CR 89-136

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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STATE OF WISCONSIN )
) ss
DEPARTMENT OF NATURAL RESOURCES )

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Bruce B. Braun, Deputy Secretary of the Department of Natural Resources and custodian of the official records of said Department, do hereby certify that the annexed copy of Natural Resources Board Order No. WW-61-89 was duly approved and adopted by this Department on May 24, 1990. I further certify that said copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at the Natural Resources Building in the City of Madison, this 2nd day of August, 1990.

Bruce B. Braun

Bruce B. Braun, Deputy Secretary

(SEAL)

12-1-90

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD REPEALING, RENUMBERING, RENUMBERING AND AMENDING, AMENDING, REPEALING AND RECREATING AND CREATING RULES

IN THE MATTER of repealing ss. 110.25(4)(b) and (d), 206.02(2)(d), 206.03(7),(12) and (17), 206.07(2)(f); renumbering ss.206.02(2)(e), 206.03(1) to (6), (8), (9), (11) and (13) to (16), 206.07(2)(g) and (h); renumbering and amending ss. 206.02(2)(f) and 206.03(10); amending ss. NR 110.03(19), 110.09(2)(h)5 and 6, 110.24(3)(c) and (4)(b), 110.25 (title) and (2), 110.26(title), (9) and (12)(a) 3 and (c), 206.01, 206.02(1),206.06, 206.07(1) and (2)(e); repealing and recreating ss. NR 110.24(3)(d), 110.25(3), (4)(f), and (5), 110.26(10), 206.05, 206.08, 206.09(1) and (2),206.10; and creating ss. NR 110.03(6m), (12m), (13e), (13t), (14e), (14t), (18m), (19m), (31e), (31t) and (32m), 110.08(5)(dm), 110.09(2)(r) and (8), 110.15(4)(d), 110.25(intro),(3m), (4)(a)3 and (4)(g), 110.255, 110.26 (12)(d), 206.03(1),(2),(5),(6),(11) to (13), (17), (21), (22), (24) and (26), 206.07(2)(h) and 206.09(4)(c) of the Wisconsin administrative code pertaining to the planning, design and construction of sewage systems

WW-61-89

Analysis Prepared by the Department of Natural Resources

Authorized statutes: ss. 144.025(2)(c) and 227.11(2)(a), Stats.

Statutes interpreted: ss. 144.04, 147.02 and 147.04, Stats.

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The revisions to chs. NR 110 and 206, Wis. Adm. Code, are intended to meet the requirements of ch. 160, Stats. and ch. NR 140, Wis. Adm. Code.

The revisions to chs. NR 110 and 206 will require the following:

NR 110

1. Updated design criteria for land disposal systems.
2. Updated design criteria for sludge storage facilities.
3. A modification to the requirement for municipal ownership.

NR 206

1. New effluent limitations and monitoring requirements for municipal land disposal systems.
2. A requirement for management plans for land disposal systems.

SECTION 1. NR 110.03(6m), (12m), (13e), (13t), (14e), (14t) and (18m) are created to read:

(6m) "Bedrock" means the rocks that underlie soil material or where weathered in-place consolidated material larger than 2 millimeters in size is greater than 50% by volume.

(12m) "Design management zone" or "DMZ" means a 3-dimensional area, bounded by a set horizontal distance from the application or containment area, as specified in Table 4, ch. NR 140, and by a variable vertical distance which extends from the land surface downward through all saturated formations.

Note: The size of the DMZ may be altered by the department based on the criteria in s. 140.22(5).

(13e) "High groundwater level" means the higher of either the elevation to which the soil is saturated as observed as a free water surface in an unlined hole or the elevation to which the soil has been seasonally or periodically saturated as indicated by soil color patterns throughout the soil profile.

(13t) "Highest anticipated groundwater elevation" means the sum of the calculated mounding effects of the disposal discharge and the seasonal high groundwater level.

(14e) "Hydraulic application rate" means the average daily volume of effluent discharged to a designated acreage of the land application system during a calendar month or other period of time specified in a WPDES permit. The rate is calculated by dividing the total discharge volume for the month or period of time by the acreage of land and by the number of days in the month

or period of time, usually expressed in units of gallons per acre per day. For overland flow systems, the hydraulic application rate is expressed as a flow rate per unit width of slope per day.

(14t) "Hydrogeologist" means a person who is a graduate of an accredited institution of higher education and who has successfully completed 30 semester hours or 45 quarter hours of course work in geology. At least 6 semester hours or 9 quarter hours of the geology course work must be in hydrogeology, geohydrology or groundwater geology. This person shall also have acquired through education and actual field experience the ability to direct the drilling of borings, and the installation and development of wells; describe and classify geologic samples and evaluate and interpret geologic and hydrogeologic data in accordance with the requirements of chs. NR 110 and 206.

(18m) "Intermediate sludge storage" means the storage of sludge for a period of more than 24 hours and no more than 3 months.

SECTION 2. NR 110.03(19) is amended to read:

NR 110.03 (19) "Lagoon" means those sewage treatment facilities where the wastewater <u>or sludge</u> containment structure is constructed primarily of earthen materials.

SECTION 3. NR 110.03(19m) is created to read:

NR 110.03(19m) "Long-term sludge storage" means the storage of sludge for a period exceeding 3 months.

SECTION 4. NR 110.03(31e), (31t) and (32m) are created to read:

NR 110.03(31e) "Sludge storage" means the retention of sludge at a treatment plant or at an approved off-site facility.

(31t) "Short-term sludge storage" means the storage of sludge for a period of no more than 24 hours.

(32m) "Water table observation well" means any groundwater monitoring well whose screen intersects the water, which is installed for the specific purpose of determining either the elevation of the water table or the physical, chemical, biological or radiological properties of groundwater at the water table, or both.

SECTION 5. NR 110.08(5)(dm) is created to read:

NR 110.08(5)(dm) Treatment Facilities To Serve Existing Mobile Home Parks And Condominium Developments. Proposals for new treatment facilities to serve existing residential developments at mobile home parks and condominium developments may not be approved unless:

1. The conditions of par. (a) are met; or

2. The conditions of subds. (a) 1. and 2. are met and the owner submits the following:

a. Adequate proof that sufficient funds to operate, maintain and abandon the facility, if necessary, will be available for the life of the facility;

b. Documentation showing that the new treatment facilities are being proposed as a replacement of a failing septic tank/soil absorption system which has been in use for at least 10 years; and

c. Proof of the inability to form a town sanitary district or other appropriate municipal entity to oversee the facility.

SECTION 6. NR 110.09(2)(h) 5. and 6. are amended to read:

NR 110.09(2)(h) 5. An evaluation of the storage requirements either at the sewage treatment facility or at an offsite location. The evaluation shall include an estimate of the maximum period of time necessary to store sludge, and a description of the location, accessibility, soils, necessary local permits, depth to groundwater, distance to residential homes, type of facility, topography and any other appropriate information. The storage recommendations shall comply with s. NR 110.26(10).

6. An estimate of the amount of land required for each alternative shall be made. Land requirements for landfilling of sludge shall be based upon accepted landfill design practices. Department approval in accordance with ~~ch. NR 180~~ chs. NR 500 to 520, is required for construction of sludge landfills and prior to disposal of sludge at an existing licensed landfill.

SECTION 7. NR 110.09(2)(r) is created to read:

NR 110.09(2)(r) Any facility plan which recommends the abandonment of a wastewater treatment, sludge or septage storage lagoon, or land disposal system shall include an abandonment plan. A plan outlining the proposed method of abandonment of the facility shall be submitted to the department for approval. This plan shall provide for the removal and proper disposal of any accumulated solid matter or liquid wastes and any relandscaping necessary to prevent accumulation of standing water or runoff within 2 years of the date from which wastewater, sludge or septage was last disposed. The department

shall require groundwater monitoring for a minimum of one year at a quarterly frequency after the abandonment of facilities which have an existing groundwater monitoring system. Groundwater monitoring may be required on a case-by-case basis for facilities which do not have existing groundwater monitoring systems. The monitoring data shall be reviewed after 1 year and the department shall determine whether groundwater monitoring should be continued or not. Any groundwater monitoring wells which are no longer necessary shall be abandoned in accordance with ch. NR 141 and documentation of well abandonment shall be provided to the department.

