

# Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information			
Date	<u>12/1/2021</u>	Sec / Twp / Rng	<u>S-8, T-46, R-26</u>
Parcel ID	<u>24-0-014900</u>	LUG (county, city, township)	<u>Aitkin Co.</u>
Property Owner:	<u>Diane Landstad</u>	Owners address (if different)	
Property Address:	<u>38315 Deer St Aitkin MN 56431</u>		
City / State / Zip:	_____		

Flow Information and Waste Type / Strength			
Estimated Design flow	<u>450</u>	Anticipated Waste strength	<input type="checkbox"/> HI Strength <input checked="" type="checkbox"/> Domestic
Comments: Existing system is failing soil separation. Alternate site is to the South of the mound area		Any Non-Domestic Waste	<input type="checkbox"/> Yes (class V) <input checked="" type="checkbox"/> No
		Sewage ejector/grinder pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Water softener	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Garbage Disposal	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Daycare / In home business	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

### Soil Information

		Evidence of site:	
		Cut	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Filled	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Compacted	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Disturbed	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Original soils	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Soil logs completed and attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Perk test completed and attached (if applicable)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Soil loading rate (gpd/ft <sup>2</sup> )	<u>0.60</u>	Percolation rate (if applicable)	_____
Depth/elev to SHWT	<u>16"</u>	Flooding or run-on potential (comments)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Depth to system bottom maximum (or elev minimum)	<u>( + 24" )</u>	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)	<input type="checkbox"/> Yes <input type="checkbox"/> 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: <u>Diane Landstad</u>	Date <u>12/1/2021</u>
Property Address / PID: <u>38315 Deer St Aitkin MN 56431</u>	

Soil Survey Information	
<input type="checkbox"/> refer to attached soil survey	
Parent mat'l's:	<input checked="" type="checkbox"/> Till <input type="checkbox"/> Outwash <input type="checkbox"/> Lacustrine <input type="checkbox"/> Alluvium <input type="checkbox"/> Organic <input type="checkbox"/> Bedrock
landscape position:	<input checked="" type="checkbox"/> Summit <input type="checkbox"/> Shoulder <input type="checkbox"/> Side slope <input type="checkbox"/> Toe slope
soil survey map units:	<u>502 &amp; 928C</u> slope <u>2</u> %    direction- <u>West &amp; East</u>

Soil Log #1A Mound area							
		<input checked="" type="checkbox"/> Boring <input type="checkbox"/> Pit	Elevation <u>97.4'</u>		Depth to SHWT <u>16"</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 4	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular
4 - 10	Loam	<35	10YR4/4		Loose	Loose	Granular
10 - 16	Silt Loam	<35	10YR5/4		Friable	Loose	Granular
16 - 19	Silt Loam	<35	10YR5/4	7.5YR5/6	Friable	Weak	Platy
19 - 24	Clay Loam	<35	5YR4/4	7.5YR5/6	Friable	Weak	Blocky
Comments: Alternate Site is to Aitkin Co. sizing 50' x 100'							

38315 Deer St Aitkin MN 56431

Soil Log #2A Mound Area

		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>98.5'</u>		Depth to SHWT <u>16"</u>	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 8	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular
8 - 16	Silt Loam	<35	10YR5/4		Friable	Loose	Granular
16 - 20	Silt Loam	<35	10YR5/4	7.5YR5/6	Friable	Weak	Blocky
20 - 24	Clay Loam	<35	5YR4/4	7.5YR5/6	Friable	Weak	Blocky

38315 Deer St Aitkin MN 56431

		<input type="checkbox"/> Boring	<input type="checkbox"/> 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 #

38315 Deer St Aitkin MN 56431								Soil Log #3B Alternate Site	
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>97.3'</u>		Depth to SHWT <u>14"</u>			
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape		
0 - 5	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular		
5 - 14	Loam	<35	10YR4/4		Loose	Loose	Granular		
14 - 17	Silt Loam	<35	10YR5/4	7.5YR5/6	Friable	Weak	Platy		
17 - 20	Clay Loam	<35	5YR4/4	7.5YR5/6	Friable	Weak	Blocky		

