FIELD EVALUATION SHEET

PRELIMINARY EVALUATION DATE 4/16/16 , FIELD EVALUATION DATE 4/16/16
PROPERTY OWNER: Harvey Boyd   PHONE 715-220-9000
ADDRESS: 23229   Hwy 47 CITY,STATE,ZIP: Aitkin MN 56431
LEGAL DESCRIPTION: 10 Ac of SE-SE in Doc 433265
PIN# 21-0-048500   SEC 29 T 45 R 25 TWP NAME Malmo
FIRE#_____LAKE/RIVER_____ LAKE CLASS_____ OHWL_____FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2	
DISTURBED AREAS	YES___NO ✓	YES___NO ✓	REFERENCE BM ELEV. 100 FT.
COMPACTED AREAS	YES___NO ✓	YES___NO ✓	REFERENCE BM DESCRIPTION___
FLOODING	YES___NO ✓	YES___NO ✓	Ground at
RUN ON POTENTIAL	YES___NO ✓	YES___NO ✓	N/W Corner of
SLOPE %	<1	2	House
DIRECTION OF SLOPE	N	N	
LANDSCAPE POSITION	Crest	Slope	
VEGETATION TYPES	Wooded	Wooded	

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 _18"_ , 1A _18"_ , 2 _18"_ , 2A _17"_

BOTTOM ELEVATION--FIRST TRENCH OR BOTTOM OF ROCK BED: #1_____FT., #2_____FT.

SOIL SIZING FACTOR: SITE #1 _1.27_ , SITE #2 _1.27_

CONSTRUCTION RELATED ISSUES: _____

LIC# 663   SITE EVALUATOR SIGNATURE: Greg Westerlund

SITE EVALUATOR NAME: Greg Westerlund TELEPHONE# 218-839-9460

LUG REVIEW RA   DATE 6/7/16

Comments:_____

SOIL BORING LOGS ON REVERSE SIDE

Form des 2/20/98

SOILS CHARTS FOR BOTH PROPOSED AND ALTERNATE SITES

1 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
6	loam	10YR 2/2
18	Sand loam	10YR 4/4
19	Mottle Soil	

2 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
7	loam	10YR 2/2
18	Sand loam	10YR 4/4
19	Mottle Soil	

1 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
8	loam	10YR 2/2
18	Sand loam	10YR 4/4
19	Mottle Soil	

2 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
8	loam	10YR 2/2
17	Sand loam	10YR 4/4
18	Mottle Soil	

ADDITIONAL SOIL BORINGS MAY BE REQUIRED

MOUND DESIGN WORK SHEET (For Flows up to 1200 gpd)

A. Average Design FLOW

Estimated __450__ gpd (see figure A-1)
or measured _____ x 1.5 (safety factor) = _____ gpd

A-1: Estimated Sewage Flows in Gallons per Day				
number of bedrooms	Class I	Class II	Class III	Class IV
2	300	225	180	60%
(3)	450	300	218	of the
4	600	375	256	values
5	750	450	294	in the
6	900	525	332	Class I,
7	1050	600	370	II, or III
8	1200	675	408	columns.

B. SEPTIC TANK Capacity

__1,000__ gallons (see figure C-1)

C. SOILS (refer to site evaluation)

1. Depth to restricting layer = __1.5__ feet
2. Depth of percolation tests = _____ feet
3. Texture __Sandy loam__
   Percolation rate _____ mpi
4. Soil loading rate __.79__ gpd/sqft (see figure D-33)
5. Percent land slope __< 1__ %

C-1: Septic Tank Capacities (in gallons)			
Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	Liquid capacity with disposal & lift inside
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

D. ROCK LAYER DIMENSIONS

1. Multiply average design flow (A) by 0.83 to obtain required rock layer area.
   __450__ gpd x 0.83 sqft/gpd = __373.5__ sqft
2. Determine rock layer width = 0.83 sqft/gpd x linear Loading Rate (LLR)
   0.83 sqft/gpd x __.83__ gpd/sqft = __9.96__ ft
3. Length of rock layer = area ÷ width =
   __374__ sqft (D1) ÷ __10__ ft (D2) = __37.4__ ft

Mound LLR	
< 120 MPI	≤ 12
≥ 120 MPI	≤ 6

E. ROCK VOLUME

1. Multiply rock area (D1) by rock depth of 1 ft to get cubic feet of rock
   __375__ sqft x 1 ft = __375__ cuft
2. Divide cuft by 27 cuft/cuyd to get cubic yards
   __375__ cuft ÷ 27 cuyd/cuft = __13.88__ cuyd
3. Multiply cubic yards by 1.4 to get weight of rock in tons
   __13.88__ cuyd x 1.4 ton/cuyd = __19.44__ tons

F. SEWAGE ABSORPTION WIDTH

Absorption width equals absorption ratio (See Figure D-33) times rock layer width (D2)

