High Use Fields

Introduction

- Lance Petrasek
  - phone 262 903 7004
  - Email assocseptic@gmail.com

- How many people here land apply septage?

Surface

Disc/ Incorporation

Injection

High use fields?? Not for everyone!!

How many sites in WI right now?

Why get high use?

Limited Fields/ Sites

Meshes well with storage

NR 113 Allows septage to be land Applied..IF?? NR113.07 (3)(b)1

(b) 1. Septage may not be landspread on soils which have a permeability rate greater than 6 inches per hour within the top 36 inches, unless it is demonstrated that the soil has a water holding capacity of greater than 5 inches above the groundwater and bedrock. In no case may greater than the top 60 inches in a soil profile be used to determine the 5 inches of water holding capacity. Permeability shall be calculated using the following table or other method acceptable to the department:

Low use fields approved out of book…
High use fields require soil testing for approval per NR 113.08

2 Types of soil tests required

Tip: Know your site before spending $

Textural Classification System	
USDA	**Permeability Inches/Hour**
Sand Loamy Sand	Greater Than 6
Sandy Loam	2.0 – 6.0
Loam	0.6 – 2.0
Silt Loam Silt	0.6 – 2.0
Sandy Clay Loam Clay Loam Silty Clay Loam	0.6 – 2.0
Sandy Clay Silty Clay Clay	0.1 – 2.0

2. Septage may not be surface applied on soils that have a permeability of less than 0.2 inches per hour within the top 6 inches of soil.

Assuming you meet all setbacks, you must meet 1 of 2 criteria, the first is **Permeability**

Textural Classification System	Factor for Use in Calculation of Available Water Capacity
USDA	(inch/inch)
Sand	0.02
Loamy Sand	
Sandy Loam	0.10
Loam	0.20
Silt Loam	0.22
Silt	
Sandy Clay Loam	0.19
Clay Loam	
Silty Clay Loam	
Sandy Clay	0.17
Silty Clay	
Clay	

If you don't meet the Permeability requirements....

0.02

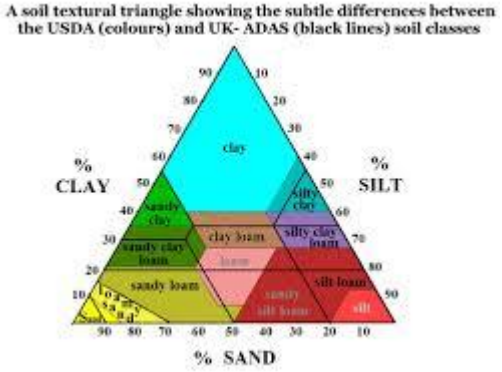
Note: The following method can be used to show that the soil meets the 5 inches of available water capacity requirement:

Multiply the number of inches of each soil texture in the soil profile (above groundwater and bedrock) by the appropriate factor given above.

Example:

10 inches of sandy loam	10 × .1	= 1
20 inches of loam	20 × .2	= 4
10 inches of silt loam	10 × .22	= 2.2
Calculated available water table		7.2

The 2nd criteria is Water Holding Capacity



Required soil test type 1: Morphological

DAIRYLAND
Laboratories, Inc.

217 E. Main St.
Arcadia, WI 54612
Telephone 608-323-2123
Fax: 608-323-2184
Email: soil@dairylandlabs.com

Lab No. 8S9297
State: WI
County: 3
Account: 7608
Date Received: 4/18/2016
Date Processed: 4/19/2016

Submitted By:
Ken-Way Services of Rice
Soil Account
PO Box 774
Rice Lake, WI 54868

Grower: Russell
KENNETH ~~BOWEN~~
PO BOX 774
RICE LAKE, WI 54868

Field: BOW-2
Acres: 20.0
Slope:
Soil Name Antigo
Plow Depth: 6.5
Irrigated: N
Tiled: N

Front South 20 acres

Laboratory Analysis

Sample No.	Text Code	Est CEC	Soil pH	O.M. %	P ppm	K ppm	Ca ppm	Mg ppm	B ppm	Mn ppm	Zn ppm	SO4-S ppm	Density	Buffer pH	60-69 Lime
1	2		6.3	2.8	42	116							0.75	7.1	0.0
2	2		6.3	2.6	47	130							0.75	7.1	0.0
3	2		6.1	2.5	55	150							0.88	7.0	0.0
4	2		6.1	2.5	51	141							0.88	7.0	0.0
Adj. Avg:			6.2	2.6	49	134									

Interpretation

	Very Low	Low	Medium	Optimum	High	Very High	Excessive
Phosphorus							Excessive
Potassium				Optimum			
Soil pH				Optimum			

Wisconsin Nutrient Recommendations

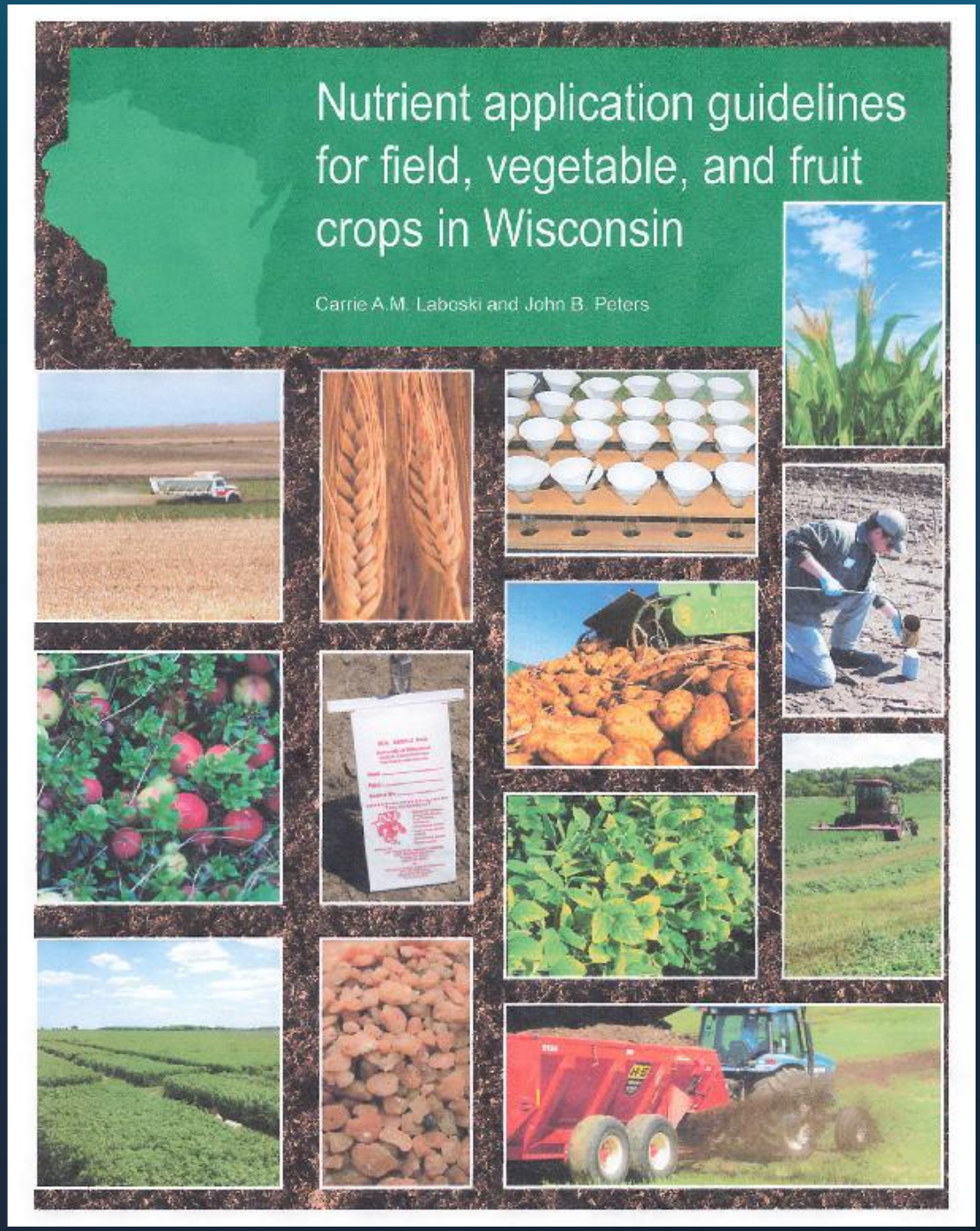
Cropping Sequence	Yield Goal	Nutrient Needs N	P2O5 lbs/A	K2O	Fertilizer Credits Leg. N	Man. N	P2O5	K2O	Nutrients to Apply N	P2O5 lbs/A	K2O
Corn, grain	171-190 bu	150		50					150		50
Soybean, grain	56-65 bu			85							85
Wheat, grain	61-80 bu	45		25					45		25
Corn, grain	171-190 bu	150		50					150		50

Lime required for this rotation to reach pH 6.3 is NO T/A of 60-69 lime or NO T/A 80-89 lime.

* A lime recommendation is calculated only when soil pH is more than 0.2 units below the optimum pH.
* Starter fertilizer (e.g. 10+20+20 lbs. N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
* A soil nitrate test may better estimate actual corn N needs.
* If alfalfa will be maintained for more than three years, increase recommended K2O by 20% each year.

