Mark

Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information

Date	5/25/2020	Sec / Twp / Rng	S-20, T-44, R-25
Parcel ID	16-1-105200	LUG (county, city, township)	Aitkin Co.
Property Owner:	Mark Olson	Owners address (if different)	
Property Address:	32527 183rd St. Isle MN 56342		
City / State / Zip:			

Flow Information and Waste Type / Strength

Estimated Design flow: 300

Comments:
Existing 1500 Single compartment holding tank installed 2017
Reuse as septic tank, both baffles inplace.
Has outlet hole in tank

Anticipated Waste strength	☐ Hi Strength	☑ Domestic
Any Non-Domestic Waste	☐ Yes (class V)	☑ No
Sewage ejector/grinder pump	☐ Yes	☑ No
Water softener	☐ Yes	☑ No
Garbage Disposal	☐ Yes	☑ No
Daycare / In home business	☐ Yes	☑ No

Site Information

Existing & proposed lot improvements located (see site map)	☐ Yes	☑ No	Well casing depth	Existing deep well	
Easements on lot located (see site map)	☐ Yes	☑ No	Drainfield w/in 100' of residential well	☐ Yes	☑ No
Property lines determined (see site map) By Owner	☑ Yes	☐ No	Site w/in 200' of transient noncommunity water supply (TNCWS)	☐ Yes	☑ No
Req'd setbacks determined (see site map)	☑ Yes	☐ No	Site w/in an inner wellhead mgmt zone (CWS/NTNCWS)	☐ Yes	☑ No
Utilities located & identified (gopher state one call)	☐ Yes	☑ No	Buried water supply pipe w/in 50' of system	☐ Yes	☑ No
Access for system maintenance (shown on site map)	☑ Yes	☐ No	Site located in Shoreland (w/in 1000' of lake, 300' of river)	☐ Yes	☑ No
Soil treatment area protected	☑ Yes	☐ No	Site map prepared with previous items included	☑ Yes	☐ No

Construction related issues

Soil Information

Evidence of site:

Cut	☐ Yes	☑ No
Filled	☐ Yes	☑ No
Compacted	☐ Yes	☑ No
Disturbed	☐ Yes	☑ No

Original soils ☑ Yes ☐ No

Soil logs completed and attached ☑ Yes ☐ No

Perk test completed and attached (if applicable) ☐ Yes ☑ No

Soil loading rate (gpd/ft^2) 0.50

Percolation rate (if applicable) _____

Depth/elev to SHWT 8"

Flooding or run-on potential (comments) ☐ Yes ☑ No

Depth to system bottom maximum (or elev minimum) (+ 36")

Flood elevation (if applicable) _____

Depth/elev to standing water (if applicable) _____

Elevation of ordinary high water level (if applicable) _____

Depth/elev to bedrock (if applicable) _____

Floodplain designation and elev - 100 yr/10 yr (if applicable) _____

Soil Survey information determined (see attachment) ☑ Yes ☐ No

Differences between soil survey and field evaluation (if applicable) _____

I hereby certify this evaluation was completed in accordance with MN 7080 and any local req's.

Designer Signature | Brummer Septic LLC. (Company) | L-1347 (License #)

Soil Observation Log

www.SepticResource.com vers 12.4

Owner Information

Property Owner / project: Mark Olson Date 5/25/2020

Property Address / PID: 32527 183rd St. Isle MN 56342

Parcel # 16-1-105200

Soil Survey Information

☐ refer to attached soil survey

Parent matl's: ☑ Till ☐ Outwash ☐ Lacustrine ☐ Alluvium ☐ Organic ☐ Bedrock

landscape position: ☐ Summit ☐ Shoulder ☑ Side slope ☐ Toe slope

soil survey map units: C9B & C104A slope 3 % direction- SE

Soil Log #1

☑ Boring ☐ Pit Elevation 96.7' Depth to SHWT 8"

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 8	Loam	<35	10YR3/2		Friable	Loose	Granular
8 - 14	Silt Loam	<35	10YR5/3	7.5YR5/4	Friable	Weak	Blocky
		<35			Loose	Loose	Granular
		<35			Loose	Loose	Granular
		<35				Loose	Granular

Comments:

32527 183rd St. Isle MN 56342			Soil Log #2				
	☑ Boring	☐ Pit	Elevation 96.5'		Depth to SHWT 8"		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 8	Loam	<35	10YR3/2		Friable	Loose	Granular
8 - 14	Silt Loam	<35	10YR5/3	7.5YR5/4	Friable	Weak	Blocky
		<35			Loose	Loose	Granular
		<35			Loose	Loose	Granular
		<35			Loose	Loose	Granular

32527 183rd St. Isle MN 56342			Soil Log #3				
	☐ Boring	☐ Pit	Elevation ______		Depth to SHWT ______		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

I hereby certify this work was completed in accordance with MN 7080 and any local req's.

Designer Signature

Brummer Septic LLC.
Company

L-1347
License #

2011 purple code

Mound Design - Aitkin county

www.SepticResource.com (vers 15.2)

Property Owner: Mark Olson **Date:** 5/25/2020

Site Address: 32527 183rd St. Isle MN 56342 **PID:** 16-1-105200

Comments: Typeiii Mound Existing Cemstone 1500 use as Septic tank install 520 pump tank

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

1) [2] bedroom Type [III] Residential System

2) [300] GPD design flow

3) [No] Garbage disposal or pumped to septic Reuse Existing 1500 single compartment Tank as septic tank.