__10__ x __1.5__ ft = __15__ ft

D-33: Absorption Width Sizing Table			
Percolation Rate in Minutes per Inch (MPI)	Soil Texture	Loading Rate Gallons per day per square foot	Absorption Ratio
Faster than 5	Coarse Sand Medium Sand Loamy Sand Fine Sand	1.20	1.00
6 to 15	Sandy Loam	0.79	1.50
16 to 30	Loam	0.60	2.00
31 to 45	Silt Loam Silt	0.50	2.40
46 to 60	Sandy Clay Loam Silty Clay Loam Clay Loam	0.45	2.67
61 to 120	Silty Clay Sandy Clay Clay	0.24	5.00
Slower than 120*			

*System designed for these soils should be rubber or performance

G. Mound Slope Width and Length
   (landslope less than or equal to 1%)

1. Absorption width (F) __15__ ft

2. Calculate mound size

a. Determine depth of clean sand fill

at upslope edge of rock layer = 3 ft

minus the distance to restricting layer (C1)

3 ft - __1.5__ ft = __1.5__ ft

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 ft) plus depth of cover (1 ft)

__1.5__ ft + 1ft + 1ft = __3.5__ ft

c. Berm width = upslope mound height (G2b) times 4 (*4 is recommended, but could be 3-12*)

__3.5__ x 4 = __14__ ft

d. The total landscape width is the sum of berm (G2c) width plus rock layer width (D2) plus berm wid
(G2c): __14__ ft + __10__ ft + __14__ ft = __38__ ft

e. Additional width necessary for absorption = absorption width (F) minus the landscape width (G2d)

__15__ ft - __38__ ft = __-23__ ft, *if number is negative (<0) skip to g*

f. Final berm width = additional width (G2e) plus the berm width (G2c)

_____ ft + _____ ft = _____ ft

g. Total mound width is the sum of berm width (G2f or G2c) plus rock layer width (D2) plus berm
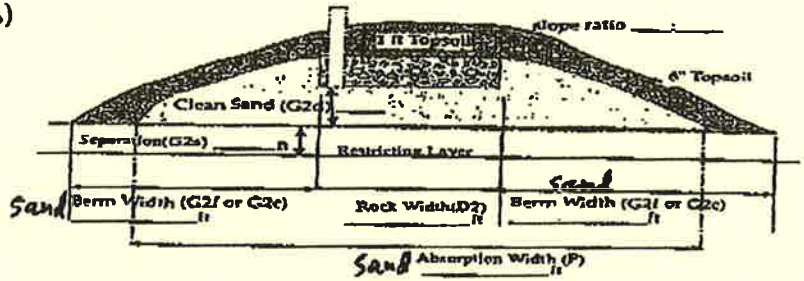width (G2f or G2c): __14__ ft + __10__ ft + __14__ ft = __38__ ft

h. Total mound length is the sum of berm (G2f or G2c) plus rock layer length (D3) plus berm (G2f or
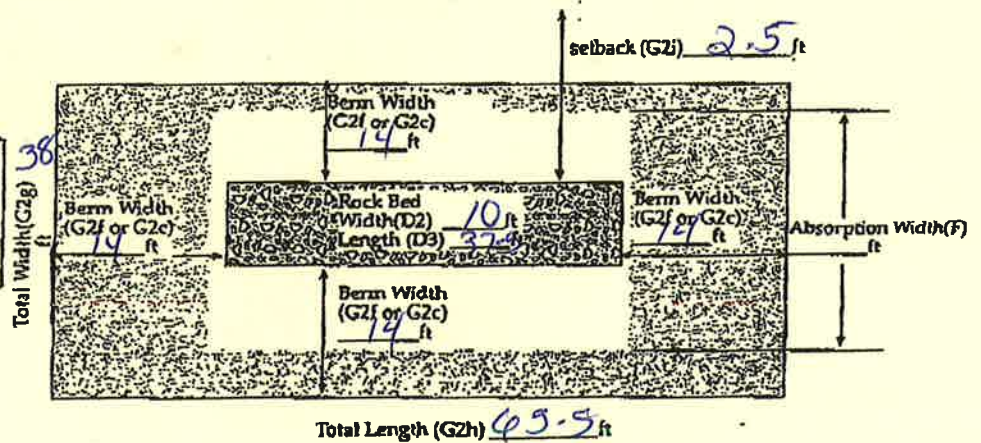G2c): __14__ ft + __37.5__ ft + __14__ ft = __65.5__ ft

i. Setbacks from the rockbed are calculated as follows: the absorption width (F) minus the rock bed widt
(D2) divided by 2: (__15__ ft - __10__ ft) ÷ 2 = __2.5__ ft

