Laird

RECEIVED
SEP 19 2018
ZONING

370105000

Onsite Septic System Application

YEAR	
SCANNED	
LAKE	

Becker County Planning & Zoning
915 Lake Ave, Detroit Lakes, MN 56501
Phone (218)-846-7314; Fax (218)-846-7266

50501 / 180th

1. PROPERTY DATA (as it appears on the tax statement, purchase agreement or deed)
Parcel Number(s) of property where the system will be installed: 370105000

Is this a split of an existing property? Yes (No)
(If yes and a parcel number has not yet been assigned, indicate the main parcel number from which the new parcel was split.)

Section 27 Township 139 Range 037 Township Name Wolf Lake - Sec 27

Lake Name _____ Lake Classification _____

Legal Description: NE 1/4 of NW 1/4

Project Address: 50501 180th St. Frazee MN

2. PROPERTY OWNER INFORMATION (as it appears on the tax statement, purchase agreement or deed)
Owner's First Name Nathan Owner's Last Name Skoog

Mailing Address 19448 Co Hwy 47 City, State, Zip OSAGE MN 56570

Phone Number (218) 850-8325

3. DESIGNER/INSTALLER INFORMATION
Designer Name Lee A. Hendrickson Company Name L&B Excavating Inc License # 1158

Address P.O. Box 185 56464 Phone Number (218) 639-2198

Installer Name Same as Designer Company Name _____ License # _____

Address _____ Phone Number _____

4. SYSTEM DESIGN INFORMATION

System Status

- X Vacant Lot-No existing system-new structure
- ____ Replacement – structure removed and being rebuilt
- ____ Failing –Replacement- cesspool/seepage pit or other
- ____ Enlargement of system-Undersized
- ____ Repairs Needed to existing
- ____ Additional system on property

What will new system serve? Check one

- X Dwelling
- ____ Resort/Commercial
- ____ Commercial (Non-resort)
- ____ Other – explain below

9/18/18 Date of site evaluation

Design Flow 750 Gallons Per Day
Number of Bedrooms 5
Garbage Disposal ____ Yes X No
Dishwasher X Yes ____ No
Lift station in House ____ Yes X No
Grinder pump in House ____ Yes X No

Well Depth 50'+
Depth of other wells within 100 ft of system _____

Original Soil X Compacted Soil ____
Type of Soil Observation
____ Pit ____ Probe X Boring
Depth to Restricting Layer 1'
Maximum Depth of System 2' Sand in mound

Size of All Tanks to be installed

- ____ gal Single Compartment Septic Tank
- 2250 3 Bdrm gal Compartmented Tank
- ____ Pit Privy
- ____ gal Separate Lift Station
- ____ gal Holding Tank
- ____ Existing Tank to be used
- ____ Existing tank w/new Additional Tank
- ____ Existing tank w/new Lift Station
- ____ Holding Tank with Privy

Total Number of tanks to be installed in this system 1 (This # will be reported to MPCA at end of year.)

PARCEL	
APP	SEPTIC
YEAR	

Type of Drainfield	Full Size of Drainfield	Reduced/Warrantied size
____ Chamber Trench	____ sq ft	____ sq ft
____ Rock Trench	____ sq ft	____ sq ft
____ Gravelless	____ sq ft	____ sq ft
X Mound	625 sq ft *** Rock bed	
____ Pressure Bed	____ sq ft ***	
____ Seepage Bed	____ sq ft ***	
____ At-grade	____ sq ft ***	
____ Alternative / Performance	____ sq ft ***	***Attach Worksheets

Type of chamber ____
Depth of Rock 1'

Alarm? (Yes) ____ No ____
Type of Alarm Electric outside
Size of Lift Pump BN 151
Size of Lift Line 2'

PROPOSED SETBACKS

	TANK	DRAINFIELD
Distance to Well	50' +	50' +
Distance to Building	30'	50'
Distance to Property Line	100' +	100' +
Distance to OHW of Lake	1000' +	1000' +
Distance to Pressure Line	—	—
Distance to Wetland/Protected Water	—	—

Perc Rate ____ Soil Sizing Factor 1.27 *If SSF other than .83, attach Perc Test Data

Soil Borings (three are required)

Depth	Texture	Color	Structure		Depth	Texture	Color	Structure
0-12	SL	10YR 4/3	Blocky		0-13	SL	10YR 4/3	Blocky
12 ↓								
light Red	mottles				Mottles @ 13"			

Depth	Texture	Color	Structure		Depth	Texture	Color	Structure
0-12	SL	10YR 4/3	Blocky					
↓								
Mottles	light Red @ 12"							

5. REQUIRED DOCUMENTS

U of MN worksheets are required for mounds, pressure beds, seepage beds, at-grades or Type IV or Type V systems. Are the required worksheets attached? X Yes ____ No

6. DESIGNER'S CERTIFIED STATEMENT

I, Lee A. Hendrickson (Print Name of Designer) certify that I have completed the preceding design work in accordance with all applicable requirements (including, but not limited to Minnesota Chapter 7080 and the Becker County Individual Sewage Treatment System Ordinance).

