Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information

Date	5/4/2023	Sec / Twp / Rng	S=-30, T-46, R-27
Parcel ID	07-0-067102	LUG (county, city, township)	Aitkin Co.
Property Owner:	Janet Sanderson	Owners address (if different)	
Property Address:	45807 295th St. Aitkin Mn 56431		45807 295th St
City / State / Zip:			Aitkin MN 56431

Flow Information and Waste Type / Strength

Estimated Design flow: 600

Comments: 4 bedroom 2 ft washed sand mound.

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)	☑ 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: Pump up from Septic tank to a 520 gallon Mound Pumop tank (near Mound)

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) 0.60

Percolation rate (if applicable) _____

Depth/elev to SHWT 16"

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

Depth to system bottom maximum (or elev minimum) (+24")

Flood elevation (if applicable) NA

Depth/elev to standing water (if applicable) _____

Elevation of ordinary high water level (if applicable) _____

Depth/elev to bedrock (if applicable) _____

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

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

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: Janet Sanderson Date 5/4/2023

Property Address / PID: 45807 295th St. Aitkin Mn 56431

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: 454E slope 9 % direction- South

Soil Log #1

☑ Boring ☐ Pit Elevation 97.7 Depth to SHWT 16"

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 7	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular
7 - 16	Loam	<35	10YR5/4		Loose	Loose	Granular
16 - 24	Loam	<35	10YR5/3	7.5YR5/6	Loose	Loose	Granular

Comments:

45807 295th St. Aitkin Mn 56431

Soil Log #2

☑ Boring ☐ Pit Elevation 97.6' Depth to SHWT 16"

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 16	Loam	<35	10YR5/4		Loose	Loose	Granular
16 - 24	Loam	<35	10YR5/3	7.5YR5/6	Loose	Loose	Granular

45807 295th St. Aitkin Mn 56431

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: Janet Sanderson **Date:** 5/4/2023

Site Address: 45807 295th St. Aitkin Mn 56431 **PID:** 07-0-067102

Comments:

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

1) [4] bedroom Type [I] Residential System

2) [600] GPD design flow

3) [No] Garbage disposal or pumped to septic Install 1820 Jacobson 2/compartment septic / lift Tank

4) [1000] Gal Septic tank (code minimum) [1000] 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 [50] ft. long rockbed

6) [10.0] ft rockbed width [50.0] 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 [48.0] feet long [17.0] perfs / lateral [51] perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)

9) [7/32] inch perfs at [1] feet residual head gives [0.56] gpm flow rate per perforation

for this perf size & spacing, & pipe size on line 12, max perfs/lateral = [19], line #8 must be less --> OK

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

11) [86] gallons per dose (treatment volume)

1.50 5x

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

520 Mound Pump Tank 2.00 3x

13) [60] feet of [2.0] inch supply line leads to [10] gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)

14) [96] gallons TOTAL pump out volume (treatment + drainback)

Mound Pump Tank Settings

15) [18] feet vertical lift from pump to mound laterals, leads to a:

16) [29] GPM @ [25] 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) [5.8] inch swing on Demand float, or timed dosing of [3.3] 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) [18] inches from bottom of tank to "Pump ON" float, or [12] inches to "Timer ON" float if time dosed

21) [21] inches from bottom of tank to "Hi Level" float, or [31] inches to "Hi Level" float if time dosed

22) [172] gallons reserve capacity (after High Level Alarm is activated)

23) 0.60 gpd/ft² Absorption area Soil Loading Rate, (this must match the soil boring log) which gives a mound ratio of 2 (minimum) desired mound ratio 2.0

24) 9 percent site slope (0-20% range) 9 (% downslope site slope, if different than upslope)

25) 12 inches, or 1.0 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) 24 inch, or 2.0 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

27) 20.0 ft. base absorption width (with sand beyond rockbed as follows:)

43.2 greater of: absorption width OR sand slope

28) 0.0 ft. upslope and sideslope sand upslope 8.8

10.0 ft. Downslope sand down slope 24.4

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

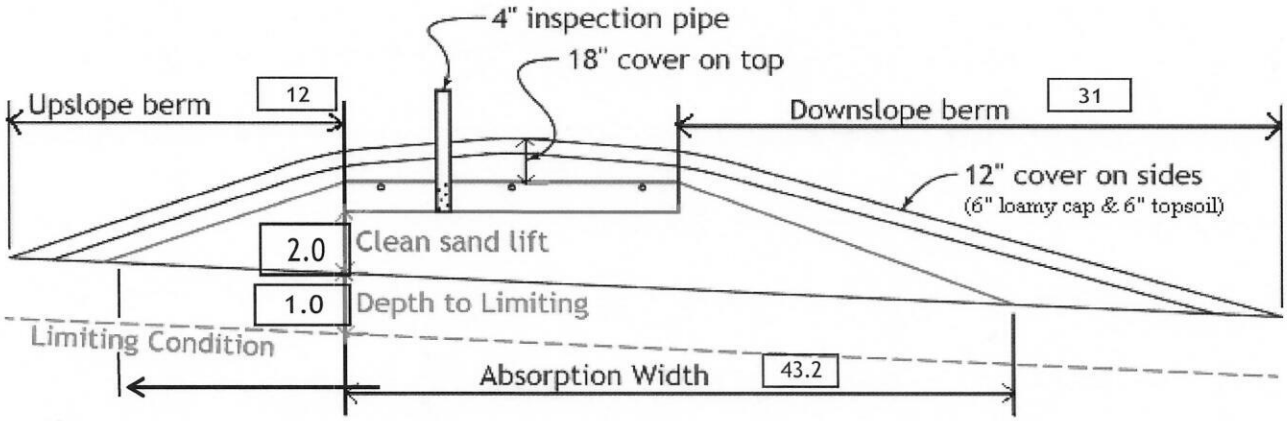
29) 4:1 upslope ratio 12 ft. upslope berm

