

Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information			
Date	<u>8/25/2020</u>	Sec / Twp / Rng	<u>S-10, T-49, R-26</u>
Parcel ID	<u>35-0-015201</u>	LUG (county, city, township)	<u>Aitkin Co.</u>
Property Owner:	<u>Kenneth Grisell</u>	Owners address (if different)	
Property Address:	<u>36608 500th Ln. Palisade MN 56469</u>		
City / State / Zip:	_____		

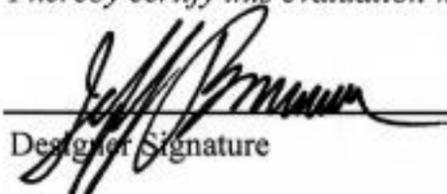
Flow Information and Waste Type / Strength			
Estimated Design flow	<u>300</u>	Anticipated Waste strength	<input type="checkbox"/> Hi Strength <input checked="" type="checkbox"/> Domestic
Comments:		Any Non-Domestic Waste	<input type="checkbox"/> Yes (class V) <input checked="" type="checkbox"/> No
		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 SE of House front yard	
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 type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Construction related issues	<u>I Think Owner is off on property lines</u> <u>I think mound is + 30 ft to East Property line, not 4 ft.</u>				

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 ²)	<u>0.60</u>	Percolation rate (if applicable)	_____	
Depth/elev to SHWT	<u>20"</u>	Flooding or run-on potential (comments)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Depth to system bottom maximum (or elev minimum)	<u>(+ 18")</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 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

www.SepticResource.com vers 12.4

Owner Information	
Property Owner / project: <u>Kenneth Grisell</u>	Date <u>8/25/2020</u>
Property Address / PID: <u>36608 500th Ln. Palisade MN 56469</u>	

Soil Survey Information	
<input type="checkbox"/> refer to attached soil survey	
Parent mat'l's:	<input type="checkbox"/> Till <input checked="" type="checkbox"/> Outwash <input type="checkbox"/> Lacustrine <input type="checkbox"/> Alluvium <input type="checkbox"/> Organic <input type="checkbox"/> Bedrock
landscape position:	<input type="checkbox"/> Summit <input checked="" type="checkbox"/> Shoulder <input checked="" type="checkbox"/> Side slope <input type="checkbox"/> Toe slope
soil survey map units:	<u>454B</u> slope <u>4</u> % direction- <u>West</u>

Soil Log #1							
		<input checked="" type="checkbox"/> Boring <input type="checkbox"/> Pit	Elevation <u>98.1'</u>	Depth to SHWT <u>25"</u>			
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 8	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
8 - 19	Sandy Loam	<35	10YR4/4		Loose	Loose	Granular
19 - 25	Loam	<35	10YR5/3		Loose	Loose	Granular
25 - 29	Loam	<35	10YR5/3	7.5YR5/6	Loose	Loose	Granular

Comments:

36608 500th Ln. Palisade MN 56469 **Soil Log #2**

		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>98.1'</u>	Depth to SHWT <u>20"</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 7	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
7 - 20	Sandy Loam	<35	10YR4/4		Loose	Loose	Granular
20 - 26	Loam	<35	10YR5/3	7.5YR5/6	Loose	Loose	Granular
26	Clay Loam	<35	110YR4/4	7.5YR5/6	Friable	Weak	Blocky
		<35					

36608 500th Ln. Palisade MN 56469 **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: Kenneth Grisell