Required soil test type 2: Nutrient

- Phosphorus
- Potassium
- Soil PH
- Nitrogen



Soils look good… now what?

Nutrient Application Guidelines for Field, Vegetable, and fruit crops in Wisconsin (A2809

Lets do the math!!

(3) SPECIFIC CROPS ON HIGH USE FIELDS. Septage may be applied to most leguminous crops at a volume sufficient to supply 200 lbs/ac of available nitrogen. If septage is applied to soybeans, the loading shall be limited to 140 lbs/ac of available nitrogen.

(4) ANNUAL AGRONOMIC RATE. For the purpose of implementing this section, septage may not be applied at a rate that exceeds the following:

Annual Agronomic Rate (Gallons per acre per year)	=	Pounds of Nitrogen Required For the Expected Crop Yield per Acre/ 0.0026

Rule of thumb in WI:

- Corn = 165 # of Nitrogen
- SoyBeans = 140# OF Nitrogen
- Hay/ Alfalfa = 200# of Nitrogen

Nutrient Application Guidelines for Field, Vegetable, and fruit crops in Wisconsin (A2809)

Simple Math for a corn application

165 # of Nitrogen per Acre /
.0026 # of Nitrogen per Gallon

=63,461.5 Gallons per Acre Allowed annually on Corn

Real Example *Preliminary Evaluation*

STEP 1
Know your site…Existing low use field or not?

CHAPTERS 281 and 283 WIS. STATS Form 3400-122 Rev.2-21 Date: 03/02/2004 updated 5/27/2022 Page 1 of 1

Here is a list of new land application sites approved for your use:

Permittee/Licensee: KEN-WAY SERVICES OF RICE LAKE, INC. PO BOX 774 RICE LAKE WI 54868						WPDES Number or Septage License Number: 2162					FID:		
DNR #	Site#/Field#	Site Owner	Legal Description	Village/City/Town	County	Denied/ Approved	Apprvd Acres	Apprvd Winter Acres	Ind Liq Waste Appl Rate (Gal/acre/day)		Wisc. Adm. Code	Variance/ Exemption
									Summer *	Winter *		
73445	BOW / 2	Ken-Way Services of Rice Lake	W1/2SE1/4SW1/4 S2 T36 R11W	T of Oak Grove	Barron	Approved	17.5				113	

For Application of: Septage

Discharge Limitations and Approval Conditions: Land application must be in compliance with NR 113 Wis. Adm. Code. Land application is not allowed in the cross hatched areas marked on the attached department approved map. No land application is allowed during periods of saturated soil conditions. Land application shall cease if ponding/runoff observed. A depth of at least 36" is required between the soil surface and bedrock/groundwater depth. This site is not approved for winter land application. Winter is defined as frozen or snow covered ground. Land application must meet pathogen control and vector attraction reduction requirements per s. NR 113.07(3), Wis. Adm. Code.

* The permittee or licensee must comply with the nitrogen limits specified in its WPDES permit, management plan (MP), sludge management plan (SMP), and/or applicable administrative codes. Nitrogen application rates are based on UW Extension A2908 nutrient

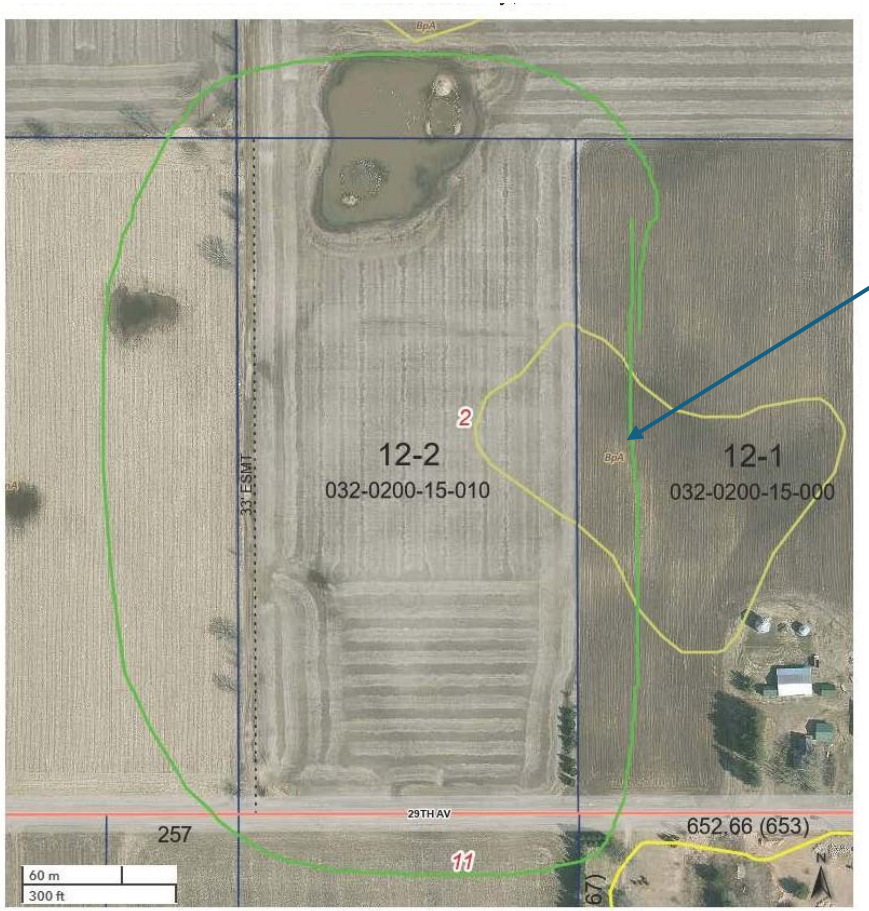
Variance/Exemption: If indicated with "", a variance (per s. NR 113.15 and NR 204.15, Wis. Adm. Code) or exemption (per s. NR 214.06, Wis. Adm. Code) has been issued to this site.

This land application approval is subject to chs. NR 113, NR 204, and/or NR 214, Wis. Adm. Code. For industrial wastes regulated per ch. NR 214, Wis. Adm. Code, this approval form, and the discharge limitations specified above, must be included as an amendment to the facility's MP per ss. NR 214.17(6)(c) and NR 214.18(6)(c), Wis. Adm. Code. The DNR Wastewater Program may request that sludge management plans (SMPs) include site approval forms, and the discharge limitations specified above, per s. NR 204.11, Wis. Adm. Code. Failure to comply with the discharge limitations and approval conditions listed on this form and include this information in the department approved MP/SMP may result revocation of the site, stepped enforcement, and/or referral for violation of chs. 281 and 283, Wis. Stats.

The DNR Wastewater Program recommends that the permittee/licensee contact the appropriate local and state governmental agency(ies) to determine if any additional restrictions, fees, and penalties, apply.

Approved By: William F Roberts Alison E. Canniff 03/02/2004 5/27/2022 Telephone Number: (715) 365-8934 715-685-0450

Let’s assume were starting from scratch
START WITH THE SOILS!
County GIS, Soil Maps, Soil Survey



Soil Mapping Unit

Soil Survey Descriptions

ANIGON SERIES

The Anigon series consists of very deep, well drained soils which are moderately deep to sandy outwash. These soils formed mostly in loess or silty alluvium underlain by stratified sandy outwash. Typically they are on outwash plains, valley trains, and stream terraces, but some are on kames, eskers, glacial lake basins, and moraines. Permeability is moderate in the silty and loamy mantle and rapid or very rapid in the sandy outwash. Slopes range from 0 to 25 percent. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 42 degrees F.

TAXONOMIC CLASS: Fine-silty over sandy or sandy-skeletal, mixed, superactive, frigid Haplic Glossudalfs

TYPICAL PEDON: Anigon silt loam - on a plane slope of less than 1 percent in a cultivated field at an elevation of about 1160 feet. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; many fine roots; moderately acid; abrupt smooth boundary. (6 to 10 inches thick)

E--10 to 14 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate thin platy structure; friable; many fine roots; moderately acid; clear wavy boundary. (0 to 10 inches thick)

B/E--14 to 20 inches; about 70 percent dark yellowish brown (10YR 4/4) silt loam (Bt); moderate fine subangular blocky structure; friable; few faint clay films on some faces of peds; penetrated by brown (10YR 5/3) silt loam (E), very pale brown (10YR 7/3) dry; moderate thin platy structure; friable; many fine roots; strongly acid; clear wavy boundary. (glossic horizon - 4 to 20 inches thick)

Bt1--20 to 30 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common faint clay films on faces of peds; many fine roots; very strongly acid; clear wavy boundary. (0 to 20 inches thick)

2Bt2--30 to 34 inches; brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; about 3 percent cobbles and 3 percent gravel; many fine roots; very strongly acid; abrupt wavy boundary. (0 to 4 inches thick)

3C1--34 to 47 inches; stratified brown (7.5YR 4/4) coarse sand and reddish brown (5YR 4/4) coarse sand; single grain; loose; about 10 percent gravel and 1 percent cobbles; few fine roots; strongly acid; abrupt wavy boundary.

3C2--47 to 60 inches; brown (7.5YR 4/4) stratified gravelly coarse sand and very gravelly coarse sand; single grain; loose; 35 percent gravel and about 4 percent cobbles; few fine roots; moderately acid.

