

# Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information			
Date	<u>7/6/2023</u>	Sec / Twp / Rng	<u>S-23, T-49, R-25</u>
Parcel ID	<u>60-0-003400</u>	LUG (county, city, township)	<u>City of Palisade</u>
Property Owner:	<u>Jeffrey Germain</u>	Owners address (if different)	<u>Aitkin Co.</u>
Property Address:	<u>48225 Great River Rd. Palisade MN 65469</u>		<u>48225 Graet River Road</u>
City / State / Zip:			<u>Palisade Mn 56469</u>

Flow Information and Waste Type / Strength			
Estimated Design flow	<u>600</u>	Anticipated Waste strength	<input type="checkbox"/> Hi Strength <input checked="" type="checkbox"/> Domestic
Comments: 24" mound in old garden area Owner's plan for future lift in basment		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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Well casing depth	Existing Shallow Well NE of house
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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	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 checked="" type="checkbox"/> Yes <input 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	<u>Call Gopher One may be phone lines buried</u>		

## Soil Information

			Evidence of site:
Original soils	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Cut <span style="float: right;"><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</span> Filled <span style="float: right;"><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</span> Compacted <span style="float: right;"><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</span> Disturbed <span style="float: right;"><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</span>
Soil logs completed and attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Perk test completed and attached (if applicable) <span style="float: right;"><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</span>
Soil loading rate (gpd/ft <sup>2</sup> )	<u>0.60</u>		Percolation rate (if applicable) _____
Depth/elev to SHWT	<u>13"</u>		Flooding or run-on potential <span style="float: right;"><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</span> (comments)
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) _____ Out side of 100 year flood zone
Soil Survey information determined (see attachment)	<input checked="" 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

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Owner Information	
Property Owner / project: <u>Jeffrey Germain</u>	Date <u>7/6/2023</u>
Property Address / PID: <u>48225 Great River Rd. Palisade MN</u>	

Soil Survey Information	
<input type="checkbox"/> refer to attached soil survey	
Parent matl's:	<input type="checkbox"/> Till <input type="checkbox"/> Outwash <input checked="" type="checkbox"/> Lacustrine <input type="checkbox"/> Alluvium <input type="checkbox"/> Organic <input type="checkbox"/> Bedrock
landscape position:	<input type="checkbox"/> Summit <input type="checkbox"/> Shoulder <input checked="" type="checkbox"/> Side slope <input type="checkbox"/> Toe slope
soil survey map units:	<u>672 &amp; 1982</u> slope <u>1</u> %                    direction- <u>West</u>

Soil Log #1							
		<input checked="" type="checkbox"/> Boring <input type="checkbox"/> Pit	Elevation <u>97.9'</u>		Depth to SHWT <u>16"</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 10	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
10 - 16	Sandy Loam	<35	10YR5/3		Loose	Loose	Granular
16 - 20	Sandy Loam	<35	10YR5/3	7.5YR4/4	Loose	Loose	Granular
20	Clay Loam	<35	10YR6/2	7.5YR5/6	Friable	Moderate	Platy
		<35			Loose	Loose	Granular
Comments:							

48225 Great River Rd. Palisade MN 65469

**Soil Log #2**

		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>98'</u>		Depth to SHWT <u>13"</u>			
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape		
0 - 13	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular		
13 - 18	Loam	<35	10YR5/3	7.5YR4/4	Friable	Weak	Granular		
		<35			Loose	Loose	Granular		
		<35							
		<35			Loose	Loose	Granular		

48225 Great River Rd. Palisade MN 65469

**Soil Log #3**

		<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 #

# Mound Design - Aitkin county

Property Owner: Jeffrey Germain

Date: 7/6/2023

Site Address: 48225 Great River Rd. Palisade MN 65469

PID: 60-0-003400

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 1650 Jacobson 2/Compartment Septic tank
- 4) 1000 Gal Septic tank (code minimum)      1000 Gal Septic tank (design size / LUG req'd)  
 Tank options: Multiple tanks or compartments req'd
- 5) 1.2 GPD/ft<sup>2</sup> 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)
- 12) 1.50 inch diameter laterals must be used to meet "4x pipe volume" requirement 1.50 5x
- 13) 50 feet of 2.0 inch supply line      leads to 9 gallons of drainback volume 2.00 3x  
 (Tip: "top feed" manifold to control the drainback)
- 14) 95 gallons TOTAL pump out volume (treatment + drainback)      **Install Jacobson 520 pump tank.**
- 15) 15 feet vertical lift from pump to mound laterals, leads to a:
- 16) 29 GPM @ 22 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) 5.7 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/ft<sup>2</sup> Absorption area Soil Loading Rate, which gives a mound ratio of **2** (minimum)  
 (this must match the soil boring log) desired mound ratio **2.0**

24) **1** percent site slope (0-20% range) **1** (% 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):  
**34.5** greater of: absorption width OR sand slope