setback (G2i) __2.5__ ft

Final Dimensions:
__65.5__ x __38__

Berm Width (C2f or G2c) __14__ ft

Berm Width (G2f or G2c) __14__ ft

Rock Bed Width(D2) __10__ ft
Length (D3) __37.5__

Berm Width (G2f or G2c) __14__ ft

Berm Width (G2f or G2c) __14__ ft

Total Width(G2g) __38__

Absorption Width(F) ft

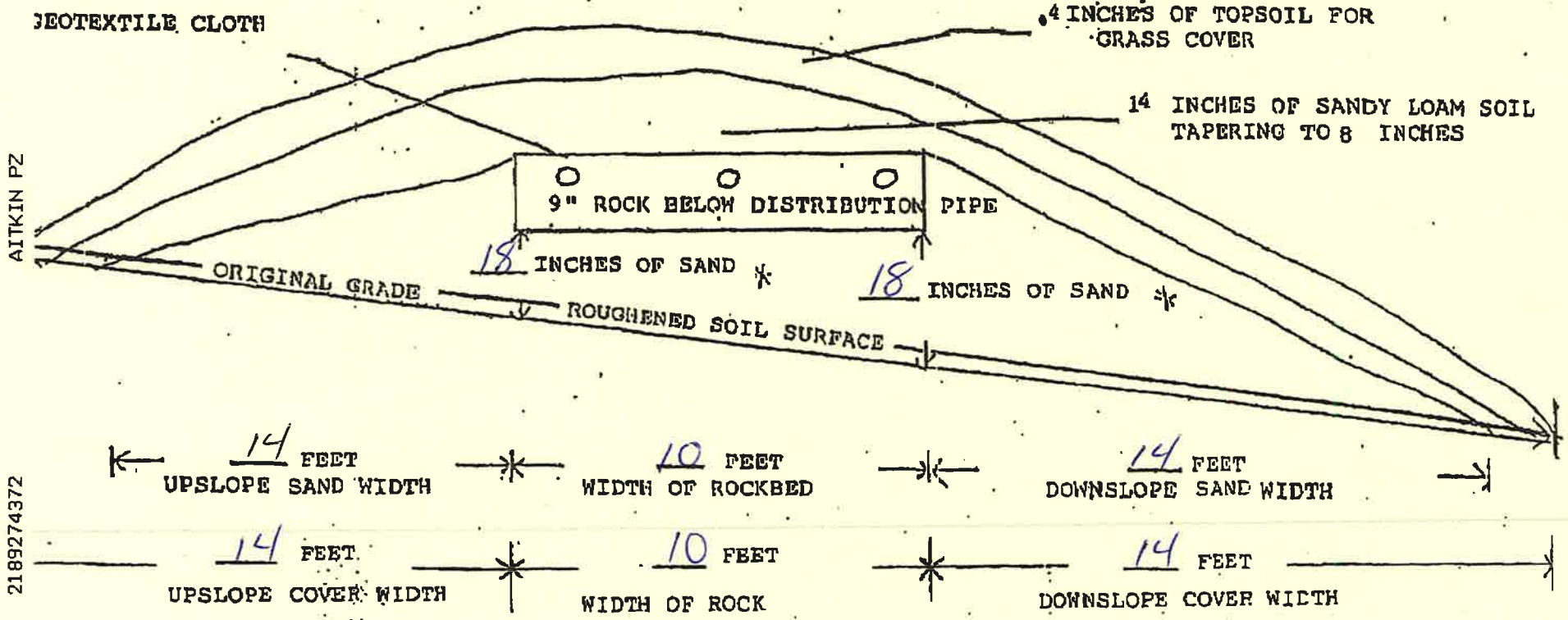Total Length (G2h) __65.5__ ft

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

Greg Westerlund (signature) __663__ (license #) __5/18/16__ (date)
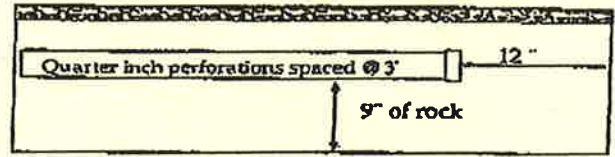
MOUND CROSS-SECTION

<1 PERCENT SLOPE OF
ORIGINAL SOIL

10 FT. x **37.5** FT. SIZE OF ROCKBED **14 38** FT. x **65.5** FT. SIZE OF SANDBASE

GEOTEXTILE CLOTH

.4 INCHES OF TOPSOIL FOR GRASS COVER

14 INCHES OF SANDY LOAM SOIL TAPERING TO 8 INCHES

9" ROCK BELOW DISTRIBUTION PIPE

18 INCHES OF SAND ✳   **18 INCHES OF SAND ✳**

ORIGINAL GRADE

ROUGHENED SOIL SURFACE

14 FEET
UPSLOPE SAND WIDTH

10 FEET
WIDTH OF ROCKBED

14 FEET
DOWNSLOPE SAND WIDTH

14 FEET
UPSLOPE COVER WIDTH

10 FEET
WIDTH OF ROCK

14 FEET
DOWNSLOPE COVER WIDTH

PRESSURE DISTRIBUTION SYSTEM

Geotextile fabric

Quarter inch perforations spaced @ 3'   12"

