

FIELD EVALUATION SHEET

PRELIMINARY EVALUATION DATE: May 2, 2016 FIELD EVALUATION DATE: May 2, 2016
 PROPERTY OWNER: Gary Brown PHONE: _____
 ADDRESS: 22165 450th Ave CITY, STATE, ZIP: Aitkin, MN 56431
 LEGAL DESCRIPTION: .75 Ac of Lot 1 in Doc 297925
 PIN#: 11-0-069100 SEC 32 T 45 R 27 TWP NAME: Hazelton
 FIRE#: N/A LAKE/RIVER: Round LAKE CLASS: RD OHWL _____ FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2	
DISTRUBED AREAS	YES _____ NO _____	YES _____ NO _____	REFERENCE BM ELEV. <u>100 FT.</u>
COMPACTED AREAS	YES _____ NO _____	YES _____ NO _____	REFERENCE BM DESCRIPTION _____
FLOODING	YES _____ NO _____	YES _____ NO _____	Elevation of ground at soil bore T-1. _____
RUN ON POTENTIAL	YES _____ NO _____	YES _____ NO _____	_____
SLOPE %	_____	_____	_____
DIRECTION OF SLOPE	_____	_____	_____
LANDSCAPE POSITION	_____	_____	_____
VEGETATION TYPES	_____	_____	_____

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING 1 _____ 1A _____ 2 _____ 2A _____

BOTTOM ELEVATION -- FIRST TRENCH OR BOTTOM OF ROCK BED: 1 _____ FT 2 _____ FT

SOIL SIZING FACTOR: SITE #1 _____ SITE #2 _____

CONSTRUCTION RELATED ISSUES: See Notes

LIC# 2129 SITE EVALUATOR SIGNATURE: *Martin Joyce*

Cell - 218-820-2621

SITE EVALUATION NAME: MARTIN JOYCE TELEPHONE # 218-765-3992

LUG REVIEW _____ DATE _____

Comments: TANK UPGRADE. PUMP AND REMOVE EXISTING TANK. INSTALL NEW 1500 COMBO S/L.
★ INSTALL NEW PUMP AND ELECTRIC ALARM.
★ CONNECTING TO THE EXISTING DRAINFIELD. SEE CURRENT CI FROM 5/2/2016.

NEW 2 Bedroom House

Assuming - Existing Mound
PRESSURE DISTRIBUTION SYSTEM

- Select number of perforated laterals 3
- Select perforation spacing = 3 ft
- Since perforations should not be placed closer than 1 foot to the edge of the rock layer (see diagram), subtract 2 feet from the rock layer length.

$$\frac{25}{\text{Rock layer length}} - 2 \text{ ft} = \underline{23} \text{ ft}$$

- Determine the number of spaces between perforations. Divide the length (3) by perforation spacing (2) and round down to nearest whole number.

$$\text{Perforation spacing} = \frac{23 \text{ ft}}{3 \text{ ft}} = \underline{7} \text{ spaces}$$

- Number of perforations is equal to one plus the number of perforation spaces (4). Check figure E-4 to assure the number of perforations per lateral guarantees <10% discharge variation.

$$\underline{7} \text{ spaces} + 1 = \underline{8} \text{ perforations/lateral}$$

- A. Total number of perforations = perforations per lateral (5) times number of laterals (1)

$$\underline{8} \text{ perfs/lat} \times \underline{3} \text{ lat} = \underline{24} \text{ perforations}$$

- B. Calculate the square footage per perforation. Should be 6-10 sqft/perf. Does not apply to at-grades.

$$\text{Rock bed area} = \text{rock width (ft)} \times \text{rock length (ft)}$$

$$\underline{10} \text{ ft} \times \underline{25} \text{ ft} = \underline{250} \text{ sqft}$$

$$\text{Square foot per perforation} = \text{Rock bed area} \div \text{number of perfs (6)}$$

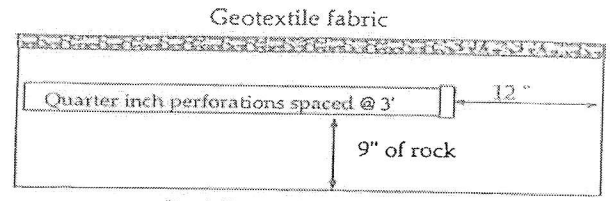
$$\underline{250} \text{ sqft} \div \underline{24} \text{ perfs} = \underline{10} \text{ sqft/perf}$$

