



Memorandum

To: Ms. Katherine Barbieri

*From: Jill Grimaldi, BCES
K. Richard Tsang, Ph.D., PE, BCEE*

Date: May 16, 2017

Subject: Review Comments on Sunbreak Farms Composting Facility FDEP Application

St. Lucie County (County) is in the process of developing an ordinance proposed to regulate commercial composting facilities within unincorporated areas of the County. While the ordinance will not be presented to the Commission for several weeks, a Notice of Intent to Issue has been published by the Florida Department of Environmental Protection (FDEP) for a facility that is being proposed in the County. CDM Smith has reviewed the application, and offers the following information.

PROPOSED OPERATION – APPLICATION SUMMARY

The application was made by Sunbreak Farms, LLC, formerly known as Cloud Grove, for a Residuals/Septage Management Facility via FDEP's application for domestic wastewater facilities. The proposed project is described within the application as follows:

- Located at 5101 Minute Maid Road, Ft. Pierce FL 34945
- 6,580-acre farm, including 640-acre above ground impoundment for storage of drainage/irrigation water
- Agricultural operation including on-site composting of aerobically digested and dewatered Class B biosolids with yard waste (no liquid biosolids will be accepted).
- Yard waste to be chipped and mixed at a ratio of 3-parts yard waste to 1-part biosolids
- Land application of resulting Class AA product on Sunbreak Farms property
- Biosolids to be obtained primarily from municipal wastewater treatment plants (WWTP)
- Design to accept 500 dry tons per day (5-day operation)
- Composting via modified aerated static pile (MASP) method and application of proprietary organic catalyst

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- Proposed temperature control in excess of FDEP's required 131 degrees Fahrenheit
- Vector attraction via temperature control and/or reduction of volatile solids, as well as turning windrow piles as needed
- Incorporation of applied compost into soil within 6 hours of application, typically

CDM SMITH COMMENTS ON APPLICATION DOCUMENTS

RECEIVING, MIXING, PROCESSING

1. All receiving, storage, mixing and composting activities appear to be proposed as outdoor activities (no enclosed building).
2. The MSAP Composting method, as stated in the application, does tend to provide more uniform/stable temperatures and oxygen levels within the piles. This does tend to reduce the need for mechanical agitation of the piles, thereby reducing potential for material to be disturbed and tracked by vehicles. This method also allows for longer sustained periods of higher temperatures within the piles. This accelerates the overall process; however, it also makes the piles more susceptible to smoldering and spontaneous fire incidents.
3. Composting method – the MSAP method proposed appears to have been practiced in other places. Composting will be outdoor, in piles, and on pervious surface. This will violate the proposed ordinance requirements in multiple areas.
4. The proposed method of composting will utilize turning to provide the needed oxygen. The conventional aerated static pile composting method utilizes blowers to maintain the piles aerobic. This is not proposed here. CDM Smith is not familiar with the catalysts being proposed, but maintaining aerobic condition is critical in the piles. Pile turning, particularly in the early stages of composting can often result in odor issues.
5. The applicant is proposing to line the windrow areas with a yard trash mix to form a 12-inch thick base. This base, as stated by the applicant, is intended to absorb free liquids from biosolids. Sufficient detail is not provided to determine if free liquids would be fully contained in this layer, or allowed to percolate through into the land surface.
6. Page 10 of the Operations Plan states that staff will mix the biosolids and yard waste thoroughly to form the windrow piles; no specific detail is given for how the mixing will be performed without disturbing the base layer described above.
7. The applicant should further clarify if the curing area (identified to be separate from the active composting area) will consist of a similar base/pad, or be in direct contact with land surface.

END USE OF COMPOST

1. The operations plan indicates that the compost material will be “for on-farm use only” and will be generated on an “as-needed basis to meet demand of normal farm operations.” The plan further states, however, that if “there are any biosolids or compost materials on-site that exceed the farm’s fertilization needs, these materials will be given away...to an acceptable agricultural operation.” The applicant would be required to obtain additional approvals to do so (listed in the operations plan as “licensing”).
2. The application indicates that all compost produced will be used on site. It is unclear if the farm has demands equivalent to the rated capacity it can produce, as proposed. A 10 ton/acre number is quoted in the plan but it is unclear if this is the loading annually or at a different frequency. It is also unclear how much of the approximate 6,500 acres will be farmed, and thus can use compost (vs. the portions used for maintenance, reservoir, composting operations, roadways, buildings, etc.).

ODOR CONTROL

1. The applicant is proposing to “cap” the windrow piles with unscreened biosolids or ground yard trash in an effort to abate odor generation (biofilter). The application unofficially defines “unscreened” biosolids as material that has not yet been screened to remove oversized wood residuals from the finished compost material. This additional woody material may or may not provide a sufficient biofilter system when mixed with biosolids. A cap consisting of solely woody material (no integrated biosolids) would function more effectively as a biofilter.
2. The application states repeatedly that MSAP reduces the need for mechanical turning of the piles and therefore reduces odor generation (by allowing the cap layer to remain intact and abate odor); however, in the odor control section of the Operations Plan, 2 of the 3 identified key contributors to odors are said to be remedied by “windrow turning,” which seems contradictory. CDM Smith acknowledges that MSAP does not fully eliminate the need for turning, however it is unclear if the limited turning required for MSAP would be sufficient to address odors. Odors cannot simultaneously be addressed by not turning (to lessen odor generation) and turning (to remedy generated odors) windrow piles.

