

Digester Effluent Solids Separation and Handling

All of the dairy wastewater will be delivered directly to the methane digester and periodically some of the cattle manure/bedding may also be delivered to the digester, but typically will be land applied. The digester will breakdown about 50% of the solids through its anaerobic processes. The effluent from the digester will be pumped through three screw presses to remove the larger solids. The solids from the screen separators will accumulate on a concrete pad that has a roof over it before being moved to outside composting piles or land applied directly or for delivery off-farm. The effluent from the solids separators will gravity drain into a solids settling tank to remove additional solids before going to the irrigation storage pond. Solids in the settling tank will be transferred to a slurry tanker via a pipe collected to the bottom of the tank. There will be sufficient head pressure within the tank to force the solids into the slurry tanker. The slurry tanker will be used to spread these solids on the appropriate fields. The overflow from the settling tank flows via gravity to the plastic lined irrigation holding pond.

Irrigation Pond Management

The irrigation / waste storage ponds have a storage capacity of approximately 1.7 million gallons, which translates into a holding time of approximately 3 days. However, to ensure adequate storage within the pond for the 25-year 24-hour design storm event, the water depth in the pond shall not exceed 16.0 feet (2 feet below top of dike) during normal operations, which includes 11.8 inches for the 25-year 24-hour design storm and 1.0 foot of freeboard. A visible marker shall be placed at a location that can be observed daily to ensure the pond does not exceed this depth. Water in the pond will be pumped to the sprayfields via 6" PVC pipelines using a 250 GPM irrigation pump station that will have a screened floating inlet.

Waste water Land Application

Effluent from the irrigation storage pond will be pumped to center pivot irrigation systems on the farm for delivery to crops in accordance with the nutrient management plan. The sludge solids from the settling pond will be spread on fields outside of the effluent sprayfields at agronomic rates. In accordance with USDA recommendations no wastewater effluent or sludge solids shall be applied to any edible crops within 120 days of harvest. Composted solids may be applied within 30 days of harvest. The Partner Farm has agreed to follow these recommendations even though they are only recommendations, i.e. not mandated.

Nutrient Management

The effluent from the irrigation pond will be sprayed on about 2195 acres of surrounding farmland while the settled solids will be spread on about 1889 acres of surrounding farmland in accordance with the application rates shown in Table 9. To ensure the appropriate application rates occur, the effluent and solids must be sampled representatively every two weeks and composited and preserved over no more than one quarter before being tested for total nitrogen and total phosphorus concentrations. The nutrient content and applications can then be used to calculate the nutrient loads being applied to the land. Records of the amount, nutrient content, and application field number must be kept.