- Determine required flow rate by multiplying the total number of perforations (6A) by flow per perforation (see figure E-6)

$$\underline{24} \text{ perfs} \times \underline{.74} \text{ gpm/perfs} = \underline{18} \text{ gpm}$$

- If laterals are connected to header pipe as shown on upper example, to select minimum required lateral diameter; enter figure E-4 with perforation spacing (2) and number of perforations per lateral (5) Select minimum diameter for perforated lateral = 17 inches.

- If perforated lateral system is attached to manifold pipe near the center, lower diagram, perforated lateral length (3) and number of perforations per lateral (5) will be approximately one half of that in step 8. Using these values, select minimum diameter for perforated lateral = _____ inches.



Perf Sizing 3/16" - 1/4"
 Perf Spacing 1.5' - 5'

E-4: Maximum allowable number of 1/4-inch perforations per lateral to guarantee <10% discharge variation

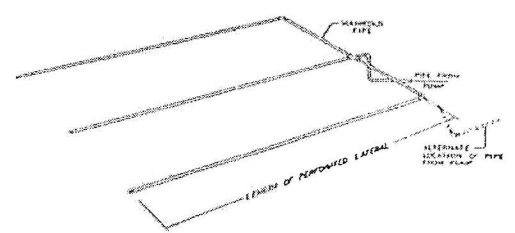
perforation spacing (feet)	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	8	14	18	28
3.0	8	13	17	26
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

E-6: Perforation Discharge in gpm

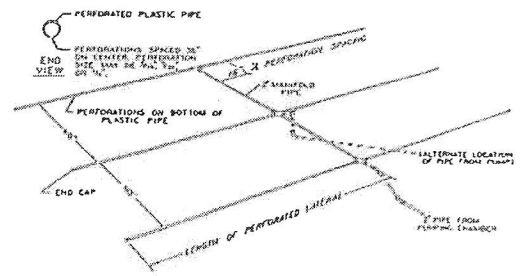
head (feet)	perforation diameter (inches)			
	1/8	3/16	7/32	1/4
1.0 ^a	0.18	0.42	0.56	0.74
2.0 ^b	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

^a Use 1.0 foot for single-family homes.
^b Use 2.0 feet for anything else.

MANIFOLD LOCATED AT END OF PRESSURE DISTRIBUTION SYSTEM



LAYOUT OF PERFORATED PIPE LATERALS FOR PRESSURE DISTRIBUTION IN MOUND



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

Mark Jones (signature) 22129 (license #) 5/2/16 (date)

Gary Brown

PUMP SELECTION PROCEDURE

1. Determine pump capacity:

A. Gravity distribution

1. Minimum required discharge is 10 gpm
2. Maximum suggested discharge is 45 gpm. For other establishments at least 10% greater than the water supply rate, but no faster than the rate at which effluent will flow out of the distribution device.

B. Pressure distribution

See pressure distribution work sheet

From A or B Selected pump capacity: 18 gpm

2. Determine pump head requirements:

A. Elevation difference between pump and point of discharge?

8 feet

B. Special head requirement? (See Figure at right - Special Head Requirements)

5 feet

C. Calculate Friction loss

1. Select pipe diameter 2 in

2. Enter Figure E-9 with gpm (1A or B) and pipe diameter (C1).

Read friction loss in feet per 100 feet from Figure E-9

Friction Loss = .73 ft/100ft of pipe

3. Determine total pipe length from pump discharge to soil treatment discharge point. Estimate by adding 25 percent to pipe length for fitting loss. Total pipe length times 1.25 = equivalent pipe length

20 feet x 1.25 = 25 feet

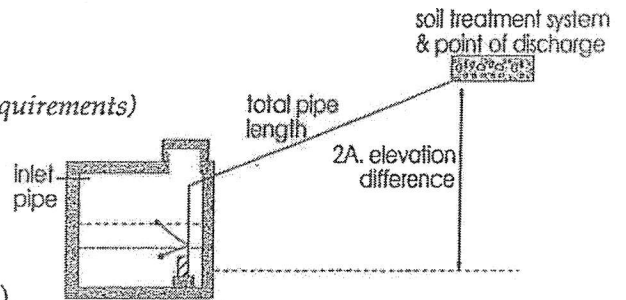
4. Calculate total friction loss by multiplying friction loss (C2) in ft/100 ft by the equivalent pipe length (C3) and divide by 100.