9" of rock

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

1. Select number of perforated laterals __3__

2. Select perforation spacing = __2.5__ ft

3. 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.

$$\frac{37.5}{\text{Rock layer length}} - 2 \text{ ft} = \underline{35.5} \text{ ft}$$

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

4. Determine the number of spaces between perforations. Divide the length (3) by perforation spacing (2) and <u>round down</u> to nearest whole number.

Perforation spacing = __35.5__ ft ÷ __2.5__ ft = __14__ 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.*

__14__ spaces + 1 = __15__ perforations/lateral

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

__15__ perfs/lat x __3__ lat = __45__ perforations

B. Calculate the square footage per perforation. Should be 6-10 sqft/perf. *Does not apply to at-grades.*
Rock bed area = rock width (ft) x rock length (ft)
__10__ ft x __37.5__ ft = __375__ sqft
Square foot per perforation = Rock bed area ÷ number of perfs (6)
__375__ sqft ÷ __45__ perfs = __8.33__ sqft/perf

E-6: Perforation Discharge in gpm				
head (feet)	perforation diameter (inches)			
	1/8	3/16	7/32	1/4
1.0a	0.18	0.42	0.56	0.74
2.0b	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

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

__45__ perfs x __.74__ gpm/perfs = __33.3__ gpm

8. 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 = __1 1/2__ inches.

LAYOUT OF PERFORATED PIPE LATERALS FOR PRESSURE DISTRIBUTION IN MOUND

9. 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.

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

Greg Westerlund (signature)   __663__ (license #)   __5/18/16__ (date)

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: __33.3__ gpm

2. Determine pump head requirements:
A. Elevation difference between pump and point of discharge?
   __9__ 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 = __2.06__ 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
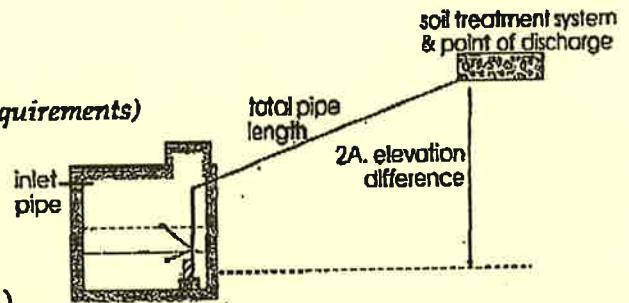   __45__ feet x 1.25 = __56.25__ feet
   4. Calculate total friction loss by multiplying friction loss (C2) in ft/100 ft by the equivalent pipe length (C3) and divide by 100.
      = __2.06__ ft/100ft x __56.25__ ÷100 = __1.16__ ft

D. Total head required is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4)
      __9__ ft + __5__ ft+ __1.16__ ft =

   Total head: __15.16__ **feet**

---

3. Pump selection

A pump must be selected to deliver at least __33__ gpm
(1A or B) with at least __15__ feet of total head (2D)

Special head requirements figure:

soil treatment system & point of discharge

total pipe length

inlet pipe

2A. elevation difference

Special Head Requirements	
Gravity Distribution	0 ft
Pressure Distribution	5 ft

E-9: Friction Loss in Plastic Pipe Per 100 feet

flow rate gpm	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

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

__Greg Westerlund__ (signature)   __663__   (license #)   __5/18/16__   (date)
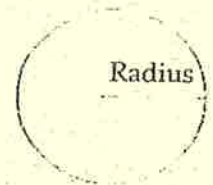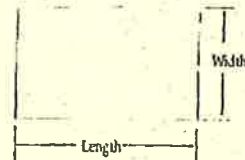
1. Determine area
   A. Rectangle area = L x W
      4.5 x **5-58** = **25.11** square feet
   B. Circle area = π (3.14) x radius in feet x radius in feet
      3.14 x _____ ft x _____ ft = _____ sqft
   C. Get area from manufacturer _____ sqft

Width
Length
Radius

2. Calculate gallons per inch
   There are 7.5 gallons per cubic foot of volume, therefore multiply the area (1A, B or C) times the conversion factor and divide by 12 inches per foot to calculate gallon per inch.
   Area x 7.5 ÷ 12 = **25.11** sqft x 7.5 ÷ 12 in/ft = **15.69** gallon per inch

3. Calculate total tank volume
   A. Depth from bottom of inlet pipe to tank bottom _____ in
   B. Total tank volume = depth from bottom of inlet pipe to tank bottom (3A) x gal/in (2)
      = **52** in x **15.69** gal/in = **815.88** gal

