

June 26, 2008

TECHNICAL REVIEW MEMORANDUM

To: City of Los Angeles, Bureau of Sanitation

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Subject: Qualitative Air Quality Analysis (Land Application and Related Emissions),
1989 Offsite Sludge Transportation and Disposal Program Final
Environmental Impact Report Addendum, City of Los Angeles, Green Acres
Farm

At the request of the City of Los Angeles (City), ENVIRON International Corporation (ENVIRON) has conducted a qualitative air quality analysis of the criteria pollutant emissions associated with land application and related operations associated with the two actions the City took in February 2000 to implement its biosolids management program, consisting of (1) purchasing the 4,688-acre Green Acres Farm in western Kern County, where the City has been land applying its biosolids since the mid-1990s, and (2) amending its pre-existing biosolids contract with Responsible Biosolids Management, Inc. (RBM). This qualitative analysis considers impacts of current operations compared to both the composting operations described the 1989 Offsite Sludge Transportation and Disposal Program Final Environmental Impact Report (1989 Program EIR) and the 1999 operations that existed at Green Acres Farm before the City's two actions in February 2000.

Land Application Emissions

Land application emissions are divided into two sources: emissions from farm equipment and emissions from the biosolids that are composted or land applied.

1. Emissions from Equipment Operations: In estimating potential emissions from land application activities, the 1989 Program EIR assumed the use of composting operations and employed a worst-case analysis that assumed the use of seven tiller machines (approximately 360 horsepower (hp) each) and four front-end loaders (approximately 200 hp each) operating 8 hours per day. At Green Acres Farm, there are no composting operations and for its land application activities, RBM uses one front-end loader (approximately 150 hp) and one tractor (approximately 400 hp); operation of each is conservatively assumed for about 8 hours day. RBM also uses one water wagon that operates intermittently, and a water truck used to supply the wagon with water and to provide water for dust control. RBM has been using essentially the same equipment for land application at Green Acres Farm since 1994, and the City's decisions in 2000 to amend its pre-existing biosolids contract and to purchase Green Acres Farm have not resulted in any changes in the type of equipment used. Based on the significant reduction in

equipment used at the site as compared with the equipment usage assumed in the 1989 Program EIR, it is reasonable to conclude that current equipment emissions are substantially less than the equipment emissions assumed in the 1989 EIR.

As noted in the City's accompanying Addendum, there has been an increase in biosolids throughput as compared with the conditions in 1999 that existed before the City took its actions in February 2000 to purchase Green Acres Farm and amend its pre-existing biosolids contract. This increase in biosolids throughput is expected to result in a relatively small change in the hours of off-road equipment use. However, it is not expected that air emissions from land application equipment under current conditions would be appreciably different from the air emissions from land application equipment under 1999 conditions. This finding is based on a number of factors, including: (a) the economy of scale in terms of equipment usage in a large biosolids operation; (b) the increased efficiency achieved at Green Acres Farm in terms of equipment usage, due in large part to the conditioning of the soil through repeated land application, which in turn makes it easier to incorporate biosolids into the soil and thereby reduces the amount of time land application equipment needs to be used; (c) the routine use of water at Green Acres Farm to provide dust control, which minimizes airborne emissions; and (d) the use of newer and cleaner equipment over time, as RBM replaces the equipment it uses about every 2-3 years. Based on all of the abovementioned factors, it is expected that current criteria and air toxic pollutant emissions from off-road equipment use are not appreciably different than the emissions under 1999 conditions.

2. Emissions from Biosolids That Are Composted or Land Applied: Based on a review of SJVAPCD Rule 4565 (Biosolids, Animal Manure, and Poultry Litter Operations) and supporting staff report, the volatile organic compound (VOC) emission factor for co-composting is 1.78 pound per ton of biosolids and the VOC emission factor for land application is approximately 1.42 pounds per ton of biosolids per 20 days for each day that the biosolids are not land incorporated.¹ Since at least 1999, the general practice at the Green Acres Farm has been to incorporate biosolids within hours of their receipt. Table 2 below summarizes the estimated VOC emissions from land application activities, conservatively assuming that biosolids would be land incorporated within 8 hours of receipt.

¹ Source: *Appendix B: Emission Reduction Analysis for Proposed New Rule 4565 (Biosolids, Animal Manure, and Poultry Litter Operations)*, SJVAPCD, February 15, 2007.

Table 2. Comparison of VOC Emissions from Land Application

	1989 Program EIR (composting)	1999 Baseline (land application)	Current Maximum (land application)
Throughput* (wet tons of biosolids)	438,000	180,404	292,000
Emission Factor (lb/ton)	1.78	1.42/20 day @ 8 hours only	1.42/20 day @ 8 hours only
VOC Emissions (tpy)	390	2.1	3.5

* 1989 Program EIR throughput based on 1,200 wet tons of biosolids per day; current maximum throughput based on RBM contract amount of 800 wet tons of biosolids per day.

Thus, it is apparent that maximum emissions from biosolids are significantly lower than the composting scenario assumed in the 1989 Program EIR. Comparing current maximum conditions to 1999 baseline conditions, only a small increase in VOC emissions (1.4 tons per year) is expected. This increase in VOC emissions is much less than the SJVAPCD significance threshold of 10 tons per year. Furthermore, in order to comply with Rule 4565, which will be in effect on September 15, 2008, Green Acres Farm will be required to land incorporate its biosolids within 3 hours of their receipt.