= .73 ft/100ft x 25 ÷ 100 = .18 ft

D. Total head required is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4)

8 ft + 5 ft + .18 ft =

Total head: 13.18 feet



Special Head Requirements	
Gravity Distribution	0 ft
Pressure Distribution	5 ft

flow rate gpm	E-9: Friction Loss in Plastic Pipe Per 100 feet		
	nominal pipe diameter		
	1.5"	2"	3"
20	2.47	0.73	0.11
25	3.73	1.11	0.16
30	5.23	1.55	0.23
35	6.96	2.06	0.30
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.70
60		5.60	0.82
65		6.48	0.95
70		7.44	1.09

3. Pump selection

A pump must be selected to deliver at least 18 gpm (1A or B) with at least 13.18 feet of total head (2D)

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

Mark Jay

(signature)

22129

(license #)

5/2/16

(date)

Subsurface Sewage Treatment System Management Plan

Property Owner: Brown Phone: _____ Date: _____
Mailing Address: 22165-450th Ave City: Aitkin Zip: 56431
Site Address: Same City: _____ Zip: _____

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 service provider.

System Designer: check every _____ months.
Local Government: check every _____ months.
State Requirement: check every 36 months.

My System needs to be checked every 36 months.

(State requirements are based on MN Rules Chapter 7080.2450, Subp. 2 & 3)

Homeowner Management Tasks

- Leaks* – Check (look, listen) for leaks in toilets and dripping faucets. Repair leaks promptly.
- Surfacing sewage* – Regularly check for wet or spongy soil around your soil treatment area.
- Effluent filter* – *Inspect and clean twice a year or more.*
- Alarms* – Alarm signals when there is a problem. Contact a service provider any time an alarm signals.
- Event counter or water meter* – Record your water use.
 - recommend meter readings be conducted (circle one: DAILY WEEKLY MONTHLY)

Professional Management Tasks

- Check to make sure tank is not leaking
- Check and clean the in-tank effluent filter
- Check the sludge/scum layer levels in all septic tanks
- Recommend if tank should be pumped
- Check inlet and outlet baffles
- Check the drainfield effluent levels in the rock layer
- Check the pump and alarm system functions
- Check wiring for corrosion and function
- Check dissolved oxygen and effluent temperature in tank
- Provide homeowner with list of results and any action to be taken
- Flush and clean laterals if cleanouts exist

"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 the 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: _____

Designer Signature: *Mark* _____ Date: _____

See Reverse Side for Management Log

4/9

Maintenance Log

Activity	Date Accomplished									
<i>Check frequently:</i>										
Leaks: check for plumbing leaks										
Soil treatment area check for surfacing										
Lint filter: check, clean if needed										
Effluent screen: if owner-maintained										
Water usage rate (monitor frequency _____)										
<i>Check annually:</i>										
Caps: inspect, replace if needed										
Sludge & Scum/Pump										
Inlet & Outlet baffles										
Drainfield effluent leaks										
Pump, alarm, wiring										
Flush & clean laterals if cleanouts exists										
Other: _____										
Other: _____										

Notes: _____

Mitigation/corrective action plan: _____



Minnesota Pollution Control Agency

520 Lafayette Road North
St. Paul, MN 55155-4194

Compliance Inspection Form

Existing Subsurface Sewage Treatment Systems (SSTS)

Doc Type: Compliance and Enforcement

Inspection results based on Minnesota Pollution Control Agency (MPCA) requirements and attached forms - additional local requirements may also apply.