Date: 8/25/2020

Site Address: 36608 500th Ln. Palisade MN 56469

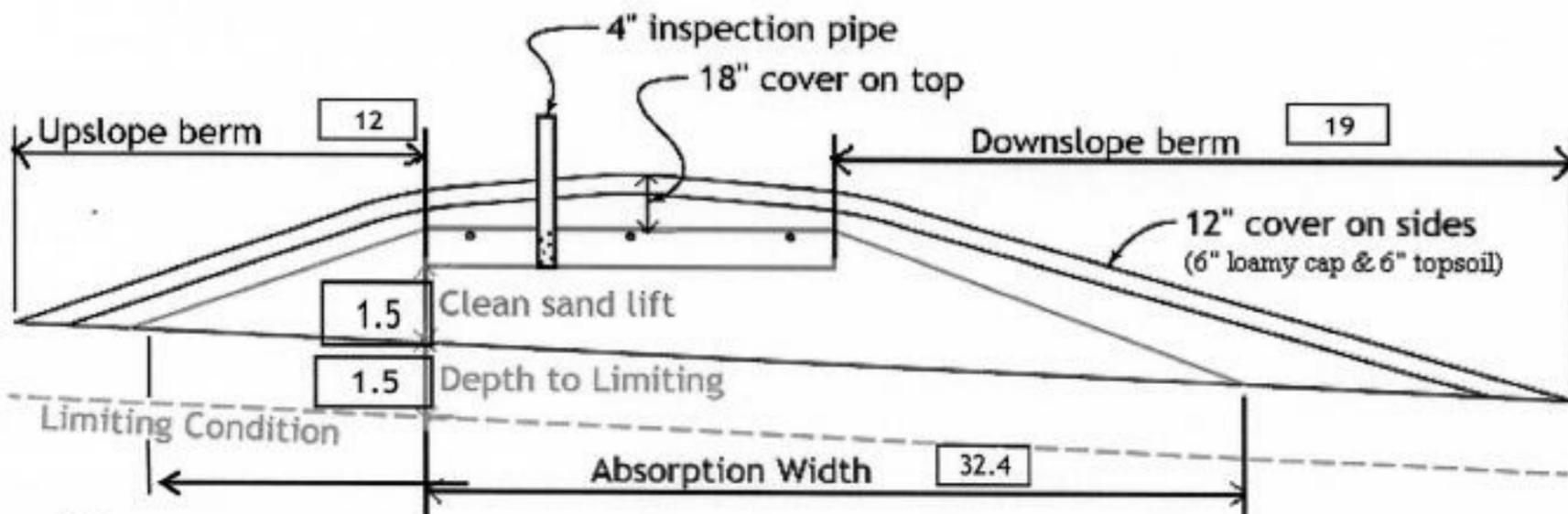
PID: 35-0-015201

Comments: _____

Instructions: = enter data = adjust if desired = computer calculated - DO NOT CHANGE!

- 1) bedroom Type Residential System
- 2) GPD design flow
- 3) Garbage disposal or pumped to septic Install a Jacobson 1650 2/Compartment tank
- 4) Gal Septic tank (code minimum) Gal Septic tank (design size / LUG req'd)
Tank options: none
- 5) GPD/ft² mound sand loading rate contour loading rate of req's a min ft. long rockbed
- 6) ft rockbed width ft rockbed length
- 7) ft lateral spacing ft perforation spacing (maximum of 3 for both)
 manifold connection
- 8) laterals feet long perfs / lateral perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)
- 9) inch perfs at feet residual head gives gpm flow rate per perforation
for this perf size & spacing, & pipe size on line 12, max perfs/lateral = , line #8 must be less --> OK
- 10) doses per day (4 minimum)
- 11) gallons per dose (treatment volume)
- 12) inch diameter laterals must be used to meet "4x pipe volume" requirement 1.50 5x
2.00 3x
- 13) feet of inch supply line leads to gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)
- 14) gallons TOTAL pump out volume (treatment + drainback)
- 15) feet vertical lift from pump to mound laterals, leads to a:
- 16) GPM @ feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) gal Dose tank (code minimum) gal Dose tank (design size / LUG req'd) at gpi
leads to a
- 18) inch swing on Demand float, or timed dosing of min ON (confirm pump rate with drawdown
(this delivers Average flow, =70% of Peak design flow) hrs OFF test and adjust as necessary)
- 19) inches from bottom of tank to "Pump OFF" float
- 20) inches from bottom of tank to "Pump ON" float, or inches to "Timer ON" float if time dosed
- 21) inches from bottom of tank to "Hi Level" float, or inches to "Hi Level" float if time dosed
- 22) gallons reserve capacity (after High Level Alarm is activated)

- 23) gpd/ft² 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
- 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 yd³ 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 = yd³ or *1.4= ton
 plus 20%
- 35) Loamy Cap:
 ft. by ft. 6" deep, plus 20% gives yd³ or *1.4= ton
- 36) Topsoil:
 ft. by ft. 6" deep, plus 20% gives yd³ or *1.4= ton

