

Septic Design

Customer:Lisa Palmer

Phone number:612-281-4726

Site Address:3350 149th Ave NE Ham Lake, MN

5 bedroom 750 gpd type 1 design.

After conducting a site evaluation on the above mentioned property. I found the soil to be a Loam with depletion at 10". We will be crushing the existing tank and burying it. We will be using a 2250 gal 2 chamber cement tank and put in a 1000 gal cement pump tank. We will install a 10'X 63' mound. The pump will deliver 47 GPM at 16 feet of head. The pump to be installed will need to meet these requirements. The pump tank must be lower than the mound. So it can drain back to help prevent any issues with sitting water. There will be 6" of rock under the pipe with 2" of rock on top of the pipe and geo cloth on top of that.

The drain field will consist of 3 end feed laterals at 61' long. Consisting of a 2" diameter pipe drilled with 1/4 perfs, 3'OC. There also will be 3 clean out pipes installed one on each lateral. There will be 29 tons of drain field rock, 753 tons of mound sand, 172 tons of loamy cap and 193 tons of topsoil . Electrical to be done by a licensed electrician. Then we will lay grass seed. If tanks do not have 2' of soil. They will be insulated with a 2" foam board on the top portion before covering. All the manhole covers will be brought up to grade. All the neighbors wells are 100'+ from the system.

Do not drive on the drain field area or drain field with anything unless it has tracks or a lawn mower. No iron filters that discharge to septic or the Warranty will be Void. Installer to verify all setbacks and wells. We are not responsible for inground sprinkler system and or driveways.

Designed by: Brad Krotzer License: L-1744 Registration R-4346

Phone number: (763)218-4769

Custom Septic Inc.