For local tracking purposes:				
Hazelton				
Sec	32	Twp	45	Rg 27

Submit completed form to Local Unit of Government (LUG) and system owner within 15 days

System Status

System Status on date (mm/dd/yyyy): 5/2/2016

- Compliant - Certificate of Compliance - Mound** **Noncompliant - Notice of Noncompliance**
(Valid for 3 years from report date, unless shorter time frame outlined in Local Ordinance.) *(See Upgrade Requirements on page 3)*

Reason(s) for noncompliance (check all applicable)

- Impact on Public Health (Compliance Component #1) - *Imminent threat to public health and safety*
- Other Compliance Conditions (Compliance Component #3) - *Imminent threat to public health and safety*
- Tank Integrity (Compliance Component #2) - *Failing to protect groundwater*
- Other Compliance Conditions (Compliance Component #3) - *Failing to protect groundwater*
- Soil Separation (Compliance Component #4) - *Failing to protect groundwater*
- Operating permit/monitoring plan requirements (Compliance Component #5) - *Noncompliant*

Property Information

Parcel ID# or Sec/Twp/Range: 11-0-069100

Property address: 22165 450th Ave, Aitkin, MN 56431 Reason for inspection: Permit
 Property owner: Gary Brown Owner's phone: _____
 or
 Owner's representative: Tim Schulke-Elite Construction Services Representative phone: 218-851-7810
 Local regulatory authority: Aitkin Regulatory authority phone: _____

Brief system description: Gravity from the house to precast Jacobson septic/lift tank. This tank will be replace. Pumps to a mound drainfield with a 10' X 25' rock bed.

Comments or recommendations:

First onsite 3/23/2016. Found that the float switch was stuck on in the lift. Float cord was stiff and no moving correctly. The lift tank had some sludge in it. Also saw some ponding in the inspection pipe in the rock bed. 5/2/2016, found the water in the inspection pipe was gone. House had not been lived in for approx. a week prior. The mound is in compliance (seperation and not surfacing). Talked to the contractor and owner about the mound. At the current time they are going to keep it and hook up it with the new tank.

Certification

I hereby certify that all the necessary information has been gathered to determine the compliance status of this system. No determination of future system performance has been nor can be made due to unknown conditions during system construction, possible abuse of the system, inadequate maintenance, or future water usage.

Inspector name: Martin Joyce Certification number: 5453
 Business name: Martin Joyce Septic Service, LLC License number: 2129
 Inspector signature: Phone number: 218-820-2621

Necessary or Locally Required Attachments

- Soil boring logs System/As-build drawing Forms per local ordinance
 Other information (list): _____

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1. Impact on Public Health - Compliance component #1 of 5

Compliance criteria:

System discharge sewage to the ground surface.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
System discharge sewage to drain tile or surface waters.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
System causes sewage backup into dwelling or establishment.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Any "yes" answer above indicates the system is an Imminent Threat to Public Health and Safety.

Verification method(s):

- Searched for surface outlet
- Searched for seeping in yard/backup in home
- Excessive ponding in soil system/D-boxes
- Homeowner testimony (See Comments/Explanation)
- "Black soil" above soil dispersal system
- System requires "emergency" pumping
- Performed dye test
- Unable to verify (See Comments/Explanation)
- Other methods not listed (See Comments/Explanation)

Comments/Explanation:

See notes. Check the inspection pipe.

2. Tank Integrity - Compliance component #2 of 5

Compliance criteria:

System consists of a seepage pit, cesspool, drywell, or leaching pit. <i>Seepage pits meeting 7080.2550 may be compliant if allowed in local ordinance.</i>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sewage tank(s) leak below their designed operating depth. If yes, which sewage tank(s) leaks:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Any "yes" answer above indicates the system is Failing to Protect Groundwater.

Verification method(s):

- Probed tank(s) bottom
- Examined construction records
- Examined Tank Integrity Form (Attach)
- Observed correct operating depth
- Examined empty (pumped) tank(s)
- Probed outside tank(s) for "black soil"
- Unable to verify (See Comments/Explanation)
- Other methods not listed (See Comments/Explanation)

Comments/Explanation:

The existing tank will be pumped and removed. New tank to be installed and lowered due to the elevation of the new house.