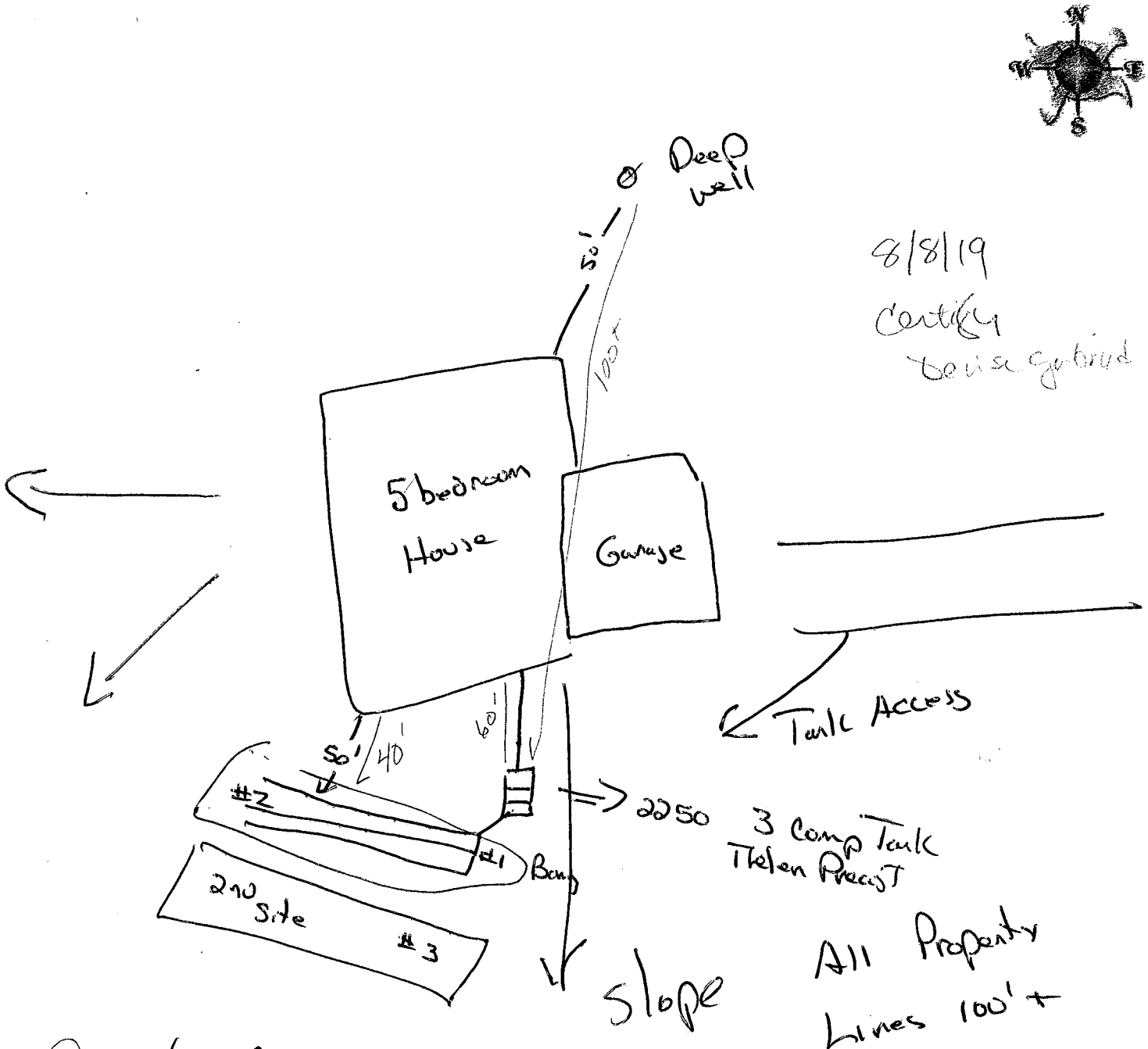
Lee A. Hendrickson
Signature of Designer

9/18/18
Date

SKETCH OF PROPERTY

Please sketch all structures and septic systems on the property;
Include setbacks and wells within 100 feet of the property.