30) 3:1 sideslope 15 ft. sideslope berms

31) 4:1 downslope 31 ft. downslope berm

32) Overall Dimensions: 10.0 ft. wide by 50.0 ft. long Rock bed

53 ft. wide by 80 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 50.0 ft. by 9 inches under pipe, plus 20% gives 23 yd³ or *1.4= 32 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)

35.3 up + 126.8 downslope + 16.9 ends + 45.4 under rock = 269 yd³ or *1.4= 377 ton
plus 20%

35) Loamy Cap:

49 ft. by 76 ft. 6" deep, plus 20% gives 83 yd³ or *1.4= 116 ton

36) Topsoil:

53 ft. by 80 ft. 6" deep, plus 20% gives 95 yd³ or *1.4= 133 ton

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

Designer Signature	Company	License#	Date
	Brummer Septic LLC.	L-1347	5/4/2023

Installer Summary

1000 gallon Septic tank (minimum)

Tank options: none

Install 1820 Jacobson 2/compartment septic / lift Tank at 16.57 gpi

520 gallon Dose tank (minimum)

29 GPM @ 25 ft. of head, Pump required

5.8 inch swing on Demand float which translates to roughly 3.9 inches of float tether length

if time dosing is required --> 3.3 minutes ON time & 5.1 hours OFF time

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

21 inches from bottom of tank to "Hi Level Alarm" or 31 inches to "Hi level alarm" if time dosed

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

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

24 inch, or 2.0 ft. Sand Lift Mound

10.0 ft. wide by 50.0 ft. long Rock bed

3 laterals 1.50 inch diameter 48.0 ft. long 3.0 ft. lateral spacing

7/32 inch perfs 3.0 ft. perforation spacing

No Effluent filter & alarm

3 clean out & valve box assemblies

43.2 ft.Total sand ABSORPTION width (minimum)

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

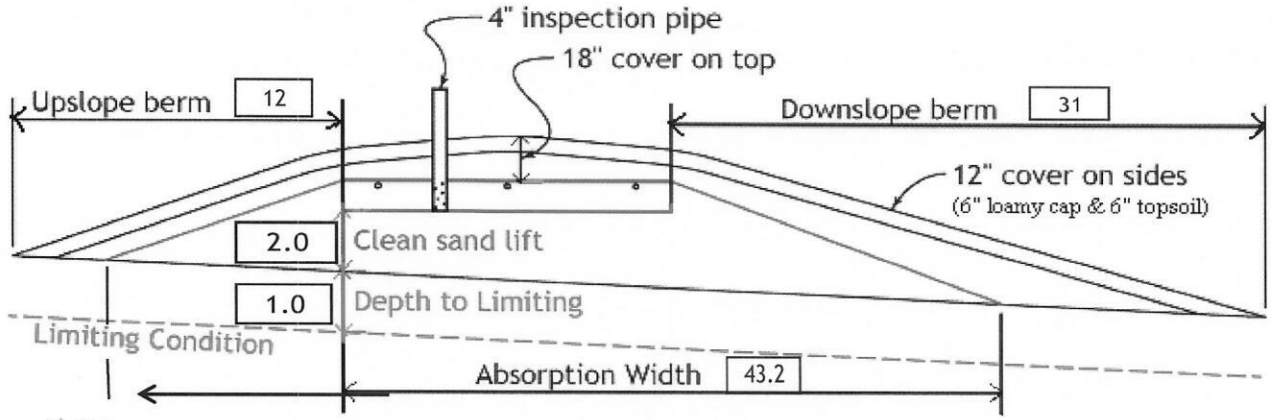
24.4 ft. Downslope (sand beyond rockbed, minimum)

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

4:1 upslope ratio 12 ft. upslope berm

3:1 sideslope 15 ft. sideslope berms

4:1 downslope 31 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:	23.0	yd^3 or *1.4=	32 ton	9 inches under pipe
Mound Sand:	269	yd^3 or *1.4=	377 ton	
Loamy Cap:	83	yd^3 or *1.4=	116 ton	6" deep
Topsoil:	95	yd^3 or *1.4=	133 ton	6" deep

INSPECTOR CHECKLIST - mound

45807 295th St. Aitkin Mn 56431

☐ 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_____ 1000 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 _____ 29 gpm 25 head VERIFY PUMP CURVE 3.3 min ON 5.1 hr OFF

☐ float setting drop 5.8 inches at 16.6 gpi "DESIGNED" 3.9 inches approx float tether length
96.0 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 50.0

☐ Sand lift depth 24 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

☐ Absorption Sand beyond rock 8.8 upslope 24.4 downslope

☐ Bermed topsoil beyond rockbed 12 upslope 15 sideslope 31 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