3. Other Compliance Conditions - Compliance component #3 of 5

a. Maintenance hole covers are damaged, cracked, unsecured, or appear to be structurally unsound. Yes* No Unknown

b. Other issues (electrical hazards, etc.) to immediately and adversely impact public health or safety. Yes* No Unknown

***System is an imminent threat to public health and safety**

Explain:

c. System is non-protective of ground water for other conditions as determined by inspector Yes* No

***System is failing to protect groundwater**

Explain:

7d9

4. Soil Separation - Compliance component #4 of 5

Date of installation: 8/1/1994 Unknown
 Shoreland/Wellhead protection/Food Beverage Lodging? Yes No

Verification method(s):
Soil observation does not expire. Previous soil observations by two independent parties are sufficient, unless site conditions have been altered or local requirements differ:

Compliance criteria:
For systems built prior to April 1, 1996, and not located in Shoreland or Wellhead Protection Area or not serving a food, beverage or lodging establishment:
 Drainfield has at least a two-foot vertical separation distance from periodically saturated soil or bedrock. Yes No

- Conducted soil observation(s) (Attach boring logs)
- Two previous verifications (Attach boring logs)
- Not applicable (Holding tank(s), no drainfield)
- Unable to verify (See Comments/Explanation)
- Other (See Comments/Explanation)

Non-performance systems built April 1, 1996, or later or for non-performance systems located in Shoreland or Wellhead Protection Areas or serving a food, beverage, or lodging establishment:
 Drainfield has a three-foot vertical separation distance from periodically saturated soil bedrock. * Yes No

Comments/Explanation:

"Experimental", "Other", or "Performance" systems built under pre-2008 Rules; Type IV or V systems built under 2008 Rules (7080.2350 or 7080.2400 (Advanced Inspector License required)
 Drainfield meets the designed vertical separation distance from periodically saturated soil or bedrock. Yes No

Indicate depths of elevations	
A. Bottom of distribution media	+12"
B. Periodically saturated soil/bedrock	24"
C. System separation	36"
D. Required compliance separation*	36"

*May be reduced up to 15 percent if allowed by Local Ordinance.

Any "no" answer above indicates the system is Failing to Protect Groundwater.

5. Operating Permit and Nitrogen BMP * - Compliance #5 of 5

Is the system operated under an Operating Permit? Yes No **If "yes", A below is required**
 Is the system required to employ a Nitrogen BMP? Yes No **If "yes", B below is required**

BMP=Best Management Practice(s) specified in the system design

If the answer to both questions is "no", this section does not need to be completed.

Compliance criteria:
 a. Operating Permit number: _____ Yes No
 Have the Operating Permit requirements been met?
 b. Is the required nitrogen BMP in place and properly functioning? Yes No