28) **5.0** ft. upslope and sideslope sand upslope **11.6**  
**5.0** ft. Downslope sand down slope **12.9**

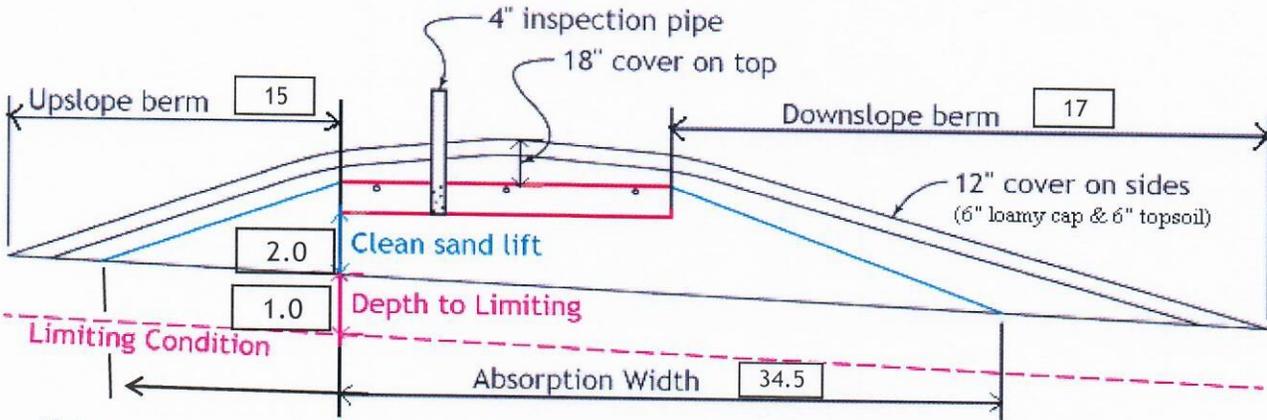
Individual slope ratios give BERM widths (topsoil beyond rockbed) of:

29) **4:1** upslope ratio **15** ft. upslope berm

30) **4:1** sideslope **16** ft. sideslope berms

31) **4:1** downslope **17** ft. downslope berm

32) Overall Dimensions: **10.0** ft. wide by **50.0** ft. long Rock bed  
**42** ft. wide by **82** 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** yd<sup>3</sup> 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)  
**47.5** up + **54.9** downslope + **14.2** ends + **38.0** under rock = **186** yd<sup>3</sup> or \*1.4= **260** ton  
 plus 20%

35) Loamy Cap: **38** ft. by **78** ft. 6" deep, plus 20% gives **66** yd<sup>3</sup> or \*1.4= **92** ton

36) Topsoil: **42** ft. by **82** ft. 6" deep, plus 20% gives **77** yd<sup>3</sup> or \*1.4= **108** ton

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

*[Signature]*  
 Designer's Signature

Brummer Septic LLC.  
 Company

L-1347  
 License#

7/6/2023  
 Date

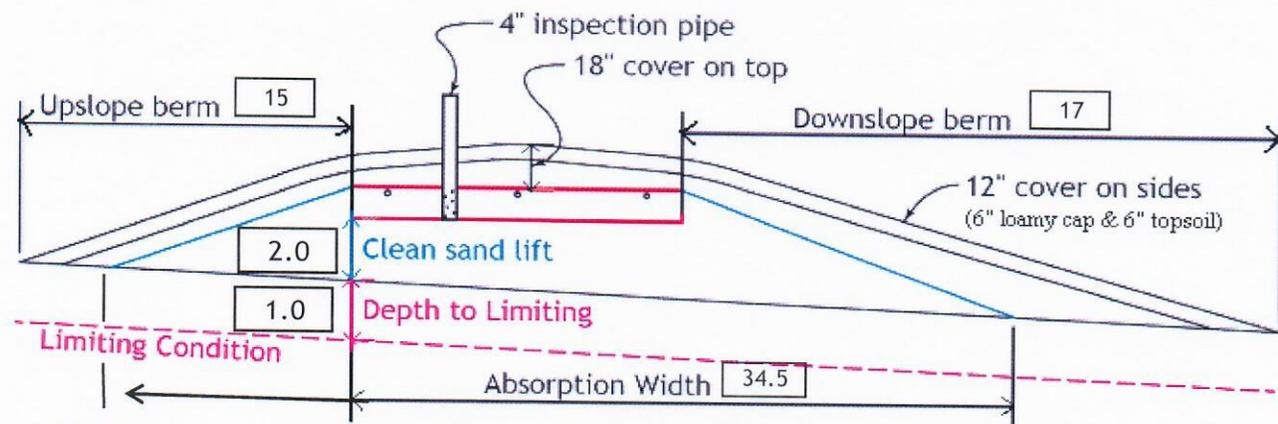
# Installer Summary

- 1000 gallon Septic tank (minimum) Tank options: Multiple tanks or compartments req'd
- 520 gallon Dose tank (minimum) Install 1650 Jacobson 2/Compartment Septic tank at 16.57 gpi
- 29 GPM @ 22 ft. of head, Pump required
- 5.7 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
- 50 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