SECTION 8. NR 110.09(8) is created to read:

NR 110.09 (8) ADDITIONAL FACILITY PLANNING REQUIREMENTS FOR LAND DISPOSAL SYSTEM ALTERNATIVES.

(a) General Requirements. In addition to the requirements of sub. (1), a report including a soil investigation and a hydrogeologic evaluation shall be submitted as part of the facilities plan for a land disposal discharge alternative.

The report shall detail the soil types, characteristics, variability and permeability, topography, groundwater conditions and quality, and other characteristics of the disposal site. Soil boring and test pit logs and soil analyses shall be provided. Wastewater characteristics which may influence the design of the disposal system shall also be discussed. Water supply quality, local groundwater use, and potential impacts of the facility on groundwater quality shall also be included.

(b) Hydrogeological Investigation. 1. A hydrogeological investigation shall be included as part of the facilities plan. The analysis of the hydrogeological information shall be done by a hydrogeologist, or other qualified person. The investigation shall include both regional and site-specific hydrogeological information.

Note: The skills and knowledge required of a hydrogeologist making submittals under this chapter include: the ability to apply hydrogeologic principles and practices to the siting, design and operation of land disposal systems; knowledge of contaminants associated with land disposal of wastewater, their transport mechanisms and fate in the environment; familiarity with environmental monitoring practices, sampling techniques and groundwater standards; and proficiency in the design of groundwater monitoring systems for defining the physical and chemical characteristics of groundwater flow. A soil scientist or other environmental scientist who can demonstrate the above skills and knowledge, as reflected in submittals made under this chapter, shall be deemed a "qualified person".

2. The following site-specific groundwater information shall be required as part of the facilities plan for land disposal facilities:

a. Depth to highest anticipated groundwater elevation.

b. Groundwater flow directions and rates of flow.

c. Vertical and horizontal gradients.

d. Groundwater quality.

e. Presence of groundwater divides and barriers.

f. Presence and extent of perched groundwater.

g. Mounding calculations.

(c) Soil Investigation. The soil evaluation may be performed in conjunction with the hydrogeological evaluation; however, each evaluation shall be performed by a person who is qualified to perform the evaluation. The following site-specific soil information shall be submitted as a part of the facilities plan for land disposal systems;

1. Soil borings and sampling performed in accordance with ss. NR 110.24(3)(d) and 110.24(4)(d), and test pit analyses performed in accordance with s. NR 113.09(8). The one boring per acre minimum of s. NR 110.24(3)(d)4. does not apply to spray irrigation, ridge and furrow, or overland flow systems. A soil analysis may be required on a case-by-case basis for land disposal systems. The USDA soil classification system shall be used for spray irrigation systems, ridge and furrow, and overland flow systems.

2. Soil descriptions, including soil profile, stratification, slope, soil moisture content, continuity, structure, texture, relative density and depth to groundwater and bedrock.

3. Soil analyses shall be performed on the zone of soil which will provide treatment of the wastewater. The department may require that the analyses include any or all of the following: grain size analyses, hydrometer analyses, field and laboratory horizontal and vertical permeabilities, Atterberg limits, soil pH, cation exchange capacity, bulk density and relative density, porosity, soil nutrient content, and organic matter content.

Note: The following methods are recommended for the analyses required in s. NR 110.09(8)(c)1.:

1. Grain size analyses (sieve and hydrometer) - ASTM D422(1972).

2. Field and laboratory vertical permeabilities (constant and vertical head) - ASTM D2434 (1974).

3. Atterberg limits (liquid and plastic limits) - ASTM D4318 (1984).

4. Soil pH, nutrient and organic matter content - "Wisconsin Procedures for Soil Testing, Plant Analysis and Feed and Forage Analysis", soil fertility series No. 6 (1987), Department of Soil Sciences, University of Wisconsin-extension (Madison) or ASA-SSSA, "Methods of Soil Analysis; part 2, Chemical and Microbiological Properties" - agronomy monograph No. 9 - 2nd edition (1982).

5. Cation exchange capacity - ASA-SSSA, "Methods of Soil Analysis; part 2, "Chemical and Microbiological Properties" - agronomy monograph no. 9 - 22nd edition (1982).

6. Bulk density - ASA-SSSA, "Methods of Soil Analysis; part 2, Physical and Mineralogical Methods" - agronomy monograph no. 9 - 2nd edition (1982).

7. Porosity - volume calculation.

4. In-field infiltration rates (measured at the proposed elevation of application).

5. A description of the soil testing methods used.

6. Depth to bedrock.

7. Type and nature of bedrock.

SECTION 9. NR 110.15(4)(d) is created to read:

NR 110.15(4)(d) Sludge storage. Adequate sludge storage shall be provided as indicated in s. NR 110.09(2)(h)5 and s. NR 110.26(10).

SECTION 10. NR 110.24(3)(c) is amended to read:

NR 110.24(3)(c) Separation from bedrock. A minimum separation of 3 meters (10 feet) shall be maintained between the bottom of lagoons and bedrock. The department may waive this requirement on a case-by-case basis if it can be demonstrated that a lesser separation distance will not cause groundwater quality problems. Criteria which will be evaluated to waive this requirement include the depth to bedrock, the type of bedrock, the fracture condition of the bedrock, the direction of groundwater movement, the existing groundwater quality, and the ~~downstream~~ downgradient uses of the groundwater.

SECTION 11. NR 110.24(3)(d) is repealed and recreated to read:

NR 110.24(3)(d) Test pits and soil borings.

1. Backhoe test pits and soil borings shall be conducted at each proposed lagoon site. Logs of the test pits and soil borings shall be submitted with the facilities plan as required in s. NR 110.09(8)(a). Soil boring and test pit analyses shall be conducted by an independent soil testing laboratory, a qualified engineering firm or an individual or firm which has demonstrated the capability to perform and evaluate such tests.

2. Soil borings and test pits shall be used to determine subsurface soil characteristics and variability, seasonal high groundwater level and elevations, and type, nature and depth to bedrock. Soils shall be classified according to the unified soil classification system. Cross-sections using the soil boring and test pit logs shall be prepared and submitted with the facilities plan.

3. Soil sampling shall be performed in accordance with ASTM D1586 (1974) or ASTM D1587 (1974).

4. Soil profile descriptions shall be written for all soil test pits. The thickness in inches and the difference between each soil horizon shall be indicated for each test pit. Horizons shall be differentiated on the basis of color, texture, soil mottles or bedrock. Depth shall be measured from the ground surface and the slope at the test pit shall be indicated.

5. A minimum of one soil boring per acre shall be conducted at each lagoon site. The number of test pits and borings shall be sufficient to adequately characterize the soil type and variability and delineate unsuitable soil areas in the field. The department may require additional soil borings and test pits to properly describe the site soils, bedrock or groundwater conditions.

6. Each boring shall have a minimum depth of 7.6 meters (25 feet) or to bedrock.

7. All soil borings in which wells are not installed shall be properly abandoned according to s. NR 141.25.

8. All test pits shall be refilled with the excavated materials.

SECTION 12. NR 110.24(4)(b) is amended to read:

NR 110.24(4)(b) Exfiltration rate. 1. Loss of water from wastewater treatment or storage lagoons may not exceed 10 cubic meters per water surface hectare (1,000 gallons per acre) per day and loss of water from sludge storage or treatment lagoons or other sludge handling facilities may not exceed 5 cubic meters per sludge surface hectare (500 gallons per acre) per day.