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


 Designer Signature

Brummer Septic LLC.
 Company

L-1347
 License#

8/25/2020
 Date

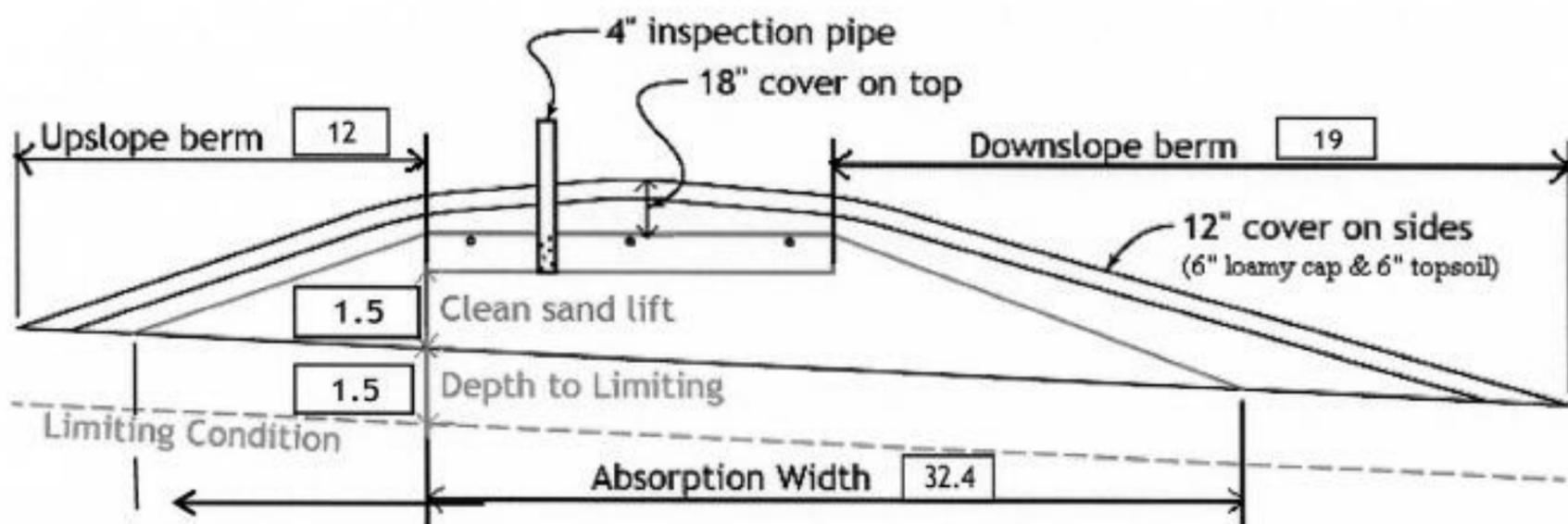
Installer Summary

1120 gallon Septic tank (minimum) Tank options: none
 Install a Jacobson 1650 2/Compartment tank
 533 gallon Dose tank (minimum) at 12.69 gpi
 18 GPM @ 25 ft. of head, Pump required
 5.0 inch swing on Demand float which translates to roughly 3.5 inches of float tether length
 if time dosing is required --> 3.5 minutes ON time & 5.1 hours OFF time
 17 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float
 20 inches from bottom of tank to "Hi Level Alarm" or 30 inches to "Hi level alarm" if time dosed
 115 ft. of 2.0 inch supply line with end feed manifold connection
 (Tip: "top feed" manifold to control drainback)
 18 inch, or 1.5 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

32.4 ft. Total sand ABSORPTION width (minimum)
 8.6 ft. upslope and sideslope (sand beyond rockbed, minimum)
 13.8 ft. Downslope (sand beyond rockbed, minimum)

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

4:1 upslope ratio	12 ft. upslope berm
4:1 sideslope	16 ft. sideslope berms
4:1 downslope	19 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:	101 yd ³ or *1.4=	141 ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	44 yd ³ or *1.4=	62 ton	6" deep
Topsoil:	52 yd ³ or *1.4=	73 ton	6" deep

INSPECTOR CHECKLIST - mound

36608 500th Ln. Palisade MN 56469

- 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 _____ 1120 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 _____ 18 gpm 25 head VERIFY PUMP CURVE 3.5 min ON 5.1 hr OFF

- float setting drop 5.0 inches at 12.7 gpi "DESIGNED" 3.5 inches approx float tether length
63.0 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 18 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- Absorption Sand beyond rock 8.6 upslope 13.8 downslope

- Bermed topsoil beyond rockbed 12 upslope 16 sideslope 19 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

