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

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

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

For local tracking purposes:

System Status

System status on date (mm/dd/yyyy): 12/21/2018

☑ **Compliant – Certificate of Compliance**
(Valid for 3 years from report date, unless shorter time frame outlined in Local Ordinance.)

☐ **Noncompliant – Notice of Noncompliance**
(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: 34-0-040702

Property address: 11500 110th Ave, Finlayson
Reason for inspection: property transfer

Property owner: Sue Gamauf
Owner's phone: 320-233-7600

or

Owner's representative:
Representative phone:

Local regulatory authority: Aitkin County
Regulatory authority phone:

Brief system description: 2,000 gal combination septic/pump tank and mound system

Comments or recommendations:

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: Dennis Schlomka
Certification number: 545

Business name: D. Schlomka, Inc
License number: 1106

Inspector signature: Dennis Schlomka
Phone number: 320-384-7911

Necessary or Locally Required Attachments

☑ Soil boring logs ☑ System/As-built drawing ☐ Forms per local ordinance

☐ Other information (list):

Property address: 11500 110th Ave, Finlayson Inspector initials/Date: DS 12/21/2018

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

Compliance criteria:	
System discharge sewage to the ground surface.	☐ Yes ☑ No
System discharge sewage to drain tile or surface waters.	☐ Yes ☑ No
System cause sewage backup into dwelling or establishment.	☐ Yes ☑ 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:

2. Tank Integrity – Compliance component #2 of 5

Compliance criteria:	
System consists of a seepage pit, cesspool, drywell, or leaching pit. *Seepage pits meeting 7080.2550 may be compliant if allowed in local ordinance.*	☐ Yes ☑ No
Sewage tank(s) leak below their designed operating depth.	☐ Yes ☑ No
If yes, which sewage tank(s) leaks:	

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 liquid level below operating depth
- ☑ Examined empty (pumped) tanks(s)
- ☐ Probed outside tank(s) for "black soil"
- ☐ Unable to verify *(See Comments/Explanation)*
- ☐ Other methods not listed *(See Comments/Explanation)*

Comments/Explanation:

Septic tanks are water tight, not water proof. At certain times of the year, especially in Spring or after heavy rains, it is possible for surface water to enter the tank.

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

a. Maintenance hole covers are damaged, cracked, unsecured, or appear to 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:

Property address: 11500 110th Ave, Finlayson Inspector initials/Date: DS 12/21/2018

4. Soil Separation – Compliance component #4 of 5

Date of installation: 6/2005 ☐ Unknown

Shoreland/Wellhead protection/Food Beverage Lodging? ☐ Yes ☑ No

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
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 or bedrock.*	☑ Yes ☐ No
"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

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

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.

- ☐ 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)*

Comments/Explanation:

Indicate depths of elevations

A. Bottom of distribution media	+ 18
B. Periodically saturated soil/bedrock	- 18"
C. System separation	36"
D. Required compliance separation*	36"

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

5. Operating Permit and Nitrogen BMP* – Compliance component #5 of 5 ☑ Not applicable

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: _____ Have the Operating Permit requirements been met?	☐ Yes ☐ No
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, replaced, 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.*

INDIVIDUAL SEWAGE TREATMENT SYSTEM INSPECTION FORM
AITKIN COUNTY, MINNESOTA

Township Wagner | Date of Inspection 5-24-05 | Permit Number 34-0-040702

Owner Alfred Gamauf | Parcel Number 326dd

Project Address 11500 - 110th Ave | Installer Mike Johnson - Sand Stone

City Finlayson | Zip Code 55735 | New * | Repair

DIST. or DROP BOX & TYPE

SETBACKS:
Buildings to tank(s) 52' to overhang
Buildings to drainfield 270'
Well(s) 50' or 100' Deep ≥100'
Lake/Creek/Wetland WA

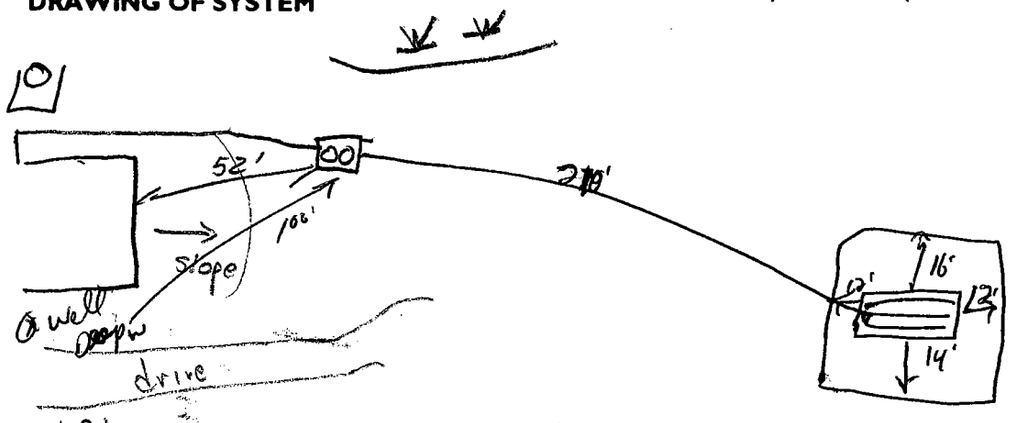
SEPTIC TANKS:
Liquid capacity 1300 combo
Manufacturer & type Baurley (Bremix) combo
Type of baffle Plastic (box)
Inspection pipes 3@4"
Manholes access 2@26"
No. & height of risers 2@24"