TYPE LOCATION: Polk County, Wisconsin; about 4 miles south and 2 miles east of Balsam lake; 150 feet west and 800 feet north of the southeast corner of sec. 25, T. 34 N., R. 17 W.

BRILL SERIES

The Brill series consists of very deep, moderately well drained soils which are moderately deep to stratified sandy outwash. These soils formed mostly in loess or silty alluvium underlain by sandy outwash. Typically they are on outwash plains, valley trains, and stream terraces but some are on glacial lake basins and moraines. Permeability is moderate in the silty and loamy mantle and rapid or very rapid in the sandy outwash. Slopes range from 0 to 6 percent. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 42 degrees F.

TAXONOMIC CLASS: Fine-silty over sandy or sandy-skeletal, mixed, superactive, frigid Haplic Glossudalfs

TYPICAL PEDON: Brill silt loam - on a plane 1 percent slope in a cultivated field at an elevation of about 1,215 feet. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 7 inches; dark brown (10YR 3/3) silt loam; pale brown (10YR 6/3) dry; moderate medium granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary. (5 to 12 inches thick)

E--7 to 11 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate medium platy structure; friable; common fine roots; slightly acid; clear wavy boundary. (0 to 10 inches thick)

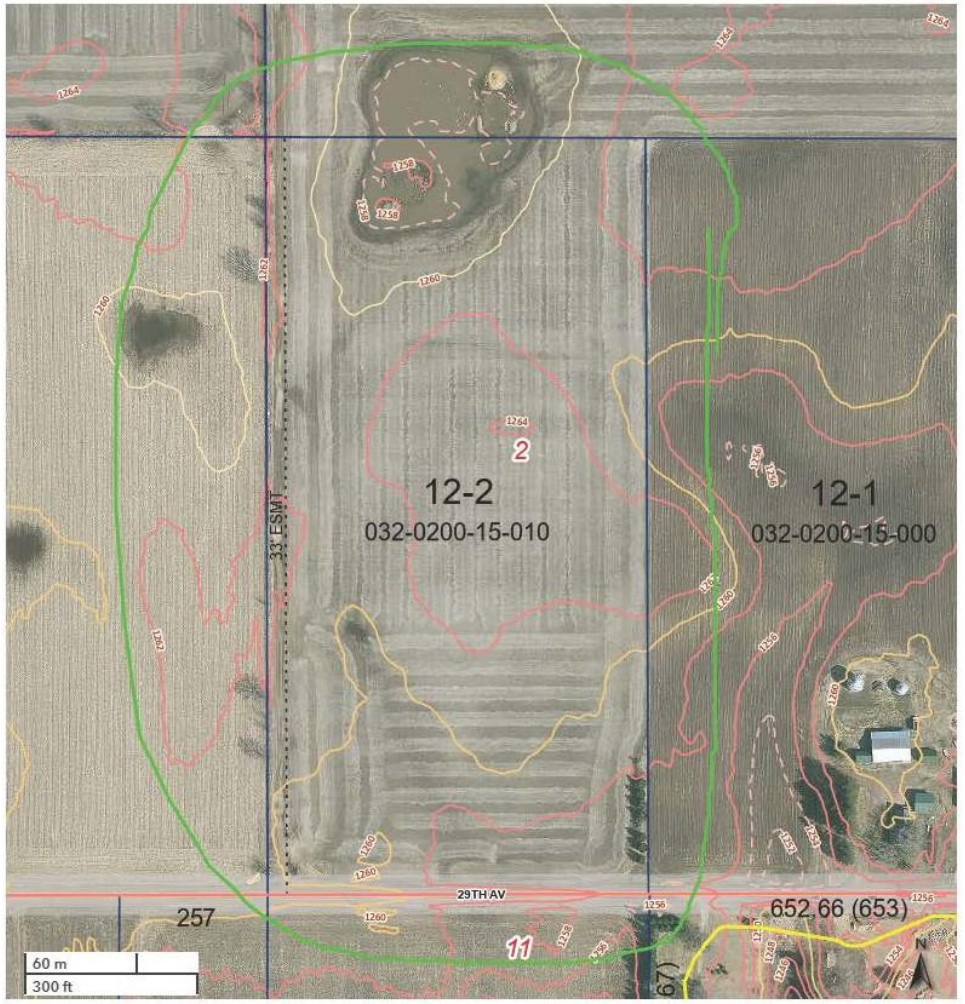
E/B--11 to 19 inches; 60 percent brown (10YR 5/3) silt loam (E), very pale brown (10YR 7/3) dry; moderate medium platy structure; friable; extends as tongues into or surrounds remnants of dark yellowish brown (10YR 4/4) silt loam (Bt); moderate medium subangular blocky structure; friable; few faint dark brown (10YR 3/3) clay films on faces of peds; few fine roots; moderately acid; clear wavy boundary. (Glossic horizon - 2 to 25 inches thick)

Bt1--19 to 34 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct dark brown (10YR 3/3) clay films on faces of peds; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary. (0 to 16 inches thick)

2Bt2--34 to 38 inches; brown (7.5YR 4/4) loam; moderate coarse subangular blocky structure; friable; few fine roots; few distinct dark brown (10YR 3/3) clay films on faces of peds; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; about 3 percent gravel; strongly acid; clear smooth boundary. (0 to 4 inches thick)

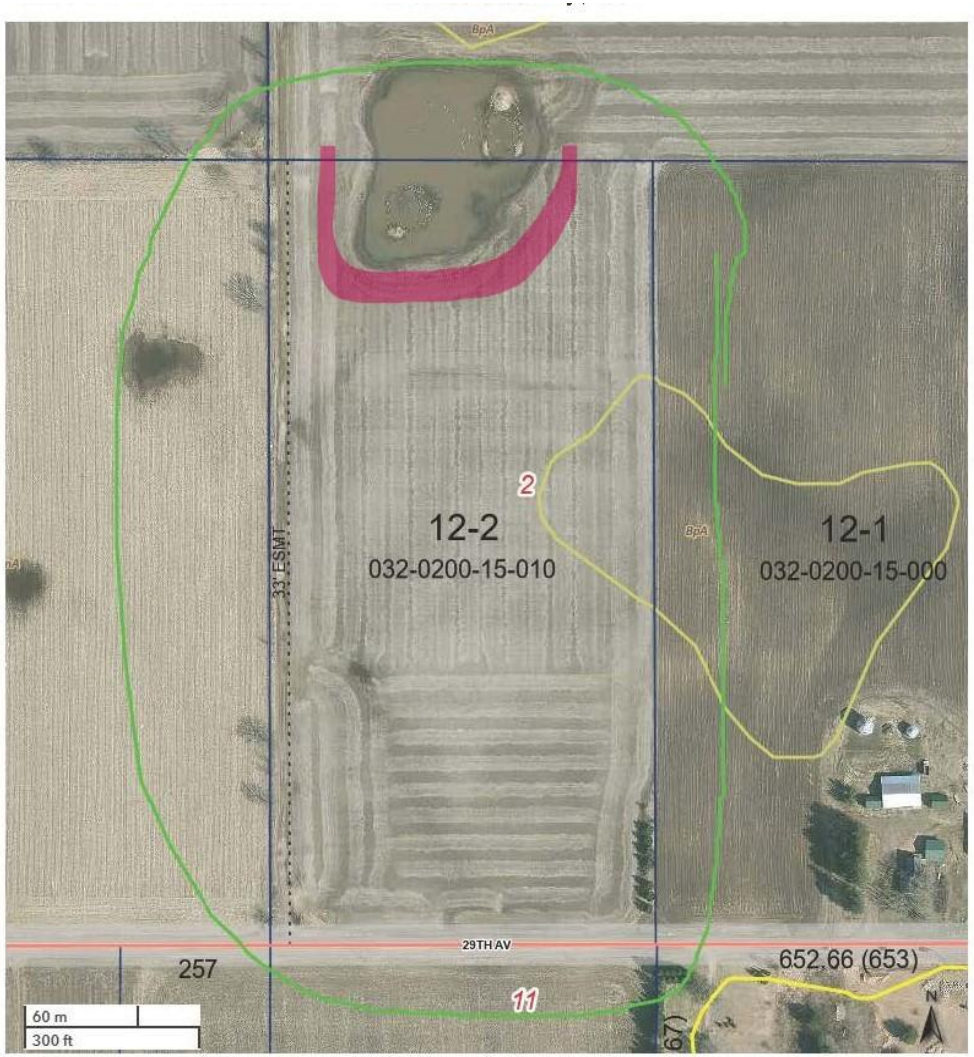
3C--38 to 60 inches; yellowish red (5YR 4/6) stratified gravelly sand and sand; single grain; loose; about 25 percent gravel as an average; very strongly acid.

