LAND SITE MANAGEMENT (CROPPING PLAN) FORM

Business Name: _____ **Septage License #:** _____ **Cropping Year:** _____

Land Site Address: _____ **Site I.D #:** _____ **Land Owner**: _____

City: _____ **Twp:** _____ **County:** _____ **Twp/Range//Sec:** _____

Previous Crop Grown	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Next Crop (to be grown *following septage application in this or next cropping year)*
Field #: ___ Acreage* ____ Phosphorus Level _____ lb/ac Agronomic Application Rate (AAR) _____ gal/ac/yr**													
Field #: ___ Acreage ____ Phosphorus Level _____ lb/ac Agronomic Application Rate _____ gal/ac/yr													
Field #: ___ Acreage ____ Phosphorus Level _____lb/ac Agronomic Application Rate _____ gal/ac/yr													
Field #: ___ Acreage ____ Phosphorus Level _____lb/ac Agronomic Application Rate _____ gal/ac/yr													

A-A

Crop Use: ☐ Animal Feed ☐ Food Crop ☐ Erosion & Runoff Control ☐ Plow under ☐ Other: _____ **Method of Septage Waste Application:** ☐ Injection ☐ Surface

Erosion & Runoff Control Method: (Check all that apply) ☐ Border strip ☐ Cover Crop ☐ Earth Berm ☐ Windbreak ☐ Tillage Across Slope ☐ Other: _____

Pathogen Reduction Method & Vector Attraction Reduction Method: (Check all that apply) ☐ Injection ☐ Lime Stabilization ☐ Surface Application & Incorporation within 6 hours
☐ Surface Application with Lime Stabilization & Incorporation within 48 hours ☐ Surface Application over Existing Actively Growing Crops/Vegetation with Lime Stabilization

Other Nutrient Sources to be Land Applied in Addition to Septage Waste: ☐ None ☐ Chemical fertilizers ☐ Manure ☐ Other _____. If any other box apart from "None" is checked, calculate AAR using Option B.

Winter Disposal Plan (Dec. 21 – Mar. 21)**:** ☐ Septage Waste Receiving Facility ☐ Septage Waste Storage Facility
(Check all that apply) ☐ No Land Application in winter months ☐ Land Application when ground is not frozen (Submit Initial Written Plan for Review and Approval)

Land Application of Food Establishment Septage (FES): ☐ Yes ☐ No If yes, explain how **FES is** combined with domestic septage and blended into a uniform mixture prior to land application.

Land Application of Portable Toilet Waste: ☐ Yes ☐ No **Land Application of Holding Tank Waste:** ☐ Yes ☐ No **Septage Waste Storage Facility Available**: ☐ Yes ☐ No

Septage Waste Applicator Calibration Rate = _____ gal/ac **Drainage Tiles:** ☐ Yes ☐ No **Soil Group:** _____ **(See Guidance Manual)**

Septage Application over Actively Growing Crops/Vegetation: ☐ Yes ☐ No If yes, explain type of crop, number, yield and use of cuttings, etc. or crop harvesting/grazing restrictions.

***Acreage**: Proposed number of acres that will be used in the current cropping year. ****Phosphorus Level**: Pounds per acre = parts per million (ppm) x 2**.

Check the Guidance Manual for definitions, description/explanation of items ***Use additional sheets as necessary***

Business Name: John Doe Septic Service **Septage License #:** 00-00 **Cropping Year:** 2009

Land Site Address: 9090 Septage Road **Site I.D #:** 1, 2, and 3 **Land Owner:** My Property

City: Pollution Control Twp**:** Waste Manager County**:** Tolerant **Section of Land Site:** 2

Prev. Crop	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Next Crop
Site I.D # 1													
Field A = 10 acres Phosphorus Level = 80 lb/ac Agronomic Application Rate (AAR) = 38,000 gal/ac/yr													
Soybeans	***No Septage Application***				***Septage Application***	***Corn(grain)***					***Fall Soil Sampling for Next Cropping Year***		***Corn***
Field B = 8 acres Phosphorus Level = 55 lb/ac Agronomic Application Rate (AAR) = 23,000 gal/ac/yr													
Rye	***Winter Wheat***					***Winter Wheat***			***Septage Application***		***Fall Soil Sampling for Next Cropping Year***		***Wheat***
	No Septage Application												

