



October 18, 2012

FILE REF: R-2012-0081  
WPDES Permit (applied for)

Jim Wysocki  
Golden Sands Dairy, LLC  
P.O. Box 330  
Bancroft, WI 54921

Subject: Rejection of Plans & Specifications for the proposed Golden Sands Dairy,  
Sec 20, T21N, R6E, Saratoga Township, Wood County

Dear Mr. Wysocki:

The Water Division of the Wisconsin Department of Natural Resources (DNR) completed review of plans and specifications for the proposed Golden Sands Dairy, submitted under the seal of Robert J. Pofahl, P.E., Resource Engineering Associates, and received June 6, 2012, and June 13 and July 17, 2012 (additional information and revisions). In accordance with s. NR 243.15(1)(a)4., Wis. Adm. Code, the plans and specifications are not considered complete until the DNR receives complete information needed for environmental review (in this case, the Environmental Impact Report being prepared by your consultants). Therefore, in accordance with s. 281.41, Wis. Stats., the 90 day review period for the plans and specifications has not begun. However, the DNR believes it is best to inform you now, as submitted the plans and specifications will not be approved.

Based on review completed in accordance with s. 281.41, Wis. Stats., and ch. NR 243, Wis. Adm. Code, the DNR hereby rejects the plans and specifications (DNR project # R-2012-0081). As described in the Information Needed For Approval, and related Discussion (below) the DNR finds the plans and specifications do not comply with all portions of s. NR 243.15, Wis. Adm. Code, and standards that apply, or that additional requirements are warranted as authorized by s. NR 243.15(1)(d) and (3)(c)2., Wis. Adm. Code. The Additional Considerations (below) also note items that may deserve further review. Please direct questions to me (Mary Anne Lowndes, 608-261-6420) or the DNR review engineer (Gretchen Wheat, 608-264-6273).

The DNR is aware that Wood County LCD has informed you that your design plans will be required to meet the new NRCS Standards (published in September 2012). While the DNR does not require design plans to meet the new NRCS Standards, the DNR will most certainly accept design plans that do.

### **INFORMATION NEEDED FOR APPROVAL**

#### **Separation to Saturation**

1. Provide a revised site assessment discussion of the saturation level, including explanation of how all of the available groundwater level data was used, and identifying the high saturation level that can be expected over time. In addition to data from the soils investigation performed at the site, consider available groundwater level data from the following sources:
  - Logs from nearby existing groundwater supply wells (a number of well logs were submitted however we can't determine whether it was part of the analysis).
  - Groundwater level monitoring (2009-2012) is available from a USGS groundwater level monitoring well in the Town of Saratoga (<http://groundwaterwatch.usgs.gov/AWLSites.asp?S=441829090075301>.)

- Groundwater level monitoring (2004-2010) is available from three monitoring wells at an Agri Alliance spill site, DATCP #02406071101, with very similar geology located near the Central Sands Dairy, Nekoosa. (The data is available from DATCP.)
- Groundwater level monitoring data (1992-1994) is available from the study of a nearby area with very similar geology, Port Edwards, located just across the Petenwell Flowage. (The DNR has a copy of the study and it was sent electronically to your consultant, Robert Nauta, on August 7, 2012.)

Kraft, et. al., Port Edwards Groundwater Priority Watershed, Groundwater Resource and Agricultural Practice Evaluation, Central Wisconsin Groundwater Center Cooperative Extension Service, College of Natural Resources, University of Wisconsin – Stevens Point, June 28, 1995.

Discussion: Based on review of the above listed sources, the DNR believes a reasonable estimate of high saturation may be approximately 985 feet elevation (about 4 feet above the highest observed saturation of 981 feet). Groundwater level monitoring data from nearby, along with precipitation data, strongly indicate the groundwater levels identified at the site during soils investigation (in May 2012) are not representative of high saturation, and the above listed groundwater level data provides the best available information to determine high saturation expected over the life of the proposed waste storage facility.

The DNR acknowledges the site's sandy soil doesn't have enough organic matter to display redoximorphic features, and more short term groundwater level observation is not expected to provide better information. Also, significant groundwater level monitoring data is available for the area. Therefore, no additional test pits or borings, or groundwater level monitoring wells are being required, but you may want to pursue site specific groundwater level monitoring.

The submittal includes the following:

- Observed saturation was at 21.5-23.5 feet below ground surface (981-979 feet elevation) and this saturation was identified as the regional water table.
- A 1981 groundwater elevation map from Wisconsin Geological & Natural History Survey indicates site groundwater levels may range from 990-980 feet elevation.
- Area well logs, along with a brief discussion that the well logs indicate a perched water table has sometimes been present.