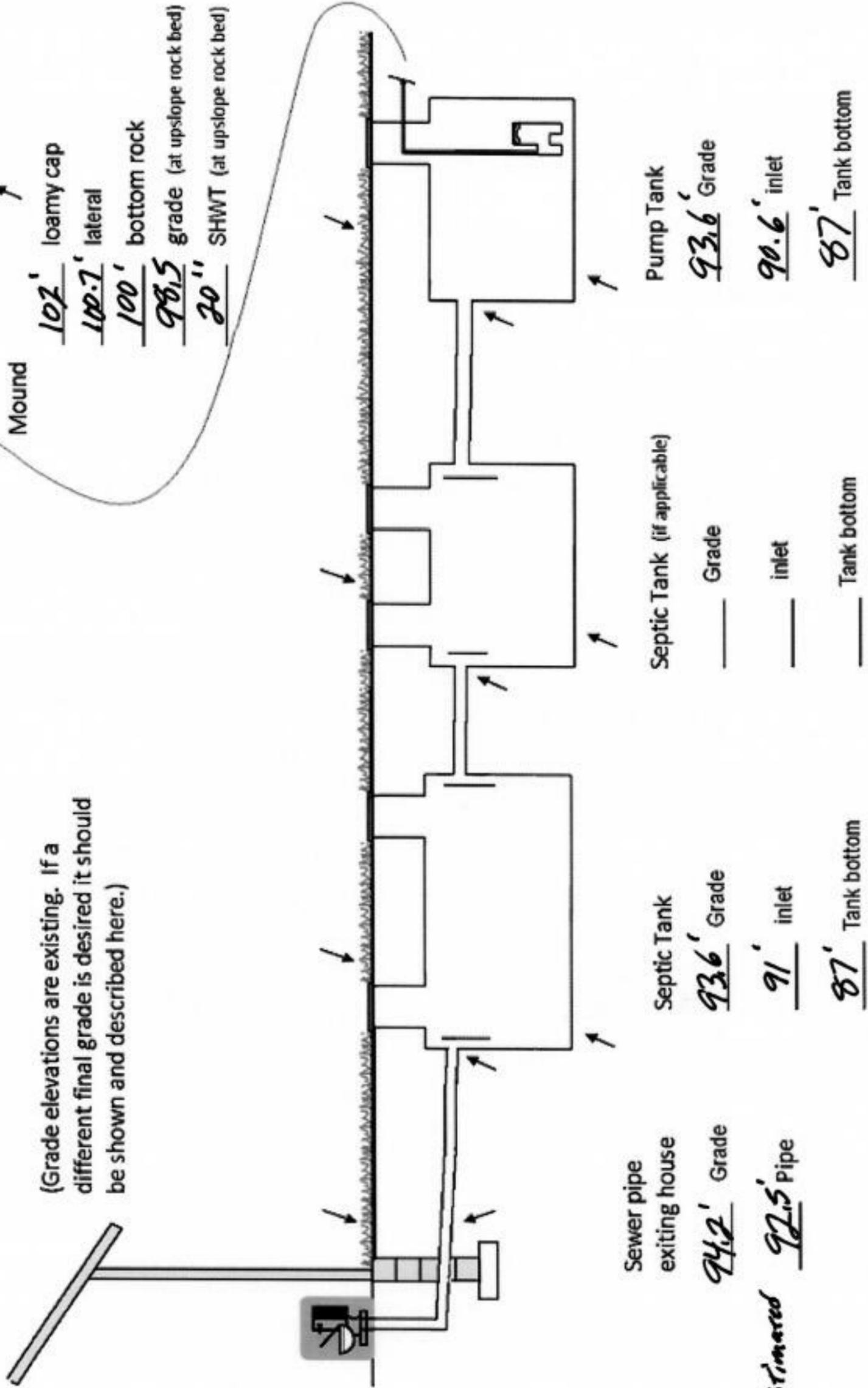
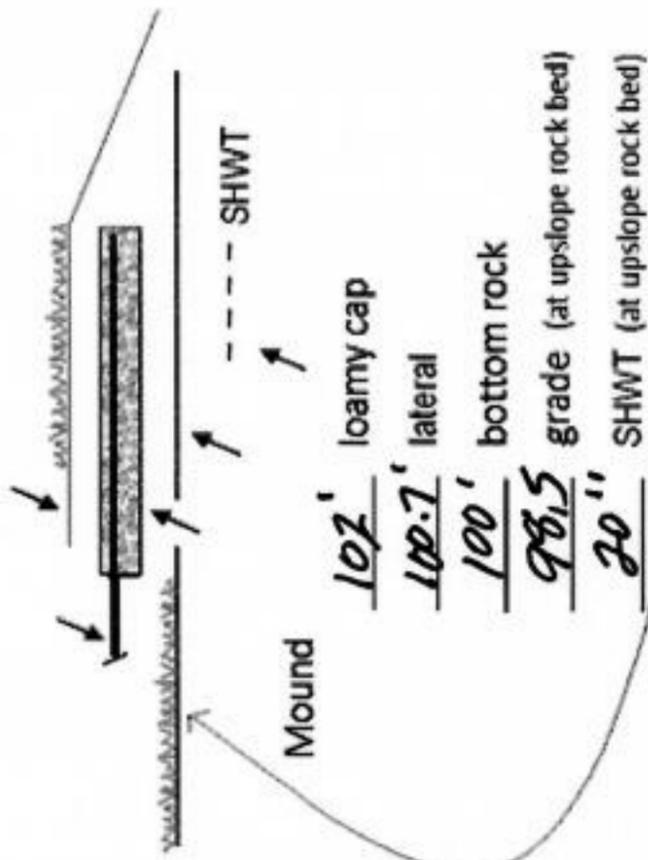
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY

- 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 SE of mound.

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



Sewer pipe exiting house

94.2' Grade

Estimated 92.5' Pipe

Septic Tank

93.6' Grade

91' inlet

87' Tank bottom

Septic Tank (if applicable)

