VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT

Memorandum

TO: Permit File No. 07340 DATE: December 2, 2014

FROM: John Harader

SUBJECT: Engineering Analysis of Application Nos. 07340-131, -161, -171, -181
Ventura Regional Sanitation District – Toland Road Landfill
Part 70 Permit Reissuance and Biosolids Drying System

FACILITY DESCRIPTION

The Ventura Regional Sanitation District's (VRSD) Toland Road Landfill is located at 3500 North Toland Road in an unincorporated area in eastern Ventura County between the cities of Santa Paula and Fillmore, north of Highway 126. This municipal solid waste landfill began accepting waste in 1962 and was expanded in 1996. The landfill has a Standard Industrial Classification (SIC) Code of 4953, Sanitary Services-Refuse Systems.

As required by Rule 74.17.1, "Municipal Solid Waste Landfills", the landfill is equipped with a landfill gas collection system that uses a number of gas collection wells that are routed to a common collection header. The landfill gas (LFG) is combusted in an 85.8 MMBTU/hr LFG Specialties Inc. enclosed landfill gas flare. LFG is also used to power nine (9) 250 kW Ingersoll Rand Micro-turbines that provide electricity for on-site use. The Microturbines are included in Authority to Construct No. 07340-130; but have been permitted since January 5, 2012 pursuant to Application No. 07340-132. The landfill also has a 2,000-gallon aboveground gasoline storage tank that is equipped with vapor recovery systems to comply with Rule 70, "Storage and Transfer of Gasoline". Permit to Operate No. 07340 is a Part 70 (Title V) Permit and is currently in the permit reissuance process.

VRSD was granted Authority to Construct No. 07340-130 on March 9, 2009 for a Biosolids Drying System. The system is described below. An initial temporary Permit to Operate was issued on April 2, 2009. Authority to Construct No. 07340-160 was granted on June 27, 2012 for modifications to the control system for the Biosolids Drying System.

APPLICATION DESCRIPTION

Part 70 Permit Application Nos. 07340-131 and 07340-161 have been submitted to permit the Biosolids Drying System pursuant to Authority to Construct Nos. 07340-130 and 07340-160. The biosolids drying system accepts wet biosolids from Ventura County wastewater treatment plants and removes liquid from them in a batch process. The dried biosolids are used for daily cover at the landfill. The re-claimed water (condensate) is used for dust control and/or irrigation at the landfill. Authority to Construct No. 07340-160 was issued on June 27, 2012 to modify the 3-stage emission control system; the carbon adsorption component of the system has been replaced with a 4.0 MMBTU/hr landfill gas fired thermal oxidizer.

Authority to Construct No. 07340-160 also included a reduction, at the permittee's request, of the required total sulfur content limit prior to combustion in any of the combustion devices (flare, microturbines, thermal oxidizer, and oil heaters). AC No. 07340-160 reduced the total sulfur content limit from 60 ppmv to 20 ppmv. VRSD submitted Application No. 07340-181 on April 8, 2014 to change the sulfur content limit of the LFG back to 60 ppmv. The existing permitted 85.8 MMBTU/hr flare is currently permitted with a LFG sulfur content limit of 60 ppmv. The permittee was not able to consistently comply with the proposed voluntary limit of 20 ppmv. The LFG contains sulfur compounds that are not hydrogen sulfide (such as mercaptans) that are not captured by the H_2S treatment system and not measured by the daily colorimetric testing. The mercaptans are measured by SCAQMD Method 307-91. The prior limit of 60 ppmv is considered to meet the BACT requirements of Rule 26, "New Source Review", as discussed in an engineering analysis for Authority to Construct Application No. 07340-130 dated January 12, 2009.

Application No. 07340-181 included an analysis of the SOx emissions based on a 60 ppmv LFG content combustion in the flare, micro-turbines, oil heaters (two), and thermal oxidizer. The application also includes a SO_2 and H_2S modeling analysis at the fence line and at receptor sites. The modeling analysis demonstrates compliance with for Rule 54, "Sulfur Compounds".

Application No. 07340-181 has been determined to be a "Non-Federal Minor Change" Part 70 permit modification since the LFG sulfur content limit is being increased to a previous level prior to the permittee's request that it be reduced. The increased level is in compliance with Rule 54, which is federally enforceable.

The processing of Application Nos. 073470-131, -161, and -181 has been combined with the Part 70 Permit Reissuance Application No. 07340-171.

Copies of Authority to Construct Nos. 07340-130 and 07340-160 are attached along with the Engineering Analyses for the applications (dated July 23, 2008 and May 22, 2012). Complete descriptions of the Biosolids Drying System are provided in these documents. A final listing of the components of the system is included in the Part 70 Permit. The following discussions detail the source test results and the changes to the system and permit conditions from the Authority to Construct Nos. 07340-130 and 07340-160.

SOURCE TESTING

There are three exhaust systems of the Biosolids Drying System that require source testing: (1) the wet biosolids receiving, storage, and handling system carbon control system exhaust; (2) the two 16.8 MMBTU/hr Fenton Thermal Oil Heaters exhausts; and (3) Dehydration Chambers with 3-stage emission control system. Initial source test results are:

Wet Biosolids Receiving System Carbon Control Exhaust Test Date: July 13, 2010			
Pollutant	Pass / Fail	Test Result	Limit
NH3	P	14 ppm	50 ppm
ROC	P	5 ppm	60 ppm
H2S	P	0 ppm	3 ppm

Fenton Thermal Oil Heater "A"			Test Date: July 13, 2010
Pollutant	Pass / Fail	Test Result	Limit
NOx	P	8 ppm	9 ppm (BACT) 40 ppm (R74.15)
CO	P	1 ppm	400 ppm (R74.15)

Fenton Thermal Oil Heater "B"			Test Date: July 13, 2010
Pollutant	Pass / Fail	Test Result	Limit
NOx	P	5 ppm	9 ppm (BACT) 40 ppm (R74.15)
CO	P	3 ppm	400 ppm (R74.15)

The Dehydration system with the 3-stage emission control system was also tested on July 13, 2010. The ROC emissions did not meet the emissions limit. As stated above, the 3-stage emission control system was modified with the installation of a thermal oxidizer and re-tested on October 12, 2012 as follows:

Dehydration Chambers 3-Stage Control System (Thermal Oxidizer)			Test Date: 10/10/12
Pollutant	Pass / Fail	Test Result	Limit
NOx	P	0.23 lb/hr	1.11 lb/hr
CO	P	2 ppm	50 ppm
CO	P	<0.01 lb/hr	0.16 lb/hr
PM	P	0.015 gr/dscf	0.176 gr/dscf
PM	P *	0.12 lb/hr	0.07 lb/hr
NH3	P	1 ppm	100 ppm
NH3	P	0.002 lb/hr	0.36 lb/hr
ROC	P	2 ppm	57 ppm
ROC	P	0.004 lb/hr	0.191 lb/hr
H2S	P	0.1 ppm	3.4 ppm
H2S (in LFG)	P	7.0 ppm	20 ppm

Compliance was demonstrated with all pollutant limits except for the PM 0.07 lb/hr emission limit. This limit was later increased to 0.30 lb/hr as discussed below.

PERMITTED EMISSIONS

Wet Biosolids Delivery and Handling – receiving, storage, and feed hoppers controlled by a 600 cfm carbon control system

Pollutant	Basis	Tons Per Year	Pounds Per Hour
ROC	60 ppm limit (as methane)	0.39	0.09
NH3	50 ppm limit	0.35	0.08

Permitted emissions calculations:

(60 ppm ROC/10^6)(16 lb/lbmole)(lbmole/385 scf)(600 cfm)(60min/hr) = 0.09 lb/hr ROC
0.09 lb/hr ROC (8760 hr/yr)(ton/2000 lb) = 0.39 ton/yr ROC

(50 ppm NH3/10^6)(17 lb/lbmole)(lbmole/385 scf)(600 cfm)(60min/hr) = 0.08 lb/hr NH_3
0.08 lb/hr NH_3 (8760 hr/yr)(ton/2000 lb) = 0.35 ton/yr NH_3

Authority to Construct No. 07340-160 and the Part 70 Permit have a 3 ppmv hydrogen sulfide limit. As shown above, no H2S was measured. Calculated permitted emissions of H2S based on a 3 ppm limit are:

(3 ppm/10^6)(34 lb/lbmole)(lbmole/385 scf)(600 cfm)(60min/hr) = 0.01 lb/hr H_2S
0.01 lb/hr H_2S (8760 hr/yr)(ton/2000 lb) = 0.04 ton/yr H_2S

District policy is to only include hydrogen sulfide if calculations exceed 1 tpy; therefore, hydrogen sulfide permitted emissions are not included as permitted emissions subject to Rule 42, "Permit Fees".

Particulate Matter emissions for the wet biosolids delivery and handling systems are negligible, if any, due to the high moisture content (80%) of the wet biosolids.

Truck Loading of Biosolids

Pollutant	Basis	Tons Per Year	Pounds Per Hour
ROC	60 ppm limit (as methane)	0.39	0.09
PM	0.0008 lb PM per ton	0.04	0.01

The truck loading system is covered and vented through a particulate filter and carbon control system with a flow rate of 600 cfm.

(60 ppm ROC/10^6)(16 lb/lbmole)(lbmole/385 scf)(600 cfm)(60min/hr) = 0.09 lb/hr ROC
0.09 lb/hr ROC (8760 hr/yr)(ton/2000 lb) = 0.39 ton/yr ROC

Particulate matter (PM) permitted emissions have been calculated for the truck loading of the biosolids exiting the dryers and into trucks. There are three augers proposed with a rate of 2.5 tons per hour per auger. VRSD has proposed using an EPA AP-42 emission factor for feed shipping of 0.0008 lb PM per ton as reported Section 9.9.1, "Grain Elevators and Processes", (Table 9.9.1-2). The "dried" biosolids remain moist (approximately 20% water) and PM emissions are not significant. Permitted Emissions have been calculated as:

The annual biosolids process limit is equal to 65,700 tons per year.

(65,700 tons per year)/(8760 hours per year) = 7.5 tons per hour/3 augers = 2.5 lbs/hr per auger

(0.0008 lb PM/ton)(2.5 tons/hr per auger)(3 augers) = 0.006 lb PM/hr = 0.01 lb/hr PM

(0.01 lb PM/hr)(8760 hours per year)/2000 = 0.04 ton/yr PM

Wet Vapor Processing and 3-Stage Emission Control System:

Pollutant	Basis	Tons Per Year	Pounds Per Hour
ROC	57 ppm limit (as methane)	0.84	0.19
NOx	100 ppm process 30 ppm combustion	4.95	1.13
PM	Engineering analysis	1.31	0.30
SOx	60 ppm S in LFG (0.02 lb SO2/MMBTU)	1.53	0.35
CO	50 ppm	0.70	0.16
NH3	100 ppm	1.58	0.36

ROC Emissions –VRSD has proposed a nominal exhaust flow rate of 1,350 dscfm.
(57 ppmv)(1350 dscfm)(16 lbCH4/lbmole)(60 min/hr)(lbmole/385 dscf)($1/10^6$) = 0.191 lb/hr ROC
0.191 lb/hr (8760/2000) = 0.84 tpy ROC

NOx Emissions – There are NOx emissions from the combustion of the landfill gas in the Thermal Oxidizer and NOx emissions from the thermal conversion of ammonia (NH3) in the Fenton Dryer exhaust to NOx. The combustion NOx emissions are based on the use of low NOx burners with an exhaust concentration of 30 ppmv at 3% oxygen. The measured EPA Method 19 F Factor of the landfill gas of 9272 dscf/MMBTU has been used:

(9272 dscf/MMBTU)(46 lb NOx/lbmole)(20.9/20.9-3)(lb mole/385 dscf)(30 ppm/10^6) = 0.0388 lb NOx/MMBTU
at 4.0 MMBTU/hr = 0.16 lb/hr NOx
at 8760 hours per year = 35,040 MMBTU/yr = 0.70 tpy NOx

VRSD proposes a maximum ammonia concentration of 200 ppm in the Fenton Dryer exhaust (after the Biofilter) and with an estimate that 50% of this ammonia is converted to NOx. Therefore, the NOx emissions are calculated as:
(100 ppm)(1350 dscfm)(46 lb NOx/lbmole) (60 min/hr)(lbmole/385 dscf)($1/10^6$) = 0.97 lb/hr NOx; and
(0.97 lb/hr)(8760 hr/yr)(ton/2000 lb) = 4.25 tpy NOx

Total NOx is 0.70 + 4.25 = 4.95 tpy;
and 0.16 + 0.97 = 1.13 lb/hr

PM Emissions – Particulate Matter permitted emissions are based on the emission limit of 0.30 lb/hr. At 8,760 hr/yr the tons per year permitted emissions are 1.31 tpy. Permitted emissions were originally based on the pilot project source testing. The limit was increased from 0.07 lb/hr to 0.30 lb/hr with the installation of the thermal oxidizer. See the October 24, 2012 VRSD letter with PM analysis report; the District's November 26, 2012 analysis; and the District November 27, 2012 letter for additional information. The increased PM limit complies with all VCAPCD rules.

SOx Emissions – There are SOx emissions from the combustion of the landfill gas in the Thermal Oxidizer. The SOx permitted emissions are based on the revised LFG sulfur concentration limit of 60 ppmv. The emission factor for 60 ppmv SOx in the combusted landfill

gas is calculated based on the mass balance that 1 mole of H2S produces 1 mole of SO2 as follows:

(60 ppmv $H_2S/10^6$)(34 lb H_2S/lbmole H_2S)(lbmole/385 scf)(scf/577 BTU)(10^6 BTU/MMBTU)(64lbSO_2/34 lbH_2S) = 0.02 lbSO_2/MMBTU heat input
at 4.0 MMBTU/hr = 0.08 lb/hr SO_2
at 8760 hr/yr (or 35,040 MMBTU/yr) = 0.35 tpy

Source tests conducted prior to the installation of the thermal oxidizer yielded results of 5.15 and 5.46 ppmv TRS in the biosolids dryer exhaust. These tests were conducted on September 13, 2010 and August 4, 2011. Pursuant to Application No. 07340-181, permitted emissions for SOx emissions from the biosolids dryer exhaust will be based on 20 ppmv. The SOx emissions rate is calculated as SO_2 as:

(20 ppmv TRS/10^6)(1,350 dscfm)(60 min/hr)(64 lb SO_2/lbmole)(lbmole/385 cf) = 0.27 lb SOx/hr
At 8760 hr/yr = 1.18 tpy SOx

Total SOx is 0.35 + 1.18 = 1.53 tpy;
and 0.08 + 0.27 = 0.35 lb/hr

CO Emissions – CO emissions are based on the combustion of the landfill gas in the thermal oxidizer with a 50 ppmv at 3% oxygen emissions factor. This CO concentration was provided by VRSD. The measured EPA Method 19 F Factor of the landfill gas of 9272 dscf/MMBTU has been used as follows to calculate permitted emissions:

(9272 dscf/MMBTU)(28 lb CO/lbmole)(lbmole/385 dscf)(20.9/20.9-3)(50 ppmv/10^6) = 0.0394 lb CO/MMBTU
at 4.0 MMBTU/hr = 0.16 lb/hr CO
at 8760 hr/yr (or 35,040 MMBTU/yr) = 0.70 tpy CO

The exhaust of the 3-stage emission control system will be limited to 0.16 lb CO/hr. This limit is applied pursuant to Rule 29, "Conditions on Permits".