- 34.5 ft. Total sand ABSORPTION width (minimum)
- 11.6 ft. upslope and sideslope (sand beyond rockbed, minimum)
- 12.9 ft. Downslope (sand beyond rockbed, minimum)

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

4:1 upslope ratio	15 ft. upslope berm
4:1 sideslope	16 ft. sideslope berms
4:1 downslope	17 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 <sup>3</sup> or *1.4=	32 ton	9 inches under pipe
Mound Sand:	186 yd <sup>3</sup> or *1.4=	260 ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	66 yd <sup>3</sup> or *1.4=	92 ton	6" deep
Topsoil:	77 yd <sup>3</sup> or *1.4=	108 ton	6" deep

## INSPECTOR CHECKLIST - mound

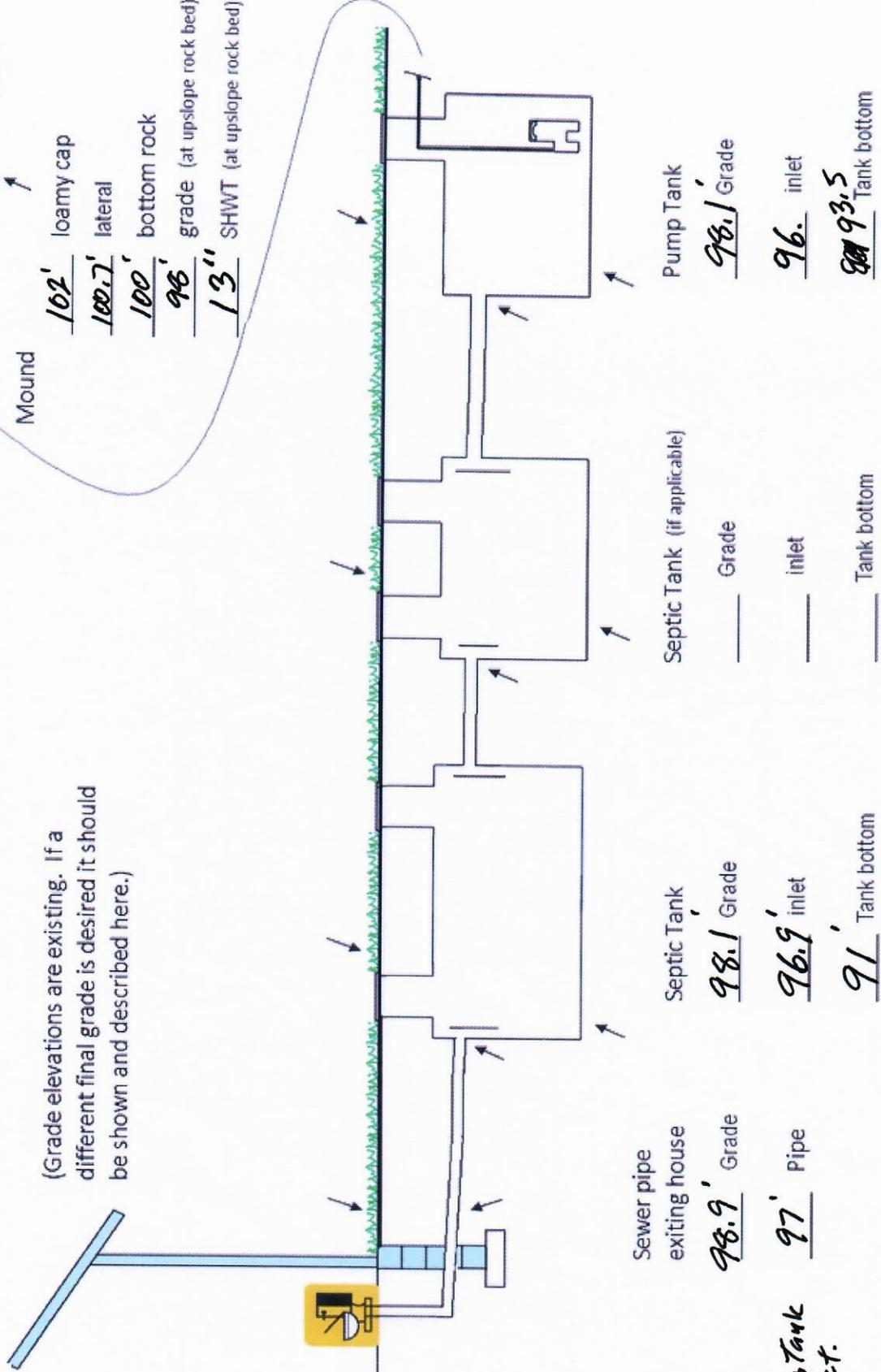
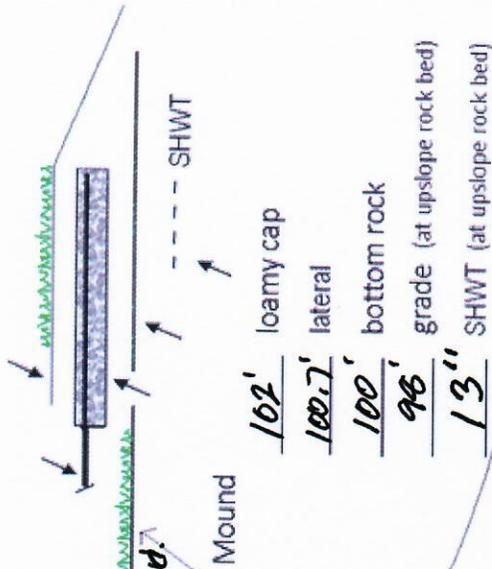
48225 Great River Rd. Palisade MN 55469