☐ 7/32 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

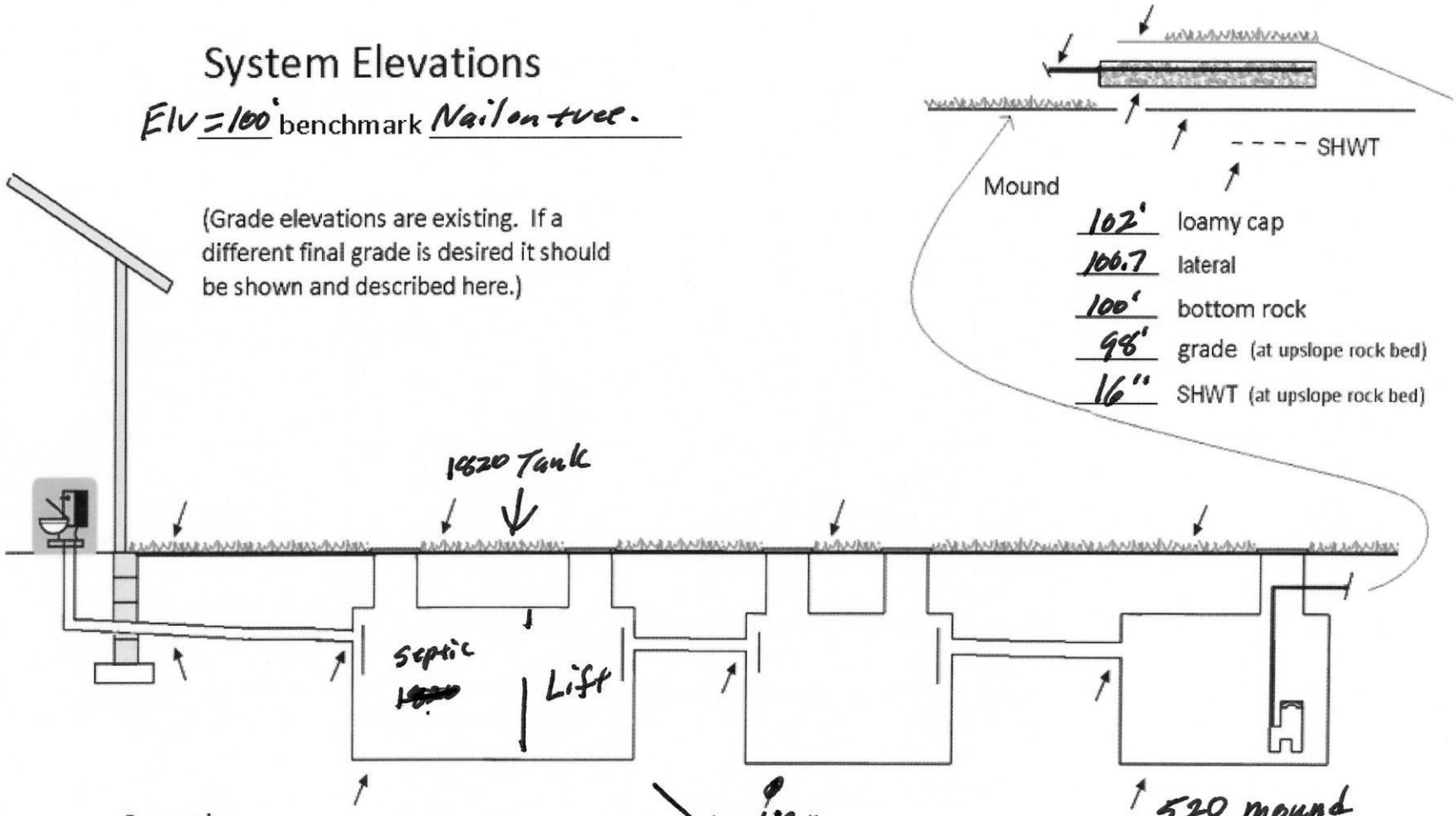
☐ monitoring plan and type _____

☐ well abandonment form - if necessary

System Elevations

Elv = 100' benchmark Nail on tree.

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



Sewer pipe exiting house
70.4' Grade
61.7' Pipe

Septic Tank
65.5' Grade
61' inlet
57' Tank bottom

~~Septic~~ Tank (if applicable)
65.5' Grade
60.8' inlet
57' Tank bottom

Pump Tank
92.2 Grade
91' inlet
87' Tank bottom

Mound Design Notes - Aitkin county

Property Owner: Janet Sanderson **Date:** 5/4/23

Site Address: 45807 295th St. Aitkin Mn 56431 **PID:** 07-0-067102

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

Grade at SE house corner	Elv.= 70.4'
Existing 1st tank inlet	Elv.= 61.7'
Estimated walk-out	Elv.= 63'
Grade at existing 1st tank	Elv.= 67.3'
Grade at existing 2nd tank	Elv.= 65.7'
Grade at proposed new 1820 tank	Elv.= 65.5'
Deep Well grade	Elv.= 70.4'
Top of Deep Well Cap	Elv.= 71.5
Grade at drainage Ditch 90 ft east of house	Elv.= 73'
Grade at 520 Mound Pump tank	Elv.= 92.2'
Estimated 520 inlet	Elv.= 91'
Estimated 520 pump	Elv.= 87'
Upslope edge of rockbed	Elv.= 98'
Top of Washed Sand	Elv.= 100'
Bottom of rockbed	Elv.= 100'
Soil Bore #1	Elv.= 97.7'
Soil Bore #2	Elv.= 97.6'
Both Benchmark Nails	Elv. = 100'
Wetland at SE mound corner	Elv.= 91.3'
Estimated Lake	Elv.= 52.5'