NH3 Emissions – As discussed above, the application proposes a maximum estimate of 200 ppmv NH_3 in the Fenton Dryer exhaust (following the Biofilter) with 50 percent being converted to NOx. Therefore, NH_3 permitted emissions are based on an emissions concentration of 100 ppmv at the exhaust of the Thermal Oxidizer:

(100 ppmv)(1350 dscfm)(17 lbNH_3/lbmole)(60 min/hr)(lbmole/385 dscf)(1/10^6) = 0.36 lb/hr NH_3
at 8760 hr/yr = 1.58 tpy NH_3

Hydrogen Sulfide – The exhaust of the 3-stage emission control system includes hydrogen sulfide limits of 0.0243 lb/hr and 3.4 ppmv H_2S. This equates to 0.11 tons per year H_2S at 8,760 hours per year. District policy is to only include hydrogen sulfide if calculations exceed 1 tpy; therefore, hydrogen sulfide permitted emissions are not included as permitted emissions.

The 3-stage emission control system includes a back-up carbon control system. ROC emissions are limited to the same 57 ppm limit. The system is only expected to be used a few hours per year and will not be used simultaneously with the thermal oxidizer. Therefore, there are no

permitted emissions calculations for the back-up control system exhaust as they are already included with the biosolids dryers and primary emission control system.

2 – 16.8 MMBTU/hr Fenton Thermal Oil Heaters:
The permitted emissions (PE) are based on a combined limit of 197,100 MMBTU of LFG per year. At 16.8 MMBTU/hr, this annual LFG consumption equates to 5,866 hours per year at full load for each unit, or an estimated capacity factor of approximately 67%. The pounds per hour permitted emissions are based on 16.8 MMBTU of LFG per hour for each unit. The permitted emissions and emission factors are:

Pollutant	Emission Factor (lb/MMBTU)	Tons Per Year @ 197,100 MMBTU	Pounds Per Hour @ 16.8 MMBTU/hr
ROC	0.0055 (VRSD)	0.54	0.18
NOx	0.012 (9 ppmv @ 3%O2)	1.18	0.40
PM	0.0075 (VRSD)	0.74	0.25
SOx	0.02 (60 ppmv S in LFG)	1.97	0.67
CO	0.3247 (400 ppm @ 3%O2)	32.00	10.91

ROC - VRSD requested in a February 20, 2009 letter that this value be used based on a recent permit issued by the San Joaquin Valley APCD for a boiler fired on biofuel. This value is close the 0.0052 lb/MMBTU emission factor found in EPA AP-42 for natural gas combustion in a boiler.

PM - VRSD requested in a February 20, 2009 letter that this value be used based on a natural gas heating value of 1020 BTU per scf. The EPA AP-42 emission factor based on 1050 BTU/cf is 0.0072 lb/MMBTU.

The NOx and CO emission factors are based on the following equation:

F(MW)(20.9/20.9-3)(lbmole/385 scf)(ppm@3%O2/10^6) = lb/MMBTU
F = F factor = 9,558 dscf/MMBTU Per 8/8/06 Toland Landfill source test
MW = 46 lb NOx/lbmole
MW = 28 lb CO/lbmole

SOx Emissions – The SOx permitted emissions are based on the concentration limit of 60 ppmv TRS as H_2S in the combusted landfill gas. The emission factor for 60 ppmv SOx in the combusted landfill gas is calculated based on the mass balance that 1 mole of H2S produces 1 mole of SO2 as follows:

(60 ppmvH_2S/10^6)(34 lb H_2S/lbmole H_2S)(lbmole/385 scf)(scf/577 BTU)(10^6 BTU/MMBTU)(64lbSO_2/34 lbH_2S) = 0.02 lbSO_2/MMBTU heat input

Overall Stationary Source Permitted Emissions -

Tons Per Year	ROC	NOx	PM	SOx	CO	NH3
85.8 MMBTU/hr Flare (existing)	2.61	13.50	3.60	4.50	45.00	
Wet Biosolids Handling	0.39					0.35
Truck Loading	0.39		0.04			
Biosolids Dryer Exhaust w/ 3-Stage Control System	0.84	4.95	1.31	1.53	0.70	1.58
Oil Heaters	0.54	1.18	0.74	1.97	32.00	
Gasoline Dispensing Facility (existing)	0.27					
Total Stationary Source	5.04	19.63	5.69	8.00	77.70	1.93

Pre-project Stationary Source (flare & gdf)	2.88	13.50	3.60	4.50	45.00	
Emission Increase	2.16	6.13	2.09	3.50	32.70	1.93

Pound Per Hour	ROC	NOx	PM	SOx	CO	NH3
85.8 MMBTU/hr Flare (existing)	1.00	5.15	1.37	1.72	17.16	
Wet Biosolids Handling	0.09					0.08
Truck Loading	0.09		0.01			
Biosolids Dryer Exhaust w/ 3-Stage Control System	0.19	1.13	0.30	0.35	0.16	0.36
Oil Heaters	0.18	0.40	0.25	0.67	10.91	
Gasoline Dispensing Facility (existing)	0.89					
Total Stationary Source	2.44	6.68	1.93	2.74	28.23	0.44

Pre-project Stationary Source (flare & gdf)	1.89	5.15	1.37	1.72	17.16	
Emission Increase	0.55	1.53	0.56	1.02	11.07	0.44

EMISSION OFFSET REQUIREMENTS

Rule 26.2.B details the emission offset requirements for new, replacement, modified, or relocated emissions units for ROC, NOx, PM, and SOx. The rule does not require offsets for CO. The addition of the Biosolids Drying System includes new emissions units.

The PM and SOx post project stationary source permitted emissions are each less than the 15.0 tpy threshold requiring offsets (Rule 26.2.B.1). Therefore, the permittee is not required to supply offsets for the PM or SOx emission increases.

The ROC post project permitted emissions are greater than the offset threshold of 5.0 tons per year; however, publicly owned biosolids processing facilities are an “essential public service” as defined in Rule 26.1.12, and the offset requirements are governed by Rule 26.2.B.3. The Toland Road Landfill, operated by VRSD, is publicly owned. Therefore, the emission increase can be offset with essential public service credits at a tradeoff ratio is 1.0:1. Pursuant to Rule 26.2.B.2.b.(2), the emission increase is 0.04. This amount will be offset with essential public service credits.

As established with Authority to Construct No. 07340-130, the NOx post project permitted emissions are greater than the offset threshold of 5.0 tons per year; however, publicly owned biosolids processing facilities are an "essential public service" as defined in Rule 26.1.12, and the offset requirements are governed by Rule 26.2.B.3. The Toland Road Landfill, operated by VRSD, is publicly owned. Therefore, the emission increase can be offset with essential public service credits at a tradeoff ratio is 1.0:1. With the addition of the thermal oxidizer, the NOx emission increase is greater than established during the processing of Authority to Construct No. 07340-130. The 6.13 tons per year NOx emission increase is offset with essential public service credits.

Changes to Permit from AC No. 07340-130 and AC No. 07340-160

- ROC and NH3 emission concentration monitoring at the thermal oxidizer exhaust has been reduced from weekly to monthly measurements. The weekly hydrogen sulfide measurement at the thermal oxidizer exhaust has been eliminated. VRSD requested these monitoring reductions and presented the weekly monitoring data (request dated January 7, 2014). The weekly data from September 2012 to November 2013 warrants the granting of these requests.

- The frequency of reference method source testing at the thermal oxidizer exhaust has been reduced from every six months to every 12 months. VRSD requested the change (request dated January 7, 2014). Initial source tests were conducted October 2012. Subsequent source testing was conducted April 2013 and October 2013. The source test data has been reviewed and warrants the reduction in source testing frequency to once every 12 months.

- The frequency of the ROC, NH3, and H2S monitoring at the wet biosolids handling carbon control system has been reduced. The daily monitoring for ROC and NH3 has been reduced to weekly monitoring; the H2S monitoring has been eliminated. VRSD requested these monitoring reductions and presented the daily monitoring data (requests dated 11/27/12, 09/10/13, 10/23/13, and 12/03/13. The data warrants these monitoring frequency reductions. VRSD requested that the ROC monitoring be reduced to monthly; however, the District will require weekly monitoring. The monitoring is required to detect the need for carbon replacement. It is possible that an atypical batch of biosolids could cause a breakthrough in the carbon control and it would not be discovered for a month. Annual source testing will still be required at this carbon control exhaust.

- The allowable spraying area for spraying the biosolids condensate has been increased to allow spraying for dust control and/or irrigation throughout the disposal area of the landfill. VRSD has submitted (February 7, 2014) a health risk assessment that demonstrates no significant health risk with this change.

- There have been some equipment changes to the Reclaim Water System for Treatment of Condensate section of the facility. There are no proposed changes to emissions due to these changes. This includes a changeout of the condensate water storage tanks. (VRSD letter dated April 4, 2013)

- The CO emission concentration limit of 50 ppmvd at the 3-stage emission control system has been dropped as it is not necessary with the 0.16 pounds per hour (lb/hr) CO limit that will remain as-is. The CO lb/hr limit is based on 50 ppmvd CO at 3% oxygen at 8,760 hours per year. In addition, the NOx limit was corrected from 1.11 to 1.13 pounds per hour. NOx and CO concentration limits are not necessary with the pounds per hour limits.

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March 9, 2009

Mr. Greg Grant
Ventura Regional Sanitiation District
1001 Partridge Drive, Suite 150
Ventura, CA 93003

Subject: Authority to Construct No. 07340-130
Biosolids Drying System and Microturbine Electric Generation Project

Dear Mr. Grant:

This is Ventura County Air Pollution Control District Authority to Construct No. 07340-130, effective on the above date. You are hereby authorized to construct the following items at the Toland Road Landfill, located at 3500 North Toland Road, in an unincorporated area of the County of Ventura between the cities of Santa Paula and Fillmore, California:

Construct a 180 tons per day **Biosolids Drying System**, that includes two modular Fenton Environmental Technologies, Inc., Model "SludgeMASTER RK72E" (Fenton) units. Wet biosolids comprised of approximately 80% water and 20% solids will be trucked (nine to eleven 36 cubic yard (yd^3) truckloads per day) to the Toland Road Landfill facility from wastewater treatment plants in Ventura County. Dried biosolids will be used at the landfill as alternative daily cover, soil amendment, fertilizer and possible other uses. Re-claimed water from the drying process will be used for dust control and irrigation at the landfill in compliance with the requirements of the State of California Regional Water Quality Control Board and the State of California Department of Health Services.

System Components:

Wet Biosolids Storage and Handling Equipment (180 tons wet biosolids per day):

1 - 35 yd^3 Fenton Wet Biosolids Receiving Hopper with Screw Auger, totally enclosed container (with a motorized cover/lid) with emissions vented to a carbon treatment system
2 - 150 yd^3 Fenton Wet Biosolids Storage Hoppers with two (2) Screw Augers, totally enclosed containers with emissions vented to a carbon treatment system
1 - Bay Products, Inc. Carbon Treatment System, Model Lo-flow 48, or functional equivalent, 600 cubic feet per minute (cfm). Initial Biosolids Drying System operation will commence with a single carbon vessel. Within 60 days of initial operation, the single vessel system will be modified with the addition of a second carbon vessel and valving / piping to operate the vessels in series for control of odors and emissions from the wet biosolids receiving and storage hoppers

Wet Biosolids Dryers (90 tons wet biosolids per day per dryer):

2 - Fenton Dehydration Chambers (or Dryers), equipped with the circulation of hot thermal fluid within the chamber walls and within a proprietary rotating disk pack. Exhaust from each of the two Dryers to be routed to a single Condenser / Heat Exchanger equipped with a 3-stage emissions control system
3 - Fenton Screw Augers, for transfer of dried biosolids to truck loading stations

3 - Fenton Truck Loading Stations, for dried biosolids. The truck loading stations shall be constructed in such a manner as to minimize fugitive emissions during transfer from the augers to the trucks. At a minimum, the truck loading station will be constructed within a roofed structure.

Wet Vapor Processing and Emission Control Systems:

1 - Fenton 96" x 144" x 24" Water Cooled Condenser / Heat Exchanger, consisting of a heat exchanger and air dilution chamber, for processing of the steam produced from the dryers (5,000 cfm). The vapor will be condensed from 5,000 acfm to 500 acfm and ambient dilution air of about 1,000 acfm will be added to further reduce the exhaust temperature. The condensate will be processed in a Reclaim Water System. The 1500 acfm (approximately 1350 dscfm) of exhaust from the condenser / heat exchanger will pass through the following three-stage emission control system:

1 - Bay Products, Inc. Biofilter, 1,500 cfm, 22' x 7' x 8', consisting of 65% shredded wood, 25% nugget bark, and 10% compost (first stage of biofilter is a 24" x 84" x 96" humidification moisture integrator chamber with acid injection pH adjustment for ammonia removal prior to entry into the biofilter stage)
1 - Bay Products, Inc. Carbon Filter, 1,500 cfm, 1,500 pounds carbon, 6" bed, 2.7 seconds contact time
1 - Lifetime Industries HEPA Filter, 1,500 cfm, 99.97 – 99.99% rated emission control efficiency

1 - Reclaim Water System for treatment of the condensate from the condensers (10 gpm), consisting of a 1,080 gallon chilled condensate collection tank, 55 gallon polymer tank, 400 gallon clarifier/separator tank, 2,500 gallon surge tank, 6,500 gallon untreated water tank, and reclaimed water tank (size to be determined), treated water used as dust control and irrigation at the landfill in compliance with the requirements of the State of California Regional Water Quality Control Board and the State of California Department of Health Services.