38315 Deer St Aitkin MN 56431								Soil Log #4B Alternate Site	
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>97.1'</u>		Depth to SHWT <u>12"</u>			
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape		
0 - 4	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular		
4 - 12	Loam	<35	10YR4/4		Loose	Loose	Granular		
12 - 15	Silt Loam	<35	10YR5/4	7.5YR5/6	Friable	Weak	Platy		
15 - 18	Clay Loam	<35	5YR4/4	7.5YR5/6	Friable	Weak	Blocky		

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

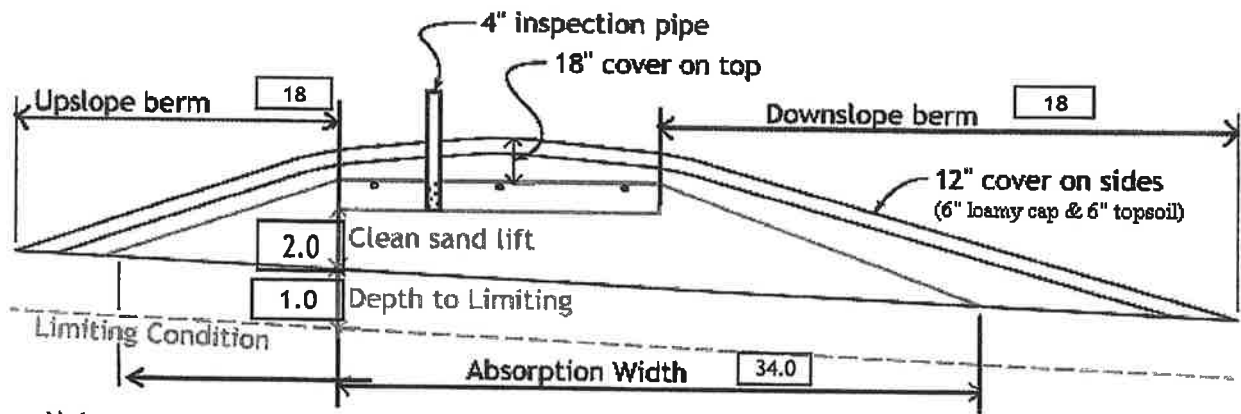
  
 Designer Signature

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- 23)  gpd/ft<sup>2</sup> Absorption area Soil Loading Rate, which gives a mound ratio of  (minimum)  
 (this must match the soil boring log) desired mound ratio
- 24)  percent site slope (0-20% range)  (% downslope site slope, if different than upslope)
- 25)  inches, or  ft. to Redox or other limiting condition (need at least 12" to be a Type I)  
 Treatment zone contains  inches of 0% soil credit, and  inches of 50% soil credit. Giving a:
- 26)  inch, or  ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27)  ft. base absorption width (with sand beyond rockbed as follows):  
 greater of: absorption width OR sand slope
- 28)  ft. upslope and sideslope sand upslope   
 ft. Downslope sand down slope
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29)  upslope ratio  ft. upslope berm **Mound Location on top of ridge 2% slope both ways**
- 30)  sideslope  ft. sideslope berms
- 31)  downslope  ft. downslope berm
- 32) Overall Dimensions:  ft. wide by  ft. long Rock bed  
 ft. wide by  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:  
 ft. by  ft. by  inches under pipe, plus 20% gives  yd<sup>3</sup> or \*1.4=  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)  
 up +  downslope +  ends +  under rock =  yd<sup>3</sup> or \*1.4=  ton  
 plus 20%
- 35) Loamy Cap:  
 ft. by  ft. 6" deep, plus 20% gives  yd<sup>3</sup> or \*1.4=  ton
- 36) Topsoil:  
 ft. by  ft. 6" deep, plus 20% gives  yd<sup>3</sup> or \*1.4=  ton