Designer Signature

Brummer Septic LLC.
Design Company

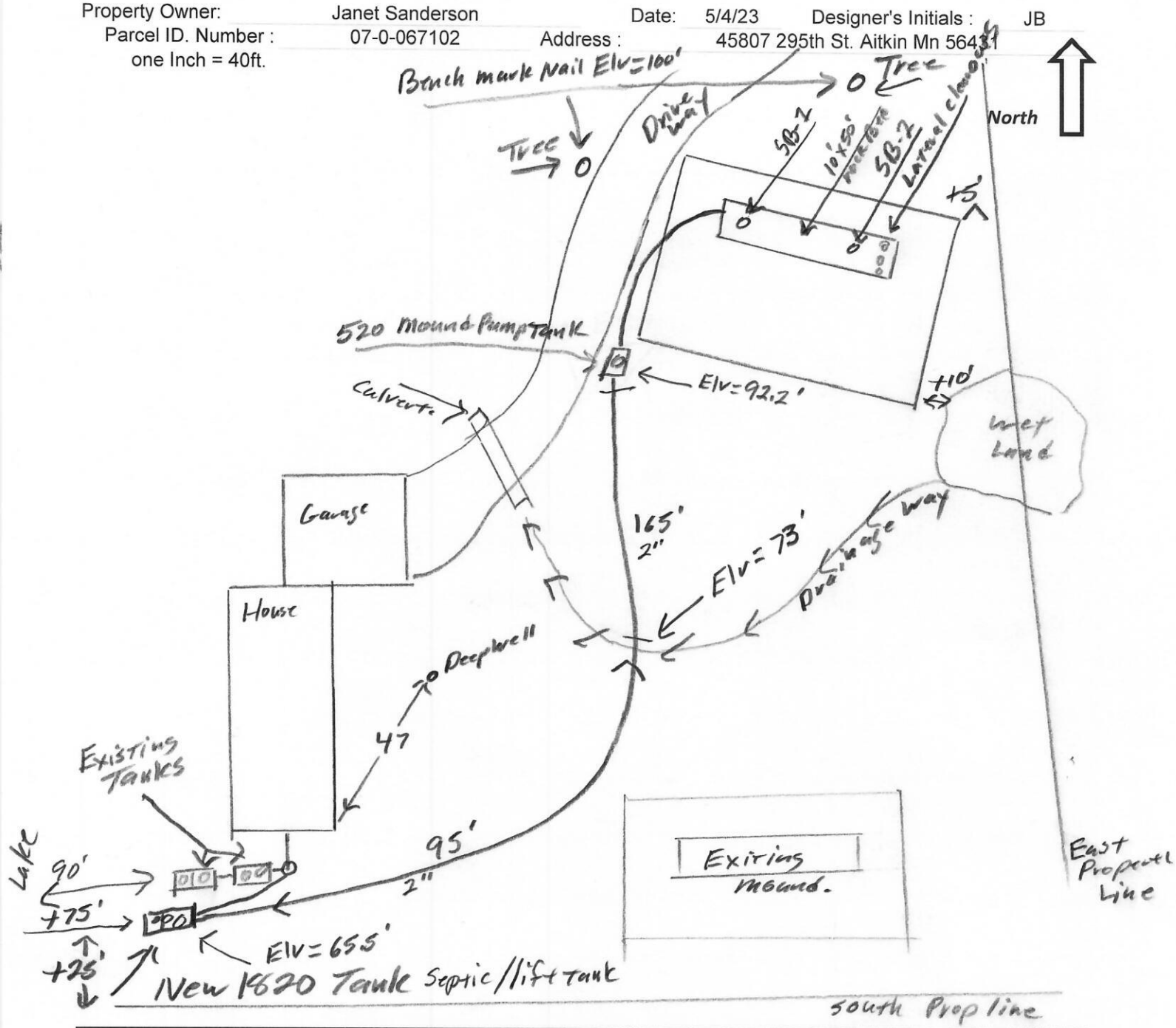
L-1347
License#

{ Design Drawing }

Property Owner: Janet Sanderson Date: 5/4/23 Designer's Initials : JB

Parcel ID. Number : 07-0-067102 Address : 45807 295th St. Aitkin Mn 56431

one Inch = 40ft.



	Surface/ SHWT	*Nail on Tree = Bench Mark 100'*		Existing Grade
Soil Bore 1	97.7' / 16"	Bench Mark	100'	Upslope Edge of Rockbed Elv.= 98'
Soil Bore 2	97.6' / 16"	Ground Elv. BM		Bottom of Rockbed Elv.= 100'
Soil Bore 3		Mound Pump Tank	92.2'	Top of Washed Sand Elv.= 100'
		Ground at SE corner house	70.4'	Elv. Of Sewer pipe at House Elv.= 61.7'

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: Janet Sanderson **Date:** 5/4/23

Site Address: 45807 295th St. Aitkin Mn 56431 **PID:** 07-0-067102

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

1 This is a type I mound for a 4 bedroom House. Existing deep well location is East of House.

2 Existing septic system is Non-Compliant. Abandon existing mound.
Pump, collapse, fill or remove existing tanks.

3 Owner confirmed property lines. (had survey done not to long ago).

4 There are 2 trees with Bench Mark nails near mound (one west & one north), Nail at Elv. = 100'

5 Install Jacobson 1820 tank for gravity flow from house, Install clean-out at connection to existing pipe.
The 1820 Jacobson 2/Compartment tank is 1152 septic / 666 gal. lift tank pumped up to 520 gal. mound pump tank.
Install a 2" supply pipe from mound pump tank to drainback to the 666 lift tank.
Use 15 GPM at 40 ft head for lift pump, install electric alarm on this lift pump. See notes on pump settings.