4) [1000] 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 [25] ft. long rockbed

6) [10.0] ft rockbed width [25.0] 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 [23.0] feet long [8.0] perfs / lateral [24] 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 --> OK

10) [7.0] doses per day (4 minimum)

11) [43] gallons per dose (treatment volume)

12) [1.50] inch diameter laterals must be used to meet "4x pipe volume" requirement 1.50 5x

13) [40] feet of [2.0] inch supply line leads to [7] gallons of drainback volume 2.00 3x
(Tip: "top feed" manifold to control the drainback)

14) [50] gallons TOTAL pump out volume (treatment + drainback)

15) [10] feet vertical lift from pump to mound laterals, leads to a:

16) [18] GPM @ [16] feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)

17) [500] gal Dose tank (code minimum) [520] gal Dose tank (design size / LUG req'd) at [16.57] gpi
leads to a

18) [3.0] inch swing on Demand float, or timed dosing of [2.8] min ON (confirm pump rate with drawdown
(this delivers Average flow, =70% of Peak design flow) [5.1] hrs OFF test and adjust as necessary)

19) [12] inches from bottom of tank to "Pump OFF" float

20) [15] inches from bottom of tank to "Pump ON" float, or [12] inches to "Timer ON" float if time dosed

21) [18] inches from bottom of tank to "Hi Level" float, or [28] inches to "HI Level" float if time dosed

22) [222] gallons reserve capacity (after High Level Alarm is activated)

23) 0.50 gpd/ft² Absorption area Soil Loading Rate, (this must match the soil boring log) which gives a mound ratio of 2.4 (minimum) desired mound ratio 2.4

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

25) 0 inches, or 0.0 ft. to Redox or other limiting condition (need at least 12" to be a Type I)
Treatment zone contains 0 inches of 0% soil credit, and 0 inches of 50% soil credit. Giving a:

26) 36 inch, or 3.0 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

27) 24.0 ft. base absorption width (with sand beyond rockbed as follows:)
43.8 greater of: absorption width OR sand slope

28) 0.0 ft. upslope and sideslope sand upslope 14.3
14.0 ft. Downslope sand down slope 19.5

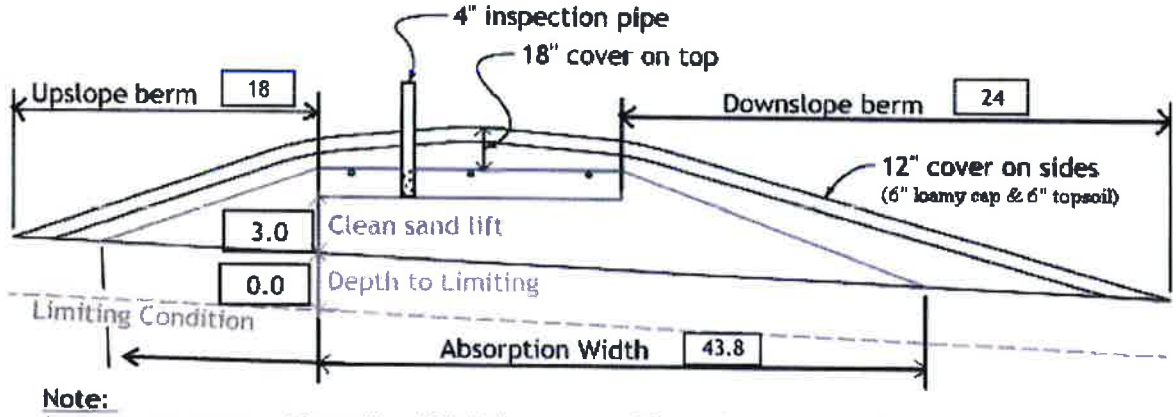
Individual slope ratios give BERM widths (topsoil beyond rockbed) of:

29) 4:1 upslope ratio 18 ft. upslope berm

30) 4:1 sideslope 21 ft. sideslope berms

31) 4:1 downslope 24 ft. downslope berm

32) Overall Dimensions: 10.0 ft. wide by 25.0 ft. long Rock bed
52 ft. wide by 67 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 25.0 ft. by 9 inches under pipe, plus 20% gives 12 yd³ or *1.4= 17 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)
62.4 up + 91.7 downslope + 27.4 ends + 29.2 under rock = 253 yd³ or *1.4= 354 ton
plus 20%

35) Loamy Cap:
48 ft. by 63 ft. 6" deep, plus 20% gives 68 yd³ or *1.4= 95 ton

36) Topsoil:
52 ft. by 67 ft. 6" deep, plus 20% gives 78 yd³ or *1.4= 109 ton

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

Designer Signature	Brummer Septic LLC.	L-1347	5/25/2020
	Company	License#	Date

Event Counter is required on this system
Aitkin Co Operating Permit Required

Installer Summary

1500 gallon Septic tank (minimum)

Tank options: none

Reuse Existing 1500 single compartment Tank as septic tank.

520 gallon Dose tank (minimum) at 16.57 gpi

18 GPM @ 16 ft. of head, Pump required

3.0 inch swing on Demand float which translates to roughly 2.5 inches of float tether length

if time dosing is required --> 2.8 minutes ON time & 5.1 hours OFF time

15 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float

18 inches from bottom of tank to "Hi Level Alarm" or 28 inches to "HI level alarm" if time dosed

40 ft. of 2.0 inch supply line with end feed manifold connection

(Tip: "top feed" manifold to control drainback)

36 inch, or 3.0 ft. Sand Lift Mound

10.0 ft. wide by 25.0 ft. long Rock bed

3 laterals 1.50 inch diameter 23.0 ft. long 3.0 ft. lateral spacing

1/4" inch perfs 3.0 ft. perforation spacing

No Effluent filter & alarm

3 clean out & valve box assemblies

43.8 ft.Total sand ABSORPTION width (minimum)

14.3 ft. upslope and sideslope (sand beyond rockbed, minimum)

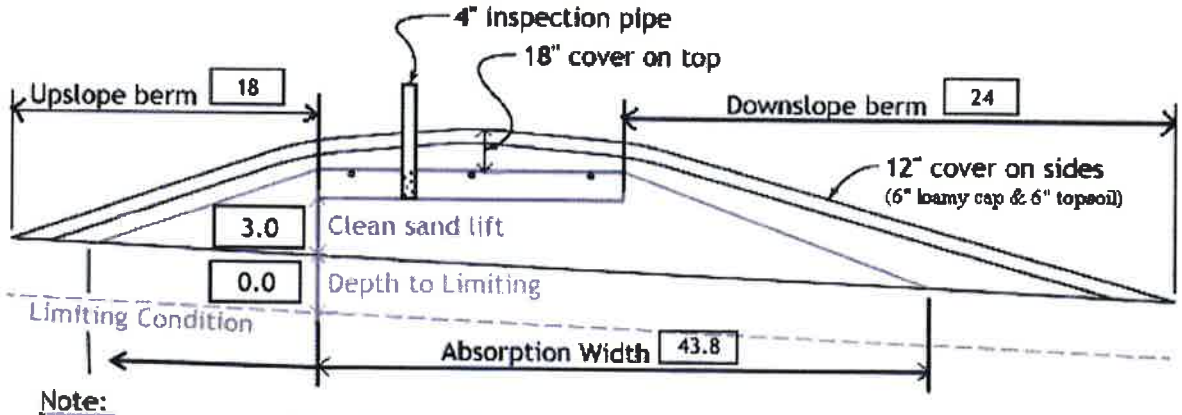
19.5 ft. Downslope (sand beyond rockbed, minimum)