32749 199th Avenue

Menahga, MN 65464

Mound Design

Property Owner: **Lisa Palmer**

Date: **5/17/23**

Site Address: **3350 149 ave NE Ham Lake MN.**

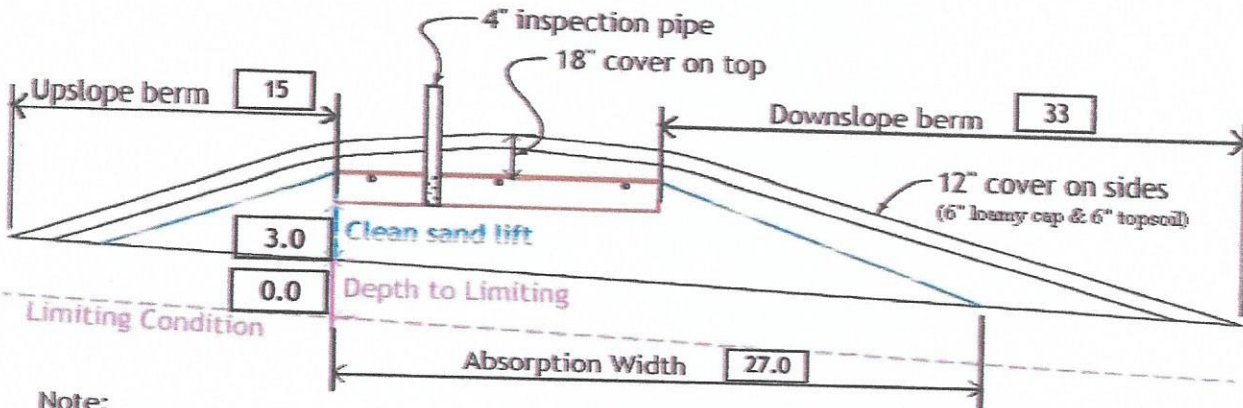
PID: _____

Comments: _____

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

- 1) 5 bedroom Type 1 Residential System
- 2) 750 GPD design flow
- 3) *yes* Garbage disposal or pumped to septic
- 4) ~~1500~~ Gal Septic tank (code minimum) ²²⁵⁰ 1500 Gal Septic tank (design size / LUG req'd)
Tank options: none
- 5) 1.2 GPD/ft² mound sand loading rate contour loading rate of 12 req's a min 62.5 ft. long rockbed
- 6) 10.0 ft rockbed width 62.5 ft rockbed length
- 7) 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum of 3 for both)
end feed manifold connection
- 8) 3 laterals 60.5 feet long 21.0 perfs / lateral 63 perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)
- 9) 1/4" inch perfs at 1 feet residual head gives 0.74 gpm flow rate per perforation
for this perf size & spacing, & pipe size on line 12, max perfs/lateral = 25, line #8 must be less --> **OK**
- 10) 4.0 doses per day (4 minimum)
- 11) 188 gallons per dose (treatment volume)
- 12) 2.00 inch diameter laterals must be used to meet "4x pipe volume" requirement
- 13) 25 feet of 2.0 inch supply line leads to 4 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)
- 14) 192 gallons TOTAL pump out volume (treatment + drainback)
- 15) 9 feet vertical lift from pump to mound laterals, leads to a:
- 16) 47 GPM @ 16 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) 750 gal Dose tank (code minimum) 750 gal Dose tank (design size / LUG req'd) at 22.00 gpi
leads to a: Optional Time dosing of:
- 18) 8.7 inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)
- 19) 12 inches from bottom of tank to "Pump OFF" float 4.1 min ON
- 20) 21 inches from bottom of tank to "Pump ON" float 8.5 hrs OFF
- 21) 24 inches from bottom of tank to "Hi Level" float 12 inches to "Timer ON" float
- 22) 34 inches to "Hi Level" float
- 22) 222 gallons reserve capacity (after High Level Alarm is activated-demand dosed)

- (this must match the soil boring log)
- 24) 8 percent site slope (0-20% range) 8 (% downslope site slope, if different than upslope) desired mound ratio 2.7
- 25) 0 inches, or 0.0 ft. to Redox or other limiting condition (need at least 12" to be a Type I)
- 26) 36 inch, or 3.0 ft. Sand Lift Mound Treatment zone contains 0 inches of 0% soil credit, and 0 inches of 50% soil credit. Giving a: CRITICAL FOR FUTURE CERTIFICATIONS!!!
- 27) 27.0 ft. Total ABSORPTION width (with sand beyond rockbed as follows:)
- 28) 0.0 ft. upslope and sideslope
17.0 ft. Downslope
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) 4:1 upslope ratio 15 ft. upslope berm
- 30) 4:1 sideslope 22 ft. sideslope berms
- 31) 4:1 downslope 33 ft. downslope berm
- 32) Overall Dimensions: 10.0 ft. wide by 62.5 ft. long Rock bed
58 ft. wide by 107 ft. long Mound footprint

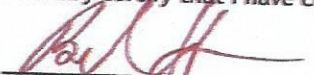



Note:

For 0 to 1% slopes, Absorption Width is measured from the Bed equally in both directions.
For slopes >1%, Absorption Width is measured downhill from the upslope edge of the Bed.

- 33) Rock Bed: 10.0 ft. by 62.5 ft. by 6 inches under pipe, plus 20% gives 21 yd³ or *1.4= 29 ton
- 34) Mound Sand: (note: volume is based on 3:1/4:1 slope from top of rockbed, Exchange sand for loamy cap if desired)
88.4 up + 247.1 downslope + 34.1 ends + 78.7 under rock = 538 yd³ or *1.4= 753 ton
plus 20%
- 35) Loamy Cap: 54 ft. by 103 ft. 6" deep, plus 20% gives 123 yd³ or *1.4= 172 ton
- 36) Topsoil: 58 ft. by 107 ft. 6" deep, plus 20% gives 138 yd³ or *1.4= 193 ton

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


Designer Signature


Company

1544
License#

5/17/23
Date

Installer Summary

750 gallon Dose tank (minimum) at 22.00 gpi

47 GPM @ 16 ft. of head, Pump required

8.7 inch swing on Demand float which translates to roughly 5.4 inches of float tether length

Optional Time dosing of:

- 4.1 minutes ON
- 8.5 hours OFF
- 12 inches to "timer ON" float
- 34 inches to "Hi level" float

21 inches from bottom of tank to "pump ON" float, or

24 inches from bottom of tank to "Hi Level Alarm" or

25 ft. of 2.0 inch supply line with end feed manifold connection
(Tip: "top feed" manifold to control drainback)