TRENCHES, BEDS, OR GRAVELLESS LEACHFIELD:
Trench depth
Trench length
Trench bottom width
Trench bottom level
Trench spacing
Drainfield rock below pipe
Size of gravelless pipe
Depth of backfill
Absorption area: square feet
lineal feet

MOUNDS:
Percent slope 3%
Upslope dike width 14'
Downslope dike width 10'
Sideslope dike width 12'
Drainfield rock below pipe 9"
Depth of sand below rock ~~9~~ 1½
Perforation size & spacing ~~1/8~~ 3
Pipe size & spacing ~~1½~~ 2" - 3 laterals
Dimensions of rock bed 10X63
Dimensions of sand base 40 X 87
Final cover 16" in Center 12" on Rock Edge

PUMPS:
Tank capacity 700
Tank manufacturer & type Baurley
No. & height of risers 24"
Pump manufacturer & model# Gould
Horsepower & GPM ⅓ - 50
Feet of head 32
Cycles per day 5
Gallons per cycle 100
Size of discharge line 1"
Type of electrical hookup post
Type & location of alarm Elec.
Cycle counter (commercial)

DRAWING OF SYSTEM



Soil Pit
0-7 10yR 3/2 Loam Friable Friable
7-14 10yR 4/3 Sandy loam SAB
14-24" 7.5yR 4/4 clay loam Platy
(Mottles 10yR 4/6 + 10yR 3/2 @ 18" very few) will
24" common

x Soil Pit 1

x Soil Pit 2

Inspector's Comments pumped old tank and fill

Corrective Action Required

Inspector's Signature

Installer's Signature

White-County Yellow-Applicant Pink-Installer

AITKIN COUNTY
CERTIFICATE OF COMPLIANCE/NOTICE OF NONCOMPLIANCE

This certificate of compliance/notice of noncompliance has been issued this _____ day of 6-9-05 to certify compliance\noncompliance with Aitkin County's Individual Sewage Treatment System and Wastewater Ordinance No. 1. The premises covered by this certificate are legally described as: _____

5 AC in SW corner of SW NW

Section 25 Township 43 Range 22 Lake NA

PERMIT NO. 32661 Owner Name Alfred Camant

Address 11500 110th Ave. Finlayson, Mn 55735

Installer Name Mike Johnson (Sandstone)

Type of System Inspected Mound

The certificate of compliance/notice of noncompliance was based on, No 1 of the following:

(1) Inspection of the installation or construction as in accordance with the above referenced permit and application design.

2) Review of as-built plans submitted in accordance with Subdivision 4.21 C. Of Aitkin County's Individual Sewage Treatment System and Wastewater Ordinance No. 1.

If the above permitted individual sewage treatment system is in noncompliance with Aitkin County's Individual Sewage Treatment System and Wastewater Ordinance No. 1, then the following shall serve as a Notice of Violation:

1) Statement of the findings of fact through inspections or investigations: _____

2) List of specific violations of Ordinance: _____

3) Requirements for correction or removal of violations: _____

4) Time schedule for compliance: _____

Failure to correct or remove the above violations will result in this matter being turned over to the Aitkin County Attorney's Office for further legal action which may result in revocation of licenses or registrations, fine's and/or imprisonment.

INSPECTOR SIGNATURE _____

c:\wp61\terry.dir\certform.doc

J.B. INSPECTION LLC.
29430 MONUMENT DR.
BROOK PARK MN 55007
LIC# 2151 320-697-1377

CONSTRUCTION NOTES: PREPARED FOR: ALFRED & SUSAN GAMAUF

TANK SIZE:
INSTALL A 2000GAL TWO COMPARTMENT TANK WITH FILTER FOR SEPTIC. ADD 1000 GAL FOR PUMP TANK, WITH BLOCK FOR PUMP AND INSTALL ALARM ALSO HAVE FILTER INSTALLED ON THE SEPTIC SIDE. ALL ELECTRIC WIRING NEEDS TO BE PROTECTED AROUND THE PUMP AND SEPTIC TANKS. THIS SHOULD BE INSTALLED IN CONDUIT BACK TO THE HOUSE.

ALL MANHOLE LIDS BRING TO GRADE AND SECURE.

INSTALL INSPECTION PIPES WHERE NEEDED, ALSO INSTALL A CLEAN OUT WHERE NEEDED.