4. Calculate gallons to cover pump (with 2-3 inches of water covering pump)
   (Pump and block height (inch) + 2 inch) x gallon/inch
   (**16** in +2 in) x **18** gal/in = **251** gallon
      15.69

5. Calculate total pumpout volume
   A. Select pump size for 4-5 does per day. Gallon per dose = gpd (see *figure A-1*) / doses per day = **450** gpd ÷ **4** doses/day = **112.5** gallons
   B. Calculate drainback
      1. Determine total pipe length, **45** feet
      2. Determine liquid volume of pipe, **.17** gal per ft (see *figure E-20*)
      3. Drainback quantity = **45** ft (5B1) x **.17** gal per ft (5B2) = **7.65** gal
   C. Total pump out volume = dose volume (5A) + drainback (5B3)
      112.5 gal + **7.65** gal = **120.15** Total gallon

6. Float separation distance (using total pumpout volume)
   Total pumpout volume (5C) ÷ gal/inch (2)
   120.15 gal ÷ **15.69** gal/in= **7.66** inch

7. Calculate volume for alarm (typically 2 to 3 inches)
   Alarm depth (inch) x gallon/inch (2) = **2** in x **15.69** gal/in = **31.38** gal

8. Calculate total gallon = gallons over pump (4) + gallons pumpout (5C) + gallons alarm (7)
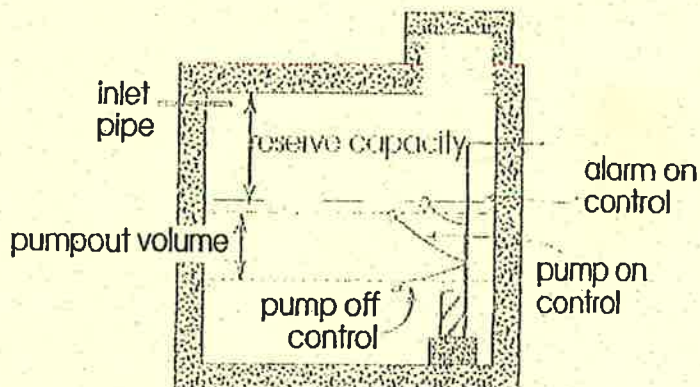   **251** gal + **120.15** gal + **31.38** gal = **402.53** gallons

9. Total Tank Depth = total gallon (8) ÷ gallon/inch (2)
   402.53 gal ÷ **15.69** gal/in = **25.66** in

Recommended:
Calculate reserve capacity (75% the daily flow)
Daily flow x .75 = **450** x .75 = **337.5** gallons

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

E-20: Volume of Liquid in Pipe	
Pipe Diameter inches	Gallons per foot
1	0.045
1.25	0.078
1.5	0.11
2	0.17
2.5	0.25
3	0.38
4	0.66

inlet pipe
reserve capacity
alarm on control
pumpout volume
pump off control
pump on control

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

Greg Westerlund (signature)   **663** (license #)   **3/18/16** (date)

Harvey Boyd

MAP DRAWN TO SCALE ~~WITH A~~ WITH A NORTH ARROW

North Prop. line

SB2A.

A/T Area

SB1A.

old Tank To be abandoned

SB2

375 sq. ft. Rock bed

SB1

New 1500 gal. Septic/pump Tank

West propline 100'±

BM

House

South prop line 100'±

Garage

O Well (Deep)