- 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 Multiple tanks or compartments req'd
  
- 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 22 head VERIFY PUMP CURVE 3.3 min ON 5.1 hr OFF
  
- float setting drop 5.7 inches at 16.6 gpi "DESIGNED" 3.9 inches approx float tether length  
95.0 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 11.6 upslope 12.9 downslope
  
- Bermed topsoil beyond rockbed 15 upslope 16 sideslope 17 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

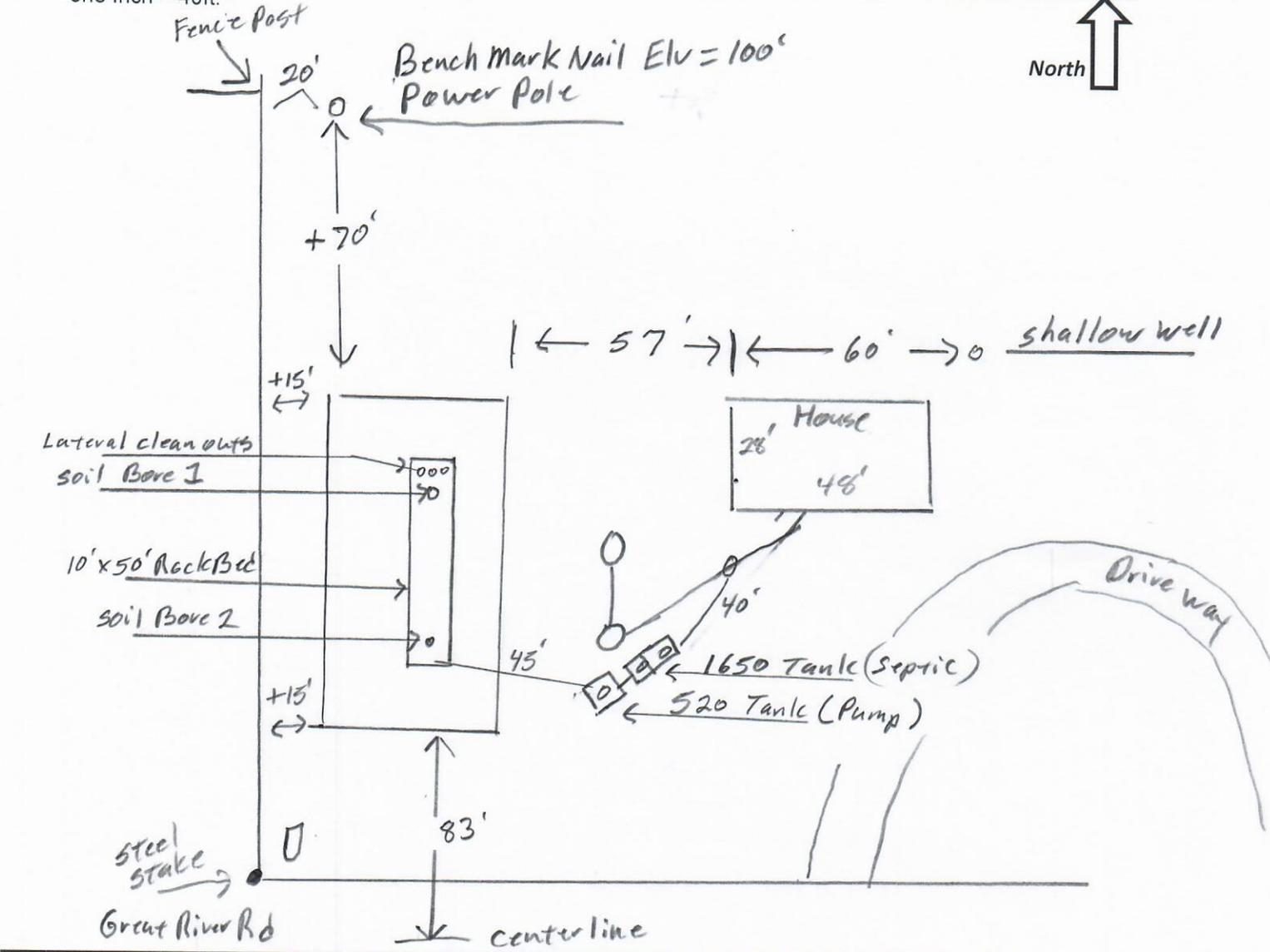
Elv = 100' benchmark Nail on Power Pole North of road.

