

SEPTIC CHECK

EXPERT SERVICE. LASTING VALUE. CLEAN WATER

INDIVIDUAL SEWAGE SYSTEM DESIGN SUMMARY

Property Owner: Don Krieger Phone: 612-709-0469
Address: 20767 508th Lane PID: 29-0-017723
City: McGregor Zip: 55760 County: Aitkin County

DESIGN USAGE

Single Family Home Other
Number of Potential Bedrooms 3
Garbage Disposal None
Sewage Lift Pump None

SITE CHARACTERISTICS

Soil type Sand
Hydraulic Loading 1.2 gpd/ft2
Depth to restrictive layer 30"

PUMP INFORMATION

Pump GPM & TDH 30 GPM & 17.7 TDH
Cycles per day 6 Doses
Gallons per cycle 63 Gallons
Perforation size & spacing 1/4" Perfs every 3'
Number, spacing, & diameter of laterals 4 - 1 1/2" Laterals every 3'
Forcemain Size 2"


CAPACITIES

Daily Water Use Est 450 Calc gpd
Septic Tank Capacity 1514 Gallons (2 - 757 gal compartments of 2250 Triple)
Pump Tank Capacity 757 gallons (3rd compartment)

BELOW GRADE SYSTEM

Type of Drainfield Pressure Bed
Maximum Depth of Bed 18"
Square Feet of bed Required 375 ft/2
Square Feet of bed Proposed 375 ft/2
Dimensions of bed Proposed 12' x 30'

APPROVAL

By  Date 6/13/24
Eric Otte License #2624

See additional information sheet if checked



Proposed Type IV Septic System Description



Property Owner: Don Krieger, 20767 508th LN McGregor, MN 55760

Description of Wastewater Treatment and Dispersal System

Existing system summary:

The Kriegers' have a 3-bedroom, Class I cabin without a garbage disposal or sewage ejector. They want a septic system instead of using the existing septic tank and insufficient inground system. There is limited space on the property, so there is not another location for a drainfield in the future. Therefore, a Type IV system utilizing pretreatment and UV light will be used to upgrade the system.

Approved Variances relating to the Septic System:

1. Reduce the garage setbacks to the drainfield from 20 feet to 5 feet & 15 feet.
2. Reduce the road right of way to 18.9 feet from the drainfield.
3. Reduce the OHWL setback to 70.2 feet.

Soil Observations:

Three soil borings were completed in the proposed drainfield area. Redox features were present in SB1 and SB2 between 30" – 32". Rock restriction in SB3 at 34" without any redox features. For this design a soil loading rate for Sand at 1.20 gpd/ft² will be used.

Pretreatment Treatment System Upgrade:

The design flow will be that of a 3-bedroom home at 450 gallons per day. The existing 1,200 gallon tank will need to be pumped, crushed, and buried. A Brown Wilbert 2,250-gallon triple compartment tank will be set in its place. Sewage will flow by gravity from the home into first 757-gallon compartment, then flow into the second 757-gallon compartment equipped with an EcoPod E50 pretreatment unit. The total septic capacity between the two compartments is 1,514 gallons. Effluent will then flow into a Salcor UV light installed on the inlet of the pump compartment. From there effluent will flow to the last 757-gallon compartment that will be used as the time dosed pump tank. The pump installed must deliver at least 30.0 GPM and 17.7 TDH. All manholes will need to be installed to grade for ease of servicing.

Effluent will then be time dosed to a 12' by 30' rockbed pressure bed. Installer will dig out the 12' x 30' bed no deeper than 18". The rockbed will be built with 1 ½" washed rock, 1 ½" laterals that have cleanouts and inspection pipes to grade. There will be 12" of cover material over the rockbed, and the installer must complete final grade, rake, and seeding.

Water supply / wells:

A new deep well will be drilled as the existing is shallow and will not meet setbacks. The location of the proposed well will meet the 50' setback. The drainfield and tank locations are over 50' from all neighboring property wells.

System Detail:

- **Septic Tank**
 - 1st compartment of Brown Wilbert 2,250-gallon triple compartment tank 757 gallons serving septic capacity
 - 2nd compartment of Brown Wilbert 2,250-gallon triple compartment tank 757 gallons serving septic capacity and equipped with Ecopod E50 pretreatment unit
 - Salcor UV light
 - Blower unit
 - (4) 24" manholes to grade; lids to be insulated
 - 24" ultra-rib riser, attached with ADH 100- or two-part epoxy

- **Time Dose Mound Pump Tank**
 - 3rd compartment of Brown Wilbert 2,250-gallon triple compartment tank 757 gallons
 - Goulds PE 51 pump
 - Delta CP2210/MN control panel (ships with EcoPod E50)

- **Drainfield**
 - 12' x 30' Rockbed pressure bed with clean sand added on south end to new bed elevation.
 - 1 ½" washed rock
 - (4) 28' 1 ½" laterals using SCH 40 pipe with ¼" perforations every 3'
 - Lateral cleanouts, inspection pipes to grade
 - 12" cover material
 - Final grade, rake, and seed

Additional Notes:

Gopher locates must be completed before installation. Installer to ensure tanks are set no closer than 10 feet from the home. All tanks are to be bedded in a level base of at least 6" of pea gravel, ¾" minus rock or screened fill sand. Backfill material around the tanks should be granular without excessive moisture content. Existing soils may be used for backfilling if they are granular in nature and free of rocks and debris over 2" in size. Granular backfill shall be compacted in lifts to prevent pipes from settling. A tank certificate shall be provided to the inspector.

Homeowner Responsibility:

- Homeowner to verify all property lines.
- Each tank is to be pumped through the maintenance cover when serviced. Do not pump through inspection pipes.
- Homeowner is responsible for all costs involved in servicing, monitoring, and mitigating the system.
- Keep all vehicles off septic area. Rutting and/or compacting the soil will change the percolation rates and may lead to system failure.
- **Water softeners, iron filters, reverse osmosis systems, and high-efficiency furnaces produce water that is not sewage and should NOT go into your septic system. Reroute water from these sources to another outlet, such as a drywell, or drain tile.**

Installer Responsibility:

- It is the installer's responsibility to make sure the septic system is seeded and mulched prior to final completion.
- Keep all vehicles and construction equipment off septic area. Rutting and/or compacting the soil will change the percolation rates and may lead to system failure.
- Installer to verify all elevations, dimensions, and ensure proper fall to pipes. Pitch pump chamber outlet to ensure complete drainback to pump chamber.
- Establish turf to prevent erosion and freezing.
- All construction is to be performed in accordance with MN Rule 7080 and the Aitkin County septic ordinance.

Maintenance Requirements

See attached operating permit - Bi-annual maintenance is recommended for this system. The service visit frequency can be modified based on the system performance and recommendations by the service provider. Level A treatment was used in this design. Below is a list of maintenance requirements to be completed by the service provider, maintainer, and owner.

Owner requirements:

- Hire a licensed service provider to complete the tasks below and maintain compliance with the operating permit.
- The owner is to maintain compliance with the operating permit at all times or follow the mitigation plan to make changes to get back into compliance if operating permit limits are not being met.
- Record water meter readings weekly and provide this information to the service provider.
- Maintain vegetation around tanks and drainfields. It is suggested the sites be mowed and trimmed twice per year.
- Update the service provider, designer, and county if changes in water use are expected such as adding food service or expansion of the building.
- Maintain access points for service equipment to reach tanks and other components.

Maintainer requirements:

- Pump and clean tanks when solids levels reach 25% of tank capacity.
- Pump and clean lift tanks when sludge levels exceed 4" in depth.
- Inspect tank integrity when pumping to ensure tank compliance.
- Clean baffles and effluent screens at each tank pumping.
- Report any unsafe conditions to owner and service provider.
- Report and note any issues such as infiltration, seepage, or other non-compliance issues.
- Follow local and state regulations when disposing of septage.

Service Provider requirements:

- Use the maintenance checklist below as a reference for service to be completed on the system at which frequency.
- Adjust or recommend changes in maintenance tasks and frequency based on operational results.
- Schedule or complete tank maintenance pumping when solids reach critical levels.
- Follow the operating permit and sampling requirements. Send maintenance reports to the County.
- For detailed maintenance tasks or troubleshooting information, refer to the attached installation and operation & maintenance manual provided the manufacture.

Component Description: Septic Tank 757 Gal.		
Location	Description	Frequency
Manholes	Inspect manholes for infiltration	Bi-annual
Manholes	Inspect inlet and outlet for infiltration	Bi-annual
Manholes	Inspect and clean effluent filter if needed	Bi-annual
Inlet/outlet	Sample sludge and scum levels	Bi-annual

Component Description: Ecopod E50 Treatment Tank 757 Gal.		
Location	Description	Frequency
Manholes	Inspect manholes for infiltration	Bi-annual
Manholes	Inspect inlet and outlet for infiltration	Bi-annual
Pretreatment	Maintain per manufacturer recommendations	Bi-annual
UV Light	Maintain per manufacturer recommendations	Bi-annual

Component Description: Mound Dose Time Dose Tank 757 Gal.		
Location	Description	Frequency
Manholes	Inspect manholes for infiltration	Bi-annual
Manholes	Inspect inlet and outlet for infiltration	Bi-annual
Inlet/outlet	Sample sludge and scum levels	Bi-annual
Pump Tank	Pump solids level exceeds 4" in depth	As needed
Manhole	Inspect pumps and floats for proper operation	Bi-annual
Panel	Inspect panel and alarm system for proper operation	Bi-annual
Panel	Record cycle counters and/or elapsed timer meters.	Bi-annual
Panel	Adjust timer settings based on dosing results	As needed
Manhole	Sample effluent fecal coliform	Bi-annual

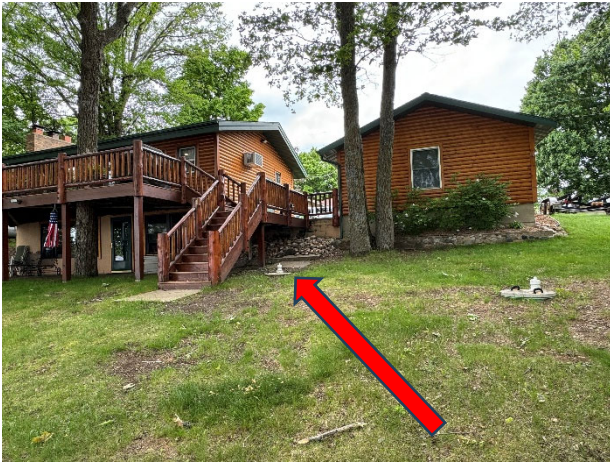
Component Description: Pressure Bed 12' by 30' rockbed		
Location	Description	Frequency
Drainfield	Inspect for ponding or seepage	Bi-annual
Drainfield	Mow the system	June 1 st , August 1st
Drainfield	Clean and flush lateral lines	As Needed

Mitigation Plan:

Problem	Action	Mitigation Steps
Rockbeds ponding	<ul style="list-style-type: none"> • Verify flow and effluent results are within permit limits. • Verify equal distribution in bed dosing. 	<ul style="list-style-type: none"> • If flow cannot be accepted by the beds, pump and haul excess effluent. • Complete pump calibration to verify timer settings are correct.
Seepage below beds	<ul style="list-style-type: none"> • Verify dosing volumes and equal distribution • Inspect all beds to determine if it's isolated to one area or in all beds. • Verify pump operation • Review flow data 	<ul style="list-style-type: none"> • Adjust timer settings to reduce flow entering the bed with seepage. • Complete pump calibration to verify timer settings are correct.
Treatment levels not meeting operating permit limits	<ul style="list-style-type: none"> • Verify flow, influent, and effluent results are within permit limits. • Verify dosing volumes from EQ tank to treatment tank. • Adjust sludge return pump settings. • Verify blower and aeration network are working properly • Sample influent 	<ul style="list-style-type: none"> • If treatment levels cannot be met, expand the treatment system or add more tankage • Adjust dosing tank match long term daily flow averages as close as possible. • Sample influent from EQ tank to verify loading. • Sample dissolved oxygen and pH in EQ tank and Treatment tank. • Check blower air filter, amperage and pressure.
Flow limit exceeded	<ul style="list-style-type: none"> • Inspect for signs of infiltration in all tanks • Inspect building plumbing for leak fixtures or toilets. • Discuss water use patterns with the owner or mgmt. 	<ul style="list-style-type: none"> • Adjust timer settings within the permit limits and operating permit limits • Pump and haul excess flow.

SEPTIC CHECK

EXPERT SERVICE. LASTING VALUE. CLEAN WATER



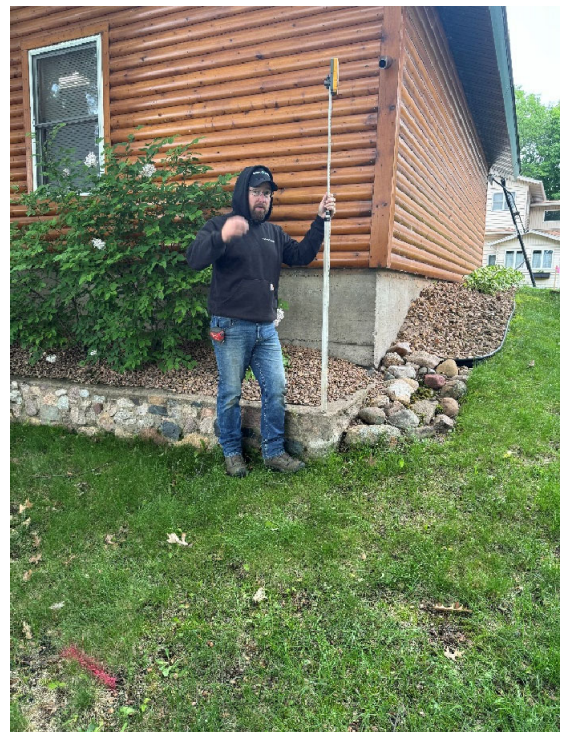
Existing tank to pump, crush, & fill with sand.



New Tank Area – 2250 Triple Compartment



Staked 12' x 30' Pressure Bed & Soil borings



Benchmark Location

SEPTIC CHECK

EXPERT SERVICE. LASTING VALUE. CLEAN WATER



Tank Access



Electrical Connection Location




Installer to crush and remove concrete pad



Installer to crush and remove all the concrete in front of the boat house

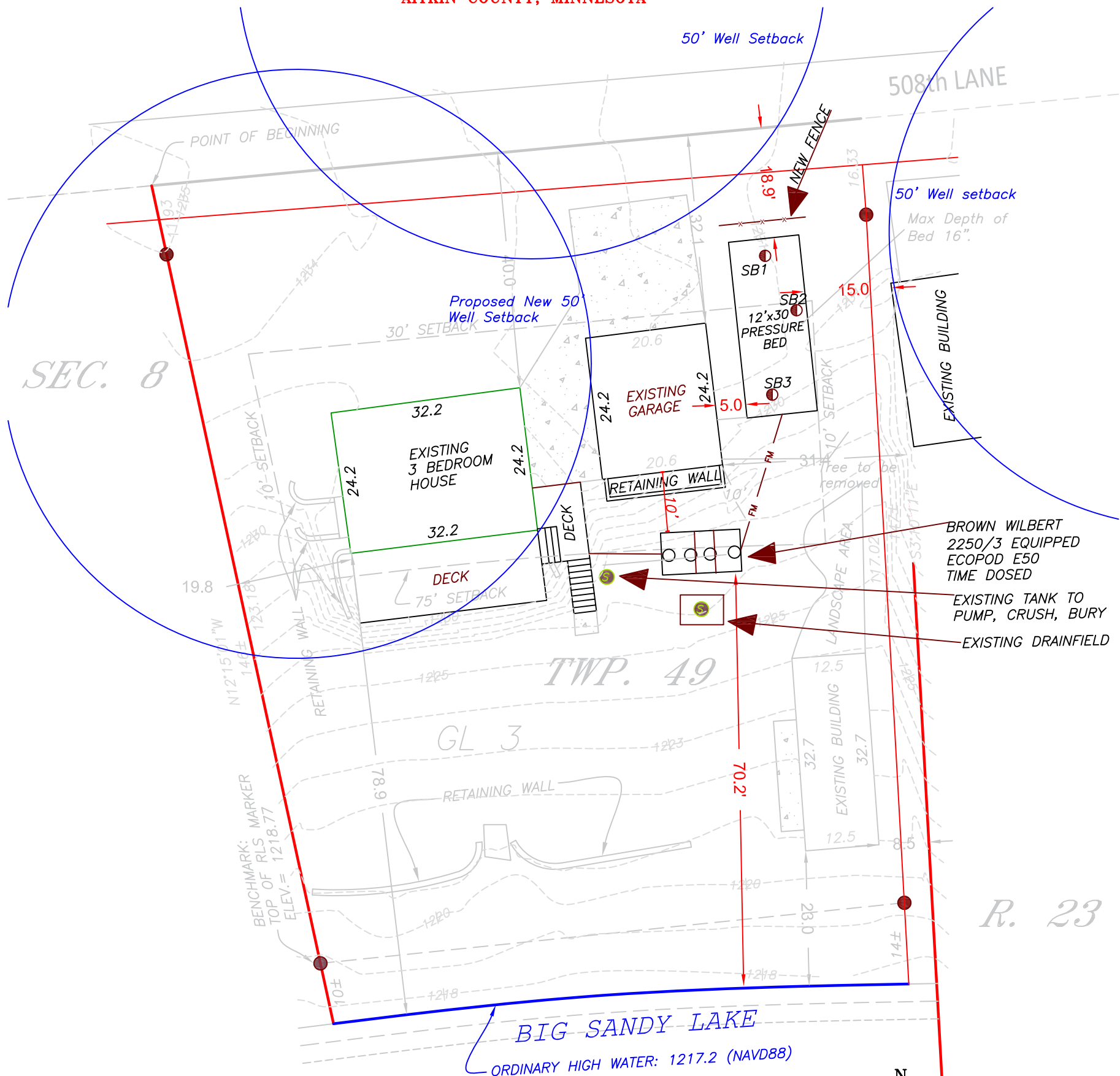


Map may not be valid at this scale. Data was mapped at an accuracy of 1:24,000 so any representation of the data at a larger scale is not advised.