PUMP: GPM:35.3 TOTAL HEAD: 17.4 FEET:

PIPING: SCH 40 4" HOUSE TO SEPTIC TANK: FT=Field Verify 75FT
SCH 40 4" SEPTIC TANK TO PUMP TANK.
SCH, 40 2" PUMP TANK TO ROCK BED: FT=Field Verify 210FT
FROM PUMP TANK PLACE 2"SCH. 40 INSIDE 4"SCH 40 HELP PROTECT SAGGING OF 2" (5-10 FT)
INSTALL INSULATED PIPE ACROSS DRIVEWAY, ALSO PLACE STRAW ON ALL NEW CONSTRUCTION TO HELP PREVENT FREEZING.

ELEVATION READINGS:

BENCHMARK LOCATION: LOCATION OF BENCHMARK NEXT TO TREE STAKED BY C2

	READING:	ELEVATION:
BENCHMARK: READING	2.06	100
CORNER ONE:	3.67	98.36
CORNER TWO:	2.40	99.66
CORNER THREE:	1.77	100.29
CORNER FOUR:	2.40	99.66
INLET SEPTIC TANK:	8.36	93.70
MANIFOLD:		98.66

IT IS UP TO THE INSTALLER TO RECEIVE AND PLACE CLEAN MATERIAL FOR MOUND & TRENCH CONSTRUCTION

ACCEPTING SUBSTANDARD MATERIAL CAN CAUSE THE FINISHED SYSTEM TO FAIL SOONER!!

Mound Design Worksheet (For flows up to 1200 gpd)

All boxed rectangles must be entered, the rest will be calculated.

A. FLOW

Estimated: 750 gpd *(see figure A-1)*
or measured: ____ x 1.5 (safety factor) = 0 gpd

B. SEPTIC TANK LIQUID VOLUMES

Septic tank capacity: 2000 2/c gallons *(see figure C-1)*

C-1 Septic Tank Capacity in Gallons

Number of Bedrooms	Minimum Capacity	Capacity with Garb. Disp.	Capacity with Disp. and Lift
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1500	2250	3000
7, 8 or 9	2000	3000	4000

C. SOILS *(Site evaluation data)*

1. Depth to restricting layer= 1.5 2x feet
2. Depth of percolation tests = 24 *inches*
3. Texture: loam
4. Soil loading rate *(see Figure D-33)* 0.6 gpd/ ft^2
   Percolation rate: 22 MPI
5. % Land Slope: 2 %

D. ROCK LAYER DIMENSIONS

1. Multiply average design flow (A) by 0.83 to obtain required area of rock layer: Item A x 0.83=
   750 gpd x 0.83 ft^2/gpd = 622.5 ft^2

2. Determine rock layer width = 0.83 ft^2/gpd x Linear Loading Rate (LLR) (see LLR chart)
   0.83 ft^2/gpd x 12 = 10.0 ft

LLR Chart

Perk Rate	LLR
<120 MPI	<=12
>=120 MPI	<=6

3. Length of rock layer = area divided by width =
   622.5 ft^2 / 10 feet = 62.5 feet

E. ROCK VOLUME

1. Multiply rock area by rock depth to get cubic feet of rock
   622.5 X 1 ft = 622.5 ft^3

2. Divide ft^3 by 27 ft^3/yd^3 to get cubic yards
   622.5 ft^3 / 27 = 23.1 yd^3

3. Multiply cubic yards by 1.4 to get weight of rock in tons;
   23.1 yd^3 X 1.4 ton/yd^3 = 32.3 tons

F. ABSORPTION WIDTH

1. Absorption width equals absorption ratio (see Figure D-33) times rock layer width
   2 x 10.0 ft = 20.0 ft

G. MOUND SLOPE WIDTH & LENGTH (Greater than 1%)

1. Downslope absorption width = absorption width minus rock layer width

20 feet - 10 feet = 10 feet

2. Calculate mound size

UPSLOPE

a. Determine depth of clean sand at upslope edge of rock layer = 3 feet minus distance to restricting layer(C1)

3 ft - 1.5 2x ft = 1.5 feet

b. Mound height at the upslope edge of rock layer = depth of clean sand for separation (G2a) at upslope edge plus depth of rock layer (1 foot) to depth of cover (1 foot)

1 ft + 1ft + 1 ft = 3 feet

c. Upslope berm multiplier based on land slope *(see figure D-34)*

Select berm multiplier of [3.7]

d. Upslope width = berm multiplier(G2c) times upslope mound height(G2b):

3.7 x 3 ft = 11.1 feet

DOWNSLOPE

e. Drop in elevation = rock layer width (D2) times percent landslope(C5) / 100

10 ft x 2 % / 100 = 0.2 feet

f. Downslope mound height = depth of clean sand for slope difference (G2e) at downslope rock edge plus the mound height at the upslope edge of rock layer (2b)