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



# { Design Drawing }

Property Owner: Jeffrey Germain      Date: 7/6/23      Designer's Initials: JB  
 Parcel ID. Number: 60-0-003400      Address: 48225 Great River Rd. Palisade MN 65469  
 one Inch = 40ft.



	Surface/ SHWT	Nail on Power Pole= Bench Mark 100'	Existing Grade
Soil Bore 1	97.9'/16"	Bench Mark	100'
Soil Bore 2	98'/13"	Ground Elv. BM	98
Soil Bore 3		Ground Elv. Tank	98.1'
	Ground at	house	98.9'
			Upslope Edge Rockbed Elv.=98'
			Bottom of Rockbed Elv.= 100'
			Top of washed sand Elv.= 100
			Extisting Inlet Pipe Elv. = 97'

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: Jeffrey Germain

Date: 7/6/23

Site Address: 48225 Great River Rd. Palisade MN 65469

PID: 60-0-003400

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 Shallow well location will be NE of House.
- 2 Existing seepage tanks to be pumped, collapsed and filled or removed.
- 3 West property line is steel stake at RW and Fence post West of Power pole in back ( Prior Owner stated )
- 4 Bench Mark Elevation = 100' is a nail on a Power pole North of mound area approx. 70 ft.  
Top of power transformer box next to power pole is at Elv.= 101.6'
- 5 Install Jacobson 1650 2/ Compartment Septic tank for gravity flow from house, Check existing pipe for reuse .  
Owner may install plumbing lift in the basement in the future, install 1650 2/Compartment Septic Tank.  
Install clean-out near tank because of landscape at house.  
Raise all manholes and tank inspection pipes to above final grade. Insulate top of tank.  
Install 520 Jacobson Pump tank with gravity flow from 1650 septic tank.
- 7 Owner will have to keep Existing Tanks pumped before project begins to try and dry up tank area.
- 8 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 34.5'.  
Sand absorption area is 11.6 ft. up slope + 10 ft. rockbed + 12.9 downslope = approx. 34.5 ft. wide sand base.  
Berms are 15ft. Upslope, 17ft. Down slope, 10ft. Rock bed = approx. 42ft. Wide.  
Overall mound size is approx. 42' wide x 70' long and approx. 4' high. End Berms at 16 ft. wide.  
The bench mark is the nail on the Power pole near mound area, BM = Elv. 100'.
- 9 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.
- 10 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.
- 11 The Jacobson 520 pump tank will be gravity flow from septic tank. Install the pump for 7 demand doses per day. approx. 95 gallons per dose, 5.7 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 raising manholes 4" above finished grade. Recommend installing an Effluent filter on septic tank out-let.  
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 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.
- 12 MPCA Recommends an event counter on all septic systems with a pump.

Designed to Aitkin Co. and MPCA recommendations and requirements.

