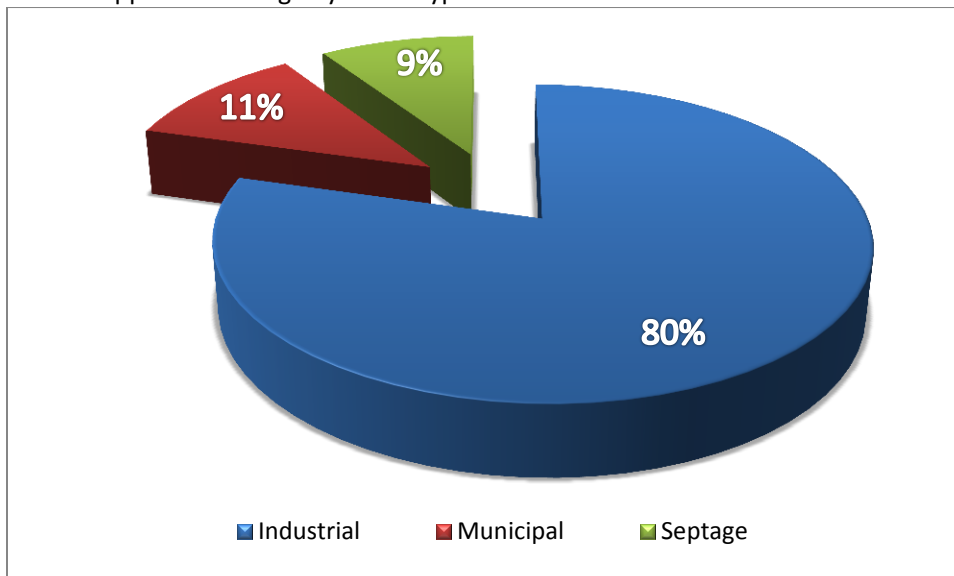


## Summary of Wastewater Land Application in Kewaunee County

- Wastewater includes industrial wastes, municipal waste/sludge, and septage waste.
- Applicable administrative codes:
  - Chapter NR 113, SERVICING SEPTIC OR HOLDING TANKS, PUMPING CHAMBERS, GREASE INTERCEPTORS, SEEPAGE BEDS, SEEPAGE PITS, SEEPAGE TRENCHES, PRIVIES, OR PORTABLE RESTROOMS.
  - Chapter NR 204, DOMESTIC SEWAGE SLUDGE MANAGEMENT.
  - Chapter NR 214, LAND TREATMENT OF INDUSTRIAL LIQUID WASTES, BY-PRODUCT SOLIDS AND SLUDGES.
- Definition of terms:
  - Industrial waste (per NR 214.03):
    - “By-product solids” means waste materials from the animal product or food processing industry including, but not limited to: remains of butchered animals, paunch manure and vegetable waste materials such as leaves, cuttings, peelings and actively fermenting sweet corn silage.
    - “Liquid waste” means process wastewater and waste liquid products, including silage leachate, whey, whey permeate, whey filtrate, contact cooling water, cooling or boiler water containing water treatment additives, and wash water generated in industrial, commercial and agricultural operations which result in a point source discharge to a land treatment system.
    - “Sludge” means the accumulated solids generated during the biological, physical or chemical treatment, coagulation or sedimentation of water or wastewater.
  - Municipal waste (per NR 204.03):
    - “Sewage sludge” or “sludge” or “biosolids” means the solid, semi-solid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes scum or solids removed in primary, secondary or advanced wastewater treatment processes and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. Note: All 3 terms defined here are interchangeable and recognized by the department, as they are all in common use.
  - Septage (per NR 113.03):
    - “Septage” means the wastewater or contents of septic or holding tanks, dosing chambers, grease interceptors, seepage beds, seepage pits, seepage trenches, privies or portable restrooms.

Current approved acreage by waste type:



Industrial = 13,944.1  
Municipal = 1,983.3  
Septage = 1,631.3  
Total = 17,558.7 acres  
– 13.5% of 130,000 acres of agricultural land available in Kewaunee County

Industrial facilities = 10  
Municipal facilities = 7  
Septage businesses = 2

**Table 1.** List of facilities/businesses that are approved to land apply industrial, municipal, and septage waste in Kewaunee County.