6 Elevation contour of rock bed upslope edge is 98'.
The area size of the rock bed is 10' x 50' . Absorption area is 50' x 43.2'.
Sand absorption area is 8.8 ft. up slope + 10 ft. rockbed + 24.4 downslope = approx. 43.2 ft. wide sand base.
Berms are 12ft. Upslope, 31ft. Down slope, 10ft. Rock bed = approx. 53ft. Wide.
Overall mound size is approx. 53' wide x 80' long and approx. 4' high.
Mound end Berms are at 3:1 ratio to fit on lot. End berms are 15 ft. wide

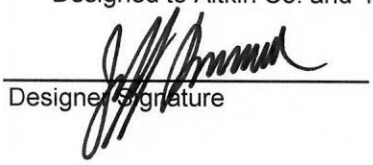
7 The bench mark is the nail on the tree near mound area, BM = Elv. 100'.
Installer to double check bench mark. Installer should confirm bench mark and sand height Elv. with inspector.
Installer should record bench mark Elv. and sand height on installation inspection form.

8 The top of the washed sand and bottom of rock bed is Elv. 100'.
It is important that the soils do not get compacted, and that clean washed sand is used.

9 The Jacobson 520 Mound Pump tank will be supplied from 666 gal. lift tank. Install the pump for 7 demand doses per day. approx. 96 gallons per dose, 5.8 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, insulate top of tank.

10 Install a 2" supply pipe from tank to end manifold in rock bed, install so pipe drains back to 520 pump tank.
Install 1.5" laterals with 9" of rock under them. (Install Lateral clean-outs at far end of laterals. Recommended)

11 **Drill 7/32" holes for Perf sizing, 36" on centers.**
Install 4" inspection pipe to bottom of rock bed, secure in rock bed and raise to above final grade.
Recommend Installing an Effluent filter and Alarm on septic tank outlet.
Recommend installing an event counter on all systems with a pump.
Recommend installing Alarm Buzzers inside house.
Designed to Aitkin Co. and MPCA recommendations and requirements.



Designer Signature

Brummer Septic LLC.
Design Company

L-1347
License#

Pump settings for Jacobson 1820 2/Compartment Tank.

Janet Sanderson

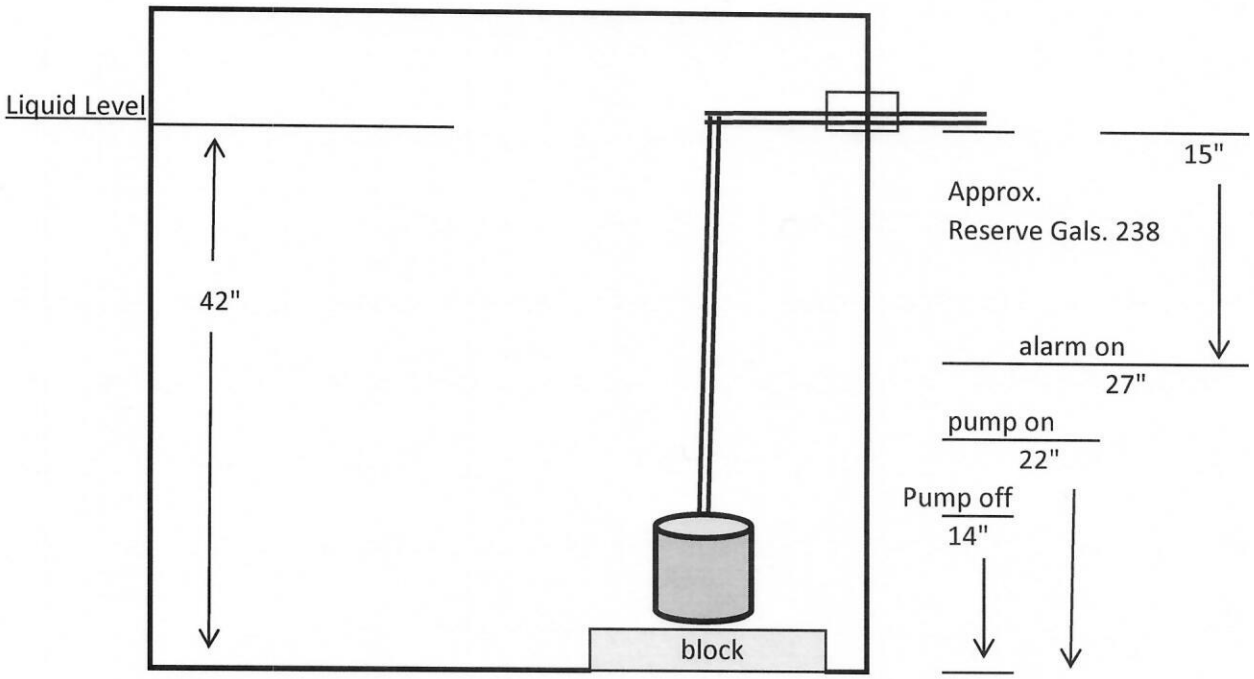
Parcel ID. 07-0-067102

This is for the Lift Tank settings that will pump up to (520 gal) Mound Pump tank

Used Larger 1820 tank because of Drainback Volume

Tank Mfg. Jacobson 666 Gallon Lift tank *pumps up to 520 gal. mound pump Tank*

Tank Size: MFG. 15.85 gals. Per inch



Assumes 10" pump

Pump out dose at 7.5" = (75 gals. dose + 43 drain back) = 118 pump out gals.