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

4:1 upslope ratio 18 ft. upslope berm

4:1 sideslope 21 ft. sideslope berms

4:1 downslope 24 ft. downslope berm



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*.

Rock Bed:	12.0 yd^3 or *1.4=	17	ton	9 inches under pipe
Mound Sand:	253 yd^3 or *1.4=	354	ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	68 yd^3 or *1.4=	95	ton	6" deep
Topsoil:	78 yd^3 or *1.4=	109	ton	6" deep

INSPECTOR CHECKLIST - mound

32527 183rd St. Isle MN 56342

- ☐ WELL setbacks: 20' to pressure tested sewer line (5 psi for 15 min)
  50' to everything 100' to dispersal area with shallow well
- ☐ PROPERTY LINES setback: 10' to everything
- ☐ Road setback: platted: 10' prop line. Metes & bounds: out of road easement, or outer ditch.
- ☐ LAKE / BLUFF setback: 20' for bluff. Lakes: GD ___, RD ___, NE ___. Protected wetland ___.
- ☐ Building setbacks: 10' for everything, 20' for dispersal area.
- ☐ WATER LINE under pressure se 10' to bed,tank & sewer line. (else sewer line > 12" below, else ok w/pvc)

- ☐ Sewer line & baffle connection (no 90's, 3' between 45's, slope min 1" in 8', max 2" in 8')
  (no depth req's, clean out every 100', Sch 40 pipe)

- ☐ Septic tank and risers (water tight, insulated, proper depth, existing verified by pumping)
  mfg_____ 1500 gallons none

- ☐ Riser over outlet, riser over inlet or center, and 6"+ inspection pipe over any remaining baffles.
- ☐ No effluent filter & alarm
- ☐ Dose tank risers and piping (water tight, insulated, proper depth, drainback)
  mfg_____ 520 gallons

- ☐ dose pump _____ 18 gpm 16 head VERIFY PUMP CURVE 2.8 min ON 5.1 hr OFF

- ☐ float setting drop 3.0 inches at 16.6 gpi "DESIGNED" 2.5 inches approx float tether length
  50.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected
  LABEL pump requirements and drawdown on riser or panel

- ☐ Cam lock reachable from grade - 30" max. J-hook weep hole. Supply line access (no hard 90's)
- ☐ 2.0 inch supply pipe: Sch40, sloped 1/8"+, supported by 4" sch40 sleeve or compacted, and buried 6"+.
- ☐ splice box / control panel / electrical connections
- ☐ flow measurement: CT, ETM, time dosed, home water meter
- ☐ mound absorption area rough up
- ☐ mound rock dimensions 10.0 X 25.0
- ☐ Sand lift depth 36 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- ☐ Absorption Sand beyond rock 14.3 upslope 19.5 downslope

- ☐ Bermed topsoil beyond rockbed 18 upslope 21 sideslope 24 downslope

- ☐ cover depth of 12-18"+ VERIFY
- ☐ 3 laterals (1-2' from edge of rock)
- ☐ 1.50 inch pipe size (Sch40 pipe & fittings)
- ☐ 3.0 ft lateral spacing

- ☐ 1/4" inch perforations
- ☐ 3.0 ft perforation spacing

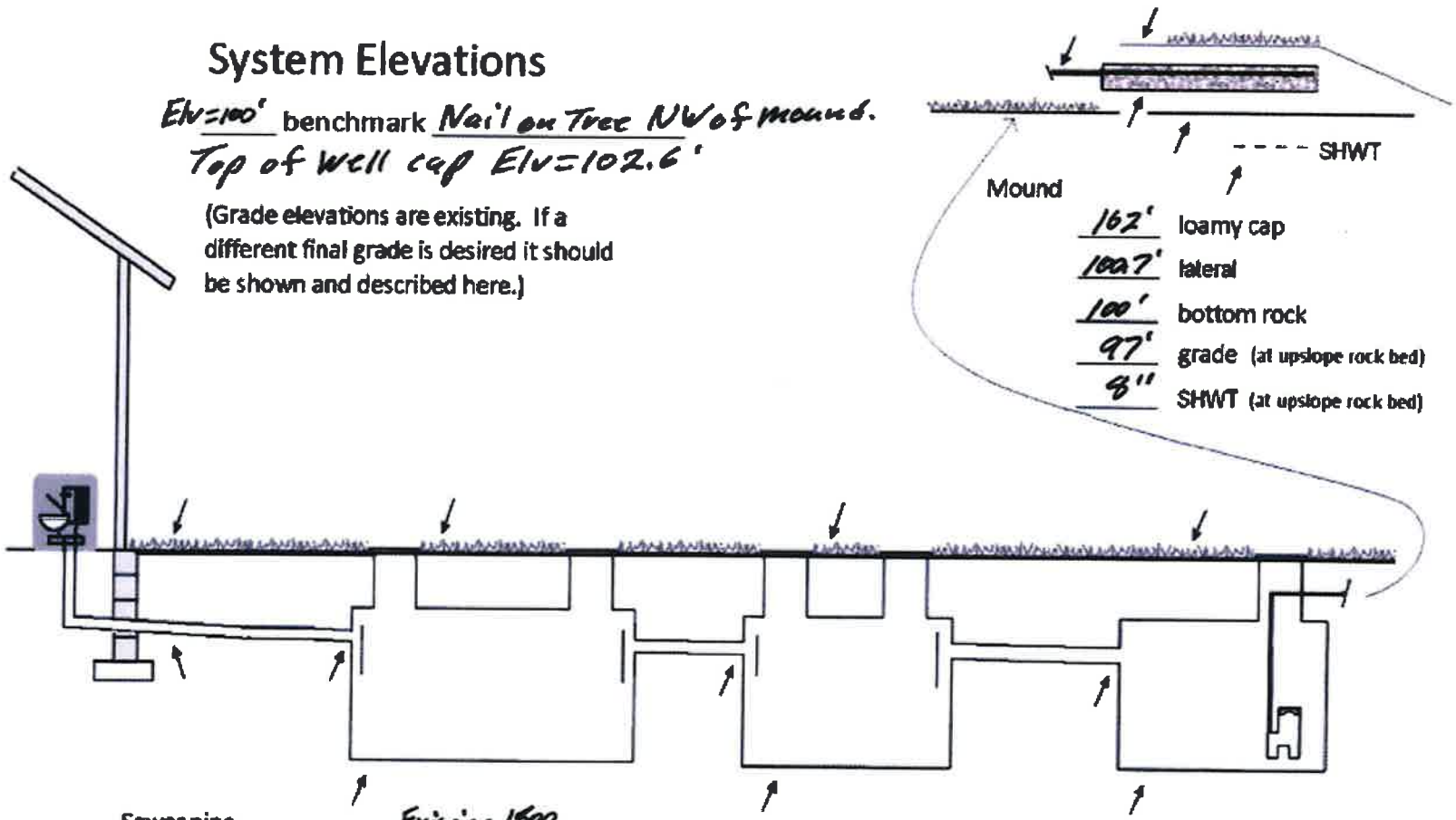
- ☐ Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- ☐ clean outs (no hard 90's)
- ☐ 4" inspection pipe to bottom of rock, anchored VERIFY