PARCEL	
APP	SEPTIC INSPECTION
YEAR	



(1) 2250 / 3 comp
2' sand ✓
Rock bed 10' x 62.5 ✓
Absorption width 15' x 62.5 ✓
PS patrol Alarm

B

Mound Design Sheet

Property Owner	Nuto Skoog	Township	Wolf Lake
Permit #		Parcel #	37010 5000
Designer Name	Lee A. Hendrickson C3504	License #	1158
Signature		Date	9/18/18
Fire Number		Date	9/18/18
Site Evaluation #			

Water Use Appliances

- [X] Clothes Washer
- [X] WaterSoftener
- [X] Dishwasher
- [ ] Whirlpool
- [ ] Humidifier
- [ ] Garbage Disposal

Number of Bedrooms	5	Bldg Type	1
Well Depth	50'+	[ ] Air Test	
Well to Tank	100'	ft	
Well to Drainfield	120'	ft	
Well to Sewerline	50'+	ft	
Well to Central	——	ft	

Flow

(A) Estimated GPD	750	or measured GPD
(B) Septic Tank Volume	1500	gallons
(C) Min Pump Tank	750	gallons
Alarm Type	Electric outside	

Soils

(D) Depth to Restricting Layer	1	ft
(E) Depth of Sand on Upslope Edge	2'	ft
(F) Soil Texture	SL	
(G) Percolation Rate	6-15	MPI
(H) Soil Sizing Factor	1.27	sq ft/GPD
(I) Land Slope	9	%

Rock Layer Dimensions

(J) Area [(A) x 0.83] =	750 x .83 = 625	sq ft
(K) Select Rock Layer Width	10'	ft
(L) Length of Rock Bed [(J) / (K)] =	62.5 / 10 = 62.5 or ft 63	

Rock Volume

(M) Volume [(J) x 1 ft] =	625 x = 625	cu ft
(N) Volume [(M) / 27] =	625 / 27 = 23	cu yds
(O) Weight [(N) x 1.4] =	23 x 1.4 = 32.2	tons

Absorption Width

(P) Select the appropriate absorption width from the table using (F), (G), or (H)	1.52	
(Q) Absorption Width [(P) x (K)] =	1.52 x 10 = 15	ft

EST. FLOW IN GALLONS/DAY (GPD)

# OF BEDROOMS	TYPE I	TYPE II	TYPEIII
2	300	225	180
3	450	300	218
4	600	375	256
5	750	450	294
6	900	525	332
7	1050	600	370
8	1200	675	408

SEPTIC TANK CAPACITY

# OF BEDROOMS	MINIMUM TANK CAPACITY	MINIMUM CAPACITY GARBAGE DISPOSAL
2 OR LESS	1000 gallons	1500 gallons
3 OR 4	1000 gallons	1500 gallons
5 OR 6	1500 gallons	2250 gallons
7 OR 8	2000 gallons	3000 gallons
OVER 9	SEE FIG C-6	(x 1.5)

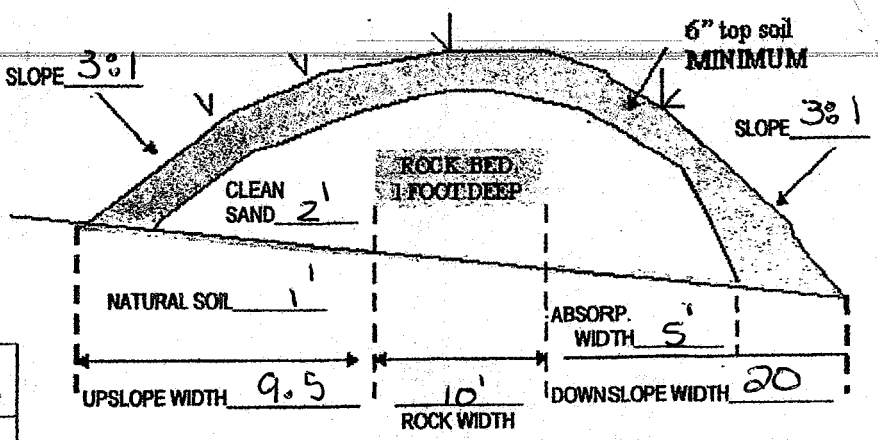
SIZING FACTORS

PERC RATE PI	SOIL TEXTURE	SQFT GALLONS /DAY	GALLONS /DAY /SQFT	ABSORP WIDTH RATIO
< 0.1	COARSE SAND	——	——	1.00
0.1 TO 5	SAND	0.83	1.20	1.00
0.1 TO 5	FINE SAND	1.67	0.60	2.00
6 TO 15	SANDY LOAM	1.27	0.79	1.52
16 TO 30	LOAM	1.67	0.60	2.00
31 TO 45	SILT LOAM	2.00	0.50	2.40
46 TO 60	CLAY LOAM	2.20	0.45	2.67
60 to 120	CLAY	——	(0.24)	5.00
> 120	CLAY	——	——	6.00