Grade

inlet

Tank bottom

Pump Tank

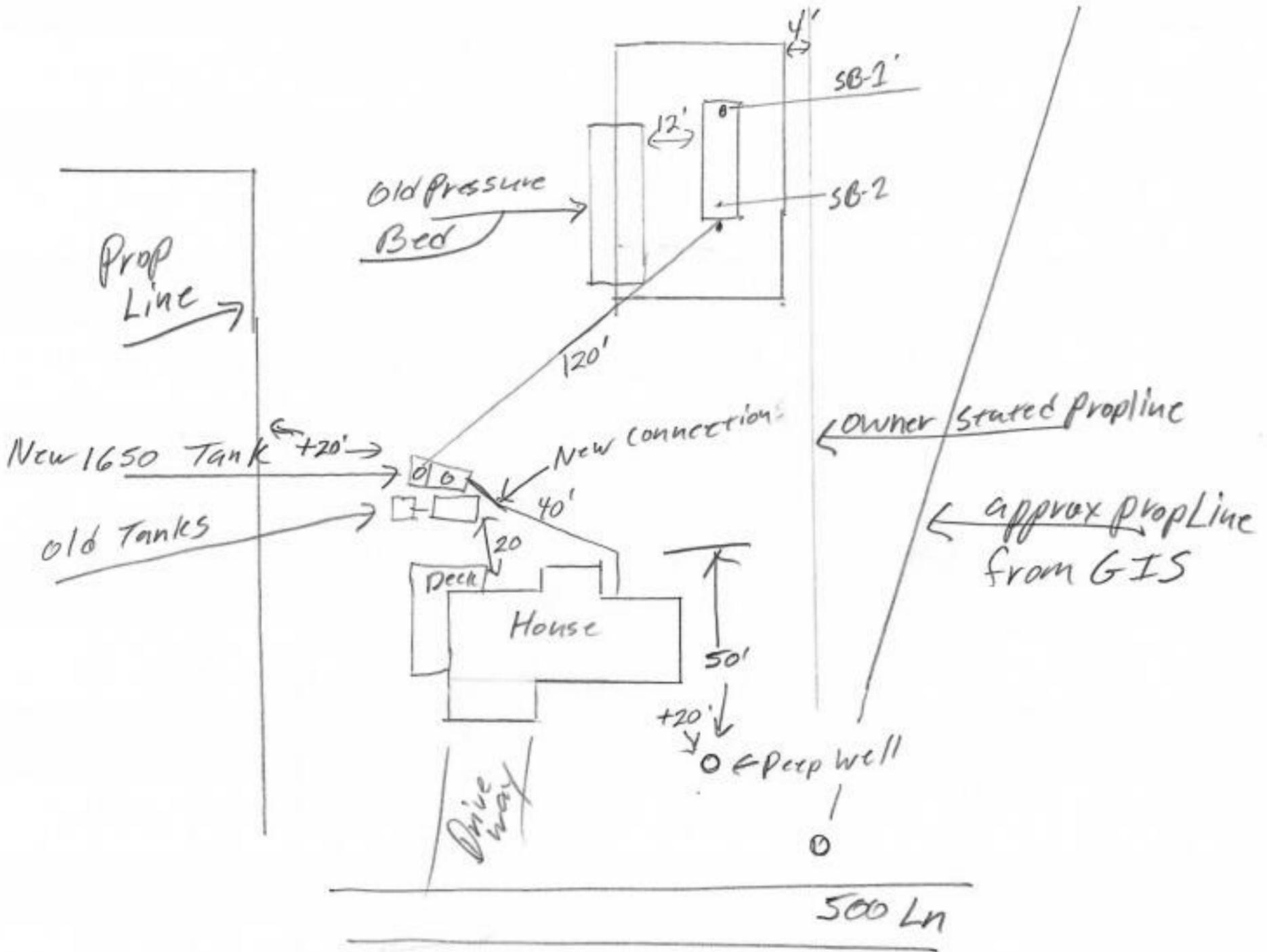
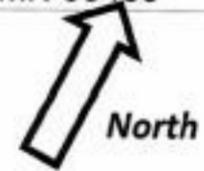
93.6' Grade

90.6' inlet

87' Tank bottom

{ Design Drawing }

Property Owner: Kenneth Grisell Date: 8/25/20 Designer's Initials: JB
 Parcel ID. Number: 35-0-015201 Address: 36608 500th Ln. Palisade MN 56469
 one Inch = 40ft.



NW corner of house grade Elv. = 94.2'

	Surface/ SHWT	Nail on Tree = Bench Mark 100'		Existing Grade	
Soil Bore 1	98.1'/25"	Bench Mark	100'		Upslope Edge of Rockbed Elv. = 98.5'
Soil Bore 2	98.1'/20"	Ground Elv. BM	97.1'		Bottom of Rockbed Elv. = 100'
Soil Bore 3		Ground Elv. Tank	93.6'		Top of Washed Sand Elv. = 100'
	Ground at	Existing house	95.5'	NE Corner	Elv. Of Existing Sewer pipe Elv. = 91.2'

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: Kenneth Grisell

Date: 8/25/20

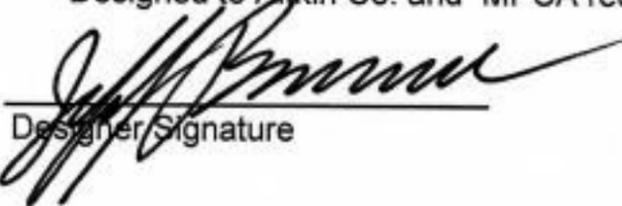
Site Address: 36608 500th Ln. Palisade MN 56469