2. In circumstances where soil or groundwater characteristics, groundwater quality, or waste characteristics warrant, the department may require ~~that more stringent~~ exfiltration rates ~~be met~~ less than 10 cubic meters per water surface hectare (1,000 gallons per acre) per day for wastewater treatment or storage lagoons.

SECTION 13. NR 110.25(title) is amended to read:

NR 110.25(title) GENERAL CONDITIONS REQUIRED FOR ALL LAND DISPOSAL SYSTEMS.

SECTION 14. NR 110.25 (intro) is created to read:

NR 110.25 GENERAL CONDITIONS REQUIRED FOR ALL LAND DISPOSAL SYSTEMS. (intro). The provisions of this section apply to all municipal and privately owned domestic sewage treatment works.

SECTION 15. NR 110.25(2)(title) and 110.25(2) are amended to read:

NR 110.25(2)(title) DESIGN REPORT. ~~An engineering~~ A design report shall be submitted in accordance with s. NR 110.15 (1). ~~The report shall detail the soil types, groundwater conditions, topography, soil permeability and other characteristics of the disposal site. Soil boring logs shall be provided. Wastewater characteristics which may influence design of the disposal system shall also be discussed.~~

SECTION 16. NR 110.25(3) is repealed and recreated to read:

NR 110.25(3) TREATMENT PRIOR TO DISPOSAL. All discharges to land disposal systems shall receive biological, chemical, physical or a combination of treatments necessary to meet effluent standards in ch. NR 206 and groundwater quality standards in ch. NR 140 as approved by the department. Industrial waste discharges tributary to the municipal system shall be in compliance with applicable pretreatment standards under s. NR 211.30.

SECTION 17. NR 110.25(3m) is created to read:

NR 110.25(3m) MANAGEMENT PLAN. (a) A management plan shall be submitted with plans and specifications for all land disposal facilities.

(b) The management plan shall contain specific information on pretreatment processes, scheduled maintenance, vegetative cover control and removal, load and rest schedules, application rates, operational strategies for periods of adverse weather, monitoring procedures and other pertinent information.

SECTION 18. NR 110.25(4)(a)3. is created to read:

NR 110.25(4)(a)3. Multiple wastewater application areas shall be provided to allow load and rest cycles. The discharge shall be alternately distributed to individual cells of the disposal system in a manner to allow sufficient resting periods to maintain the absorptive capacity of the soil, and to allow soil conditions to become unsaturated and aerobic between loadings.

SECTION 19m. NR 110.25(4)(b) and (d) are repealed.

SECTION 19. NR 110.25(4)(f) is repealed and recreated to read:

NR 110.25(4)(f) Load and rest cycles. Load and rest cycles for each system shall be determined based on hydrogeologic and other relevant site conditions such as soil permeability, texture, cation-exchange capacity, topography, depth to groundwater and bedrock and the wastewater characteristics.

SECTION 20. NR 110.25(4)(g) is created to read:

NR 110.25(4)(g) Construction precautions. 1. All precautions shall be taken during construction of a land disposal system to minimize compaction of absorption areas and to prevent reduction in soil infiltration rate. Project specifications shall detail the specific precautions to take, which may include no heavy equipment use and erosion control on berms.

2. Erosion control measures shall be practiced during the construction of the land disposal system to avoid erosion of soil into a surface water and into or from the land disposal system.

SECTION 21. NR 110.25(5) is repealed and recreated to read:

NR 110.25(5) GROUNDWATER MONITORING. (a) Applicability. Groundwater monitoring systems shall be installed in accordance with approved plans and specifications as required in ch. NR 108, for the purpose of determining groundwater conditions for the engineering report in s. NR 110.09(1)(b) and for WPDES permit requirements. Plans and specifications shall be prepared by a hydrogeologist or other qualified person.

Note: The skills and knowledge required of a hydrogeologist making submittals under this chapter include: the ability to apply hydrogeologic principles and practices to the siting, desing and operation of land disposal systems; knowledge of contaminants associated with land disposal of wastewater, their transport mechanisms and fate in the environment; familiarity with environmental monitoring practices, sampling techniques and groundwater standards; and proficiency in the design of groundwater monitoring systems for defining the physical and chemical characteristics of groundwater flow. A soil scientist or other environmental scientist who can demonstrate the above skills and knowledge, as reflected in submittals made under this chapter, shall be deemed a "qualified person".

(b) Well Locations. 1. A minimum of 3 monitoring wells per land disposal system shall be installed to monitor groundwater quality in accordance with s. NR 206.10(2), to determine flow direction(s) and for a flow rate determination. At a minimum, one well will be upgradient and 2 wells downgradient of the land disposal system.

2. One or more upgradient monitoring wells shall be installed at locations and depths sufficient to yield groundwater samples that are representative of background water quality near the facility. Selection of well locations should take into account past and present land uses which might affect groundwater quality. The upgradient well should be located so it will not be affected by the land disposal system. Any upgradient wells should be located at the most distant point upgradient of the application area, and not closer than 75 feet from the application area. If the well is located beyond

the property boundary, an easement for access shall be obtained prior to installation of the well.

3. Two or more downgradient wells shall be located so as to intercept any groundwater impacted by the land disposal system, considering the vertical and horizontal gradients of flow. The wells shall be no closer than 30 feet for rapid infiltration systems, and at a minimum, one well shall be located between the application area and the design management zone (DMZ) or property boundary. It is recommended that one well be located at or beyond the DMZ or property boundary. If the well is located beyond the property boundary, an easement for access shall be obtained prior to installation of a well.

(c) Monitoring well construction. All groundwater monitoring wells shall be constructed in accordance with ch. NR 141 and this section.

1. a. For piezometers, inlet screens shall have a length of at least 2.5 feet but not more than 5 feet unless otherwise approved by the department.

b. For water table observation wells, inlet screens shall not exceed 10 feet in length.

c. For a multilevel groundwater monitoring system, the deeper well shall be screened at a depth to be determined from the site investigation.

2. All groundwater monitoring wells shall be developed in accordance with s. NR 141.21.

3. All groundwater monitoring systems shall be sampled in accordance with procedures contained in the "groundwater sampling guidelines," WDNR, Feb. 1987, or in s. NR 140.16.

4. All unsuccessful wells, boreholes or other vertical holes and wells whose use is no longer required must be properly abandoned in accordance with s. NR 141.25.

5. Documentation of well construction, well development and abandonment shall be submitted to the department in accordance with ss. NR 141.21 and 141.25. A location map shall also be provided in accordance with s. NR 141.065.

(d) Alternative methods and materials. The department may approve alternative construction methods or materials for installation of groundwater monitoring wells on a case-by-case basis.

SECTION 22. NR 110.255 is created to read:

NR 110.255 CONDITIONS REQUIRED FOR SPECIFIC TYPES OF LAND DISPOSAL SYSTEMS.

(1) ABSORPTION POND SYSTEMS. (a) Design and construction criteria for absorption pond systems.

1. New absorption pond systems shall consist of a minimum of 3 individual absorption ponds of approximately equal size. Absorption pond systems consisting of 1 or 2 individual ponds may be approved by the department on a case-by-case basis if it is demonstrated that the system has effluent storage capabilities or other provisions to ensure the operation of

the system in accordance with the load and rest cycles determined under s. NR 110.25(4)(f).

2. The design hydraulic application rate for an absorption pond system shall be based on field and laboratory test results for infiltration and hydraulic conductivity. The design hydraulic application rate shall be conservatively established to allow for pond resting cycles and for a long term reduction in infiltration rate due to wastewater solids clogging the soil.

3. Multiple pond systems shall be designed and constructed to allow individual ponds to be taken out of service for resting without interrupting the discharge to the remaining ponds.

4. Wastewater effluent shall be discharged to absorption ponds such that it is evenly distributed over the entire absorption pond bottom. Effluent storage may be required to provide effluent dosing control by fill and draw operation.