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

Designer Signature     
  Company     
  License#     
  Date

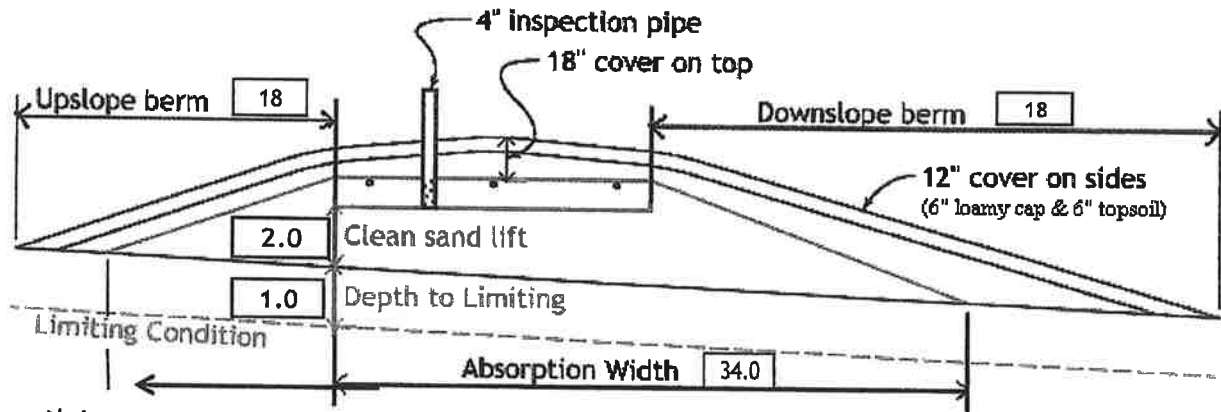
# Installer Summary

1000 gallon Septic tank (minimum) Tank options: none  
 Install 1650 Jacobson 2/Compartment tank.  
 533 gallon Dose tank (minimum) at 12.69 gpi  
 29 GPM @ 24 ft. of head, Pump required  
 6.5 inch swing on Demand float which translates to roughly 4.3 inches of float tether length  
 if time dosing is required --> 2.9 minutes ON time & 5.1 hours OFF time  
 19 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float  
 22 inches from bottom of tank to "Hi Level Alarm" or 32 inches to "Hi level alarm" if time dosed  
 110 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 38.0 ft. long Rock bed  
 3 laterals 1.50 inch diameter 36.0 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

34.0 ft. Total sand ABSORPTION width (minimum)  
 12.0 ft. upslope and sideslope (sand beyond rockbed, minimum)  
 12.0 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	18 ft. sideslope berms
4:1 downslope	18 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:	17.0 yd <sup>3</sup> or *1.4=	24 ton	9 inches under pipe
Mound Sand:	168 yd <sup>3</sup> or *1.4=	235 ton	
Loamy Cap:	66 yd <sup>3</sup> or *1.4=	92 ton	6" deep
Topsoil:	76 yd <sup>3</sup> or *1.4=	106 ton	6" deep