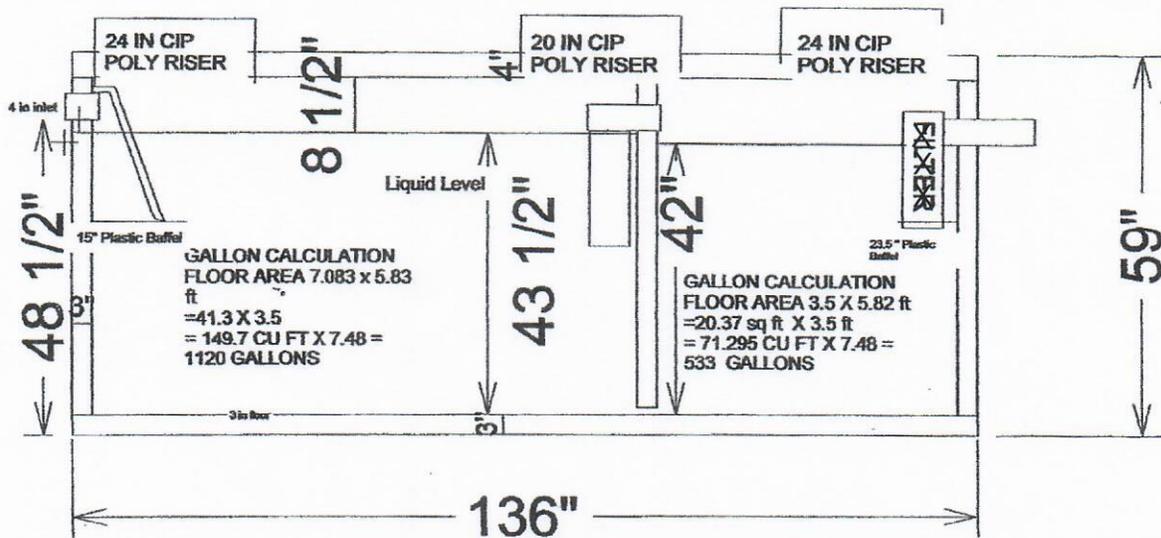
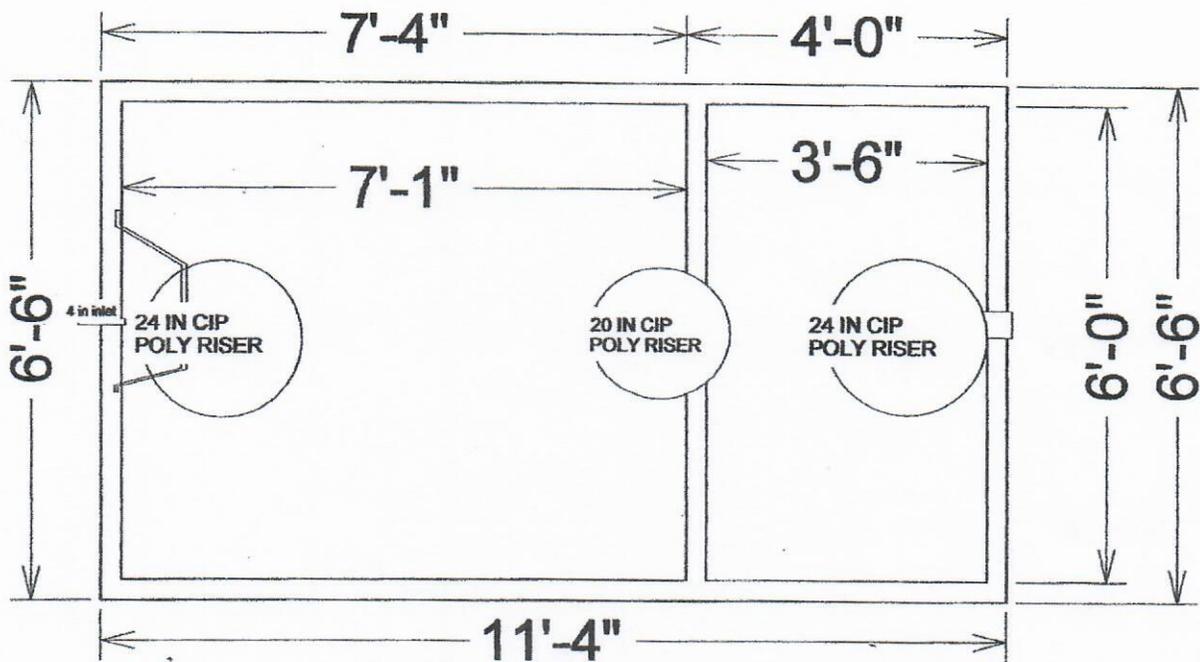
  
Designer Signature

Brummer Septic LLC.  
Design Company

L-1347  
License#

# 1650 Gallon 2 Compartment Septic Tank

## TOP VIEW

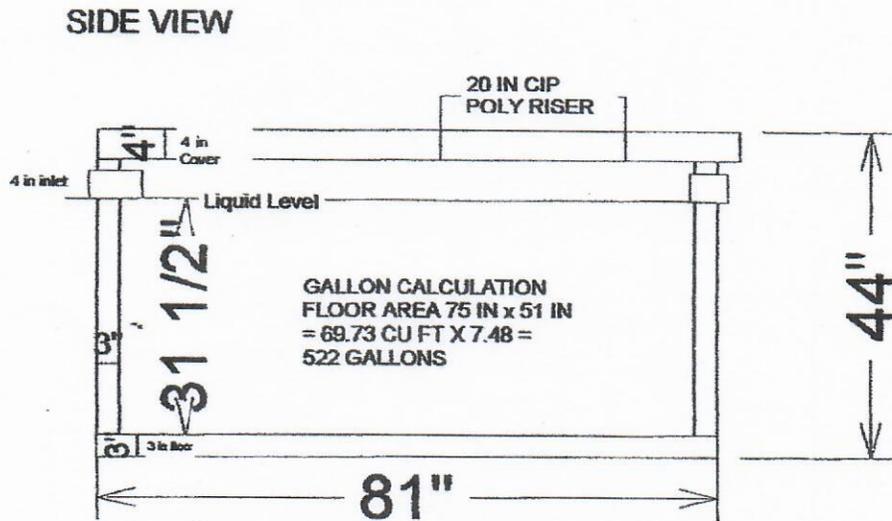
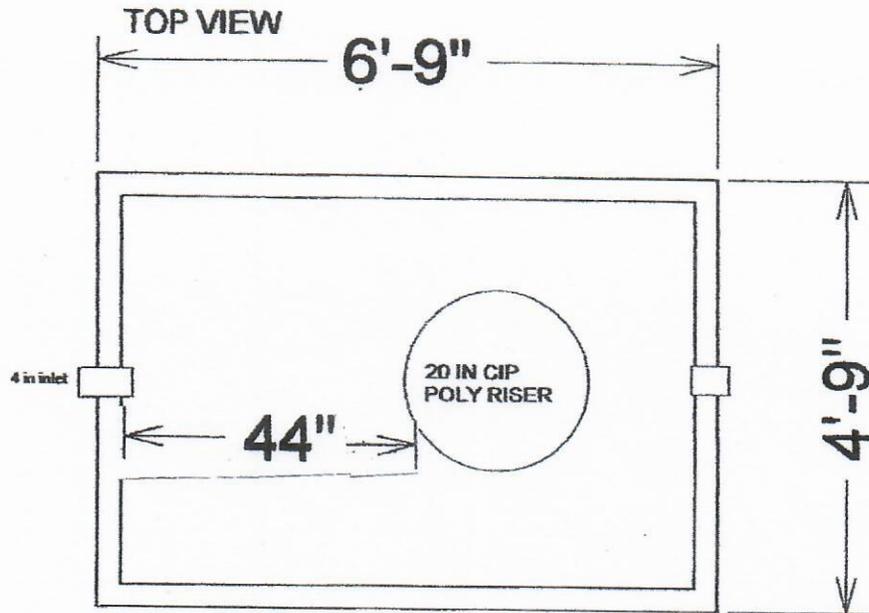