- ☐ Abandon existing system - if necessary ☐ Re-use existing tank certification
- ☐ monitoring plan and type _____
- ☐ well abandonment form - if necessary

System Elevations

Elv=100' benchmark Nail on Tree NW of mound.
Top of well cap Elv=102.6'

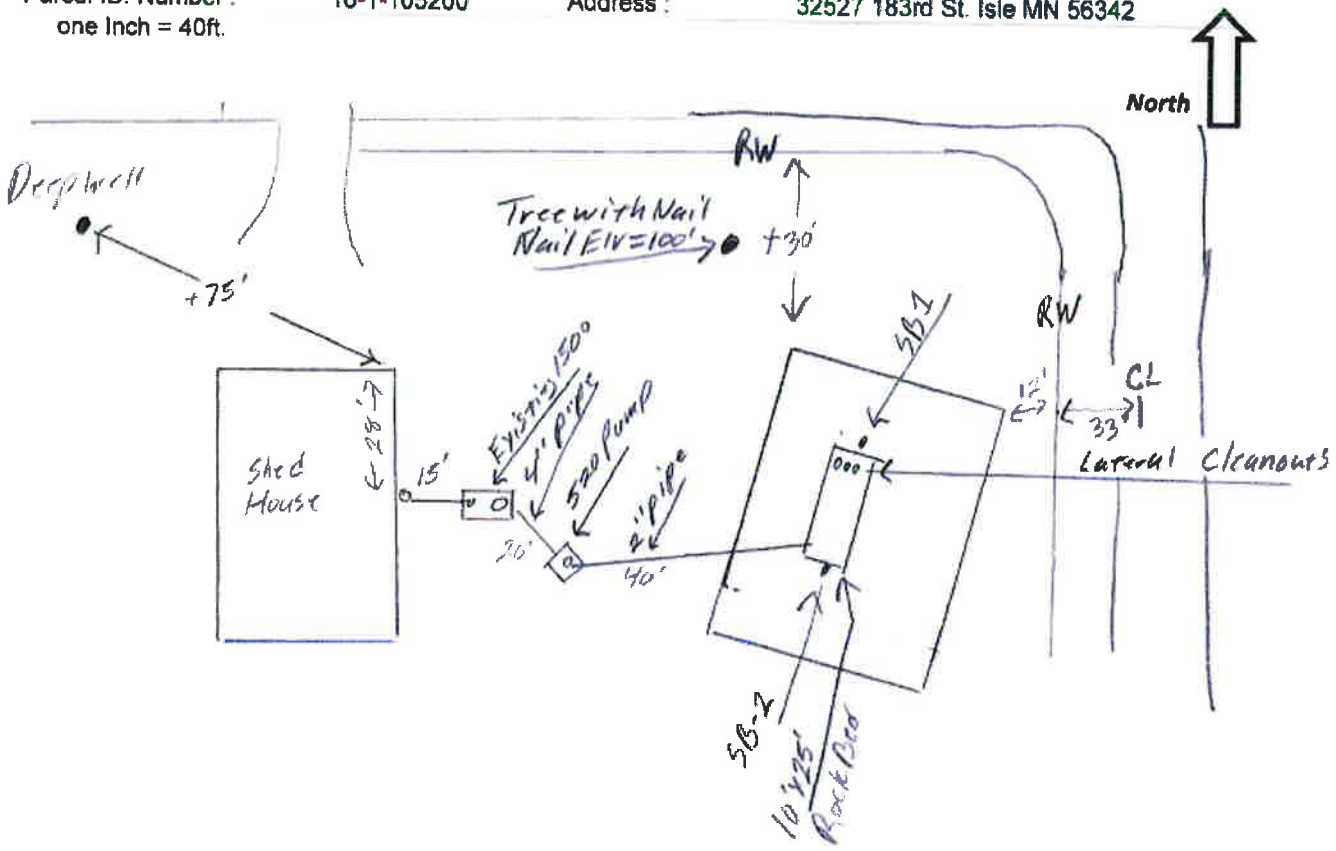
(Grade elevations are existing. If a different final grade is desired it should be shown and described here.)