The submittal did not include the following:

- How long the site borings were left open to allow the groundwater level to stabilize.
- How the submitted groundwater level information was used, along with the observed saturation levels, to identify the high saturation elevation for the site, considering seasonal and year to year fluctuations.
- The high saturation elevation being identified for the site.

S. NR 243.15(3)(f), Wis. Adm. Code, specifies, at minimum, manure storage facilities be designed in accordance with criteria in NRCS 313 (12/2005). In addition, s. NR 243.15(1)(d), Wis. Adm. Code, provides authority for the DNR to require (as part of written approval) a more stringent design based on certain site specific conditions of concern at a particular site. Presuming an approval may be issued the DNR intends to specify a saturation elevation from which separation must be provided. Prior to the saturation elevation being specified in an approval condition, the DNR believes it appropriate to allow and request additional input from the applicant.

NRCS 313 (2005), V.A.2. Site Assessment specifies an assessment "...to determine physical site characteristics that will influence the placement, construction, maintenance, and environmental integrity of a proposed waste storage facility." In addition to test pits or soil borings, V.A.2.b.(7) specifies "Groundwater maps and well construction logs shall be included when available and applicable." These were included but we're not sure how they were considered. Additional groundwater level monitoring data is also available and indicates a higher saturation level is likely during the life of the waste storage facility.

**Waste Storage Impoundment Design**

2. Provide revised designs for waste storage facilities to address the following:
  - a. Floor elevations must be expected to achieve separation from saturation over time (also see #1 above).
  - b. A liner design that will provide greater groundwater protection is required. For example, add a soil liner component in intimate contact with the proposed watertight concrete (or a different improved liner option may be acceptable). If a soil liner component is proposed, identify the soil liner quality criteria, quantity of soil needed, and borrow source location, and provide borrow characterization.
  - c. Redundant waste storage facilities are required, meaning at least two waste storage facilities of significant volume as compared to the estimated waste generation rates.

**Discussion:** The submittal proposes a single waste storage facility (WSF) with a liner constructed of liquid-tight concrete (with embedded waterstop installed at all joints). The proposed design working storage height is 28.2 feet (to Maximum Operating Level) with 15-19 feet to be below ground, and the remaining height to be contained by above ground embankments.

The WSF floor is proposed to be located at 985 feet elevation, 4 feet above the submittal's reported highest observed saturation (981 feet elevation) during soils investigation. If the high saturation was determined accurately and the proposed liner type was deemed acceptable, the proposed waste storage floor elevation would exceed the NRCS 313 (12/2005) minimum specified 2 feet separation from saturation.

However, as described in #1 above, the DNR believes saturation has not been accurately determined. Also, due to the extremely permeable soils at the site, and potential impacts from failure of an embedded waterstop, the DNR believes a more protective fail safe liner design is needed. If a soil liner component is added to the proposed watertight concrete design, the NRCS 313 (12/2005) minimum specified separation from saturation increases to 3 or 4 feet (depending on the soil liner quality and thickness selected).

The DNR is requiring redundant waste storage facilities primarily because the proposed dairy will continuously generate very large volumes of liquid manure and wastewaters, making redundancy necessary to ensure maintenance and repair can occur without interrupting collection and storage. Splitting waste storage volumes into smaller sizes also generally reduces risk of manure spills in the event of failure. If you are planning to propose expansion soon after initial permitting, and you intend to provide redundant storage facilities as a part of the expansion, you may want to revise your permit application now so the DNR is able to consider the redundancy that would be provided by the expansion.

S. NR 243.15(3)(f), Wis. Adm. Code, specifies that, at minimum, manure storage facilities be designed in accordance with criteria in NRCS 313 (12/2005). In addition, s. NR 243.15(1)(d), Wis. Adm. Code, provides authority for the DNR to require (as part of its written approval of plans and specifications) a more stringent design based on certain site specific conditions that are of concern at this site. Presuming an approval may be issued, as a condition of approval the DNR intends to specify a liner type for the waste storage facility that is more protective of groundwater. Prior to the liner type being specified in an approval condition, the DNR believes it appropriate to allow and request additional input from the applicant.

S. NR 243.15(3)(c)2., Wis. Adm. Code, provides authority for the DNR to require installation of leakage collection, monitoring or secondary containment, based on certain site specific conditions that are of concern at this site. A soil liner component (as described above) is one option for secondary containment associated with the liner installation, and the DNR believes this option would provide sufficient groundwater protection.