5. The absorption pond bottom shall be as level as possible at all locations.

6. The shape of each absorption pond and the placement of ponds at the site must take into account the information in the hydrogeologic study required in s. NR 110.09(8) such as the groundwater flow direction, the presence of discharge or recharge zones and the variability of soils. Infiltration areas should be oriented in relation to the direction of groundwater flow in such a manner as to minimize groundwater impacts. When

possible, absorption ponds shall be constructed in areas which are not groundwater recharge areas.

7. The minimum top width of an embankment or dike shall be 12 feet if the dike is intended to provide access for maintenance vehicles on a routine basis. The minimum top width shall be 8 feet if the embankment or dike is not designed for vehicle access. Outside embankment and dike slopes may not be steeper than 3 horizontal to one vertical and shall be properly seeded with a mixture of grasses to prevent erosion. Inside embankments and dikes may not be steeper than 2 horizontal to one vertical and shall be properly graveled or riprapped to prevent erosion. Interior ramps for maintenance vehicle access are acceptable.

8. Absorption ponds may not be constructed on backfilled material. Earthwork activities within 1 foot of the final pond surface shall be limited to times when soil conditions are dry.

9. The bottom of the absorption pond may not be closer than 5 feet to the highest anticipated groundwater elevation.

10. An absorption pond system shall be constructed on soils which meet with the following minimum requirements:

a. Soil texture may not be coarser than loamy sand (USDA soils classification) or have less than 5% passing a number 200 sieve.

b. Soil texture may not be finer than clay loam (USDA soil classification) or have liquid limits greater than 50% (unified soil classification).

c. Soil pH may not be less than 6.5.

11. A minimum separation distance of 10 feet shall be maintained between the bottom of the absorption pond and bedrock.

(b) Discharge limitations for absorption pond systems. Effluent limitations are as specified in s. NR 206.08(1)(b).

(2) SPRAY IRRIGATION SYSTEMS. (a) Design and construction criteria for spray irrigation systems.

1. All spray irrigation systems shall be designed with a wastewater distribution system capable of loading and resting various portions of the site to optimize wastewater treatment within the soil and crop growth.

2. Spray irrigation onto frozen ground is prohibited. The department may restrict loadings during times of the year when the cover crop is not actively growing.

3. Application of wastewater to the spray irrigation system shall incorporate a rest/load cycle and application intensity such that the soil moisture holding capacity in the top foot of the soil column is not exceeded and ponding or runoff do not occur. Following wastewater application to a portion of the field, that portion shall be rested. Table 8 provides values for the maximum volume of wastewater that may be applied per load cycle and the maximum intensity of wastewater application for specific soil textures. The values in Table 8 are the maximum amount approvable unless greater values

can be justified through soil testing and are approved by the department. The volume applied and the intensity sprayed may be restricted by the department to values less than those listed in Table 8 if site conditions warrant.

Table 8

| Soil Texture (USDA - SCS) | Maximum Volume Applied Per Load Cycle | Maximum Intensity of Application |
|---|---|---|
| Sands | 0.65 inches | 1.00 in/hr |
| Sandy Loams | 0.90 inches | 0.90 in/hr |
| Loams | 1.30 inches | 0.45 in/hr |
| Silt Loams | 1.40 inches | 0.45 in/hr |
| Clay Loams | 1.10 inches | 0.40 in/hr |
| Clays | 0.70 inches | 0.40 in/hr |

4. The spray nozzle openings shall be sized to prevent plugging and shall be located as near to the ground surface as practical to minimize wind drift of the wastewater.

5. The spray nozzles shall be arranged so that the wastewater will be evenly distributed over the entire area under irrigation.

6. The spray irrigation system shall be arranged so that individual sections within the system can be taken out of service for resting without interrupting discharge to the remaining sections.

7. The spray irrigation system shall be seeded with perennial grasses such as reed canary grass, tall fescue and orchard grass. The cover crop shall be a crop which is not used for direct human consumption. New seedings shall also contain a nurse crop. The cover crop shall be maintained by cutting and removing the grass a minimum of twice per growing season. The

department may approve the use of other types of cover crops such as corn but will restrict the use of such sites to times when the cover crop is actively growing. The department may also require reduced hydraulic application rates, grass buffer strips or both around the perimeter of the site to prevent wastewater runoff during rainfall events.

8. The ground surface of the spray irrigation system shall have a minimum separation distance to bedrock of at least 5 feet.

9. A minimum separation distance of 5 feet shall be maintained between the land surface elevation of the spray irrigation field and the highest anticipated groundwater elevation. The department may on a case-by-case basis allow this distance to be reduced if the permittee can show, based on hydrogeologic and other relevant site factors, that the groundwater will be adequately protected.

10. The department may require disinfection of effluent to spray irrigation systems if there is a potential risk to public health.

(b) Discharge limitations for spray irrigation systems. Effluent limitations are as specified in s. NR 206.08(2)(b).

(3) RIDGE AND FURROW SYSTEMS. (a) Design and construction criteria for ridge and furrow systems.

1. The shape of each cell within the ridge and furrow system shall be such that a minimum of soil disturbance is necessary to form the system.

2. A ridge and furrow system may not be constructed on a site at which less than 50% of the soil particles pass a No. 200 sieve. Coarser textured soils may be approved on a case-by-case basis depending on system design and wastewater strength. Suitable soils shall extend at least 3 feet below the base grade of the furrow bottoms.

3. The furrows of the ridge and furrow system shall be one foot deep and one foot wide at the furrow bottom.

4. Furrow side slopes may not be steeper than one horizontal to 2 vertical.

5. The system shall be sized and constructed in order to allow sufficient resting to allow soil conditions to become unsaturated and aerobic prior to any wastewater being reapplied.

6. The system shall be constructed in a manner which provides equal liquid distribution during loading of each cell. The header ditch shall be sealed in order to allow complete drainage and to prevent wastewater seepage. The drainage of the header ditch and the grading of the furrows for equal liquid distribution shall be tested with water before seeding the ridges with grasses.

7. The system shall consist of at least 2 cells which can be alternately loaded and rested.

8. The wastewater distribution system shall be arranged so that individual cells within the ridge and furrow system can be taken out of service for resting without interrupting discharge to the remaining cells.

9. The bottom of the ridge and furrow system may not be closer than 5 feet to the highest anticipated groundwater elevation. The department may allow this distance to be reduced on a case-by-case basis if the permittee can show, based on hydrogeologic and other relevant site factors, that the groundwater will be adequately protected.

10. The bottom of the system shall be at least 5 feet from bedrock.

11. Outside embankments and dikes may not be steeper than 3 horizontal to one vertical. Inside embankments and dikes may not be steeper than 2 horizontal to one vertical. All embankments and dikes shall be properly seeded with perennial grasses to prevent erosion. A nurse crop of annual grasses shall be used to establish a ground cover.

12. All ridge tops shall be a minimum of 6 feet wide to allow mechanical removal of grasses. The grasses shall be cut, and if possible removed, at least once during the growing season and shall be burned or cut and removed each spring.

13. All areas within a ridge and furrow system shall be accessible for maintenance equipment.

14. The system shall be constructed to prevent surface runoff from entering the system.

15. The ridges shall be seeded with perennial grasses which are suited to wet soil conditions. A nurse crop shall be used to seed new or modified

systems. In addition, the grass cover shall be established to at least a 2-inch length before the system is used for wastewater treatment.

16. Discharge to ridge and furrow systems which have frozen soils is prohibited.

(b) Discharge limitations for ridge and furrow systems. Effluent limitations are as specified in s. NR 206.08(3)(b).

(4) OVERLAND FLOW SYSTEMS. (a) Design and construction criteria for overland flow systems.

1. Overland flow systems shall be underlain by at least one foot of heavy textured soils such as clays or clay loams to retard leakage through the base.

