100578000-2021

Becker County Planning & Zoning
915 Lake Ave
Detroit Lakes, MN 56501
(218) 846-7314
www.co.becker.mn.us

Certificate of Compliance
Inspection Report - Permit #: SS2021-1203

Owner & Property Information

Owner Name:	V GAIL BRENDLE REVOCABLE LIVING TRUST	**Site Address:**	33176 S COTTON LAKE RD
Mailing Address:	V GAIL BRENDLE REVOCABLE LIVING TRUST 4355 37TH AVE S FARGO ND 58104	**Township - Sec/Twp/Rng:**	ERIE - 11/139/040
		Legal Description:	COFELL BEACH 139 40 W 55' OF LOT 4
Parcel #:	100578000	**Designer:**	JenCo Services, LLC, L4041 (James Piper)
Secondary Parcel #:		**Installer:**	Tony Stenger Excavating, L388 (Tony Stenger)

Inspector Verified Specifications

Insp- Effluent Screen Installed:	No	**Insp- Tank Nbr/Size:**	2/1000 & 500
Insp- Alarm Required:	Yes	**Insp- Drainfield Type:**	No Drainfield
Insp- Lift Pump in System:	Yes	**Insp- Drainfield Size:**	existing
Insp- Number of Bedrooms:	3	**Insp- Soil Verification:**	#1:existing #2:N/A #3:N/A

Inspector Verified Setbacks

Insp- Tank Dist to Road	100+	**Insp- Drainfield Dist to Road**	
Insp- Tank Dist to Nearest Prop Line	13	**Insp- Drainfield Dist to Nearest Prop Line**	
Insp- Tank Dist to Nearest Structure	18	**Insp- Drainfield Dist to Nearest Structure**	
Insp- Tank Dist to Well	70+	**Insp- Drainfield Dist to Well**	
Insp- Tank Dist to OHW	100+	**Insp- Drainfield Dist to OHW**	
Insp- Tank Dist to Pond/Wetland		**Insp- Drainfield Dist to Pond/Wetland**	
Insp- Tank Dist to Pressure Line		**Insp- Drainfield Dist to Pressure Line**	

Certificate of Compliance

(Yes) Certificate is hereby granted based upon the application, addendum from, plans, specifications and all other supporting data. With proper maintenance, this system can be expected to function satisfactory, however this is not a guarantee.

Certification Date: 10/12/2021

Zoning Office Signature:

Denise Gubrud

Denise Gubrud - ISTS Inspector

*** Certificate of Compliance is not valid unless signed by a Registered Qualified Employee ***

Field Review Form

Permit # SS2021-1203

Property and Owner

Owner: **V GAIL BRENDLE REVOCABLE LIVING TRUST**	Parcel Number: **100578000**
Site Address: **33176 S COTTON LAKE RD**	Secondary Parcel:

Home Information

Does the structure contain any of the following elements?	Designer submitted	Inspector verified
	Garbage disposal: No Dishwasher: Invalid Field Grinder pump: Invalid Field Lift pump in bsmt: Invalid Field	Garbage disposal? Y (N) Dishwasher? Y (N) Grinder pump? Y (N) Lift pump in basement? Y (N)
Number of bedrooms: **3**	Review - Number of bedrooms: 3	
Effluent screen	Effluent screen installed? Y (N) Mfr:	
Alarm: **Yes** Type: **ELECTRIC**	Review - Alarm? (Y) N Type & Mfr: PS Patrol	
Lift pump in system: **Yes**	Review - Lift pump in system? (Y) N Mfr: 4/10th Gonlds	

Component Information

Tank size: **1000,500**	Review - Tank nbr: 2 size: 1000 500 Mfr: Infiltrator
Drainfield type:	Review - Drainfield type: existing
Drainfield size: Full size - Reduced/warr. size -	Review - Drainfield status: none / installed / next spring Review - Drainfield size:
Absorption area size:	Review - Absorption area size:
Chamber type/num: Trench sqft/chamber -	Review - Chamber type: Num: Review - Trench sqft/chamber:
Drainfield rock depth:	Review - Rock depth:

Soil Verification

Vertical separation verified	Boring #1: Boring #2: Boring #3: existing

Setback Verification

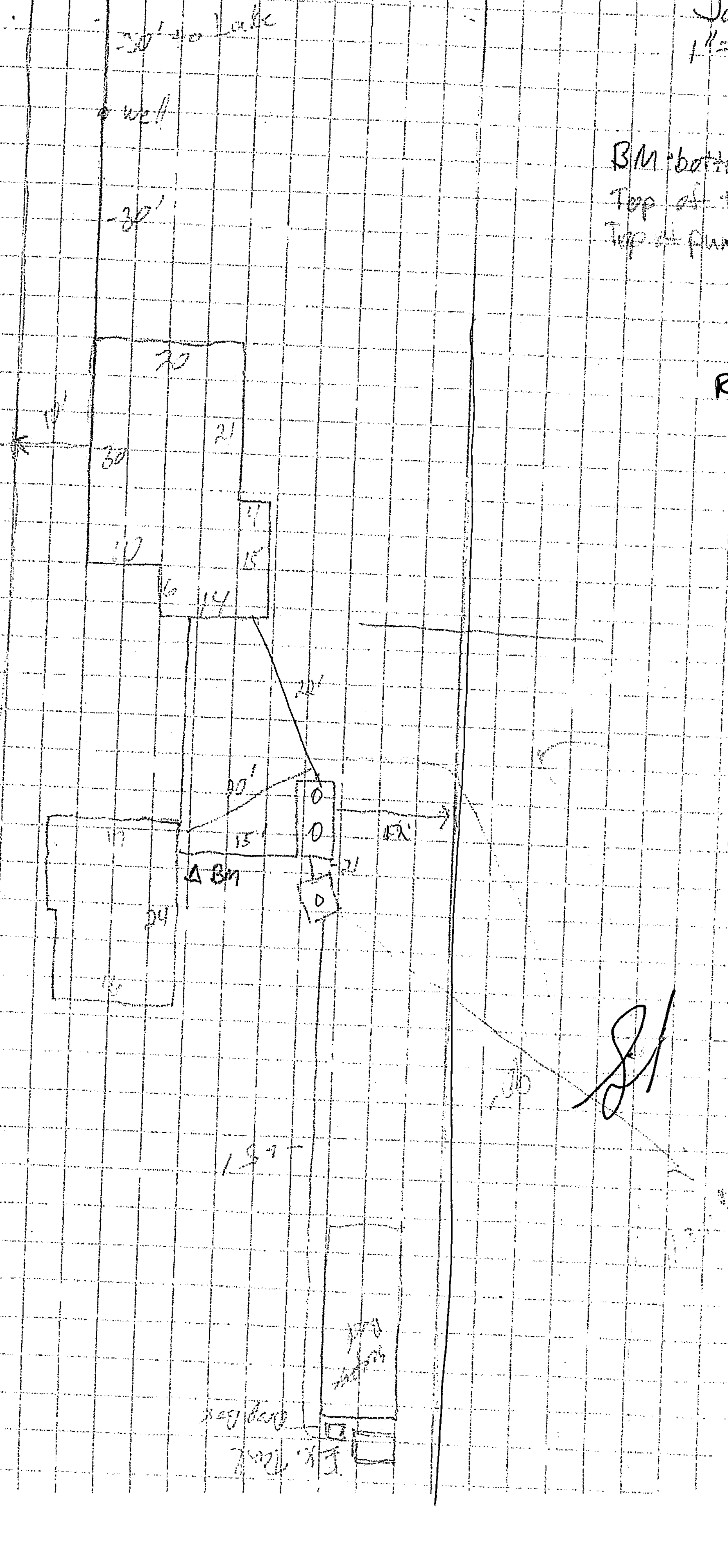
	Designer submitted		Inspector verified	
Distance to...	Tank	Drainfield	Tank	Drainfield
Road	+50'		100+	
Nearest prop line	15'		13	
Nearest structure	15'		19	
Well	+50'	N/A	70+	
OHW	+50'		100+	
Pond/Wetland				
Pressure line	+20'			

Date System Installed: 10/12/2021 Installer: Tony Stichter Inspector: Denise Gutbrod

James Fipp
1" = 20' N

1203

BM: bottom step (landing) = 100'
Top of tank = 96'
Top of pump tank = 95.6'



Replace
septic & lift tanks

10/12/2021
1000
500 lift] infiltrator

PS Patrol alarm
4/10th / goulds

existing drainfield
setbacks ok
certify
Denise Gudbrand

ONSITE SEWAGE TREATMENT PROGRAM

Preliminary Evaluation Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

1. Contact Information

v 04.01.2020

Property Owner/Client:	V GAIL BRENDLE REVOCABLE LIVING TRUST	Date Completed:	10/1/2021
Site Address:	33176 S COTTON LAKE RD, ROCHERT, MN	Project ID:	
Email:	UNKNOWN	Phone:	701-219-9011
Mailing Address:	4355 37TH AVE S, FARGO, ND 58104		
Legal Description:	COFELL BEACH 139 40 W 55' OF LOT 4		

Parcel ID: 100578000 SEC: 11 TWP: 139 RNG: 040

2. Flow and General System Information

A. Client-Provided Information

Project Type: ☐ New Construction ☐ Replacement ☐ Expansion ☑ Repair

Project Use: ☑ Residential ☐ Other Establishment:

Residential use: # Bedrooms: 3 Dwelling Sq.ft.: Unfinished Sq. Ft.:

Adults: 2 # Children: # Teenagers:

In-home business (Y/N): No If yes, describe:

Water-using devices: *(check all that apply)*

☐ Garbage Disposal/Grinder ☐ Dishwasher ☐ Hot Tub*
☐ Sewage pump in basement ☐ Water Softener* ☐ Sump Pump*
☐ Large Bathtub >40 gallons ☐ Iron Filter* ☐ Self-Cleaning Humidifier*
☐ Clothes Washing Machine ☐ High Eff. Furnace* ☐ Other:

* Clear water source - should not go into system

Additional current or future uses: NONE

Anticipated non-domestic waste: NONE

The above is complete & accurate: ***Client signature & date***

B. Designer-determined flow Information

Attach additional information as necessary.