36 inch, or 3.0 ft. Sand Lift Mound

10.0 ft. wide by 62.5 ft. long Rock bed

3 laterals 2.00 inch diameter 60.5 ft. long 3.0 ft. lateral spacing

1/4" inch perfs 3.0 ft. perforation spacing

No Effluent filter & alarm

3 clean out & valve box assemblies

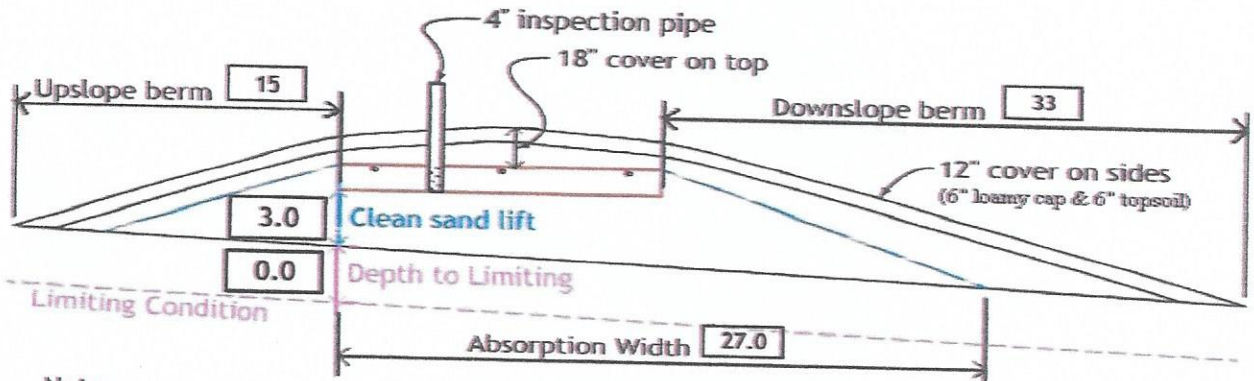
27.0 ft. Total sand ABSORPTION width (minimum)

0.0 ft. upslope and sideslope (sand beyond rockbed, minimum)

17.0 ft. Downslope (sand beyond rockbed, minimum)

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

4:1 upslope ratio	15 ft. upslope berm
4:1 sideslope	22 ft. sideslope berms
4:1 downslope	33 ft. downslope berm



Note:
For 0 to 1% slopes, Absorption Width is measured from the Bed equally in both directions.
For slopes >1%, Absorption Width is measured downhill from the upslope edge of the Bed.

Rock Bed:	21.0 yd ³ or *1.4=	29 ton	6 inches under pipe
Mound Sand:	538 yd ³ or *1.4=	753 ton	calculation based on 3:1/4:1 slope from top of rockbe
Loamy Cap:	123 yd ³ or *1.4=	172 ton	6" deep
Topsoil:	138 yd ³ or *1.4=	193 ton	6" deep

INSPECTOR CHECKLIST - mound

- 3300 149 ave NE Ham Lake MN.
- WELL setbacks: 20'- 50' to sewer line req's MDH pressure test form (5 psi for 15 min)
 - 50' to everything 100' to drainfield with shallow well
 - PROPERTY LINES setback: 10' to everything
 - Road setback: platted: 10' prop line. Metes & bounds: out of road easement, or outer ditch.
 - LAKE / BLUFF setback: 20' for bluff. Lakes: GD __, RD __, NE __. Protected wetland __.
 - Building setbacks: 10' for everything, 20' for dispersal area.
 - WATER LINE

Sewer line & tank connection (no hard 90's, long sweep 90 or 2-45's, slope minimum 1" in 8' = 1%)
(no depth req's, clean out every 100', Sch 40 pipe)

Septic tank and risers (water tight risers, baffles, insulated, proper depth, existing verified by pumping)
mfg _____ 1500 gallons none _____

Riser over outlet, riser over inlet or center, and 6"+ inspection pipe over any remaining baffles.
 No effluent filter & alarm