Site I.D # 2

Acreage = 15 acres Phosphorus Level = 110 lb/ac Agronomic Application Rate (AAR) = 60,000 gal/ac/yr			
Oats	***No Septage Application***	***Septage Application over Grass-Alfalfa-Clover Hay Crop*** ***Requires Lime Stabilization of Septage Before Application*** ***Document Cuttings to Determine Yield*** ***Soil Sampling***	***Grass-Legume Mixture***

Site I.D # 3

Acreage Field A = 5 acres Phosphorus Level = 95 lbs/ac Agronomic Application Rate (AAR) = 60,000 gal/ac/yr			
Corn	***Septage to Unfrozen Ground*** ***Winter Plan Approval Required.***	***Soybeans*** ***Fall Soil Sampling for Next Cropping Year***	***Soybeans***
Acreage Field B = 25 acres Phosphorus Level = 70 lb/ac Agronomic Application Rate (AAR) = 23,000 gal/ac/yr			
Rye	***Winter Rye*** **Winter Rye** ***No Septage Application***	***Septage Application*** ***Fall Soil Sampling for Next Cropping Year***	***Rye***

Time of Soil Sampling: Fall soil sampling is recommended. Results of fall soil sampling can the used for the cropping plan of the following cropping year. Spring soil sampling may be done if soils were not sampled in fall and the soil test results should be provided before septage is land applied in that cropping year. ***Use one form for each land site.***

DEQ

Agronomic Application Rates (AAR) For Selected Crops

OPTION A

Completion is required under authority of Part 117 Act 451 PA 1994
Failure to comply is a misdemeanor.

Crop	Nitrogen Requirement* (Lb N/Ac)	Agronomic Application Rate AAR = N Requirement / 0.0026 (Gal/Ac/Yr)
Grass-Legume Mixtures Alfalfa Clover Soybeans Trefoil	160	60,000
Corn	100	38,000
Bromegrass Orchard grass Timothy	90	35,000
Small grains Barley Buckwheat Millet Oats Rye Sorghum-Sudan grass Wheat	60	23,000

* Nitrogen Requirement values reported in this table are based on considerations for:
1) Nitrogen recommendation as reported in Table 4 (Nitrogen recommendations for field crops grown on mineral and organic soils),
2) Nutrient removal as reported in Table 3 (Nutrient removal in harvest portion of several Michigan field crops) of reference below.
Source: Nutrient Recommendations for Field Crops in Michigan. Extension Bulletin E2904, 2004 (Ref. # 5, Chapter 5).
Assumes no additional nitrogen sources such as chemical fertilizers, manure, etc.

DEQ

Calculating Agronomic Application Rates (AAR)
Option B

APPENDIX D

Completion is required under authority of Part 117 Act 451 PA 1994
Failure to comply is a misdemeanor.

Business Name: _____ **County:** _____ **Year:** _____

Site Address: _____ **Township:** _____ **Site I.D #:**_____ **Field #:** _____

Crop	Expected Crop Yield (bu/ac, ton/ac)		Nitrogen Removal (lb/unit yield)		Nitrogen Requirement (lb N/ac)		Nitrogen from Previous Crop (lb N/ac)		Nitrogen from Chemical Fertilizer (lb N/ac)	Total Nitrogen Requirement (lb N/ac)	Agronomic Application Rate AAR = N Regd. / 0.0026 (gal/ac/yr) Max = 100,000

A-D

EQP 5928

Calculating Agronomic Application Rates (AAR) EXAMPLE

APPENDIX E

OPTION B

Completion is required under authority of Part 117 Act 451 PA 1994
Failure to comply is a misdemeanor.