	Date: 6/13/2024
PID 29-0-017723	Web AppBuilder for ArcGIS
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.	1:564 0 0.003 0.006 mi 1 inch = 47 feet

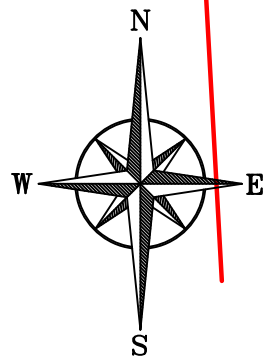
Proposed Septic System Site Map

PART OF GOVERNMENT LOT 3,
SECTION 8, TOWNSHIP 49 NORTH, RANGE 23 WEST
AITKIN COUNTY, MINNESOTA



ELEVATIONS

BENCHMARK =	=	100.00
RETAINING WALL BLOCK	=	100.00
GRADE AT EXIST. TANK	=	97.20
INLET AT EXIST. TANK	=	94.20
NE ROCKBED CORNER	=	101.50
NW ROCKBED CORNER	=	102.00
SE ROCKBED CORNER	=	100.50
SW ROCKBED CORNER	=	101.10
BOTTOM SB 1	=	99.20
BOTTOM SB 2	=	99.10
BOTTOM SB 3	=	98.40
BOTTOM OF NEW ROCKBED	=	100.20



SCALE

1" = 20'



BEARINGS ARE BASED ON NAD83(2011)
AITKIN COUNTY COORDINATE SYSTEM
SURVEY DATA PREPARED BY
NORTHWESTERN SURVEYING & ENGINEERING, INC.

● DENOTES FOUND IRON MONUMENT

● SET 1/2" IRON REBAR WITH RLS
CAP STAMPED "STANG 52591"



6074 KEYSTONE ROAD,
MILACA, MN 56353
320-983-2447
SEPTICCHECK.COM

DONALD KRIEGER
20767 508TH LN
MCGREGOR, MN

JOB#:	23342	DRAWN BY:	TJB
FILENAME:	23342 DONALD KRIEGER		
REV#	DESCRIPTION	DATE	

I HEREBY CERTIFY THAT THIS SEPTIC PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ADVANCED SEPTIC DESIGNER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE:



Preliminary Evaluation Worksheet



v 04.02.2024

1. Contact Information

Property Owner/Client: Date Completed:

Site Address: Project ID:

Email: Phone:

Mailing Address: Alt Phone:

Legal Description:

Parcel ID: SEC: TWP: RNG:

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: Dwelling sq.ft.: Unfinished sq.ft.:

Adults: # Children: # Teenagers:

In-home business (Y/N): If yes, describe:

Water-using devices: (check all that apply)

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

* Clear water source - should not go into system

Additional current or future uses:

Anticipated non-domestic waste:

The above is complete & accurate:

Client signature & date

B. Designer-determined Flow and Anticipated Waste Strength Information

Attach additional information as necessary.

Design Flow: GPD Anticipated Waste Type:

Maximum Concentration BOD: mg/L TSS: mg/L Oil & Grease: 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:



Preliminary Evaluation Worksheet



Site within 200' of noncommunity transient well (Y/N) Yes, source:

Site within a drinking water supply management area (Y/N) Yes, source:

Site in Well Head Protection inner wellhead management zone (Y/N) Yes, source:

Buried water supply pipes within 50 ft of proposed system (Y/N)

B. Site located in a shoreland district/area? Yes, name:

Elevation of ordinary high water level: ft Source:

Classification: Tank Setback: ft. STA Setback: ft.

C. Site located in a floodplain? Yes, Type(s):

Floodplain designation/elevation (10 Year): ft Source:

Floodplain designation/elevation (100 Year): ft Source:

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:

LGU Contact:

LGU-specific setbacks:

LGU-specific design requirements:

LGU-specific installation requirements:

Notes:



Field Evaluation Worksheet



1. Project Information v 04.02.2024

Property Owner/Client: Project ID:

Site Address: Date Completed:

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):

A soil observation in the most limiting area of the proposed system (Y/N):

Number of soil observations: Soil observation logs attached (Y/N):

Percolation tests performed & attached (Y/N):

5. Phase I. Reporting Information

	Depth	Elevation	
Limiting Condition*:	<input type="text" value="30"/> in	<input type="text" value="99.20"/> ft	<i>*Most Restrictive Depth Identified from List Below</i>
Periodically saturated soil:	<input type="text" value="30"/> in	<input type="text" value="99.20"/> ft	Soil Texture: <input type="text" value="Medium Sand"/>
Standing water:	<input type="text"/> in	<input type="text"/> ft	Percolation Rate: <input type="text"/> min/inch
Bedrock:	<input type="text"/> in	<input type="text"/> ft	Soil Hyd Loading Rate: <input type="text" value="1.20"/> gpd/sq.ft
Benchmark Elevation:	<input type="text" value="100.0"/> ft	Elevations and Benchmark on map? (Y/N): <input type="text" value="Yes"/>	

Benchmark Elevation Location:

Differences between soil survey and field evaluation:

Site evaluation issues / comments:

Anticipated construction issues:

1. PROJECT INFORMATION		v 04.02.2024
Property Owner/Client:	<input type="text" value="Don Krieger"/>	Project ID: <input type="text"/>
Site Address:	<input type="text" value="20767 508th Lane McGregor, MN 55760"/>	Date: <input type="text" value="06/13/24"/>
Email Address:	<input type="text" value="Kriegsr1@aol.com"/>	Phone: <input type="text" value="612-709-0469"/>
2. DESIGN FLOW & WASTE STRENGTH		
Design Flow:	<input type="text" value="450"/> GPD	Anticipated Waste Type: <input type="text" value="Residential"/>
BOD:	<input type="text" value="170"/> mg/L	TSS: <input type="text" value="60"/> mg/L
		Oil & Grease: <input type="text" value="25"/> mg/L
Treatment Level:	<input type="text" value="A"/> <i>Select Treatment Level C for residential septic tank effluent</i>	
3. HOLDING TANK SIZING <i>Holding Tank Sizing: see 7080.2290</i>		
<i>Code Minimum</i> Holding Tank Capacity:	<input type="text"/>	Gallons with <input type="text"/> Tanks or Compartments
<i>Recommended</i> Holding Tank Capacity:	<input type="text"/>	Gallons with <input type="text"/> Tanks or Compartments
The holding tank(s) will be:	<input type="text"/>	<i>Existing tank reuse requires a tank integrity assessment</i>
Type of High Level Alarm:	<input type="text"/>	
	(Alarm Set @ 75% tank capacity measured from inlet to bottom)	
Comments:	<input type="text"/>	
4. SEPTIC TANK SIZING <i>Sizing: See 7080.1930</i>		
A. Residential dwellings:		
Number of Bedrooms (Residential):	<input type="text" value="3"/>	
<i>Code Minimum</i> Septic Tank Capacity:	<input type="text" value="1000"/> Gallons	with <input type="text" value="1"/> Tanks or Compartments
<i>Recommended</i> Septic Tank Capacity:	<input type="text" value="1570"/> Gallons	with <input type="text" value="2"/> Tanks or Compartments
The septic tank(s) will be:	<input type="text" value="All New"/>	<i>Existing tank reuse requires a tank integrity assessment</i>
Comments:	<input type="text"/>	
Effluent Screen & Alarm (Y/N):	<input type="text" value="Optional"/>	Model/Type: <input type="text"/>
B. Other Establishments:		
Waste received by:	<input type="text"/>	<input type="text"/> GPD x <input type="text"/> Days Hyd. Retention Time
<i>7080 Minimum</i> Septic Tank Capacity:	<input type="text"/>	Gallons with <input type="text"/> Tanks or Compartments
<i>Designed</i> Septic Tank Capacity:	<input type="text"/>	Gallons with <input type="text"/> Tanks or Compartments
The septic tank(s) will be:	<input type="text"/>	<i>Existing tank reuse requires a tank integrity assessment</i>
Comments:	<input type="text"/>	
Effluent Screen & Alarm (Y/N):	<input type="text"/>	Model/Type: <input type="text"/>
<small>* Other Establishments Require Department of Labor and Industry Approval and Inspection for Building Sewer *</small>		

5. PUMP TANK SIZING <i>Sizing: see 7080.2100</i>	
<p style="text-align: center;">Soil Treatment Dosing Tank</p> <p>Pump Tank Capacity (7080 Minimum): <input type="text" value="500"/> Gal</p> <p>Pump Tank Capacity (Designed): <input type="text" value="757"/> Gal</p> <p>Pump Req: <input type="text" value="30.0"/> GPM Total Head <input type="text" value="17.7"/> ft</p> <p>Supply Pipe Dia. <input type="text" value="2.00"/> in Dose Vol: <input type="text" value="63.0"/> gal</p>	<p style="text-align: center;">Other Component Dosing Tank:</p> <p>Pump Tank Capacity (7080 Minimum): <input type="text"/> Gal</p> <p>Pump Tank Capacity (Designed): <input type="text"/> Gal</p> <p>Pump Req: <input type="text"/> GPM Total Head <input type="text"/> ft</p> <p>Supply Pipe Dia. <input type="text"/> in Dose Vol: <input type="text"/> Gal</p>
* Flow measurement device must be incorporated for any system with a pump *	

6. SYSTEM AND DISTRIBUTION TYPE		Project ID: <input type="text"/>
Soil Treatment Type: <input type="text" value="Bed"/>	Distribution Type: <input type="text" value="Pressure Distribution-Level"/>	
Elevation Benchmark: <input type="text" value="100.00"/> ft	Benchmark Location: <input type="text" value="Retaining wall backside of garage"/>	
MPCA System Type: <input type="text" value="Type IV"/>	Distribution Media: <input type="text" value="Rock"/>	
Type III/IV/V Details: <input type="text" value="Pretreat with UV light/reduced separation"/>	<input type="text"/>	

7. SITE EVALUATION SUMMARY:										
Describe Limiting Condition: <input type="text" value="Redoximorphic Features/Saturated Soils"/>										
Layers with >35% Rock Fragments? (yes/no) <input type="text" value="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: <input type="text"/>										
Limiting Condition:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Depth: <input type="text" value="30.0"/> inches</td> <td style="width: 30%;">Depth: <input type="text" value="2.50"/> ft</td> <td style="width: 30%;">Elevation: <input type="text" value="99.20"/> ft</td> </tr> <tr> <td>Minimum Req'd Separation: <input type="text" value="12"/> inches</td> <td>Depth: <input type="text" value="1.00"/> ft</td> <td>Elevation: <input type="text"/></td> </tr> <tr> <td>Distribution Media Bottom*: <input type="text" value="18"/> inches</td> <td>Depth: <input type="text" value="1.50"/> ft</td> <td>Elevation: <input type="text" value="100.20"/> ft</td> </tr> </table>	Depth: <input type="text" value="30.0"/> inches	Depth: <input type="text" value="2.50"/> ft	Elevation: <input type="text" value="99.20"/> ft	Minimum Req'd Separation: <input type="text" value="12"/> inches	Depth: <input type="text" value="1.00"/> ft	Elevation: <input type="text"/>	Distribution Media Bottom*: <input type="text" value="18"/> inches	Depth: <input type="text" value="1.50"/> ft	Elevation: <input type="text" value="100.20"/> ft
Depth: <input type="text" value="30.0"/> inches	Depth: <input type="text" value="2.50"/> ft	Elevation: <input type="text" value="99.20"/> ft								
Minimum Req'd Separation: <input type="text" value="12"/> inches	Depth: <input type="text" value="1.00"/> ft	Elevation: <input type="text"/>								
Distribution Media Bottom*: <input type="text" value="18"/> inches	Depth: <input type="text" value="1.50"/> ft	Elevation: <input type="text" value="100.20"/> ft								
<i>Elevations are critical for system compliance.</i>										
<i>Media Bottom Elevation OK</i>										
*This is the maximum depth to the bottom of the distribution media for required separation. Negative Depth (ft) requires a mound.										
Designed Distribution Bottom Elevation: <input type="text" value="100.20"/> ft	Mound Minimum Sand Depth: <input type="text" value="N/A"/> inches									
A. Soil Texture: <input type="text" value="Medium Sand"/>										
B. Soil Hyd. Loading Rate: <input type="text" value="1.20"/> GPD/ft ²	C. Percolation Rate: <input type="text"/> MPI									
D. Contour Loading Rate: <input type="text" value="14.4"/>	Note: <input type="text"/>									
E. Measured Land Slope: <input type="text" value="5.0"/> %	Note: <input type="text"/>									
Comments: <input type="text"/>										

8. SOIL TREATMENT AREA DESIGN SUMMARY		
Trench:		
Dispersal Area <input type="text"/> sq.ft	Sidewall Depth <input type="text"/> in	Trench Width <input type="text"/> ft
Total Lineal Feet <input type="text"/> ft	No. of Trenches <input type="text"/>	Code Max. Trench Depth <input type="text"/> in
Contour Loading Rate <input type="text"/> ft	Minimum Length <input type="text"/> ft	Designed Trench Depth <input type="text"/> in
Bed:		
Dispersal Area <input type="text" value="375.0"/> sq.ft	Sidewall Depth <input type="text" value="6.0"/> in	Maximum Bed Depth <input type="text" value="18"/> in
Bed Width <input type="text" value="12"/> ft	Bed Length <input type="text" value="30.0"/> ft	Designed Bed Depth <input type="text" value="18"/> in

Project ID: _____

Mound:

Dispersal Area	<input type="text"/>	sq.ft	Bed Length	<input type="text"/>	ft	Bed Width	<input type="text"/>	ft
Absorption Width	<input type="text"/>	ft	Clean Sand Lift	<input type="text"/>	ft	Berm Width (0-1%)	<input type="text"/>	ft
Upslope Berm Width	<input type="text"/>	ft	Downslope Berm	<input type="text"/>	ft	Endslope Berm Width	<input type="text"/>	ft
Total System Length	<input type="text"/>	ft	System Width	<input type="text"/>	ft	Contour Loading Rate	<input type="text"/>	gal/ft

At-Grade:

Dispersal Area	<input type="text"/>	sq.ft	Bed Length	<input type="text"/>	ft	Bed Width	<input type="text"/>	ft
Upslope Berm	<input type="text"/>	ft	Downslope Berm	<input type="text"/>	ft	Finished Height	<input type="text"/>	ft
System Length	<input type="text"/>	ft	Endslope Berm	<input type="text"/>	ft	System Width	<input type="text"/>	ft

Level & Equal Pressure Distribution Soil Treatment Area

No. of Laterals	<input type="text" value="4"/>	Lateral Diameter	<input type="text" value="1.50"/>	in	Lateral Spacing	<input type="text" value="3.0"/>	ft	
Perforation Spacing	<input type="text" value="3.0"/>	ft	Perforation Diameter	<input type="text" value="1/4"/>	in	Drainback Volume	<input type="text" value="4.3"/>	gal
Min Dose Volume	<input type="text" value="49.3"/>	gal	Max Dose Volume	<input type="text" value="112.5"/>	gal	Total Dosing Volume	<input type="text" value="67.3"/>	gal

Non-Level and Unequal Pressure Distribution Soil Treatment Area

	Elevation (ft)	Pipe Size (in)	Pipe Volume (gal/ft)	Pipe Length (ft)	Perf Size (in)	Spacing (ft)	Spacing (in)	
Lateral 1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Minimum Dose Volume <input type="text"/> gal
Lateral 2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Maximum Dose Volume <input type="text"/> gal
Lateral 3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Total Dosing Volume <input type="text"/> gal
Lateral 4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Lateral 5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Lateral 6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

9. Organic Loading and Additional Info for HSW or Type IV/V Design - See Organic Loading tab

Organic Loading to Soil Treatment (Based on Waste Strength Data and Organic Loading Design)

A. Organic Loading Based on: B. Minimum required area sq.ft

Technology Strength Reduction (Treatment Level or HSW)

A. Starting Waste Strength Treatment designed to meet:

Pretreatment Technology: *Must Meet or Exceed Target Level

Model: Units:

Disinfection Technology: *Required for Levels A & B

Model: Units:

10. Comments/Special Design Considerations:

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

Eric Otte (Designer)	 (Signature)	2624 (License #)	6/13/2024 (Date)
-------------------------	--	---------------------	---------------------

1. SYSTEM SIZING: Project ID: _____ v 04.02.2024

- A. Design Flow: GPD
- B. Code Maximum Depth: inches Designers Maximum Depth: inches
- C. Soil Loading Rate: GPD/sq.ft
- D. Hydraulic Absorption Required Bottom Area: Design Flow (1A) ÷ Soil Loading Rate (1C)
 GPD ÷ GPD/sq.ft = sq.ft

Optional Upsizing of Dispersal Media Area

- E. Larger Bed Area Size or Organic Sizing of Bed Area (see organic loading sheet - 2G) sq.ft
- F. Select Distribution Method: Notes:
- G. Select Dispersal Media: Product:
- H. If distribution media is installed in contact with sand or loamy sand or with a percolation rate of 0.1 to 5 mpi indicate distribution or treatment method:

2. BED CONFIGURATION: (Less than 6% slope required)

- A. Select size Multiplier: 1.0 = pressurized or 1.5 = gravity
- B. Required Bed Area =Hydraulic Absorption area (1D) or Upsized Bed Area (1E) X Size Multiplier (2A) =
 sq.ft X = sq.ft
- C. Select Bed Width: ft
- D. Calculate Bed Length: Designed Bottom Area (2B) ÷ Bed Width (2C) = Bed Length
 sq.ft ÷ ft = ft
- E. Contour Loading Rate: Bed Width (2C) x SHLR (1C) *Must be less than 12 to be a Type I system*
 ft x GPD/sq.ft = gal/ft

3. ESTIMATED MATERIAL CALCULATION: ROCK

- A. If drainfield rock is being used, select sidewall height
 in ft (0.33 ft for pressure, 0.5 ft for gravity)
- B. Media Volume: (Media Depth(3A) + depth to cover pipe) X Designed Bottom Area(2B) = cu.ft
 (ft + ft) X sq.ft = cu.ft
- C. Calculate Volume in cubic yards: Media volume in cubic feet (3A) ÷ 27 = cubic yards
 cu.ft ÷ 27 = cu.yd
- Bed to be constructed to dimensions in design. This is an estimate of materials needed. Individual construction practices may vary quantities.