Comments

LUG Approval _____ **Date** _____

MINIMUM MOUND SIZE



(1)

Absorption Width		Rock Layer Width		Min. Downslope Berm Toe
15 ft	-	10 ft	=	5 ft

(2)

Depth of Clean Sand Fill at Upslope Edge of Rock Layer		Depth of Sand for Separation
3 ft	-	1 ft = 2 ft

(3)

Sep. Depth from Step 2		Rock Layer Depth		Cover Depth		Mound Height at Upslope Edge
2 ft	+	1 ft	+	1 ft	=	4 ft

(4) Select appropiate upslope berm multiplier from Table B

2.36

(5)

Berm Multiplier from Step 4		Upslope Mound Height		Upslope Berm Width
2.36	X	4 ft	=	9.44 ft

(6)

Rock Layer Width (K)		Landslope % (I)		Elevation Change
10 ft	X	9	X 100 =	.9 ft

(7)

Depth of Sand for Elev. Change at downslope edge from Step 6		Mound Height from Step 3		Downslope Height
.9 ft	+	4 ft	=	4.9 ft

(8) Select downslope berm multiplier from Table A

4.11

(9)

Berm Multiplier from Step 8		Downslope Mound Height		Downslope Berm Width
4.11	X	4.9 ft	=	20.2 ft

(10) Compare the value from Step 1 with the value from Step 9 and select the larger number as the downslope berm width: 20' ft

(11)

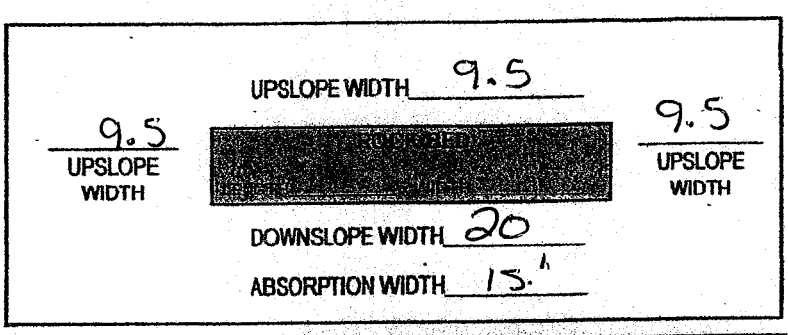
Upslope Berm Width from Step 5		Rock Layer Width (K)		Downslope Berm Width from Step 10		Total Mound Width
9.5 ft	+	10 ft	+	20 ft	=	49.5 ft

(12)

Upslope Berm Width from Step 5		Rock Layer Length (L)		Upslope Berm Width from Step 5		Total Mound Length
9.5 ft	+	63 ft	+	9.5 ft	=	82 ft

FINAL DIMENSIONS

50' (Step 11) X 82' (Step 12)



4.9

Table A

LAND SLOPE IN %	DOWNSLOPE 3:1	4:1	5:1	6:1	7:1
0	3.00	4.00	5.00	6.00	7.00
1	3.09	4.17	5.26	6.38	7.53
2	3.19	4.35	5.56	6.82	8.14
3	3.30	4.54	5.88	7.32	8.86
4	3.41	4.76	6.25	7.89	9.72
5	3.53	5.00	6.67	8.57	10.77
6	3.66	5.26	7.14	9.38	12.07
7	3.80	5.56	7.69	10.34	13.73
8	3.95	5.88	8.33	11.54	15.91
9	4.11	6.25	9.09	13.04	18.92
10	4.29	6.67	10.00	15.00	23.33
11	4.48	7.14	11.11	17.65	30.43
12	4.69	7.69	12.50	21.43	43.75