600 gpd ÷ 8 = 75 gals. Per Dose

Drainback for a 250 ft 2" pipe / 250 x .17 = 43 gallons

Sett alarm higher because of the drainback volume

Estimated Pump Elevation in 666 gal. Lift tank Elv.= 57'

Estimated Inlet of 520 gal. Mound Pump tank Elv.= 91'

Estimated 34 ft. head

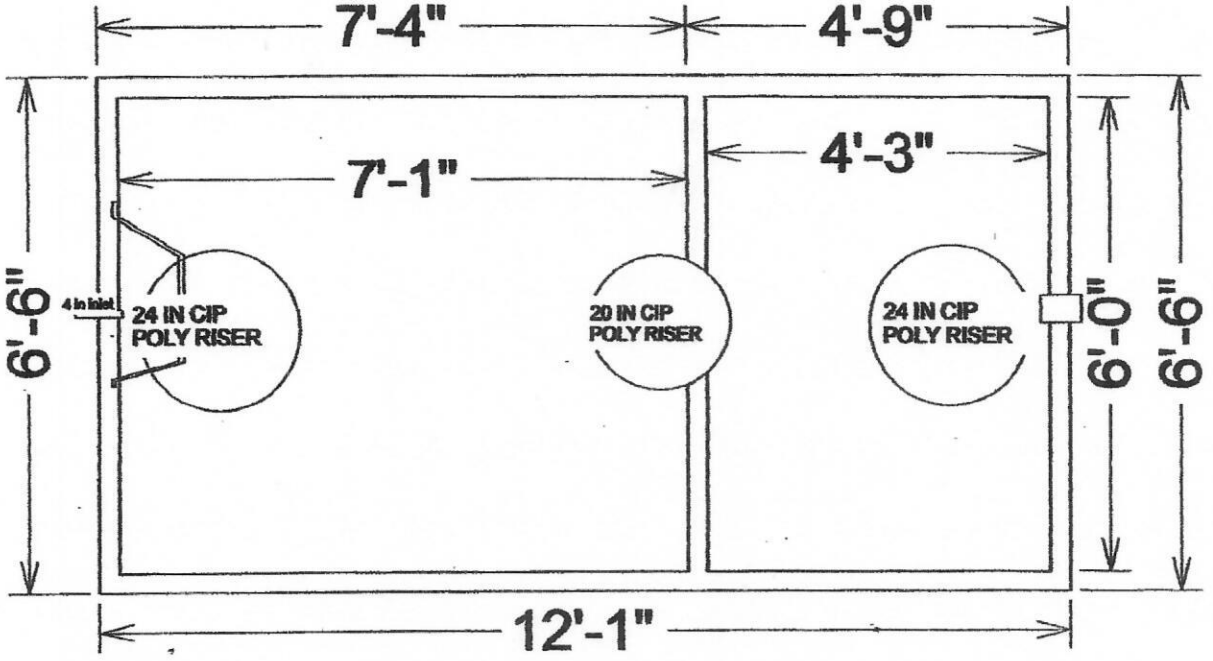
Pumping to a 2nd tank use 15 GPM

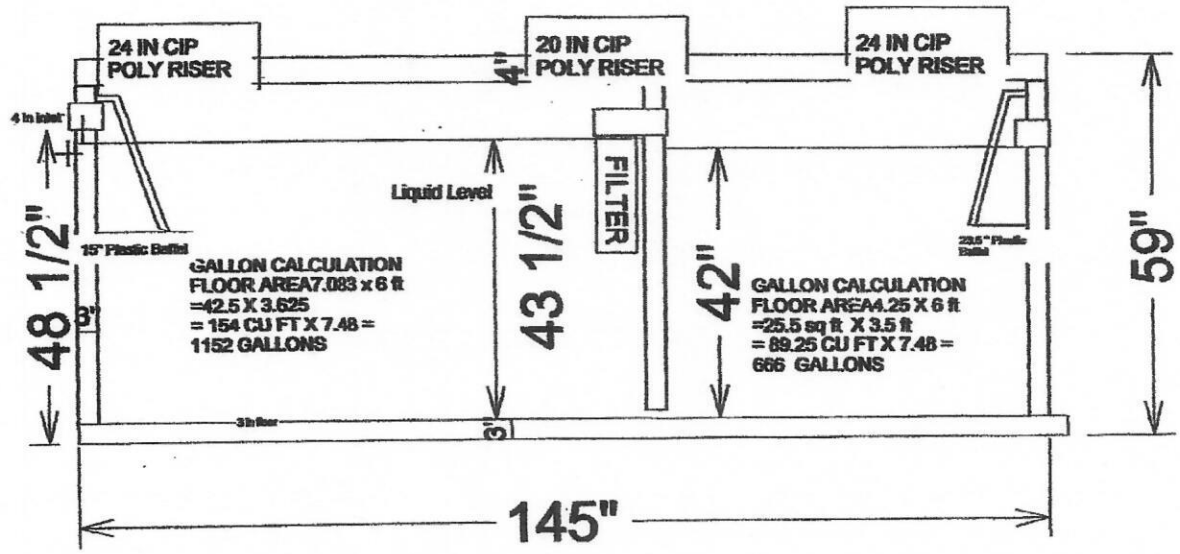
Use 15 GPM at 40 ft head for lift pump

1820 Gallon 2 Compartment Septic Tank

Weight: 13, 780 Lbs

TOP VIEW



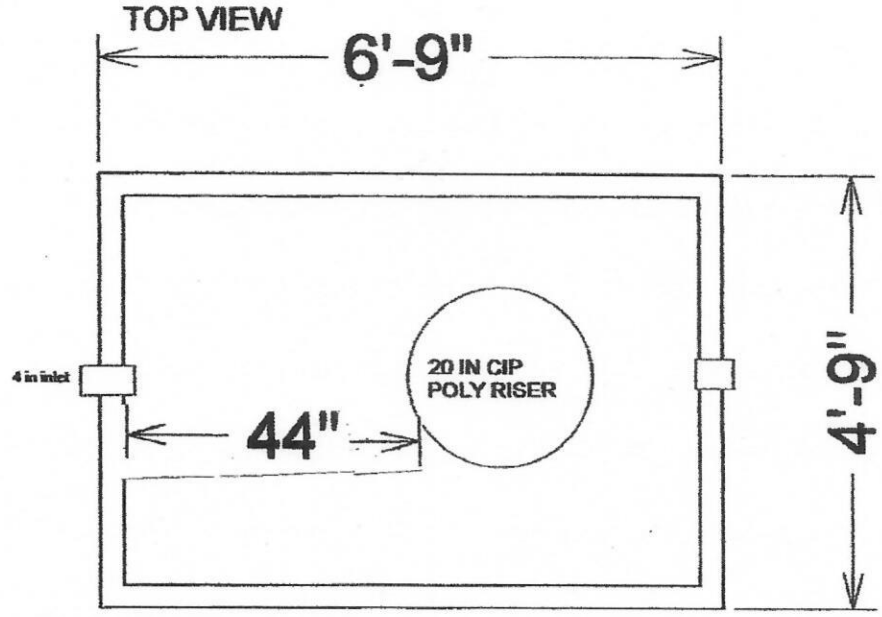


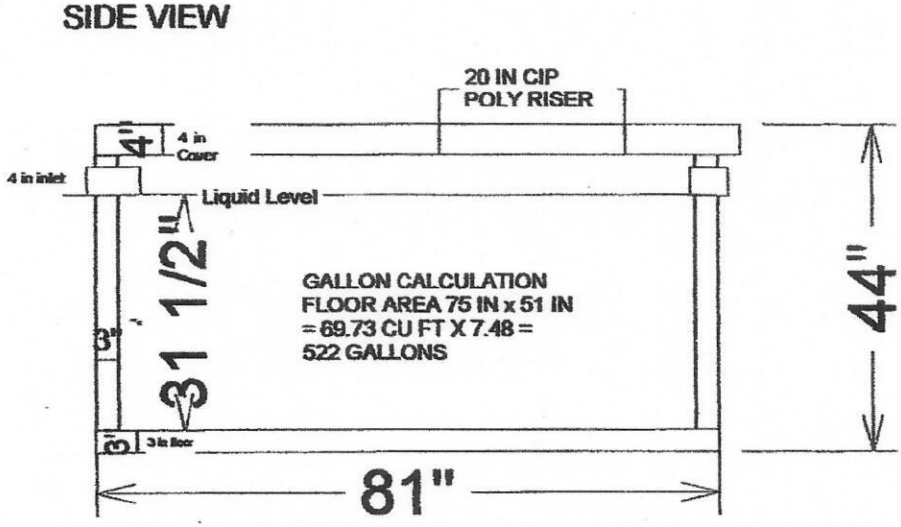
666 gal. / 42" = 15.85 GPI

SIDE VIEW

Drawings Owned BY Jacobson Precast, Inc.
36641 HWY 169, Aitkin, Mn 56431

520 Gallon Pump Tank





522 gals. / 31.5" = 16.57 GPI

Aitkin County

Detailed Parcel Report

Parcel Number: 07-0-067102

General Information

Township/City:	FARM ISLAND TWP		
Taxpayer Name:	SANDERSON, JANET L TRUSTEE		
Taxpayer Address:	MODINE FAMILY CABIN TRUST 45807 295TH ST DEERWOOD MN 56444		
Property Address:	45807 295th St		
Township:	46	**Lake Number:**	1020800
Range:	27	**Lake Name:**	SUNSET LAKE RD
Section:	30	**Acres:**	3.13
Green Acres:	No	**School District:**	1.00
Plat:			
Brief Legal Description:	3.13 ACS IN LOT 3		

Tax Information

Class Code 1:	Residential 1 unit
Class Code 2:	Unclassified
Class Code 3:	Unclassified
Homestead:	Owner Homestead
Assessment Year:	2023

Estimated Land Value:	$346,700.00
Estimated Building Value:	$266,200.00
Estimated Total Value:	$612,900.00
Prior Year Total Taxable Value:	$521,300.00
Current Year Net Tax (Specials Not Included):	$2,578.00
Total Special Assessments:	$0.00
****Current Year Balance Not Including Penalty:**	$2,578.00
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.**