0.20 ft + 3 ft = 3.2 feet

g. Downslope berm multiplier based on percent land slope (see Figure D-34) [4.35]

h. Downslope width = downslope multiplier(G2g) times downslope mound height(G2f)

4.35 x 3.2 = 13.9 feet

i. Select greater of G1 and G2h as the downslope width 13.9 feet

j. Total mound width is the sum of upslope (G2d) width plus rock layer width (D2) plus downslope width (G2i)

11.1 ft + 10.0 ft + 13.9 ft = 35.0 feet

k. Total mound length is the sum of upslope width (G2d) plus rock layer length (D3) plus upslope width (G2d)

11.1 ft + 62.5 ft + 11.1 ft = 84.7 feet

Final Dimensions (slope >1%)	35.0 ft x 84.7 ft

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

[signature] (signature) 2151 (license #) 05/24/05 (date)

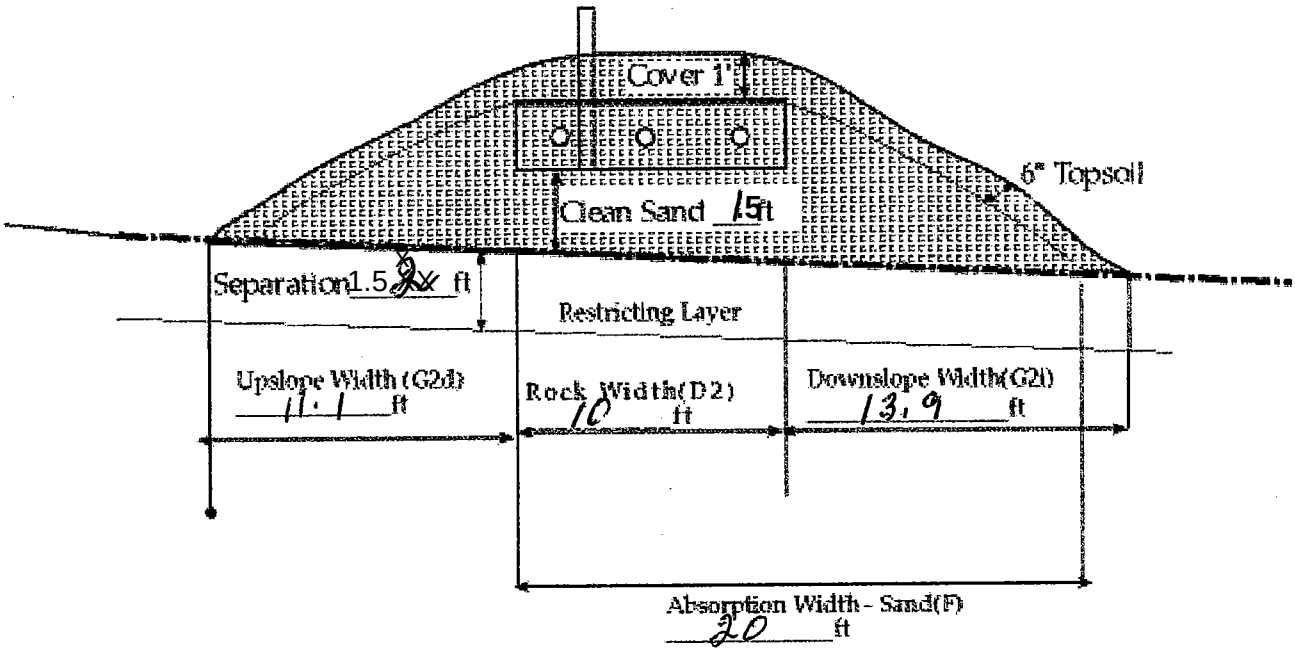
A-1 Estimated Sewage Flows in GPD				
Number of Bedrooms	Class I	Class II	Class III	Class IV
2	300	225	180	60% of
3	450	300	218	the
4	600	375	256	values
5	750	450	294	in the
6	900	525	332	Class I,
7	1050	600	370	II or II
8	1200	675	408	columns