Design Flow: 450 GPD Anticipated Waste Type: Residential

BOD: <170 mg/L TSS <60 mg/L Oil & Grease <25 mg/L

3. Preliminary Site Information

A. Water Supply Wells

#	Description	Mn. ID#	Well Depth (ft.)	Casing Depth (ft.)	Confining Layer	STA Setback	Source
1							
2							
3							
4							

Additional Well Information:

ONSITE SEWAGE TREATMENT PROGRAM

Preliminary Evaluation Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

Site within 200' of noncommunity transient well (Y/N)	No	Yes, source:	
Site within a drinking water supply management area (Y/N)	No	Yes, source:	
Site in Well Head Protection inner wellhead management zone (Y/N)	No	Yes, source:	
Buried water supply pipes within 50 ft of proposed system (Y/N)	No		
B. Site located in a shoreland district/area?	Yes	Yes, name:	COTTON
Elevation of ordinary high water level:	1444 ft	Source:	GIS
Classification: Lake- Recreational	Tank Setback: 75 ft.	STA Setbk:	75 ft.
C. Site located in a floodplain?	No	Yes, Type(s):	N/A
Floodplain designation/elevation (10 Year):	N/A ft	Source:	N/A
Floodplain designation/elevation (100 Year):	N/A ft	Source:	N/A

D. Property Line Id / Source: ☑ Owner ☐ Survey ☑ County GIS ☐ Plat Map ☐ Other:

E. ID distance of relevant setbacks on map: ☑ Water ☐ Easements ☑ Well(s) ☑ Building(s) ☑ Property Lines ☐ OHWL ☐ Other:

4. Preliminary Soil Profile Information From Web Soil Survey (attach map & description)

Map Units: Slope Range: %

List landforms:

Landform position(s):

Parent materials:

Depth to Bedrock/Restrictive Feature: in Depth to Watertable: in

Map Unit Ratings

Septic Tank Absorption Field- At-grade:

Septic Tank Absorption Field- Mound:

Septic Tank Absorption Field- Trench:

5. Local Government Unit Information

Name of LGU: BECKER COUNTY

LGU Contact: KYLE VAREBERG

LGU-specific setbacks:

LGU-specific design requirements:

LGU-specific installation requirements:

Notes: REPLACING LIFT TANK AND NON COMPLIANT SEPTIC TANK WITH NEW TANK AND PUMP TANK

ONSITE SEWAGE TREATMENT PROGRAM

Field Evaluation Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

v 04.01.2020

1. Project Information

Property Owner/Client: V GAIL BRENDLE REVOCABLE LIVING TRUST | Project ID:

Site Address: 33176 S COTTON LAKE RD, ROCHERT, MN | Date Completed: 10/1/2021

2. Utility and Structure Information

Utility Locations Identified ☐ Gopher State One Call # ☐ Any Private Utilities:

Locate and Verify (*see Site Evaluation map*) ☑ Existing Buildings ☐ Improvements ☐ Easements ☑ Setbacks

3. Site Information

Vegetation type(s): | Landscape position:

Percent slope: % | Slope shape: | Slope direction:

Describe the flooding or run-on potential of site:

Describe the need for Type III or Type IV system:

Note:

Proposed soil treatment area protected? (Y/N): | If yes, describe:

4. General Soils Information

Filled, Compacted, Disturbed areas (Y/N):

If yes, describe:

Soil observations were conducted in the proposed system location (Y/N): No

A soil observation in the most limiting area of the proposed system (Y/N): No

Number of soil observations: | Soil observation logs attached (Y/N): No

Percolation tests performed & attached (Y/N): No

5. Phase I. Reporting Information

	Depth		Elevation	
Limiting Condition*:		in		ft
Periodically saturated soil:		in		ft
Standing water:		in		ft
Bedrock:		in		ft
Benchmark Elevation:	100.0	ft		

**Most Restrictive Depth Identified from List Below*

Soil Texture:

Percolation Rate: min/inch

Soil Hyd Loading Rate: gpd/ft^2

Elevations and Benchmark on map? (Y/N): Yes

Benchmark Elevation Location:

Differences between soil survey and field evaluation:

Site evaluation issues / comments:

Anticipated construction issues:

University of Minnesota Onsite Sewage Treatment Program

Design Summary Page

MINNESOTA POLLUTION CONTROL AGENCY

1. PROJECT INFORMATION

v 04.01.2020

Property Owner/Client:	V GAIL BRENDLE REVOCABLE LIVING TRUST	Project ID:	
Site Address:	33176 S COTTON LAKE RD, ROCHERT, MN	Date:	10/01/21
Email Address:	UNKNOWN	Phone:	701-219-9011

2. DESIGN FLOW & WASTE STRENGTH

Attach data / estimate basis for Other Establishments

Design Flow: 450 GPD Anticipated Waste Type: Residential

BOD: <170 mg/L TSS: <60 mg/L Oil & Grease: <25 mg/L

Treatment Level: C *Select Treatment Level C for residential septic tank effluent*