STORMWATER/RUNOFF

1. Existing Environmental Resource Permit (ERP) No. 56-00111-S was transferred from Cloud Grove to Sunbreak Farms in 2016. This ERP allows for discharging of water from agricultural lands (Sunbreak Farms) to the C-25 canal system via one 10,000 gpm and nine 20,000 gpm pumps. It is unclear from the preliminary review of readily available permit transfer documents, if this discharge has been maintained for use by Sunbreak Farms. If the discharge is being maintained, there is a significant potential for transfer of surface water from the project site to the C-25

canal/surface water system. CDM Smith would require additional review time to confirm the intent and configuration of this discharge arrangement.

2. The application excludes information pertaining to Section 3.A. of the form, "Discharges to Surface Waters." If the ERP mentioned above is being maintained, there is a significant potential for offsite discharge. Applicant should be asked to clarify operation.
3. Overflow for the 640-acre impoundment is identified as discharge to the Minute Maid Canal (with ultimate discharge to the C-25 Canal). Again, no discharge to surface water information is provided in the application form. This appears to be an application deficiency, or inconsistency in the documents that should be clarified.
4. Applicant states that perimeter berms will fully contain the 100-year, 3-day storm event, and that "no discharge from the compost areas to either the fields or perimeter ditches will occur." Applicant should clarify what runoff is being stored in the 640-acre impoundment (and potentially discharged offsite) if not from the compost areas.
5. Regulatory agencies typically require a pre- vs. post-condition pollutant load analysis prior to issuance of drainage permits. It is unclear, other than the ERP mentioned above, if other stormwater permits have been secured or if a stormwater report has been prepared in support of such a permit. The pollutant loading analysis typically includes nutrient loading calculations that are of interest to the County, especially within the sensitive St. Lucie Watershed.
6. Page 15 of the Operations Plan states that if staff observe ponding within the windrow areas, the water will be routed to other containment areas, and that "in no case shall runoff from the composting piles be allowed to discharge directly to an adjacent farm ditch or off-site." Additional detail should be provided to describe the "other containment area(s)" to be utilized for this action. Specifically, details should be provided on what safeguards will be in place in these other areas to ensure that there is no direct contact with offsite discharge.

ENVIRONMENTAL CONSIDERATIONS

3. It is assumed that, given the description in the Operations Plan, the "catalyst" is safe not only for plants, as stated, but for crops intended for human consumption. This is understood to be a proprietary enzyme that produces bacteria or fungus, which accelerates the composting process; however, no details are given addressing long-term buildup of the byproduct within the site soils or impacts to surface waters.
4. Water Use Permit (WUP) No. 56-00111-W was transferred to Sunbreak Farms in 2016 and expires in 2025. The permit allows for withdrawal of irrigation water from the Upper Floridan Aquifer via two, 500 feet deep (approximately) wells rated at 100 gallons per minute (gpm). A full review of the site modeling would be required to confirm impacts on surface waters from

pumping wells at this depth, but hydrogeology in the area, coupled with the modeling review that was likely completed by SFWMD would indicate that the impact on surface waters from this withdrawal would be negligible. The WUP also allows for withdrawal from the C-25 canal via one, 24-inch axial flow pump rated for 18,000 gpm to meet irrigation water demands.

5. The applicant states in the Operations Plan dated May 2017, that the two onsite groundwater wells are “not associated with potable water.” CDM Smith was not able to confirm in the short review period what year these wells were constructed in. CDM Smith would recommend confirming the well construction details to ensure that the above grade wellhead components are located above the 100-year flood elevation on the property as currently configured. Wellhead components that lie below the flood plain elevation provide a potential conduit for downward flow of surface waters into the well, thereby creating a potential for contamination of the aquifer with surface water. Additionally, well construction details were not readily available. Older agricultural wells are occasionally constructed with cable tool methods, which do not provide a proper sanitary seal between the various aquifers between land surface and total depth of the well (in this case, 500 feet +/-). More modern methods of well installation (rotary mud and reverse air) do provide this sanitary seal, which would lessen the potential for cross contamination of aquifers. Any potential for downward migration of surface waters on a site of this nature, introduces the potential for coliform contamination of the underground source of drinking water if proper seals and safeguards are not in place. Such migration could have future impacts on neighboring agricultural users of the aquifer. CDM Smith would request additional time to review well construction details.
6. The most significant potential issue with the proposed project is the handling of such large amount of biosolids on pervious area in the open. It is unclear how the applicant can effectively manage stormwater, as well as leachate, to prevent surface and ground water contamination (even with the use of berms). Typical dewatered biosolids from plants in FL are very wet, mostly in the 15 percent solids range. Significant amounts of leachate will be generated by handling up to 500 dry tons of this material daily. This leachate will also contain high BOD and nutrients; collection and storage without treatment would not be sufficient. Surface water runoff is minimally controlled. The application does not discuss potential impacts related to ground water via percolation.

MONITORING, TESTING AND RECORD KEEPING

1. Proposed activities in this section of the Operations Plan appear to be consistent with regulatory requirements.

GENERAL COMMENTS

1. The application repeatedly states that the facility will only accept and compost biosolids in quantities necessary to meet farming demands. Municipalities require reliable disposal options for biosolids; no attention has been given in the application to how the contracts will be secured

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or what will be required of municipalities delivering biosolids in the event that there is not a need for deliveries at the Sunbreak Farms site on a given day.

2. The proposed capacity of this facility is huge. Permit application states 500 dry ton per day. Assuming biosolids are dewatered to 20 percent (which most facilities in FL do not), there will be 2,500 wet tons of biosolids coming to the site. Assuming a truck load holds 20 ton, there will be 125 truckloads to the site per day. This is just for biosolids. Yard waste is proposed to be mixed in a ratio of 3:1 (yard waste to biosolids). The burden on existing roadways, as well as access to the interior of the site should be looked at with this level of potential increases in truck traffic.

It is the opinion of CDM Smith that additional information should be requested of the applicant to further detail the issues of odor control, stormwater management, aquifer protection and overall apparent inconsistencies within the application.

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