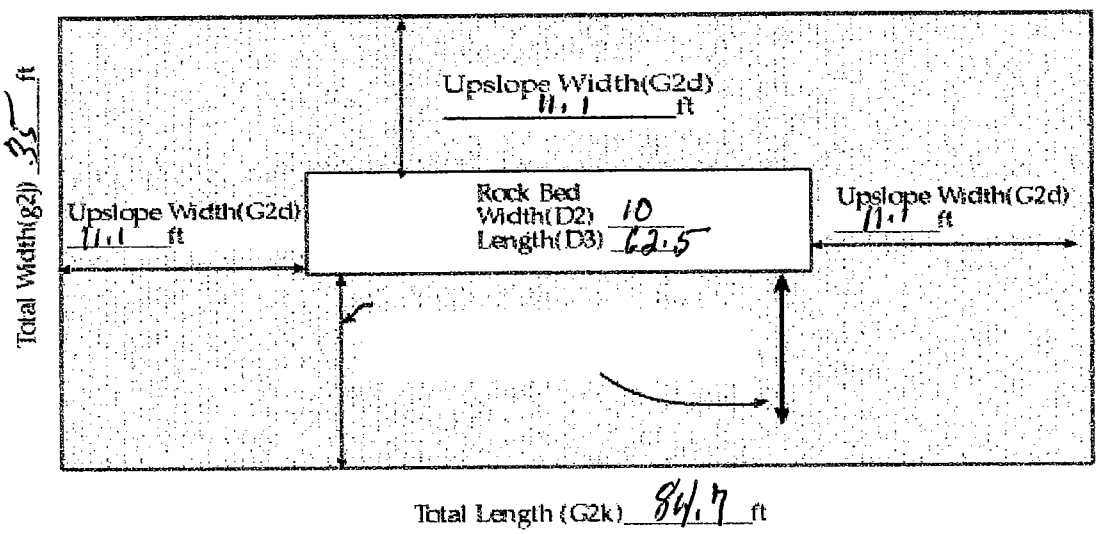
D-33 Absorption Width Sizing Table			
Perc Rate mpi	Soil Texture	Loading Rate gpd/sq ft	Absorption Ratio
<5	Coarse sand Loamy sand Med., Fine sand	1.20	1.00
6 -15	Sandy loam	0.79	1.50
16-30	Loam	0.60	2.00
31-45	Silt Loam, Silt	0.50	2.40
46 - 60	Clay loam, Silty or Sandy Clay Loam	0.45	2.67
61-120	Silty or Sandy Clay or Clay	0.24	5
>120*			
*Must be other or performance.			

D-34: SLOPE MULTIPLIER TABLE

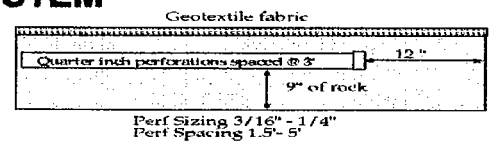
Land Slope, in %	UPSLOPE multipliers for various slope ratios						DOWNSLOPE multipliers for various slope ratios				
	3:1	4:1	5:1	6:1	7:1	8:1	3:1	4:1	5:1	6:1	7:1
0	3.0	4.0	5.0	6.0	7.0	8.0	3.0	4.0	5.0	6.0	7.0
1	2.91	3.85	4.76	5.66	6.54	7.41	3.09	4.17	5.26	6.38	7.53
2	2.83	3.70	4.54	5.36	6.14	6.90	3.19	4.35	5.56	6.82	8.14
3	2.75	3.57	4.35	5.08	5.79	6.45	3.30	4.54	5.88	7.32	8.86
4	2.68	3.45	4.17	4.84	5.46	6.06	3.41	4.76	6.25	7.89	9.72
5	2.61	3.33	4.00	4.62	5.19	5.71	3.53	5.00	6.67	8.57	10.77
6	2.54	3.23	3.85	4.41	4.93	5.41	3.66	5.26	7.14	9.38	12.07
7	2.48	3.12	3.70	4.23	4.70	5.13	3.80	5.56	7.69	10.34	13.73
8	2.42	3.03	3.57	4.05	4.49	4.88	3.95	5.88	8.33	11.54	15.91
9	2.36	2.94	3.45	3.90	4.30	4.65	4.11	6.25	9.09	13.04	18.92
10	2.31	2.86	3.33	3.75	4.12	4.44	4.29	6.67	10.00	15.00	23.33
11	2.26	2.78	3.23	3.61	3.95	4.26	4.48	7.14	11.11	17.65	30.43
12	2.21	2.70	3.12	3.49	3.80	4.08	4.69	7.69	12.50	21.43	43.75

Landslope > 1% slope





PRESSURE DISTRIBUTION SYSTEM



All boxed rectangles must be entered, the rest will be calculated.

1. Select number of perforated laterals: [3]

2. Select perforation spacing = [3] ft

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

3. Since perforations should not be placed closer that 1 foot to the edge of the rock layer (see diagram), subtract 2 feet from the rock layer length

[63] - 2 ft = 61 ft
rock layer length

4 Determine the number of spaces between perforations.
Divide the length (3) by perforation spacing (2) and round down to nearest whole number.
Perforation spacing = 61 ft / 3 ft = 20 spaces

5. 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.*
20 spaces + 1 = 21 perforations/lateral

6. A. Total number of perforations = perforations per lateral (5) times number of laterals (1).
21 perfs/ lat x 3 laterals = 63 perforations

B. Calculate the square footage per perforation.
Recommended value is 6-10 sqft/perf. Does not apply to at-grades.
1. Rock bed area = rock width (ft) x rock length (ft)
[10] ft x 63 ft = 630 ft^2
2. Square foot per perforation=Rock Bed Area/number of perfs(6)
630.0 ft^2 / 63 perfs = 10.0 ft^2/ perf

E-6 Perforation Discharge in GPM

Head (feet)	Perforations diameter (inches)		
	3/16	7/32	1/4
1[a]	0.42	0.56	0.74
2[b]	0.59	0.80	1.04
5	0.94	1.26	1.65

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

7. Determine required flow rate by multiplying the total number of perforations(6A) by flow per perforations (see figure E-6)
63 perfs x [0.56] gpm / perfs = 35.3 gpm

8. If laterals are connected to header pipe as shown in Figure E-1, to select minimum required lateral diameter; enter figure E-4 with perforation spacing (2) and number of perforations per lateral (5).