3. HOLDING TANK SIZING

Minimum Capacity: Residential =400 gal/bedroom, Other Establishment = Design Flow x 5.0, Minimum size 1000 gallons

Code Minimum **Holding Tank** Capacity: _____ Gallons in _____ Tanks or Compartments

Recommended **Holding Tank** Capacity: _____ Gallons in _____ Tanks or Compartments

Type of High Level Alarm: _____ (Set @ 75% tank capacity)

Comments: _____

4. SEPTIC TANK SIZING

A. Residential dwellings:

Number of Bedrooms (Residential): 3

Code Minimum **Septic Tank** Capacity: 1000 Gallons in 1 Tanks or Compartments

Recommended **Septic Tank** Capacity: 1000 Gallons in 1 Tanks or Compartments

Effluent Screen & Alarm (Y/N): No Model/Type: IM-1060/PLASTIC

B. Other Establishments:

Waste received by: _____ _____ GPD x _____ Days Hyd. Retention Time

Code Minimum **Septic Tank** Capacity: _____ Gallons In _____ Tanks or Compartments

Recommended **Septic Tank** Capacity: _____ Gallons In _____ Tanks or Compartments

Effluent Screen & Alarm (Y/N): _____ Model/Type: _____

5. PUMP TANK SIZING

Pump Tank 1 Capacity (Minimum):	500 Gal	Pump Tank 2 Capacity (Minimum):	Gal
Pump Tank 1 Capacity (Recommended):	500 Gal	Pump Tank 2 Capacity (Recommended):	Gal
Pump 1	45.0 GPM	Pump 2	GPM
Total Head	24.4 ft	Total Head	ft
Supply Pipe Dia.	2.00 in	Supply Pipe Dia.	
Dose Vol:	100.0 gal	Dose Vol:	Gal

ONSITE SEWAGE TREATMENT PROGRAM

Design Summary Page

MINNESOTA POLLUTION CONTROL AGENCY

6. SYSTEM AND DISTRIBUTION TYPE

Project ID:

Soil Treatment Type:

Distribution Type:

Elevation Benchmark: 100 ft

Benchmark Location:

MPCA System Type: Type I

Distribution Media:

Type III/IV Details:

7. SITE EVALUATION SUMMARY:

Describe Limiting Condition:

Layers with >35% Rock Fragments? (yes/no) If yes, describe below: % rock and layer thickness, amount of soil credit and any additional information for addressing the rock fragments in this design.

Note:

	Depth		Depth		Elevation of Limiting Condition	
Limiting Condition:		inches		ft		ft
Minimum Req'd Separation:		inches		ft	Elevation	
Code Max System Depth:		inches		ft		ft

Critical for system compliance

This is the maximimum depth to the bottom of the distribution media for required separation. Negative Depth (ft) means it must be a mound.

Soil Texture:

Soil Hyd. Loading Rate: GPD/ft^2

Percolation Rate: MPI

Contour Loading Rate:

Note:

Measured Land Slope: %

Note:

Comments:

8. SOIL TREATMENT AREA DESIGN SUMMARY

Trench:

Dispersal Area	ft^2	Sidewall Depth	in	Trench Width	ft
Total Lineal Feet	ft	No. of Trenches		Code Max. Trench Depth	in
Contour Loading Rate	ft	Length	ft	Designed Trench Depth	in

Bed:

Dispersal Area	ft^2	Sidewall Depth	in	Maximum Bed Depth	in
Bed Width	ft	Bed Length	ft	Designed Bed Depth	in

Mound:

Dispersal Area	ft^2	Bed Length	ft	Bed Width	ft
Absorption Width	ft	Clean Sand Lift	ft	Berm Width (0-1%)	ft
Upslope Berm Width	ft	Downslope Berm	ft	Endslope Berm Width	ft
Total System Length	ft	System Width	ft	Contour Loading Rate	gal/ft

University of Minnesota Onsite Sewage Treatment Program

Design Summary Page

MINNESOTA POLLUTION CONTROL AGENCY

At-Grade:

Bed Width	ft	Bed Length	ft	Finished Height	ft
Contour Loading Rate	gal/ft	Upslope Berm	ft	Downslope Berm	ft
Endslope Berm	ft	System Length	ft	System Width	ft

Level & Equal Pressure Distribution

No. of Laterals		Perforation Spacing	ft	Perforation Diameter	in
Lateral Diameter	in	Min Dose Volume	gal	Max Dose Volume	gal

Non-Level and Unequal Pressure Distribution

	Elevation (ft)	Pipe Size (in)	Pipe Volume (gal/ft)	Pipe Length (ft)	Perf Size (in)	Spacing (ft)	Spacing (in)
Lateral 1							
Lateral 2							
Lateral 3							
Lateral 4							
Lateral 5							
Lateral 6							