Sewer pipe exiting house	Existing 1500 Septic Tank	Septic Tank (if applicable)	Pump Tank
99.8' Grade	98.5' Grade	____ Grade	97.4' Grade
98.1' Pipe	96.9' inlet	____ inlet	96' inlet Estimated.
	96.7' outlet ~~Tank bottom~~	____ Tank bottom	____ Tank bottom

{ Design Drawing }

Property Owner: Mark Olson Date: 5/25/20 Designer's Initials : JB
Parcel ID. Number : 16-1-105200 Address : 32527 183rd St. Isle MN 56342
one Inch = 40ft.



Nail on Tree NW of mound Elv.= 100'
Deep Well Cap Elv. = 102.6'

	Surface/ SHWT	Nail on Tree = Bench Mark 100'		Existing Grade
Soil Bore 1	96.7' / 8"	Bench Mark	100'	Upslope Edge of Rockbed Elv.= 97'
Soil Bore 2	96.5' / 8"	Ground Elv. BM	99'	Bottom of Rockbed Elv.= 100'
Soil Bore 3		Ground Elv. Tank	97.4' Pump	Top of Washed Sand Elv.= 100'
	Ground at	Existing house	98.8'	Approx Pump tank Inlet Elv.= 96'

Please show all that apply (Existing)
Wells within 100ft. Of Drain field.
Water lines within 10 ft. of Drain field.
Drain field Areas:

Please Draw to Scale with North to Top or Left Side of Page:

Disturbed/Compacted Areas	Access Route for Tank Maintenance
Component Location	Property Lines
OHW ordinary high water	Structures
Lot Easements	Setbacks

Mound Design Notes - Aitkin county

Property Owner: Mark Olson **Date:** 5/25/20

Site Address: 32527 183rd St. Isle MN 56342 **PID:** 16-1-105200

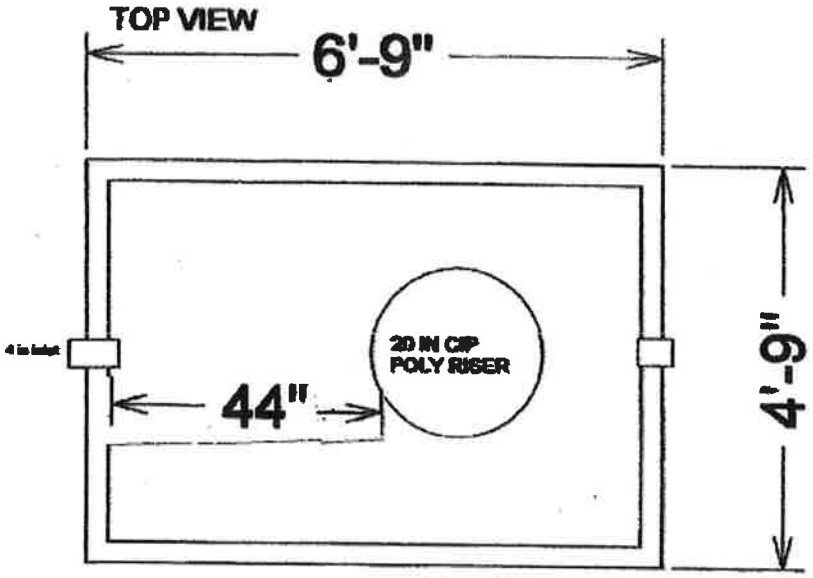
Comments: ***Mound design may not follow Aitkin co. Auto fill form for mound design.***

1 This is a type III mound , (Soil Separation 8") sized for a 2 bedroom system.
2 Existing well location is on the NW corner of House.
3 Existing Holding tank (2017 Cemstone 1500 gal. single compartment) to be reused as septic tank..
Existing tank has both baffles in-place, manhole raised to surface, outlet port.
4 The House is gravity flow from East side of house, existing clean-out near house.
5 Install 520 Jacobson pump tank for gravity flow from septic tank..
Install pump tank low enough for drainback from mound to pump tank. (Electric alarm and event counter)
6 The berm slopes are at 4:1. The NE corner of the downslope berm is placed 48 ft from center line of road.
North berm is +30 ft to RW, well is + 125' from mound
Mound location is on contour. Slope is SE at 3%.
7 Elevation contour of rock bed upslope edge is 97' .
The area size of the rock bed is 10' x 25' . Absorption area is 25' x 43.8'.
Sand absorption area is 14.3 ft. up slope + 10 ft. rockbed + 19.5 downslope = approx. 43.8 ft. wide sand base.
Berms are 18ft. Upslope, 24ft. Down slope, 10ft. Rock bed = approx. 52ft. Wide.
Overall mound size is approx. 52' wide x 67' long and approx. 5' high. End berms are 21ft. Wide.
8 The bench mark is the nail on the tree near mound area, BM = Elv. 100'.
Installer to double check bench mark. Installer should confirm bench mark and sand height Elv. with inspector.
Installer should record bench mark Elv. and sand height on installation inspection form.
The top of the sand and bottom of rock bed is Elv. 100'.
9 It is important that the soils do not get compacted, and that clean Washed sand is used.
10 The Jacobson 520 pump tank will be gravity flow from septic tank. Install the pump for 7 demand doses per day. approx. 50 gallons per dose, 3 inches of tank level. Install alarm at 3 inches from pump on level.
Install all manholes, inspection pipes and clean-outs to grade or above. (Recommend min. 4" above grade)
Install a 2" supply pipe from tank to end manifold in rock bed, install so pipe drains back to tank.
Install 1.5" laterals with 9" of rock under them. Install clean-outs at far end of laterals.
Drill 1/4" perf holes spaced 3 ft. on center.
Install inspection pipe to bottom of rock bed, secure in rock bed and raise to above final grade.
11 Installer will pressure test and squirt height laterals when finished.
12 **Install Event counter on Effluent pump, calibrate pump and give gallons per event to Owner.**
13 Designer does not guarantee or warranty any Type III systems.
Designed to Aitkin Co. and MPCA recommendations and requirements.