2 - Delta Cooling Towers, Inc. Paragon Model ΔT-250 I Evaporative Coolers, induced draft, counter flow design, 250 ton capacity (3.75 MMBTU), equipped with drift eliminators for particulate matter control, used to provide cooling water for the Fenton Water Cooled Condenser / Heat Exchanger. Pursuant to Rule 23.J.10, cooling towers that are not in contact with contaminated process water are exempt from permit, however are regulated by this Authority to Construct to enforce compliance with applicable rules and regulations.

Thermal Oil Heaters:

2 - 16.8 MMBTU/hr (input rating) Fenton Thermal Oil Heaters, equipped with Nova Plus, Model NVC9-G-30 low NOx burners, manufactured by Power Flame, Inc., fired on treated landfill gas (LFG), used for heating the Fenton Dehydration Chambers' circulation fluid. The LFG treatment system shall include two (2) vessels containing approximately 78,000 pounds of sulfur removal media, operated in parallel for the control of sulfur content in the combusted gas. The two (2) vessels are a single system which provides sulfur control for gas routed to all combustion devices. The LFG will be further processed through a knockout/mesh pad for removal of particulate matter. Two (2) vessels holding siloxane removal media, operated in

parallel or in series, are included in the gas treatment process, but not required by permit or regulation.

Electrical Power Microturbines:

9 - 3.2 MMBTU/hr Ingersoll Rand 250 kW Microturbines, fired on treated landfill gas. The electricity produced will support the biosolids drying process and other landfill operations. The LFG treatment system shall include two (2) vessels containing approximately 78,000 pounds of sulfur removal media, operated in parallel for the control of sulfur content in the combusted gas. The two (2) vessels are a single system which provides sulfur control for gas routed to all combustion devices. The LFG will be further processed through a knockout/mesh pad for removal of particulate matter. Two (2) vessels holding siloxane removal media, operated in parallel or in series, are included in the gas treatment process, but not required by permit or regulation.

As landfill gas control devices the Microturbines are subject to permit and regulated by this Authority to Construct to enforce compliance with applicable rules and regulations. The combustion emissions from the Microturbines are exempt from permit pursuant to Rule 23.D.6.

Subject to the Following Conditions:

A. Permitted Emissions:

A.1 Following the changes authorized by this Authority to Construct, permitted emissions for Part 70 Permit No. 07340 have been calculated to be:

Pollutant	Tons/Year	Pounds/Hour
Reactive Organic Compounds	4.65	2.35
Nitrogen Oxides	14.68	5.55
Particulate Matter	4.66	1.70
Sulfur Oxides and Hydrogen Sulfide	6.60	2.41
Carbon Monoxide	77.00	28.07
Ammonia	7.53	1.72

This represents the following permitted emissions increase for the Biosolids Drying System and Microturbine Electric Generation Project:

Pollutant	Tons/Year	Pounds/Hour
Reactive Organic Compounds	1.77	0.46
Nitrogen Oxides	1.18	0.40
Particulate Matter	1.06	0.33
Sulfur Oxides and Hydrogen Sulfide	2.10	0.69
Carbon Monoxide	32.00	10.91
Ammonia	7.53	1.72

A.2. The 1.18 tons per year NOx emission increase has been offset with essential public service credits, pursuant to Rule 26.2.B.3. Pursuant to Rule 26.1.12, a publicly owned biosolids

processing facility is an "essential public service". The post project ROC, PM, and SOx permitted emissions do not exceed the offset thresholds of Rule 26.2.B; therefore, the permittee is not required to provide offsets for these pollutants.

In order to remain eligible for essential public service credits, and as required by Rule 26.1, this facility shall process only biosolids that have been generated from wastewater originating exclusively in Ventura County.

B. Wet Biosolids Delivery, Storage, and Handling System:

B.1. All wet biosolids shall be covered or containerized during transportation from their respective wastewater treatment facility to the Toland Road Landfill. The delivery trucks shall be equipped with gates that achieve a reasonable seal. Wet biosolids shall be transported in an enclosed vessel or container, or shall be kept in a covered delivery truck until they are unloaded to the receiving hopper. Any cover used to comply with this condition shall consist of a tarp or other similar material that is in good condition, overlapped and reasonably sealed at any seams, constructed and maintained with a gap of less than ½ inch between the cover and the container walls, and securely anchored to minimize headspace where vapors may accumulate.

B.2 The amount of wet biosolids received at the facility shall not exceed a rolling 30-day average of 180 tons per day and shall not exceed an annual limit of 65,700 tons per year, based on a 12 calendar month rolling period. In addition, this facility shall treat only biosolids that have been generated from wastewater originating exclusively in Ventura County.

In order to comply with this condition, the permittee shall maintain records of the tons of wet biosolids received at the facility on a daily, daily average (rolling 30-day basis), monthly, and rolling twelve calendar month basis. In addition, for each biosolids delivery, the permittee shall maintain a record of the source of the biosolids, the amount of biosolids received in tons, and confirmation that the biosolids delivery truck complies with the container or cover requirement of Condition B.1 above. Any throughput exceeding the above limits; or any violation of the biosolids source requirement and cover requirement above, shall be considered a violation of this condition.

B.3 The **Biosolids Drying System** shall process all received biosolids to meet the standard of "Class A Biosolids" as defined by the Environmental Protection Agency in 40 CFR Part 503.

In order to comply with this condition, for each biosolids delivery, the permittee shall maintain a record of the source of the biosolids, and the amount of biosolids received in tons. Processed biosolids will be tested in accordance with methods specified in 40 CFR Part 503 to confirm / document that EPA Class A specifications have been met.

B.4. The Fenton wet biosolids receiving hopper and storage hoppers shall consist of closed containers without uncontrolled vents to the atmosphere. The receiving hopper may be equipped with a cover or lid, which shall be a motorized cover or lid. The cover or lid shall be in the closed position except during activities necessary for the unloading of wet biosolids from the delivery truck into the receiving hopper, or maintenance activities. The receiving hopper shall be closed or sufficiently covered within ten (10) minutes of terminating biosolids transfer activities

B.5. The Fenton wet biosolids receiving hopper and storage hoppers shall be vented to a 600 cfm carbon control system consisting of two (2) carbon vessels staged in series for the control of odors, reactive organic compounds (ROC) and ammonia (NH_3) emissions. The carbon control system shall be in operation at all times that biosolids are being loaded into, stored in, or unloaded from, the biosolids hoppers. In addition, the carbon control system shall comply with the following requirements:

a. Ammonia (NH_3) emissions shall not exceed 50 ppmv and hydrogen sulfide (H_2S) emissions shall not exceed 3 ppmv at the outlet of the carbon control system.
b. Ammonia emissions shall be monitored, using the colorimetric methods, daily (Monday through Friday, excluding recognized holidays) for the first thirty (30) days of operation. Upon completion of the initial source test and associated final report required in Item B.6 below, the daily monitoring results and the final source test report shall be submitted to the APCD with a request to reduce the monitoring frequency to once weekly. Daily monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.
c. Hydrogen sulfide emissions shall be monitored using colorimetric methods or a portable monitor that meets the specifications of Section D.1 of Rule 54, "Sulfur Compounds". Hydrogen sulfide levels shall be monitored daily (Monday through Friday, excluding recognized holidays) for the first thirty (30) days of operation. Upon completion of the initial source test and associated final report required in Item B.6 below, the daily monitoring results and the final source test report shall be submitted to the APCD with a request to reduce the monitoring frequency to once weekly. Daily monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.
d. Reactive organic compound (ROC) emissions shall not exceed 60 ppmv, measured as methane, at the outlet of the carbon control system.
e. ROC emissions shall be monitored daily (Monday through Friday, excluding recognized holidays) using a hand-held device compliant with EPA Method 21, for the first thirty (30) days of operation. Upon completion of the initial source test and associated final report required in Item B.6 below, the daily monitoring results and the final source test report shall be submitted to the APCD with a request to reduce the monitoring frequency to once weekly. Daily monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.
f. The carbon shall be replaced at intervals to ensure compliance with the specified emissions limits and as warranted by the required emissions monitoring.

B.6. Within 30 days of system start-up, and once every twelve (12) months thereafter, the permittee shall have ROC, H_2S and NH_3 emission concentrations at the carbon control system measured by an independent contractor. The average of three source test runs shall be used to determine compliance. EPA Method 21 shall be used for ROC emissions, Bay Area Air Quality Management District (BAAQMD) Method ST-1B (January 20, 1982) shall be used for NH_3 emissions, and the EPA or South Coast AQMD test methods specified in Rule 54.D.1 shall be used for H_2S emissions. Within 45 working days after the completion of these tests, a report of the test results shall be submitted to the APCD.

Testing for purposes of compliance demonstration shall only be conducted after the Part 70 Permit application is received, a temporary Permit to Operate is issued by the APCD, and a source test plan has been submitted and approved. The APCD shall be notified at least five working days prior to the emissions test and the test schedule shall be re-confirmed one working day in advance of the planned test. APCD personnel shall be allowed to observe the test.

The conditions in Section B. above have been applied pursuant to Rule 26, "New Source Review", Rule 51, "Nuisance", Rule 54, "Sulfur Compounds", and Rule 62.1, "Hazardous Materials".

C. Fenton Dehydration Chambers:

C.1. Screw augers used for unloading dried solids from the Fenton Dehydration Chambers to the truck loading stations shall be totally enclosed. The truck loading stations shall be constructed in such a manner as to minimize fugitive emissions during transfer from the augers to the trucks. At a minimum, the truck loading station shall be constructed within a roofed structure.

C.2. Processed biosolids shall be primarily used as Alternative Daily Cover (ADC) over landfilled refuse, and may be buried as refuse if not used as ADC (as defined and regulated by CIWMB regulations). Processed biosolids may be stockpiled within the footprint of the landfill for up to 10 working days prior to its use as ADC or its permanent disposal within the landfill. Dried biosolids from the covered truck loading stations shall be transported in a truck or container that will prevent spillage or discharge of material prior to its intended discharge point.

C.3. The vapors from each of the two Fenton Dehydration Chambers shall be routed to a single, two-stage water cooled condenser / heat exchanger. The exhaust of the condenser / heat exchanger shall be controlled by a three-stage emission control system consisting of: (1) biofilter (equipped with a 24" x 84" x 96" humidification moisture integrator chamber with acid injection pH adjustment for ammonia removal prior to entry into the biofilter stage) ; (2) carbon filtration; and (3) HEPA filter. Emissions from the control system exhaust shall not exceed the following limits:

a. 0.0243 pounds H_2S and sulfur compounds (as H_2S) per hour; and 3.4 ppmv H_2S
b. 1.64 pounds NH_3 per hour and 458 ppmv NH_3;
c. 0.07 pounds PM per hour;
d. 0.176 grains PM per DCF, pursuant to Rule 52, "Particulate Matter – Concentration (Grain Loading)"
e. 0.191 pounds ROC per hour and 57 ppmv as methane

Hydrogen sulfide levels shall be monitored using colorimetric methods or a portable monitor that meets the specifications of Section D.1 of Rule 54, "Sulfur Compounds". Hydrogen sulfide levels shall be monitored daily (Monday through Friday, excluding recognized holidays) for the first thirty (30) days of operation. Upon completion of the initial source test and associated final report required in Item C.4 below, the daily monitoring results and the final source test report shall be submitted to the APCD with a request to reduce the monitoring frequency to once

weekly. Daily monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.

The aqueous liquid in the biofilter's humidification moisture integrator chamber shall be monitored and recorded daily (Monday through Friday, excluding recognized holidays) for pH level. The pH level shall be maintained between 4.0 and 6.0 pH units.

ROC concentration shall be monitored daily (Monday through Friday, excluding recognized holidays) using a hand-held device compliant with EPA Method 21, for the first thirty (30) days of operation. Upon completion of the initial source test and associated final report required in Item C.4 below, the daily monitoring results and the final source test report shall be submitted to the APCD with a request to reduce the monitoring frequency to once weekly. Daily monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.

C.4 Within 30 days of initial operation, and once every twelve (12) months thereafter, the permittee shall conduct an emissions test for PM, ROC, NH_3, and H_2S and Sulfur Compounds at the exhaust of the three stage filtration emission control system. This testing shall be conducted by an independent contractor. The following parameters shall be measured using the specified source test methods:

PM	CARB Method 5
ROC	EPA Method 18
NH_3	BAAQMD Method ST-1B (January 20, 1982)
Sulfur Compounds	SCAQMD Method 307

The average of three source test runs shall be used to determine compliance. The tests shall be conducted at normal operating load. For CARB Method 5 the total particulate catch shall include the filter catch, probe catch, impinger catch, and solvent extract.

Testing for purposes of compliance demonstration shall only be conducted after the Part 70 Permit application is received, a temporary Permit to Operate is issued by the APCD, and a source test plan has been submitted and approved. The APCD shall be notified at least five working days prior to the emissions test and the test schedule shall be re-confirmed one working day in advance of the planned test. APCD personnel shall be allowed to observe the test.

C.5. Within 45 working days after the completion of the three-stage filtration emission control system source tests required above, a report of the test results shall be submitted to the APCD.

The test report shall indicate the emissions of particulate matter (PM) in grains per DSCF and pounds per hour; ROC constituents and rates in pounds per hour; ammonia and sulfur compounds in ppmv and pounds per hour; the biosolids processing rate in tons per hour; and the exhaust flow rates in actual cubic feet per minute and standard cubic feet per minute. The test report shall include an analysis of compliance with Rule 52, "Particulate Matter – Concentration (Grain Loading)", Rule 53, "Particulate Matter – Process Weight", and Rule 54, "Sulfur Compounds".

C.6. The HEPA filter enclosure shall be equipped with a pressure drop indicator to ensure filter operation is within the normal range of 1.0 to 2.75 inches water column (as recommended by the manufacturer). The pressure drop indicator shall be monitored daily (Monday through Friday, excluding recognized holidays) and the HEPA filter shall be replaced when the pressure drop exceeds 2.75 inches water column. The HEPA filter shall be visually inspected monthly and the filter medium replaced as necessary. This replacement schedule may be modified as appropriate based on the results of required emissions testing.

The conditions above have been applied pursuant to Rule 26, "New Source Review", Rule 51, "Nuisance", Rule 52, "Particulate Matter – Concentration (Grain Loading)", Rule 53, "Particulate Matter – Process Weight", Rule 54, "Sulfur Compounds", and Rule 62.1, "Hazardous Materials".

D. Two (2) 16.8 MMBTU/hr Fenton Thermal Oil Heaters:

D.1. Annual landfill gas consumption for the combined use of the two (2) 16.8 MMBTU/hr Fenton Thermal Oil Heaters shall not exceed 197,100 MMBTU per year.