Minimum Dose Volume _____ gal

Maximum Dose Volume _____ gal

9. Additional Info for At-Risk, HSW or Type IV Design

A. Starting BOD Concentration = Design Flow X Starting BOD (mg/L) X 8.35 ÷ 1,000,000

_____ gpd X _____ mg/L X 8.35 ÷ 1,000,000 = _____ lbs. BOD/day

B. Target BOD Concentration = Design Flow X Target BOD (mg/L) X 8.35 ÷ 1,000,000

_____ gpd X _____ mg/L X 8.35 ÷ 1,000,000 = _____ lbs. BOD/day

Lbs. BOD To Be Removed: _____

PreTreatment Technology: _____ *Must Meet or Exceed Target

Disinfection Technology: _____ *Required for Levels A & B

C. Organic Loading to Soil Treatment Area:

_____ mg/L X _____ gpd x 8.35 ÷ 1,000,000 ÷ _____ ft^2 = _____ $lbs./day/ft^2$

10. Comments/Special Design Considerations:

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

JAMES PIPER		L4041	10/01/202
(Designer)	(Signature)	(License #)	(Date)

Onsite Sewage Treatment Program

Basic Pump Selection Design Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

1. PUMP CAPACITY Project ID: v 04.01.2020

Pumping to Gravity or Pressure Distribution: Gravity

A. If pumping to gravity enter the gallon per minute of the pump: 45.0 GPM *(10 - 45 gpm)*

B. If pumping to a pressurized distribution system: GPM

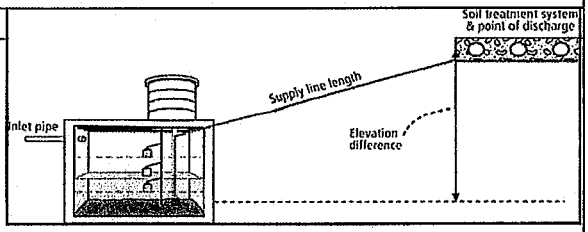
C. Enter pump description: Demand Dosing

2. HEAD REQUIREMENTS

A. Elevation Difference between pump and point of discharge: 15 ft

B. Distribution Head Loss: 5 ft

C. Additional Head Loss: ft (due to special equipment, etc.)



Distribution Head Loss	
Gravity Distribution = 0ft	
Pressure Distribution based on Minimum Average Head Value on Pressure Distribution Worksheet:	
Minimum Average Head	**Distribution Head Loss**
1ft	5ft
2ft	6ft
5ft	10ft

D. 1. Supply Pipe Diameter: 2.0 in

2. Supply Pipe Length: 70 ft

E. **Friction Loss in Plastic Pipe per 100ft** from Table I:

Friction Loss = 5.02 ft per 100ft of pipe

F. Determine *Equivalent Pipe Length* from pump discharge to soil dispersal area discharge point. Estimate by adding 25% to supply pipe length for fitting loss.
Supply Pipe Length X 1.25 = *Equivalent Pipe Length*

70 ft X 1.25 = 87.5 ft

Table I. Friction Loss in Plastic Pipe per 100ft

Flow Rate (GPM)	Pipe Diameter (inches)			
	1	1.25	1.5	2
10	9.1	3.1	1.3	0.3
12	12.8	4.3	1.8	0.4
14	17.0	5.7	2.4	0.6
16	21.8	7.3	3.0	0.7
18		9.1	3.8	0.9
20		11.1	4.6	1.1
25		16.8	6.9	1.7
30		23.5	9.7	2.4
35			12.9	3.2
40			16.5	4.1
45			20.5	5.0
50				6.1
55				7.3
60				8.6
65				10.0
70				11.4
75				13.0
85				16.4
95				20.1

G. Calculate *Supply Friction Loss* by multiplying *Friction Loss Per 100ft* by the *Equivalent Pipe Length* and divide by 100.
Supply Friction Loss =

5.02 ft per 100ft X 87.5 ft ÷ 100 = 4.4 ft

H. *Total Head* requirement is the sum of the *Elevation Difference* + Distribution Head Loss, + Additional Head Loss + Supply Friction Loss

15.0 ft + 5.0 ft + ft + 4.4 ft = 24.4 ft

3. PUMP SELECTION

A pump must be selected to deliver at least **45.0** GPM with at least **24.4** feet of total head.

Comments:

Onsite Sewage Treatment Program

Pump Tank Design Worksheet (Demand Dose)

MINNESOTA POLLUTION CONTROL AGENCY

DETERMINE TANK CAPACITY AND DIMENSIONS | Project ID: | v 04.01.2020

1. A. *Design Flow (Design Sum.1A)*: 450 GPD C. Tank Use: Dosing
   B. Min. required pump tank capacity: 500 Gal D. Recommended pump tank capacity: 500 Gal

2. A. Tank Manufacturer: INFILTRATOR B. Tank Model: IM-540
   C. Capacity from manufacturer: 552 Gallons
   D. Gallons per inch from manufacturer: 10.8 Gallons per inch
   E. Liquid depth of tank from manufacturer: 44.0 inches

Note: Design calculations are based on this specific tank. Substituting a different tank model will change the pump float or timer settings. Contact designer if changes are necessary.