Verify Slope county gis



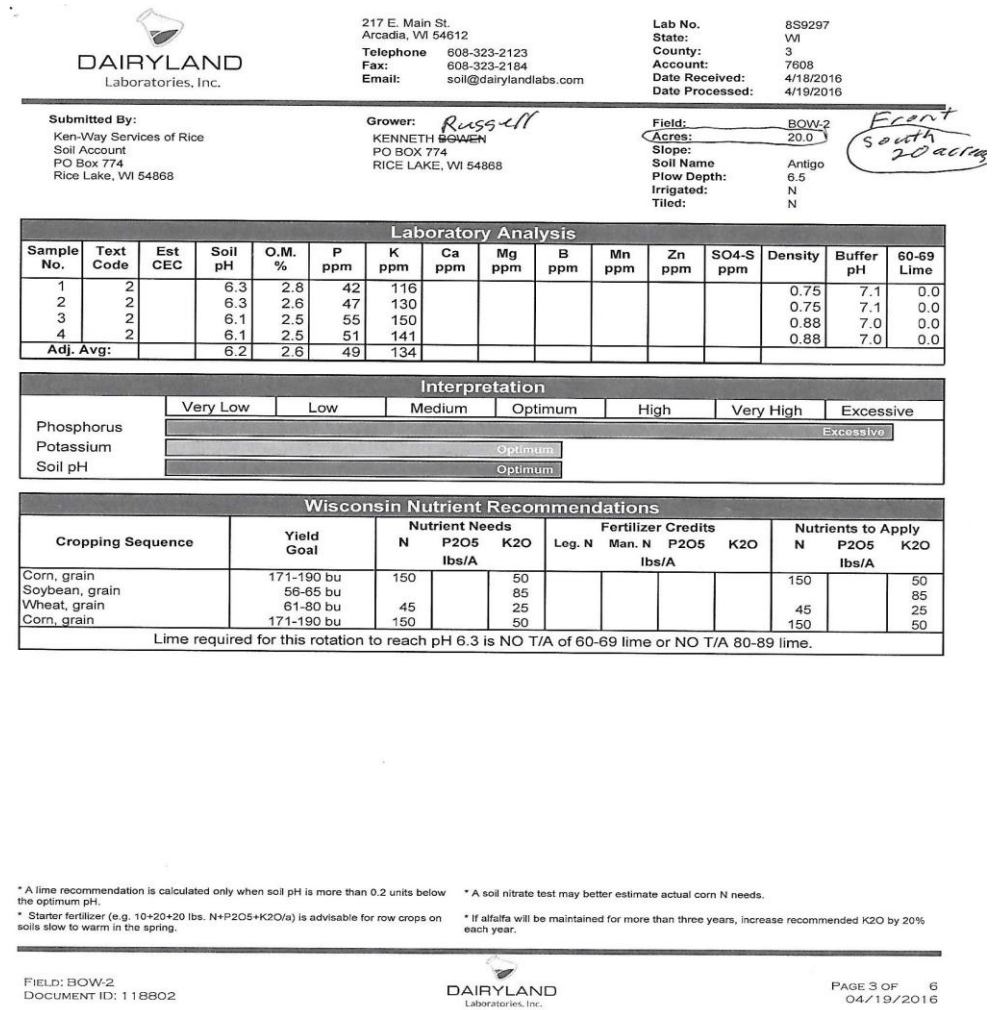
Max slope for high use injection = 12%
Soil Series Modifier:
A= 1-3%
B= 2-6%
C= 6-12%

Identify Floodplains, Wetlands, Waterways County Gis



STEP 2

Nutrient Soil Testing



DAIRYLAND
Laboratories, Inc.

217 E. Main St.
Arcadia, WI 54612
Telephone 608-323-2123
Fax: 608-323-2184
Email: soil@dairylandlabs.com

Lab No. 8S9297
State: WI
County: 3
Account: 7608
Date Received: 4/18/2016
Date Processed: 4/19/2016

Submitted By:
Ken-Way Services of Rice
Soil Account
PO Box 774
Rice Lake, WI 54868

Grower: Russell
KENNETH ~~BOWEN~~
PO BOX 774
RICE LAKE, WI 54868

Field: BOW-2
Acres: 20.0
Slope:
Soil Name Antigo
Plow Depth: 6.5
Irrigated: N
Tiled: N

Front south 20 acres

Laboratory Analysis

Sample No.	Text Code	Est CEC	Soil pH	O.M. %	P ppm	K ppm	Ca ppm	Mg ppm	B ppm	Mn ppm	Zn ppm	SO4-S ppm	Density	Buffer pH	60-69 Lime
1	2		6.3	2.8	42	116							0.75	7.1	0.0
2	2		6.3	2.6	47	130							0.75	7.1	0.0
3	2		6.1	2.5	55	150							0.88	7.0	0.0
4	2		6.1	2.5	51	141							0.88	7.0	0.0
Adj. Avg:			6.2	2.6	49	134									

Interpretation

	Very Low	Low	Medium	Optimum	High	Very High	Excessive
Phosphorus							Excessive
Potassium				Optimum			
Soil pH				Optimum			

Wisconsin Nutrient Recommendations

Cropping Sequence	Yield Goal	Nutrient Needs N	P2O5	K2O	Fertilizer Credits Leg. N	Man. N	P2O5	K2O	Nutrients to Apply N	P2O5	K2O
		lbs/A			lbs/A				lbs/A		
Corn, grain	171-190 bu	150		50					150		50
Soybean, grain	56-65 bu			85							85
Wheat, grain	61-80 bu	45		25					45		25
Corn, grain	171-190 bu	150		50					150		50

Lime required for this rotation to reach pH 6.3 is NO T/A of 60-69 lime or NO T/A 80-89 lime.

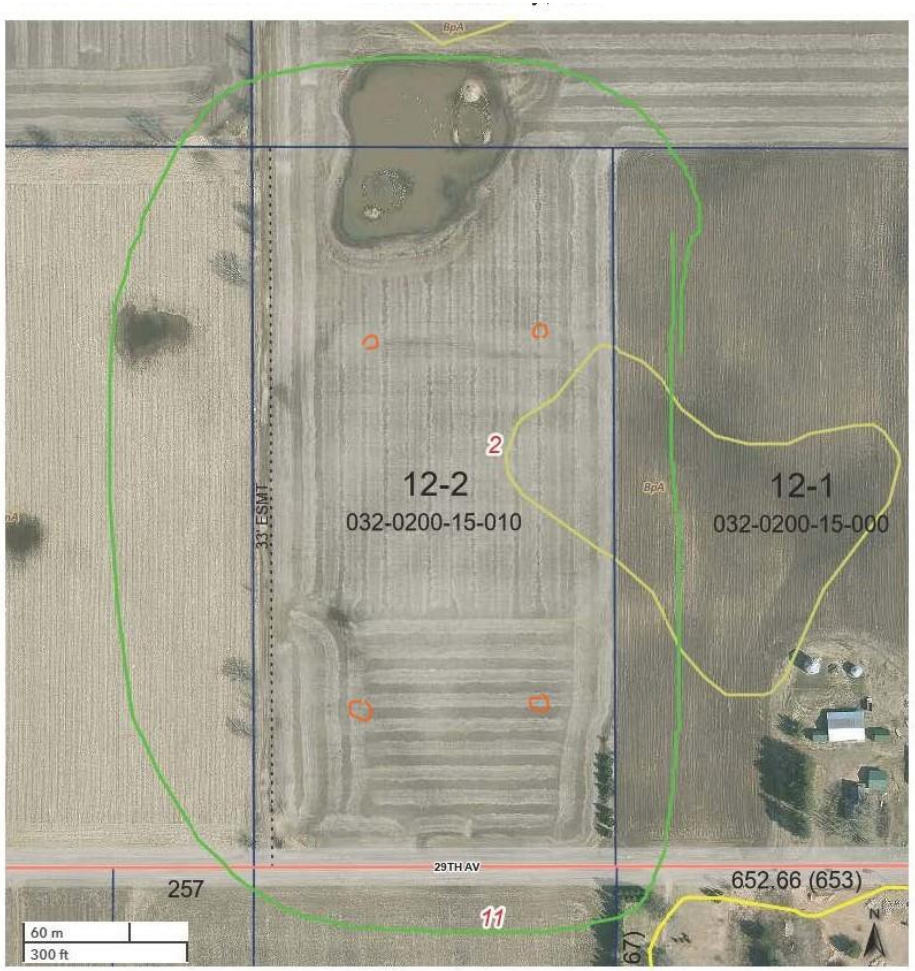
* A lime recommendation is calculated only when soil pH is more than 0.2 units below the optimum pH.
* Starter fertilizer (e.g. 10+20+20 lbs. N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
* A soil nitrate test may better estimate actual corn N needs.
* If alfalfa will be maintained for more than three years, increase recommended K2O by 20% each year.