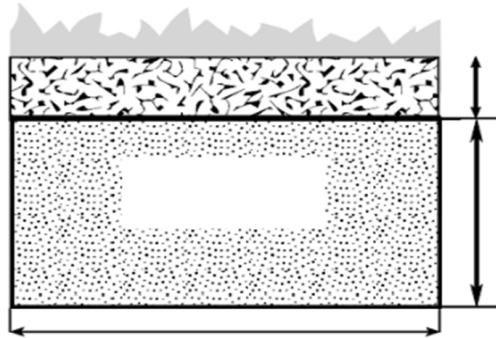
4. ESTIMATED MATERIAL CALCULATION: REGISTERED PRODUCTS - CHAMBERS AND EZFLOW

- A. Registered Product:
- B. Bed Width ft
- C. Bed Length Minimum ft
- D. Component depth (see Registration) in
- Check registered product information for specific application details and design*

5. Dimension Summary

Project ID:

End View



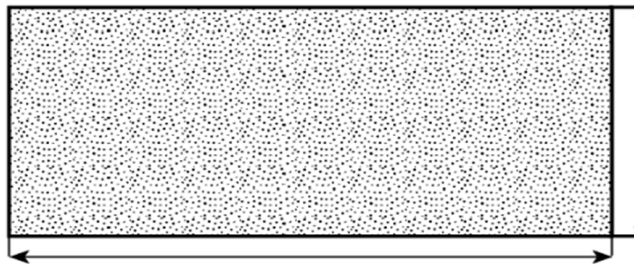
Minimum 12 inch cover

Elevation based on Benchmark

12	Bed Width (ft)	6.0	Media Depth (in) <i>Below Pipe</i>	100.70	ft
		18.0	Max Depth (in)- Design	100.20	ft
		12.0	Required Separation (in)	100.20	ft
		30.0	Limiting Condition (in)	99.20	ft

Top View

Distribution Pipes must be no less 12 inches and no more than 24 inches from the edge



One 4" Inspection pipe per bed required

12.0	Bed Width (ft)	30.0	Bed Length (ft)	Bottom Area (sq.ft)	375
------	----------------	------	-----------------	---------------------	-----

Distribution Media:

Manifold Connection:

Perforation Size: (in)

Perforation Spacing: (in)

Comments:



Pressure Distribution Design Worksheet

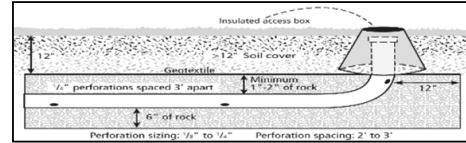
Project ID:

v 04.02.2024

1. Media Bed Width: ft
2. Media Bed Length: ft
3. Minimum Number of Laterals in system/zone = Rounded up number of $[(\text{Media Bed Width}(1.) - 4) \div 3] + 1$.

$[(\text{ } \boxed{12} \text{ } - 4) \div 3] + 1 = \text{ } \boxed{4} \text{ } \text{laterals}$ *Does not apply to at-grades*

4. Designer Selected Number of Laterals: laterals
Cannot be less than line 2 (Except in at-grades)



5. Lateral spacing in Bed; *Must be greater than 1 foot and no more than 2 feet from Edge*: ft
6. *Length of Laterals* = Media Bed Length(2.) - 2 Feet.

$\boxed{30.0} - 2\text{ft} = \boxed{28.0} \text{ft}$ *Perforation can not be closer then 1 foot from edge.*

7. Select *Perforation Spacing*: ft
8. Determine the *Number of Perforation Spaces*. Divide the *Length of Laterals*(6.) by the *Perforation Spacing*(7.) and round down to the nearest whole number.

$\text{Number of Perforation Spaces} = \boxed{28.0} \text{ft} \div \boxed{3.0} \text{ft} = \boxed{9} \text{Spaces}$

9. *Number of Perforations per Lateral* is equal to 1.0 plus the *Number of Perforation Spaces*(8.). Check table below to verify the number of perforations per lateral guarantees less than a 10% discharge variation. The value is double with a center manifold.

$\text{Perforations Per Lateral} = \boxed{9} \text{Spaces} + 1 = \boxed{10} \text{Perfs. Per Lateral}$

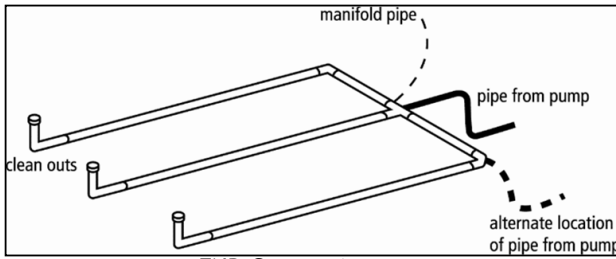
10. Select *Perforation Diameter Size*: in 0.25
11. Select *Lateral Diameter (See Table)*: in
12. Select *Manifold Connection (End or Center)*:

If Center Manifold Connection the max number of perfs per lateral in the table can be doubled.

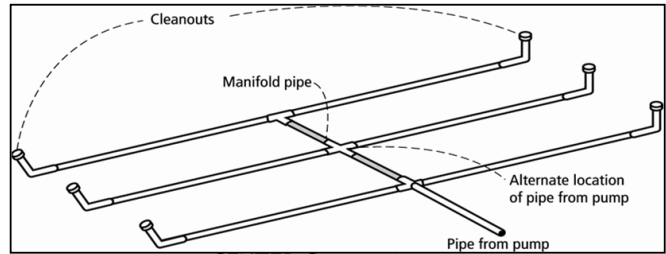
Maximum Number of Perforations Per Lateral to Guarantee <10% Discharge Variation											
1/4 Inch Perforations						7/32 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1 1/4	1 1/2	2	3		1	1 1/4	1 1/2	2	3
2	10	13	18	30	60	2	11	16	21	34	68
2 1/2	8	12	16	28	54	2 1/2	10	14	20	32	64
3	8	12	16	25	52	3	9	14	19	30	60
3/16 Inch Perforations						1/8 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1 1/4	1 1/2	2	3		1	1 1/4	1 1/2	2	3
2	12	18	26	46	87	2	21	33	44	74	149
2 1/2	12	17	24	40	80	2 1/2	20	30	41	69	135
3	12	16	22	37	75	3	20	29	38	64	128



Pressure Distribution Design Worksheet



END Connection



CENTER Connection

Perf Per Lateral: 10

Perf Per Lateral Equal Split: 5 | 5

OPTIONAL Perf Per Lateral Non-Equal Split*: |

* must not exceed maximum number perfs per lateral in table

End Feed Lateral Min Diameter: 1.50

Center Feed Lateral Min Diameter:

13. Total Number of Perforations equals the Number of Perforations per Lateral (9.) multiplied by the Number of Perforated Laterals.(4.)

10 Perf. Per Lat. X 4 Number of Perf. Lat. = 40 Total Number of Perf.

14. Calculate the Square Feet per Perforation.

Recommended value is 4-11 ft² per perforation, Does not apply to At-Grades

a. Bed Area = Bed Width (ft)(1.) X Bed Length (ft)(2.)

12.00 ft X 30.00 ft = 360 sq.ft

b. Square Foot per Perforation = Bed Area (14a) ÷ by Total Number of Perfs (13)

360 sqft ÷ 40 perf = 9 sq.ft/perf

15. Select Minimum Average Head: 1.0 ft

16. Select Perforation Discharge based on Table: 0.74 GPM per Perf

17. Flow Rate = Total Number of Perfs(13.) X Perforation Discharge(16.)

40 Perfs X 0.74 GPM per Perforation = 30.0 GPM

18. Volume of Liquid Per Foot of Distribution Piping (Table II): 0.110 Gallons/ft

19. Volume of Distribution Piping = Number of Perforated Laterals(4.) X Length of Laterals(6.) X Volume of Liquid Per Foot of Distribution Piping (18.)

4 X 28.0 ft X 0.110 gal/ft = 12.3 Gallons

20. Minimum Delivered Volume = Volume of Distribution Piping (19.) X 4

12.3 gal X 4 = 49.3 Gallons

21. Maximum Delivered Volume = Design flow x 25%

450 gpd X 25% = 112.5 Gallons

22. Minimum Delivered vs Maximum Delivered evaluation: Volume ratio correct

Perforation Discharge (GPM)				
Head (ft)	Perforation Diameter			
	1/8	3/16	7/32	1/4
1.0 ^a	0.18	0.41	0.56	0.74
1.5	0.22	0.51	0.69	0.9
2.0 ^b	0.26	0.59	0.80	1.04
2.5	0.29	0.65	0.89	1.17
3.0	0.32	0.72	0.98	1.28
4.0	0.37	0.83	1.13	1.47
5.0 ^c	0.41	0.93	1.26	1.65
1 foot	Dwellings with 3/16 inch to 1/4 inch perforations			
2 feet	Dwellings with 1/8 inch perforations			
	Other establishments and MSTs with 3/16 inch to 1/4 inch perforations			
5 feet	Other establishments and MSTs with 1/8 inch perforations			

Table II 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

Comments/Special Design Considerations:

1. PUMP CAPACITY

Project ID:

v 04.02.2024

Pumping to Gravity or Pressure Distribution:

Pressure

A. If pumping to gravity enter the gallon per minute of the pump:

GPM (10 - 45 gpm)

B. If pumping to a pressurized distribution system:

30.0 GPM

C. Enter pump description:

Equalization/Time Dosing

2. HEAD REQUIREMENTS

A. Elevation Difference between pump and point of discharge:

12.0 ft

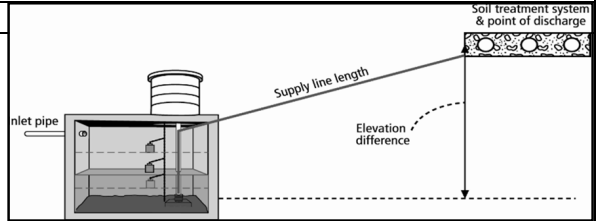
B. Distribution Head Loss:

5 ft

C. Additional Head Loss*:

ft (due to special equipment, etc.)

* Common additional head loss: gate valve = 1 ft each, globe valve = 1.5 ft each, splitter valve = see manufacturers details



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:

25 ft

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

Friction Loss = 2.4 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*

$$25 \text{ ft} \times 1.25 = 31.3 \text{ ft}$$

G. Calculate *Supply Friction Loss* by multiplying *Friction Loss Per 100ft(E.)* by the *Equivalent Pipe Length(F.)* and divide by 100.

Supply Friction Loss =

$$2.4 \text{ ft per 100ft} \times 31.3 \text{ ft} \div 100 = 0.7 \text{ ft}$$

H. *Total Head* requirement is the sum of the *Elevation Difference(2A)* + *Distribution Head Loss(2B)* + *Additional Head Loss(2C)* + *Supply Friction Loss(2G)*

$$12 \text{ ft} + 5.0 \text{ ft} + \text{ft} + 0.7 \text{ ft} = 17.7 \text{ ft}$$

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

3. PUMP SELECTION

A pump must be selected to deliver at least **30.0** GPM with at least **17.7** feet of total head.

Comments:

Blank area for comments.

Project ID: _____

v 04.02.2024

DETERMINE TANK CAPACITY AND DIMENSIONS

1. A. Design Flow: GPD B. Tank Use:
- C. Percentage of Design Flow % Gal Up to 75% design flow is normal for Design percentage
- D. Code minimum pump tank capacity: Gal E. Recommended capacity: Gal

2. A. Tank Manufacturer: B. Tank Model:
- C. Capacity from manufacturer: Gallons *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.*
- D. Liquid depth of tank from manufacturer: inches
- E. Gallons per inch: Gallons per inch

DETERMINE DOSING VOLUME

3. *Volume to Cover Pump* (The inlet of pump should be 4 inches from the bottom of the tank & 2 inches covering the pump recommended)

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

(in + 2 inches) X Gallons Per Inch = Gallons

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

-Item 19 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: GPD X 0.25 = Gallons (maximum dose) inches/dose

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

7. Calculate *Doses Per Day* = Percentage Design Flow(1C) ÷ *Delivered Volume*(6.)

gpd ÷ gal = Doses

8. Calculate Drainback:

A. *Diameter of Supply Pipe* = inches

B. *Length of Supply Pipe* = feet

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

D. *Drainback* = *Length of Supply Pipe*(8B) X *Volume of Liquid Per Lineal Foot of Pipe*(8C)

ft X gal/ft = Gallons

9. *Total Dosing Volume* = *Delivered Volume*(6.) + *Drainback*(8D)

gal + gal = Gallons

10. *Working Storage Volume* = Tank Volume (2C) - Volume to Cover Pump(3.) - Reserve Capacity (22.)

gal - gal - = 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

11. Required Flow Rate :

A. From Pump Curve - **Must verify after Install:** GPM*

B. Calculated GPM = Change in Depth (in) x Gallons Per Inch(2E) / Time Interval in Minutes

in X gal/in ÷ min = GPM

12. Select Flow Rate from 11 A or B: GPM*

**Note: This value must be adjusted after installation based on pump calibration.*

NORMAL OPERATION TIMER SETTINGS*

13. Calculate **TIMER ON** setting*:

Total Dosing Volume(9.) ÷ GPM(12.)

gal ÷ gpm = Minutes ON*

HR	MIN	SEC	
0	2.0	14	ON Time

14. Calculated **TIMER OFF** setting*:

Minutes Per Day (1440)/Doses Per Day(7.) - Minutes On(13.)

1440 min ÷ doses/day - min = Minutes OFF*

HR	MIN	SEC	
4	45.0	46	OFF Time

OPTIONAL PEAK ENABLE DOSING* - Designers option for peak flow operation

15. Peak Percentage of Design Flow %

16. Peak Pump Volume that meets both Minimum and Maximum Volume gal + Drainback gal

17. Peak Dose Volume gal

18. Peak TIMER ON gal ÷ gpm = min ON

HR	MIN	SEC	
			Peak ON

**Note: This value must be adjusted after installation based on pump calibration.*

19. Peak TIMER OFF: 1440 min ÷ doses/day - min On min Off

HR	MIN	SEC	
			Peak OFF

FLOAT SETTINGS Alarm and Pump are to be wired on separate circuits and inspected by the electrical inspector

20. Pump Off Float - Measuring from bottom of tank:

Distance to set Pump Off Float=Gallons to Cover Pump(3.) ÷ Gallons Per Inch(2E):

gal ÷ gal/in = inches

Reserve Capacity Gal

Alarm Depth in

21. Alarm Float - Measuring from bottom of tank (90% recommended):

Distance to set Alarm Float = Tank Depth(2D) X % of Tank Depth (90% recommended)

in X % = inches

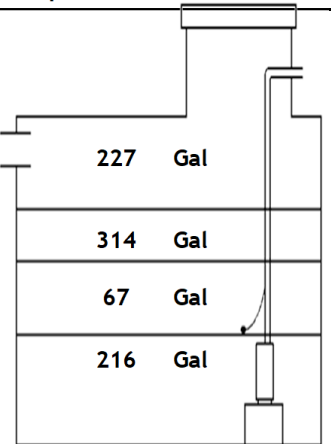
Storage Capacity Gal

Normal Dose Volume Gal

Pump Off in

22. Reserve Capacity in gallons = Tank Depth(2D) - Alarm Depth(21.) X Gallons Per Inch(2E)

(in - in) X = gallons



Soil Observation Log

Soil Verification for:	Don Krieger	Property Address	20767 508th Lane McGregor, MN 55760
Soil parent material(s): (Check all that apply)	<input checked="" type="checkbox"/> Outwash <input type="checkbox"/> Lacustrine <input type="checkbox"/> Loess <input type="checkbox"/> Till <input type="checkbox"/> Alluvium <input type="checkbox"/> Bedrock <input type="checkbox"/> Organic Matter		
Landscape Position: (check one)	<input checked="" type="checkbox"/> Summit <input type="checkbox"/> Shoulder <input type="checkbox"/> Back/Side Slope <input type="checkbox"/> Foot Slope <input type="checkbox"/> Toe Slope		

Vegetation	Grass	Soil survey map units	D458B Menahga Loamy Sand
Weather Conditions/Time of Day:	Cloudy 11:00 am		Date

Observation #/Location:		Observation 1				Observation Type:
Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)
0" - 5"	Sandy Loam	<5%	10YR 2/2			Granular
5" - 30"	Sand	<5%	10YR 5/4			Single grain
30" - 32"	Sandy Loam	<5%	10YR 6/4	10YR 5/8	Concentrations	S2
Observation #/Location:		Observation 2				Observation Type:

Observation #/Location:		Observation 2				Observation Type:
Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)
0" - 7"	Sandy Loam	<5%	10YR 2/2			Granular
7" - 32"	Sand	<5%	10YR 5/4			Single grain
32" - 35"	Sandy Loam	<5%	10YR 5/4	10YR 5/8	Concentrations	S2
Observation #/Location:		Observation 3				Observation Type:

Observation #/Location:		Observation 3				Observation Type:
Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)
0" - 4"	Sandy Loam	<5%	10YR 2/2			Granular
4" - 34"	Sand	<5%	10YR 5/4			Single grain

Comments: Rock Restriction in boring at 34" - no redox present to this depth

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

Eric Otte	2624	6/6/2024
(Designer/Inspector)	(License #)	(Date)

Septic Tank Absorption Fields -- Trench (MN)—Atkin County, Minnesota



Soil Map may not be valid at this scale.