Dose tank, risers and piping (water tight risers, insulated, proper depth, drainback)
mfg _____ 750 gallons

dose pump _____ 47 gpm 16 head VERIFY PUMP CURVE

Optional Time dosing of:
4.1 min ON 8.5 hr OFF

verify that installed "vertical lift from pump to laterals" is no more than design value of 9 feet
 float setting drop 8.7 inches at 22.0 gpi "DESIGNED" 5.4 inches approx float tether length
192.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected)

LABEL pump requirements and drawdown on riser or panel

Cam lock reachable from grade - 30" max. J-hook weep hole. Supply line access (no hard 90's)
 2.0 inch supply pipe: Sch40, sloped 1/8"+, supported by 4" sch40 sleeve or compacted, and buried 6"+.
 splice box / control panel / electrical connections / Hi Level Alarm
 flow measurement: CT, ETM, time dosed, home water meter
 mound absorption area rough up

mound rock dimensions 10.0 X 62.5
 Sand lift depth 36 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

Absorption Sand beyond rock 0.0 upslope 17.0 downslope

Bermed topsoil beyond rockbed 15 upslope 22 sideslope 33 downslope

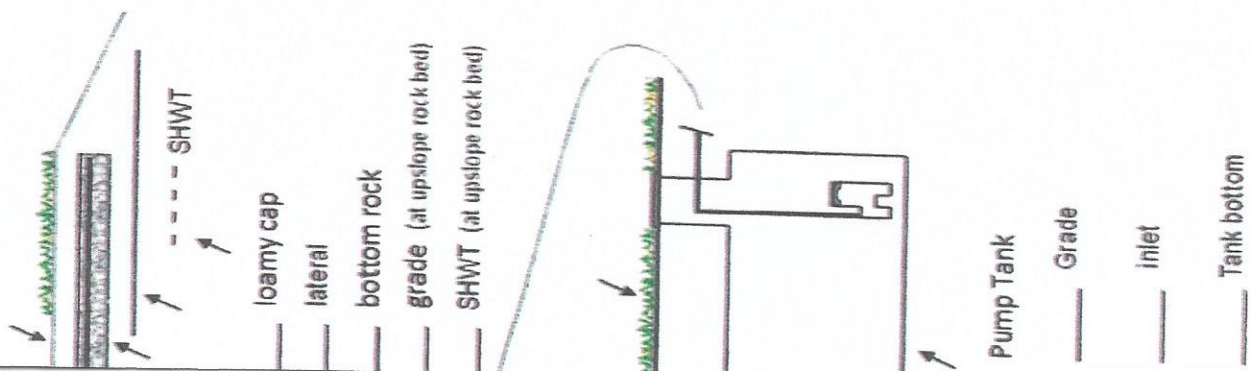
cover depth of 12-18"+ VERIFY
 3 laterals (1-2' from edge of rock)
 2.00 inch pipe size (Sch40 pipe & fittings)
 3.0 ft lateral spacing