Crop	Expected Crop Yield (bu/ac, ton/ac)		Nitrogen Removal (lb/unit yield)		Nitrogen Requirement (lb N/ac)		Nitrogen from Previous Crop (lb N/ac)		Nitrogen from Chemical Fertilizer (lb N/ac)	Total Nitrogen Requirement (lb N/ac)	Agronomic Application Rate AAR = N Reqd. / 0.0026 (gal/ac/yr) Max = 100,000
Example: Corn with No Nitrogen Contribution from Previous Crop (e.g., Wheat) and Chemical Fertilizer											
Corn (grain)	150	X	0.9	=	135	-	0	-	0	135	52,000
Example: Corn with Nitrogen Contribution from Previous Crop (e.g., Soybeans) and No Chemical Fertilizer											
Corn (grain)	150	X	0.9	=	135	-	30	-	0	105	40,000
Example: Corn with Nitrogen Contribution from Chemical Fertilizer and No Contribution from Previous Crop											
Corn(grain)	150	X	0.9	=	135	-	0	-	20	115	44,000
Example: Wheat with Nitrogen Contribution from Previous Crop (e.g., Dry Edible Beans) and No Chemical Fertilizer											
Wheat	60	X	1.2	=	72	-	20	-	0	52	20,000

APPENDIX F

LAND APPLICATION VOLUME RECORD

Business Name: _____ **County of Land Site**: _____ **Section:** ___ **Year:** _____

Site Address: _____ **Site I.D #:** _____ **City:** _____ **Twp:** _____

Date of Septage Application	Field Number (A,B,C, etc.)	Number Of Acres	Number of Gallons	Method of Application		Time of Application	Time of Incorporation (if applicable)	Lime Stabilization (if applicable)	Comment
				Surface	Injection				
Total Volume =									

Note: Complete this form for one land site with one or more fields.

DEPARTMENT OF ENVIRONMENTAL QUALITY

APPENDIX G

SEPTAGE LIME STABILIZATION LOG

Septage Waste Firm Name: _____

Land site Address: _____ Site I.D #: _____ Field #: _____

Date	Amount of Septage Waste (gallons)	Type of Alkaline Material (or Lime) Used	Amount of Alkaline Material (or Lime) Used (lbs)	Form of Lime Mixed with Septage waste	Initial pH after mixing with Lime	pH after 30 minutes	Method of Application (Injection/ Surface)	Field Type (Fallow/Cropped)	Driver

A-G

Additional Comments/Observations of Crops/Septage Waste/Soil/Weather Conditions (Use extra sheet/s as needed):

DEPARTMENT OF ENVIRONMENTAL QUALITY

APPENDIX H

SEPTAGE LIME STABILIZATION LOG (Example)

Septage Waste Firm Name: Septage Waste Hauler #1

Land site Address: Land Application Road Site I.D #: 1 Field #: A

Date	Amount of Septage Waste (gallons)	Type of Alkaline Material (or Lime) Used	Amount of Alkaline Material (or Lime) Used (lbs)	Form of Lime Mixed with Septage waste	Initial pH after mixing with Lime	pH after 30 minutes	Method of Application (Injection/ Surface)	Field Type (Fallow/Cropped)	Driver
7/14/2008	2000	Quicklime	60	Dry	12	12	Injection	Fallow	John Doe

Septage Waste Firm Name: My Septic Service

Land site Address: Nutrient Management Road Site I.D #: 3 Field #: B

8/21/2008	1500	Hydrated Lime	50	Slurry	12	12	Surface	Over alfalfa Hay	John Doe Jnr

Additional Comments/Observations of Crops/Septage Waste/Soil/Weather Conditions (Use extra sheet/s as needed):

Nutrient Removal in Harvest Portion of Several Michigan Field Crops.