Map Scale: 1:368 if printed on A landscape (11" x 8.5") sheet.



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



MAP LEGEND

Area of Interest (AOI)	Transportation
Area of Interest (AOI)	Rails
Soils	Interstate Highways
Soil Rating Polygons	US Routes
Extremely limited	Major Roads
Very limited	Local Roads
Moderately limited	Background
Slightly limited	Aerial Photography
Not limited	
Not rated or not available	
Soil Rating Lines	
Extremely limited	
Very limited	
Moderately limited	
Slightly limited	
Not limited	
Not rated or not available	
Soil Rating Points	
Extremely limited	
Very limited	
Moderately limited	
Slightly limited	
Not limited	
Not rated or not available	
Water Features	Streams and Canals

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this 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.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Aitkin County, Minnesota
 Survey Area Data: Version 24, Sep 9, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 13, 2021—Aug 14, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Septic Tank Absorption Fields — Trench (MN)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
D458B	Menahga loamy sand, 1 to 8 percent slopes	Slightly limited	Menahga (85%)	Excessive percolation (0.11)	0.6	100.0%
			Eagleview (8%)	Excessive percolation (0.11)		
			Andrusia (1%)	Excessive percolation (0.11)		
Totals for Area of Interest					0.6	100.0%

Rating	Acres in AOI	Percent of AOI
Slightly limited	0.6	100.0%
Totals for Area of Interest	0.6	100.0%

Description

Trench septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through perforated pipe. In this system the drain field is placed in a trench and covered with soil material. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat) is evaluated from a depth of 30 to 107 centimeters. Depth to saturation and depth to bedrock are evaluated from the surface to a depth of 203 centimeters. The frequency of ponding and flooding also is evaluated. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect this use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Slightly limited" indicates that the soil has features that are favorable for the specified use. "Moderately limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Good performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without special design or expensive installation procedures. "Extremely limited" indicates that the soil has one or more features that are very unfavorable for the specified use. The limitations generally cannot be overcome.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as the one shown for the map unit. The percent composition of each component in a particular map unit is given to help the user better understand the extent to which the rating applies to the map unit.

Other components with different ratings may occur in each map unit. The ratings for all components, regardless the aggregated rating of the map unit, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Aitkin County, Minnesota

D458B—Menahga loamy sand, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t4t1

Elevation: 590 to 2,030 feet

Mean annual precipitation: 23 to 33 inches

Mean annual air temperature: 36 to 48 degrees F

Frost-free period: 90 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Menahga and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Menahga

Setting

Landform: Hillslopes

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Sandy outwash

Typical profile

A - 0 to 3 inches: loamy sand

Bw - 3 to 17 inches: loamy sand

C - 17 to 79 inches: sand

Properties and qualities

Slope: 1 to 8 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: 10 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 4s

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: A

Ecological site: F057XY023MN - Dry Sandy Upland Coniferous Forest

Forage suitability group: Sandy (G057XN022MN)

Other vegetative classification: Sandy (G057XN022MN)

Hydric soil rating: No

Minor Components

Eagleview

Percent of map unit: 8 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: F088XY012MN - Very Dry Sandy Upland Coniferous Forest

Other vegetative classification: Sandy (G057XN022MN)

Hydric soil rating: No

Roscommon

Percent of map unit: 2 percent

Landform: Swales

Down-slope shape: Concave

Across-slope shape: Linear

Ecological site: F088XY008MN - Wet Mixed Forest

Other vegetative classification: Level Swale, Low AWC, Acid (G057XN007MN)

Hydric soil rating: Yes

Meehan

Percent of map unit: 2 percent

Landform: Swales

Down-slope shape: Concave

Across-slope shape: Linear

Ecological site: F088XY011MN - Moist Sandy Mixed Forest

Other vegetative classification: Level Swale, Low AWC, Acid (G057XN007MN)

Hydric soil rating: No

Leafriver, frequently ponded

Percent of map unit: 1 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Ecological site: F088XY007MN - Wet Depressional Forest

Other vegetative classification: Organic (G057XN014MN)

Hydric soil rating: Yes

Andrusia

Percent of map unit: 1 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F088XY012MN - Very Dry Sandy Upland
Coniferous Forest
Other vegetative classification: Sloping Upland, Low AWC, Acid
(G057XN008MN)
Hydric soil rating: No

Wurtsmith

Percent of map unit: 1 percent
Landform: Flats
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F088XY013MN - Dry Sandy Upland Coniferous
Forest
Other vegetative classification: Sloping Upland, Low AWC, Acid
(G057XN008MN)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 24, Sep 9, 2023



Septic System Management Plan for Below Grade Systems

The goal of a septic system is to protect human health and the environment by properly treating wastewater before returning it to the environment. Your septic system is designed to kill harmful organisms and remove pollutants before the water is recycled back into our lakes, streams and groundwater.

This **management plan** will identify the operation and maintenance activities necessary to ensure long-term performance of your septic system. Some of these activities must be performed by you, the homeowner. Other tasks must be performed by a licensed septic maintainer or service provider. However, it is **YOUR** responsibility to make sure all tasks get accomplished in a timely manner.

The University of Minnesota's *Septic System Owner's Guide* contains additional tips and recommendations designed to extend the effective life of your system and save you money over time.

Proper septic system design, installation, operation and maintenance means safe and clean water!

Property Owner	Don Krieger	Email	kriegsr1@aol.com
Property Address	20767 508th Lane McGregor	Property ID	29-0-017723
System Designer	Septic Check	Contact Info	320-983-2447
System Installer	Septic Check	Contact Info	320-983-2447
Service Provider/Maintainer		Contact Info	
Permitting Authority	Aitkin County	Contact Info	218-927-7342
Permit #		Date Inspected	

Keep this Management Plan with your Septic System Owner's Guide. The Septic System Owner's Guide includes a folder to hold maintenance records including pumping, inspection and evaluation reports. Ask your septic professional to also:

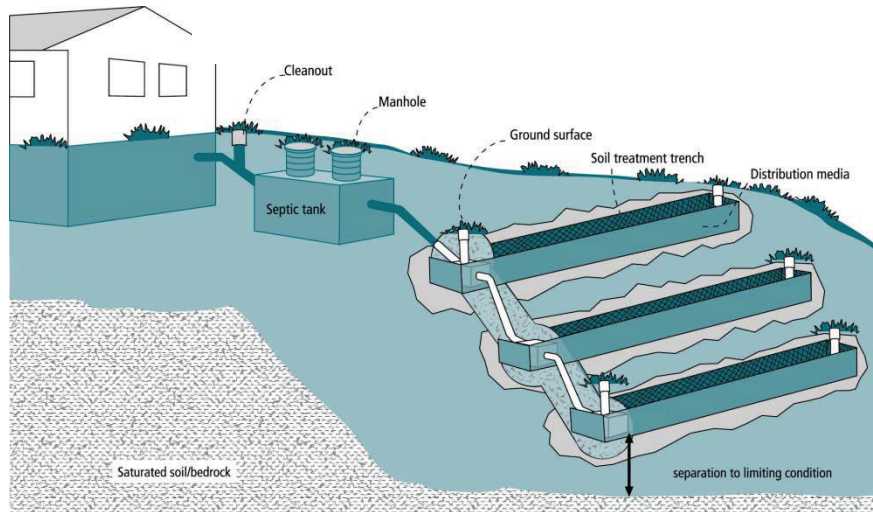
- Attach permit information, designer drawings and as-built of your system, if they are available.
- Keep copies of all pumping records and other maintenance and repair invoices with this document.
- Review this document with your maintenance professional at each visit; discuss any changes in product use, activities, or water-use appliances.

For a copy of the *Septic System Owner's Guide*, visit www.bookstores.umn.edu and search for the word "septic" or call 800-322-8642.

For more information see <http://septic.umn.edu>



Your Septic System



Septic System Specifics	
System Type: <input type="radio"/> I <input type="radio"/> II <input type="radio"/> III <input checked="" type="radio"/> IV* <input type="radio"/> V* (Based on MN Rules Chapter 7080.2200 – 2400) *Additional Management Plan required	<input checked="" type="checkbox"/> System is subject to operating permit* <input checked="" type="checkbox"/> System uses UV disinfection unit* Type of advanced treatment unit <u>Ecopod E50</u>

Dwelling Type	Well Construction
Number of bedrooms: <u>3</u> System capacity/ design flow (gpd): <u>450</u> Average daily flow (gpd): <u><450</u> Comments _____ Business? <input type="radio"/> Y <input checked="" type="radio"/> N What type? _____	Well depth (ft): <u>deep</u> <input type="checkbox"/> Cased well Casing depth: <u>50' +</u> <input type="checkbox"/> Other (specify): _____ Distance from septic (ft): <u>>50'</u> Is the well on the design drawing? <input checked="" type="radio"/> Y <input type="radio"/> N

Septic Tank	
<input type="checkbox"/> First tank Tank volume: <u>757</u> gallons Does tank have two compartments? <input checked="" type="radio"/> Y <input type="radio"/> N <input type="checkbox"/> Second tank Tank volume: _____ gallons <input type="checkbox"/> Tank is constructed of <u>concrete</u> <input type="checkbox"/> Effluent screen: <input type="radio"/> Y <input checked="" type="radio"/> N Alarm <input type="radio"/> Y <input checked="" type="radio"/> N	<input type="checkbox"/> Pump tank (if one) <u>757</u> gallons <input type="checkbox"/> Effluent pump make/model: <u>Goulds PE 51</u> Pump capacity _____ GPM TDH _____ Feet of head <input type="checkbox"/> Alarm <input checked="" type="radio"/> Y <input type="radio"/> N Location <u>Outdoor Powerpost</u>

Soil Treatment Area (STA)	
Trenches: _____ total lineal feet Number of trenches: _____ at _____ feet each STA size (width x length): <u>12</u> ft x <u>30</u> ft Location of additional STA: _____ Type of distribution media: <u>1.5" Washed Rock</u>	<input type="checkbox"/> Gravity distribution <input checked="" type="checkbox"/> Pressure distribution <input checked="" type="checkbox"/> Inspection ports <input checked="" type="checkbox"/> Cleanouts <input type="checkbox"/> Additional STA not available <input type="checkbox"/> Surface water diversions



Homeowner Management Tasks

These *operation and maintenance* activities are your responsibility. *Chart on page 6 can help track your activities.*

Your toilet is not a garbage can. Do not flush anything besides human waste and toilet paper. No wet wipes, cigarette butts, disposal diapers, used medicine, feminine products or other trash!

The system and septic tanks needs to be checked
every 36 months

Your service provider or pumper/maintainer should evaluate if your tank needs to be pumped more or less often.

Seasonally or several times per year

- *Leaks.* Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.
- *Soil treatment area.* Regularly check for wet or spongy soil around your soil treatment area. If surfaced sewage or strong odors are not corrected by pumping the tank or fixing broken caps and leaks, call your service professional. *Untreated sewage may make humans and animals sick.* Keep bikes, snowmobiles and other traffic off and control borrowing animals.
- *Alarms.* Alarms signal when there is a problem; contact your service professional any time the alarm signals.
- *Lint filter.* If you have a lint filter, check for lint buildup and clean when necessary. If you do not have one, consider adding one after washing machine.
- *Effluent screen.* If you do not have one, consider having one installed the next time the tank is cleaned along with an alarm.

Annually

- *Water usage rate.* A water meter or another device can be used to monitor your average daily water use. Compare your water usage rate to the design flow of your system (listed on the next page). Contact your septic professional if your average daily flow over the course of a month exceeds 70% of the design flow for your system.
- *Caps.* Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.
- *Water conditioning devices.* See Page 5 for a list of devices. When possible, program the recharge frequency based on *water demand (gallons)* rather than *time (days)*. Recharging too frequently may negatively impact your septic system. Consider updating to demand operation if your system currently uses time,
- *Review your water usage rate.* Review the Water Use Appliance chart on Page 5. Discuss any major changes with your service provider or pumper/maintainer.

During each visit by a service provider or pumper/maintainer

- Make sure that your service professional services the tank through the manhole. (NOT through a 4" or 6" diameter inspection port.)
- Ask how full your tank was with sludge and scum to determine if your service interval is appropriate.
- Ask your pumper/maintainer to accomplish the tasks listed on the Professional Tasks on Page 4.



Professional Management Tasks

These are the operation and maintenance activities that a pumper/maintainer performs to help ensure long-term performance of your system. At each visit a written report/record must be provided to homeowner.

Plumbing/Source of Wastewater

- Review the Water Use Appliance Chart on Page 5 with homeowner. Discuss any changes in water use and the impact those changes may have on the septic system.
- Review water usage rates (if available) with homeowner.

Septic Tank/Pump Tanks

- *Manhole lid.* A riser is recommended if the lid is not accessible from the ground surface. Insulate the riser cover for frost protection.
- *Liquid level.* Check to make sure the tank is not leaking. The liquid level should be level with the bottom of the outlet pipe. (If the water level is below the bottom of the outlet pipe, the tank may not be watertight. If the water level is higher than the bottom of the outlet pipe of the tank, the effluent screen may need cleaning, or there may be ponding in the soil treatment area.)
- *Inspection pipes.* Replace damaged or missing pipes and caps.
- *Baffles.* Check to make sure they are in place and attached, and that inlet/outlet baffles are clear of buildup or obstructions.
- *Effluent screen.* Check to make sure it is in place; clean per manufacturer recommendation. Recommend retrofitted installation if one is not present.
- *Alarm.* Verify that the alarm works.
- *Scum and sludge.* Measure scum and sludge in each compartment of each septic and pump tank, pump if needed.

Pump

- *Pump and controls.* Check to make sure the pump and controls are operating correctly.
- *Pump vault.* Check to make sure it is in place; clean per manufacturer recommendations.
- *Alarm.* Verify that the alarm works.
- *Drainback.* Check to make sure it is draining properly.
- *Event counter or elapsed time meter.* Check to see if there is an event counter or elapsed time meter for the pump. If there is one or both, calculate the water usage rate and compare to the anticipated use listed on Design and Page 2. Dose Volume: 67 gallons: Pump run time: 2.2 Minutes

Soil Treatment Area

- *Inspection pipes.* Check to make sure they are properly capped. Replace caps and pipes that are damaged.
- *Surfacing of effluent.* Check for surfacing effluent or other signs of problems.
- *Gravity trenches and beds.* Check the number of gravity trenches with effluent ponded in distribution media. Identify the percentage of the system in use. Determine if action is needed.
- *Pressure trenches and beds - Lateral flushing.* Check lateral distribution; if cleanouts exist, flush and clean at recommended frequency.
- *Vegetation* - Check to see that a good growth of vegetation is covering the system.

All other components – evaluate as listed here:



Water-Use Appliances and Equipment in the Home

Appliance	Impacts on System	Management Tips
Garbage disposal	<ul style="list-style-type: none"> • Uses additional water. • Adds solids to the tank. • Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area. 	<ul style="list-style-type: none"> • Use of a garbage disposal is not recommended. • Minimize garbage disposal use. Compost instead. • To prevent solids from exiting the tank, have your tank pumped more frequently. • Add an effluent screen to your tank.
Washing machine	<ul style="list-style-type: none"> • Washing several loads on one day uses a lot of water and may overload your system. • Overloading your system may prevent solids from settling out in the tank. Unsettled solids can exit the tank and enter the soil treatment area. 	<ul style="list-style-type: none"> • Choose a front-loader or water-saving top-loader, these units use less water than older models. • Limit the addition of extra solids to your tank by using liquid or easily biodegradable detergents. Limit use of bleach-based detergents and fabric softeners. • Install a lint filter after the washer and an effluent screen to your tank • Wash only full loads and think even – spread your laundry loads throughout the week.
Dishwasher	<ul style="list-style-type: none"> • Powdered and/or high-phosphorus detergents can negatively impact the performance of your tank and soil treatment area. • New models promote “no scraping”. They have a garbage disposal inside. 	<ul style="list-style-type: none"> • Use gel detergents. Powdered detergents may add solids to the tank. • Use detergents that are low or no-phosphorus. • Wash only full loads. • Scrape your dishes anyways to keep undigested solids out of your septic system.
Grinder pump (in home)	<ul style="list-style-type: none"> • Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area. 	<ul style="list-style-type: none"> • Expand septic tank capacity by a factor of 1.5. • Include pump monitoring in your maintenance schedule to ensure that it is working properly. • Add an effluent screen.
Large bathtub (whirlpool)	<ul style="list-style-type: none"> • Large volume of water may overload your system. • Heavy use of bath oils and soaps can impact biological activity in your tank and soil treatment area. 	<ul style="list-style-type: none"> • Avoid using other water-use appliances at the same time. For example, don’t wash clothes and take a bath at the same time. • Use oils, soaps, and cleaners in the bath or shower sparingly.
Clean Water Uses	Impacts on System	Management Tips
High-efficiency furnace	<ul style="list-style-type: none"> • Drip may result in frozen pipes during cold weather. 	<ul style="list-style-type: none"> • Re-route water directly out of the house. Do not route furnace recharge to your septic system.
Water softener Iron filter Reverse osmosis	<ul style="list-style-type: none"> • Salt in recharge water may affect system performance. • Recharge water may hydraulically overload the system. 	<ul style="list-style-type: none"> • These sources produce water that is not sewage and should not go into your septic system. • Reroute water from these sources to another outlet, such as a dry well, drintile or old drainfield.
Surface drainage Footing drains	<ul style="list-style-type: none"> • Water from these sources will overload the system and is prohibited from entering septic system. 	<ul style="list-style-type: none"> • When replacing, consider using a demand-based recharge vs. a time-based recharge. • Check valves to ensure proper operation; have unit serviced per manufacturer directions



Homeowner Maintenance Log

Track maintenance activities here for easy reference. See list of management tasks on pages 3 and 4.