PID: 35-0-015201

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

- 1 This is a type I mound for a 2 bedroom House. Existing deep well location is SE of House.
- 2 Owner marked East property line, Designer staked mound East berm 4 ft from owner marked property line. Looking on Aitkin Co. GIS Map the East property line runs straight north from lake not NW like owner thinks.
- 3 Existing deep well is Approx. 20' ft SE of house. + 100' ft to mound and + 50' to tanks.
Existing septic and pump tanks to be pumped, collapsed, filled or removed.
Existing pressure bed to be abandon, West berm toe will be over pressure bed approx.. 5 ft.
- 4 Bench Mark Elevation = 100', is a nail on a tree near SE corner of mound area.
- 5 Install Jacobson 1650 Compartment tank for gravity flow from house (connect to existing pipe.)
- 6 Elevation contour of rock bed upslope edge is 98.5'.
The area size of the rock bed is 10' x 25' . Absorption area is 25' x 32.4'.
Sand absorption area is 8.6 ft. up slope + 10 ft. rockbed + 13.8 downslope = approx. 32.4 ft. wide sand base.
Berms are 12ft. Upslope, 19ft. Down slope, 10ft. Rock bed = approx. 41ft. Wide.
Overall mound size is approx. 41' wide x 57' long and approx. 3.5' high. End berms are 16 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 1650 compartment tank will be gravity flow from dwelling. Install the pump for 7 demand doses per day. approx. 63 gallons per dose, 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 if less than 2 ft of cover soil.
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)
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.