2. The downslope flow distance shall be 100 feet or greater.

3. The downslope gradient for the overland flow fields shall be between 2% and 8%.

4. The system shall consist of at least 2 cells of approximately equal area which can be alternately loaded and rested. Where self-propelled equipment which operates on a continuous basis is installed and division into identifiable cells is impossible, its movement shall be regulated to provide alternate loading and resting of the soil.

Note: It is recommended that an overland flow cell be rested for at least one third of the total time in the rest/load cycle.

5. The system shall be arranged so that individual cells within the system can be taken out of service for resting without interrupting discharge to the remaining cells.

6. The distribution equipment shall be arranged so that the wastewater will be evenly distributed over the entire area of an overland flow cell and the wastewater travels down the slope in a non-channelized flow.

7. The wastewater distribution equipment shall be located at or near the ground level.

Note: A pressurized distribution system is recommended for ease of operation.

8. The wastewater distribution system shall be designed to allow for cleaning of the distribution orifices. Flexibility to adjust the flow from individual orifices shall be provided to allow the system to be hydraulically balanced to minimize flow channeling.

9. An impermeable channel shall be provided for collecting runoff from the overland flow fields. The collection system shall be capable of removing the effluent and the rain from a 10-year frequency, 24-hour duration rainfall event with only temporary backing up of water onto the fields.

10. The overland flow fields shall be vegetated with a water tolerant mixed perennial grass cover crop such as reed canary grass, tall fescue and orchard grass. A nurse crop shall be used to establish the perennial grass cover. The grass cover shall be maintained by frequent resting. The crop shall be cut and the cuttings removed at least twice per year to stimulate grass growth and enhance nutrient removal from the system.

11. Winter operation may be allowed as long as the soil surface remains unfrozen. The department may require storage or additional treatment of the runoff during cold weather.

12. An overland flow field may be used when the land surface elevation is at least 5 feet above bedrock.

13. The land surface elevation of an overland flow field shall be no closer than 5 feet to the seasonally high groundwater level. The department may on a case-by-case basis allow this distance to be reduced if the permittee can show, based on hydrogeologic and other relevant site factors, that the groundwater will be adequately protected. If such a variance is approved or if the risk of groundwater contamination is otherwise high, the department may require additional pretreatment of the wastewaters.

14. The hydraulic application rate, expressed as a flow rate per unit width of slope, shall be between .16 gpm/ft and .60 gpm/ft.

(b) Discharge limitations for overland flow systems. Effluent limitations are as specified in s. NR 206.08(4)(b) and applicable surface water limitations.

SECTION 23. NR 110.26(title) is amended to read:

NR 110.26(title) SLUDGE HANDLING, STORAGE AND DISPOSAL.

SECTION 24. NR 110.26(9) is amended to read:

NR 110.26(9) SLUDGE REDUCTION. (a) Incineration. Adequate provisions for residue disposal and air pollution control shall be provided. The appropriate requirements of chs. NR ~~154~~ 415 and ~~180~~ 500 to 520 shall be met.

SECTION 25. NR 110.26(10) is repealed and recreated to read:

NR 110.26 (10) SLUDGE STORAGE FACILITIES (a) General. A detailed description of the wastewater treatment process and design data shall accompany plans for the proposed storage facility. Sludge storage facilities shall be designed and operated to maintain compliance with the groundwater quality standards in ch. NR 140.

(b) Separation distances. 1. Sludge storage facilities may not be located within the following distances of a water supply well:

a. 1000 feet from a community public water supply well;

b. 250 feet from a private water supply well.

2. Separation distances from residential and commercial buildings shall be maintained as required in s. NR 110.15(3)(d).

3. A minimum separation distance of 1.25 meters (4 feet) shall be maintained between the bottom of storage lagoons and the highest recorded or indicated seasonal groundwater table elevation.

4. A minimum separation distance of 3 meters (10 feet) shall be maintained between the bottom of storage lagoons and bedrock.

(c) Liquid sludge storage facilities. 1. Liquid sludge storage facilities shall be designed to facilitate easy addition and removal of sludge without causing damage to the facility.

2. Liquid sludge storage lagoons and pits shall be designed and constructed in accordance with s. NR 110.24.

3. The maximum lagoon depth shall be 6 meters (20 feet). The depth may be increased by the department on a case-by-case basis.

4. Storage tanks shall be designed, installed and maintained to prevent leaks due to corrosion or structural failure.

5. In the event a sludge storage facility is temporary, it shall be abandoned in such a manner so as to prevent safety, environmental and aesthetic problems from occurring. The department shall be notified in writing if the storage facility is to be abandoned and how abandonment will be accomplished.

(d) Cake storage facilities. 1. Permanent and temporary cake storage facilities shall be designed to minimize odors and to protect surface waters, groundwaters and soil.

2. Surface runoff shall be diverted away from the storage location.

3. Cake storage facilities designed as pits shall provide a method of draining-off and collecting precipitation.

4. All sludge stored at an intermediate term cake storage facility shall be covered with a temporary cover. At a minimum, the cover shall be a 4 mil

polyethylene cover or equivalent. The cover shall be anchored or otherwise secured.

5. All sludge stored at a long term cake storage facility shall be covered with a permanent cover.

6. Abandonment shall be accomplished in accordance with s. NR 110.26(10)(g).

(e) Monitoring wells. Monitoring wells may be required on a case-by-case basis. Construction of monitoring wells shall comply with the requirements of s. NR 110.25(5) and ch. NR 141.

(f) Amount of storage. Appropriate sludge storage and length of storage shall be evaluated according to the following priority:

1. POTW's that produce sludge and are in the process of upgrading their wastewater treatment facilities and are proposing to or are currently landspreading sludge will be required to provide adequate storage capacity for the 20 year design life as required under facilities planning. Long term sludge storage facilities for liquid or cake sludge shall be designed to provide capacity for 180 days of storage. Lesser storage capacity, but in no case less than 150 days, may be approved upon evaluation of the local soil and climatic conditions, the availability of suitable winter sludge disposal sites or other pertinent considerations. This storage capacity may not include storage in clarifiers, oxidation ditches or aeration basins. However, extra digester capacity that is greater than the digestive requirements can be considered as storage and can be used in calculating the 150 or 180 days of storage. The department may determine leasing to be an acceptable alternative

to construction if the lease is for a minimum of 5 years with an option for another 5 years if the WPDES permit is reissued.

2. For those POTW's not upgrading their facilities, and who have 5 or more years of remaining design life of POTW but need additional sludge storage, an engineering report shall be submitted regarding the upgrading of the sludge storage capacity. POTW's that are not upgrading their facilities but are having sludge management problems due to a lack of storage will be required to either: a) build 150 to 180 days of storage or b) lease for 150 to 180 days of storage covering the facilities' projected 5 to 10 year sludge production needs. The storage requirement will be based on the projected remaining design life left in the POTW and would be as follows:

| Remaining Design life of POTW | DESIGN YEAR STORAGE REQUIREMENTS |
|---|---|
| 0 to 5 years | Take action to address immediate needs and start facility planning |
| 5 to 10 years | 10 years |
| 10 to 15 years | 15 years |
| 15 to 20 years | 20 years |

3. Facilities that are not in the process of upgrading their wastewater treatment facility and are not encountering sludge land disposal problems even though the facility has less than 150 or 180 day of storage capacity are not required to expand their sludge storage capacity. If necessary, the department may require additional storage at such time as federal sludge regulations require.

4. POTW's that are using incineration or landfilling shall have 45 days storage capacity.

(g) Abandonment plan. An abandonment plan for the sludge storage facility shall be submitted for approval to the department in accordance with s. NR 110.09 and this paragraph. The abandonment plan shall include a demonstration that adequate approvable acreage is available for sludge landspreading or that other disposal options are to be used. This plan shall be implemented if the storage facility is not used for a period greater than 2 years unless such a period is specifically approved by the department. The operator shall initiate abandonment activities, including but not limited to, sludge removal and disposal, regrading to the original elevations, seedbed preparation, seeding, fertilization, mulching and erosion control.