Activity	Date accomplished									
<i>Check frequently:</i>										
Leaks: check for plumbing leaks *										
Soil treatment area check for surfacing **										
Lint filter: check, clean if needed *										
Alarms **										
<i>Check annually:</i>										
Water usage rate (max gpd: <u>450</u>)										
Caps: inspect, replace if needed										
Water use appliances – review use										
Other:										

*Monthly

** Quarterly

*** Bi-Annually

Notes: If flow exceeds system capacity, check for and repair any leaks into the system, including household plumbing fixtures. If system ponds or otherwise cannot handle flow, repair options include; add time dosing, adding pre-treatment, or expanding the system.

“As the owner of this SSTS, I understand it is my responsibility to properly operate and maintain the sewage treatment system on this property, utilizing the Management Plan. If requirements in this Management Plan are not met, I will promptly notify the permitting authority and take necessary corrective actions. If I have a new system, I agree to adequately protect the reserve area for future use as a soil treatment system.”

Property Owner Signature: Donald Kueger Date 6/19/21
 Management Plan Prepared By: Eric Otte Certification # 8453
 Permitting Authority: Aitkin County



This Management Plan identifies some basic requirements for proper operation and maintenance of the ECOPOD wastewater treatment device for residential use. Refer to the manufacturer’s Operation and Maintenance Manual for ECOPOD wastewater treatment products for detailed instructions on proper system operation and maintenance. Refer to your soil treatment system management plan (below or above-grade) for additional management requirements.

The ECOPOD Manual, submitted by the manufacturer (Delta Environmental Products) as part of the registration of this product in Minnesota, can be found at the Minnesota Pollution Control Agency’s website <http://www.pca.state.mn.us/programs/ists/productregistration.html>.

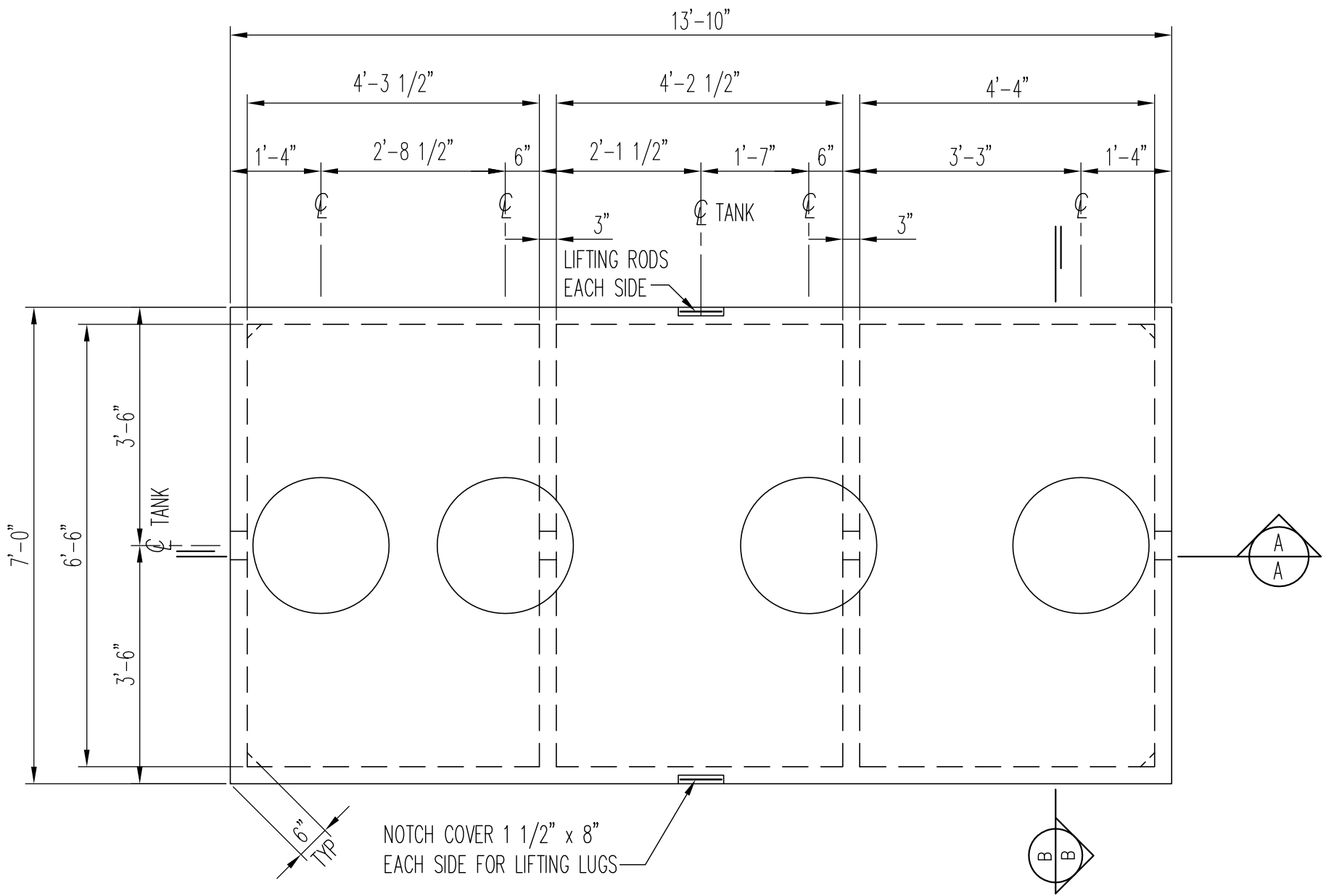
SYSTEM COMPONENT	TASK	FREQUENCY	RESPONSIBLE PARTY
ECOPOD Wastewater Treatment Device	Monitor alarm	On-going	Homeowner
	Keep vents on blower housing clear of obstruction	On-going	Homeowner
	Check and clean air filter on the air pump	Every three months	Homeowner or Service Provider
	Monitor flow	Every six months	Service Provider
	Check mechanical and electrical components	Every six months	Service Provider
	Perform operational field tests on influent/effluent quality including odor, color, turbidity, temperature, dissolved oxygen and pH as appropriate	Every six months	Service Provider
	Sample effluent as required in the local Operating Permit	See Operating Permit*	Service Provider
	Check sludge level in all sewage tanks; follow manufacturers recommendations for solids removal	Every six months	Service Provider & Maintainer
	For seasonal use, follow manufacturers guidelines	As required based on seasonal usage	Service Provider

* Systems designed to meet treatment level A or B with UV disinfection must collect effluent sample for fecal coliform annually at a minimum.

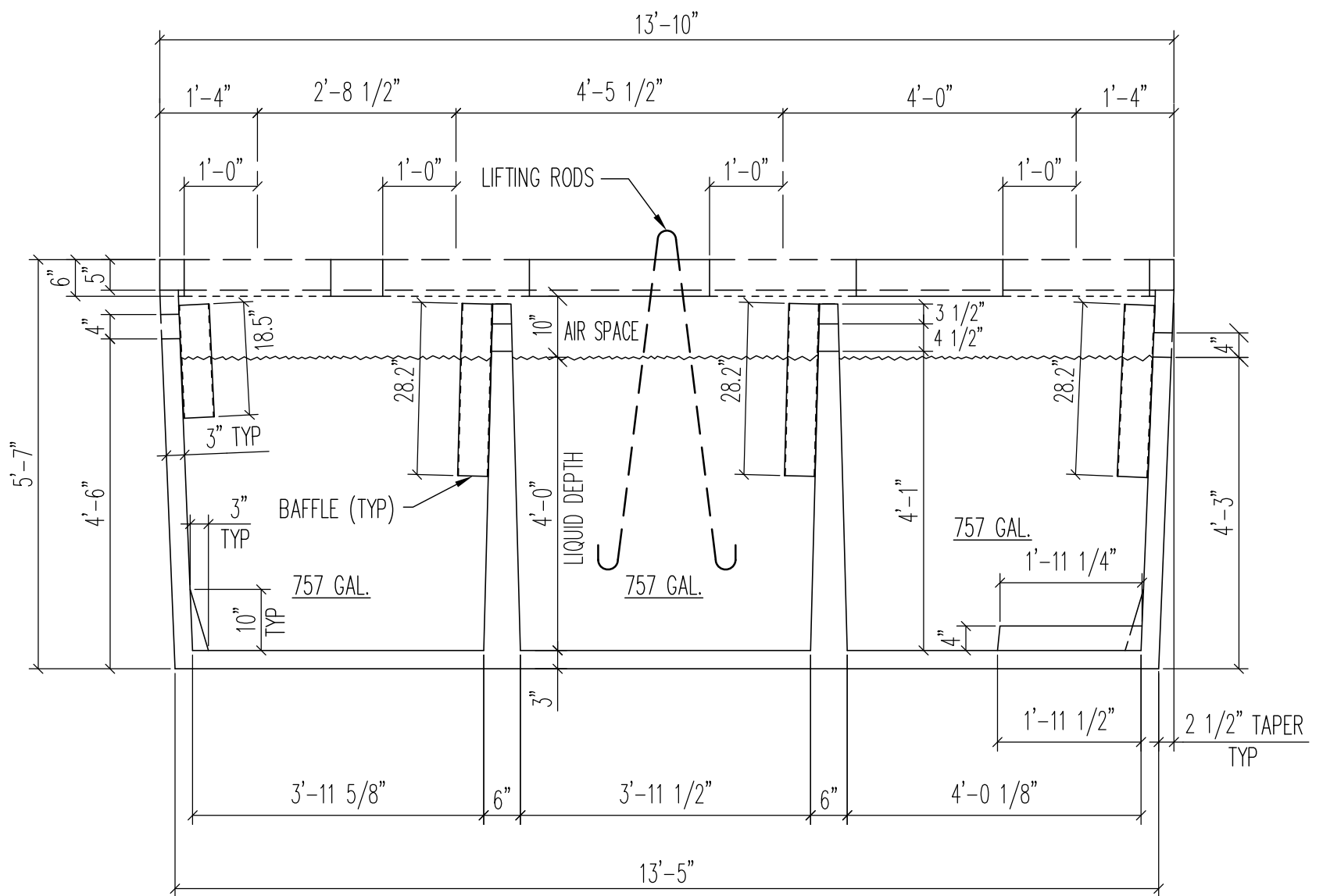
At the time of each service visit, Form 7-2: Aerobic Treatment Unit should be completed. See <http://www.onsiteconsortium.org/omspchecklists.html>

Items not permitted in the ECOPOD wastewater systems are specified in the ECOPOD Manual for Minnesota.

Sampling requirements may be specified in local operating permits. The protocol for collection of wastewater samples is specified in the ECOPOD Manual for Minnesota.



2250 GALLON 3 COMP. TANK
 $1/2" = 1'-0"$



SECTION A-A
 $1/2" = 1'-0"$

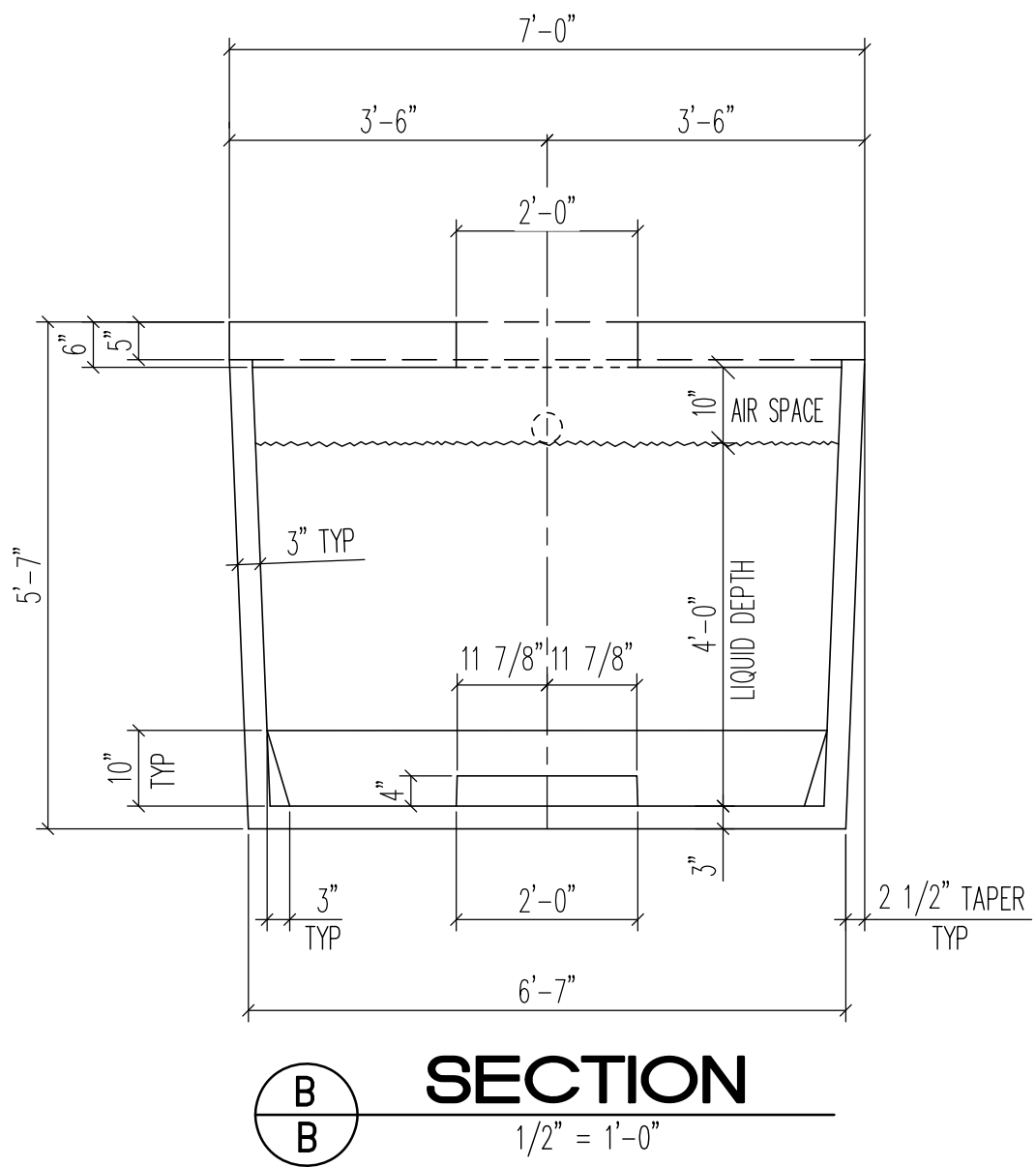
NOTE:

1. PROVIDE MINIMUM 1" CLEAR BETWEEN TOP OF BAFFLE AND UNDERSIDE OF LID.

2250 GALLON 3 COMP.
 SEPTIC TANK
 (2250 3C)

Brown Wilbert

WEIGHT= 21,760#
 MAX. SOIL COVER= 8'-0"
 TOTAL LIQUID VOLUME= 2271 GAL.



NOTE:

1. PROVIDE MINIMUM 1" CLEAR BETWEEN TOP OF BAFFLE AND UNDERSIDE OF LID.

2250 GALLON 3 COMP.
SEPTIC TANK
(2250 3C)

Brown *Wilbert*

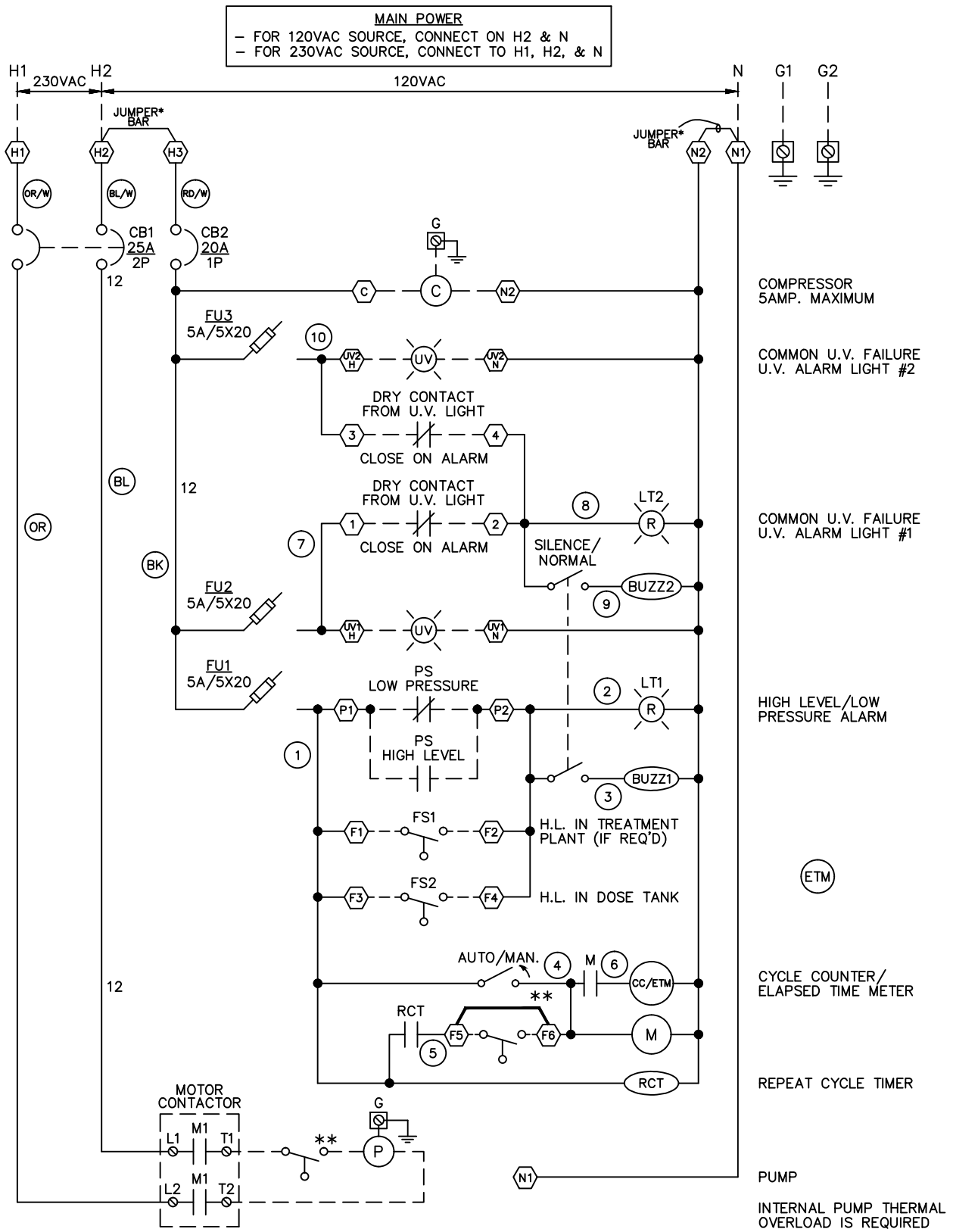
WEIGHT= 21,760#
MAX. SOIL COVER= 8'-0"
TOTAL LIQUID VOLUME= 2271 GAL.