Nutrient removal in harvest portion of several Michigan field crops.					
Crop		**Unit**	**N lb/unit of yield**	**P_2O_5 lb/unit of yield**	**K_2O lb/unit of yield**
Alfalfa	(Hay)	Ton	45	13.0	50.0
	(Haylage)	Ton	14	3.2	12.0
Barley	(Grain)	Bu	0.88	0.38	0.25
	(Straw)	Ton	13	3.2	52
Beans (dry edible)	(Grain)	Cwt	3.6	1.2	1.6
Bromegrass	(Hay)	Ton	33	13	51
Buckwheat	(Grain)	Bu	1.7	0.25	0.25
Canola	(Grain)	Bu	1.9	0.91	0.46
Clover	(Hay)	Ton	40	10	40
Clover-grass	(Hay)	Ton	41	13	39
Corn	(Grain)	Bu	0.90	0.37	0.27
	(Stover)	Ton	22.0	8.2	32.0
	(Silage)	Ton	9.4	3.30	8.00
Millet	(Grain)	Bu	1.1	0.25	0.25
Oats	(Grain)	Bu	0.62	0.25	0.19
	(Straw)	Ton	13	2.8	57
Orchard grass	(Hay)	Ton	50	17	62
Potato	(Tubers)	Cwt	0.33	0.13	0.63
Rye	(Grain)	Bu	1.1	0.41	0.31
	(Straw)	Ton	8.6	3.7	21
	(Silage)	Ton	3.5	1.5	5.2
Sorghum	(Grain)	Bu	1.1	0.39	0.39
Sorghum-Sudan grass	(Hay)	Ton	40	15	58
	(Haylage)	Ton	12	4.6	18
Soybean	(Grain)	Bu	3.8	0.80	1.40
Spelts	(Grain)	Bu	1.2	0.38	0.25
Sugar beets	(Roots)	Ton	4.0	1.3	3.3
Sunflower	(Grain)	Bu	2.5	1.2	1.6
Timothy	(Hay)	Ton	45	17	62
Trefoil	(Hay)	Ton	48	12	42
Wheat	(Grain)	Bu	1.2	0.63	0.37
	(Straw)	Ton	13.0	3.3	23

Source: Nutrient Recommendations for Field Crops in Michigan.
MSU Extension Bulletin E-2904, 2004 (Ref. #5, Chapter 5).

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER BUREAU

APPENDIX J

WINTER PLAN FOR LAND APPLICATION OF SEPTAGE WASTE

This information is required by authority of Part 117, 1994 PA 451, as amended.
Failure to submit this information is a felony.

Business Name: _____ **Septage License #:** _____ **Cropping Year:** _____

Land Site Address: _____ **Site I.D #:** ____

City: _____ **Twp:** _____ **County:** _____ **Section:** _____

Number of Acres for Use During Winter Months: _____	**Site Plan** *(Attach plan showing field to be used in winter)*: ☐ Yes ☐ No

Method of Septage Waste Application: ☐ **Injection* (Recommended)** ☐ **Surface***

Percent of Slope: Surface (Maximum)	☐ 2%	☐ 2-6%	
Injection (Maximum)	☐ 2%	☐ 2-6%	☐ 6.1 - 12%

Maximum Application Rate* (gallons per acre during winter months): 10,000 gallons

Depth of Injection/Incorporation: ☐ 0 - 8 inches ☐ 0 - 12 inches

Dominant Soil Class (Within Depth of Injection or Incorporation) *e.g. sandy loam***:**

Land Management Practice that will Follow after Winter application at this site:
☐ Crops ☐ Septage Waste Application ☐ Other _____

Pathogen Reduction and Vector Attraction Reduction Method: *(Check all that apply)*
☐ Lime stabilization ☐ Injection ☐ Incorporation within 6 hours ☐ Other _____

Equipment to be used for injection or proper soil incorporation *(Surface application***):**

Erosion Control Plan: ☐ Border strip (winter crop) ☐ Cover Crop (winter crop)
(Check all that apply) ☐ Tillage Across Slope ☐ Flat Land (< 2% slope**)** ☐ Other _____

Other Winter Disposal Plan: ☐ Wastewater Treatment Plant ☐ Septage Waste Storage Facility
(Check all that apply)

*Note: * Surface applied septage waste or septage waste that bubbles to soil surface after injection must be incorporated within 6 hours or 48 hours if lime-stabilized.*

Isolation Distances: Make sure that isolation distances are met with regard to the winter disposal area.

Name of Septage Business Owner (Print): _____

Signature of Septage Business Owner: _____ Date: _____

Reminder: Effective October 12, 2006, land application of septage waste when soil is frozen is not permitted. Must stop septage waste application when soil freezes.