DETERMINE DOSING VOLUME

3 Calculate *Volume to Cover Pump* (The inlet of the pump must be at least 4-inches from the bottom of the pump tank & 2 inches of water covering the pump is recommended)

(Pump and block height + 2 inches) X *Gallons Per Inch*

(12 in + 2 inches) X 10.8 Gallons Per Inch = 151 Gallons

4 *Minimum Delivered Volume* = 4 X Volume of Distribution Piping:

-Item 18 of the Pressure Distribution or Item 11 of Non-level ____ Gallons (Minimum dose) ____ inches/dose

5 Calculate *Maximum Pumpout Volume* (25% of Design Flow)

Design Flow: 450 GPD X 0.25 = 113 Gallons (Maximum dose) 10.4 inches/dose

6 *Select a pumpout volume that meets both Minimum and Maximum:* 100 Gallons

7 Calculate *Doses Per Day* = Design Flow ÷ *Delivered Volume*

450 gpd ÷ 100 gal = 4.50 *Doses*

8 Calculate Drainback:

A. *Diameter of Supply Pipe* = 2 inches

B. Length of Supply Pipe = 70 feet

C. *Volume of Liquid Per Lineal Foot of Pipe* = 0.170 Gallons/ft

D. *Drainback = Length of Supply Pipe X Volume of Liquid Per Lineal Foot of Pipe*

70 ft X 0.170 gal/ft = 11.9 Gallons

9. *Total Dosing Volume = Delivered Volume* plus *Drainback*

100 gal + 11.9 gal = 112 Gallons

10. Minimum Alarm Volume = Depth of alarm (2 or 3 inches) X gallons per inch of tank

3 in X 10.8 gal/in = 32.4 Gallons

Volume of Liquid in Pipe

Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661

DEMAND DOSE FLOAT SETTINGS

11. Calculate *Float Separation Distance* using *Dosing Volume*.

Total Dosing Volume /Gallons Per Inch

112 gal ÷ 10.8 gal/in = 10.4 Inches

12. Measuring from bottom of tank:

A. *Distance to set Pump Off Float* = Pump + block height + 2 inches

12 in + 2 in = 14 Inches

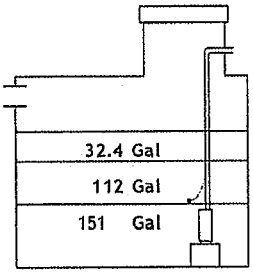
B. *Distance to set Pump On Float=Distance to Set Pump-Off Float + Float Separation Distance*

14 in + 10.4 in = 24 Inches

C. *Distance to set Alarm Float = Distance to set Pump-On Float + Alarm Depth* (2-3 inches)

24 in + 3.0 in = 27 Inches

Inches for Dose:	10.4	in
Alarm Depth	27.4	in
Pump On	24.4	in
Pump Off	14.0	in



Onsite Sewage Treatment Program

Tank Buoyancy Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

1. Tank Specifications

Project ID:

v 04.01.2020

A. Tank Manufacturer: INFILTRATOR

Tank Model: IM-1060

B. Outside Tank Dimensions and Specifications:

Tank Use: Septic

Length: 127 in Width: 62.2 in Height: 54.7 in Diameter: in

Length: 10.6 ft Width: 5.2 ft Height: 4.6 ft Radius of Tank: in

2. Outside Volume of Tank

Rectangular Tank

A. Area of Tank = Length (ft) X Width (ft)

10.6 ft X 5.2 ft = 54.9 ft^2

B. Volume of Tank = Area of Tank (2.A) X Height (ft)

54.9 ft X 4.6 ft = 250.1 ft^3

Circular Tank

A. Area of Tank = πr^2 (3.14 X (Radius of Tank)$^{2)}$

3.14 X ft^2 = ft^2

B. Volume of Tank = Area of Tank X Height (ft)

ft^2 X ft = ft^3

3. Force of Tank Weight (F_{TW})

Weight of Tank (provided by manufacturer) 320 lbs/ft^3

4. Force of Soil Weight Over Tank (F_{SW})

A. Depth of Cover Over Tank: 36 in 3.0 ft

B. Weight of Soil Per Cubic Foot: 120 lbs/ft^3

C. Volume of Soil Over Tank = Depth of Cover (ft) X Area of Tank (ft^2)

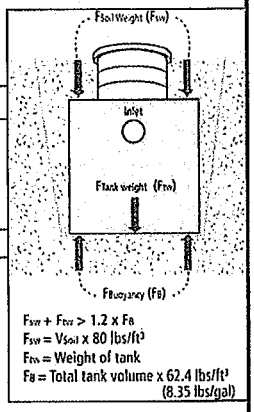
3.0 ft X 54.9 ft^2 = 164.6 ft^3

Soil Type	Weight of Soil (lbs/ft^3)
Sandy	120
Loamy	100
Clay	90

D. Weight of Soil Over Tank = Volume of Soil Over Tank X Weight of Soil Per Cubic Foot

164.6 ft^3 X 120 lbs/ft^3 19,748.5 lbs

Note: Assumes saturation does not get over the lid of the tank



$F_{SW} + F_{TW} > 1.2 \times F_B$
$F_{SW} = V_{SOIL} \times 80$ lbs/ft³
F_{TW} = Weight of tank
F_B = Total tank volume x 62.4 lbs/ft³ (8.35 lbs/gal)