In order to demonstrate compliance with this condition, the permittee shall install and operate a fuel meter and maintain monthly records of landfill gas consumption at the heaters. The monthly records shall be summed for the previous twelve months. Landfill gas consumption totals for any of these 12 calendar month rolling periods in excess of the specified limit shall be considered a violation of this condition.

D.2. The two (2) 16.8 MMBTU/hr Fenton Thermal Oil Heaters shall be fired on treated landfill gas (LFG) with a sulfur concentration of no more than 60 ppmv, calculated as hydrogen sulfide at standard conditions. The LFG treatment system shall include two (2) vessels containing approximately 78,000 pounds of sulfur removal media, operated in parallel for the control of sulfur content in the combusted gas. The two (2) vessels are a single system which provides sulfur control for gas routed to all combustion devices. The LFG will be further processed through a knockout/mesh pad for removal of water particles 5 micron and larger. Two (2) vessels holding siloxane removal media, operated in parallel or in series, are included in the gas treatment process, but not required by permit or regulation. The sulfur and siloxane reducing media shall each be replaced as warranted by the performance results of the emissions testing required below. This condition is applied pursuant to Rule 26, "New Source Review", Rule 51, "Nuisance", Rule 54, "Sulfur Compounds", and Rule 64, "Sulfur Content of Fuels".

Hydrogen sulfide levels in the treated landfill gas shall be monitored prior to combustion in the Heaters, using colorimetric method, daily (Monday through Friday, excluding recognized holidays). To verify reasonable correlation between total sulfur concentration and hydrogen sulfide concentration measured using the colorimetric method, total sulfur levels in the treated landfill gas shall be monitored once monthly, prior to combustion, using SCAQMD Method 307.

D.3. Within 30 days of initial operation, and once every twelve (12) months thereafter, the sulfur content of the treated LFG shall be measured pursuant to the methods of Section E.1 of Rule 64, "Sulfur Content of Fuels".

Testing for purposes of compliance demonstration shall only be conducted after the Part 70 Permit application is received, a temporary Permit to Operate is issued by the APCD, and a source test plan has been submitted and approved. The APCD shall be notified at least five working days prior to the emissions test and the test schedule shall be re-confirmed one working day in advance of the planned test. APCD personnel shall be allowed to observe the test. The test plan shall cite the specific test method to be used to measure the sulfur content of the treated LFG. Within 45 working days after the completion of these tests, a report of the test results shall be submitted to the APCD.

D.4. The two (2) 16.8 MMBTU/hr Fenton Thermal Oil Heaters are subject to 40 CFR Part 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills". VRSD has proposed that the LFG combustion is subject to 40 CFR Section 60.752(b)(2)(iii)(C) because the LFG is routed through a treatment system that processes the gas for subsequent sale or use. Therefore, the heaters would not be subject to the control device requirements of a 98% NMOC reduction efficiency or a 20 ppmvd NMOC outlet limitation. The permittee shall request and receive a compliance determination from EPA stating that the LFG meets the "treated" requirements and is subject to Section 60.752(b)(2)(iii)(C) and not subject to the control requirements of 40 CFR Section 60.752(b)(2)(iii)(B) and the associated monitoring, recordkeeping, and reporting for such control devices. Without the EPA determination, the heaters will be subject to the Section 60.752(b)(2)(iii)(B) and initial and periodic source testing will be required.

D.5. The two (2) 16.8 MMBTU/hr Fenton Thermal Oil Heaters, equipped with Nova Plus, Model NVC9-G-30 low NOx burners shall be operated in compliance with all applicable requirements of APCD Rule 74.15, "Boilers, Steam Generators, and Process Heaters". These requirements include, but are not limited to, the following conditions:

D.6. Two (2) 16.8 MMBTU/hr Fenton Thermal Oil Heater Emission Limitations:

a) Oxides of nitrogen (NOx measured as NO2) emissions from each heater shall not exceed 9 ppmvd, corrected to 3% oxygen.
b) Carbon monoxide (CO) emissions from each heater shall not exceed 400 ppmvd, corrected to 3% oxygen.

The NOx limitation is applied as BACT (Best Available Control Technology) pursuant to Rule 26.2 and is more stringent than the Rule 74.15.B.1 limitation. The CO limitation is applied for Rule 74.15.B.1 compliance.

In order to comply with this condition, the permittee shall have each unit's emissions tested within 30 days of initial operation and then no less than once every 24 months thereafter.

D.7. Within 30 days of each heater start-up, the permittee shall conduct an emission test on each unit. This test shall be conducted by an independent contractor to determine the oxides of nitrogen (NOx) emissions and carbon monoxide (CO) emissions. Such testing shall be conducted at the expected maximum operating load in accordance with APCD Rule 74.15.1.E, which includes California ARB Method 100 for oxides of nitrogen, carbon monoxide, and stack gas oxygen.

Testing for purposes of compliance demonstration shall only be conducted after the Part 70 Permit application is received and a temporary Permit to Operate is issued by the APCD and a source test plan has been submitted and approved. The APCD shall be notified at least five working days prior to the emissions test and the test schedule shall be re-confirmed one working day in advance of the planned test. APCD personnel shall be allowed to observe the test.

D.8. Within 45 working days after the completion of the heater source tests required above, a report of the test results shall be submitted to the APCD.

The test report shall indicate the emissions of NOx and CO in parts per million by volume (corrected to 3% oxygen on a dry basis), pounds per hour and pounds per million BTU; the amount of excess oxygen in percent by volume; and the fuel and exhaust flow rates in standard cubic feet per minute.

E. Delta Cooling Towers, Inc. Paragon Model ΔT-250 I Evaporative Coolers:

E.1. The cooling towers shall be equipped with drift eliminators for particulate matter control. The Part 70 Permit application shall include as-built specifications and manufacturer's data on the installed cooling towers demonstrating the units are equipped with drift eliminators.

E.2. Re-claimed water from the biosolids drying process (condensate) shall **not** be used in the cooling towers. Only potable water may be used in the cooling towers.

The above conditions have been applied pursuant to Rule 51, "Nuisance", Rule 52, "Particulate Matter – Concentration (Grain Loading)", Rule 53, "Particulate Matter – Process Weight".

F. Biosolids Reclaim Water System:

F.1 Re-claimed water (condensate) from the Fenton Dehydration Chambers may be used for dust control and irrigation at the landfill provided such use is in compliance with the requirements of the State of California Regional Water Quality Control Board (RWQCB) and the State of California Department of Health Services (DHS). If the use for dust control and irrigation at the landfill is not approved by the RWQCB and the DHS, the re-claimed water shall be hauled off-site for disposal at an approved disposal site. The use of the condensate for dust control and/or irrigation shall comply with the following additional requirements:

a. Condensate application shall not occur within 387 feet of the Toland Road Landfill property line.
b. The condensate application rate shall not exceed 5,000 gallons per hour.
c. Condensate application shall only be conducted between the hours of 7 am and 4 pm.

In order to comply with this condition, the permittee shall maintain records of the condensate application flow rate, the location of the condensate application, and the date and time condensate application is conducted. **In addition, the Part 70 Permit Modification application shall include documentation that the use of re-claimed water for dust control**

and irrigation at the landfill has been approved by the State of California Regional Water Quality Control Board and the State of California Department of Health Services.

F.2 Re-claimed water from the biosolids drying process (condensate) shall be stored in totally enclosed tanks. All tanks shall be equipped with a solid roof and shall be maintained in good condition. All tanks shall be equipped with sealed hatches and pressure-vacuum relief valves. Pressure relief shall be set at 3.0 $\pm$ 0.5 inches water column and vacuum relief shall be set at 8.0 $\pm$ 2.0 inches water column. **The Part 70 Permit Modification application shall include documentation that the installed tanks meet these requirements.**

The above conditions have been applied pursuant to Rule 51, "Nuisance".

G. Ingersoll Rand 250 kW Microturbines:

G.1. The nine (9) microturbines shall be certified to meet the applicable waste gas emission standards as required by the CARB (California Air Resources Board) Distributed Generation Certification Regulation. The nine (9) microturbines shall comply with all applicable requirements of ARB Executive Order DG-027, "Distributed Generation Certification of Ingersoll Rand Energy Systems 250SW Microturbine" or other applicable executive order. Except as provided below, VRSD shall only install microturbines that have been issued an ARB Executive Order certifying compliance with the applicable waste gas emission standards. The Part 70 Permit Modification application shall include documentation that the installed microturbines meet the Distributed Generation requirements.

Installation of any units built within one year before that CARB certification date, but possessing the same model number and essential components, shall include documentation from Ingersoll Rand stating that the units are essentially identical and will meet the performance and emission standards of the CARB certified units; and a third party report certifying the units were constructed using the same essential materials. The APCD may, at its sole discretion, require a reference method source test or an emissions screening using a portable analyzer, on one or more of the units built before the CARB certification date that shows that they meet or exceed the emission limits required by the CARB certification. An emissions source test or emissions screening shall not be required if the microturbine is certified by CARB within 30 days of start-up.

G.2. The nine (9) microturbines shall comply with Rule 54, "Sulfur Compounds", and Rule 64, "Sulfur Content of Fuels". In order to comply with these rules, the nine (9) microturbines shall be fired on treated landfill gas (LFG) with a sulfur concentration of no more than 60 ppmv, calculated as hydrogen sulfide at standard conditions. The LFG treatment system shall include two (2) vessels containing approximately 78,000 pounds of sulfur removal media, operated in parallel for the control of sulfur content in the combusted gas. The two (2) vessels are a single system which provides sulfur control for gas routed to all combustion devices. The LFG will be further processed through a knockout/mesh pad for removal of water particles 5 micron and larger. Two (2) vessels holding siloxane removal media, operated in parallel or in series, are included in the gas treatment process, but not required by permit or regulation. Both sulfur control media and the siloxane control media shall be replaced as warranted by the performance results and as necessary to ensure compliance with applicable emission limits.

Hydrogen sulfide levels in the treated landfill gas shall be monitored prior to combustion in the microturbines, using colorimetric method, daily (Monday through Friday, excluding recognized holidays). To verify reasonable correlation between total sulfur concentration and hydrogen sulfide concentration measured using the colorimetric method, total sulfur levels in the treated landfill gas shall be monitored once monthly, prior to combustion in the microturbines, using SCAQMD Method 307.

This condition is applied pursuant to Rule 51, "Nuisance", Rule 54, "Sulfur Compounds", and Rule 64, "Sulfur Content of Fuels".

G.3. Within 30 days of initial operation, and once every twelve (12) months thereafter, the sulfur content of the treated LFG shall be measured pursuant to the methods of Section E.1 of Rule 64, "Sulfur Content of Fuels".

Testing for purposes of compliance demonstration shall only be conducted after the Part 70 Permit application is received, a temporary Permit to Operate is issued by the APCD, and a source test plan has been submitted and approved. The APCD shall be notified at least five working days prior to the emissions test and the test schedule shall be re-confirmed one working day in advance of the planned test. APCD personnel shall be allowed to observe the test. The test plan shall cite the specific test method to be used to measure the sulfur content of the treated LFG. Within 45 working days after the completion of these tests, a report of the test results shall be submitted to the APCD.

G.4. The nine (9) microturbines are subject to 40 CFR Part 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills". VRSD has proposed that the LFG combustion is subject to 40 CFR Section 60.752(b)(2)(iii)(C) because the LFG is routed through a treatment system that processes the gas for subsequent sale or use. Therefore, the microturbines would not be subject to the control device requirements of a 98% NMOC reduction efficiency or a 20 ppmvd NMOC outlet limitation. The permittee shall request and receive a compliance determination from EPA stating that the LFG meets the "treated" requirements and is subject to Section 60.752(b)(2)(iii)(C) and not subject to the control requirements of 40 CFR Section 60.752(b)(2)(iii)(B) and the associated monitoring, recordkeeping, and reporting for such control devices. Without the EPA determination, the microturbines will be subject to the Section 60.752(b)(2)(iii)(B) and initial and periodic source testing will be required.

H. All stack exhausts for the Biosolids Drying System, Thermal Oil Heaters, and the Microturbines shall be of a vertical orientation and shall not be equipped with rain caps. Flapper-type rain caps are acceptable. This condition is based on health risk assessments and Rule 54 dispersion modeling that were conducted for the project and is applied pursuant to Rule 51, "Nuisance", and Rule 54, "Sulfur Compounds".

I. The permittee shall comply with all applicable provisions of Rule 55, "Fugitive Dust".

J. The permittee shall conduct all Biosolids Operations in a manner which minimizes the potential for a violation of Rule 51, "Nuisance". If the APCD determines that the permittee is

causing a public nuisance problem, the permittee shall take effective measures to resolve the problem. The measures taken shall be in accordance with any applicable permitting requirements of Rule 10, "Permits Required".

K. The permittee shall maintain the following records:

a. Source of biosolids; tons of wet biosolids received at the facility on a daily, monthly, and rolling twelve month basis; and confirmation that the biosolids delivery truck complies with the cover requirement of Condition B.1;
b. Source of the biosolids, the amount of biosolids received in tons, and a confirmation or documentation that the dried biosolids as processed meet EPA Class A specifications in accordance with 40 CFR Part 503 – "Standards for the Use or Disposal of Sewage Sludge";
c. Daily (Monday through Friday, excluding recognized holidays) and weekly (upon written concurrence from APCD) reactive organic compound (ROC), ammonia (NH_3) and hydrogen sulfide (H_2S) measurements at the wet biosolids storage and handling hoppers' carbon control system exhaust;
d. Source test reports for ROC, NH_3, and H_2S at the wet biosolids storage and handling hoppers' carbon control system exhaust (12 month intervals);
e. Replacement of the carbon media at the wet biosolids storage and handling hoppers' carbon control system (as deemed necessary through emissions monitoring data);
f. Daily (Monday through Friday, excluding recognized holidays) and weekly (upon written concurrence from APCD) reactive organic compound (ROC) and hydrogen sulfide (H_2S) measurements at the at the exhaust of the dehydration three stage filtration emission control system; and daily (Monday through Friday, excluding recognized holidays) pH measurements of the aqueous liquid in the biofilter's humidification moisture integrator chamber level and pressure drop readings for the HEPA filter of the three stage filtration emission control system;
g. Source test reports for PM, ROC, NH_3, and H_2S and Sulfur Compounds at the exhaust of the dehydration three stage filtration emission control system (12 month intervals);
h. Dehydration chamber filtration control system biofilter replacement (as deemed necessary through emissions monitoring data);
i. Dehydration chamber filtration control system carbon replacement (as deemed necessary through emissions monitoring data);
j. Dehydration chamber filtration control system HEPA monthly inspection and replacement as deemed necessary through emissions monitoring data;
k. Monthly and rolling twelve month Landfill Gas BTU consumption at the two 16.8 MMBTU/hr Fenton Thermal Oil Heaters;
l. LFG sulfur removal treatment media replacement (as deemed necessary through emissions monitoring data);
m. Thermal Oil Heater LFG treatment system siloxane removal media replacement (as deemed necessary through emissions monitoring data);
n. Thermal Oil Heater landfill gas sulfur content test results (12 month intervals);
o. Thermal Oil Heater NOx and CO source test results (24 month intervals);
p. Flow rate, location, date, and time of re-claimed water (condensate) application for dust control and/or irrigation;

q. Daily colorimetric (Monday through Friday, excluding recognized holidays) and monthly SCAQMD Method 307 hydrogen sulfide (H_2S) measurements at the at the exhaust of the sulfur removal system vessels;
r. Microturbine LFG treatment system siloxane removal media replacement (as deemed necessary through emissions monitoring data);
s. Microturbine landfill gas sulfur content test results (12 month intervals);
t. Records required by Rule 55, "Fugitive Dust".