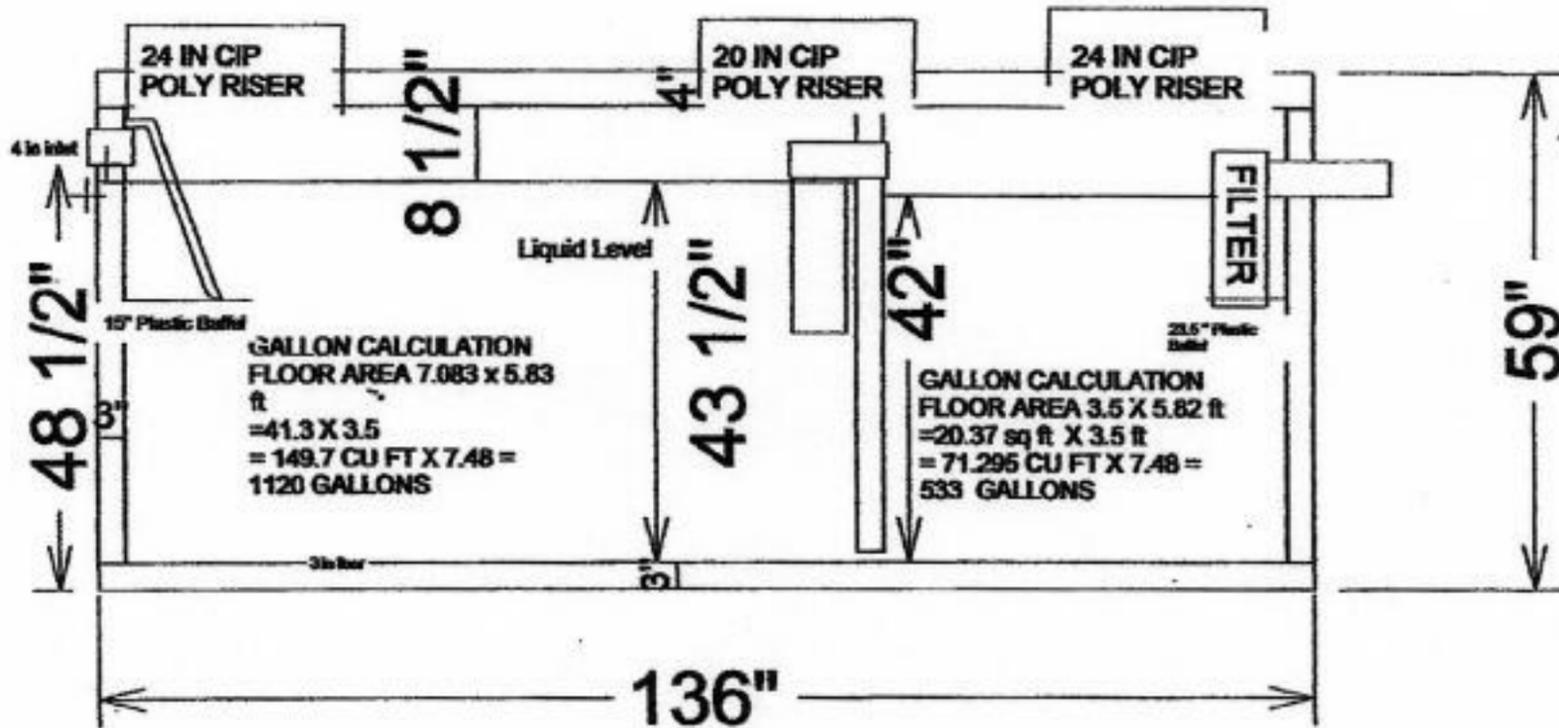
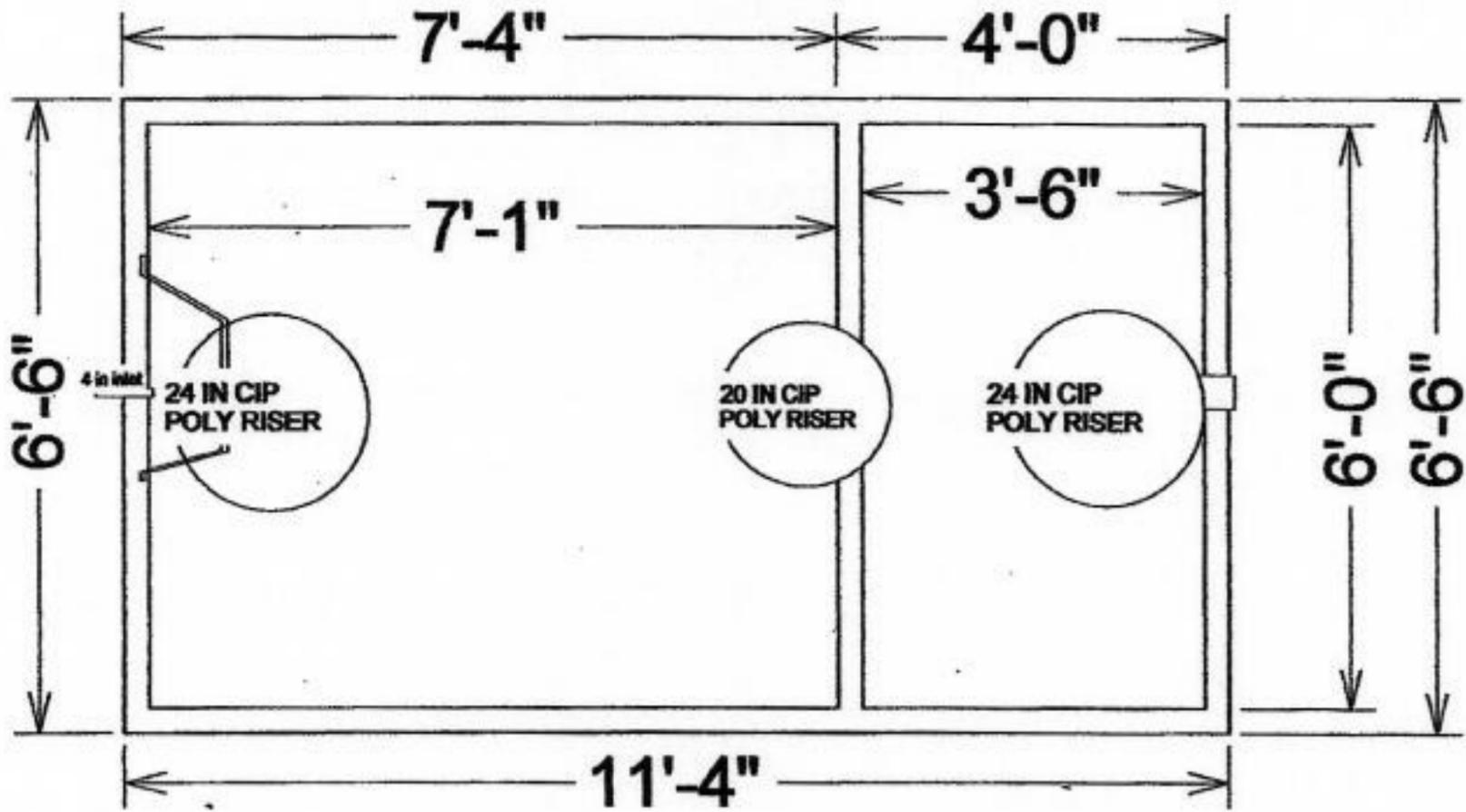