$533 / 42" = 12.69 \text{ GPI}$

## SIDE VIEW

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

# 520 Gallon Pump Tank



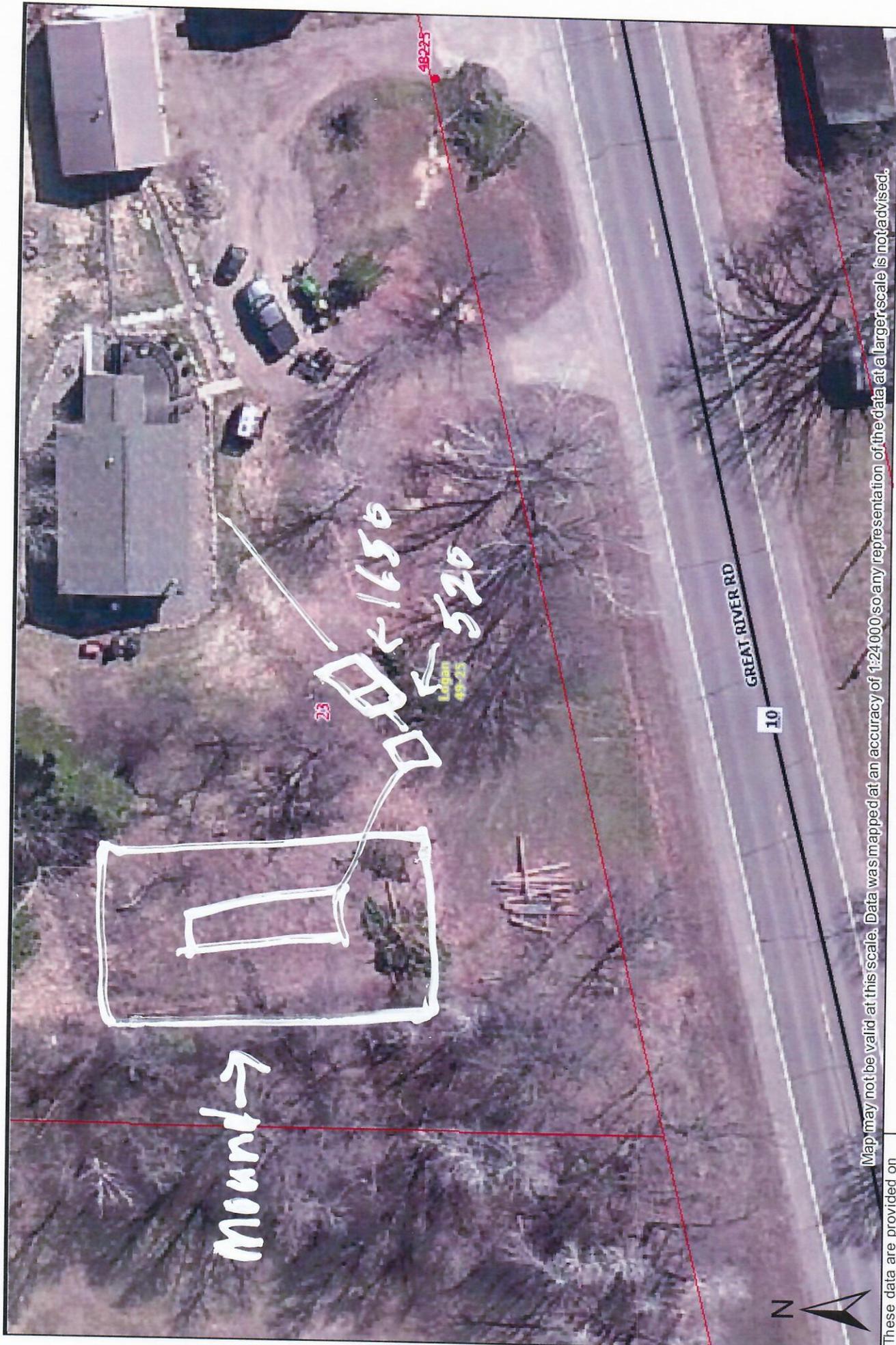
522 gals. / 31.5" = 16.57 GPI

Drawings Owned BY Jacobson Precast, Inc.