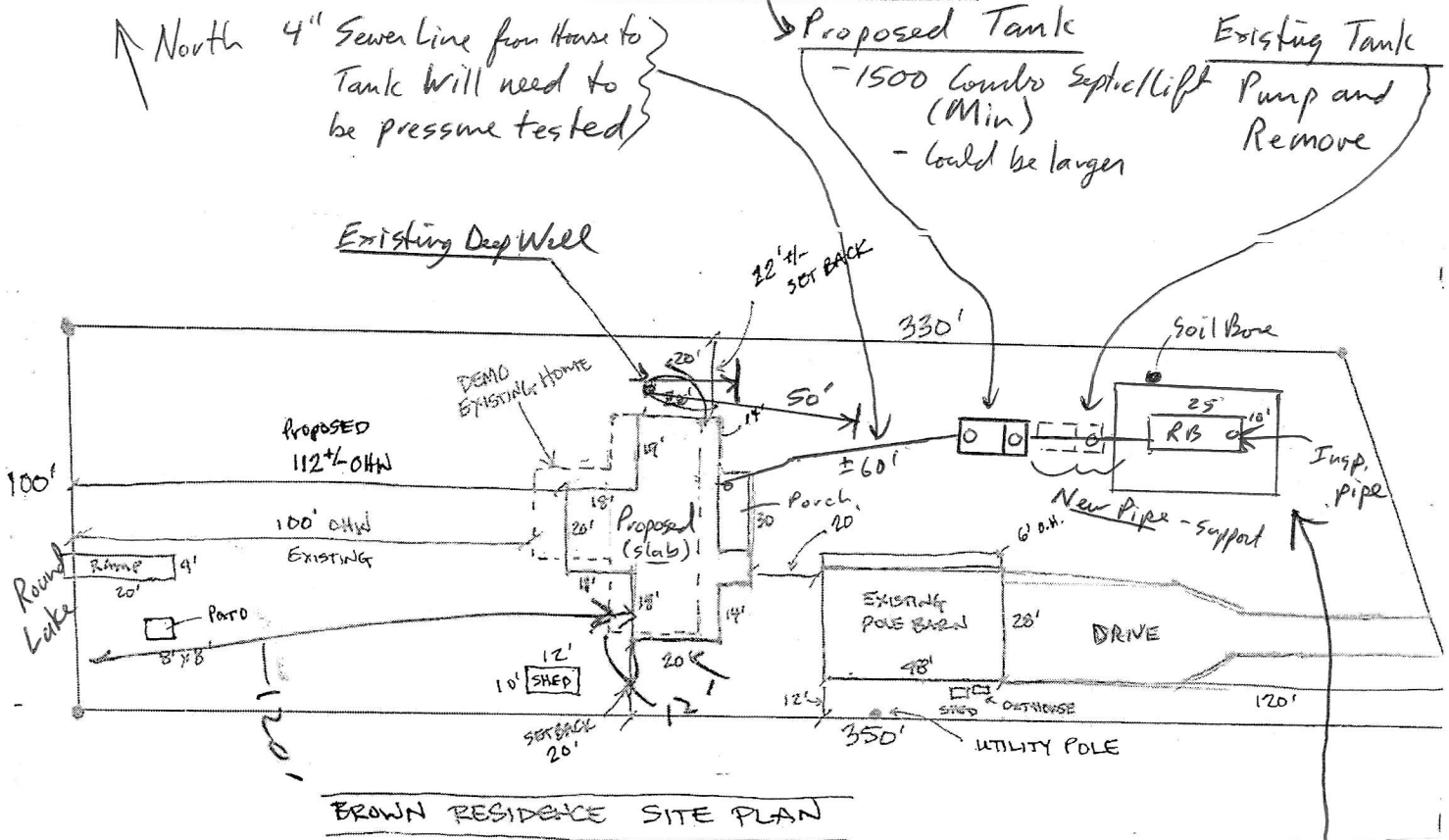
Any "no" answer indicates Noncompliance.

Upgrade Requirements (Minn. Stat. 115.55) An imminent threat to public health and safety (ITPHS) must be upgraded, replaced, or its use discontinued within ten months of receipt of this notice or within a shorter period if required by local ordinance. If the system is failing to protect ground water, the system must be upgraded, replace, or its use discontinued within the time required by local ordinance. If an existing system is not failing as defined in law, and has at least two feet of design soil separation, then the system need not be upgraded, repaired, replaced, or its use discontinued, notwithstanding any local ordinance that is more strict. This provision does not apply to systems in shoreland areas, Wellhead Protection Areas, or those used in connection with food, beverage, and lodging establishments as defined in law.

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Name: Gary Brown
 Site Address: 22165 450th Ave, Aitkin, MN 56431

Site Sketch: *Tank needs to be lower due to the elevation of the new house.*
 Re Code: 11-0-069100



BROWN RESIDENCE SITE PLAN

Soil Borings (BR #): Locate each boring on the map above, indicate on the right of the column the soil texture structure, color, depth of each different soil type, evidence of mottling, bedrock and standing water. Also, indicate if the material is fill.

SB #1		SB #2
0" - 6"	Topsoil	10YR 3/3
6" - 28"	Sandy Loam	10YR 4/4
28" - 32"	Fine Sandy Loam w/mottles	10YR 4/4

** Existing Mound*
 10' x 25' Rock Bed
 + 12" Sand

28" Restrictive Layer
 +12" Bottom of Drainfield

+36" of Separation

RECORD DEPTH OF MOTTLING, SEASONAL, SEASONAL HIGH WATER (AS INDICATED USING THE MUNSELL COLOR BOOK) OR BEDROCK ON ABOVE LINES

Comments: _____

What needs to be completed to bring the above system into compliance if found not in compliance?

Nothing _____

5/2/2016

Mark Jensen