Designer Signature

Brummer Septic LLC.
Design Company

L-1347
License#

1650 Gallon 2 Compartment Septic Tank

TOP VIEW

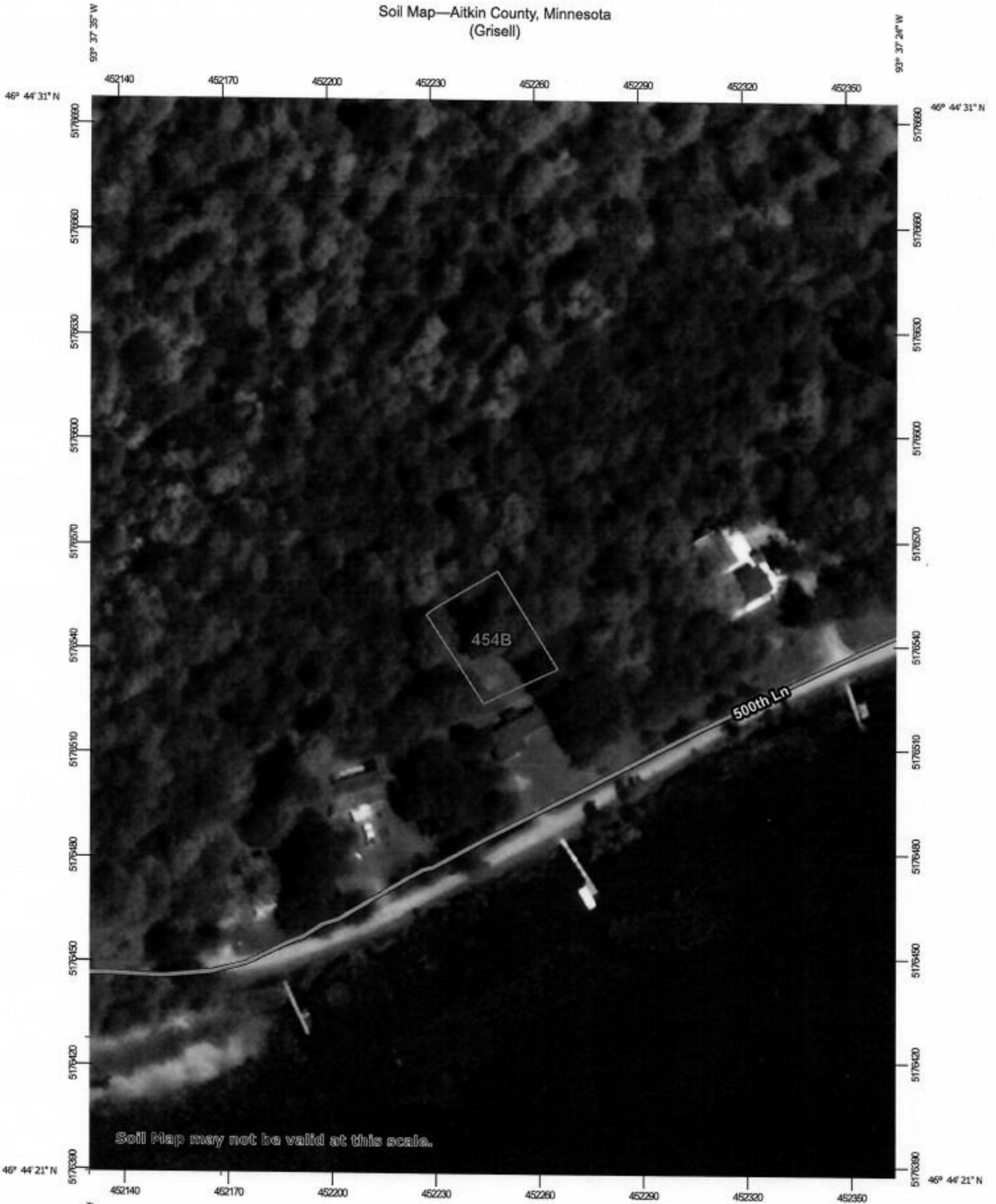


$533 / 42" = 12.69 \text{ GPI}$

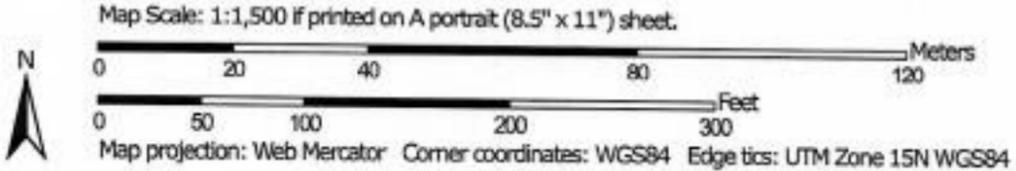
SIDE VIEW

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

Soil Map—Aitkin County, Minnesota
(Grisell)



Soil Map may not be valid at this scale.



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Aitkin County, Minnesota

454B—Mahtomedi loamy coarse sand, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: gjgw
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): Summit, backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly outwash

Typical profile

A - 0 to 3 inches: loamy coarse sand
E - 3 to 6 inches: loamy coarse sand
Bw - 6 to 28 inches: gravelly sand
C - 28 to 60 inches: gravelly sand

Properties and qualities

Slope: 2 to 6 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 capacity: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy (G090AN022MN)
Other vegetative classification: Sandy (G090AN022MN)
Hydric soil rating: No

Minor Components

Meehan and similar soils

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

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

Leafriver and similar soils

Percent of map unit: 2 percent

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota

Survey Area Data: Version 21, Jun 4, 2020