SECTION 26. NR 110.26(12)(a)3 and (c), are amended to read:

NR 110.26(12)(a)3. The department shall evaluate sludge management plans and reports according to the requirements of ch. NR 204 ~~on the basis of recommendations in Wisconsin department of natural resources technical bulletin no. 88~~ and any other pertinent information deemed appropriate to the review of sludge management plans and reports. ~~Copies of technical bulletin no. 88 are available for inspection at the offices of the department of natural resources, secretary of state, and the revisor of statutes. Copies of technical bulletin no. 88 may be obtained for personal use from the department of natural resources, 101 S. Webster St., P.O. Box 7921, Madison, Wisconsin 53707.~~

(c) Landfilling. Landfilling of sludge from municipal wastewater treatment facilities shall comply with the requirements of ch. NR ~~180~~ 500 to 520.

SECTION 27. NR 110.26(12)(d) is created to read:

NR 110.26(12)(d) Other disposal. All other disposal options shall be carried out in compliance with all applicable state and federal regulations.

SECTION 28. NR 206.01 is amended to read:

NR 206.01 PURPOSE. The purpose of this chapter is to establish effluent limitations and monitoring requirements to be used in permits for discharges of ~~holding tank domestic wastewater for storage lagoons and~~ wastewaters from publicly owned treatment works and privately owned domestic wastewater treatment works to land disposal systems. Section 147.02, Stats., requires a permit for the lawful discharge of any pollutant into the waters of the state. Section 147.015(13), Stats., defines "waters of the state" as including groundwater. Consequently, permits are required for the type of discharges to which this chapter applies. It is the intent of the department through this chapter to restore and maintain the physical, chemical and biological integrity of the groundwater of the state and to encourage the protection of this resource, and to achieve compliance with ch. NR 140.

SECTION 29. NR 206.02(1) is amended to read:

NR 206.02 APPLICABILITY. (1) The provisions of this chapter are applicable to discharges to~~: (a) Land~~ land disposal systems of liquid wastewaters from publicly owned wastewater treatment works and from privately owned domestic wastewater treatment works~~;~~

~~(b) Land disposal systems of septage from storage lagoons; and~~

~~(c) Land disposal systems of domestic wastewaters from holding tanks by persons other than private pumpers~~.

SECTION 30. NR 206.02(2)(d) is repealed.

SECTION 31. NR 206.02(2)(e) is renumbered NR 206.02(2)(d)

SECTION 32. NR 206.02(2)(f) is renumbered NR 206.02(2)(e) and amend to read:

NR 206.02(2)(e) Solid, liquid, and hazardous wastes at a disposal site licensed pursuant to ch. NR ~~180 or~~ 181 or chs. NR 500 to 520.

SECTION 33. NR 206.03(1) to (6) are renumbered NR 206.03(3), (4), (7), (8), (9) and (10) respectively.

SECTION 34. NR 206.03(7) is repealed.

SECTION 35. NR 206.03(1), (2), (5) and (6) are created to read:

NR 206.03(1) "Average daily flow" means the average daily wastewater volume discharging to the wastewater treatment system determined for the previous 24 months.

(2) "Average design flow" means the anticipated average daily wastewater discharge to a sewage treatment facility.

(5) "Cation exchange capacity" means the sum total of exchangeable cations absorbed by a soil, expressed in milliequivalents per 100 grams of oven dry soil.

SECTION 36. NR 206.03(8), (9), (10) and (11) are renumbered NR 206.03 (14), (15), (16) and (18) respectively and NR 206.03(16) (as renumbered) is amended to read:

(16) "Land disposal system" means a facility for disposing of liquid wastes consisting of:

(a) An absorption or seepage pond system,

(b) A ridge and furrow system,

(c) A spray irrigation system,

(d) A subsurface ~~field~~ soil absorption system or mound system, ~~or~~

(e) An overland flow system, or

(f) Any other land area receiving liquid waste discharges.

SECTION 37. NR 206.03(12) is repealed.

SECTION 38. NR 206.03(13), (14), (15) and (16) are renumbered NR 206.03 (19), (20), (23) and (25) respectively.

SECTION 39. NR 206.03(17) is repealed

SECTION 40. NR 206.03(11), (12), (13), (17), (21), (22), (24) and (26) are created to read:

NR 206.03(11) "Highest anticipated groundwater elevation" means the sum of the calculated mounding effects of the disposal discharge and the seasonal high groundwater level.

(12) "High groundwater level" means the higher of either the elevation to which the soil is saturated as observed as a free water surface in an unlined hole, or the elevation to which the soil has been seasonally or

periodically saturated as indicated by soil color pattern throughout the soil profile.

(13) "Hydraulic application rate" means the average daily volume of effluent discharged to a designated acreage of land of the land application system during a calendar month or other period of time specified in a WPDES permit. The rate is calculated by dividing the total discharge volume for the month or period of time by the acreage of land and by the number of days in the month or period of time (usually expressed in units of gpad). For overland flow systems, the hydraulic application rate is expressed as flow rate per unit width of slope.

(17) "Large scale soil absorption system" means a subsurface soil absorption system with a design capacity of 8,000 or more gallons per day which uses septic tanks with drainfield or mound systems, and which meets the following criteria:

(a) A single system with a design capacity of 8,000 gallons or more of wastewater per day; or

(b) Multiple systems which:

1. Are controlled by the same owner or have ownership interest vested in the same person; and

2. Where the distance between any two of the systems is 1,500 feet or less; and

3. Have a cumulative design treatment capacity of 8,000 or more gallons of wastewater per day.

(c) The addition of an individual system which in conjunction with one or more existing systems falls within the conditions listed in par. (b).

(21) "Total Kjeldahl nitrogen" or "TKN" means the sum of ammonia nitrogen and organic nitrogen.

(22) "Total nitrogen" means the sum of nitrate plus nitrite nitrogen, ammonia nitrogen, and organic nitrogen.

(24) "Water table observation well" means any groundwater monitoring well whose screen intersects the water table, installed for the specific purpose of determining either the elevation of the water table or the physical, chemical, biological or radiological properties of groundwater at the water table or both.

(26) "Well" means any borehole or other excavation or opening in the ground deeper than it is wide constructed for the purpose of obtaining or monitoring groundwater.

SECTION 41. NR 206.05 is repealed and recreated to read:

NR 206.05 (title) COMPLIANCE WITH EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS. (1) All new or modified land disposal systems approved on or after the effective date of this code...[revisor insert date] shall comply with the applicable effluent limits and monitoring requirements of this chapter and groundwater quality standards in NR 140.

(2) All land disposal systems, except large scale soil absorption systems, approved or modified prior to the effective date of this code...[revisor insert date] shall comply with the effluent limits as shown in Table 1, and with the groundwater quality standards in ch. NR 140.

(3) All land disposal systems, except large scale soil absorption systems, approved prior to the effective date of this code...[revisor insert date] shall comply with the monitoring requirements described in s. NR 206.09 by January 1, 1994.

(4) Large scale soil absorption systems shall comply with the effluent monitoring requirements of this chapter and with the groundwater quality standards in ch. NR 140. Influent monitoring may be required on a case-by-case basis.

(5) All systems, except large scale soil absorption systems, approved prior to the effective date of this code...[revisor insert date] shall comply with the effluent limits for $BOD_5$ and load/rest requirements described in ss. NR 206.08(1)(b)1, (2)(b)3, (3)(b)3, and 110.25(4)(f).

(6) All systems for which groundwater monitoring is required under s. NR 206.10 shall comply with the groundwater monitoring construction requirements of s. NR 110.25 and ch. NR 141.

