 3 lat = 24 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 24.9 ft = 249 sqft
   Square foot per perforation = Rock bed area ÷ number of perfs (6)
   249 sqft ÷ 24 perfs = 10 sqft/perf

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

   24 perfs x .74 gpm/perfs = 17.76 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 = 1.5 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

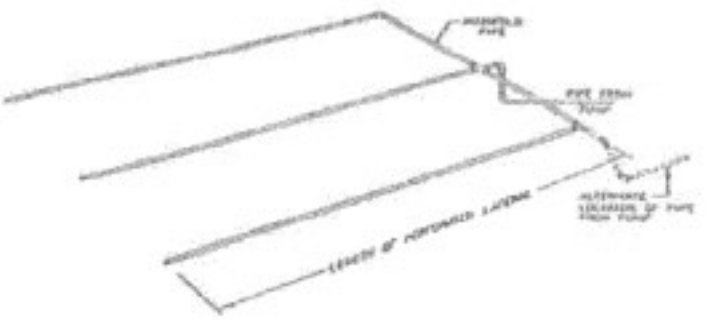
perforation spacing (feet)	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	8	14	18	28
3.0	8	13	17	26
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

E-6: Perforation Discharge in gpm

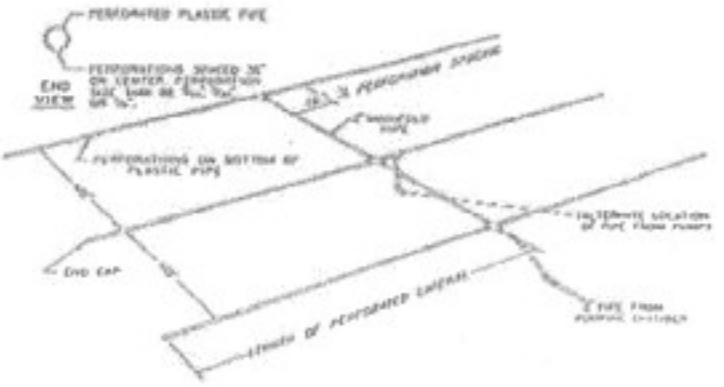
head (feet)	perforation diameter (inches)			
	1/8	3/16	7/32	1/4
1.0[a]	0.18	0.42	0.56	0.74
2.0[b]	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

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

MANIFOLD LOCATED AT END OF PRESSURE DISTRIBUTION SYSTEM



LAYOUT OF PERFORATED PIPE LATERALS FOR PRESSURE DISTRIBUTION IN MOUND



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

_____ (signature) L3206 (license #) 11 AUG 23 (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: 17.76 gpm

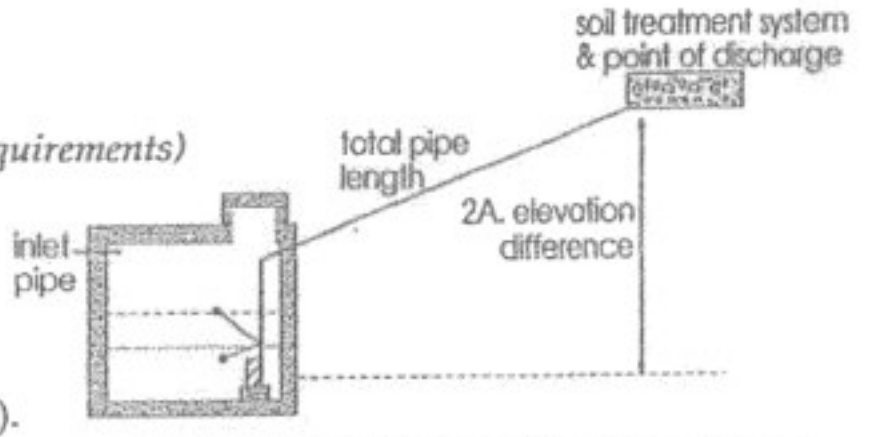
2. Determine pump head requirements:

A. Elevation difference between pump and point of discharge?

8 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 2.0 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

   25 feet x 1.25 = 31.25 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 31.25 ÷100 = .6438 ft

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

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

8 ft + 5 ft + .64 ft =

Total head: 13.64 feet

3. Pump selection

A pump must be selected to deliver at least 17.76 gpm (1A or B) with at least 13.6 feet of total head (2D)