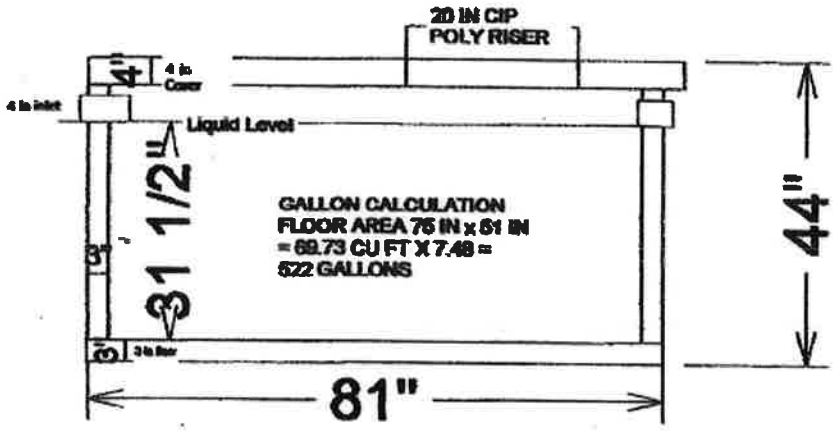
Designer Signature | Brummer Septic LLC. Design Company | L-1347 License#

This System will require an Aitkin Co. Operator permit, annual inspection
There will be 1 alarm on this system, one on the pump tank.
Owner and installer are responsible for owner knowing how system is maintained.

520 Gallon Pump Tank



SIDE VIEW



522 gals. / 31.5" = 16.57 GPI

INDIVIDUAL SEWAGE TREATMENT SYSTEM INSPECTION FORM
AITKIN COUNTY, MINNESOTA

Township Lakeside Date of Inspection 8/14/2017 Permit Number 2017-1824

Owner Mark Olson Parcel Number 14-1-105200

Project Address 32527 183rd St. Installer Greg Westerlund

City Isle Zip Code 56342 T2HT

New [✓] Repair [ ]

DIST. or DROP BOX & TYPE —

SETBACKS:

Buildings to tank(s) 15'

Buildings to drainfield —

Well(s) 50' or 100' No well on property

Lake/Creek/Wetland —

SEPTIC TANKS: New ✓ Existing ____

Number of tanks installed 1

Liquid capacity and type Clearstone 1500

Type of baffle Plastic

Inspection pipes —

Manholes size 24"

Manhole to grade Yes ✓ No ____ 1.5' riser

PUMPS: New ____ Existing ____

Tank capacity and type ____

Pump manufacturer & model # ____

Horsepower & GPM ____

Feet of head ____

Gallons per cycle ____

Size of discharge line ____

Type & location of alarm ____

Water meter ____

TRENCHES, BEDS, OR GRAVELLESS LEACHFIELD:

Trench depth ____

Trench length ____

Trench bottom width ____

Trench spacing ____

Drainfield rock below pipe ____

Size of gravelless pipe ____

Depth of backfill ____

Absorption area: square feet ____

lineal feet ____

MOUNDS:

Percent slope ____

Upslope dike width ____

Downslope dike width ____

Sideslope dike width ____

Drainfield rock below pipe ____

Depth of sand below rock ____

Perforation size & spacing ____

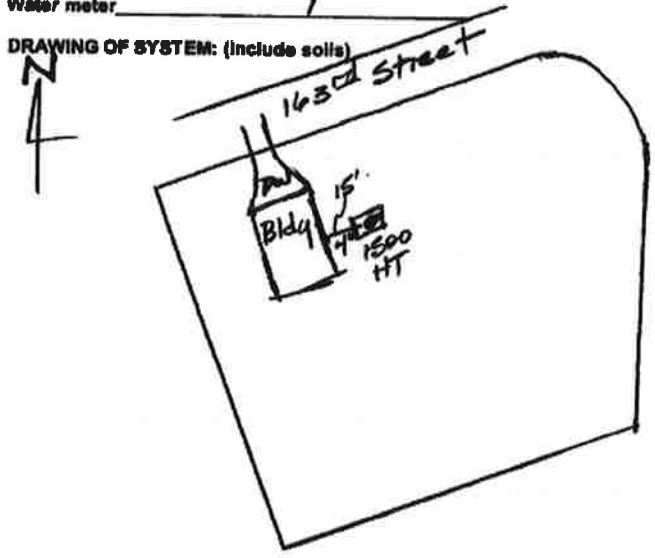
Pipe size & spacing ____

Dimensions of rock bed ____

Dimensions of sand base ____

Final cover ____

DRAWING OF SYSTEM: (Include soils)



Inspector's Comments: Area around building would require a T3 system - very limit wet

Inspector's Signature Bryan Haugen Installer's Signature ____

Rev:1/13 White – County Yellow – Applicant Pink - Installer

Aitkin County

Detailed Parcel Report

Parcel Number: 16-1-105200

General Information

Township/City:	LAKESIDE TWP		
Taxpayer Name:	OLSON, MARK & MONTILINO, DEBRA		
Taxpayer Address:	1906 YORKSHIRE AVE MINNETONKA MN 55305		
Property Address:	32527 183RD ST		
Township:	44	**Lake Number:**	48900200
Range:	25	**Lake Name:**	MILLE LACS (BACK LOTS)
Section:	20	**Acres:**	0.00
Green Acres:	No	**School District:**	473.00
Plat:	TRILLIUM		
Brief Legal Description:	LOT 1 BLK 3		