Table 1. Effluent Limits
Based on System Type and Date of System Approval

| System Type | Date of Approval: Pre-1/1/85 | Post 1/1/85 and Pre 1/1/90 | Post 1/1/90 |
|---|---|---|---|
| Absorption Pond | $BOD_5$: 50 mg/l<br>Load/Rest: as per permit | $BOD_5$: 50 mg/l<br>Load/Rest: as per permit<br>Total Nitrogen: 20 mg/l | $BOD_5$: 50 mg/l<br>Load/Rest: as per permit<br>Total Nitrogen: 10 mg/l<br>TDS: 500 mg/l<br>Cl: 250 mg/l<br>Hydraulic Application Rate: case by case |
| Spray Irrigation | All parameters case by case | All parameters case by case | $BOD_5$: 50 mg/l<br>Load/Rest: as per permit<br>Total Nitrogen: case by case<br>Hydraulic Application Rate: case by case<br>Fecal coliform: case by case |
| Ridge and Furrow | All parameters case by case | All parameters case by case | $BOD_5$: 50 mg/l<br>Load/Rest: case by case<br>Total Nitrogen: case by case<br>Hydraulic Application Rate: case by case |
| Overland Flow | All parameters case by case | All parameters case by case | All parameters case by case |
| Other | All parameters case by case | All parameters case by case | All parameters case by case |

SECTION 42. NR 206.06, 206.07(1) and 206.07(2)(e) are amended to read:

NR 206.06 ALTERNATIVE REQUIREMENTS. (1) If the owner of a proposed land disposal system feels that compliance with the monitoring requirements, discharge prohibitions and effluent limits of this chapter are impracticable, the reasons therefore shall be fully communicated in writing to the department. This communication shall set forth alternative requirements for which department approval is sought and all pertinent facts, data, reports, and studies supporting the imposition of such alternative requirements, along with supporting documentation on the ability of the system to meet ch. NR 140 standards or standards pursuant to the appropriate variances.

(2) If the department determines that compliance with the monitoring requirements, discharge prohibitions and effluent limits of this chapter would be impracticable in specific cases, it may approve alternative requirements which, in its opinion, are in substantial compliance with the requirements of this chapter and ch. NR 140.

NR 206.07 GENERAL CONDITIONS REQUIRED FOR ALL LAND DISPOSAL SYSTEMS. (1) DESIGN LIMITATIONS. (a) A land disposal system shall be constructed in accordance with the design criteria in ch. NR 110, or the appropriate rules promulgated by the department of industry, labor and human relations for large scale subsurface soil absorption systems.

(b) Background groundwater monitoring data described in ~~s.~~ ss. NR 140.20(1) and 206.10 ~~(2)(d)~~ (4) shall be collected prior to the design of a land disposal system, and submitted to the department as part of the facility plan required in s. NR 110.09.

(c) Land disposal systems shall be designed and operated to maintain compliance with the groundwater quality standards contained in ch. NR 140, as required by s. NR 140.22(1).

NR 206.07(2)(e) All municipal and domestic wastewater land disposal systems shall be preceded by a biological, chemical or physical treatment or a combination of treatments approved by the department. Industrial waste discharges tributary to the municipal treatment works shall be in compliance with applicable pretreatment standards under s. NR 211.30.

SECTION 43. NR 206.07(2)(f) is repealed.

SECTION 44. NR 206.07(2)(g) and (h) are renumbered 206.07(2)(f) and (g) respectively.

SECTION 45. NR 206.07(2)(h) is created to read:

NR 206.07(2)(h) 1. All land disposal facilities shall be operated in accordance with an approved management plan. The management plan shall conform to the requirements of s. NR 110.25(3m).

2. For all land disposal facilities approved after the effective date of this code...[revisor insert date], an acceptable management plan shall be submitted with the construction plans and specifications.

3. For land disposal facilities constructed prior to the effective date of this code...[revisor insert date], an acceptable management plan shall be submitted in accordance with a schedule established by the department.

4. If operational changes are needed the management plan shall be revised.

5. All management plans and revisions to management plans shall be submitted to the department for review to determine adequacy and compliance with code requirements.

SECTION 46. NR 206.08 and 206.09(1) and (2) are repealed and recreated to read:

NR 206.08 EFFLUENT LIMITATIONS FOR SPECIFIC TYPES OF LAND DISPOSAL SYSTEMS. (1) ABSORPTION POND SYSTEMS. (a) Design limitations. Absorption pond systems shall conform to the design requirements in s. NR 110.255(1).

(b) Effluent Limitations. 1. The discharge to an absorption pond system may not exceed a monthly average $BOD_5$ concentration of 50 mg/l.

2. The maximum hydraulic application rate to an absorption pond system shall be determined on a case-by-case basis in accordance with s. NR 110.255(1)(a)2.

3. The discharge to an absorption pond system which is subject to the groundwater quality standards in ss. NR 140.10 and 140.12 shall comply with the following limitations:

a. The monthly average total nitrogen concentration may not exceed 10 mg/l.

b. The total dissolved solids concentration may not exceed 500 mg/l.

c. The chloride concentration may not exceed 250 mg/l.

4. If an absorption pond system has been granted an exemption to groundwater quality standards under s. NR 140.28, the discharge requirements for nitrogen, total dissolved solids and chloride will be determined by the department on a case-by-case basis. Information to be considered in approving alternate limitations shall include:

a. Alternate concentration limits under ch. 140;

b. Qualifications on the exemption, if any exist;

c. Level of treatment of the wastewater for the particular contaminant;

d. Removal capability prior to discharge to the treatment system;

e. Expected increase in the concentration of a pollutant in the groundwater downgradient at the point of standards application.

5. The department may approve alternative effluent limitations in accordance with s. NR 206.06 for total nitrogen, $BOD_5$, hydraulic application rate, total dissolved solids and chlorides; and may require effluent limitations for additional substances on a case-by-case basis in order to protect and maintain groundwater quality as required in ch. NR 140.

Note: The effluent limitations in par. (b) 3. have been established to provide compliance with the groundwater enforcement standards for nitrate, total dissolved solids and chloride. The department has determined that it is not technically and economically feasible for absorption pond systems to comply with the preventive action limits for these substances. These effluent limitations, in combination with groundwater monitoring requirements, will assist the department in minimizing the levels of nitrate, total dissolved solids and chloride in the groundwater, to the extent technically and economically feasible. Groundwater enforcement standards and preventive action limits are specified in ss. NR 140.10 and 140.12.

(2) SPRAY IRRIGATION SYSTEMS. (a) Design limitations. Spray irrigation systems shall conform to the design requirements in s. NR 110.255(2).

(b) Effluent limitations. 1. Discharge shall be limited to prevent any runoff of effluent from the site. Wastewater may not be sprayed during any rainfall event that causes runoff from the site. Uncontaminated storm water may be allowed to drain from a spray irrigation field.

2. The volume of discharge shall be limited to prevent ponding, except for temporary conditions following rainfall events.

3. The monthly average $BOD_5$ concentration may not exceed 50 mg/1.

4. The department may limit the fecal coliform bacteria in the discharge to the spray irrigation system based on the potential impact to public health.

5. The hydraulic application rate for each system shall be based on hydrogeologic conditions, soil texture, permeability, cation exchange

capacity, topography, cover crop and wastewater characteristics. The average hydraulic application rate may not exceed 10,000 gallons per acre per day.

Note: Based upon the department's experience, the recommended range for the average hydraulic application rate is 2,000 to 7,000 gallons per acre per day, based on a monthly average.

6. The annual nitrogen application rate shall be limited to the nitrogen needs of the cover crop plus demonstrable denitrification occurring in the treatment system. Determination of the annual nitrogen application rate shall include the nitrogen supplied by the wastewater and any supplemental fertilizers used.

7. The soil at each individual spray irrigation field shall be tested annually for nitrogen, available phosphorus, available potassium and pH. The results of these analyses shall be submitted to the department and used to manage the spray irrigation system.

8. The department may limit additional parameters as necessary to protect and maintain groundwater quality as required in ch. NR 140.