1/4" inch perforations
 3.0 ft perforation spacing

Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY

clean outs (no hard 90's)
 4" inspection pipe to bottom of rock, anchored VERIFY

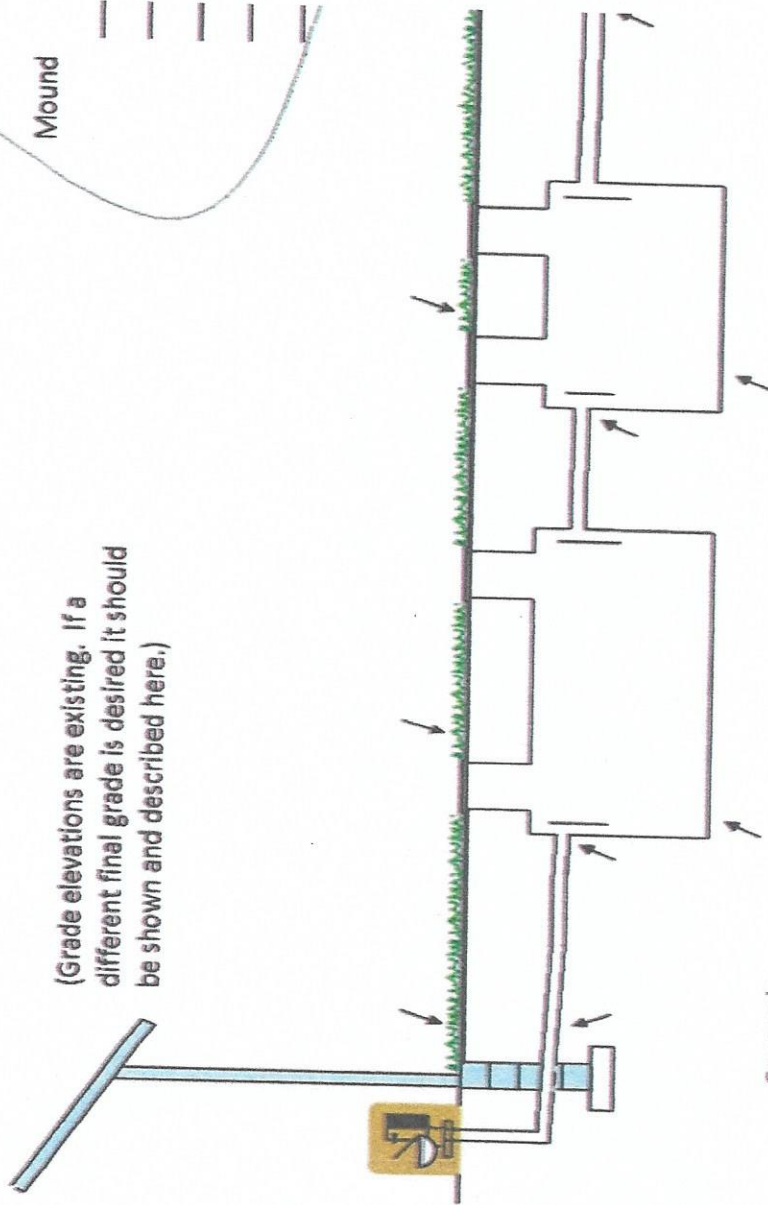
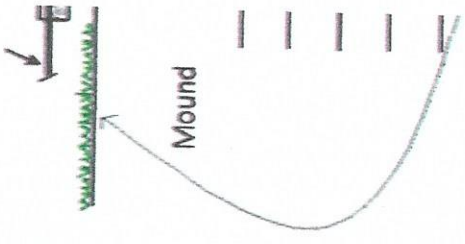
Abandon existing system - if necessary _____
 monitoring plan and type _____
 well abandonment form - if necessary _____ Re-use existing tank certification



System Elevations

_____ benchmark _____

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



Sewer pipe
exiting house

_____ Grade

_____ Pipe

Septic Tank

_____ Grade

_____ Inlet

_____ Tank bottom

Septic Tank (if applicable)

_____ Grade

_____ Inlet

_____ Tank bottom



Septic System Management Plan for Above 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	Lisa Palmer	Email
Property Address	3350 149th Ave NE Ham Lake, MN	Property ID
System Designer	Custom Septic Inc.	Contact Info 763-218-4769
System Installer	TBD	Contact Info
Service Provider/Maintainer		Contact Info
Permitting Authority		Contact Info
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:

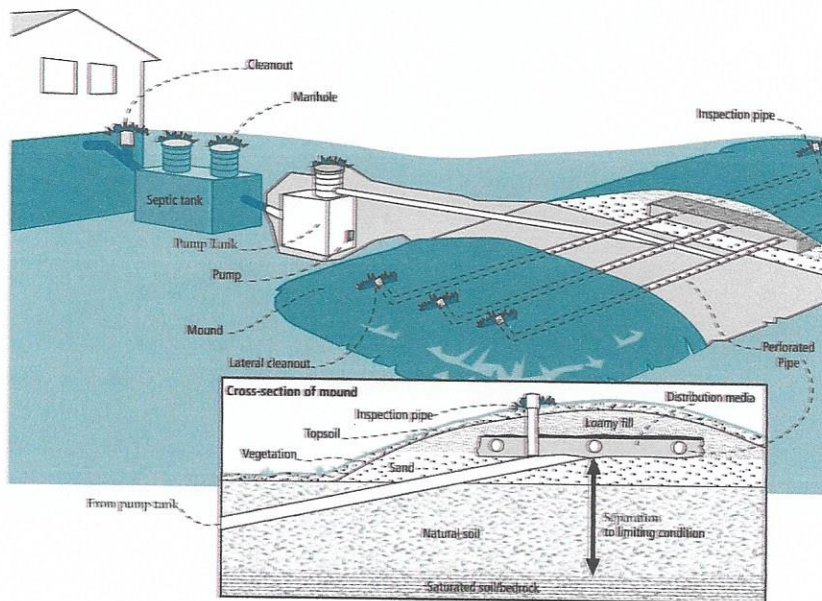
- Attach permit information, designer drawings and as-built of your system, if they are available.
- Keep copies of all pumping records and other maintenance and repair invoices with this document.
- Review this document with your maintenance professional at each visit; discuss any changes in product 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 checked="" type="radio"/> I <input type="radio"/> II <input type="radio"/> III <input type="radio"/> IV* <input type="radio"/> V* (Based on MN Rules Chapter 7080.2200 – 2400) *Additional Management Plan required	<input type="checkbox"/> System is subject to operating permit* <input type="checkbox"/> System uses UV disinfection unit* Type of advanced treatment unit _____

Dwelling Type	Well Construction
Number of bedrooms: <u>5</u> System capacity/ design flow (gpd): <u>750</u> Anticipated 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 well</u> <input type="checkbox"/> Cased well Casing depth: _____ <input type="checkbox"/> Other (specify): _____ Distance from septic (ft): <u>88'</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>2250</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>Cement</u> <input type="checkbox"/> Effluent screen: <input type="radio"/> Y <input checked="" type="radio"/> N Alarm <input checked="" type="radio"/> Y <input type="radio"/> N	<input type="checkbox"/> Pump Tank <u>1000</u> gallons <input type="checkbox"/> Effluent Pump make/model: <u>tbd</u> Pump capacity <u>47</u> GPM TDH <u>16</u> Feet of head <input type="checkbox"/> Alarm location <u>In house</u>

Soil Treatment Area (STA)	
Mound/At-Grade area (width x length): <u>58</u> ft x <u>107</u> ft Rock bed size (width x length): <u>10</u> ft x <u>63</u> ft Location of additional STA: _____	<input checked="" type="checkbox"/> Inspection ports <input checked="" type="checkbox"/> Cleanouts <input type="checkbox"/> Surface water diversions <input type="checkbox"/> Additional STA _____



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 24 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.



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: _____ gallons: Pump run time: _____ 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.
- *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 discharge 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, drain tile 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									
Check frequently:										
Leaks: check for plumbing leaks*										
Soil treatment area check for surfacing**										
Lint filter: check, clean if needed*										
Effluent screen (if owner-maintained)***										
Alarm**										
Check annually:										
Water usage rate (maximum gpd _____)										
Caps: inspect, replace if needed										
Water use appliances – review use										
Other:										

*Monthly

**Quarterly

***Bi-Annually

Notes:

"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: _____

Date _____

Management Plan Prepared By: **Custom Septic Inc.**

Certification # **4346**

Permitting Authority: _____

Anoka County, Minnesota

Ma—Markey muck, occasionally ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t4td
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

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

Description of Markey, Occasionally Ponded

Setting

Landform: Depressions
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy outwash

Typical profile

Oa - 0 to 28 inches: muck
Cg - 28 to 79 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Occasional
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: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Ecological site: F088XY005MN - Forestland Peatland
Forage suitability group: Not Suited (G088XN024MN)

Map Unit Description: Markey muck, occasionally ponded, 0 to 1 percent slopes—Anoka County, Minnesota

Other vegetative classification: Not Suited (G088XN024MN)
Hydric soil rating: Yes

Minor Components

Markey, frequently ponded

Percent of map unit: 10 percent

Landform: Depressions

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F088XY005MN - Forestland Peatland

Other vegetative classification: Not Suited (G088XN024MN)

Hydric soil rating: Yes

Seelyeville

Percent of map unit: 5 percent

Landform: Depressions

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R102AY038SD - Calcareous Fen

Other vegetative classification: Not Suited (G088XN024MN)