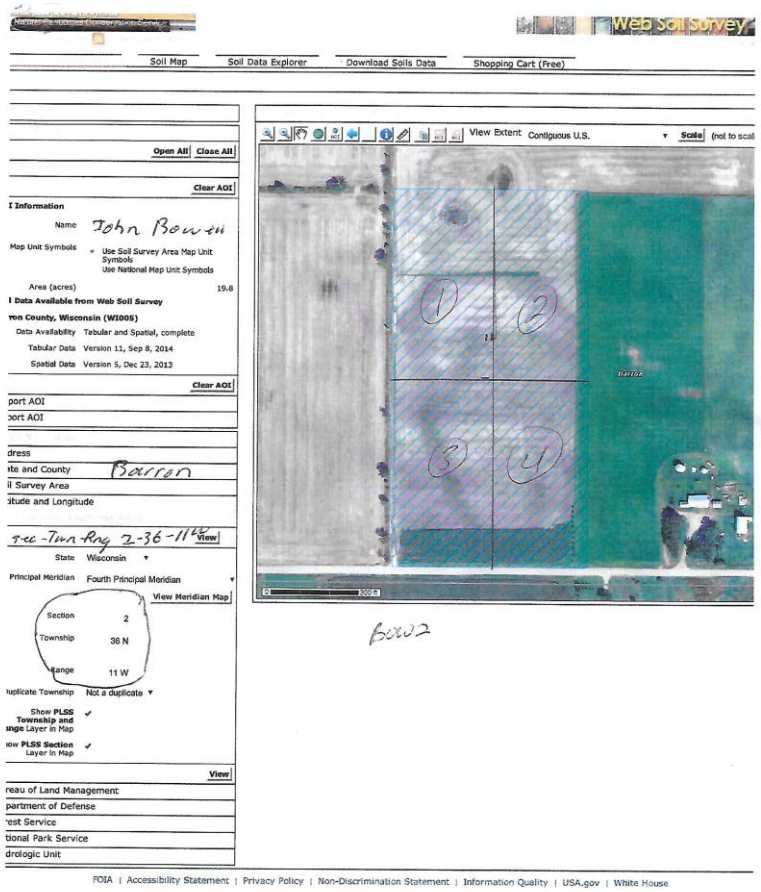
FIELD: BOW-2
DOCUMENT ID: 118802

DAIRYLAND
Laboratories, Inc.

PAGE 3 OF 6
04/19/2016

Tests should cover entire lot





STEP 3

Morphological Evaluation

Wisconsin Department of Safety & Professional Services
Division of Industry Services

Page_____of_____

SOIL EVALUATION REPORT

In accordance with SPS 385, Wis. Adm. Code

Attach complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and location and distance to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes (Privacy Law, s. 15.04(1)(m)).

County

Parcel I.D.

Reviewed by | Date

Property Owner

Property Location
Govt. Lot ¼ ¼ S T N R E (or) W

Property Owner's Mailing Address

Site Address or CSM and Lot #:

City, State, Zip | Phone Number ( ) | ☐ City ☐ Village ☐ Town | Nearest Road

☐ New Construction Use: ☐ Residential / Number of bedrooms _____ Code derived design flow rate_____GPD
☐ Replacement ☐ Public or commercial – Describe: _____ Flood Plan elevation if applicable_____ft.
Parent material_____
General comments and recommendations:

☐ Boring # ☐ Boring ☐ Pit Ground surface elev._____ft. Depth to limiting factor_____in. / elev._____ft.

Horizon	Depth In.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft² *Eff#1	*Eff#2

☐ Boring # ☐ Boring ☐ Pit Ground surface elev._____ft. Depth to limiting factor_____in. / elev._____ft.

Horizon	Depth In.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft² *Eff#1	*Eff#2

CST Name (Please Print) | Signature | CST Number

Address | Date Evaluation Conducted | Telephone Number

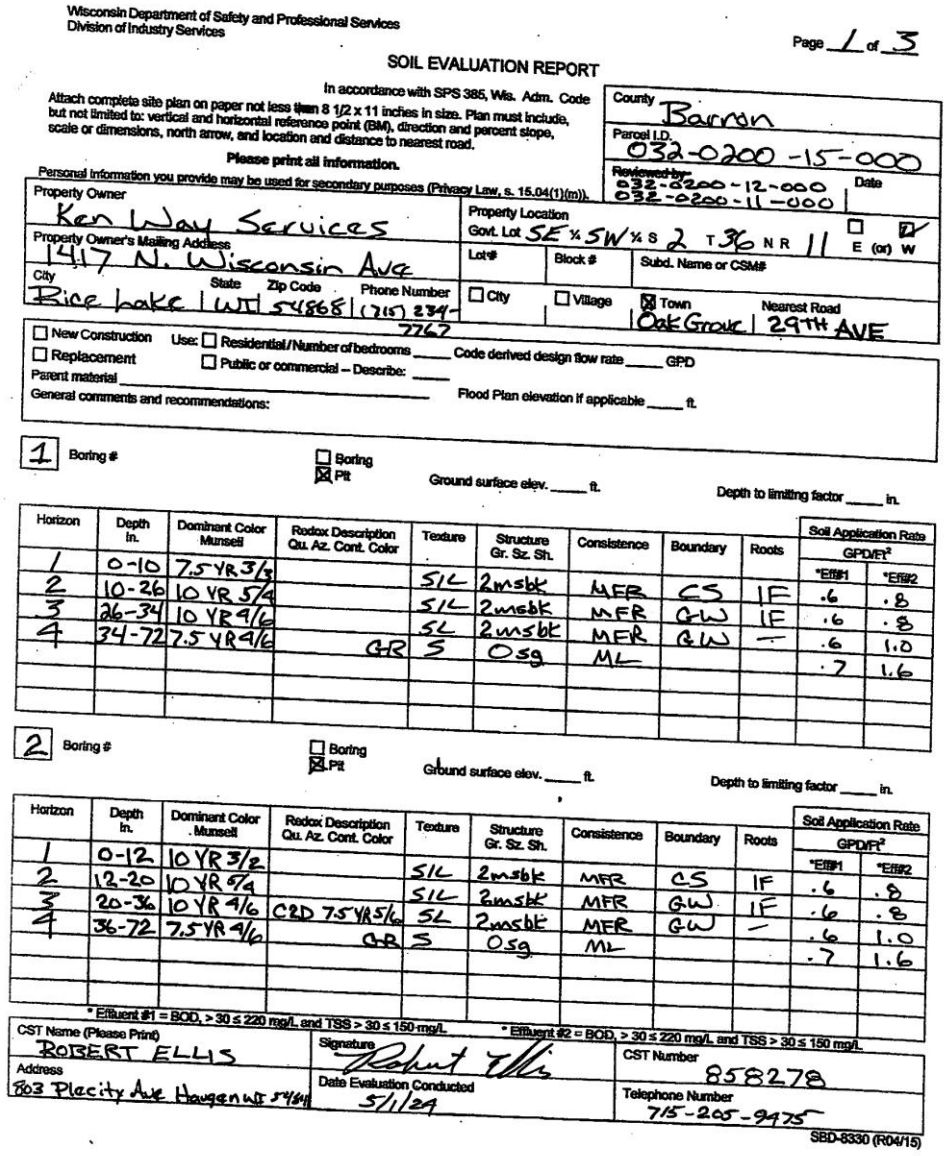
* Effluent #1 = BOD > 30 ≤ 220 mg/L and TSS > 30 ≤ 150 mg/L * Effluent #2 = BOD, ≤ 30 mg/L and TSS ≤ 30 mg/L

SBD-8330 (R03/22)

Narrative may be needed For high groundwater, or bed rock….36” separation. Seasonal options.

Soil Tests Conducted.

- 8 Borings
- Nutrient Testing Done



Wisconsin Department of Safety and Professional Services
Division of Industry Services

Page 1 of 3

SOIL EVALUATION REPORT

In accordance with SPS 385, Wis. Adm. Code

Attach complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and location and distance to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes (Privacy Law, s. 15.04(1)(m)).

County: Barron
Parcel I.D.: 032-0200-15-000
Reviewed by: 032-0200-12-000 / 032-0200-11-000 Date:

Property Owner: Ken Way Services
Property Owner's Mailing Address: 1417 N. Wisconsin Ave
City: Rice Lake State: WI Zip Code: 54868 Phone Number: (715) 234-7767

Property Location
Govt. Lot SE ¼ SW ¼ S 2 T 36 N R 11 ☐ E (or) ☒ W
Lot # Block # Subd. Name or CSM#
☐ City ☐ Village ☒ Town: Oak Grove
Nearest Road: 29TH AVE

☐ New Construction ☐ Replacement
Use: ☐ Residential / Number of bedrooms ____ ☐ Public or commercial – Describe: ____
Code derived design flow rate ____ GPD
Parent material
Flood Plan elevation if applicable ____ ft.
General comments and recommendations:

1 Boring # ☐ Boring ☒ Pit
Ground surface elev. ____ ft.
Depth to limiting factor ____ in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft² *Eff#1	*Eff#2
1	0-10	7.5YR 3/3		SiL	2msbk	MFR	CS	IF	.6	.8
2	10-26	10YR 5/4		SiL	2msbk	MFR	GW	IF	.6	.8
3	26-34	10YR 4/6		SL	2msbk	MFR	GW	—	.6	1.0
4	34-72	7.5YR 4/6	GR	S	0sg	ML			.7	1.6

2 Boring # ☐ Boring ☒ Pit
Ground surface elev. ____ ft.
Depth to limiting factor ____ in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft² *Eff#1	*Eff#2
1	0-12	10YR 3/2		SiL	2msbk	MFR	CS	IF	.6	.8
2	12-20	10YR 5/4		SiL	2msbk	MFR	GW	IF	.6	.8
3	20-36	10YR 4/6	C2D 7.5YR 5/6	SL	2msbk	MFR	GW	—	.6	1.0
4	36-72	7.5YR 4/6	GR	S	0sg	ML			.7	1.6

* Effluent #1 = BOD, > 30 ≤ 220 mg/L and TSS > 30 ≤ 150 mg/L * Effluent #2 = BOD, > 30 ≤ 220 mg/L and TSS > 30 ≤ 150 mg/L

CST Name (Please Print): ROBERT ELLIS
Address: 803 Placity Ave Haugen WI 54841
Signature: Robert Ellis
Date Evaluation Conducted: 5/1/24
CST Number: 858278
Telephone Number: 715-205-9975

SBD-8330 (R04/15)

STEP 4

Show Calculations

(3) SPECIFIC CROPS ON HIGH USE FIELDS. Septage may be applied to most leguminous crops at a volume sufficient to supply 200 lbs/ac of available nitrogen. If septage is applied to soybeans, the loading shall be limited to 140 lbs/ac of available nitrogen.