5.Buoyant Force (F_B)

Buoyant Force (F_B) = Outside Volume of Tank X Weight of Water Per Cubic Foot (62.4 lbs/ft^3) X 1.2 (Safety Fctr)

250 X 62.4 lbs/ft^3 X 1.2 = 18,724.2 lbs

6. Evaluation of Net Forces

A. Downward Force = Force of Tank Weight (F_{TW}) + Force of Soil Weight of Soil (F_{SW})

320 lbs + 19749 lbs = 20,068.5 lbs

B. Net Difference = Downward Force - Buoyant Force Including Safety Factor

20069 lbs - 18724 lbs = 1,344.3 lbs

If the Net Difference is negative, countermeasures will need to be taken to prevent the tank from floating out of the ground.

Comments/Solution:

Onsite Sewage Treatment Program

Tank Buoyancy Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

1. Tank Specifications

Project ID:

v 04.01.2020

A. Tank Manufacturer: INFILTRATOR

Tank Model: IM-540

B. Outside Tank Dimensions and Specifications:

Tank Use: Dosing

Length:	64.9	in	Width:	61.7	in	Height:	54.6	in	Diameter:		in
Length:	5.4	ft	Width:	5.1	ft	Height:	4.6	ft	Radius of Tank:		in

2. Outside Volume of Tank

Rectangular Tank

A. Area of Tank = Length (ft) X Width (ft)

5.4 ft X 5.1 ft = 27.8 ft^2

B. Volume of Tank = Area of Tank (2.A) X Height (ft)

27.8 ft X 4.6 ft = 126.5 ft^3

Circular Tank

A. Area of Tank = πr^2 (3.14 X (Radius of Tank)$^{2)}$

3.14 X _____ ft^2 = _____ ft^2

B. Volume of Tank = Area of Tank X Height (ft)

_____ ft^2 X _____ ft = _____ ft^3

3. Force of Tank Weight (F_{TW})

Weight of Tank (provided by manufacturer) 169 lbs/ft^3

4. Force of Soil Weight Over Tank (F_{SW})

A. Depth of Cover Over Tank: 36 in 3.0 ft

B. Weight of Soil Per Cubic Foot: 120 lbs/ft^3

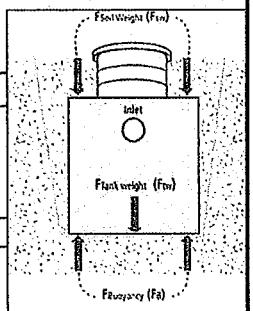
C. Volume of Soil Over Tank = Depth of Cover (ft) X Area of Tank (ft^2)

3.0 ft X 27.8 ft^2 = 83.4 ft^3

Soil Type	Weight of Soil (lbs/ft^3)
Sandy	120
Loamy	100
Clay	90

D. Weight of Soil Over Tank = Volume of Soil Over Tank X Weight of Soil Per Cubic Foot

83.4 ft^3 X 120 lbs/ft^3 10,010.8 lbs *Note: Assumes saturation does not get over the lid of the tank*



$F_{sw} + F_{tw} > 1.2 \times F_B$
$F_{sw} = V_{soil} \times 80$ lbs/ft³
F_{tw} = Weight of tank
F_B = Total tank volume x 62.4 lbs/ft³ (8.35 lbs/gal)

5. Buoyant Force (F_B)

Buoyant Force (F_B) = Outside Volume of Tank X Weight of Water Per Cubic Foot (62.4 lbs/ft^3) X 1.2 (Safety Fctr)

127 X 62.4 lbs/ft^3 X 1.2 = 9,474.2 lbs

6. Evaluation of Net Forces

A. Downward Force = Force of Tank Weight (F_{TW}) + Force of Soil Weight of Soil (F_{SW})

169 lbs + 10011 lbs = 10,179.8 lbs

B. Net Difference = Downward Force - Buoyant Force Including Safety Factor

10180 lbs - 9474 lbs = 705.6 lbs

If the Net Difference is negative, countermeasures will need to be taken to prevent the tank from floating out of the ground.

Comments/Solution:

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Sewage tank integrity assessment form

Subsurface Sewage Treatment Systems (SSTS) Program

Purpose: This form **may** be used to certify the compliance status of the sewage tank components of the SSTS. **This form is not a complete SSTS inspection report, only a tank integrity assessment, and may only certify sewage tank compliance status when entirely completed and signed by a qualified professional.** SSTS compliance inspection report forms can be found at: https://www.pca.state.mn.us/water/inspections.

Instructions: This form may be completed, and signed, by a Designated Certified Individual (DCI) of a licensed SSTS inspection, maintenance, installation, or service provider business who personally conducts the necessary procedures to assess the compliance status of each sewage tank in the system. A copy of this information should be submitted to the system owner and be maintained by the licensed SSTS business for a period of five (5) years from the assessment date.