Winter Period: December 21 – March 21

DEQ OFFICIAL USE
☐ Approved ☐ Not Approved

DEQ Signature: _____ Date: _____

Comments: (Use additional sheet, if necessary)

EQP 5931 3/2009

Summary of How to Take Soil Samples*

APPENDIX K

Number of cores (or borings) to make one composite sample = 15 – 20.

Field (land) size area covered by one composite sample = 10 – 15 acres.
About 1- 2 cores (borings) per acre.
Mix cores (borings) in a clean pail to make composite sample.

Quantity of a composite sample to put inside sample container = About 1-2 cups.

Depth to sample = 6 - 8 inches (or tillage depth).

How often to sample = Once every year (Septage Program).

When to sample = Any time, but best when soil is not frozen or too wet. Sample at about the same time each year if possible.

Where to sample = Sample uniform areas to make a composite sample.
Delineate areas that look alike and get a composite sample from each area.

Avoid unusual spots such as manure or lime piles, near fences or roads, fertilizer bands, very low spots, etc.

Pattern of sampling = Zig-zag or "W-shaped" pattern across sampling area.

Tools to use = Soil sampling probe (best); soil auger; pointed shovel; plastic pail; sample box or bag.

Sample Identification: Identify sample box or bag properly (Your name, field [land] location and other requested information printed on the sample box or bag).

Where to send soil sample = MSU Soil & Plant Nutrient Lab or other commercial soil testing lab of your choice. *Samples for MSU Soil & Plant Nutrient Lab may be dropped off at the MSUE office nearest to you.*

* Refer to "Sampling Soils for Fertilizer and Lime Recommendations. 1998. Michigan State University Extension Bulletin E- 498", for guidance.

For additional information about soil sampling and laboratory procedures in soil analysis, consult:
Recommended Chemical Soil Test Procedures for the North Central Region. 1998. North Central Regional Research Publication No. 221 (Revised). Missouri Agricultural Experiment Station SB 1001.

New Land Site Application Checklist

APPENDIX L

Business Name:_____ Septage License #: _____
(To be provided by DEQ, if new business)

Land Site Address:_____ Site I.D #: _____
(To be provided by DEQ)

City:_____ Twp:_____ County:_____ Sec:_____

Item	Attached/Submitted	Comments
Completed Application Form EQP 5837	Yes ☐ No ☐	
Latitude and Longitude	Yes ☐ No ☐	
Name & Address of Land Owner	Yes ☐ No ☐	
Name & Address of Land Manager	Yes ☐ No ☐	
Maps		
Atlas/Plat Book	Yes ☐ No ☐	
Aerial	Yes ☐ No ☐	
Topographic	Yes ☐ No ☐	
Soil	Yes ☐ No ☐	
Land Site Plan Drawing	Yes ☐ No ☐	
Site plan showing isolation distances:		
Homes or Commercial Buildings	Yes ☐ No ☐	
Water Wells (public, private, other)	Yes ☐ No ☐	
Surface Waters	Yes ☐ No ☐	
Roads	Yes ☐ No ☐	
Property Lines	Yes ☐ No ☐	
Soil Fertility Test Report	Yes ☐ No ☐	
Notice of Application with items specified in Part 11709 (1) (a) to (d) sent to:		
Local Health Dept.*	Yes ☐ No ☐	
Clerk of City, Village or Township	Yes ☐ No ☐	
Contiguous Lot/Parcel Owners	Yes ☐ No ☐	
Lot/Parcel owners within 150 ft/800 ft	Yes ☐ No ☐	
Completed Cropping Plan Form EQP 5928	Yes ☐ No ☐	
Completed Winter Plan Form	Yes ☐ No ☐	
Fee Payment	Yes ☐ No ☐	

* LHD will receive additional land application materials sent by applicant through DEQ.