CP2210/MN
CONTROL PANEL

Delta Treatment Systems
9125 Comar Drive
Walker, LA 70785
(225) 665-6162 Fax (800) 219-9183

CP2210/MN



MAIN POWER
 - FOR 120VAC SOURCE, CONNECT ON H2 & N
 - FOR 230VAC SOURCE, CONNECT TO H1, H2, & N

H1 H2
 230VAC

120VAC

N G1 G2

JUMPER*
 BAR

JUMPER*
 BAR

H1 (OR/W)
 H2 (BL/W)
 H3 (RD/W)

CB1 25A 2P
 CB2 20A 1P

G

COMPRESSOR
 5AMP. MAXIMUM

COMMON U.V. FAILURE
 U.V. ALARM LIGHT #2

COMMON U.V. FAILURE
 U.V. ALARM LIGHT #1

HIGH LEVEL/LOW
 PRESSURE ALARM

(ETM)

CYCLE COUNTER/
 ELAPSED TIME METER

REPEAT CYCLE TIMER

PUMP
 INTERNAL PUMP THERMAL
 OVERLOAD IS REQUIRED

FS1-HIGH LEVEL FLOAT SWITCH IN TREATMENT PLANT
 FS2-HIGH LEVEL FLOAT SWITCH IN DOSE TANK

* REMOVE JUMPER BARS FOR SEPERATE SOURCES.
 ** IF PUMP REQUIRES SEPARATE PERMISSIVE FLOAT,
 REMOVE JUMPER AND CONNECT FLOAT TO (F5) & (F6).

PUMP POWER
 - FOR 120VAC, CONNECT PUMP HOT LEAD TO
 T1 ON MOTOR CONTACTOR, AND NEUTRAL ON N1
 - FOR 230VAC, CONNECT PUMP TO T1 & T2

MAX. RATINGS
 2HP@230V/1Ø
 3/4HP@115V/1Ø
 MAX. 15A

REV.	DATE	REVISION DESCRIPTION	BY
-	-	-	-
-	-	-	-

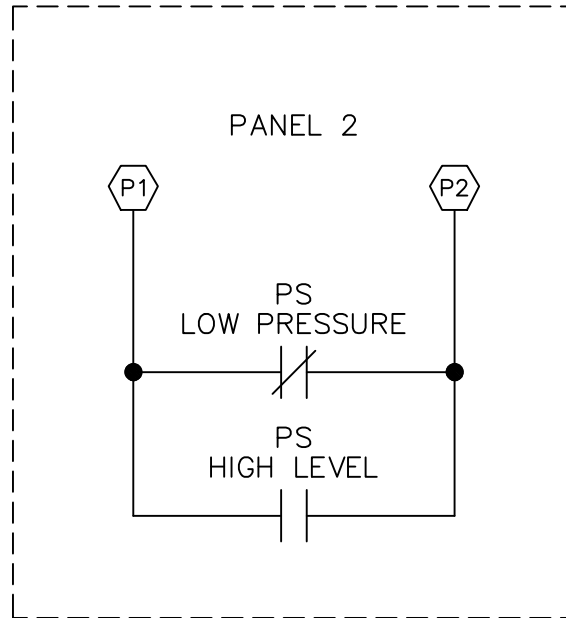


9125 Comar Drive
 Walker, LA
 70785
 Ph. (225) 665-6162
 Fax (800)219-9183

SCHEMATIC DIAGRAM

COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL, IT IS THE PROPERTY OF PENTAIR PUMP GROUP, IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF PENTAIR PUMP GROUP.	PLOT SCALE NTS	DRAWING NUMBER CP2210/MN	DRAWN BY BMF	DATE 04/23/19	SHEET OF 1 4	REV. A
--	-------------------	-----------------------------	-----------------	------------------	-----------------	-----------

PRESSURE SWITCH PANEL LOCATED
NEAR COMPRESSOR



REV.	DATE	REVISION DESCRIPTION	BY
-	-	-	-
-	-	-	-



9125 Comar Drive
Walker, LA
70785
Ph. (225) 665-6162
Fax (800)219-9183

SCHEMATIC DIAGRAM

COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS THE PROPERTY OF PENTAIR PUMP GROUP, IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF PENTAIR PUMP GROUP.

PLOT SCALE
NTS

DRAWING NUMBER
CP2210/MN

DRAWN BY
BMF

DATE
04/23/19

SHEET
OF
2 4

REV.
A

HOW TO SET THE REPEAT CYCLE TIMER

EXAMPLES OF SETTINGS

	Selector			Dial		Time On	Time Off
	3	4 (On)	7 (Off)	Orange (On)	Green (Off)		
*	1.2	10m	10h	.7	.2	7min	2hours
	1.2	10m	10h	1.2	1.2	12min	12hours
	3.0	10m	hrs	2.0	2.0	20min	2hours
	3.0	10m	hrs	3.0	3.0	30min	3hours

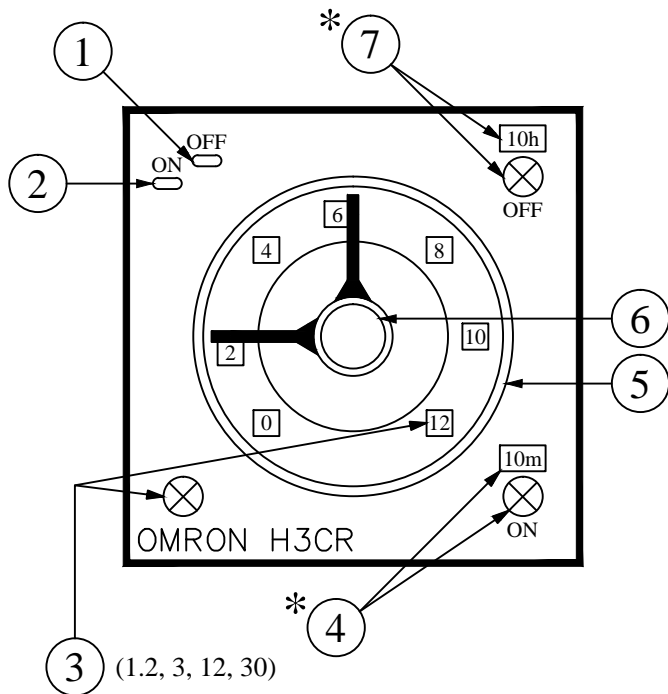
* = Factory Settings

Time On = 4(On) Setting x Orange Setting
 Time Off = 7(Off) Setting x Green Setting

Factory Setting:

Time On = 10m x 0.7 = 7 Minutes

Time Off = 10h x 0.2 = 2 Hours



* H3CR-F8N
 (10s, 10m, hrs, 10h)

- ① OFF Indicator (Green)
 - ② ON Indicator (Orange)
 - ③ Range Time Selector
 - ④ ON Time Unit Selector
 - ⑤ Setting dial for OFF (Green pointer)
 - ⑥ Setting dial for ON (Orange pointer)
 - ⑦ OFF Time Unit Selector
- Note: If pointer is turned counterclockwise until overranged, instantaneous output will be set.

REV.	DATE	REVISION DESCRIPTION	BY
-	-	-	-
-	-	-	-




9125 Comar Drive
 Walker, LA
 70785
 Ph. (225) 665-6162
 Fax (800)219-9183

REPEAT CYCLE TIMER INSTRUCTIONS

COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL, IT IS THE PROPERTY OF PENTAIR PUMP GROUP, IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF PENTAIR PUMP GROUP.		PLOT SCALE NTS	DRAWING NUMBER CP2210/MN	DRAWN BY BMF	DATE 04/23/19	SHEET OF 4 4	REV. A
--	--	-------------------	-----------------------------	-----------------	------------------	-----------------	-----------

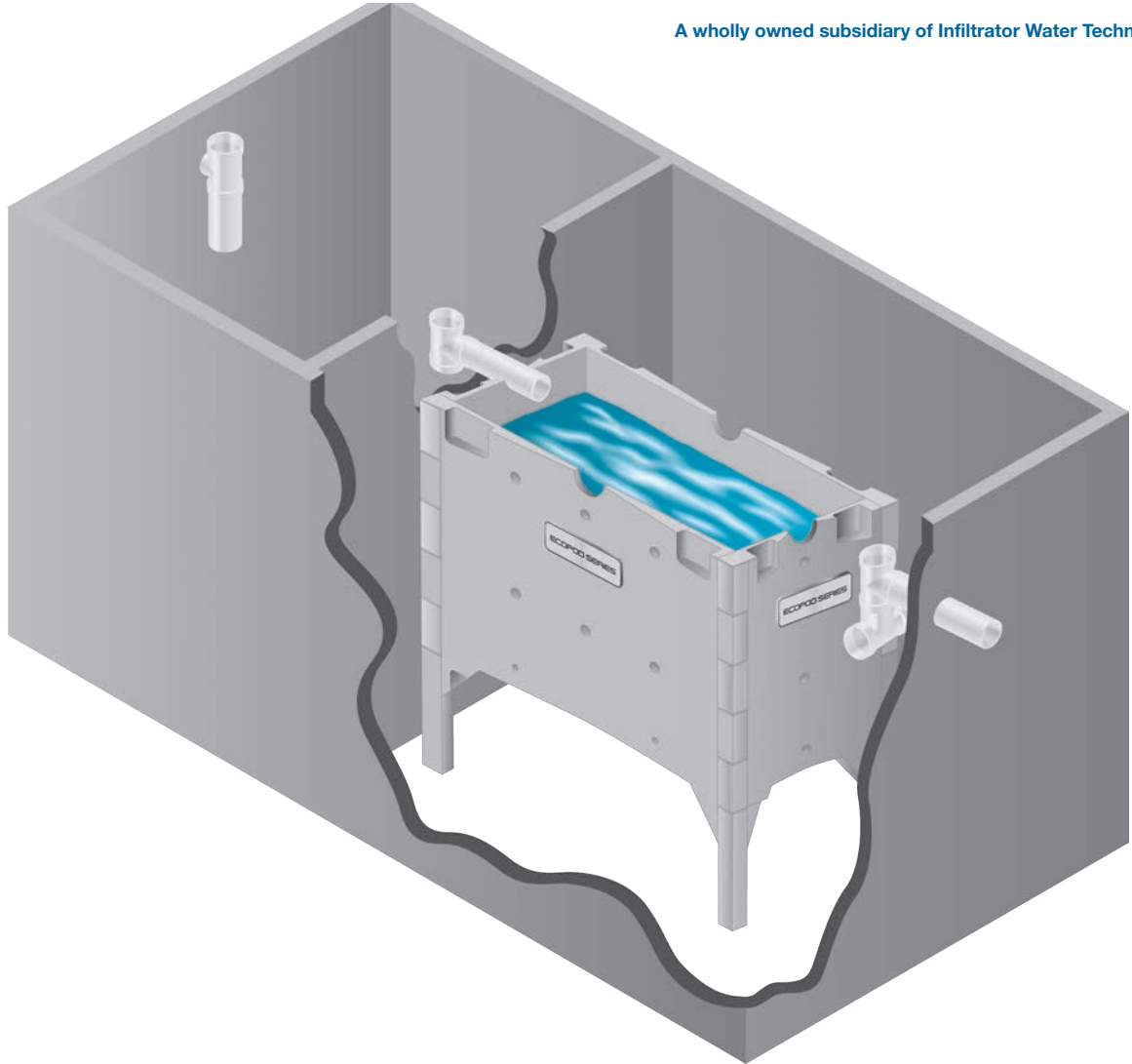
BILL OF MATERIALS

ITEM	QTY.	MANUFACTURER	PART NUMBER	DESCRIPTION
1	1	STAHLIN	RJ1412HPL	ENCLOSURE 1
2	1	STAHLIN	BP1412AL	BACKPLATE
3	1	SQUARE D	QOU225	CB1
4	1	SQUARE D	QOU120	CB2
5	3	PHOENIX CONTACT	UT4-HESI	FUSE HOLDER
6	3	BUSSMANN	BK/GMA-SA	FU1,2
7	2	ARK-LES	-	BUZZER1,2
8	2	ABB	CL100R W/BULBS	RED PILOT LIGHT
9	1	EZ SWITCH	18159-5	SILENCE SWITCH
10	1	OMRON	H3CR-F8N-100-240AC	REPEAT CYCLE TIMER
11	1	EZ SWITCH	01-796520-5D	AUTO-MANUAL SWITCH
12	1	ABB	AF16-30-10-13	CONTACTOR
13	1	CANTEX	5133705	ENCLOSURE 2
14	1	HERGA	-	DUAL PRESSURE SWITCH
15	17	PHOENIX	UT4	TERMINALS
16	6	PHOENIX	UT6	TERMINALS
17	1	EATON	CEC-48DR-406	COMBO COUNTER/ETM
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

					9125 Comar Drive Walker, LA 70785 Ph. (225) 665-6162 Fax (800)219-9183	<h3>BILL OF MATERIALS</h3>				
REV.	DATE	REVISION	DESCRIPTION	BY						
-	-	-	-	-						
-	-	-	-	-						
COMPANY CONFIDENTIAL: INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS THE PROPERTY OF PENTAIR PUMP GROUP, IT IS TO BE USED SOLELY FOR THE PURPOSE PROVIDED, AND IT IS NOT TO BE DISCLOSED TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF PENTAIR PUMP GROUP.					PLOT SCALE NTS	DRAWING NUMBER CP2210/MN	DRAWN BY BMF	DATE 04/23/19	SHEET OF A	REV. A



A wholly owned subsidiary of Infiltrator Water Technologies, LLC



DELTA TREATMENT SYSTEMS

ECOPOD-N[®]

NSF/ANSI 40 AND 245

RESIDENTIAL WASTEWATER

TREATMENT SYSTEM



DELTA TREATMENT SYSTEMS

NSF/ANSI 40 AND 245

Residential Wastewater Treatment System

ECOPOD-N® Advanced Wastewater Treatment

ECOPOD-N is the clear choice for an on-site wastewater disposal system where nitrogen reduction is required. It was tested under Standard 40 and 245 of NSF/ANSI with an average nitrogen reduction of greater than 50% and met and exceeded Class 1 requirements with an average effluent quality of 9 mg/L BOD5 and 8 mg/L TSS.

ECOPOD-N directly contributes to a cleaner, safer environment using the bacteria nature provides. As a result of air being pumped into the system, the bacteria thrive and grow in much greater numbers than would occur naturally. This "overpopulation" of bacteria speeds the process of breaking down the sewage, making it safe for release into the environment.

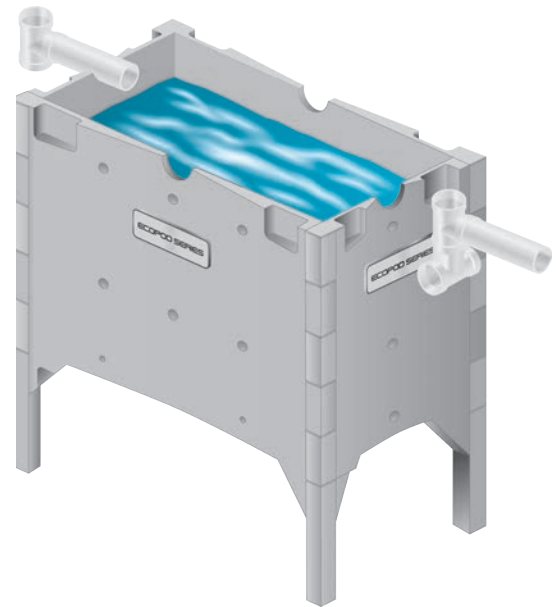
ECOPOD-N significantly reduces BOD, TSS, fecal coliforms, and nutrients in the wastewater. Nitrification and denitrification occur in a single tank.

ECOPOD-N series uses a fixed film process which is characteristically stable, reliable and sturdy. Fixed film is a preferred treatment process for on-site wastewater treatment systems.

