

Soil Susceptibility and Sustainability in the Plainfield Sands Summary

The soils in Saratoga cannot support an operation of this size. According to the Wisconsin Soil Survey provided by the United States Department of Agriculture-Natural Resources Conservation Service, our soil properties are identified as Plainfield Sand, 0-2 slope (PfA) by soils scientists. “The Plainfield series consists of deep, excessively drained, sandy soils on outwash plains. Available water capacity is low to very low, and permeability is rapid. Natural fertility is low. These soils are suited to jack pine and Norway pine for pulpwood or to Norway pine and Scotch pine for Christmas trees. These soils are severely limited for cultivated crops by the very low available water capacity. In most years, crop growth is seriously restricted by a lack of moisture. If these soils are cultivated, the hazard of soil blowing is severe. The sloping soils are subject to water erosion. The soils of this unit, except for the steeply sloping soils, are suitable for permanent pasture, if grazing is controlled. They are also suited for woodland and wildlife habitat...”

The following are some, not all, excerpts from the USDA-NRCS’ recent, expanded, online, soil survey which includes specific categories, descriptions and soil ratings relative to suitability and limitations of use of Plainfield sand 0-2 percent slopes (PfA).

<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

The rating provides a value that ranges from 0 to 1 where 1 is the worst and 0 is the best. The Rating and Area of Interest (AOI) results were obtained through plotting the acreage that is currently proposed for the Golden Sands Dairy (CAFO). (The following descriptions have been edited in length.)

Category	Sub Category	Description	Rating	AOI
Building Site Development	Corrosion of Concrete	Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete.	HIGH	100.0%
Disaster Recovery Planning	Catastrophic Mortality, Large Animal Disposal, Pit	A method of disposing of dead animals by placing the carcasses in successive layers in an excavated pit. Improper site selection, design or installation may cause contamination of groundwater, seepage, and contamination of stream systems from surface drainage or flood water. A “very limited” rating indicates that the soil has one or more features that are unfavorable	Very Limited - Seepage (1.00) Too sandy (1.00) Unstable excavation walls (0.50)	100.0%

		for the specified use.		
	Clay Liner Material Source	Using natural clay soil material to line the bottom of a landfill pit to assist in the sealing of pit that may have excessively high water transmission capabilities to soil layer below excavation. A Poor rating indicates that the soil has one or more features that are unfavorable for the specified use.	Poor-Hard to pack (0.00) Small stone content (0.28)	100.0%
	Rubble & Debris Disposal, Large-Scale Event	Burial of rubble and debris in an expeditiously constructed landfill is a method of disposing of material that has been rendered unsafe and unusable by the effects of a large scale disaster. Improper site selection, design or installation may cause contamination of groundwater, seepage, and contamination of stream systems from surface damage or flood water.	Severely limited - Seepage, bottom layer (1.00) Too sandy (1.00) Unstable excavation walls (0.50)	100.0%
Land Classification	Farmland Classification	Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage and oilseed crops.	Not prime farmland	100.0%
Sanitary Facilities	Sewage Lagoons	Shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid. A "very limited" rating indicates that the soil has one or more features	Very limited-Seepage (1.00)	100.0%

		that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design or expensive installation procedures.		
Sanitary Facilities	Disposal of Wastewater by Irrigation	<p>Wastewater includes municipal and food-processing wastewater and effluent from lagoons or storage ponds. The effluent in the lagoons and storage ponds is from facilities used to treat domestic or animal waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter.</p> <p>The ratings are based on the soil properties that affect the design, construction, management and performance of the irrigation system.</p>	Very limited- Filtering capacity (1.00) (Droughty (0.98) Too acid (0.07)	100.0%
	Manure and Food Processing Waste	<p>Manure and food-processing waste for crop production. Manure is the excrement of livestock and poultry. The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, and erodibility, the rate at which the waste is applied and the method applied. Also, among many other factors, the wind erodibility group, soil erosion factor K and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application</p>	Very limited- Filtering capacity (1.00), Droughty (0.98) leeching (0.45) Too acid (0.02)	100.0%

		site. Very limited indicates the soil has one or more features that are unfavorable for the specified use.		
Water Management	Irrigation General	This interpretation evaluates a soil's limitation(s) for installation, and use of irrigation systems. Irrigation systems are used to provide supplemental water to crops, orchards, vineyards and vegetables in areas where natural precipitation will not support desired production of crops being grown. Very limited indicates that the soil has one or more features that are unfavorable for the specified use.	Very limited- Seepage (1.00) Low water holding capacity (0.99)	100.0%

The proposed Golden Sands CAFO will be using a cement manure lagoon to store 30 of the 48 million gallons of liquid manure. Considering the corrosive nature of cement in Plainfield sand, the likelihood of cracking with seepage is high. A Technical Note from the Soil Conservation Service, U.S. Department of Agriculture dated September 1993 states, "Concrete... will not flex to conform to settlement or shifting of the earth. In addition, some concrete aggregates may be susceptible to attack by the continued exposure to the chemicals contained in or generated by the animal wastes." According to the USDA, our soils would not support a compacted clay liner underneath the manure lagoon either - as the soils properties are just too poor. Some Wisconsin dairies have installed clay liners underneath concrete lagoons as a precautionary step to add protection from contaminates reaching groundwater. In Plainfield sand, it will not help.

However, as it stands now, Wysocki is not lining the concrete lagoon with compacted clay or any other substance; rather, the concrete will sit at or below our groundwater table with only permeable sands underneath. This will be allowed even though the USDA already knows our soils are a poor choice for siting this facility in SARATOGA.

(In Oct 2012 DNR refused the application for the manure storage and handling practices for the Golden Sands Dairy. The DNR has requested a new plan with 2 manure lagoon and 8" of compacted clay underneath. We have not seen nor heard of any new plans being submitted. However it is possible the new plans are in the EIR which was just turned in. We do not have access to the EIR at this time and the DNR has 60 days to review it. Regardless according to the above report, clay lining and 2 lagoons will not matter much)