This data shall be maintained at the facility for at least five years and shall be made available to APCD personnel upon request.

L. Prior to construction completion, an application for a Part 70 Permit Modification shall be submitted to the District. The application shall include the District application form, the "Modification to Part 70 Cover Form" cover sheet, and proposed permit conditions for the system. **The application shall also include an as-built complete equipment list and process flow diagram for the system.** The associated filing fee of $450.00 must also accompany the application.

Your application for an Authority to Construct (dated September 14, 2006) was received by this office on September 15, 2006. Additional information was received on February 13, 2007, March 27, 2007, April 5, 2007, April 23, 2007, June 27, 2007, August 28, 2007, November 20, 2007, February 25, 2008, March 13, 2008, and December 31, 2008. The application was considered complete on December 17, 2007.

The granting of this permit signifies that the above emissions have been evaluated based on the information provided with your application. Prior to construction completion, an application for an APCD Permit to Operate must be filed. Compliance of the source will be verified through inspection and review of the required data and source test reports.

This Authority to Construct shall expire and shall be canceled two years from the date of issuance unless an extension has been approved in writing by the District (Rule 10).

Within 30 days after receipt of this permit, the permittee may petition the Hearing Board to review any condition on the permit (Rule 22). This permit, or a copy, shall be posted reasonably close to the installation site and shall be reasonably accessible to inspection personnel (Rule 19).

The granting of this Authority to Construct shall not be construed as an endorsement by the District or a guarantee of compliance with the rules of the District.

Contact Kerby E. Zozula, Supervising Air Quality Engineer, at 805/645-1421 if you have any questions.

Sincerely,

For:

Terri Thomas, Supervisor
Engineering Division

Michael Villegas
Air Pollution Control Officer

c: Barry Mamaghany, VCAPCD Compliance Division

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VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT
Memorandum

TO: Permit File No. 07340 DATE: July 23, 2008

FROM: John Harader

SUBJECT: Engineering Analysis of Application No. 07340-130
Ventura Regional Sanitation District – Toland Road Landfill
Biosolids Drying System

FACILITY DESCRIPTION

The Ventura Regional Sanitation District's (VRSD) Toland Road Landfill is located at 3500 North Toland Road in an unincorporated area in eastern Ventura County between the cities of Santa Paula and Fillmore, north of Highway 126. This municipal solid waste landfill began accepting waste in 1962 and was expanded in 1996. The landfill has a Standard Industrial Classification (SIC) Code of 4953, Sanitary Services-Refuse Systems.

As required by Rule 74.17.1, "Municipal Solid Waste Landfills", the landfill is equipped with a landfill gas collection system that uses a number of gas collection wells that are routed to a common collection header. The landfill gas (LFG) is combusted in an 85.8 MMBTU/hr LFG Specialties Inc. enclosed landfill gas flare. LFG is also used to power a 70 kW Ingersoll Rand PowerWorks Micro Turbine that provides electricity for on-site use. The landfill also has a 2,000-gallon aboveground gasoline storage tank that is equipped with vapor recovery systems to comply with Rule 70, "Storage and Transfer of Gasoline". Permit to Operate No. 07340 is a Part 70 (Title V) Permit.

APPLICATION DESCRIPTION

Authority to Construct Application No. 07340-130 was submitted to construct a 180 tons per day Biosolids Drying System. The biosolids will be trucked from wastewater treatment plants in Ventura County. Currently, biosolids from Ventura County wastewater treatment plants are trucked to Kern County for land disposal. The biosolids consist of approximately 80% water and 20% solids. The proposed drying system is made up of enclosed modular units manufactured by Fenton Environmental Technologies, Inc. The drying / dehydration will occur in a dehydration chamber that is equipped with heated thermal oil circulating through its vessel walls. Dried biosolids will be used at the landfill as alternative landfill cover and possibly for groundcover or fertilizer.

Equipment Description:

VRSD has proposed to install two modular Fenton Environmental Technologies, Inc., Model "SludgeMASTER RK72E" (Fenton) units. The components of the system are:

Biosolids Handling Equipment (180 tons wet biosolids per day):

1 - 35 yd^3 Fenton Wet Biosolids Receiving Hopper with Screw Auger, enclosed container with motorized cover, emissions vented to a carbon adsorption system
1 - 150 yd^3 Fenton Wet Biosolids Storage Hopper with Screw Auger, enclosed container, emissions vented to a carbon adsorption system
1 - 150 yd^3 Fenton Wet Biosolids Feed Hopper with two Screw Augers, enclosed container, emissions vented to a carbon adsorption system
1 - Bay Products, Inc. Carbon Adsorption System, Model Lo-flow 48, 600 cfm, for control of ammonia (NH_3) and ROC emissions from wet biosolids receiving hopper, storage hopper, and feed hopper

Biosolids Dryers (90 tons wet biosolids per day per dryer):

2 - Fenton SludgeMASTER Dehydration Chambers (or Dryers), equipped with the circulation of hot thermal fluid within the chamber walls and within a proprietary rotating disk pack, 3 hour batch process. Hot thermal fluid generated by two 15 MMBTU/hr heaters
3 - Fenton Screw Augers, for transfer of dried solids to truck loading stations
3 - Fenton Truck Loading Stations, dried biosolids used as daily landfill cover on site

Wet Vapor Processing and Emission Control Systems:

1 - Fenton 96" x 144" x 24" Water Cooled Condenser / Heat Exchanger, consisting of a heat exchanger and air dilution chamber. Receives 5,000 cfm steam by-product from dryers and outputs 500 cfm cooled air and 10 gpm condensate. Air emissions from the condenser vented to the following control systems:

    1 - Bay Products, Inc. Biofilter, 1,500 cfm, 22' x 7' x 8', consisting of 65% shredded wood, 25% nugget bark, and 10% compost
    1 - Bay Products, Inc. Carbon Filter, 1,500 cfm, 1,500 pounds carbon, 67 cu. ft. carbon capacity, 2.7 seconds contact time
    1 - Lifetime Industries HEPA Filter, 1,500 cfm, 99.97 – 99.99% rated efficiency

1 - Reclaim Water System for treatment of the condensate from the condensers (10 gpm), consisting of a 1,080 gallon chilled condensate collection tank, 55 gallon polymer tank, 400 gallon clarifier/separator tank, 250 gallon surge tank, 6,500 gallon untreated water tank, and a reclaim water tank (size to be determined). Treated water used for dust control and irrigation at the landfill facility; treated water may not utilized by the evaporative cooling towers.

2 - Delta Cooling Towers, Inc. Paragon Model ΔT-250 I Evaporative Coolers, induced draft, counter flow design, 250 ton capacity (3.75 MMBTU), equipped with drift eliminators for particulate matter control, used to provide cooling water for the heat exchangers. Only potable water used in the cooling towers. Cooling towers are exempt from permit requirements per Rule 23.J.10.

Thermal Oil Heaters:

2 - 15 MMBTU/hr North American Mfg. Co. Thermal Oil Heaters, equipped with Nova Plus, Model NVC9-G-30 low NOx burners, manufactured by Power Flame, Inc., fired on treated landfill gas, used for heating dehydration chamber circulation fluid

Electrical Power Microturbines:

6 - 3.2 MMBTU/hr Ingersoll Rand 250 kW Microturbines, (exempt from permit per Rule 23.D.6) fired on treated landfill gas, used to power the biosolids dryers and electrical generators. The electricity produced will support the biosolids drying process and other landfill operations

Process Description:

Delivery and Handling: Approximately 9 to 11 truck loads per day of wet biosolids (approximately 80% water and 20% solids) will be delivered to the landfill in 35 cubic yard capacity trucks (approximately 35 to 40 tons). The truck loads are delivered to the Fenton 35 cubic yard receiving hopper which is equipped with a motorized cover. The biosolids are moved forward automatically in series from the receiving hopper to the 150 cubic yard Fenton storage hopper, to the 150 cubic yard Fenton feed hopper, and then to one of two dehydration chambers using enclosed augers. The enclosed receiving hopper (except when motorized cover is open for during deliveries), storage hopper, and feed hopper are vented to a 600 cfm Carbon Adsorption System. ROC emissions, hydrogen sulfide (H_2S) emissions and ammonia (NH_3) odors are expected to be negligible through the delivery and handling systems after the carbon control. H_2S will be monitored with a portable analyzer. Ammonia will be monitored with Sensidyne™ Strips. The carbon will be replaced every 24 months, or more frequently if warranted by the monitoring data. VRSD has proposed a limit of 50 ppmv of ammonia (NH_3) which is the OSHA 8-hour Permissible Exposure Limit (PEL). As detailed below, permitted emissions of 0.35 tons per year NH_3 and 0.08 pounds per hour NH_3 have been calculated.

Dehydration Chambers: Dehydration occurs in the two SludgeMASTER dehydration chambers, operating in parallel, in batch processes drying approximately 11 tons of wet biosolids. The duration of the batch drying process is approximately three hours. Heat for the drying chambers is provided by the circulation of hot thermal oil through the steel walls of the chamber and through a proprietary rotating hollow disk pack. The biosolids are dried to a minimum of 60 percent dry solids (and 40% water).

There are three enclosed screw augers for removing the dried biosolids from the dryers and loading them into transport trailers. Three truck loading stations are proposed with an estimated 15-22 tons dried biosolids loaded per truck per day. The loading bay will have a roof (supported by columns) over it; and VRSD will be required to cover the product in the transport trailers with plastic sheeting or other cover. The product will be used for alternative daily landfill cover and will displace the use for handling of soil for landfill cover. As detailed below, permitted emissions of 0.01 tons per year PM and 0.01 pounds per hour PM have been estimated for the truck loading process.

Thermal Oil Heaters: The thermal fluid that heats the dehydration chambers is heated in two 15 MMBTU/hr North American Mfg. Co. Thermal Oil Heaters. The heaters are equipped with a Nova Plus, Model NVC9-G-30 low NOx burner, manufactured by Power Flame, Inc. The heaters will be required to meet a NOx concentration limit of 9 ppmvd at 3 percent oxygen. The low NOx burner and 9 ppmvd (3% oxygen) limit are considered BACT for NOx.

The heaters will be fired on treated landfill gas. The proposed landfill gas conditioning/treatment system is manufactured by SEECO GASCON. The system consists of a knockout/mesh pad for the removal of water particles 5 micron and larger and pressure vessels with layered media for hydrogen sulfide and siloxane removal. The layered media consist of VCP60 activated carbon and Midas odor control media. The manufacturer's recommendation for the replacement of the media filters is once per year. Sulfur concentration in the LFG will be reduced to no more than 5 ppmv. Hydrogen sulfide monitoring of the LFG will be required. The landfill gas treatment system is considered BACT for ROC, SOx, and PM-10.

Wet Vapor Processing and Emission Control Systems: The wet odorous vapors from each of the two biosolids dehydration chambers will be routed to a single, two-stage water cooled condenser/heat exchanger. The operating schedules of the biosolids dryers will be staggered, such that only one dryer at a time will exhaust steam to the condenser. The condenser is a custom fabricated indirect heat exchanger consisting of four banks of 22 platecoils each, with a total condensing surface area of 4,400 square feet. The vapor stream is cooled from 240 degrees F to 160 degrees F. The vapor will be condensed from 5,000 acfm to 500 acfm. Ambient air in the amount of 1,000 acfm will be combined with the 500 acfm and further reduce the temperature to 120 degrees F. The 1500 acfm (approximately 1350 dscfm) of exhaust from the condenser / heat exchanger will pass through a three-stage emission control system. The control system is comprised of a biofilter to remove biological components, a carbon filter to remove organics and ammonia, and a HEPA filter to remove fine particulate matter. Per manufacturer's specifications the biofilter will require replacement every five years and the carbon filter will require replacement every 12 months. Fenton recommends a monthly visual inspection for the HEPA filter and replacement as needed. As discussed below, permitted emissions for ROC, PM, H_2S, and ammonia (NH_3) from this controlled exhaust have been estimated based on a source test of a small scale pilot project.

Cooling Towers: VRSD has proposed the installation of two cooling towers to provide cooling water for the heat exchanger. Potable water (not biosolids condensate) will be used for the

cooling tower makeup water. Initial proposals for the biosolids drying project included using the condensate recovered from the drying process as cooling tower water. The proposed cooling towers are Delta Cooling Towers, Inc., Paragon Model ΔT-250 I Evaporative Coolers. The units are induced draft with a counter flow design and a 250 ton (3.75 MMBTU) capacity. The circulating water flow rate for each unit will be 750 gallons per minute, and the drift fraction will be 0.002 percent. The units are equipped with drift eliminators for particulate matter control that consist of high density polyethylene (HDPE) plates. Pursuant to Rule 23.J.10, cooling towers that are not in contact with contaminated process water are exempt from permit, however are regulated by this Authority to Construct to enforce compliance with applicable rules and regulations. Therefore, cooling tower emissions are not included in the permitted emissions for the facility.

Biosolids Condensate Treatment and Uses: The condensate that exits the heat exchanger is treated in a treatment system consisting of three tanks. The first tank is a Chilled Condensate Collection Tank (1,080 gallons) which stores the incoming water. The second tank is a Clarifier/Separator Tank (400 gallons) where a polymer (55 gallon polymer tank) is introduced to enhance coagulation and cause fats and grease to settle, while oils and foam are skimmed off the top. The final tank is a Surge Tank (2,500 gallons) that holds the processed condensate prior to further use. The submitted process flow diagrams also include a 6,500 gallon untreated water tank and a reclaimed water storage tank (size to be determined). These tanks will all be required to be totally enclosed and equipped with pressure vacuum relief valves.