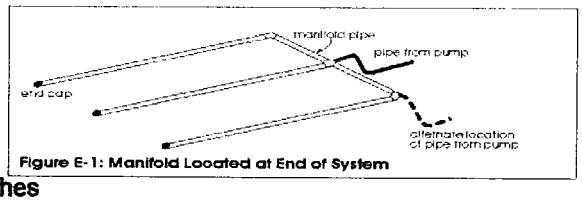
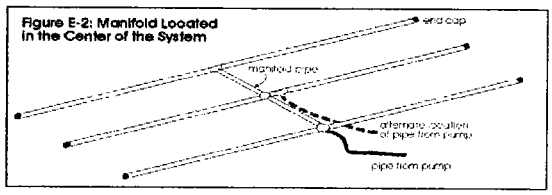


Figure E-1: Manifold Located at End of System

Select minimum diameter for perforated laterals = [2] inches

9. If perforated lateral system is attached to manifold pipe near the center, like Figure E-2, 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.



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

[signature] (signature) 2151 (license #) 05/24/05 (date)

PUMP SELECTION PROCEDURE

All boxed rectangles must be entered, the rest will be calculated.

1. Determine pump capacity:

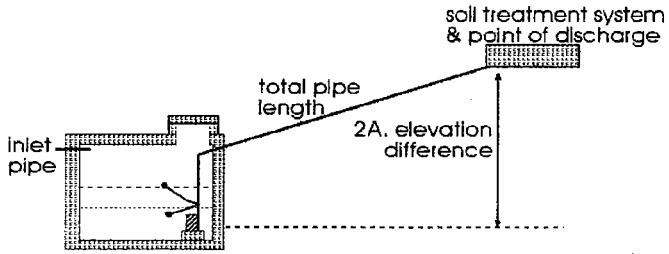
A. Gravity Distribution

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 design worksheet

Selected Pump Capacity: [35.3] **gpm**



2. Determine head requirements:

A. Elevation difference between pump and point of discharge.
[7] feet

B. Special head requirement? *(See Figure - Special Head Requirements)*
[5] feet

Special Head Requirements	
Gravity Distribution	0ft
Pressure Distribution	5ft

C. 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= [2.06] ft/ 100 ft of pipe

3. Determine total pipe length from pump discharge to soil system discharge point.
Estimate by adding 25 percent to pipe length for fitting loss.
Equivalent pipe length times 1.25 = total pipe length
[210] ft x 1.25 = [262.5] feet

4. Calculate total friction loss by multiplying friction loss (C2) by the equivalent pipe length (C3) and divide by 100.
FL= [2.06] ft/100ft X [262.5] ft / 100= [5.4] feet

E-9 Friction Loss in Plastic Pipe per 100 ft

Flow Rate	nominal pipe diameter		
gpm	1.5"	2.0"	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	0.3
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.7
60		5.6	0.82
65		6.48	0.95
70		7.44	1.09

D. Total head requirement is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4).
[7] ft + [5] ft + [5.4] ft

Total Head: [17.4] **feet**

3. Pump Selection

1. A pump must be selected to deliver at least 35.3 gpm (1A or B)
with at least 17.4 feet of total head (2D).

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

[signature] (signature) [2151] (license #) [05/24/05] (date)

J. B. INSPECTION LLC.
29430 MONUMENT RD. BROOK PARK MN 55007
DESIGNER JEFFREY BURGER Lic# 2151

SOIL BORING LOG

DATE: **08/05/2004** PID# **PID# 340.040.702**
TOWNSHIP: **Wagner** COUNTY: **Aitkin**
CLIENT: **AL GAMAUF**
ADDRESS: **11500 110 TH AVE** CITY: **FINLAYSON** STATE: **MN** ZIP: **55735** **BLOCK#_____**
LOT#_____

Primary Site

Boring method: Hand auger__ X__

Color classification system: Munsell__X__

Boring Number: B1
Surface Elevation:
Soil type at system depth:

Depth (feet)	Texture	color
1	Loam	7.5YR 3/4
2	Sandloam	7.5YR 5/6
3	Loam Sand. w/stone	2.5YR 4/6
4		
5		
6		
7		

Slope:_____%

End of boring at 5 **feet**

Standing water table: yes (no)
Present at_____feet of depth,
_____hours after boring.
Mottled soil: Observed at 1.5 **feet.**
Mottled soil not present in boring X
Observations & Comments:

Boring Number: B2
Surface Elevation:
Soil type at system depth:

Depth (feet)	Texture	Color
1	Loam w/stone	7.5YR 3/4
2	Sandy loam	7.5YR 5/8
3	Loam Sand Clay/stone	2.5YR 4/6
4		
5	Sandy loam	2.5YR 4/6
6		
7		

Slope:_____%

End of boring at 5 **feet**

Standing water table: yes (no)
Present at_____feet of depth,
_____hours after boring.
Mottled soil: Observed at_____feet.
Mottled soil not present in boring X
Observations & Comments:

J. B. INSPECTION LLC.
29430 MONUMENT RD. BROOK PARK MN 55007
DESIGNER JEFFREY BURGER Lic# 2151

SOIL BORING LOG

DATE: **08/05/2004** PID# **PID# 340.040.702**
TOWNSHIP: **Wagner** COUNTY: **Aitkin**
CLIENT: **AL GAMAUF**
ADDRESS: **11500 110 TH AVE** CITY: **FINLAYSON** STATE: **MN** ZIP: **55735** **BLOCK#_____**
LOT#_____

Primary Site

Boring method: Hand auger__ X__	**Color classification system: Munsell__X__**
Boring Number: B 3	**Boring Number:**
Surface Elevation:	**Surface Elevation:**
Soil type at system depth:	**Soil type at system depth:**

Depth (feet)	Texture	color	Depth (feet)	Texture	Color
1	Loam w/stone	7.5YR 3/4	1		
2	Sandy Loam	7.5YR 5/8	2		
3	Sandy Loam w/stone	7.5YR 4/6	3		
4			4		
5			5		
6			6		
7			7		

Slope:_____%

End of boring at 5 **feet**

Standing water table: yes (no)
Present at_____feet of depth,
_____hours after boring.
Mottled soil: Observed at 1.5 **feet.**
Mottled soil not present in boring X
Observations & Comments:

Slope:_____%

End of boring at_____feet

Standing water table: yes no
Present at_____feet of depth,
_____hours after boring.
Mottled soil: Observed at_____feet.
Mottled soil not present in boring___
Observations & Comments:

J. B. INSPECTION LLC.
29430 MONUMENT RD. BROOK PARK MN 55007
DESIGNER JEFFREY BURGER Lic# 2151

SOIL BORING LOG

DATE: **08/05/2004** PID# **PID# 340.040.702**
TOWNSHIP: **Wagner** COUNTY: **Aitkin**
CLIENT: **AL GAMAUF**
ADDRESS: **11500 110 TH AVE** CITY: **FINLAYSON** STATE: **MN** ZIP: **55735** **BLOCK#_____**
LOT#_____

Alternate site

Boring method: Hand auger__ X__

Boring Number: BH
Surface Elevation:_____
Soil type at system depth:_____

Depth (feet)	Texture	color
1	LOAM	7.5YR 3/4
2	SAND LOAM	7.5YR 5/4
3		
4	MOTTLING	7.5YR 6/1
5		
6		
7		

Slope:_____%

End of boring at 3.17 **feet**

Standing water table: yes (no)
Present at_____**feet of depth,**
_____**hours after boring.**
Mottled soil: Observed at 3 **feet.**
Mottled soil not present in boring___
Observations & Comments:

Color classification system: Munsell__X__

Boring Number: B5
Surface Elevation:_____
Soil type at system depth:_____

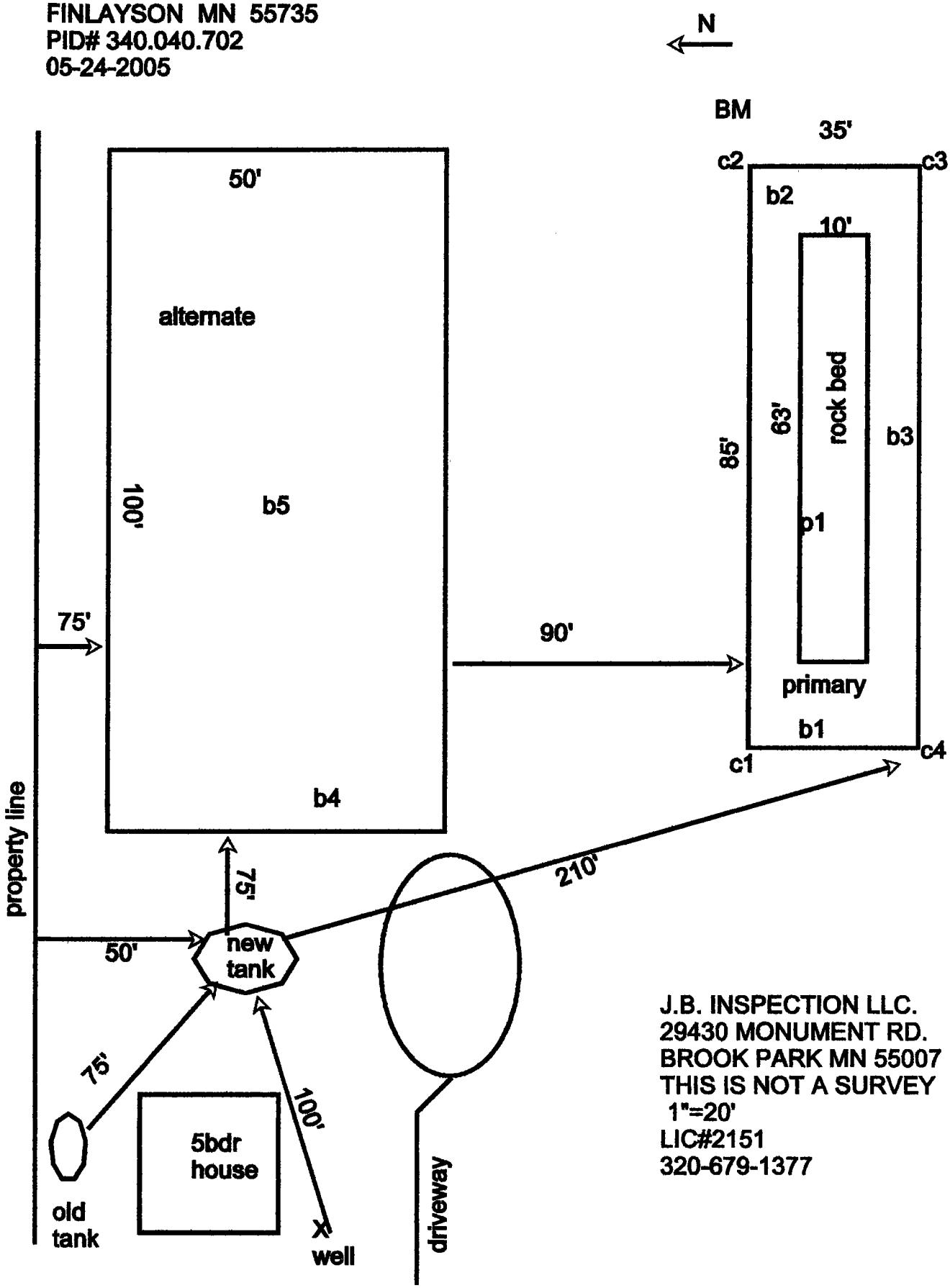
Depth (feet)	Texture	Color
1	LOAM W/ STONE	7.5YR 3/4
2	LOAM	7.5YR 5/4
3	SANDY CLAY LOAM	2.5YR 4/6
4		
5	SANDY	7.5YR 4/6
6		
7		

Slope:_____%

End of boring at 5 **feet**

Standing water table: yes (no)
Present at_____**feet of depth,**
_____**hours after boring.**
Mottled soil: Observed at_____**feet.**
Mottled soil not present in boring X
Observations & Comments:

ALFRED GAMAUF
11500 110TH AVE
FINLAYSON MN 55735
PID# 340.040.702
05-24-2005



J.B. INSPECTION LLC.
29430 MONUMENT RD.
BROOK PARK MN 55007
THIS IS NOT A SURVEY
1"=20'
LIC#2151
320-679-1377

JOB #

PERCOLATION TEST DATA SHEET

Company Name J.B. INSPECTION LLC. License Number 2151

Percolation Test Performed by JUEFFREY BURGER

Homeowner Nam ALFRED & SUSAN GAMAUF

Address 11500 110TH AVE FINLAYSON MN, 55735

Test Hole # P1 Diameter of hole 8 inches

Location CENTER OF DRAIN FIELD AREA

Method of scratching sidewall NAIL BOARD

Depth at bottom of hole 24 inches Depth of gravel at bottom 2 inches

Date presoak started 8/5/2004 Starting at 10:30AM AM / PM

Depth of initial water filling 10" above hole bottom

Method used to maintain 12" of water depth in hole for 4 hours SPHION SYSTEM

Date presoak ended 8/5/2004 Ending at 3:00 PM AM / PM

Date perc readings conducted 8/5/2004 Starting at 3:10PM AM / PM

Maximum depth above hole bottom during test 8 inches

Surface elevation (in reference to benchmark): feet

Directions: Enter elapsed time and drop in water level and the rest will be calculated

#	*Elapsed Time (min)*	*Time Interval (min)*	*Drop in Water Level (inches)*	*Percolation Rate (mpi)*	*% Difference*	*10% Goal Reached**
1	3:20 AM	10	0.50	20.0	NA	NA
2	3:30PM	10	0.50	20.0	0.0	YES
3	3:40PM	10	0.48	20.8	4.2	YES
4	3:50PM	10	0.45	22.2	6.7	YES
5				0.0	0.0	0
6		0		0.0	0.0	0
7		0		0.0	0.0	0
8		0		0.0	0.0	0

* 3 consecutive percolation rates must be within 10% or less of each other

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

(signature) 2151 (license #) 08/05/04 (date)