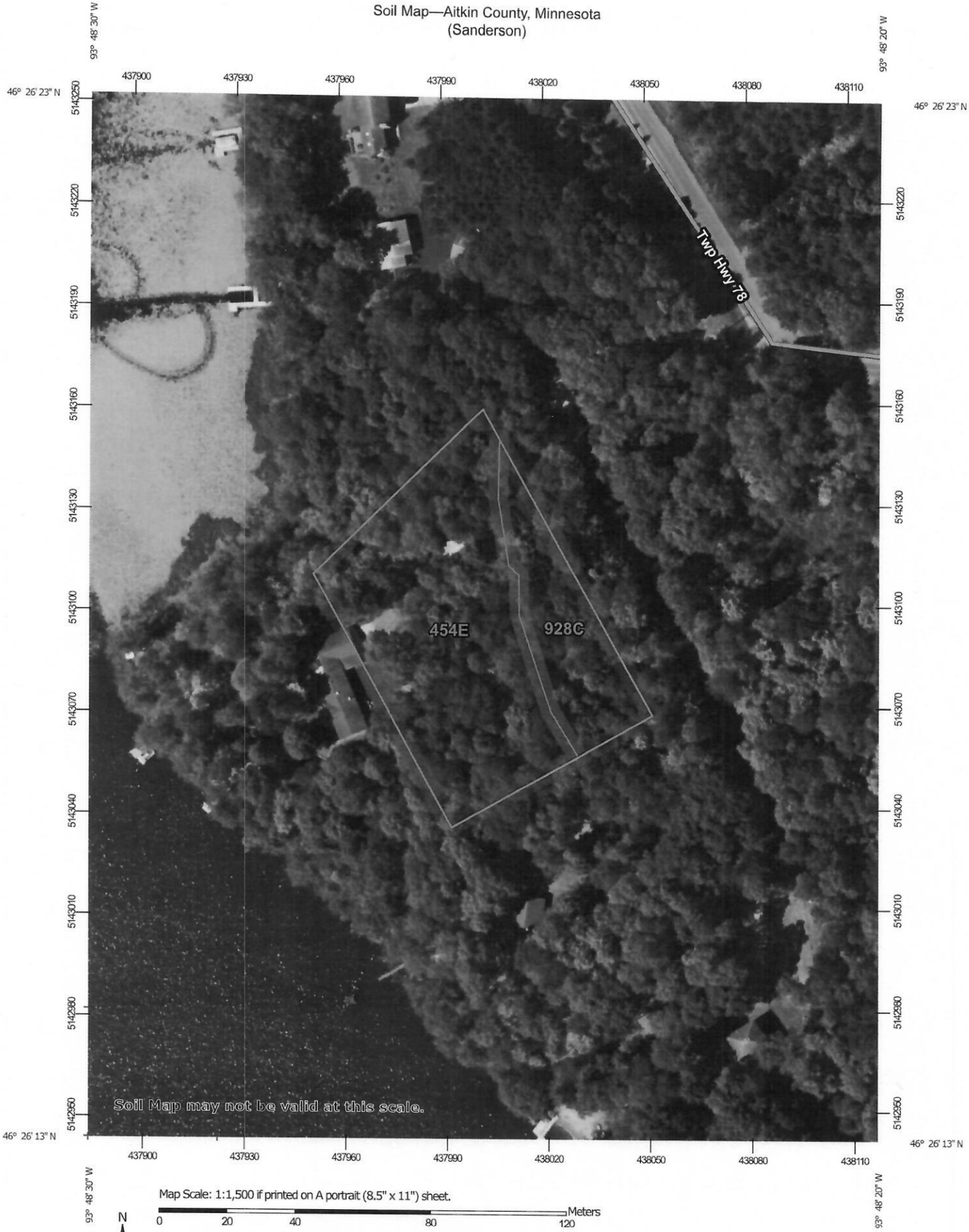
Sanderson

1:2,257 | 0 0.01 0.02 mi | 1 inch = 188 feet | Web AppBuilder for ArcGIS

Aitkin County

Date: 4/29/2023

Soil Map—Aitkin County, Minnesota
(Sanderson)



Map Scale: 1:1,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Aitkin County, Minnesota

454E—Mahtomedi loamy coarse sand, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: gjgy
Elevation: 980 to 1,640 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 120 to 140 days
Farmland classification: Not prime farmland

Map Unit Composition

Mahtomedi and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mahtomedi

Setting

Landform: Outwash plains
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly outwash

Typical profile

A - 0 to 1 inches: loamy coarse sand
E - 1 to 14 inches: loamy coarse sand
Bw - 14 to 25 inches: gravelly sand
C - 25 to 60 inches: gravelly sand

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F090AY019WI - Dry Sandy Uplands

Forage suitability group: Steep; Coarse Testure; Low AWC (G090AN018MN)
Other vegetative classification: Steep; Coarse Testure; Low AWC (G090AN018MN)
Hydric soil rating: No

Minor Components

Leafriver and similar soils
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Soils with more gravel
Percent of map unit: 2 percent
Hydric soil rating: No

Soils with less gravel
Percent of map unit: 2 percent
Hydric soil rating: No

Newson and similar soils
Percent of map unit: 2 percent
Landform: Swales
Hydric soil rating: Yes

Meehan and similar soils
Percent of map unit: 2 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 23, Sep 6, 2022

Aitkin County, Minnesota

928C—Cushing-Mahtomedi complex, 2 to 10 percent slopes

Map Unit Setting

National map unit symbol: gjk4
Elevation: 980 to 1,640 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 120 to 140 days
Farmland classification: Not prime farmland

Map Unit Composition

Cushing and similar soils: 50 percent
Mahtomedi and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cushing

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

E - 0 to 16 inches: very fine sandy loam
B/E - 16 to 19 inches: loam
Bt - 19 to 44 inches: loam
C - 44 to 60 inches: loam

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F090AY015WI - Loamy Upland with Carbonates
Forage suitability group: Sloping Upland, Acid (G090AN006MN)

Other vegetative classification: Sloping Upland, Acid (G090AN006MN)
Hydric soil rating: No

Description of Mahtomedi

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly outwash

Typical profile

A - 0 to 4 inches: loamy sand
E - 4 to 15 inches: coarse sand
Bw - 15 to 26 inches: gravelly coarse sand
C - 26 to 60 inches: gravelly sand

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F090AY019WI - Dry Sandy Uplands
Forage suitability group: Sandy (G090AN022MN)
Other vegetative classification: Sandy (G090AN022MN)
Hydric soil rating: No

Minor Components

Cathro and similar soils

Percent of map unit: 4 percent
Landform: Bogs
Hydric soil rating: Yes

Sandwick and similar soils

Percent of map unit: 4 percent
Landform: Flats
Hydric soil rating: Yes

Meehan and similar soils

Percent of map unit: 4 percent
Hydric soil rating: No

Alstad and similar soils
Percent of map unit: 3 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 23, Sep 6, 2022