Re-claimed water from the biosolids drying will be used for dust control and irrigation at the landfill. These uses of the recycled water are required to be approved by the Regional Water Quality Control Board (RWQCB) and the California Department of Health Services (DHS). The RWQCB permit will prohibit using the re-claimed water for dust control or irrigation during periods of precipitation. Fugitive emissions from the application of the condensate are not included in the permitted emissions; however, this activity must comply with Rule 51, "Nuisance". A health risk assessment for the land application of the condensate is discussed below.

Microturbines: VRSD is proposing to install six (6) Ingersoll Rand 250 kW microturbines for providing electrical power to operate the system. The gas turbines are not required to be permitted pursuant to Rule 23.F.6, which exempts gas turbines with a rated full load output of less than 300 kW. Therefore, BACT is not required for the turbines. The application included emission calculations for the microturbines and proposed that the NOx emissions would satisfy the proposed CARB Distributed Generation NOx standards for landfill gas. The turbines are certified pursuant to ARB Executive Order DG-027, "Distributed Generation Certification of Ingersoll Rand Energy Systems 250SW Microturbine".

The microturbines will be fired on treated landfill gas. The Ingersoll Rand Turbines include their own fuel conditioning system which includes the removal of moisture, siloxanes, and other contaminants. The siloxanes will be removed with two 2,000 pound vessels containing Siemens VCP60 coal based bedding and 12,000 pounds of silica gel. The VCP60 unit requires

replacement at one year intervals; and the silica gel requires replacement at 1.5 year intervals. The sulfur is not expected to be removed. The application states that the highest sulfur concentration measured in the LFG was approximately 55 ppmv; so the sulfur concentration is not expected to be greater than 60 ppmv. This will be included as a limit to enforce compliance with Rule 54 and Rule 64.

PERMITTED EMISSIONS

Wet Biosolids Delivery and Handling

The 600 cfm carbon control system for the receiving, storage, and feed hoppers of the wet biosolids will have a 50 ppmv ammonia (NH_3) limit.

(50 ppm/10^6)(17 lb/lbmole)(lbmole/385 scf)(600 cfm)(60min/hr) = 0.08 lb/hr NH_3

0.08 lb/hr NH_3 (8760 hr/yr)(ton/2000 lb) = 0.35 ton/yr NH_3

VRSD has proposed a limit of 50 ppmv of ammonia (NH_3) which is the OSHA 8-hour Permissible Exposure Limit (PEL).

Particulate Matter emissions for the wet biosolids delivery and handling are negligible, if any, due to the high moisture content (80%). ROC emissions are also expected to be insignificant during this part of the process; however, covers and carbon control systems are required. An initial source test at the carbon adsorption control exhaust will be required for ROC, NH_3, and hydrogen sulfide (H_2S).

If ROC or hydrogen sulfide is detected in the exhaust vent of the carbon control system, the permittee shall apply for, and obtain, authorization to emit ROC or H_2S in compliance with all District rules and regulations. This authorization will be granted only upon demonstrating compliance that all sources at the facility comply with Rule 54, “Sulfur Compounds”. ROC emissions greater than or equal to 0.01 tons per year will be subject to Rule 26, “New Source Review”.

2 - 15 MMBTU/hr North American Mfg. Co. Thermal Oil Heaters:

The permitted emissions (PE) are based on a combined limit of 127,440 MMBTU of LFG per year. At 15 MMBTU/hr, this annual LFG consumption equates to 4,248 hours per year at full load for each unit, or an estimated capacity factor of approximately 48%. The pounds per hour permitted emissions are based on 15 MMBTU of LFG per hour for each unit. The permitted emissions and emission factors are:

Table 1 – 15 MMBTU/hr Thermal Oil Heaters Permitted Emissions

Pollutant	Emission Factor (lb/MMBTU)	Tons Per Year	Pounds Per Hour
ROC	0.0052 (AP-42)	0.33	0.16
NOx	0.012 (9 ppmv @ 3%O2)	0.76	0.36
PM	0.0072 (AP-42)	0.46	0.22
SOx	0.00194 (5 ppmv S in LFG)	0.12	0.06
CO	0.3247 (400 ppm @ 3%O2)	20.69	9.74

The NOx and CO emission factors are based on the following equation:

F(MW)(20.9/20.9-3)(lbmole/385 scf)(ppm@3%O2/10^6) = lb/MMBTU
F = F factor = 9,558 dscf/MMBTU Per 8/8/06 Toland Landfill source test
MW = 46 lb NOx/lbmole
MW = 28 lb CO/lbmole

The SOx emission factor is based on complete combustion of the landfill gas containing that has a 5 ppm sulfur concentration. The emission factor was submitted by the applicant as part of the SO_2 and H_2S modeling analysis.

Truck Loading of Biosolids:

Particulate matter (PM) permitted emissions have been calculated for the truck loading of the biosolids exiting the dryers and into trucks. There are three augers proposed with a rate of 2.75 tons per hour. VRSD has proposed using an EPA AP-42 emission factor for feed shipping of 0.0008 lb PM per ton as reported Section 9.9.1, "Grain Elevators and Processes", (Table 9.9.1-2). Permitted Emissions have been calculated as:

(0.0008 lb PM/ton)(2.75 tons/hr-auger)(3 augers) = 0.0066 lb PM/hr = 0.01 lb PM/hr

(0.0008 lb PM/ton)(48 tons/day)(365 day/yr)(ton/2000 lb) = 0.007 ton PM/yr = 0.01 ton PM/yr

The "dried" biosolids remain very moist (40% water) and PM emissions are not significant.

Condenser / Heat Exchanger Vapor Collection System Filtered Exhaust:

VRSD has proposed permitted emissions calculations based on September 20, 2005 source testing of a demonstration (pilot) biosolids drying project at the Toland Road Landfill. The measured flow rate for the demonstration project was 106 cfm. The flow rate for the permanent biosolids drying project condenser / heat exchanger exhaust is 500 cfm. VRSD has proposed to increase the measured emissions from the demonstration project by a factor of 500/106 and then multiply by a contingency factor of 20 to obtain permitted emissions. The District has used this

calculation method for ROC, PM, and H_2S, but for NH_3 the District has calculated permitted emissions based on a limit of 50 ppmv NH_3 as detailed below.

Table 2 – Condenser / Heat Exchanger Permitted Emissions (PE)

	9/20/05 Test Results Measured Q = 106 cfm	At 500 cfm (500/106)	Lb/hr PE (20x 500 cfm)	TPY PE (8760 hr/yr)`
ROC	0.00101 lb/hr	0.00476 lb/hr	0.10 lb/hr	0.42
PM	0.000369 lb/hr	0.00174 lb/hr	0.03 lb/hr	0.15
H_2S	< 0.28 ppm* 0.0003 lb/hr	0.00142 lb/hr*	0.012 lb/hr*	0.05
NH_3	N/A	N/A	0.18 lb/hr	0.78

*Based on an ENSR letter dated June 26, 2007. Dilution air of 1,000 acfm will be added, but this will not affect the pounds per hour limits and tons per year calculations. The proposed H_2S limit with dilution will be 1.9 ppmv to enforce the pounds per hour emissions.

**The District has imposed an ammonia limit of 50 ppmv of NH_3 which is the OSHA 8-hour Permissible Exposure Limit (PEL). This limit has been established pursuant to Rule 62.1, "Hazardous Materials". The pilot source testing indicates compliance with this limit.

$(50 \text{ ppm}/10^6)(17 \text{ lb } NH_3/\text{lbmole})(\text{lbmole}/385 \text{ scf})(1350 \text{ dscfm})(60\text{min/hr}) = 0.18 \text{ lb/hr } NH_3$

$0.18 \text{ lb/hr } NH_3 (8760 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.78 \text{ ton/yr } NH_3$

Reclaimed Water System:

Emissions from the reclaimed water storage tanks are assumed to be negligible. The ROC concentration is low and the tanks are totally closed vessels with PV valves.

Permitted Emissions Summary:

The total Permitted Emissions (PE) for the Biosolids Drying System are summarized below:

Table 3 – Total Permitted Emissions

Tons Per Year	ROC	NOx	PM	SOx + H_2S	CO	NH_3
Wet Biosolids Handling						0.35
2 – 15 MMBTU/hr Heaters	0.33	0.76	0.46	0.12	20.69	
Truck Loading			0.01			

Condenser / Heat Exchanger	0.42		0.15	0.05		0.78
Total - Biosolids Drying System (Emission Increase for Project)	**0.75**	**0.76**	**0.62**	**0.17**	**20.69**	**1.13**
Stationary Source - Pre Biosolids Drying System	2.88	13.50	3.60	4.50	45.00	0.00
Stationary Source - Post Biosolids Drying System	3.63	14.26	4.22	4.67	65.69	1.13

Pounds Per Hour	ROC	NOx	PM	SOx + H_2S	CO	NH_3
Wet Biosolids Handling						0.08
2 – 15 MMBTU/hr Heaters	0.16	0.36	0.22	0.06	9.74	
Truck Loading			0.01			
Condenser / Heat Exchanger	0.10		0.03	0.01		0.18
Total - Biosolids Drying System	**0.26**	**0.36**	**0.26**	**0.07**	**9.74**	**0.26**
Stationary Source - Pre Biosolids Drying System	1.89	5.15	1.37	1.72	17.16	0.00
Stationary Source - Post Biosolids Drying System	2.15	5.51	1.63	1.79	26.90	0.26

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

Rule 26.2.A details the BACT requirements for new, replacement, modified, or relocated emissions units. This rule has a zero threshold for BACT for ROC, NOx, PM-10, and SOx. There is no BACT requirement for CO. The emissions units described above are new emissions units; therefore, BACT is required. The following table describes the BACT requirements for each emissions unit:

Table 4 - BACT

Emissions Unit / Process	BACT
Delivery, Handling, and Storage of Wet Biosolids	• Receiving hopper equipped with a motorized cover • Storage hoppers closed and vented to carbon
Dehydration Chambers – Handling of Dried Biosolids	• Dried biosolids loading bay equipped with roof • Dried biosolids covered
Dehydration Chambers – Emissions	• Biofilter • Carbon filter • HEPA filtration
Reclaim Water Storage System	• Closed containers with PV valves

Process Heaters	• Low NOx burners – 9 ppmvd NOx @ 3% O2 • Landfill gas (fuel) treatment system consisting of water knockout, H_2S and siloxane removal, polypropylene filter, H_2S monitoring

The cooling towers and micro-turbines are exempt from permit pursuant to Rule 23.J.10 and Rule 23.D.6, respectively. Therefore, the emission units are not subject to the BACT requirements of Rule 26. However, there will be permit conditions to enforce rules that do apply to these units such as Rule 51, "Nuisance", Rule 52, "Particulate Matter – Concentration (Grain Loading)", Rule 53, "Particulate Matter – Process Weight", Rule 54, "Sulfur Compounds", and Rule 64, "Sulfur Content of Fuels". In order to comply with these rules, he cooling towers will be required to operate with drift eliminators for particulate matter control and the landfill gas will be required to be treated prior to combustion in the micro-turbines.

EMISSION OFFSET REQUIREMENTS

Rule 26.2.B details the emission offset requirements for new, replacement, modified, or relocated emissions units for ROC, NOx, PM, and SOx. The rule does not require offsets for CO. The addition of the Biosolids Drying System includes new emissions units. The post project stationary source permitted emissions and the emissions increases are detailed above in Table 3.

The ROC, PM, and SOx post project stationary source permitted emissions are all less than the thresholds requiring offsets (Rule 26.2.B.1). Therefore, the permittee is not required to supply offsets for the ROC, PM, or SOx emission increases.

The NOx post project permitted emissions are greater than the offset threshold of 5.0 tons per year; however, publicly owned biosolids processing facilities are an "essential public service" as defined in Rule 26.1.12, and the offset requirements are governed by Rule 26.2.B.3. The Toland Road Landfill, operated by VRSD, is publicly owned. The tradeoff ratio is 1.0:1. The NOx emission increase of 0.76 tons per year is offset with essential public service credits. Offsets are not required for any other pollutant emission increases.

RULE COMPLIANCE

Rule 74.17, "Solid Waste Disposal Sites"

Pursuant to Section F.3 of Rule 74.17, Rule 74.17 does not apply to the Toland Road Landfill because VRSD has shown compliance with Sections H and B of Rule 74.17.1, "Municipal Solid Waste Landfills".

Rule 74.17.1, "Municipal Solid Waste Landfills"
40 CFR Part 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills"

The two 15 MMBTU/hr North American Mfg. Co. Thermal Oil Heaters and six microturbines are subject to 40 CFR Part 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills". VRSD has proposed that the LFG combustion is subject to 40 CFR Section 60.752(b)(2)(iii)(C) because the LFG is routed through a treatment system that processes the gas for subsequent sale or use. Therefore, the heaters and microturbines would not be subject to the control device requirements of a 98% NMOC reduction efficiency or a 20 ppmvd NMOC outlet limitation.

The Authority to Construct will require the permittee to request and receive a compliance determination from EPA stating that the LFG meets the "treated" requirements and is subject to Section 60.752(b)(2)(iii)(C) and not subject to the control requirements of 40 CFR Section 60.752(b)(2)(iii)(B) and the associated monitoring, recordkeeping, and reporting for such control devices. Without the EPA determination, the heaters and microturbines will be subject to the Section 60.752(b)(2)(iii)(B) and the required initial and periodic source testing.

Rule 52, "Particulate Matter – Concentration (Grain Loading)

Particulate matter concentration emissions from the dehydration dryers and associated emission control system are expected to comply with Rule 52. The rule allows up to 0.176 grains per cubic foot of dry gas at exhaust flow rates of up to 1,400 dry standard cubic feet dry gas per minute. The exhaust flow rate from the dehydration dryers and associated emission control system is expected to be approximately 1500 cfm (approximately 1350 dscfm) after the addition of dilution air. The measured particulate concentration for the September 20, 2005 demonstration source test was 0.0000735 gr/dscf. Therefore, even with the contingency factor of 20 the concentration is still expected to be significantly less than the requirement of 0.176 gr/dscf. The Authority to Construct will require a CARB Method 5 PM source test at the three stage filtration exhaust for the dehydration chambers.

The heaters and microturbines are exempt from the requirements of Rule 52 pursuant to Section B.1 of Rule 52.