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

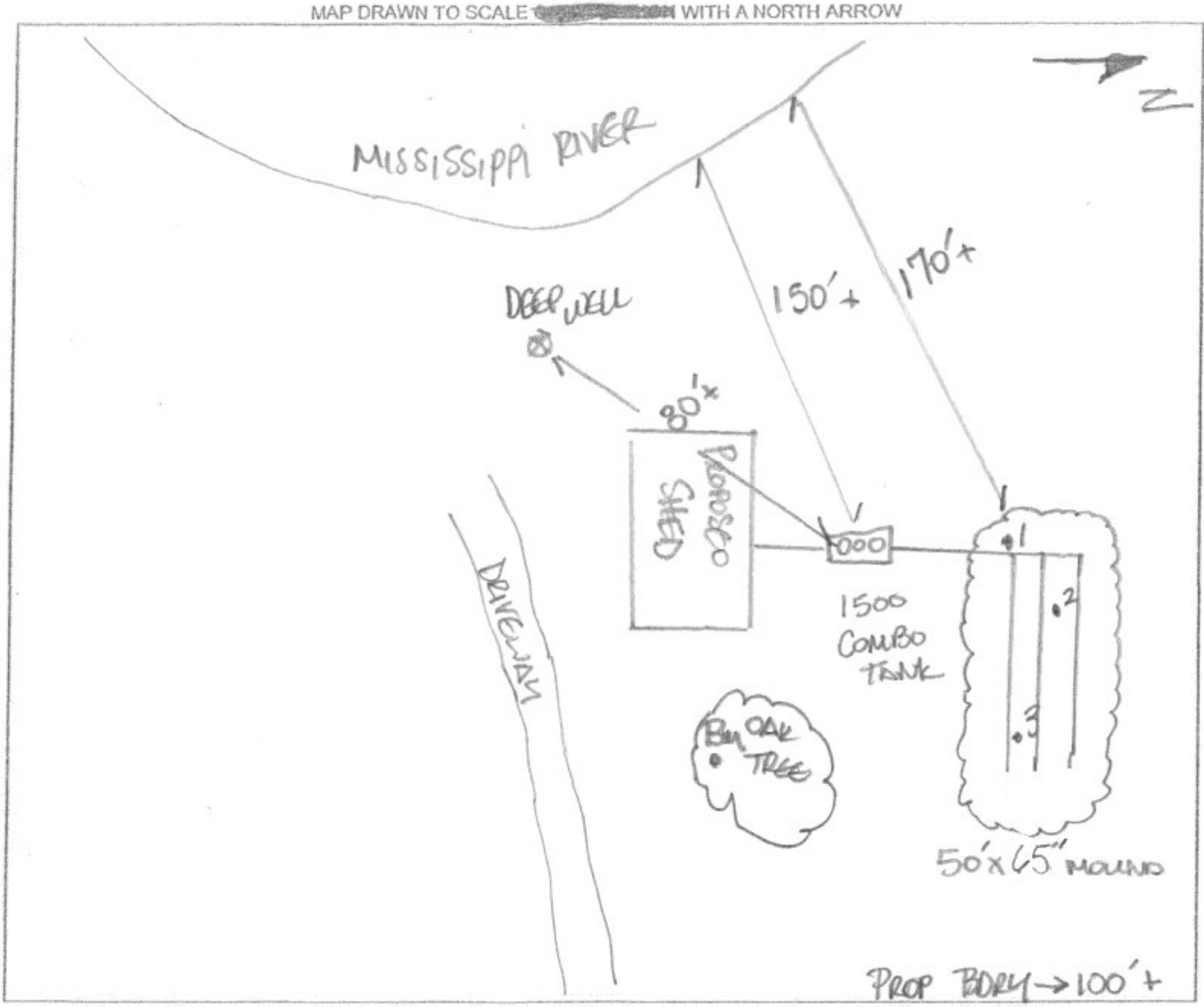
[signature] (signature) L3206 (license #) 11 Aug 23 (date)

CLIENT: TONY PETROSKE

SKETCH SHEET

DATE: 11 AUG 23

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

- [x] WATER WELLS WITHIN 100 FT OF TREATMENT AREAS
- [ ] PRESSURE WATER LINES WITHIN 10 FT OF TREATMENT AREAS
- [ ] STRUCTURES
- [ ] LOT IMPROVEMENTS
- [x] 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

100	BENCHMARK
98	ELEVATION OF SEWER LINE @ HOUSE
97	ELEVATION @ TANK INLET
103	ELEVATION @ BOTTOM OF ROCK LAYER
	ELEVATION @ BOTTOM OF BORING OR
100	RESTRICTIVE LAYER
95	ELEVATION OF PUMP
103.5	ELEVATION OF DISTRIBUTION DEVICE

DESIGNER SIGNATURE [signature]

DATE 11 AUG 23

LICENSE# L3206

MENTORED BY DAN SUTTER

Subsurface Sewage Treatment System Management Plan

Property Owner: TONY PETROSKE Phone: 641-436-0710 Date: 11AUG23

Mailing Address: 60933 240TH AVE City: JACOBSON Zip: 55752

Site Address: SAME City: _____ Zip: _____

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 36 months.
Local Government: Recommends SSTS check every 36 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 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 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: _____ Date: _____

Designer Signature: [signature] Date: 11AUG23

See Reverse Side for Management Log

Maintenance Log

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										
Water usage rate (monitor frequency _____)										
Check annually:										
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:_____