Hwy 47

$\frac{1}{4}'' = 10'$

N
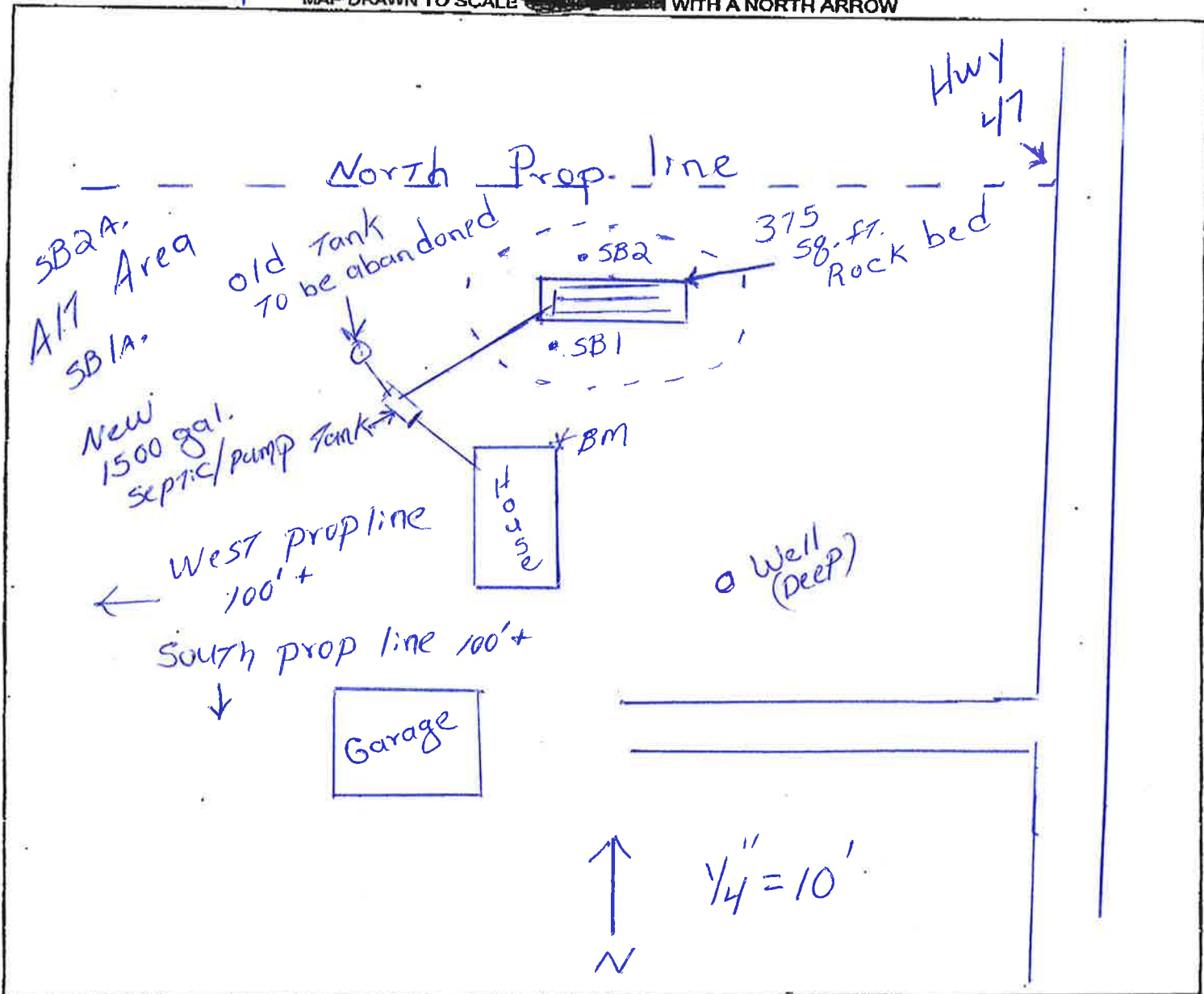
CHECK OFF LIST—HAVE ALL OF THE FOLLOWING BEEN DRAWN ON THE MAP??

SHOW EXISTING OR PROPOSED

☐ WATER WELLS WITHIN 100 FT OF TREATMENT AREAS
☐ PRESSURE WATER LINES WITHIN 10 FT OF TREATMENT AREAS
☐ STRUCTURES ☐ LOT IMPROVEMENTS
☐ ALL SOIL TREATMENT AREAS ☐ ALL ISTS COMPONENTS
☐ HORIZONTAL AND VERTICAL REFERENCE
☐ POINT OF SOIL BORINGS ☐ DIRECTION OF SLOPE
☐ LOT EASEMENTS ☐ ALL LOT DIMENSIONS
☐ DISTURBED/ COMPACTED AREAS
☐ SITE PROTECTION—LATHE AND RIBBON EVERY 15 FT
☐ ACCESS ROUTE FOR TANK MAINTENANCE

REQUIRED SETBACKS

☐ STRUCTURES ☐ PROPERTY LINES
☐ OHWL

COMMENTS:

DESIGNER SIGNATURE _Greg Westerlund_

LICENSE# 663

INDICATE ELEVATIONS

BENCHMARK 100
ELEVATION OF SEWER LINE @ HOUSE 97
ELEVATION @ TANK INLET 96-5
ELEVATION @ BOTTOM OF ROCK LAYER 100-5
ELEVATION @ BOTTOM OF BORING OR
RESTRICTIVE LAYER 97
ELEVATION OF PUMP 92-5
ELEVATION OF DISTRIBUTION DEVICE 101-5

DATE 5/18/16

UNIVERSITY OF MINNESOTA
ONSITE
SEWAGE
TREATMENT
PROGRAM

UNIVERSITY OF MINNESOTA
EXTENSION

Septic System Management Plan for Mound 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	Harvey Boyd	
Property Address	23229 Hwy 47	Property ID 21-0-048500
System Designer	Greg Westerlund	License # 663
System Installer	Westerlund	License # 663
Service Provider/Maintainer		Phone
Permitting Authority		Phone
Permit #		Date Inspected