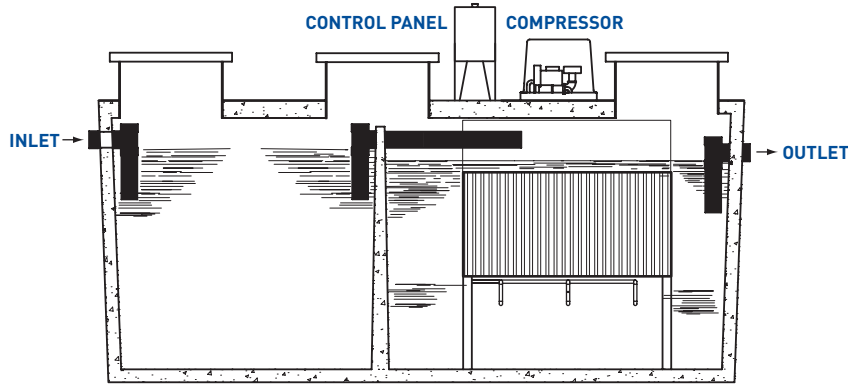
ECOPOD-N Available Offering

ECOPOD-N Units are manufactured to specifications according to wastewater flow requirements. Units are available in the following sizes:

- Model E50-N treating 500 gallons per day
- Model E60-N treating 600 gallons per day
- Model E75-N treating 750 gallons per day
- Model E100-N treating 1,000 gallons per day
- Model E150-N treating 1,500 gallons per day



Certified to NSF/ANSI 245 for Nitrogen Reduction



Why Use ECOPOD-N® Advanced Wastewater Treatment?

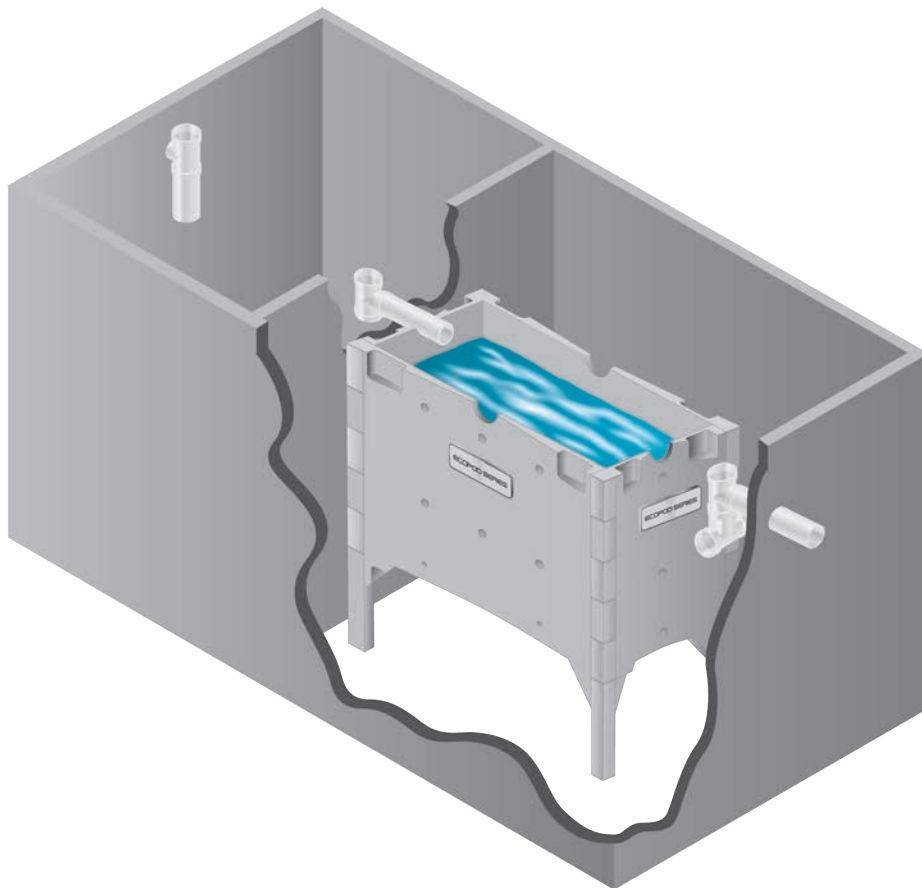
- Built with technology which meets NSF/ANSI 40 and 245 – Class 1
- Completely submerged reactor disposes of wastewater quietly, efficiently, and with no odor
- Typical effluent quality of 9 mg/L BOD5 and 8 mg/L TSS
- No inner tank filters, screens or diffusers to service
- Patented non-clogging air delivery system
- Remote mount air compressor
- Low initial capital cost and operation
- Complete on-site system designs
- ECOPOD-N treatment systems are pre-engineered, requiring no special expertise to design, specify, or install
- True attached growth system – no mixed liquor
- Integral clarifier – no external clarifier required

Manufactured According to Need

Choices of fabrication are offered, consistent with your preference or regulatory requirements:

- Fiberglass Construction
- Concrete Construction*
- Polypropylene Construction
- Round or Rectangular

*Based on regional availability



Design Components Material Specifications

Shown is the ECOPOD-N MODEL E50-N

Treatment Capacity	500 GPD
Electrical Requirement	115/1/60
Aerator Compressor	EN50

Other Delta Treatment Systems Products

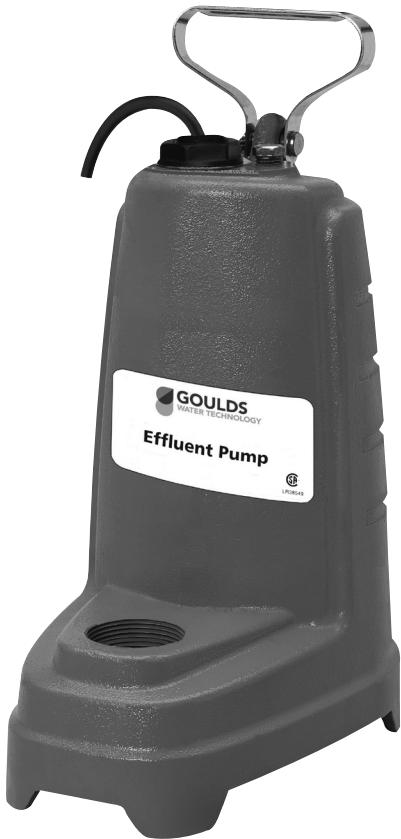
A respected leader in wastewater treatment with decades of technical design and manufacturing experience, Delta Treatment Systems is committed to the continuing development of new products in the 21st century.



Distributor Network

ECOPOD® Series Advanced Wastewater Treatment Systems and accessories are sold, installed and serviced by certified distributors who are fully trained to provide all necessary components and to ensure professional installation.





FEATURES

- Corrosion resistant construction
- Cast iron body
- Thermoplastic impeller and cover.
- Upper sleeve and lower heavy duty ball bearing construction.
- Motor is permanently lubricated for extended service life.
- Powered for continuous operation.
- All ratings are within the working limits of the motor.
- Quick disconnect power cord, 20' standard length, heavy duty 16/3 SJTW with 115 or 230 volt grounding plug.
- Complete unit is heavy duty, portable and compact.
- Mechanical seal is carbon, ceramic, BUNA and stainless steel.
- Stainless steel fasteners

PE

SUBMERSIBLE EFFLUENT PUMP



APPLICATIONS

Specially designed for the following uses:

- Mound Systems
- Effluent/Dosing Systems
- Low Pressure Pipe Systems
- Basement Draining
- Heavy Duty Sump/Dewatering

SPECIFICATIONS

Pump - General:

- Discharge: 1½" NPT
- Temperature: 104°F (40°C) maximum, continuous when fully submerged.
- Solids handling: ½" maximum sphere.
- Automatic models include a float switch.
- Manual models available.
- Pumping range: see performance chart or curve.

PE31 Pump:

- Maximum capacity: 53 GPM
- Maximum head: 25' TDH

PE41 Pump:

- Maximum capacity: 61 GPM
- Maximum head: 29' TDH

PE51 Pump:

- Maximum capacity: 70 GPM
- Maximum head: 37' TDH

MOTOR

General:

- Single phase
- 60 Hertz
- 115 and 230 volts
- Built-in thermal overload protection with automatic reset.
- Class B insulation
- Oil-filled design
- High strength carbon steel shaft

PE31 Motor:

- .33 HP, 3000 RPM
- 115 volts
- Shaded pole design

PE41 Motor:

- .40 HP, 3400 RPM
- 115 and 230 volts
- PSC design

PE51 Motor:

- .50 HP, 3400 RPM
- 115 and 230 volts
- PSC design

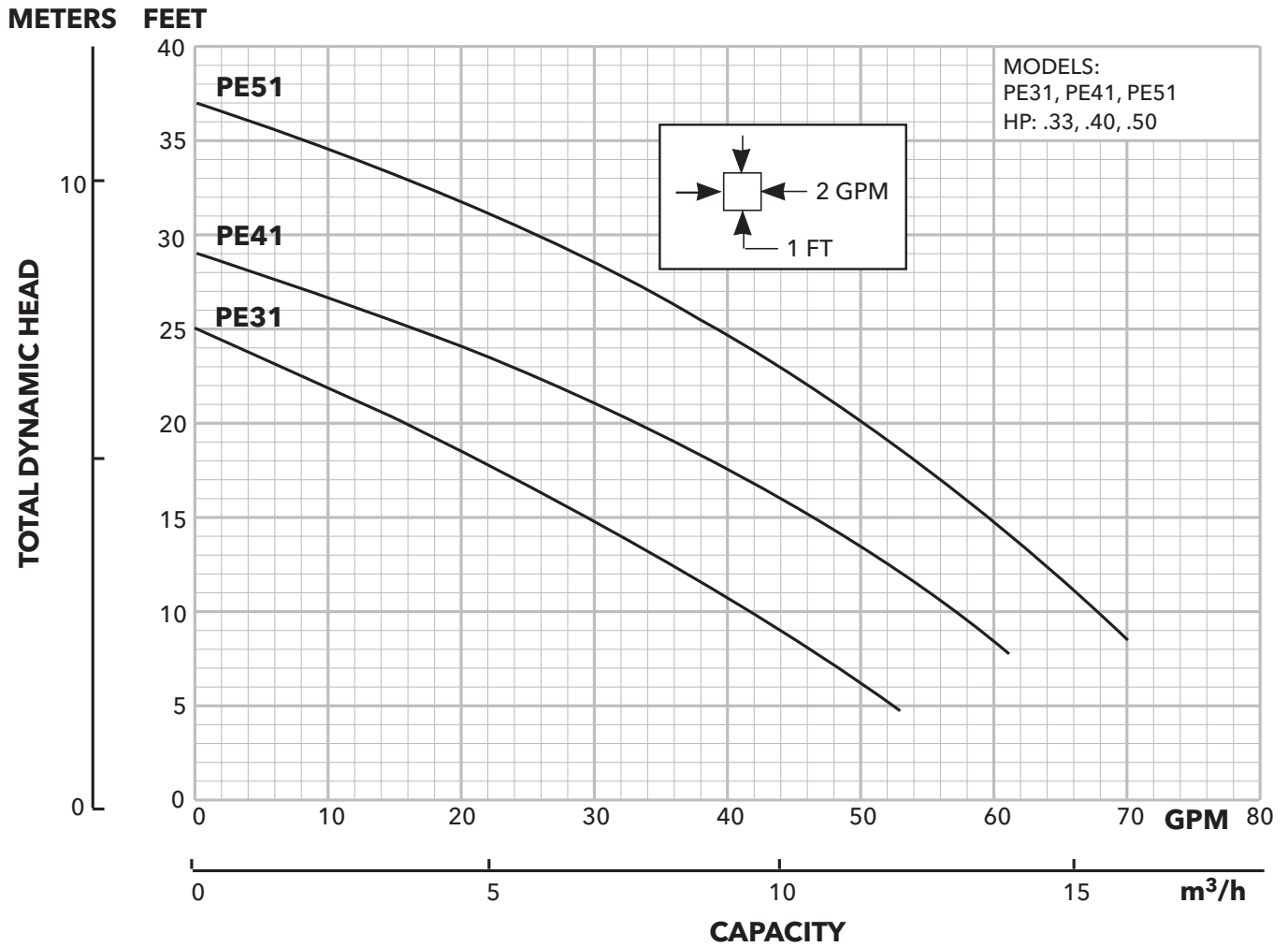
AGENCY LISTINGS



Tested to UL 778 and CSA 22.2 108 Standards
By Canadian Standards Association
File #LR38549

PUMP INFORMATION

Order No.	HP	Volts	Amps	Minimum Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight lbs/kg
PE31M	0.33	115	12	20	1	Manual / No Switch	20'	1.5"	18"	.5"	31 / 14.1
PE31P1						Piggyback Float Switch					
PE41M	0.4	230	7.5	15		Manual / No Switch					
PE41P1				Piggyback Float Switch							
PE42M	0.4	230	3.7	10		Manual / No Switch					
PE42P1				Piggyback Float Switch							
PE51M	0.5	115	9.5	20		Manual / No Switch					
PE51P1						Piggyback Float Switch					
PE52M		230	4.7	10		Manual / No Switch					
PE52P1						Piggyback Float Switch					



PERFORMANCE RATINGS

PE31

Total Head (feet of water)	GPM
5	52
10	42
15	29
20	16
25	0

PE41

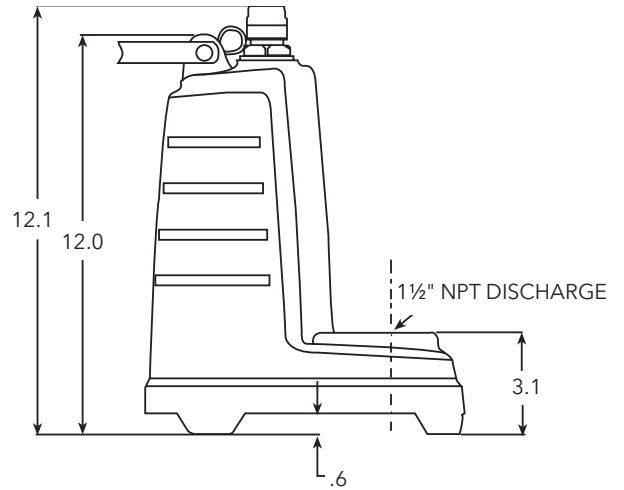
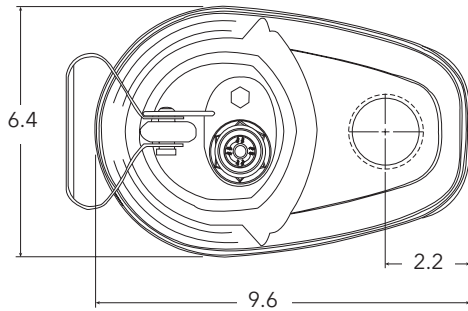
Total Head (feet of water)	GPM
8	61
10	57
15	46
20	33
25	16

PE51

Total Head (feet of water)	GPM
10	67
15	59
20	50
25	39
30	26
35	8

DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)



xylem
Let's Solve Water

Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.gouldswatertechnology.com

Goulds is a registered trademark of Goulds Pumps, Inc. and is used under license.
© 2016 Xylem Inc. BPE R1 September 2016

Aitkin County Environmental Services
Planning & Zoning
 307 Second St. NW, Room 219
 Aitkin, MN 56431
 218-927-7342
 aitkinpz@co.aitkin.mn.us

Wastewater Treatment and Dispersal Operating Permit

Operating Permit # _____
 Application # _____
 Date issued: _____
 Expiration date: _____
 Renewal period: _____

(Fields above are issued by the County)

Facility Information

Permittee name: Don Krieger Phone number: 612-709-0469

Mailing address: 1361 Woodcrest Ave

City: Shoreview State: MN Zip code: 55126

Property ID number: 29-0-017723

Property address: 20767 508th Lane McGregor, MN 55760

System type: Type IV Treatment level: A

System design flow (gpd): 450 Residential/Commercial: Residential

System components: 2250 Triple compartment tank - 757 gal Septic, 757gal Septic equipped w/EcoPod E50 & UV Light, 757 gal time dose pump tank to a 12' x 30' pressure bed.

Monitoring Requirements

Parameter	Effluent limits	Frequency	Location
Design flow (gpd)	450	Daily	Control Panel
Average flow (gpd)	315	Daily	Control Panel
CBOD ₅ (mg/L)	15 mg/l	As Needed	Bed Dose Tank
TSS (mg/L)	15 mg/l	As Needed	Bed Dose Tank
Fecal Coliform bacteria (#/100mL)	1000 cf/100ml	Annual (1x1yr)	Bed Dose Tank
Ponding/Surfacing in soil treatment	None	Semi-Annual - 2 x yr	Drainfield

Monitoring Requirements Comment Field

Maintenance Requirements

Maintenance requirements shall be performed as specified in the Management Plan as prepared by the system's Designer.

System component	Maintenance	Frequency
Septic tank/Trash tank	Sludge sample, pump as needed	Semi-Annual - 2 x yr
Pump tank and controls	Sludge sample, pump/replace as needed	Semi-Annual - 2 x yr
Advanced treatment product	Per Service Plan	Semi-Annual - 2 x yr
UV light disinfection device	Per Service Plan	Semi-Annual - 2 x yr
Soil treatment and dispersal	Repair as needed	Semi-Annual - 2 x yr

Monitoring Protocol

Any sampling and laboratory testing procedures shall be performed in accordance with the proprietary treatment product's protocol, Standard Methods, and at a Minnesota Department of Health approved laboratory. Results shall be submitted to the permitting authority at: Aitkin County Environmental Services, 307 2nd St NW, Room 219, Aitkin, MN 56431 no later than the expiration date listed.

Contingency Plan

In the event the wastewater treatment system does not meet the required performance requirements as contained in this operating permit, the owner shall notify Aitkin County Environmental Services within thirty (30) days of receiving non-compliant information. The owner is responsible for obtaining the services of a Minnesota Pollution Control Agency (MPCA) licensed Service Provider or other qualified practitioner to complete the required corrective measures.