Rule 53, "Particulate Matter – Process Weight

Particulate matter process weight emissions from the dehydration dryers and associated emission control system are expected to comply with Rule 53. The rule limits the maximum particulate matter discharge rate (pounds per hour) based on the process weight per hour (pounds per hour). Each biosolids dryer is expected to process 90 tons of wet biosolids per day and operate 24 hours per day. Emissions from two dryers are controlled and exhausted together. Therefore, the process weight is 180 tons per day or 15,000 pounds per hour. The rule limit is a discharge rate of 11.0 pounds per hour for this process rate. The particulate matter permitted emissions for this exhaust point have been estimated to be 0.03 pounds per hour. The Authority to Construct will require a CARB Method 5 PM source test at the three stage filtration exhaust for the dehydration chambers.

The heaters and microturbines are exempt from the requirements of Rule 53 pursuant to Section B.1 of Rule 53.

Rule 54, "Sulfur Compounds"

The emissions of SO_2 and H_2S from this project are expected to comply with the standards of Rule 54. Dispersion modeling has been conducted and demonstrates compliance with the SO_2 and H_2S property line concentration limits. The two 15 MMBTU/hr heaters, the six microturbines, and emissions from the biosolids dryers were all included in the modeling analysis. The maximum modeled SO_2 concentration is 0.0024 ppmv and 0.0077 ppmv averaged over 24 hours and 1 hour, respectively; and the Rule 54 limits are 0.04 ppmv (24 hr) and 0.25 (1 hour). The maximum modeled H_2S concentration is 0.0020 ppmv and 0.02 ppmv averaged over 24 hours and 1 hour, respectively; and the Rule 54 limits are 0.03 ppmv (24 hr) and 0.06 (1 hour). Compliance with the point of discharge limits will be demonstrated by required source testing.

Rule 64, "Sulfur Content of Fuels"

Pursuant to Rule 64.D.3, the permittee will be required to monitor the process heater and micro-turbine fuel (landfill gas) sulfur content on a quarterly basis. The rule requires that the sulfur content of the fuel not exceed 50 grains per 100 cubic feet of gas (788 ppmv) as H_2S. SOx BACT for the process heaters will be a sulfur content fuel limit of 5 ppmv as H_2S. The microturbine's LFG treatment system is not proposed to reduce Sulfur; however, the microturbines are not subject to BACT requirements since they are exempt from permit. The LFG sulfur content for the microturbines is expected to be less than 60 ppmv. The fuel sulfur content limits need to be more stringent than Rule 64 to enforce compliance with Rule 54.

Rule 74.15, "Boilers, Steam Generators, and Process Heaters"

The two 15 MMBTU/hr North American Mfg. Co. Thermal Oil Heaters (process heaters) are subject to Rule 74.15 and are expected to comply with the 40 ppmvd NOx limit and 400 ppmvd CO limit (at 3 percent oxygen). The BACT NOx limit of 9 ppmvd (at 3 percent oxygen) is more stringent than Rule 74.15. The rule requires source testing every 24 months in order to demonstrate compliance. The Authority to Construct will require initial source testing for NOx and CO.

Rule 74.23, "Stationary Gas Turbines"

Rule 74.23 does not apply to the six (6) 250 kW micro-turbine because the rule only applies to turbines rated at 300 kW and greater.

40 CFR Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines

This NSPS does not apply to the six 250 kW micro-turbines because the NSPS only applies to turbines with a heat input at peak load greater than 10 million BTU per hour (40 CFR Part 60.330). The turbines will have a maximum heat input of approximately 3.35 million BTU per hour each.

40 CFR Part 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines (Turbine MACT)

The turbine MACT does not apply to the proposed turbine because the MACT does not apply to turbines with a rated peak power output of less than 1.0 megawatt (40 CFR Part 63.6090(b)(3)). The proposed turbine has a rated peak power output of 92 kW.

California Statewide Distributed Generation (DG) Certification Program (California Health & Safety Code Section 41514.9)

CARB has established a statewide DG Certification Program to certify electrical generation technologies that are exempt from permit. CARB Executive Order DG-027, "Distributed Generation Certification of Ingersoll Rand Energy Systems 250SW Microturbine" was granted on June 24, 2008 for the proposed microturbines for this facility. The executive order states that the proposed microturbines meet the DG Certification Regulation 2008 Waste Gas Emission Standards.

RULE 51 (NUISANCE) REQUIREMENTS FOR TOXIC EMISSIONS

An initial health risk assessment and Rule 54 modeling analysis (dated October 6, 2006) was received by the District on October 11, 2006. Emissions from the process heaters and the biosolids dryers were included in the analysis. The equipment was assumed to have vertical stacks without rain caps. The presented cancer risk is between 1 and 2 million. This HRA was reviewed by the District and found to be acceptable. The cancer risk and non-cancer risks meet the District's permit issuance thresholds. See the District HRA memo dated October 17, 2006 for further details. The Authority to Construct will require vertical stacks without rain caps as was assumed in the HRA.

A second HRA and Rule 54 modeling analysis were submitted on February 12, 2007. The health risk was also below the District's permit issuance thresholds. See the District HRA memo dated June 4, 2007 for further information. This HRA included ammonia emissions from the evaporative cooling towers which were to use the biosolids condensate. The project has since been modified and the cooling towers will not be operated with condensate from the biosolids drying. The Authority to Construct will require that the cooling towers use potable water and not be operated with biosolids condensate.

A health risk assessment for the use of the condensate from the biosolids drying for dust control and/or irrigation was submitted in August 2007. At the District's request, this HRA was resubmitted (received November 2007) because an average ammonia emission was used instead of the maximum concentration that had been observed and the modeled scenario included different application volumes depending on the location within the facility which would be difficult to enforce. The modeled health risks were well below the District's permit issuance levels. The application of the condensate will be limited to the following parameters pursuant to

the HRA: (1) The minimum distance from the application area to the property line shall be 387 feet; (2) The maximum application volume shall be 5,000 gallons per hour; and (3) Application shall only occur between 7 am and 4 pm. See the memos dated September 24, 2007 and December 14, 2007 for further information.

PUBLIC NOTIFICATION REQUIREMENTS

This application does not trigger the newspaper notification requirements of Rule 26.7 since the potential to emit of the new, replacement, modified, or relocated emissions units covered by this application are below the thresholds of Table B-1 of Rule 26.7.

This application does not trigger the public notification requirements of H&SC Section 42301.6 since the applicant has stated that this source is not located within 1,000 feet from the outer boundary of a school site.

Once the biosolids drying project is installed and a Part 70 Permit Modification application is submitted, notification is required by Rule 33.7, "Part 70 Permits – Notification". The District is required to submit a copy of the Permit to Operate application, the proposed changes to the Part 70 permit, and the District's analysis of the application to EPA Region 9 for a 45 day review period. Rule 33.7 does not require public notice for a Minor Part 70 Permit Modification.

CONDITIONAL USE PERMIT / CEQA PROCESS

A modification to add the biosolids drying system was required for the Conditional Use Permit that VRSD holds for the Toland Road Landfill (CUP 3141). The Ventura County Resource Management Agency Planning Division was the lead agency for the CEQA process. The modification is defined as a Minor Modification and is referred to as "LU06-0111". The modification was approved by the Ventura County Board of Supervisors on September 25, 2007.

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June 27, 2012

Ms. Sally Coleman
Ventura Regional Sanitiation District
1001 Partridge Drive, Suite 150
Ventura, CA 93003

Subject: Authority to Construct No. 07340-160 – Modify Biosolids Drying System Install Thermal Oxidizer and Remove Carbon Adsorption Filter

Dear Ms. Coleman:

This is Ventura County Air Pollution Control District Authority to Construct No. 07340-160, effective on the above date. Ventura Regional Sanitation District (VRSD) was granted Authority to Construct No. 07340-130 on March 9, 2009 to construct a Biosolids Drying System at the Toland Road Landfill, located at 3500 North Toland Road, in an unincorporated area of the County of Ventura between the cities of Santa Paula and Fillmore, California. Authority to Construct No. 07340-160 hereby authorizes you to modify the Biosolids Drying System and Authority to Construct No. 07340-130, as described below:

Remove The Following Existing Equipment:

Bay Products, Inc. Carbon Adsorption Filter, 1,500 actual cubic feet per minute (acfm) capacity, 1,500 pounds carbon, 6" bed, 2.7 seconds contact time

Install The Following New Equipment:

4.0 MMBTU/hr Gulf Coast Environmental Systems LLC, Direct Fired Thermal Oxidizer, Model 20-TO, maximum capacity 2,000 acfm, maximum temperature 1,800 degrees Fahrenheit, equipped with a low NOx burner and fired on landfill gas. The Thermal Oxidizer is equipped with an upstream blower with a maximum rated capacity of 2,000 acfm. The Thermal Oxidizer is also equipped with a temperature measurement device and continuous recorder.

Revise The Three-Stage Emission Control System As Follows:

Authority to Construct No. 07340-130 authorized the following three-stage emission control system for the biosolids drying system exhaust: 1) a Bay Products, Inc. Biofilter, 2) followed by a Bay Products Inc. Carbon Filter, 3) followed by a Lifetime Industries HEPA Filter. The proposed Thermal Oxidizer will be the third and final control system of the three stages. The three-stage emission control system will now consist of the following:

- Bay Products, Inc. Biofilter, 1,500 acfm, 22' x 7' x 8', consisting of 65% shredded wood, 25% nugget bark, and 10% compost (first stage of biofilter is a 24" x 84" x 96" humidification moisture integrator chamber with acid injection pH adjustment for ammonia removal prior to entry into the biofilter stage)
- Lifetime Industries HEPA Filter, 1,500 acfm, 99.97 – 99.99% rated emission control efficiency
- 4.0 MMBTU/hr Gulf Coast Environmental Systems LLC, Direct Fired Thermal Oxidizer, Model 20-TO, maximum capacity 2,000 acfm, maximum temperature 1,800 degrees Fahrenheit, equipped with a low NOx burner and fired on landfill gas.

The emission control system has an existing 3,000 acfm capacity blower located upstream of the Bay Products, Inc. Biofilter. The emission control system is equipped with manual draft dampers and fresh air dilution valves to maintain the proper draft through the Biosolids Dryers and to maintain the Bay Products, Inc. Biofilter inlet temperature at the design set point as to not damage the Biofilter's biological media. The three-stage emission control system has a nominal exhaust flow rate of 1,500 acfm and 1,350 dscfm.

All other equipment and components of the Biosolids Drying System will remain as described in Authority to Construct No. 07340-130.

Revise Condition Nos. D.2 and G.2 of Authority to Construct No. 07340-130

As proposed by the permittee, lower the landfill gas sulfur concentration limit from 60 ppmv to 20 ppmv. Therefore, all landfill gas fired in the 16.8 MMBTU/Hr Fenton Thermal Oil Heaters, 250 KW Ingersoll Rand Microturbines, and 4.0 MMBTU/hr Gulf Coast Environmental Systems LLC Direct Fired Thermal Oxidizer shall not exceed a sulfur concentration of 20 ppmv, calculated as hydrogen sulfide at standard conditions.

Subject to the Following Conditions:

1. Following the changes authorized by Authority to Construct No. 07340-130 (Biosolids Drying Project) and Authority to Construct No. 07340-160 (Modifications to the Biosolids Drying System), permitted emissions for Part 70 Permit No. 07340 have been calculated to be:

Pollutant	Tons/Year	Pounds/Hour
Reactive Organic Compounds (ROC)	4.65	2.35
Nitrogen Oxides (NOx)	19.63	6.68
Particulate Matter (PM)	4.66	1.70
Sulfur Oxides (SOx) & Hydrogen Sulfide (H2S)	6.60	2.41
Carbon Monoxide (CO)	77.70	28.23
Ammonia (NH3)	1.93	0.44

This represents the following permitted emissions changes for the Biosolids Drying System from Authority to Construct Nos. 07340-130 to 07340-160:

Pollutant	Tons/Year	Pounds/Hour
Reactive Organic Compounds	0.00	0.00
Nitrogen Oxides	+4.95	+1.13
Particulate Matter	0.00	0.00
Sulfur Oxides and Hydrogen Sulfide	0.00	0.00
Carbon Monoxide	+0.70	+0.16
Ammonia	-5.60	-1.28

The Engineering Analysis for Authority to Construct No. 07340-160 contains additional details pertaining to these permitted emissions.

2. Authority to Construct No. 07340-130 for the Biosolids Drying System had a NOx emission increase of 1.18 tons per year that was offset with essential public service credits, pursuant to Rule 26.2.B.3. As shown above, Authority to Construct No. 07340-160 has an additional 4.95 tons per year NOx emission increase that has also been offset with essential public service credits. Pursuant to Rule 26.1.12, a publicly owned biosolids processing facility is an "essential public service". The post project ROC, PM, and SOx permitted emissions do not exceed the offset thresholds of Rule 26.2.B; therefore, the permittee is not required to provide offsets for these pollutants. Rule 26 does not require offsets for CO emissions.

   In order to remain eligible for essential public service credits, and as required by Rule 26.1, this facility shall process only biosolids that have been generated from wastewater originating exclusively in Ventura County.

3. Emission Limits for Biosolids Drying System - Three Stage Emission Control System

   The vapors from each of the two Fenton Dehydration Chambers (as described in Authority to Construct No. 07340-130) shall be routed to a single, two-stage water cooled condenser / heat exchanger. The exhaust of the condenser / heat exchanger shall be controlled by a three-stage emission control system consisting of: (1) biofilter (equipped with a 24" x 84" x 96" humidification moisture integrator chamber with acid injection pH adjustment for ammonia removal prior to entry into the biofilter stage) ; (2) HEPA filter; and (3) Thermal Oxidizer as described above. Emissions from the control system exhaust shall not exceed the following limits:

   f. 0.0243 pounds H_2S and sulfur compounds (as H_2S) per hour; and 3.4 ppmv H_2S
   g. 0.36 pounds NH_3 per hour and 100 ppmv NH_3
   h. 0.07 pounds PM per hour
   i. 0.176 grains PM per DCF, pursuant to Rule 52, "Particulate Matter – Concentration (Grain Loading)"
   j. 0.191 pounds ROC per hour and 57 ppmv as methane
   k. 1.11 pounds NOx per hour (NOx measured as NO2)
   l. 0.16 pounds CO per hour and 50 ppmv CO, corrected to 3% oxygen

   Compliance with these emission limits shall be demonstrated by the periodic monitoring requirements in Condition No. 4 below and the source testing requirements in Condition

No. 5 below. The NOx and CO emission limits may be adjusted during the Permit to Operate application, provided that compliance with all applicable rules is demonstrated.