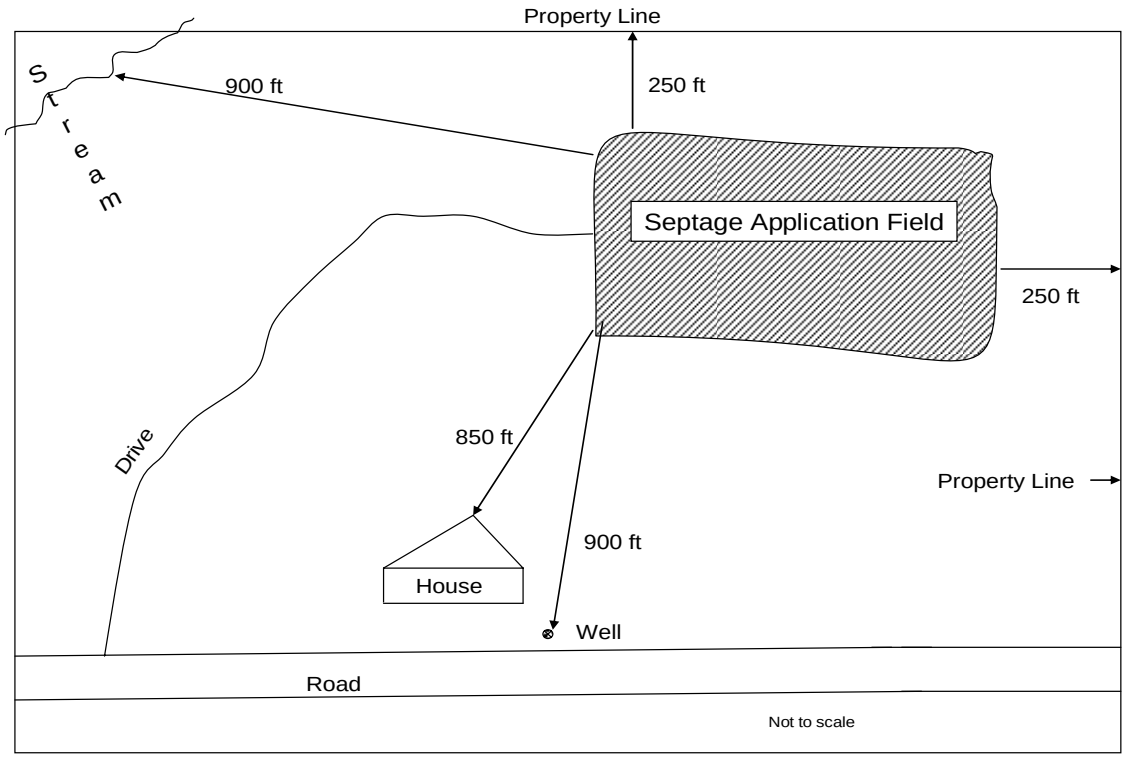
Note 1: If necessary, you may use the space under "Comments" or the back of the form to explain an item that does not apply.

2: You may list item/s not shown above.