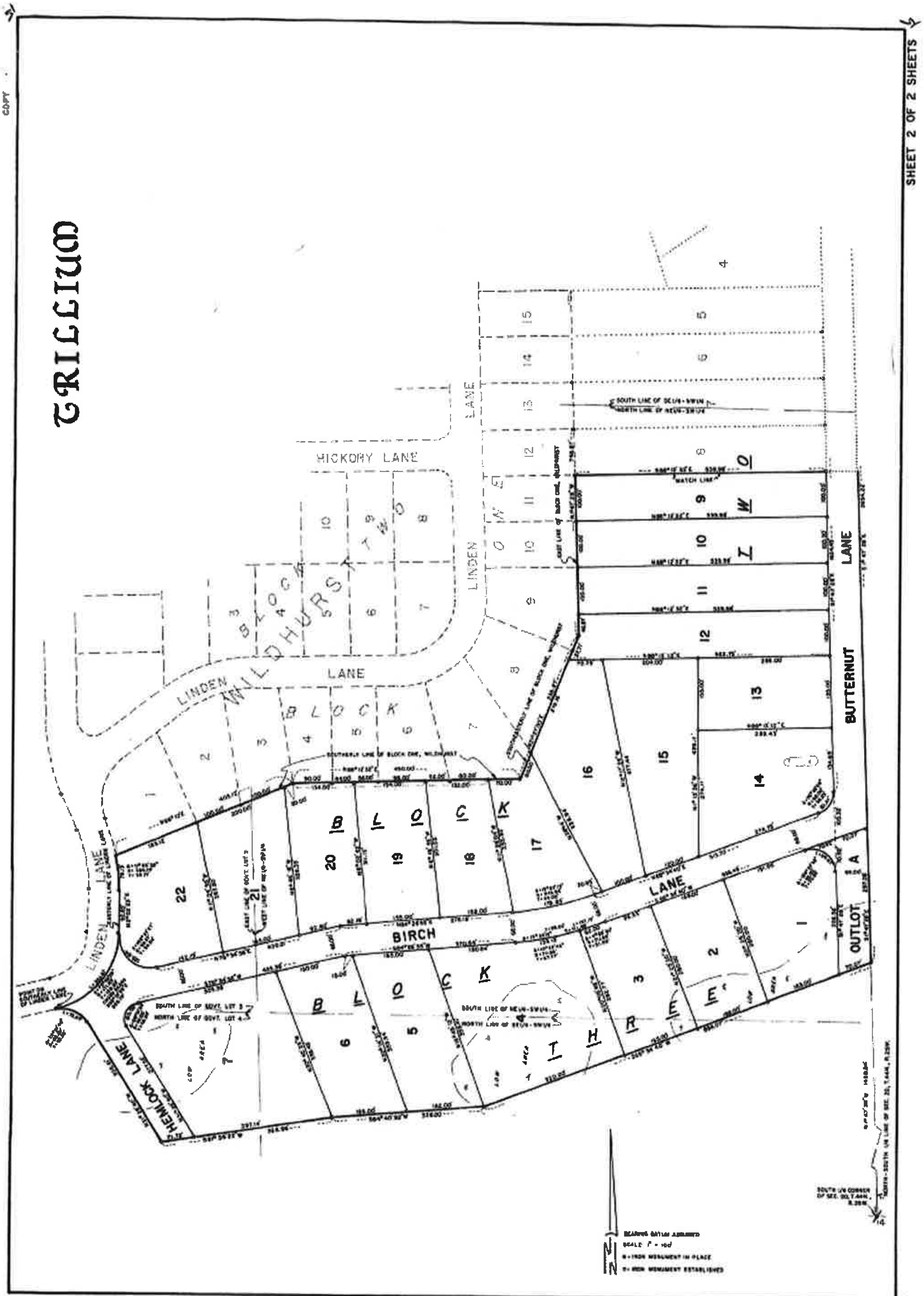
Tax Information

Class Code 1:	Non-Comm Seasonal Residential Recreational
Class Code 2:	Unclassified
Class Code 3:	Unclassified
Homestead:	Non Homestead
Assessment Year:	2020

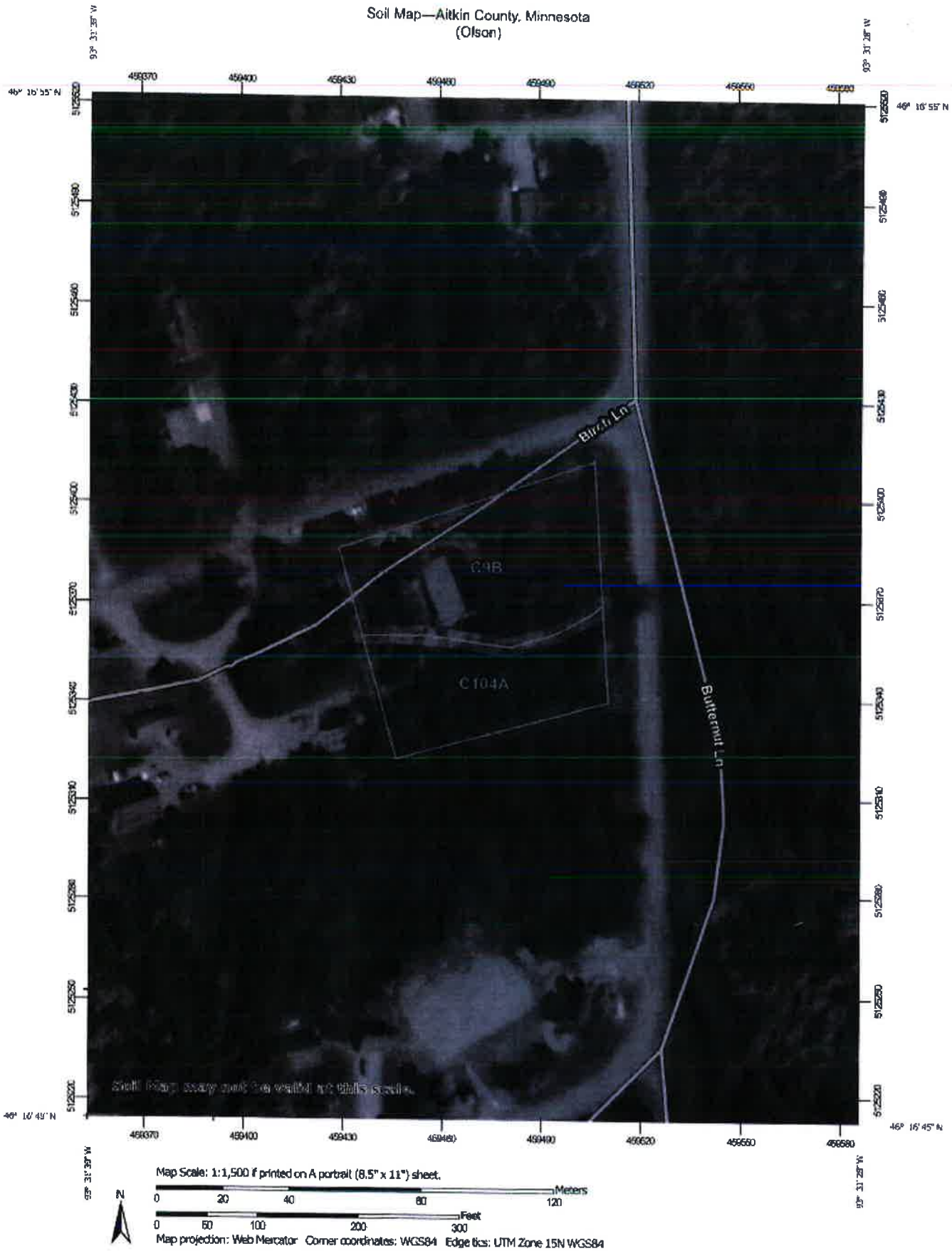
Estimated Land Value:	$27,000.00
Estimated Building Value:	$79,100.00
Estimated Total Value:	$106,100.00
Prior Year Total Taxable Value:	$100,900.00
Current Year Net Tax (Specials Not Included):	$974.00
Total Special Assessments:	$0.00
****Current Year Balance Not Including Penalty:**	$487.00
Delinquent Taxes:	No