**Liquid-Tight Concrete Joint Details**

3. For each liquid-tight concrete waste storage impoundment, tank, solids stacking pad and feed silage pad (including work area, aprons, surface leachate collection channels and silage pad runoff collection basin) provide the following:
  - a. A joint plan that clearly shows the location of all joints, and labeling to indicate all joints will have embedded waterstop (not base seal waterstop). Use of embedded waterstop is consistent with Wisconsin Construction Specification 4 Concrete (5/2012).
  - b. Specify that waterstop for all corners, intersections and transitions will be fabricated by the manufacturer, or a manufacturer-certified contractor in a controlled environment and with proper manufacturers' equipment. Only straight butt joint spliced waterstop may be field fabricated. This is consistent with Wisconsin Construction Specification 4 Concrete (5/2012).
  - c. A revised cross-section detail drawing of the embedded waterstop joints, showing a maximum 1:10 slope (vertical to horizontal) in the change of concrete thickness (each 1 inch of vertical thickness change must occur over a horizontal run of at least 10 inches). The use of a maximum 1:10 slope in concrete thickness change is consistent with NRCS 313 (9/2012).
  - d. Revised reinforcing steel specifications for improved temperature and shrinkage control, in accordance with the following table. This is consistent with the recently published NRCS 313 (9/2012) and is deemed necessary by the DNR.

Concrete Thickness	Rebar size (grade 60) and joint spacing		
	≤ 100 ft.	≤ 150 ft.	≤ 175 ft.
≤ 5 "	#4 @ 18 "	#4 @ 15"	#5 @ 18"
≤ 6 "	#4 @ 18"	#5 @ 18"	#5 @ 15"
≤ 7 "	#4 @ 15"	#5 @ 15"	#5 @ 12"
≤ 8 "	#5 @ 18"	#5 @ 15"	#5 @ 12'

**Discussion:** The DNR is requiring these design features to reduce leakage from the waste containment facilities, by improving joint design and improving concrete design to reduce cracking, so that greater groundwater protection is provided for this site due to extremely permeable soils.

S. NR 243.15(3)(f), Wis. Adm. Code, specifies that, at minimum, manure storage facilities be designed in accordance with criteria in NRCS 313 (12/2005). In addition, s. NR 243.15(1)(d), Wis. Adm. Code, provides authority for the DNR to require (as part of its written approval of plans and specifications) a more stringent design based on certain site specific conditions that are of concern at a particular site. Presuming an approval may be issued, the DNR intends to specify a liner type for the waste storage and containment facilities that are more protective of groundwater. Prior to the liner type being specified in an approval condition, the DNR believes it appropriate to allow and request additional input from the applicant.

**Feed Leachate and Runoff Control System**

4. Provide additional information about the feed leachate and runoff control system to address the following:
  - a. Identify the size of each proposed pump (two), and the pump control method and on/off settings.
  - b. Provide calculations to demonstrate the pump size and control settings are appropriate to ensure all leachate and the proposed first flush runoff amount will be collected.

Discussion: The submittal proposes a feed silage storage area of approximately 235,170 ft<sup>2</sup>, and a system to collect all feed leachate and 0.1 inch first flush runoff. The largest leachate volume is identified as 149,600 gallons. The first flush runoff volume appears to be identified only in combination with leachate and as a daily average of 0.25 gal/day (see Appendix B – Waste Storage Calculations). The pumps need to be sized based on a maximum volume that would be pumped in a day rather than an average daily basis.

The DNR believes the requested information is needed to ensure the system is designed in accordance with s. NR 243.15(9), Wis. Adm. Code, that requires feed storage runoff control systems be designed to ensure leachate and contaminated runoff are collected or controlled in a manner that complies with the production area requirements (no pollutant discharge to navigable water, and not to cause exceedance of groundwater quality standards).

**ADDITIONAL CONSIDERATIONS – CATASTROPHIC MORTALITY DISPOSAL:** The DNR believes this item deserves additional attention.

The submittal proposes on-site burial for mortality disposal in the event of a catastrophic mortality incident (see Environmental Incidence Response Plan, p. 10). The DNR is concerned the site characteristics may not allow for large scale mortality disposal, due to relatively shallow groundwater and highly permeable soils. Please consider what other options may be appropriate and feasible in the event of such an emergency. You may also want to contact the DATCP to discuss this issue.

**APPEAL NOTICE:** If you believe that you have a right to challenge this decision, you should know Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent. To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with s. NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with s. NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review.

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES  
FOR THE SECRETARY



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