(4) ANNUAL AGRONOMIC RATE. For the purpose of implementing this section, septage may not be applied at a rate that exceeds the following:

Annual Agronomic Rate (Gallons per acre per year) = Pounds of Nitrogen Required For the Expected Crop Yield per Acre/ 0.0026

Rule of thumb in WI:

- Corn = 165 # of Nitrogen
- SoyBeans = 140# OF Nitrogen
- Hay/ Alfalfa = 200# of Nitrogen

Simple Math

165 # of Nitrogen /
.0026 # of Nitrogen per Gallon

=63,461.5 Gallons per Acre Allowed annually on Corn

Table 6.1. Suggested nitrogen (N) application rates for corn at different nitrogen:corn grain price ratios.

Soil and previous crop	Nitrogen:Corn price ratio 0.05	0.10	0.15	0.20
	total lb N/a to apply[a]			
Loamy: high yield potential soil				
Corn, forage legumes, legume vegetables, green manures[d]	**190**[b] 170 -------- 210[c]	**165** 155 -------- 180	**150** 140 -------- 160	**135** 125 -------- 150
Soybean, small grains[e]	**140** 125 -------- 160	**120** 105 -------- 130	**105** 95 -------- 115	**90** 80 -------- 105
Loamy: medium yield potential soil				
Corn, forage legumes, legume vegetables, green manures[d]	**145** 130 -------- 160	**125** 115 -------- 140	**115** 105 -------- 125	**105** 95 -------- 110
Soybean, small grains[e]	**130** 110 -------- 150	**100** 85 -------- 120	**85** 70 -------- 95	**70** 60 -------- 80
Sands/ loamy sands				
Irrigated—all crops[d]	**215** 200 -------- 230	**200** 185 -------- 210	**185** 175 -------- 195	**175** 165 -------- 185
Non-irrigated—all crops[d]	**140** 130 -------- 150	**130** 120 -------- 140	**120** 110 -------- 130	**110** 100 -------- 120

[a] Includes N in starter.
[b] Rate is the N rate that provides the maximum return to nitrogen (MRTN).
[c] Range is the range of profitable N rates that provide an economic return to N within $1/a of the MRTN rate.
[d] Subtract N credits for forage legumes, legume vegetables, animal manures, and green manures. This includes first-, second-, and third-year credits where applicable. Do not subtract N credits for leguminous vegetables on sand and loamy sand soils.
[e] Subtract N credits for animal manures and second-year forage legumes.

tial, regardless of soil property limitations, because the length of growing season restricts yield potential. Soils with no soil property limitations on yield potential in locations with 1) 2100 to 2200 GDD or 2) less than 2100 GDD and a mesic temperature regime are in a transition area; in some cases these soils are high yield potential, in others medium. In the transition area, growers and agronomists should choose the most appropriate yield potential based upon experience. Average GDD isolines for Wisconsin are provided in Figure 4.1. Loamy soils that are irrigated because of low available water capacity or that are artificially drained (e.g., tiled) because of poor drainage can be considered high yield potential if the location has more than 2200 GDD or is in a transition area. If loamy soils are limited by shallow depth to bedrock and field evaluation demonstrates that there is more than 30 inches of soil over bedrock throughout a majority of the field, then the soil can be considered high yield potential.

For medium- and fine-textured (loamy) soils, the suggested application rate varies according to the previous crop (Table 6.1). Where corn follows a forage legume, leguminous

Annual VS Weekly loading Rates

(5) MAXIMUM WEEKLY LOADING OF NON–GREASE INTERCEPTOR WASTE. (a) *Weekly hydraulic rates.* The maximum weekly hydraulic loading rate of septage application shall be limited by soil characteristics, and application method. The maximum weekly hydraulic loading rate is limited to 13,000 gallons per acre per week except that injection and incorporation on sites of 6 percent slope or less may be increased as follows:

1. For sites with predominately sandy loam, loam and silt loam, the weekly application rate may be increased with department approval to 27,000 gallons per acre per week.

2. For sites with predominately clay loam, the weekly application rate may be increased with department approval to 20,000 gallons per acre per week.

Discuss different types of application

ANIGON SERIES

The Anigon series consists of very deep, well drained soils which are moderately deep to sandy outwash. These soils formed mostly in loess or silty alluvium underlain by stratified sandy outwash. Typically they are on outwash plains, valley trains, and stream terraces, but some are on kames, eskers, glacial lake basins, and moraines. Permeability is moderate in the silty and loamy mantle and rapid or very rapid in the sandy outwash. Slopes range from 0 to 25 percent. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 42 degrees F.

TAXONOMIC CLASS: Fine-silty over sandy or sandy-skeletal, mixed, superactive, frigid Haplic Glossudalfs

TYPICAL PEDON: Anigon silt loam - on a plane slope of less than 1 percent in a cultivated field at an elevation of about 1160 feet. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; many fine roots; moderately acid; abrupt smooth boundary. (6 to 10 inches thick)

E--10 to 14 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; moderate thin platy structure; friable; many fine roots; moderately acid; clear wavy boundary. (0 to 10 inches thick)

B/E--14 to 20 inches; about 70 percent dark yellowish brown (10YR 4/4) silt loam (Bt); moderate fine subangular blocky structure; friable; few faint clay films on some faces of peds; penetrated by brown (10YR 5/3) silt loam (E), very pale brown (10YR 7/3) dry; moderate thin platy structure; friable; many fine roots; strongly acid; clear wavy boundary. (glossic horizon - 4 to 20 inches thick)

Bt1--20 to 30 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common faint clay films on faces of peds; many fine roots; very strongly acid; clear wavy boundary. (0 to 20 inches thick)

2Bt2--30 to 34 inches; brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; about 3 percent cobbles and 3 percent gravel; many fine roots; very strongly acid; abrupt wavy boundary. (0 to 4 inches thick)

3C1--34 to 47 inches; stratified brown (7.5YR 4/4) coarse sand and reddish brown (5YR 4/4) coarse sand; single grain; loose; about 10 percent gravel and 1 percent cobbles; few fine roots; strongly acid; abrupt wavy boundary.

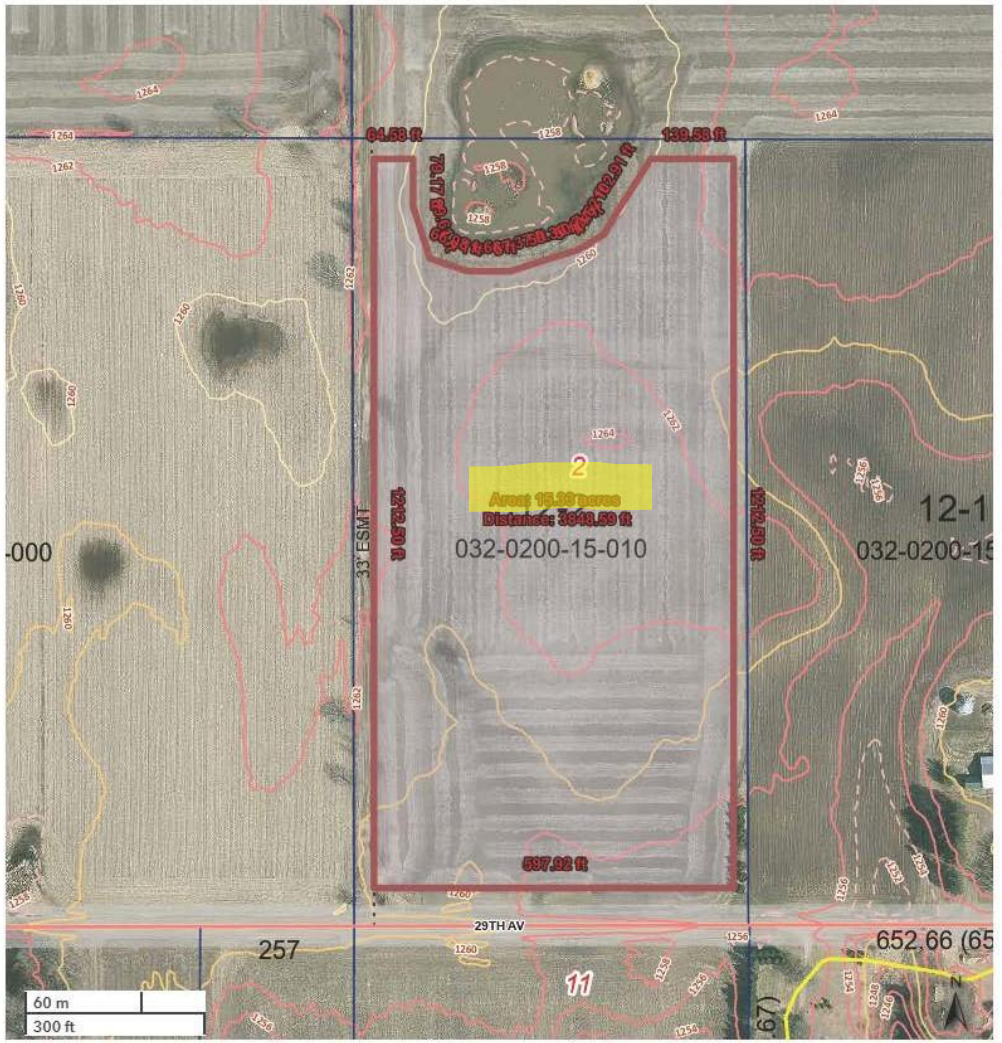
3C2--47 to 60 inches; brown (7.5YR 4/4) stratified gravelly coarse sand and very gravelly coarse sand; single grain; loose; 35 percent gravel and about 4 percent cobbles; few fine roots; moderately acid.