## INSPECTOR CHECKLIST - mound

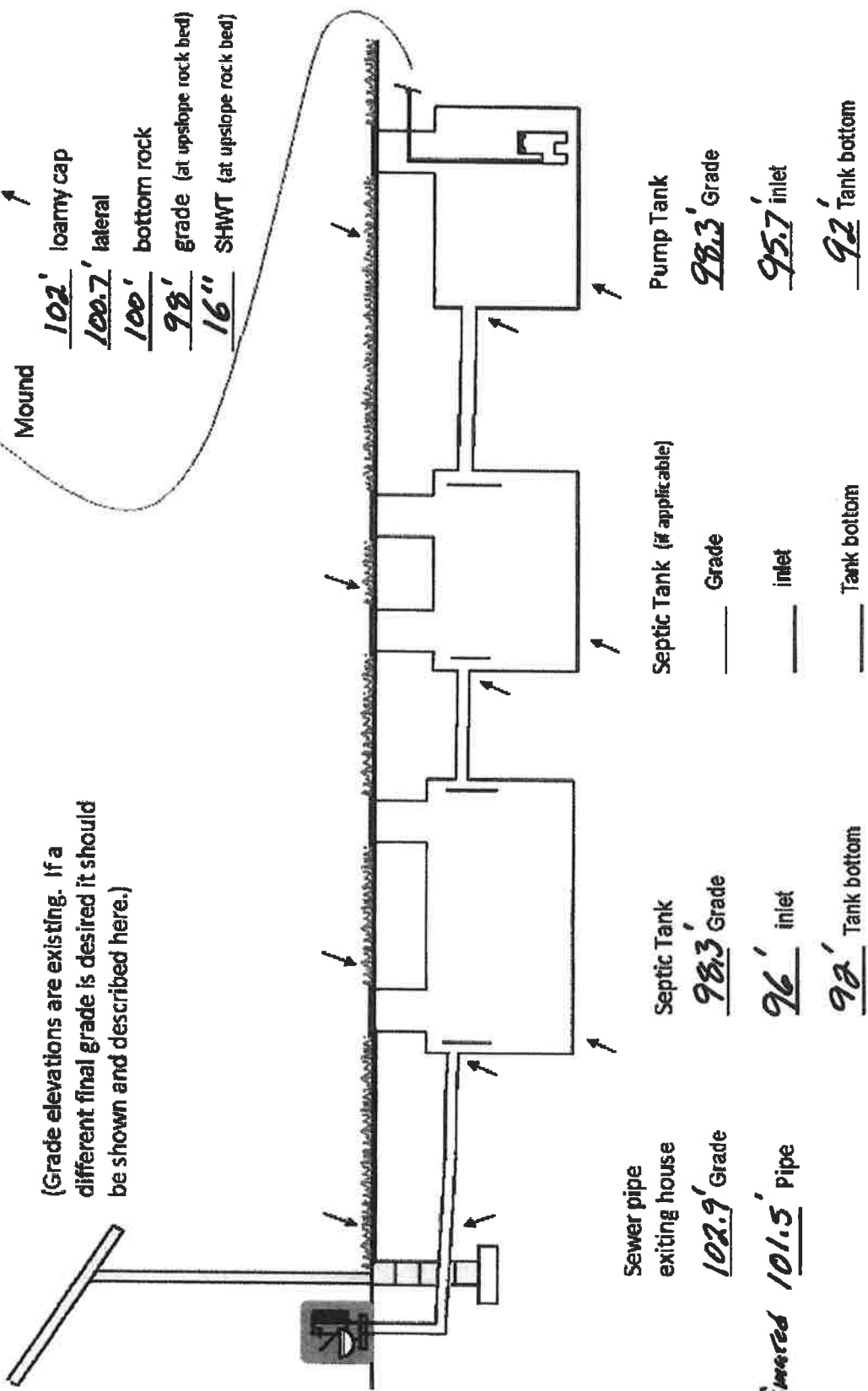
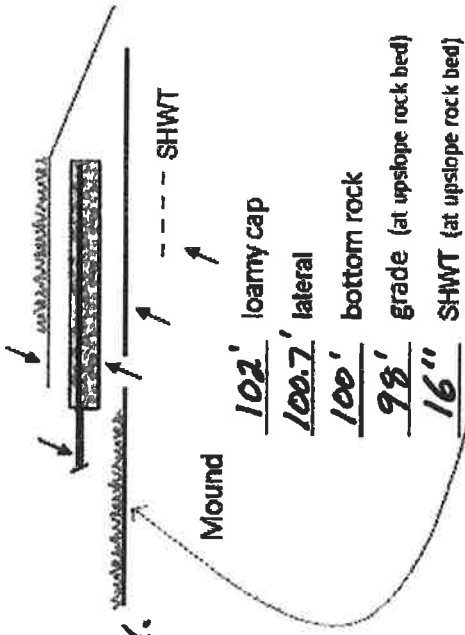
38315 Deer St Aitkin MN 56431

- 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 set 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 \_\_\_\_\_ 533 gallons
  
- dose pump \_\_\_\_\_ 29 gpm 24 head VERIFY PUMP CURVE 2.9 min ON 5.1 hr OFF
  
- float setting drop 6.5 inches at 12.7 gpi "DESIGNED" 4.3 inches approx float tether length  
83.0 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 38.0  
Sand lift depth 24 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)
  
- Absorption Sand beyond rock 12.0 upslope 12.0 downslope
  
- Bermed topsoil beyond rockbed 18 upslope 18 sideslope 18 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.