Table B

LAND SLOPE IN %	UPSLOPE 3:1	4:1	5:1	6:1	7:1
0	3.00	4.00	5.00	6.00	7.00
1	2.91	3.85	4.76	5.66	6.54
2	2.83	3.70	4.54	5.36	6.14
3	2.75	3.57	4.35	5.08	5.79
4	2.68	3.45	4.17	4.84	5.46
5	2.61	3.33	4.00	4.62	5.19
6	2.54	3.23	3.85	4.41	4.93
7	2.48	3.12	3.70	4.23	4.70
8	2.42	3.03	3.57	4.05	4.49
9	2.36	2.94	3.45	3.90	4.30
10	2.31	2.86	3.33	3.75	4.12
11	2.26	2.78	3.23	3.61	3.95
12	2.21	2.70	3.12	3.49	3.80

PUMP SELECTION PROCEDURE

Determine Pump Capacity

1) Gravity Distribution
   a) Minimum is 10 GPM
   b) Maximum is 45 GPM

2) Pressure Distribution
   a) Number of perforated laterals: 3
   b) Perforation spacing: 3 ft
   c) Length of lateral
      rock layer length: 63 - 2 ft = 61 ft
   d) Number of spaces between perfs
      (2c): 61 / (2b): 3 = 21
   e) Perforations per lateral
      (2d): 21 + 1 = 22
   f) Total number of perforations
      (2e): 22 x (2a): 3 = 66
   g) Select perf discharge from table: .74
   h) Pump capacity
      (2f): 66 x (2g): .74 = 49 GPM

Determine Head Requirements

1) Elevation difference
   a) Between pump and point of discharge: 5 ft
   b) If system is pressure distribution (1a) + 5 ft
      If system is gravity distribution (1a) + 0 ft: 5 ft
2) Friction loss
   a) Select value from table: 3.99 ft/100 ft of pipe
   b) Total pipe length from pump to discharge point
      pipe length: 20 x 1.25 = 25 ft
   d) Total friction loss
      (2a): 3.99 x (2b): 25 / 100 = 1
3) Total head required
   (1a): 5 (1b): 5 + (2d): 1 = 11

Select a pump that can deliver at least 50 GPM with at least 11 feet of total head.

1) Minimum lateral diameter
   a) Select the value from the bottom table
   c) Diameter if a center manifold system

BN 98

Perforation Discharges (GPM)

Head (ft)	Perforation diameter (in) 7/32"	1/4"
* 1.0 ft	0.56	0.74
1.5 ft	0.69	0.90
** 2.0 ft	0.80	1.04

* Use 1.0 ft for single homes
** Use 2.0 ft for everything else

Friction Loss in Plastic Pipe

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

Max number of 1/4" perfs per lateral

Perforation spacing	1 1/4"	1 1/2"	2"
2.5 ft	14	18	28
3.0 ft	13	17	26
3.3 ft	12	16	25
4.0 ft	11	15	23
5.0 ft	10	14	22

APP YEAR	SEPTIC

********** FOR OFFICE USE ONLY **********

Application Approved by: Laurie Stall Date: 9/24/18

Amount Paid $150.00 Receipt Number 13772-692774 Permit Number _____

NOTES: _____

****

INSPECTION REPORT

Home Information

Does the structure contain any of the following elements?

Garbage disposer ____ Yes X No Dishwasher X Yes ____ No

Grinder pump ____ Yes X No Lift pump in basement ____ Yes X No

Effluent screen installed? ____ Yes X No Effluent screen manufacturer _____

Alarm required? X Yes ____ No Alarm Type Ps Patrol outdoor Alarm manufacturer SJC

Lift pump in system? ✓ Yes ____ No Pump manufacturer _____

Number of bedrooms 5

Component Information

Tank size 2250 Tank manufacturer Thelen

Drainfield size 10 x 63 Rock Less

Drainfield medium 15 x 63 SAA Medium manufacturer Rock

Drainfield medium size/depth 12

Soil Verification

Vertical separation verified for Boring #1 on ✓ Depth _____

Vertical separation verified for Boring #2 on _____ Depth _____

Vertical separation verified for Boring #3 on _____ Depth _____

Setback Verification

	TANK	DRAINFIELD
Distance to Well	100+	100+
Distance to Building	60	60
Distance to Property Line	100's	100's
Distance to OHWof Lake		
Distance to Pressure Line	50+	50+
Distance to Wetland/Protected Water		

ATF Inspection
no soils

Date System Installed _____ **Installer** _____ **Inspector** Denise Gubrud

****

****

CERTIFICATE OF COMPLIANCE

( ) Certificate Is Hereby Denied

(X) Certificate is Hereby Granted Based upon the Application, addendum from, plans, specifications and all other supporting data. With property maintenance, this system can be expected to function satisfactory, however, this is not a guarantee.

Denise Gubrud — Signature

Inspector — Title

8/8/19 — Date

(Certificate of Compliance is not valid unless signed by a Registered Qualified Employee)