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Anoka County, Minnesota

Survey Area Data: Version 20, Sep 6, 2022

Anoka County, Minnesota

ZmB—Zimmerman fine sand, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2q12w
Elevation: 720 to 1,540 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 46 degrees F
Frost-free period: 100 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Zimmerman

Setting

Landform: Rises
Landform position (two-dimensional): Summit, shoulder, backslope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Ap - 0 to 8 inches: fine sand
Bw - 8 to 22 inches: fine sand
E - 22 to 45 inches: fine sand
Bt - 45 to 46 inches: loamy fine sand
E and Bt - 46 to 80 inches: fine sand

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat 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
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F091XY015WI - Dry Upland
Forage suitability group: Unnamed (G091BN022MN)

Other vegetative classification: Central Dry Oak-Aspen (Pine)
Woodland (FDc25), Unnamed (G091BN022MN)
Hydric soil rating: No

Minor Components

Cantlin

Percent of map unit: 5 percent
Landform: Rises
Landform position (two-dimensional): Summit, backslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F091XY011WI - Sandy Upland
Other vegetative classification: Sloping Upland, Low AWC, Acid
(G091BN008MN)
Hydric soil rating: No

Isanti, drained

Percent of map unit: 2 percent
Landform: Flats, depressions
Landform position (two-dimensional): Foothills, toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear
Ecological site: F091XY005WI - Wet Sandy and Loamy Lowland
Other vegetative classification: Level Swale, Low AWC, Acid
(G091BN007MN)
Hydric soil rating: Yes

Lino

Percent of map unit: 2 percent
Landform: Swales
Landform position (two-dimensional): Foothills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F091XY007WI - Moist Sandy and Loamy Lowland
Other vegetative classification: Level Swale, Low AWC, Acid
(G091BN007MN)
Hydric soil rating: No

Soderville

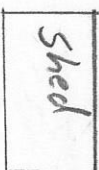
Percent of map unit: 1 percent
Landform: Flats, rises
Landform position (two-dimensional): Backslope, foothills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F091XY007WI - Moist Sandy and Loamy Lowland
Other vegetative classification: Sloping Upland, Low AWC, Acid
(G091BN008MN)

1497th Ave NE

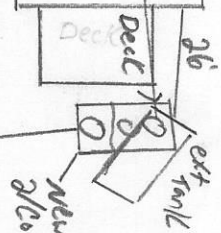
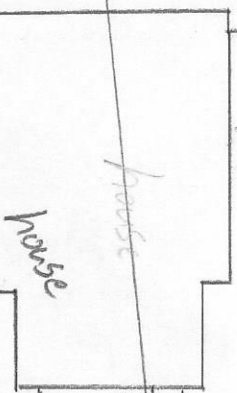
3350 149th Ave NE
Ham Lake, MN N ↗

property line

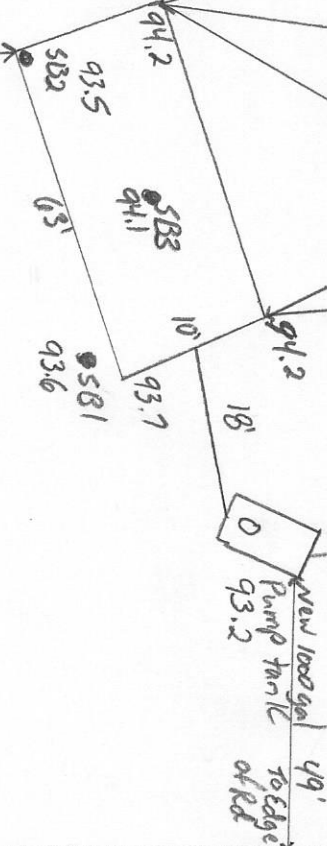
183



Drive Way



64' property line



Naples Rd St NE

new 1000 gal Pump tank
93.2
49' to edge of Rd

new 250 gal
2/10/06
120.6

Deep well Bm

House

Deck

ext tank

0

93.5

94.1

93.6

94.2

94.1

93.7

93.2

0

93.2

49'

to edge of Rd

18'

10'

94.1

94.2

88'

84'

45'

44'

46'

16'

26'

70'

183

183

64'