Keep this Management Plan with your *Septic System Owner's Guide*. The *Septic System Owner's Guide* includes a folder designed to hold maintenance records including pumping, inspection and evaluation reports. Ask your septic professional to also:
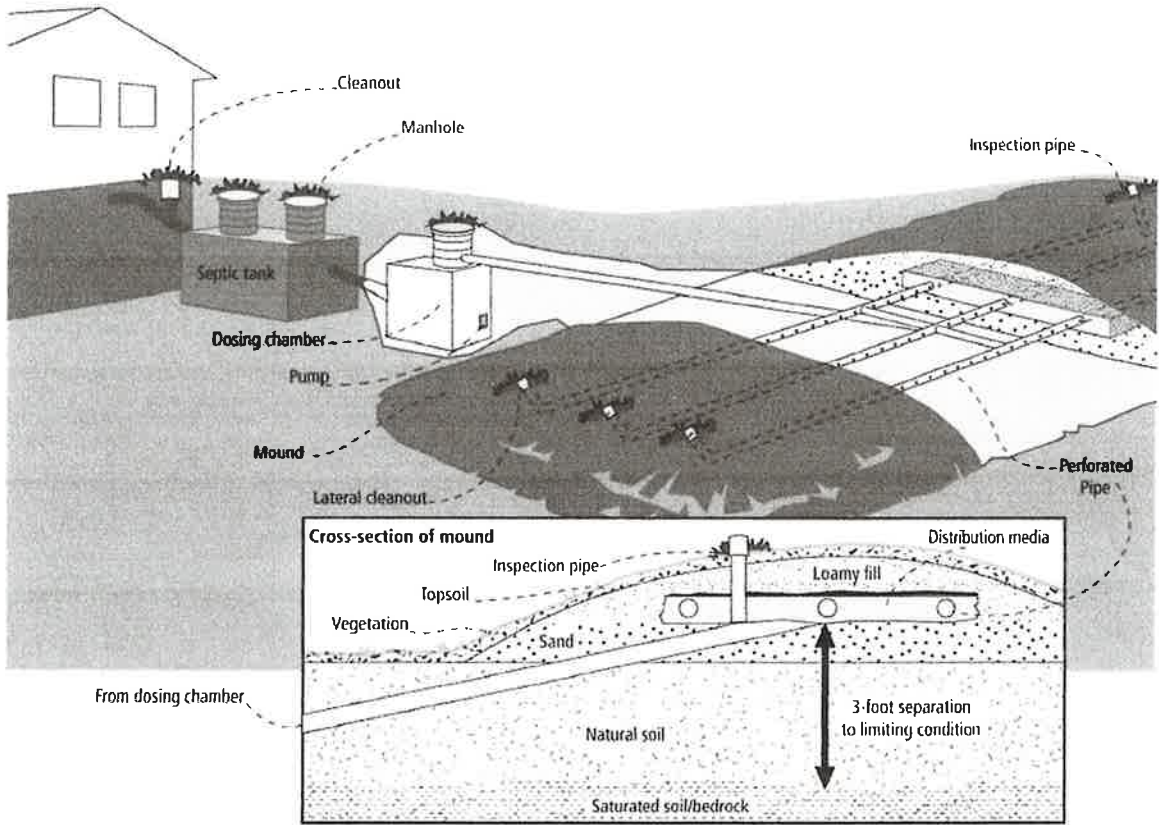
- Attach permit information, designer drawings and as-builts of your system, if they are available.
- Keep copies of all pumping records and other maintenance and repair invoices with this document.
- Review this document with your maintenance professional at each visit; discuss any changes in product use or water-use appliances.

For a copy of the *Septic System Owner's Guide*, call 1-800-876-8636 or go to http://shop.extension.umn.edu/

http://septic.umn.edu

ONSITE
SEWAGE
TREATMENT
PROGRAM

*Septic System Management Plan
for Mound Systems*

UNIVERSITY OF MINNESOTA

EXTENSION

Information on Your System

Dwelling Type	Well Construction
Number of bedrooms: __3__	Well depth (ft): _____
System capacity/ design flow (gpd): __450__	☐ Cased well Casing depth: _____
Anticipated average daily flow (gpd): __< 400__	☐ Other (specify): _____
Comments_____	Distance from septic (ft): __80'+__
In-home business? __N__ What type? _____	Is the well on the design drawing? (Y) N

Septic Tank

☐ One tank *Tank volume:* __1,000__ gallons	☐ Pump Tank (*if one*) __500__ gallons
Does tank have two compartments? Y (N)	☐ Effluent Pump *type:* __Zoeller__
☐ Two tanks *Tank volume:* _____ gallons	TDH __15__ Feet of head
☐ Tank is constructed of __PreCast Con.__	Pump capacity __33__ GPM
☐ Effluent Screen *type:* __NO__	☐ Alarm ___✓__ visual ___✓__ audible

Soil Treatment Area

Mound area (length x width): __66__ ft x __38__ ft	☐ Cleanouts or Inspection Ports
Rock bed size (length x width): __10__ ft x __38__ ft	☐ Surface Water Diversions

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SEWAGE
TREATMENT
PROGRAM

*Septic System Management Plan
for Mound Systems*

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EXTENSION

Maintenance Log

Track maintenance activities here for easy reference. See list of management tasks on page 2.