Facilities Included in this Summary	Waste Type	Facility/Business Location Based in Kewaunee County	Approved Land Application Sites* in Kewaunee County
Agropur Inc Luxemburg	Industrial	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
BelGioioso Cheese Inc Denmark	Industrial	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
BelGioioso Cheese Inc Langes Corner	Industrial	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Dominion Energy Kewaunee, Inc	Industrial	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
JBS Green Bay Inc Lime Kiln	Industrial	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Land O Lakes Inc Denmark	Industrial	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
NEW Organic Digestion LLC	Industrial	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Packerland Whey Products Inc	Industrial	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sanimax USA LLC	Industrial	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Thiry Daems Cheese Factory Inc	Industrial	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Algoma WWTF	Municipal	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Appleton WWTF	Municipal	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Casco WWTF	Municipal	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Denmark WWTF	Municipal	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Kewaunee WWTF	Municipal	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Luxemburg WWT	Municipal	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sturgeon Bay Utilities WWTF	Municipal	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Pelishek Sanitation	Septage	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Renier Sanitation Service	Septage	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* Includes manure storage structures approved for industrial waste storage.

**Table 2.** Total amount of acres in Kewaunee County used for land application of wastewater by the facilities identified in Table 1, 2010-2014.

Year	2010	2011	2012	2013	2014
<b>Total Acres Land Applied</b>	2,484.4	2,158.1	1,272	759.2	705.5

**ADDITIONAL NOTES:**

- This information was compiled on August 25, 2015, and is subject to change based on permittee operations/activities within the parameters and requirements of their WPDES permits.
- Permittees with land application outfalls may change their approved sites at any time, which includes applying for new sites and/or abandoning sites that they no longer use.
- The total acreage approved for land application only represents what is available for land application, not what is used every year for land application of wastewater. Facilities are able choose which sites from their approved list to use for land application during a crop year. This decision is usually affected by proximity of sites, availability of sites/crop rotation, and volume of wastewater produced.
- Some facilities reserve certain sites for only emergency usage, which means that those sites are only used when the usual sites or disposal methods are not available.

- Once land application sites are reviewed and approved by DNR, the facilities can manage those sites according to their needs as long as all WPDES permit and administrative code requirements are met at all times.
- Land application is a complex process to manage for facilities and can become more of a logistical burden than a benefit (cost, equipment, availability of acreage, site management, employee/hauler management), which results in reducing land application activity.
- Table 2 shows that the total amount of acreage in Kewaunee County used for land application of wastewater has steadily decreased over the past 5 years. This is due, in part, to one of the major industrial land applicators in Kewaunee County (Agropur Luxemburg) undergoing a wastewater treatment plant upgrade in 2013 and essentially eliminating land application as a disposal method.
- According to wastewater program records, the following manure pits are approved for industrial waste acceptance in Kewaunee County:
  - Deer Run Dairy pit; located in the Town of Franklin; approved for less than 10% industrial wastewater from JBS.
  - 3 pits owned by Gerald Stahl; located in the Town of Luxemburg; approved for industrial sludge from Sanimax.

#### **MONITORING & REPORTING REQUIREMENTS FOR LAND APPLIED INDUSTRIAL WASTES:**

- Liquid waste:
  - Application rate (gallons)
    - Daily
  - Total Solids (%)
    - Annual
  - Chloride (mg/L)
    - Monthly
  - Total Kjeldahl Nitrogen (mg/L)
    - Monthly
  - Total Phosphorus (mg/L)
    - Quarterly
  
- Sludge:
  - Discharge rate (tons)
    - Daily
  - Total solids (%)
  - Chloride (%)
  - Total Kjeldahl Nitrogen (%)
  - Total Phosphorus (%)
  - Ammonia Nitrogen (%)
  - Organic Nitrogen (%)
  - Total Potassium (%)
  - pH
  - Lead (mg/kg)
  - Zinc (mg/kg)
  - Copper (mg/kg)
  - Nickel (mg/kg)
  - Cadmium (mg/kg)
    - The parameters above starting with total solids require annual monitoring
  
- By-product Solids:
  - Application rate (tons)
    - Daily
  - Total Solids (%)
    - Quarterly

- Chloride (%)
  - Quarterly
- Total Kjeldahl Nitrogen (%)
  - Quarterly
- Total Phosphorus (%)
  - Annual

**\*\*Note about nitrogen:**

*Total nitrogen = nitrate ( $\text{NO}_3$ ) + nitrite ( $\text{NO}_2$ ) + organic nitrogen + ammonia ( $\text{NH}_3$ )*

*Total Kjeldahl nitrogen (TKN) = organic nitrogen + ammonia ( $\text{NH}_3$ ) + ammonium ( $\text{NH}_4^+$ )*

## Wastewater Storage Options

### 1. Industrial Wastes:

#### a. Liquid wastewater

##### i. Chapter NR 214.17(1): Exemption for less than 10% industrial waste in manure pits.

1. Industrial liquid wastes mixed into liquid manure at a volume less than 10% of the volume of the mixture at the time it is landspread may be exempted in writing by the department on a case-by-case basis from the requirements of s. NR 214.17 (2), (3), (4) and (7) if the liquid waste mixture has beneficial properties as a soil conditioner or fertilizer, is applied in accordance with accepted agricultural practices and does not cause detrimental effects.