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



Estimated 101.5' Pipe



## Mound Design Notes - Aitkin county

Property Owner: Diane Landstad

Date: 12/1/21

Site Address: 38315 Deer St Aitkin MN 56431

PID: 24-0-014900

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

- 1 This is a type I mound for a 3 bedroom House. Existing deep well location is NE of House.
- 2 The Existing septic system is Non-Compliant. The existing septic tank is partly under concrete patio. Pump, and remove existing septic tank. Abandon existing drainfield.
- 3 No part of this new system or the Alternate site is closer than 50' ft to a property line. Alternate site is to Aitkin Co. code it is 50 ft. x 100 ft, it is South of new mound area.
- 4 Bench Mark Elevation= 100' is a nail on a tree near NW corner of mound area.
- 5 Install Jacobson 1650 Compartment tank for gravity flow from Slab on grade house. Grade at house is 102.9' near patio. Estimated sewer pipe at house is Elv. = 101.5' Install tank low enough for drain back from mound to pump tank.
- 6 Elevation contour of rock bed upslope edge is 98'. Mound is at top of ridge with 2% slope both ways. The area size of the rock bed is 10' x 38' . Absorption area is 38' x 34'. Sand absorption area is 12ft. up slope + 10 ft. rockbed + 12 downslope = approx. 34 ft. wide sand base. Berms are 18ft. Upslope, 18ft. Down slope, 10ft. Rock bed = approx. 46ft. Wide. Overall mound size is approx. 46' wide x 74' long and approx. 4' high. End Berms are 18 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 & washed 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 1650 compartment tank will be gravity flow from dwelling. Install the pump for 7 demand doses per day. approx. 83 gallons per dose, 6.5 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. Recommend all manholes raised 4" to 6" above final grade for access.
- 10 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 Lateral clean-outs at far end of laterals. Recommended )
- 11 **Drill 1/4" 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.

Designed to Aitkin Co. and MPCA recommendations and requirements.

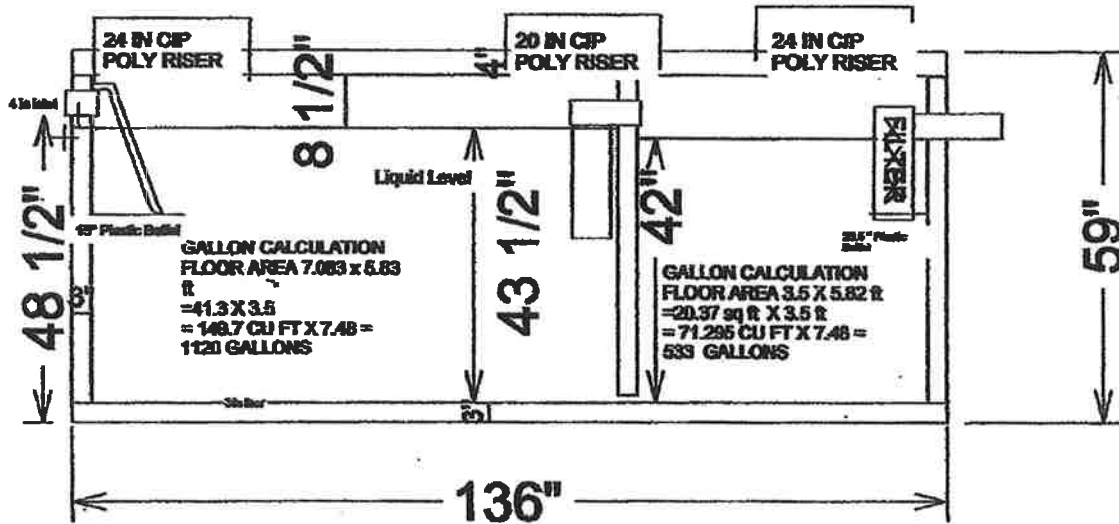
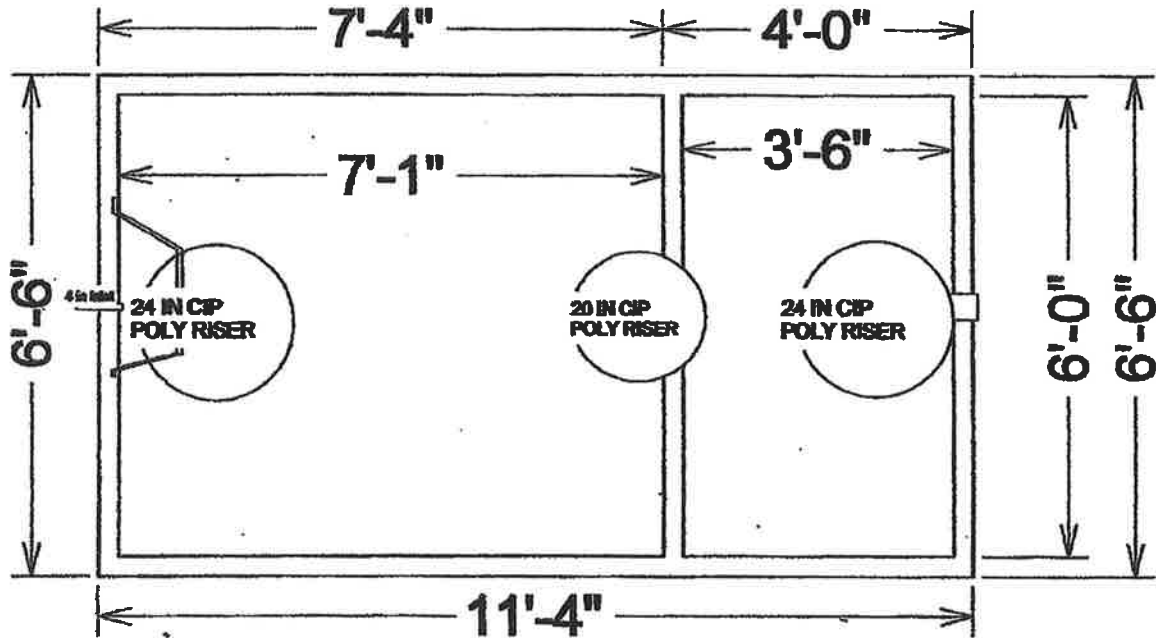
  