When this form is signed by a qualified certified professional, it becomes *necessary supporting documentation* to an Existing System Compliance Inspection Report: Compliance inspection form - Existing system (wq-wwists4-31b). This form can be found on the MPCA website at https://www.pca.state.mn.us/water/inspections.

The information and certified statement on this form is **required** when existing septic tank compliance status is determined by an individual other than the SSTS Inspector that submits an inspection report. This form represents a third party assessment of SSTS component compliance and is allowable under Minn. R. 7082.0700, subp. 4 Item (B) subitem (1). This form is valid for a period of three years beyond the signature date on this form unless a new evaluation is requested by the owner or owner's agent or is required according to local regulations. Additional Administrative Rule references for this activity can be found at Minn. R. 7082.0700, subp. 4 Items B, C, and D; 7083.0730 Item C.

☒ **Certificate of sewage tank compliance**

Affirm all three statements:

- ☒ The SSTS does not contain a seepage pit, cesspool, drywell, leaching pit, or other pit.
- ☒ It does not contain a sewage tank that was designed to be watertight, but subsequently leaks below the designed operating depth.
- ☒ It does not represent an imminent safety threat by reason of unsecured, damaged, or weak maintenance hole cover(s) or other unsafe condition.

☐ **Notice of sewage tank non-compliance**

Select all that apply:

- ☐ The SSTS has a seepage pit, cesspool, drywell, leaching pit, or other pit – **"Failure to Protect Groundwater."**
- ☐ It has a sewage tank that was designed to be watertight, but subsequently leaks below the designed operating depth – **"Failure to Protect Groundwater."**
- ☐ It presents a threat to public safety by reason of unsecured, damaged, or weak maintenance hole cover(s) or other unsafe condition – w**"Imminent Threat to Public Health or Safety."**

Company information

Company name: JENCO SERVICES

Business license number: L4041

Designated Certified Individual (DCI) information

Print name: JAMES PIPER

Certification number: C1202

I personally conducted the work described above as a Designated Certified Individual of a Minnesota-licensed SSTS inspection, maintenance, installation, or service provider Business. I personally conducted the necessary procedures to assess the compliance status of each sewage tank in this SSTS.

***By typing/signing my name below**, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing this form.*

Designated Certified Individual's signature: *(This document has been electronically signed.)*

Date (mm/dd/yyyy): 10/12/2021

10/12/2021

11:00 Tony

Becker County Planning & Zoning
915 Lake Ave
Detroit Lakes, MN 56501
(218) 846-7314
www.co.becker.mn.us

Septic Permit

Permit #: SS2021-1203

Owner & Property Information

Owner Name:	V GAIL BRENDLE REVOCABLE LIVING TRUST
Mailing Address:	V GAIL BRENDLE REVOCABLE LIVING TRUST 4355 37TH AVE S FARGO ND 58104
Phone #:	701-219-9011
Lake/River(1000 /300):	Yes
Lake/River Name:	Cotton (Erie & Holmesville) [RD]
Pond/Wetland(50):	No

Parcel #:	100578000
Secondary Parcel #:	
Site Address:	33176 S COTTON LAKE RD
Township - Sec/Twp/Rng:	ERIE - 11/139/040
Designer:	JenCo Services, LLC, L4041 (James Piper)
Installer:	Tony Stenger Excavating, L388 (Tony Stenger)

Specifications

Tank to be Installed:	Single Septic Tank
Total # Tanks Installed:	2
System Status:	Repairs Needed to Existing
System Serves:	Seasonal Dwelling
Number of Bedrooms:	3
Design Flow/GPD:	450
Garbage Disposal?	No
Size of Lift Pump:	45GPM
Size of Lift Line:	2"
Soil Sizing Factor:	

Type of Drainfield:	
Full Size of Drainfield:	
Reduced/Warrantied Size:	
Absorbtion Area Size:	
Rock Depth:	
Chamber Type and Number:	
Chamber Trench SqFt/Chamber:	
Is System Pressurized?	
Alarm?	Yes
Type of Alarm:	ELECTRIC

Setbacks

Road Type:	Public / Township
Tank Dist to Road:	+50'
Tank Dist to Closest Prop Line:	15'
Tank Dist to Nearest Structure:	15'
Tank Dist to Well:	+50'
Tank Dist to OHW:	+50'
Tank Dist to Pond/Wetland:	
Tank Dist to Pressure Line:	+20'

Right of Way Marked:	No
Drainfied Dist to Road:	
Drainfied Dist to Closest Prop Line:	15'
Drainfield Dist to Nearest Structure:	
Drainfield Dist to Well:	N/A
Drainfield Dist to OHW:	
Drainfield Dist to Pond/Wetland:	
Drainfield Dist to Pressure Line:	

Other Information

Date Approved:	10/4/2021
Permit Fee:	225.00
Receipt Number:	250648389
Date Paid:	10/4/2021

Notes: Replace septic tank (1000 gallons) and lift tank (500 gallons). Utilize existing drainfield

Zoning Office Signature: Denise Gubrud

PERMIT MUST BE POSTED AT JOB SITE. PERMIT EXPIRES ONE YEAR FROM DATE PAID.
**** Please schedule for inspection prior to installation! ****