36641 HWY 169, Aitkin, Mn 56431

DDo not copy drawings without permission of the Owner





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.

Germain



Date: 7/17/2023

Web AppBuilder for ArcGIS

1:564 0 0.003 0.006 mi 1 inch = 47 feet

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
672	Willosippi loam	0.1	32.4%
1982	Baudette-Spooner complex	0.1	67.6%
<b>Totals for Area of Interest</b>		<b>0.2</b>	<b>100.0%</b>



**Warning: Soil Map may not be valid at this scale.**

You have zoomed in beyond the scale at which the soil map for this area is intended to be used. Mapping of soils is done at a particular scale. The soil surveys that comprise your AOI were mapped at 1:20,000. The design of map units and the level of detail shown in the resulting soil map are dependent on that map scale. Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

## Aitkin County, Minnesota

### 1982—Baudette-Spooner complex

#### Map Unit Setting

*National map unit symbol:* gjfs  
*Elevation:* 980 to 1,310 feet  
*Mean annual precipitation:* 20 to 27 inches  
*Mean annual air temperature:* 37 to 41 degrees F  
*Frost-free period:* 95 to 105 days  
*Farmland classification:* Prime farmland if drained

#### Map Unit Composition

*Baudette and similar soils:* 55 percent  
*Spooner and similar soils:* 35 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Baudette

##### Setting

*Landform:* Lake plains  
*Landform position (two-dimensional):* Backslope, summit  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Silty lacustrine deposits

##### Typical profile

*A - 0 to 4 inches:* silt loam  
*E - 4 to 9 inches:* silt loam  
*Bt - 9 to 21 inches:* silt loam  
*C - 21 to 60 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):*  
Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 30 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 20 percent  
*Available water storage in profile:* High (about 12.0 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 1  
*Hydrologic Soil Group:* C  
*Forage suitability group:* Sloping Upland, Acid (G088XN006MN)  
*Hydric soil rating:* No

## Description of Spooner

### Setting

*Landform:* Flats on lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Silty and clayey lacustrine deposits

### Typical profile

*A - 0 to 7 inches:* silt loam  
*E - 7 to 22 inches:* silt loam  
*Btg - 22 to 27 inches:* silt loam  
*C - 27 to 60 inches:* silt loam

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):*  
Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 6 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 40 percent  
*Available water storage in profile:* High (about 11.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* B/D  
*Forage suitability group:* Level Swale, Neutral (G088XN001MN)  
*Hydric soil rating:* Yes

## Minor Components

### Cathro and similar soils

*Percent of map unit:* 5 percent  
*Landform:* Bogs  
*Hydric soil rating:* Yes

### Sax and similar soils

*Percent of map unit:* 5 percent  
*Landform:* Depressions  
*Hydric soil rating:* Yes

## Data Source Information

Soil Survey Area: Aitkin County, Minnesota  
Survey Area Data: Version 18, Oct 4, 2017

## Aitkin County, Minnesota

### 672—Willosippi loam

#### Map Unit Setting

*National map unit symbol:* gjjb  
*Elevation:* 980 to 1,310 feet  
*Mean annual precipitation:* 20 to 27 inches  
*Mean annual air temperature:* 37 to 41 degrees F  
*Frost-free period:* 95 to 105 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

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

#### Description of Willosippi

##### Setting

*Landform:* Swales on lake plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Loamy glaciolacustrine deposits

##### Typical profile

*Ap - 0 to 7 inches:* loam  
*Eg - 7 to 12 inches:* fine sandy loam  
*Btg1-4,Cg1 - 12 to 42 inches:* stratified loamy sand to silty clay loam  
*Cg2,Cg3 - 42 to 60 inches:* stratified loamy sand to silty clay loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* 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 6 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* High (about 10.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* B/D  
*Forage suitability group:* Level Swale, Acid (G088XN005MN)  
*Hydric soil rating:* Yes

### Minor Components

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

*Percent of map unit:* 3 percent

*Landform:* Flats

*Hydric soil rating:* Yes

#### **Hamre and similar soils**

*Percent of map unit:* 3 percent

*Landform:* Depressions

*Hydric soil rating:* Yes

#### **Gravelly soils**

*Percent of map unit:* 2 percent

*Landform:* Swales

*Hydric soil rating:* Yes

#### **Aftad 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 18, Oct 4, 2017