TYPE LOCATION: Polk County, Wisconsin; about 4 miles south and 2 miles east of Balsam lake; 150 feet west and 800 feet north of the southeast corner of sec. 25, T. 34 N., R. 17 W.

STEP 5

Create Map for Submital County Gis

Acres Proposed



Complete Application

State of Wisconsin, DNR
PO Box 7921
Madison, WI 53707-7921

Land Application Site Request

Form 3400-053 (R 12/22) Page 1 of 10

Notice: Complete this form for each site and submit it along with supporting documents to the appropriate WDNR Regional Wastewater Specialist or Engineer for evaluation. Failure to file a complete site request package including supporting documents, approvals, and acknowledgement signatures may result in delay, denial, or return of the request. Complete the form pursuant to the instructions on pages 5 through 10. The department will not be able to process a modified or altered form 3400-053.

Completion and submission of this form is mandatory under s. 283.55, Wis. Stats., and chs. NR 204 or 214, Wis. Adm. Code, for sewage sludge and industrial waste and under s. 281.48, Wis. Stats., and ch. NR 113, Wis. Adm. Code, for septage. Failure to properly complete and submit this form is a violation of s. 283.91 or s. 281.48, Wis. Stats., and may result in a monetary penalty and/or imprisonment. Personally identifiable information on this form is not intended to be used for other purposes, but may be made available to requesters under Wisconsin's Public Records law ss. 19.32-19.38, Wis. Stats.

Applicant Information

Permittee Name or Licensed Business		Phone No.	
Mailing Address	City	State	ZIP Code
WPDES Permit No. WI-00	Septage License No.	Email	

Methods and Equipment

Application Method Used (check all that apply): ☐ Surface Only (without Incorporation) ☐ Incorporation ☐ Injection

Equipment Used (check all used): ☐ Injector ☐ Splash Plate ☐ Sprayer ☐ Slinger ☐ Moldboard ☐ Chisel ☐ Disc ☐ Other

Site Request Package Checklist

Prior to submitting the Site Request Package, ensure that all items (chs. NR 113, NR 204, NR 214, Wis. Adm. Codes) have been included by using the checklist below:

- ☐ **Completed 3400-053 Land Application Site Request Form.** Pages 1 through 3.
- ☐ **Aerial Photograph.** Requested sites/fields boundaries marked and identified. Label restricting features including wells, residences, wetlands, waterways, dry runs, etc.
- ☐ **Soil Map Units.** Maps may be combined with the Aerial Photograph.
- ☐ **Proof of Ownership (Legal Property Owner) (if applicable).** Include a copy of the tax parcel listing showing the property owner along with the parcel map displaying the parcel identification.
- ☐ **Setback Reduction Permissions (if applicable).** Include signature(s) from any affected owners and occupants.
- ☐ **Soil Test Reports (if applicable).**
  - ☐ Nutrient Test Report. Submit test report per UWEX A2809 prior to landspreading for sewage sludge, high use septage fields, and other specific cases.
  - ☐ Morphological Report. Soil test report of soil horizons, etc. Required for high use septage fields, and may be required by the department in case-by-case situations consistent with administrative code requirements.
- ☐ **Other Site Review Information (if applicable).** Field data/ surveys, additional equipment lists, waste descriptions, etc. to assist in the site review process. Comments:

Property Owner and Farmer Information

If the property is owned by a corporation or trust, enter the legal entity name and registered address in the Property Owner section below and complete the information of the registered agent in the "Comments" spaces.

Property Owner	Phone No. (optional)	Email Address (optional)		
Mailing Address		City	State	ZIP Code

Is the Property Owner farming the Property? ○ Yes ○ No If Yes, skip Farmer Information below and sign the **Property Owner** section on page 3.

Farmer Name (if different)	Phone No. (optional)	Email Address (optional)		
Mailing Address		City	State	ZIP Code
Farm/Business Name (if different)	Business Alt. Phone (optional)	Business Email Address (if different)		
Farm/Business Address (if different)		City	State	ZIP Code

Comments

Land Application Site Request

Form 3400-053 (R 12/22) Page 2 of 10

Site Information

Outline the exact location, and indicate the name of the site(s)/field(s) on a soil map unit map and/or an aerial photograph.

Site Number/Name	(indicate only one) ○ City ○ Village ○ Town of				County (indicate only one)
Field Number	Legal Description (Quarter-Quarter-Quarter)	Section	Township	Range	Estimated Acreage
			N	○ E ○ W	
			N	○ E ○ W	
			N	○ E ○ W	
			N	○ E ○ W	

Have all requested sites been in agricultural production in the last 2 crop years? ○ Yes ○ No If No, explain on an additional sheet of paper.

Will application be to an existing crop? ○ Yes ○ No If Yes, check appropriately: ○ Cultivated Crops ○ Permanent Hayland ○ Pasture ○ Tree Plantation

If Cultivated Crops are being grown, are they being grown for human food? ○ Yes ○ No If yes, food what crop?

The desired field may already be approved for waste application. If so, this field may need to be transferred to the applicant. Property owner authorization may be necessary to ensure timely review of this site request package. Nitrogen application rate (lbs/acre/crop year) may need to be adjusted due to carryover nitrogen.

Was non-agricultural waste applied to site(s) in the last 3 crop years? ○ Yes ○ No ○ Unknown. If unknown, recommend property owner authorization.

If Yes, is non-agricultural waste currently applied to site(s)? ○ Yes ○ No

If Yes, check the appropriate boxes for waste(s) spread:

☐ Septage ☐ Sewage Sludge ☐ Industrial Liquid Waste ☐ Byproduct Solids ☐ Industrial Sludge ☐ Other (specify)

If known, provide the permittee/licensee name and DNR number of the field:

Check the appropriate boxes for the land use types adjacent to the site:

☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Other (specify)
☐ Forest ☐ Landfill ☐ Mining Operation ☐ Recreational ☐ Other (specify)

Application to frozen or snow covered ground? ○ Yes ○ No If Yes, complete the applicable proposed frozen or snow covered application rate below.

Distance between the land surface and bedrock/groundwater: ○ 18 inches to 36 inches ○ Greater than 36 inches Note: Distance <18 is not approvable.

Are any parts of the site(s) enrolled in the Conservation Reserve Program (CRP)? ○ Yes ○ No If Yes, explain on an additional sheet of paper.

Is drain tile installed on the site(s)? ○ Yes ○ No ○ Unknown If Yes, what is the minimum depth? _____ inches

If yes, identify tile outlets on submitted aerial photograph.

Waste Information

Waste(s) to be Land Applied:

☐ Septage ☐ Sewage Sludge ☐ Industrial Sludge ☐ Industrial Liquid Waste ☐ By Product Solids ☐ Other (specify)

If Industrial (application under ch. NR214 Wis. Adm. Code), check all that apply to better characterize the waste:

☐ Liquid Sludge ☐ Cake Sludge ☐ By Product Solids ☐ Whey or Permeate ☐ Paper Mill Sludge (Cake Sludge) ☐ Other (specify)

Complete the applicable section for the type of waste intended to be land spread.

Septage (Chapter NR 113, Wis. Adm. Code)

Is this application for a High Use Field? ○ Yes ○ No If Yes, include Nutrient and Morphological Soil Reports in site request package.

Request to increase weekly application rate > 13,000 gallons/acre/week? ○ Yes ○ No

If Yes, applicant to provide supporting information pursuant to sub NR 113.09(5), Wis. Adm. Code with request package.

Is application requested for frozen or snow covered ground? ○ Yes ○ No If yes, type of waste? ○ Emergency Septic Tank ○ Holding Tank

Proposed typical application rate: Gal/acre ○ Day / ○ Week Proposed frozen or snow covered application rate: Gallons/acre

Sewage (Municipal) Sludge (Chapter NR 204, Wis. Adm. Code)

Has this site been Self Approved? ○ Yes ○ No If yes, WDNR Self Approver Number:

Proposed typical application rate: rate (check one) ○ Gal/acre ○ Ton/acre ○ Other (specify)

The nutrient soil test results must be submitted prior to land application per s. NR 204.06, Wis. Adm. Code.