- a. Manure/industrial waste mixture is land applied to fields owned/operated by the manure pit owner and is regulated as animal waste.
- b. Land application sites for this manure/industrial waste mixture are not required to be reviewed and approved for industrial waste application.
- c. Industrial waste generator is required per WPDES permit requirements to keep records of the waste volume disposed of in manure pits and the hauling schedule of the pit to ensure the less than 10% waste volume requirement is met at all times.
  - i. This information is reported to DNR via annual reports.
- d. Industrial waste disposed of in manure pits through this exemption should be accounted for in the nutrient management plan for the farm that owns/operates the manure pit.

- ii. This exemption is available only for liquid industrial waste/wastewater. It is not available for industrial sludge or by-product solids.

#### b. Liquid wastewater >10%, industrial sludge, and by-product solids.

##### i. Chapter NR 213 – LINING OF INDUSTRIAL LAGOONS AND DESIGN OF STORAGE STRUCTURES.

1. Industrial wastewater storage greater than 10% allowed in NR 214.17(1) = 100% waste storage and requires review and approval in accordance with NR 213 standards.
  - a. Any waste mixture containing greater than 10% liquid industrial waste volume is managed as industrial waste and all WPDES permit requirements of the waste generator and NR 214 apply for the monitoring and disposal of that waste.
2. Any volume of industrial sludge and by-product solids proposed for storage requires review and approval in accordance with NR 213 requirements.
  - a. Fields identified for land application of this waste are required to be reviewed and approved in accordance with NR 214 and the waste generator's WPDES permit. All permit and code requirements apply at all times.
3. Industrial waste generator is required per WPDES permit requirements to keep records of the sampling/monitoring, waste volume disposed of in manure pits/storage facilities, the approved sites used for disposal, and the application rate for each site.
  - a. This information is reported to DNR via annual reports.

### 2. Municipal waste/sludge.

#### a. Chapter NR 110.26 – SEWERAGE SYTEMS: Sludge handling, storage and disposal.

#### b. Chapter NR 204.10: Storage facilities.

- i. Any volume of municipal waste/sludge proposed for storage requires review and approval in accordance with NR 110 and NR 204 requirements.
- ii. All requirements of the waste generator's WPDES permit and NR 110 & 204 apply at all times.

3. Septage waste.

a. Chapter 113.12: Septage storage facilities.

i. Small storage facilities – capacity of less than 25,000 gallons of waste storage.

1. Allowed if the storage facility has been previously approved under ch. SPS 383 or meet the standards in NR 110 and DNR is notified of the activity via Form 3400-137, Septage Storage Facility Permit Application.
2. Permits are not usually issued for small facilities but can be on a case-by-case basis.
3. Waste cannot be stored for longer than 2 years.
4. Waste disposal must follow all requirements of NR 113.
  - a. Disposal volumes reported to DNR via annual reports.

ii. Large storage facilities – capacity of greater than 25,000 gallons of waste storage.

1. Specific WPDES permit required.
  - a. Submission of WPDES permit application materials.
2. Facility meets NR 110 standards.
  - a. Plan and specification approval required by DNR plan review engineers.
3. Inspection and adequacy of sealing report submitted and accepted by DNR.
4. Waste cannot be stored for longer than 2 years.
5. Waste disposal must follow all requirements of NR 113.
  - a. Disposal volumes reported to DNR via annual reports.

iii. Other storage facilities.

1. Includes manure pits.

- a. Pits under buildings where animals are housed are not allowed.
- b. Potential conflict if farm has a grade A dairy license.
- c. Pit must meet NRCS 313 standards.
- d. Submission of Form 3400-137 required.
- e. Waste cannot be stored for longer than 2 years.
- f. All requirements listed in NR 133.12(4) must be followed.
  - i. Submit a report that includes:
    1. The location of the storage facility;
    2. The type and volume of the storage facility including construction and sealing details;
    3. Sufficient site characteristics information to evaluate the environmental impact and suitability of such waste storage;
    4. The name and address of the owner of the storage facility;
    5. Any contractual arrangements involved;
    6. The type and composition of any wastes other than septage to be stored at the facility;
    7. Annual sampling and analysis of the combined wastes in accordance with requirements in the permit;
    8. The methods to be used for landspreading the septage or septage mixture; and
    9. *If septage makes up 10% or more of the mixture in the storage facility or if there are 25,000 gallons or more of septage in the mixture, a certification statement that the entire contents of the storage facility shall be landspread in accordance with this chapter.*