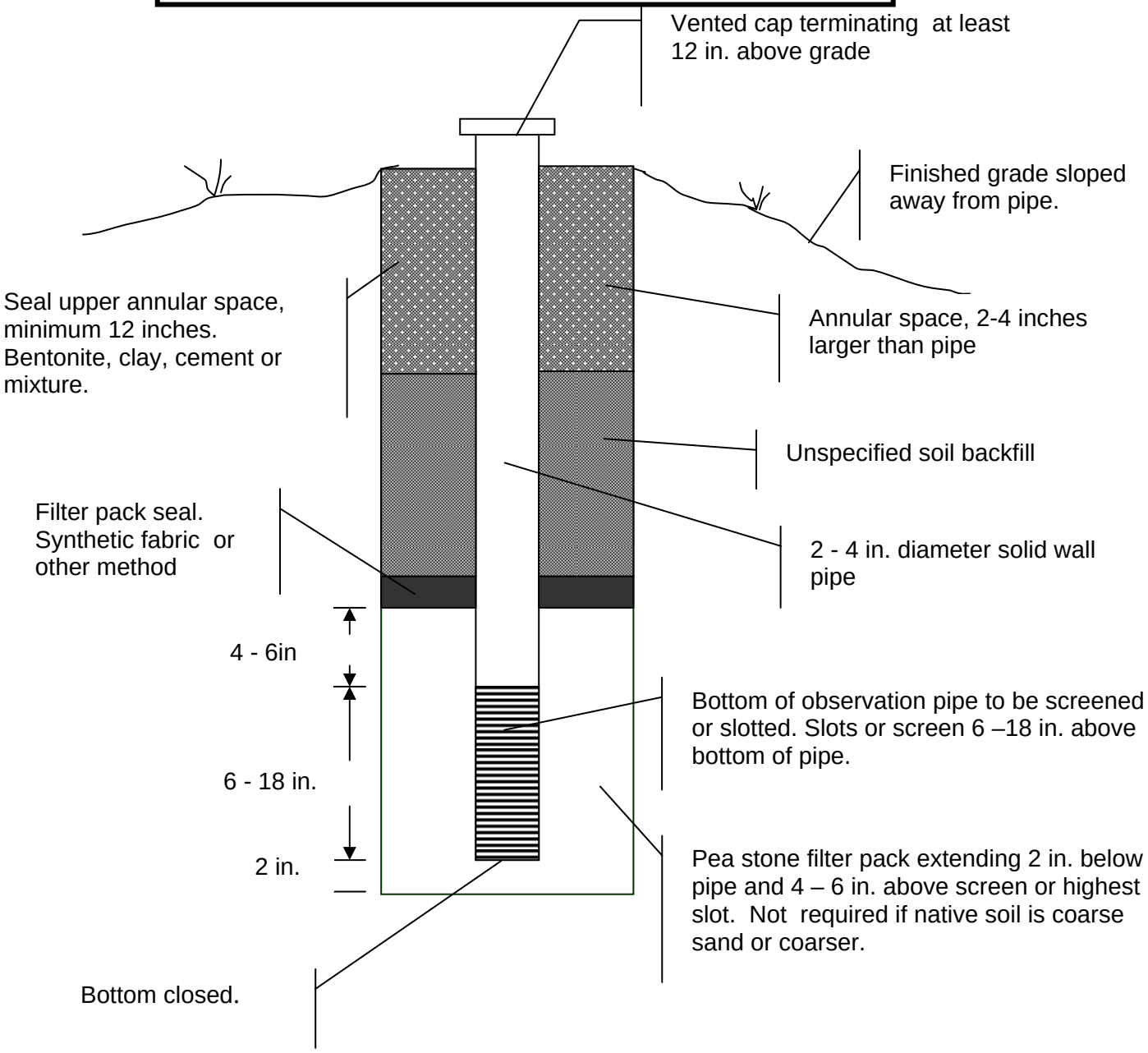
3. See the land application Guidance Manual for additional information.

Submitted by: _____ Date: _____

LAND SITE EXAMPLE



Suggested Groundwater Elevation Monitoring Well
For Septage Disposal Sites with High Seasonal Groundwater



IMPORTANT NOTES

- Approval of specific locations and depths of proposed monitoring wells must be obtained from the MDEQ or authorized local health department having jurisdiction.

- Monitoring of saturated conditions in fine textured soils may be inconclusive using the detail suggested. Alternate methods to address the direct determination of saturated soil conditions may be necessary.

Sample Notice of Application

Date

Name of lot or parcel owner or neighbor
Address

Dear _____:

My company is in the business of pumping and servicing septic tanks. As a part of that business, the waste must be disposed of in an environmentally safe manner once it has been cleaned out of the septic tank. My method of disposal involves the recycling of the waste by uniform application and incorporation into the soil with subsequent planting and harvest of crops, which utilize nutrients contained in the applied waste. This notice is being provided to you as required by Section 11709 of Part 117, Septage Waste Servicers, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 117), in conjunction with our permit application for land application to the Department of Environmental Quality (DEQ).

I am also attaching the following information to you as required by Part 117:

- A map identifying the site from a county land atlas and plat book.
- The site location by latitude and longitude.
- The name and address of the land owner.
- The name and address of the manager of the land, if different than the owner.

The requirements of the law are designed to protect the environment, and my company fully intends to comply with those requirements. There may be conditions, however, which we are not aware of that could prevent the use of the site. Please forward any comments in writing directly to me and to the DEQ at the following address:

Department of Environmental Quality
Water Bureau – DWEHS - OSWU
Septage Waste Program
P. O. Box 30273
Lansing, Michigan 48909-7773

Sincerely,

Name
Address of Applicant for a Site Permit