Industrial Waste (Chapter NR 214, Wis. Adm. Code)

Proposed typical application rate: rate (check one) ○ Gal/acre ○ Ton/acre ○ Other (specify)

Proposed application rate on frozen or snow covered ground: rate (check one) ○ Gal/acre ○ Ton/acre ○ Other (specify)

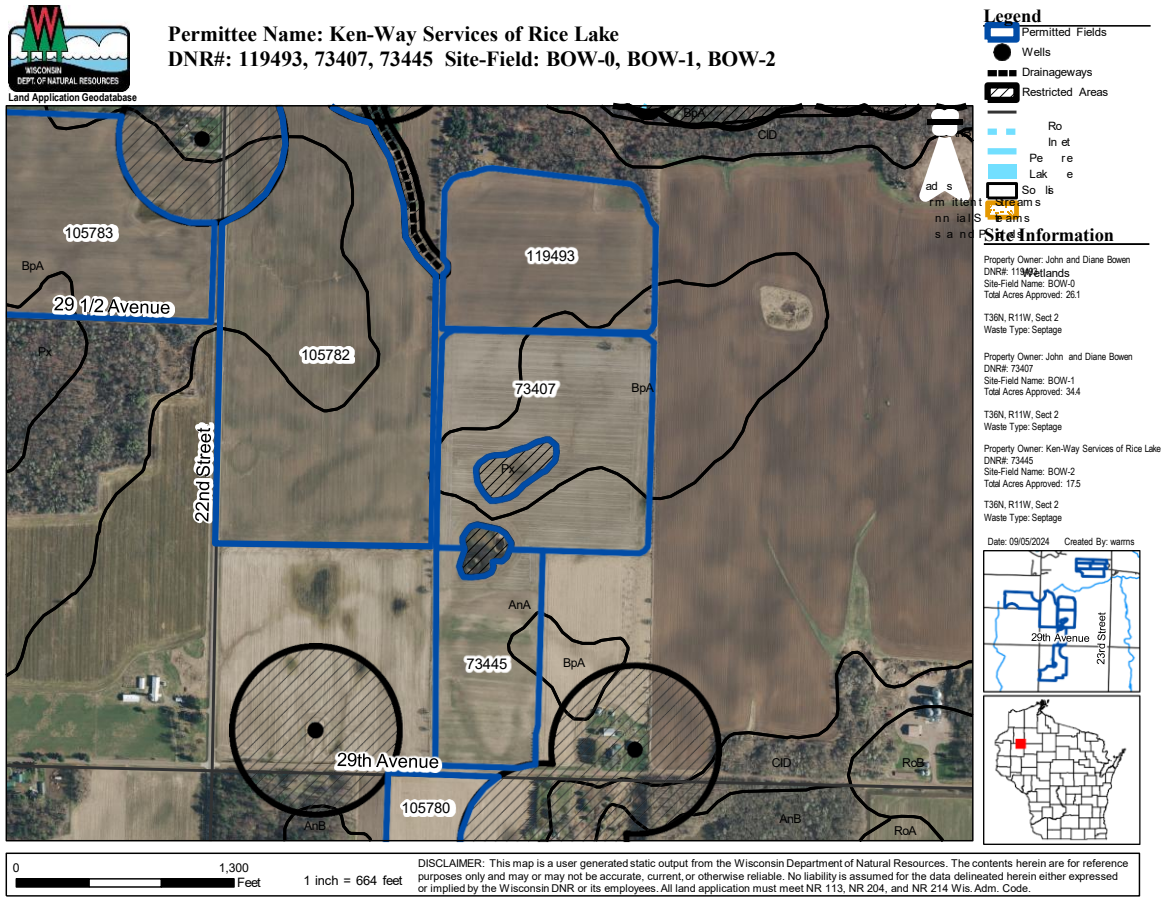
Proposed application interval (check one) ○ Daily ○ Weekly ○ Monthly ○ Quarterly ○ Annually ○ Other (specify)

Total proposed waste applied to site per year: ○ Gallons ○ Tons ○ Other (specify)

UPDATE!!

Fields approved for high use

On 9-5-24



UPDATE!!

Approval letter for 1 of the fields

SITE APPROVAL AND DISCHARGE LIMITS FORM

State of Wisconsin Department of Natural Resources

CHAPTERS 281 and 283 WIS. STATS Form 3400-122 Rev.2-21

Date: 03/02/2004 Page 1 of 2

Here is a list of new land application sites approved for your use:

Permittee/Licensee: KEN-WAY SERVICES OF RICE LAKE, INC. PO BOX 774 RICE LAKE WI 54868	WPDES Number or Septage License Number: WI-0066435	FID:

DNR #	Site#/Field#	Site Owner	Legal Description	Village/City/Town	County	Denied/ Approved	Apprvd Acres	Apprvd Winter Acres	Ind Liq Waste Appl Rate (Gal/acre/day)		Wisc. Adm. Code	Variance/ Exemption
									Summer *	Winter *		
73407	BOW / 1	John and Diane Bowen	NE1/4SW1/4 S2 T36 R11W	T of Oak Grove	Barron	Approved	34.4			0	113	

For Application of: Septage

Discharge Limitations and Approval Conditions:

Land application must be in compliance with ch. NR 113, Wis. Adm. Code. Land application is not allowed in the cross hatched areas marked on the attached department approved map. The total pounds of nitrogen applied per acre per year shall be limited to the nitrogen needs of the crop minus any other nitrogen sources (including but not limited to manure, chemical fertilizer, and legume carryover.). This site has been approved as a high use field. The volume of septage applied annually may not exceed the nitrogen needs of the crop to be grown each year. Vehicles and equipment used for spreading shall be equipped with a distribution system capable of uniformly spreading waste over the site. No land application is allowed during periods of saturated soil conditions. Land application shall cease if ponding/runoff observed. This site shall be managed in accordance with the approved management plan. There are several residences around this site. Meet all separation distances to residences and wells (per ch. NR 113, Wis. Adm. Code. This site has wetland and/or surface waters nearby. Meet all setbacks to surface waters, dry runs, and drainageways (per ch. NR 113, Wis. Adm. Code). The department recommends utilizing best management practices to prevent waste runoff and soil erosion. A depth of at least 36" is required between the soil surface and bedrock/groundwater depth. This field has been approved with an increased weekly hydraulic rate of 27,000 gallons/acre/week (per NR 113.09(5), Wis. Adm. Code). This site is not approved for winter land application. Winter is defined as frozen or snow covered ground.

* The permittee or licensee must comply with the nitrogen limits specified in its WPDES permit, management plan (MP), sludge management plan (SMP), and/or applicable administrative codes. Nitrogen application rates are based on UW Extension A2908 nutrient

Variance/Exemption: If indicated with "", a variance (per s. NR 113.15 and NR 204.15, Wis. Adm. Code) or exemption (per s. NR 214.06, Wis. Adm. Code) has been issued to this site.

This land application approval is subject to chs. NR 113, NR 204, and/or NR 214, Wis. Adm. Code. For industrial wastes regulated per ch. NR 214, Wis. Adm. Code, this approval form, and the discharge limitations specified above, must be included as an amendment to the facility's MP per ss. NR 214.17(6)(c) and NR 214.18(6)(c), Wis. Adm. Code. The DNR Wastewater Program may request that sludge management plans (SMPs) include site approval forms, and the discharge limitations specified above, per s. NR 204.11, Wis. Adm. Code. Failure to comply with the discharge limitations and approval conditions listed on this form and include this information in the department approved MP/SMP may result revocation of the site, stepped enforcement, and/or referral for violation of chs. 281 and 283, Wis. Stats.

The DNR Wastewater Program recommends that the permittee/licensee contact the appropriate local and state governmental agency(ies) to determine if any additional restrictions, fees, and penalties, apply.

Approved By: William F Roberts updated 9/5/24 by: Stephen Warrner 03/02/2004	Telephone Number: (715) 360-7297 414-897-5771

Submit to Local Septage Coordinator

REGIONAL SEPTAGE COORDINATORS

Region	Coordinator Name	Counties of Responsibility
South Central Region (SCR) Mailing Address: N7725 Highway 28 Horicon WI 53032	Kassandra (Kassie) Schultz Email: Kassandra.Schultz@Wisconsin.gov Phone Number: 262-675 4072	Columbia, Dane, Dodge, Grant, Green, Iowa, Jefferson, Lafayette, Richland, Rock, Sauk
Southeast Region (SER) Mailing Address: 1027 West St. Paul Ave Milwaukee WI 53233	Stephen (Steve) Warrner Email: Stephen.Warrner@Wisconsin.gov Phone: 414-897-5771	Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington, Waukesha
Northeast Region (NER) Mailing Address: 3369 West Brewster St Appleton WI 54914	Teresa Hall Email: Teresa.Hall@Wisconsin.gov Phone: 920-841-6425	Brown, Calumet, Door, Fond du Lac, Green Lake, Kewaunee, Manitowoc, Marinette, Marquette, Menominee, Oconto, Outagamie, Shawano, Waupaca, Waushara, Winnebago
Northern Region (NOR) Mailing Address: 2501 Golf Course Rd Ashland WI 54806	Alison Canniff Email: Alison.Canniff@Wisconsin.gov Phone: 715-685-0450	Ashland, Barron, Bayfield, Burnett, Douglas, Florence, Forest, Iron, Langlade, Lincoln, Oneida, Polk, Price, Rusk, Sawyer, Taylor, Vilas, Washburn
West Central Region (WCR) Mailing Address: 890 Spruce St Baldwin WI 54002	Peter Carlson Email: peter.carlson@wisconsin.gov Phone: 715-225-2209	Adams, Buffalo, Chippewa, Clark, Crawford, Dunn, Eau Claire, Jackson, Juneau, La Crosse, Marathon, Monroe, Pepin, Pierce, Portage, St. Croix, Trempealeau, Vernon, Wood

Wake Up/ Questions?