(3) RIDGE AND FURROW SYSTEMS. (a) Design limitations. Ridge and furrow systems shall conform to the design requirements in s. NR 110.255(3).

(b) Effluent limitations. 1. Discharge to a ridge and furrow system shall be limited so that the discharge and precipitation from a 10-year frequency, 24-hour duration rainfall event does not overflow the boundary of the system.

2. The discharge shall be alternately distributed to individual sections of the disposal system to allow sufficient resting periods to maintain the treatment capability of the soil.

3. The monthly average $BOD_5$ concentration may not exceed 50 mg/l.

4. The volume of discharge shall be limited to prevent inundation of the ridges except for temporary conditions following precipitation events.

5. The average hydraulic application rate may not exceed 10,000 gallons per acre per day for the system.

Note: Based upon the department's experience, the recommended range for the average hydraulic application rate is 2,000 to 5,000 gallons per acre per day based on a monthly average.

6. The annual total nitrogen in the wastewater applied to the system shall be limited to the annual nitrogen need of the cover crop plus demonstrable denitrification occurring in the treatment system.

7. The department may limit additional parameters as necessary to protect and maintain groundwater quality as required in ch. NR 140.

(4) OVERLAND FLOW SYSTEMS. (a) Design limitations. Overland flow systems shall conform to the design requirements in s. NR 110.255(4).

(b) Effluent limitations. 1. The discharge to the overland flow system shall be alternately distributed to individual sections of the system in a regular load/rest cycle that allows sufficient resting to dry accumulated solids and maintain a complete grass cover.

2. The hydraulic application rate shall be as defined in the management plan, developed according to s. NR 206.07(2)(h). The hydraulic application rate is expressed as a flow rate per unit width of slope.

3. Hydraulic application rates shall be reduced substantially when the vegetative cover has not developed sufficiently to anchor the soil and create the filter mat necessary for effective wastewater treatment. This condition may occur during original or springtime system startup.

4. The discharge of wastewater to an overland flow system shall be in accordance with a WPDES permit.

5. The department may limit parameters to an overland flow system in order to protect and maintain groundwater quality as required in ch. NR 140.

(5) All other land disposal systems shall be evaluated by the department on a case-by-case basis.

NR 206.09 WASTEWATER MONITORING REQUIREMENTS. (1) Discharges to land disposal systems, except for large scale soil absorption systems, shall be monitored for total daily flow and at least monthly for total dissolved solids, chlorides, $BOD_5$, organic nitrogen, ammonia-nitrogen and nitrate plus nitrite nitrogen. For spray irrigation systems, fecal coliform bacteria monitoring may be included on a case-by-case basis. For large scale soil absorption systems, effluent shall be monitored for total daily flow, and at least quarterly for $BOD_5$, organic nitrogen, ammonia nitrogen, total dissolved solids and chlorides. The frequency of flow monitoring and sampling and the type of samples shall be as specified in the WPDES permit.

(2) Influent to all treatment facilities subject to the monitoring provisions of sub. (1) shall be monitored for total daily flow, and at least monthly for $BOD_5$ and organic nitrogen and ammonia-nitrogen. The frequency of flow monitoring and sampling and the type of samples shall be as specified in the WPDES permit. Any flow bypassing the treatment facility to the land disposal system shall be monitored at a minimum of once per bypass event for the parameters for which effluent monitoring is required or as determined by the department. Influent monitoring may be required on a case-by-case basis for large scale soil absorption systems.

SECTION 47. NR 206.09(4)(c) is created to read:

NR206.09(4)(c) Sample analysis used for permit reporting shall be performed by a laboratory certified under ch. NR 149.

SECTION 48. NR 206.10 is repealed and recreated to read:

NR 206.10 (title) GROUNDWATER MONITORING. (1) DESIGN CRITERIA. The design criteria and construction standards for a groundwater monitoring well shall conform to s. NR 110.25(5) and ch. NR 141.

(2) CONSTRUCTION REQUIREMENTS. (a) Approval of plans and specifications for groundwater monitoring wells installed after the treatment facility has been constructed is required for any well which is to be used as a permanent groundwater monitoring well.

(b) If wells were installed prior to treatment facility construction, department approval for use of these wells as permanent groundwater monitoring wells is required and is conditional, based on documentation that the wells were constructed in conformance with ch. NR 141.

(3) MONITORING REQUIREMENTS. (a) For systems approved on or before the effective date of this code...[revisor insert date], monitoring requirements shall be based on average daily flow.

(b) For systems modified or approved after the effective date of this code...[revisor insert date], monitoring requirements shall be based on average design flow.

(c) If the system has a design or average daily flow less than 0.015 MGD, the department may require groundwater monitoring if there is reason to believe contamination of groundwater is occurring.

(d) If the system has a design or average daily flow equal to or greater than 0.015 MGD, groundwater shall be monitored at a minimum of one level, at locations specified in the permit, and may include monitoring at more than one level. The department may waive this requirement on a case-by-case basis. Criteria which will be evaluated to waive this requirement include degree of treatment of the effluent, depth to groundwater and bedrock, nature of the bedrock, soil permeability, directions and rate of groundwater flow, vertical and horizontal flow gradients, existing groundwater quality, downgradient uses of the groundwater and compliance with ch. NR 140 standards.

(e) Groundwater elevation within the land disposal system shall be monitored through the use of a water table observation well for all land disposal systems that have a depth to groundwater from cell bottom of less than 5 feet.

(4) SAMPLING FREQUENCY. (a) For systems where background water quality has been established, the groundwater sampling frequency shall be quarterly.

(b) For systems where background water quality has not been established, the groundwater sampling frequency shall be every 6 to 7 weeks until 8 representative samples have been obtained, and shall be quarterly thereafter.

(c) The department may modify the sampling frequency on a case-by-case basis.

(5) PARAMETER LIST. (a) The department may require groundwater monitoring for any or all of the following parameters in filtered or unfiltered samples: elevation, $BOD_5$, field specific conductance, COD, organic nitrogen, ammonia nitrogen, nitrate plus nitrite nitrogen, chlorides, sulfates, total dissolved solids, alkalinity, hardness, temperature and pH.

(b) Monitoring for other parameters may be required on a case-by-case basis if there is reason to believe contamination is occurring or if these contaminants are present in the wastewater, to determine compliance with the groundwater quality standards in ch. NR 140.

(6) SAMPLING PROCEDURES. Groundwater sampling procedures shall comply with the methods contained in s. NR 140.16.

(7) ANALYTICAL PROCEDURES. (a) The methods of analysis for substances contained in groundwater samples shall be those in ch. NR 219.

(b) Sample analysis used for permit reporting shall be performed by a laboratory certified or registered under ch. NR 149.

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on May 24, 1990.

The rules contained herein shall take effect as provided in s. 227.22, Stats.

Dated at Madison, Wisconsin August 2, 1990.

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES

By Carroll D. Besadny

Carroll D. Besadny, Secretary

(SEAL)

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State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
*Carroll D. Besadny, Secretary*
*Box 7921*
*Madison, Wisconsin 53707*
*TELEFAX NO. 608-267-3579*
*TDD NO. 608-267-6897*

August 2, 1990



Mr. Gary L. Poulson
Assistant Revisor of Statutes
Suite 702
30 W. Mifflin Street

Dear Mr. Poulson:

Enclosed are two copies, including one certified copy, of State of Wisconsin Natural Resources Board Order No. WW-61-89. These rules were reviewed by the Assembly Committee on Environmental Resources and Utilities and the Senate Committee on Urban Affairs, Environmental Resources, Utilities and Elections pursuant to s. 227.19, Stats. Summaries of the final regulatory flexibility analysis and comments of the legislative review committees are also enclosed.

You will note that this order takes effect following publication. Kindly publish it in the Administrative Code accordingly.

Sincerely,

C. D. Besadny
Secretary

Enc.