*** For more information on delinquent taxes, please call the Aitkin County Treasurer's Office at 218-927-7325.**

**** Balance Due on a parcel does not include late payment penalties.**


SHEET 2 OF 2 SHEETS
BIRCH LANE
BUTTERNUT LANE
HEMLOCK LANE
LINDEN LANE
HICKORY LANE
OUTLOT A

Soil Map—Aitkin County, Minnesota
(Olson)



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
C9B	Mora-Ronneby complex, 1 to 4 percent slopes, stony	0.7	59.7%
C104A	Cathro, frequently ponded-Seelyeville, occasionally ponded-Greenwood complex, 0 to 1 percent slopes	0.5	40.3%
Totals for Area of Interest		**1.2**	**100.0%**

Aitkin County, Minnesota

C9B—Mora-Ronneby complex, 1 to 4 percent slopes, stony

Map Unit Setting

National map unit symbol: 2z19y
Elevation: 790 to 1,970 feet
Mean annual precipitation: 27 to 36 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mora, stony, and similar soils: 55 percent
Ronneby, stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mora, Stony

Setting

Landform: Drumlins, moraines
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till

Typical profile

A - 0 to 8 inches: silt loam
E - 8 to 11 inches: fine sandy loam
B/E - 11 to 15 inches: fine sandy loam
Bt1 - 15 to 23 inches: fine sandy loam
Bt2 - 23 to 42 inches: fine sandy loam
BCd - 42 to 79 inches: fine sandy loam

Properties and qualities

Slope: 1 to 4 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: 31 to 52 inches to densic material
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B/D
Forage suitability group: Level Swale, Acid (G090XN005MN)
Hydric soil rating: No

Description of Ronneby, Stony

Setting

Landform: Moraines, drumlins
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till

Typical profile

A - 0 to 10 inches: silt loam
E - 10 to 11 inches: fine sandy loam
B/E - 11 to 17 inches: fine sandy loam
Bt - 17 to 45 inches: fine sandy loam
BCd - 45 to 79 inches: fine sandy loam

Properties and qualities

Slope: 1 to 3 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: 31 to 54 inches to densic material
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 8 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Forage suitability group: Level Swale, Acid (G090XN005MN)
Hydric soil rating: No

Minor Components

Cebana, stony

Percent of map unit: 8 percent
Landform: Interdrumlins, moraines
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave

Across-slope shape: Linear
Hydric soil rating: Yes

Milaca, stony

Percent of map unit: 5 percent
Landform: Drumlins, moraines
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Glese, frequently ponded, stony

Percent of map unit: 2 percent
Landform: Interdrumlins, moraines
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 20, Sep 16, 2019

Aitkin County, Minnesota

C104A—Cathro, frequently ponded-Seelyeville, occasionally ponded-Greenwood complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2z1b2
Elevation: 790 to 1,970 feet
Mean annual precipitation: 27 to 36 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Cathro, frequently ponded, and similar soils: 40 percent
Seelyeville, occasionally ponded, and similar soils: 25 percent
Greenwood and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cathro, Frequently Ponded

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sapric herbaceous organic material over loamy lodgment till

Typical profile

Oa - 0 to 34 inches: muck
2Cg - 34 to 79 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 18.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Forage suitability group: Not Suited (G090AN024MN)

Hydric soil rating: Yes

Description of Seelyeville, Occasionally Ponded

Setting

Landform: Depressions
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material

Typical profile

Oa1 - 0 to 10 inches: muck
Oa2 - 10 to 66 inches: muck
2A - 66 to 70 inches: silt loam
2Bt - 70 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Not Suited (G090XN024MN)
Hydric soil rating: Yes

Description of Greenwood

Setting

Landform: Depressions
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material

Typical profile

Oi - 0 to 10 inches: peat
Oe - 10 to 66 inches: mucky peat
2A - 66 to 70 inches: silt loam
2Bt - 70 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 30.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Forage suitability group: Not Suited (G088XN024MN)
Hydric soil rating: Yes

Minor Components

Twig, frequently ponded, stony

Percent of map unit: 15 percent
Landform: Moraines, interdrumlins
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 20, Sep 16, 2019

INVOICE

KOHL'S Concepts

SKY KOHL
8776 STATE HWY 371
BRAINERD, MN 56401
218-821-9111
SKEET.SLAYERS@GMAIL.COM

DATE 5-27-2020
CUSTOMER ORDER NO.
PROJECT Sewer
PHONE 507 848 5758

To: Mark Olson

QUANTITY	DECSCRIPTION	PRICE	AMOUNT
	installation of a 10x25		
	Mound For the price of	11,775	
	That includes All material-labor		
-	Tank		
-	pipe		
-	Alarm		
-	piggy Back Event counter		
-	pump		
-	Rock		
-	Clean Sand		
-	Fill dirt		
-	Black dirt		
-	Seed		
-	Electrical work		
+			
	Sky kohl / LH022 5-27-2020		

Thank You!