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										
Check annually:										
Water usage rate (monitor frequency____)										
Caps: inspect, replace if needed										
Water use appliances – review use										
Other:										

Notes:

"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 _____

Designer Signature: *Greg Westerlund* Date 5/18/16

Permitting Authority Signature: _____ Date _____

Homeowner Management Tasks

These operation and maintenance activities are your responsibility. Use the chart on page 6 to track your activities.

Identify the service intervals recommended by your system designer and your local government. The tank assessment for your system will be the shortest interval of these three intervals. Your pumper/maintainer will determine if your tank needs to be pumped.

System Designer: check every __36__ months
Local Government: check every _____ months
State Requirement: check every __36__ months

> **My tank needs to be checked every _____ months**

Seasonally or several times per year

- ❑ *Leaks.* Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.
- ❑ *Surfacing sewage.* 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, call your service professional. *Untreated sewage may make humans and animals sick.*
- ❑ *Alarms.* Alarms signal when there is a problem; contact your maintainer any time the alarm signals.
- ❑ *Lint filter.* If you have a lint filter, check for lint buildup and clean when necessary.
- ❑ *Effluent screen.* If you have an effluent screen, inspect and clean it twice a year or per manufacturer recommendations.

Annually

- ❑ *Water usage rate.* A water meter 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.
- ❑ *Review your water usage rate.* Review the Water Use Appliance chart on Page 5. Discuss any major changes with your pumper/maintainer.

During each visit by a pumper/maintainer

- ❑ Ask if your pumper/maintainer is licensed in Minnesota.
- ❑ Make sure that your pumper/maintainer services the tank through the manhole. (NOT though a 4" or 6" diameter inspection port.)
- ❑ Ask your pumper/maintainer to accomplish the tasks listed on the Professional Tasks on Page 3.

ONSITE
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PROGRAM

*Septic System Management Plan
for Mound Systems*

UNIVERSITY OF MINNESOTA
E X T E N S I O N

Professional Management Tasks

These are the operation and maintenance activities that a pumper/maintainer performs to help ensure long-term performance of your system. Professionals should refer to the O/M Manual for detailed checklists for tanks, pumps, alarms and other components. Call 800-322-8642 for more details.

❑ Written record provided to homeowner after each visit.

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 drainfield.)

❑ *Inspection pipes.* Replace damaged 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.

❑ *Alarm.* Verify that the alarm works.

❑ *Scum and sludge.* Measure scum and sludge in each 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 operating properly.

❑ *Event counter or run time.* Check to see if there is an event counter or run time log for the pump. If there is one, calculate the water usage rate and compare to the anticipated average daily flow listed on Page 4.

Soil Treatment Area

❑ *Inspection pipes.* Check to make sure they are properly capped. Replace caps that are damaged.

❑ *Surfacing of effluent.* Check for surfaced effluent or other signs of problems.

❑ *Lateral flushing.* Check lateral distribution; if cleanouts exist, flush and clean as needed.

❑ *Ponding.* Check for ponding. Excessive ponding in mounds indicates a problem.

All other components – inspect as listed here:

_____

_____

_____

Water-Use Appliances and Equipment in the Home

Appliance	Impacts on System	Management Tips
Garbage disposal	• 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.	• 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	• 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.	• 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 a liquid or easily biodegradable detergents. • Install a ling filter after the washer and an effluent screen on your tank. • Wash only full loads. • Limit use of bleach-based detergents. • Think even – spread your laundry loads throughout the week.
2nd floor laundry	• The rapid speed of water entering the tank may reduce performance.	• Install an effluent screen in the septic tank to prevent the release of excessive solids to the soil treatment area. • Be sure that you have adequate tank capacity.
Dishwasher	• 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.	• 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)	• Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area.	• 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)	• 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.	• 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	• Drip may result in frozen pipes during cold weather.	• Re-route water into a sump pump or directly out of the house. Do not route furnace recharge to your septic system.
Water softener Iron filter Reverse osmosis	• Salt in recharge water may affect system performance. • Recharge water may hydraulically overload the system.	• These sources produce water that is clean; clean water should not go into your septic system. • Reroute water from these sources to another outlet, such as a dry well or old drainfield. • When replacing consider using a demand-based recharge vs. a time-based recharge.
Surface drainage Footing drains	• Water from these sources will likely overload the system.	• Check valves to ensure proper operation; have unit serviced per manufacturer directions