Authorization

Aitkin County Environmental Services authorizes the Permittee to operate a wastewater treatment and dispersal system at the address named above in accordance with the requirements of this operating permit, attached Management Plan and contract with the Service Provider/Inspector.

This permit is effective on the issuance date identified above. This permit and the authorization to treat and disperse wastewater shall expire on the expiration date identified above. The Permittee is not authorized to discharge after the above date of expiration. The Permittee shall submit monitoring information on forms as required by Aitkin County Environmental Services no later than thirty (30) days prior to the above date of expiration for operating permit renewal. This permit is not transferable.

The owner is required to obtain the services of a Minnesota Pollution Control Agency (MPCA) licensed and trained: 1) Service Provider or Inspector to provide ongoing system operation, maintenance, and monitoring and 2) Maintainer to pump the system's sewage tanks and components. The owner is responsible for providing the name of the Service Provider or Inspector business prior to the issuance of this operating permit. The owner has secured the services of _____ as the Service Provider or Inspector for this system. The Service Provider or Inspector is hereby authorized to provide the required monitoring data and routine maintenance service records to both Aitkin County Environmental Services.

[For systems that generate high strength wastewater, the following items should be added to the operating permit: "If there is a change of use within the facility (i.e., change in menu, increase in food capacity, change in water use fixtures, etc.), the permittee is required to notify Aitkin County Environmental Services and the Service Provider before any changes occurs. Changes to the facility that could potentially impact performance of the wastewater treatment and dispersal system shall not take place until appropriate evaluation has been completed."]

I hereby certify with my signature as Permittee that I understand the provisions of the wastewater treatment and dispersal system operating permit including maintenance and monitoring requirements. I agree to indemnify and hold Aitkin County harmless from all loss, damages, costs, and charges that may be incurred using this system. If I fail to comply with the provisions of this operation permit, I understand that penalties may be issued. If I sell this property during the life of the permit, I will inform the new owner(s) of the permit requirements and the need to renew the operating permit.

The Operating Permit is hereby granted to: _____

Permittee

(please print):

Donald Krieger

Permitting Authority

(please print): _____

Title:

owner

Date:

6/19/24

Title: _____

Date: _____

Permittee

Signature:

Donald Krieger

Permitting

Authority

Signature: _____

County Representative Signature

Instructions for Completing an Operating Permit

The following instructions provide an explanation for local units of government to complete the operating permit template. This is intended to provide guidance to local units of governments (LGU) in developing operating permits for Type IV and Type V systems, including both residential and commercial systems. The template could be modified for holding tanks or any other system. Since the Management Plan is considered part of the operating permit, it needs to be attached to the operating permit. A signed contract, between the owner and Service Provider, should be attached to the operating permit to help ensure the owner has made the necessary arrangements to have the system maintained and monitored.

LGU Name, Department and Address – fill in the name, department, and address of local unit of government at the top of the operating permit.

Wastewater Treatment and Dispersal Operating Permit No. – assign an operating permit number to be able to track the system over the years.

Permittee Name, Business Name, Telephone Number, and Address – fill in the name, address, and phone number of the owner. If this is a business, fill in the name of the business, too.

Property Id. Number (GPS Location) – these are simply identifiers used by local units of government in the event the property address changes over time.

Name of Local Unit of Government – fill in the name of the local unit of government. This authorizes the Permittee to operate the wastewater treatment system at the address named above, according to the operating permit, attached Management Plan and contract with the Service Provider.

Issuance Date – fill in the date the operating permit is issued. The operating permit should not be issued until all required information is submitted.

Expiration Date – fill in the date when this operating permit expires. The first time an operating permit is issued to an owner, it should be issued for one (1) year. This helps ensure the owner does the required maintenance and monitoring during the first year. If the owner complies, the operating permit can then be issued for a longer period of time as determined by the local unit of government (typically 3 to 5 years). However, if the owner does not comply in the first year, the second operating permit could, again, be issued for a period of one (1) year.

System Type – fill in as Type IV or Type V system. Holding tanks may also be issued operating permits (Type II system).

Treatment Level – specify Treatment Level A, A2, B, B2, C, TN or TP. Treatment Level A = Carbonaceous Biochemical Oxygen Demand, five day (CBOD₅) 15 milligrams per liter (mg/L), Total Suspended Solids (TSS) 15 mg/L, Fecal Coliform Bacteria 1000 per 100 milliliter (mL); Treatment Level A2 = CBOD₅ 15 mg/L, TSS 15 mg/L; Treatment Level B = CBOD₅ 25 mg/L, TSS 30 mg/L, Fecal Coliform Bacteria 10,000 per 100 mL; Treatment Level B2 = CBOD₅ 25 mg/L, TSS 30 mg/L; Treatment Level C = CBOD₅ 125 mg/L, TSS 60 mg/L, Oil and Grease (O&G) 25 mg/L; Total Nitrogen (TN) = 20 mg/L or less, or Total Phosphorus (TP) = 2 mg/L or less.

System Design Flow – fill in the design flow specified on the construction permit for the system, along with the projected average daily flow for the system. Average daily flow is generally 60 to 70 percent of design flow.

Residential/Commercial – specify if the system is residential or commercial. You may specify additional information, such as classification of dwelling, number of bedrooms, or type of commercial establishment.

System Components – provide a brief description of the system components. An example would be the following: 600 gallon trash tank, 600 gallon Brand X proprietary treatment device, 1 Brand Y Ultraviolet (UV) light disinfection unit, 500-gallon pump tank, pump, floats and controls, and 250-foot shallow trenches using pressure distribution.

Monitoring Requirements (Table)

The monitoring requirements specified in an operating permit are unique to the site and soil conditions of the property (its environmental sensitivity) and system complexity. The monitoring requirements include specific parameters to be monitored, target limits and the frequency and location of monitoring. The monitored parameters, at a minimum, would include: 1) wastewater flow - the most basic parameter to know in understanding system performance, 2) ponding in the soil treatment system and 3) surfacing of the soil treatment system. Monitoring for CBOD₅, TSS, fecal coliform bacteria and nitrogen are unique to the site, its receiving environment and complexity of the wastewater system. Field tests for temperature, pH and dissolved oxygen can be performed by the Service Provider to serve as general indicators of system performance.

1. **Flow** – flow to each system needs to be determined as specified in the Management Plan or as determined by the local unit of government. Flow can be determined several ways, using water meters, event counters, and running time clocks. Telemetry can also be used and has the advantage that flow can be determined continually.

The determination for the frequency of flow measurement is done on a case-by-case basis. At first, daily flow monitoring may be needed to determine average flow and peak flows to a system. After a period of time, weekly or monthly flow determination may be acceptable. Flow determinations once a year generally provide limited information.

2. **CBOD₅** – monitoring for CBOD₅ is not typically required for the majority of wastewater systems used for single-family homes generating typical domestic strength effluent. However, monitoring for CBOD₅ may be needed periodically. For example, there may be a need to audit systems as part of the product registration process in Minnesota or if the Service Provider is trying to troubleshoot a system. For commercial systems, monitoring for CBOD₅ is generally necessary to determine CBOD₅ removal efficiencies of proprietary treatment devices and/or organic loading rates to the soil's infiltrative surface.

3. **TSS** – monitoring for TSS is not typically required for most residential wastewater systems that generate typical domestic strength effluent. However, turbidity measurements may be taken in the field by Service Providers. Monitoring for TSS may be needed periodically as part of an audit process for the registration of proprietary treatment products in Minnesota. For commercial systems, monitoring for TSS may be necessary.
4. **O&G** – monitoring for Oil and Grease (O&G) is not typically required for most residential wastewater systems; however, it is an important parameter to monitor for facilities that have food preparation and service and for residences that generate high strength wastewater.
5. **Fecal Coliform Bacteria** – monitoring for fecal coliform bacteria should generally be required for systems listed as Treatment Level A and Treatment Level B systems where reduced vertical soil separation is used.
6. **Total Nitrogen and Total Phosphorus** – monitoring for Total Nitrogen (TN) may be needed in areas identified as nitrogen sensitive environments. Monitoring for Total Phosphorus (TP) may be required in phosphorus sensitive lake environments.
7. **Operational Field Tests** – these are tests performed by the Service Provider to help ‘monitor’ system performance and identify problems (troubleshooting a system). Although field tests are not a strict monitoring requirement, they are appropriate to list in the operating permit if specified in the Management Plan or in the product’s Operation and Maintenance Manual. The local unit of government will determine if the permittee is required to report field test results as part of the operating permit.
8. **Ponding/Surfacing in Soil Treatment** – all systems should be monitored periodically as specified in the Management Plan to determine the extent and frequency of ponding in soil treatment systems. A check for surfacing is needed.

Maintenance Requirements (Table)

This table lists some of the basic maintenance requirements for each major component of the wastewater system. Since you can’t possibly list all the maintenance requirements in this table, it is best to reference the Management Plan. You could also reference the proprietary products Operation and Maintenance Manual.

1. **System Component** – list each system component, including the external grease interceptor, septic tank, trash tank, surge tank, effluent screen, pump tank and controls, proprietary treatment product, disinfection device, and soil treatment and dispersal system.
2. **Maintenance** – briefly identify the maintenance requirements of each major system component. For additional information, you could also reference the proprietary product documents listed on the MPCA website at <http://www.pca.state.mn.us/programs/ists/productregistration.html>.
3. **Frequency** – briefly identify the frequency of maintenance as per the systems Management Plan and Operation and Maintenance Manual.

Monitoring Protocol – this section of the operating permit states that testing needs to be performed in accordance with approved methods and the results submitted to the: 1) local unit of government and 2) manufacturer within a specified time frame. Fill in the name and address of both entities in the spaces provided.

Contingency Plan – this briefly describes requirements if the system does not function as intended. The owner must notify the local unit of government within thirty (30) days of receiving non-compliant information. The Management Plan may identify some of the corrective actions required or the permittee will need to consult their Service Provider. The owner is responsible for obtaining the services of a MPCA-licensed Service Provider or other qualified practitioner to complete the required corrective measures. More detail could be added here by the local unit of government.

Authorization – fill in the length of time of the operating permit; this is typically one to five years. Fill in the name of the local unit of government in the second blank space. Note that this permit is not transferable.

Next, fill in the name of the treatment product’s manufacturer; the manufacturer is required to train practitioners in servicing the registered treatment device(s). Fill in the name of the Service Provider in the next space; the owner is required to identify who the MPCA licensed Service Provider will be (in a contract). This is needed to ensure the owner has made the necessary arrangements to have the system maintained and monitored.

The Service Provider is authorized to provide monitoring data and routine maintenance service records directly to the local unit of government and to the manufacturer of the treatment product. For systems generating high strength wastewater, the following should be added to the operating permit: “If there is a change of use within the facility (i.e., change in menu, increase in food capacity, change in water use fixtures, etc.), the permittee is required to notify the local unit of government and the Service Provider before the change(s) occurs.” Changes to the facility that could potentially impact performance of the wastewater treatment and dispersal system shall not take place until appropriate evaluation has been completed.

In the final paragraph, fill in the name of the local unit of government. It contains a general indemnification statement. The permittee is reminded that this permit is not transferable and that a new operating permit will be needed by the new property owner.

The Operating Permits Hereby Granted to – print the name of the owner who signed the operating permit.

Signature of Permittee (and date of signature) – the owner signs and dates the operating permit.

By Order of – signature of the permitting authority, title, and date.



**MAINTENANCE SERVICE, MONITORING, AND INSPECTION
CONTRACT FOR ONSITE WASTEWATER TREATMENT SYSTEM**

It is hereby agreed this 13th day of June 2024 by and between Septic Check (Service Provider) and Client:

Client Name and Site Address	
Name:	Don Krieger
Street Address:	20767 508 th Lane
City, State, Zip:	McGregor, MN 55760
Parcel ID:	29-0-017723
LGU:	Aitkin County
Contract Type:	ATU 2x w/ test
Treatment System:	ECOPOD E50

That in consideration of the payments provided herein, the Service Provider shall provide services to perform preventative maintenance, monitoring, and inspection of the Onsite Wastewater Treatment System (OWTS) located at the property described in this Contract.

Each inspection visit includes an examination of the OWTS per this Contract and a follow-up report. The report shall contain status of conditions and recommended corrective measures or replacement parts if deemed appropriate. The Service Provider is authorized to submit a copy of the report to the Local Governmental Unit (LGU) listed above.

This Contract does not assume any responsibilities or obligations which are normally the responsibilities of the Client as related to parts or labor, and does not extend to cover any costs that may be associated with any recommendations made under this Contract.

The Service Provider will only contract or subcontract for parts or labor after Client authorization. Billings for service calls outside of this Contract shall be made on a case-by-case basis. This Contract covers listed services and does not cover alarm calls of any kind.

PHONE 320-983-2447 • TOLL FREE 888-983-2447 • FAX 320-983-2151

6074 Keystone Road • Milaca, MN 56353 • info@SepticCheck.com • www.SepticCheck.com

A Division of WEX Companies

The Service Provider shall be provided access to the site and the system in order to perform the following services as indicated:

SEPTIC TANK AND LIFT STATION(S) INSPECTION

- Check septic tank and compartments for solids build-up and general appearance. If necessary, recommend pumping when 25 to 33% of the operating levels contain solids.
- Inspect the septic tank baffles, inspection pipes, risers, and lids for structural integrity.
- Check pumping system, including control panel and floats (if applicable).
- Record and date the readings of flow measurement devices (if applicable).
- Check dosing settings in the control panel (if applicable).
- Check and clean effluent screen(s) (if applicable).
- Other:

*****The cost of tank or lift station pumping is the responsibility of the Client and is not included in this Contract.***

TREATMENT DEVICE – Aerobic Treatment Unit (ATU)

- Inspect ATU per manufacturer's recommendations (if applicable).
- Inspect and clean any parts per manufacturer's recommendations.
- Inspect the appearance of the wastewater inside the unit for color and turbidity, and check odors.
- Sample effluent per operating permit.
- Inspect UV disinfection unit (if applicable); clean tube and replace bulb when needed.
- Other:

*****The cost of the replacement bulb is the responsibility of the Client and is not included in this Contract.***

DISPERSAL FIELD

*****Mowing is not included in this Contract.***

- Inspect for visible signs of failure (surface discharge, wet spots, settling, etc.).
- Check inspection pipes for evidence of ponding.
- Inspect and clean lateral lines when necessary.

*****The cost of cleaning lateral lines is the responsibility of the Client and is not included in this Contract.***

OPERATING PERMIT COMPLIANCE

****Operating permit fees are not included in this Contract.**

- Complete onsite inspection reports and enter in database.
- Collect and compile sample results and flow data.
- Submit service and sample reports to the LGU prior to deadline.
- Act as liaison between client and LGU as needed.

In no event shall the Service Provider be responsible for special or consequential damages including but not limited to loss of time, injury to personal property or any other consequential damages or incidental or economic loss due to equipment failure or for any other reason. This Contract does not assume any responsibilities or obligations which are normally the responsibility of the Client related to parts or labor, and does not extend to cover any costs that may be associated with any recommendations made under this Contract.

Contract Terms	
Contract Effective Date:	Upon acceptance of this Contract, automatic annual renewal
Frequency of Regular Service Visits:	SEMI-ANNUAL – 2x/yr
Sample Parameters:	Fecal Coliform, Flow
Cost for Maintenance Contract:	\$430/year to include regular service visits, testing (if applicable), and reporting with annual price increases equivalent to the Regional Consumer Price Index (CPI) to cover variable costs such as fuel, materials, and laboratory fees (average 3% per year approximately).
Billing Dates:	\$215 after each regular service visit is complete
Alarm/Emergency Call Charge:	Invoiced using current service visit and labor fees.
Expected Repair Budget:	\$300/year* (See below)
Repeat Sampling Cost:	\$100/Repeat sample retrieval and processing due to initial sample not meeting permit limits.

**The expected repair budget above is a recommended planning amount to cover expected repair/replacement costs associated with your treatment device. Other costs for items such as tank pumping and cleaning, pump or other component replacements are not expected to be covered by the amount.*

OUTSIDE SCOPE OF WORK:

- **Alarm Response:** Service Provider will be available to respond to alarm conditions as notified by the owner or automatic dialer (if installed). A typical response time is three to six hours and within 24 hours. Some alarms may need to be responded to immediately.
- **Repairs:** Parts/material costs will be as needed for each repair. Estimates for repairs can be provided before work starts if you prefer, although some potential alarm conditions may not permit delay.
- **Tank pumping and other services:** Services not covered in this Contract will be billed by outside vendors directly to the Client. In the event Service Provider pays vendor for said services, the Client will be billed for the service cost plus 10%.
- **Repeat sampling:** Any additional required sampling shall be billed separately.
- **Operating Permit Fees:** Ongoing permit fees from the LGU are to be paid and submitted by the client.

SLUG LOADS AND ACCIDENTAL SPILLS

Service Provider is not responsible for any illicit discharges into the wastewater system that may harm the treatment efficiency such as: accidental release of cleansers/oils, pharmaceuticals, feminine products, rags/paper towels, condoms, grease or food products, volume of water or high strength waste beyond system design, or other chemical discharges. Trucking or hauling the waste may be required in those circumstances at the cost of the Client.

The Service Provider agrees to provide inspection, monitoring, and routine maintenance service only under this Contract. The Client remedies for breach of this Contract shall be limited to refund of any amounts paid in advance for service. The Client or operator may terminate this agreement, without cause, upon 30 days written notice.

Client:

Service Provider:

Sign: *Donald Krieger*
Signed by: Donald Krieger
Date: 6/19/24

Sign: *Brian Koski*
Signed by: Brian Koski
Date: 6/13/2024

****Please choose how you would like your invoices and reports sent to you****

MAIL _____ (if different from what we have)

EMAIL Kriegsr1@aol.com (address)