Designer Signature

Brummer Septic LLC.  
Design Company

L-1347  
License#

# 1650 Gallon 2 Compartment Septic Tank

## TOP VIEW



$533 / 42" = 12.69 \text{ GPI}$

## SIDE VIEW

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



Map may not be valid at this scale. Data was mapped at an accuracy of 1:24,000 so any representation of the data at a larger scale is not advised.

These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

**Landstad**



Web AppBuilder for ArcGIS

1 inch = 94 feet

0 0.005 0.01 mi

1:1,128

Date: 12/1/2021



# Detailed Parcel Report

Parcel Number: 24-0-014900

## General Information

Township/City: NORDLAND TWP  
Taxpayer Name: LANDSTAD, DIANE P  
Taxpayer Address: 38315 DEER ST  
AITKIN MN 56431  
Property Address: 38315 DEER ST  
Township: 46 Lake Number: 0  
Range: 26 Lake Name:  
Section: 8 Acres: 40.81  
Green Acres: No School District: 1.00  
Plat:  
Brief Legal Description: NE SW & PART OF SE NW IN DOC 298993

## Tax Information

Class Code 1: Residential 1 unit  
Class Code 2: Rural Vacant Land  
Class Code 3: Unclassified  
Homestead: Owner Homestead  
Assessment Year: 2021

Estimated Land Value:	\$67,600.00
Estimated Building Value:	\$220,800.00
Estimated Total Value:	<u>\$288,400.00</u>
Prior Year Total Taxable Value:	\$245,318.00
Current Year Net Tax (Specials Not Included):	\$1,606.00
Total Special Assessments:	\$0.00
**Current Year Balance Not Including Penalty:	\$0.00
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.

Soil Map—Aitkin County, Minnesota  
(Landstad)



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



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

93° 39' 24" W

93° 39' 9" W

46° 28' 57" N

46° 28' 51" N





## Aitkin County, Minnesota

### 502—Dusler silt loam

#### Map Unit Setting

*National map unit symbol:* gjh6  
*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:* Prime farmland if drained

#### Map Unit Composition

*Dusler and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Dusler

##### Setting

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

##### Typical profile

*A - 0 to 5 inches:* silt loam  
*Eg, 2B/E - 5 to 21 inches:* fine sandy loam  
*2Bt1, 2Bt2 - 21 to 50 inches:* clay loam  
*2C - 50 to 60 inches:* loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 6 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 5 percent  
*Available water supply, 0 to 60 inches:* High (about 10.4 Inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C/D  
*Forage suitability group:* Level Swale, Acid (G090AN005MN)  
*Other vegetative classification:* Level Swale, Acid (G090AN005MN)

*Hydric soil rating:* No

**Minor Components**

**Duluth and similar soils**

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

**Mahtowa and similar soils**

*Percent of map unit:* 4 percent

*Landform:* Swales

*Hydric soil rating:* Yes

**Blackhoof and similar soils**

*Percent of map unit:* 4 percent

*Landform:* Depressions

*Hydric soil rating:* Yes

**Data Source Information**

Soil Survey Area: Aitkin County, Minnesota

Survey Area Data: Version 22, Sep 10, 2021

## 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

*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  
*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

#### **Meehan and similar soils**

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

#### **Sandwick and similar soils**

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

**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 22, Sep 10, 2021