This condition has been applied pursuant to Rule 26, "New Source Review", Rule 29, "Conditions on Permits", Rule 51, "Nuisance", Rule 52, "Particulate Matter – Concentration (Grain Loading)", Rule 53, "Particulate Matter – Process Weight", Rule 54, "Sulfur Compounds", Rule 62.1, "Hazardous Materials", and Rule 68, "Carbon Monoxide".

4. Periodic Monitoring Requirements

a. Hydrogen sulfide levels at the exhaust of the three-stage emission control system shall be monitored using colorimetric methods or a portable monitor that meets the specifications of Section D.1 of Rule 54, "Sulfur Compounds". Hydrogen sulfide levels shall be monitored on a weekly basis. Upon completion of the initial source test and associated final report required below, the weekly monitoring results and the final source test report may be submitted to the APCD with a request to reduce the monitoring frequency from weekly to monthly. Weekly monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.

b. Ammonia emissions at the exhaust of the three-stage emission control system shall be monitored using colorimetric methods or a portable monitor on a weekly basis. Upon completion of the initial source test and associated final report required below, the weekly monitoring results and the final source test report may be submitted to the APCD with a request to reduce the monitoring frequency from weekly to monthly. Weekly monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.

c. The aqueous liquid in the biofilter's humidification moisture integrator chamber shall be monitored and recorded daily (Monday through Friday, excluding recognized holidays) for pH level. The pH level shall be maintained between 4.0 and 6.0 pH units.

d. ROC concentration at the exhaust of the three-stage control system shall be monitored weekly using an organic vapor analyzer certified according to the requirements of EPA Method 21. Upon completion of the initial source test and associated final report required below, the weekly monitoring results and the final source test report may be submitted to the APCD with a request to reduce the monitoring frequency from weekly to monthly. Weekly monitoring shall be maintained until written concurrence to reduce frequency is issued by the APCD.

5. Source Testing Requirements

Within 30 calendar days of initial operation, and once every six (6) months thereafter, the permittee shall conduct an emissions test for ROC, NOx, PM, CO, NH_3, H_2S and Sulfur Compounds at the exhaust of the three stage filtration emission control system. This

testing shall be conducted by an independent contractor. The following air pollutants shall be measured using the specified source test methods:

H_2S & Sulfur Compounds	SCAQMD Method 307
NH_3	BAAQMD Method ST-1B (January 20, 1982)
PM	CARB Method 5
ROC	EPA Method 18
NOx	CARB Method 100
CO	CARB Method 100

The average of three source test runs shall be used to determine compliance. The tests shall be conducted at normal operating load. For CARB Method 5 the total particulate catch shall include the filter catch, probe catch, impinger catch, and solvent extract. Following the review of the initial compliance test, the APCD may revise the list of air pollutants to be tested every six (6) months.

Testing for purposes of compliance demonstration shall only be conducted after the Part 70 Permit application is received, a temporary Permit to Operate is issued by the APCD, and a source test plan has been submitted and approved. The source test plan shall be submitted for approval ten (10) calendar days prior to actual testing. The APCD shall be notified at least five (5) working days prior to the emissions test and the test schedule shall be re-confirmed one (1) working day in advance of the planned test. APCD personnel shall be allowed to observe the testing.

6. Within 30 calendar days after the completion of the three-stage emission control system source tests required above, a report of the test results shall be submitted to the APCD.

   The test report shall indicate the emissions of hydrogen sulfide and sulfur compounds in ppmv and pounds per hour; ammonia (NH3) in ppmv and pounds per hour; particulate matter (PM) in grains per DSCF and pounds per hour; ROC constituents and rates at the outlet of the Thermal Oxidizer in ppmv and in pounds per hour; and nitrogen oxides (NOx) and carbon monoxide (CO) in ppmv at 3% oxygen and pounds per hour. The report shall also include the biosolids processing rate in tons per hour; and the exhaust flow rates in actual cubic feet per minute and standard cubic feet per minute. The test report shall include an analysis of compliance with Rule 52, “Particulate Matter – Concentration (Grain Loading)”, Rule 53, “Particulate Matter – Process Weight”, Rule 54, “Sulfur Compounds”, and Rule 68, “Carbon Monoxide”.

7. The 4.0 MMBTU/Hr Gulf Coast Environmental Systems Thermal Oxidizer is subject to 40 CFR Part 60, Subpart WWW, “Standards of Performance for Municipal Solid Waste Landfills”. The unit is subject to the control device requirements of a 98% NMOC reduction efficiency or a 20 ppmvd NMOC (as hexane at 3% oxygen) outlet limitation of 40 CFR Section 60.752(b)(2)(iii)(B). The subpart includes monitoring, recordkeeping, reporting and initial and periodic source testing requirements.

   As an alternative, the permittee may be able to request and receive a compliance determination from EPA stating that the LFG meets the “treated” requirements of 40 CFR

Section 60.752(b)(2)(iii)(C). With such a determination, the unit will not be subject to the NMOC emission control requirements of Section 60.752(b)(2)(iii)(B).

8. During operation of the thermal oxidizer, the temperature of the combustion chamber shall not be less than 1,600 degrees Fahrenheit. The temperature shall be regulated automatically by a fully modulated temperature-fuel (or temperature-thermocouple sensing) control system. This temperature requirement may be adjusted after the review of the initial compliance source test provided that the change does not violate any conditions of this Authority to Construct.

   In order to demonstrate compliance with this condition, the permittee shall install and maintain a temperature monitoring device to determine and display the temperature at the combustion chamber. The temperature display must be accurate within +\- 20 degrees Fahrenheit. The temperature displayed for the combustion chamber shall be recorded on a continuous basis on a chart recorder and/or an electronic data logging system.

9. The 4.0 MMBTU/Hr Gulf Coast Environmental Systems Thermal Oxidizer shall be fired on treated landfill gas (LFG) with a sulfur concentration of no more than 20 ppmv, calculated as hydrogen sulfide at standard conditions. The LFG treatment system shall include two (2) vessels containing approximately 78,000 pounds of sulfur removal media, operated in parallel for the control of sulfur content in the combusted gas. The two (2) vessels are a single system which provides sulfur control for gas routed to all combustion devices. The LFG will be further processed through a knockout/mesh pad for removal of water particles 5 micron and larger. Two (2) vessels holding siloxane removal media, operated in parallel or in series, are included in the gas treatment process, but not required by permit or regulation. The sulfur and siloxane reducing media shall each be replaced as warranted by the performance results of the emissions testing required below. This condition is applied pursuant to Rule 26, “New Source Review”, Rule 51, “Nuisance”, Rule 54, “Sulfur Compounds”, and Rule 64, “Sulfur Content of Fuels”.

   Hydrogen sulfide levels in the treated landfill gas shall be monitored prior to combustion in the Thermal Oxidizer, using colorimetric methods or a portable monitor that meets the specifications of Section D.1 of Rule 54, “Sulfur Compounds”, on a daily basis (Monday through Friday, excluding recognized holidays). To verify reasonable correlation between total sulfur concentration and hydrogen sulfide concentration measured using the colorimetric method or portable monitor, total sulfur levels in the treated landfill gas shall be monitored once monthly, prior to combustion, using SCAQMD Method 307.

10. The 4.0 MMBTU/Hr Gulf Coast Environmental Systems Thermal Oxidizer shall be equipped and operated with low NOx burners designed to meet a NOx emission limit of 30 ppmv at 3% oxygen. There is no annual landfill gas combustion limit for the 4.0 MMBTU/Hr Gulf Coast Environmental Systems Thermal Oxidizer. The permitted emissions have been calculated based on the maximum firing rate at full time operation of 8,760 hours per year. This condition has been applied pursuant to the BACT and emission offset requirements of Rule 26, “New Source Review”.

11. Re-claimed water (condensate) from the Fenton Dehydration Chambers may be used for dust control and irrigation at the landfill provided such use is in compliance with the requirements of the State of California Regional Water Quality Control Board (RWQCB) and the State of California Department of Health Services (DHS). If the use for dust control and irrigation at the landfill is not approved by the RWQCB and the DHS, the re-claimed water shall be hauled off-site for disposal at an approved disposal site. The use of the condensate for dust control and/or irrigation shall comply with the following additional requirements:

    d. Condensate application shall occur within Irrigation Area Nos. 1 and 2 as described in the January 2012 Health Risk Assessment. The locations are described with the following parameters:

Area Source	Southwest Corner[1]		Width (m)	Height (m)	Angle[2] (deg)
	UTM E (m)	UTM N (m)			
Area 1	316558	3809097	181.0	151.1	49.59
Area 2	316665	3808968	147.8	339.5	49.59
[1] UTM coordinates are zone 11, NAD83 [2] Angle rectangle is rotated north					

    e. The condensate application rate shall not exceed 5,000 gallons per hour.
    f. Condensate application shall only be conducted between the hours of 7 am and 4 pm.

    In order to comply with this condition, the permittee shall maintain records of the condensate application flow rate, the location of the condensate application, and the date and time condensate application is conducted. In addition, the Part 70 Permit Modification application shall include documentation that the use of re-claimed water for dust control and irrigation at the landfill has been approved by the State of California Regional Water Quality Control Board and the State of California Department of Health Services.

12. The permittee shall maintain the following records:

    u. Weekly and monthly (upon written concurrence from APCD) reactive organic compound (ROC), ammonia (NH_3) and hydrogen sulfide (H_2S) measurements at the exhaust of the dehydration three stage emission control system; and daily (Monday through Friday, excluding recognized holidays) pH measurements of the aqueous liquid in the biofilter's humidification moisture integrator chamber level and pressure drop readings for the HEPA filter of the three stage emission control system;
    v. Daily (Monday through Friday, excluding recognized holidays) and monthly measurement of the sulfur content of the landfill gas at the thermal oxidizer;
    w. Source test reports for ROC, NOx, PM, CO, NH_3, H_2S and Sulfur Compounds at the exhaust of the three stage emission control system (6 month intervals);

x. Dehydration chamber filtration control system biofilter media replacement dates (as deemed necessary through emissions monitoring data);
y. Dehydration chamber filtration control system HEPA monthly inspection and replacement dates as deemed necessary through emissions monitoring data;
z. Flow rate, location, date, and time of re-claimed water (condensate) application for dust control and/or irrigation.

This data shall be maintained at the facility for at least five years and shall be made available to APCD personnel upon request.

13. Prior to construction completion, an application for a Part 70 Permit Modification shall be submitted to the District. The application shall include the District application form, the "Modification to Part 70 Cover Form" cover sheet, and proposed permit conditions for the system. **The application shall also include an as-built complete equipment list and process flow diagram for the system.** The associated filing fee of $450.00 must also accompany the application.

Your application for an Authority to Construct (dated January 26, 2012) was received by this office on January 27, 2012. Additional information was received on March 2, 2012. The application was considered complete on March 29, 2012.

The granting of this permit signifies that the above emissions have been evaluated based on the information provided with your application. Prior to construction completion, an application for an APCD Permit to Operate must be filed. Compliance of the source will be verified through inspection and review of the required data and source test reports.

This Authority to Construct shall expire and shall be canceled two years from the date of issuance unless an extension has been approved in writing by the District (Rule 10).

Within 30 days after receipt of this permit, the permittee may petition the Hearing Board to review any condition on the permit (Rule 22). This permit, or a copy, shall be posted reasonably close to the installation site and shall be reasonably accessible to inspection personnel (Rule 19).

The granting of this Authority to Construct shall not be construed as an endorsement by the District or a guarantee of compliance with the rules of the District.

Contact Kerby E. Zozula, Engineering Division Manager, at 805/645-1421 if you have any questions.

Sincerely,

For:

Terri Thomas, Supervisor
Engineering Division

Michael Villegas
Air Pollution Control Officer

c: Dan Searcy, VCAPCD Compliance Division Manager

VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT

Memorandum

TO: Permit File No. 07340 DATE: May 22, 2012

FROM: John Harader

SUBJECT: Engineering Analysis of Application No. 07340-160
Ventura Regional Sanitation District – Toland Road Landfill
Modification to Biosolids Drying System – New Thermal Oxidizer

FACILITY DESCRIPTION

The Ventura Regional Sanitation District's (VRSD) Toland Road Landfill is located at 3500 North Toland Road in an unincorporated area in eastern Ventura County between the cities of Santa Paula and Fillmore, north of Highway 126. This municipal solid waste landfill began accepting waste in 1962 and was expanded in 1996. The landfill has a Standard Industrial Classification (SIC) Code of 4953, Sanitary Services-Refuse Systems.

As required by Rule 74.17.1, "Municipal Solid Waste Landfills", the landfill is equipped with a landfill gas collection system that uses a number of gas collection wells that are routed to a common collection header. The landfill gas (LFG) is combusted in an 85.8 MMBTU/hr LFG Specialties Inc. enclosed landfill gas flare and nine 250 KW Ingersoll Rand Microturbines. The landfill also has a 2,000-gallon aboveground gasoline storage tank that is equipped with vapor recovery systems to comply with Rule 70, "Storage and Transfer of Gasoline". Permit to Operate No. 07340 is a Part 70 (Title V) Permit.

Authority to Construct Application No. 07340-130 was issued on March 9, 2009 for a Biosolids Drying System, with a three-stage air pollution control system, to be installed at the Toland Road Landfill. Permit to Operate Application No. 07340-131 was submitted to permit the system on April 1, 2009; and a temporary Permit to Operate was issued on April 2, 2009. Over the past 3 years, the system has had numerous operational problems with a significant amount of downtime. On September 13, 2011, Notice of Violation No. 022633 was issued to VRSD as the Biosolids Drying System failed to comply with Condition No. C.3.e of the Authority to Construct that limits ROC emissions to 57 ppmvd as methane as measured by a reference method source test. In addition, portable analyzer readings also indicated that the Biosolids Drying System was likely not in compliance with the 57 ppmvd ROC limit. Subsequently on December 12, 2011 a Stipulated Conditional Order of Abatement (Docket No. 842) was issued by the VCAPCD Hearing Board. The Order of Abatement requires the submittal of this Authority to Construct application to modify the air pollution control system and includes the various increments of progress, which include conducting required source testing within 30 calendar days after

commencing operation and submitting the source test report within 30 calendar days after completion of the testing.

Biosolids are trucked to the Toland Road Landfill from various wastewater treatment plants in Ventura County. The drying system is made up of enclosed modular units manufactured by Fenton Environmental Technologies, Inc. The drying / dehydration/ pasteurization occurs in a rotating dehydration chamber that is equipped with heated thermal oil circulating through its vessel walls. The air emissions from the Fenton Dryers are currently controlled by the following three-stage emission control system: 1) a Bay Products, Inc. Biofilter, 2) followed by a Bay Products Inc. Carbon Filter, 3) followed by a Lifetime Industries HEPA Filter. Dried biosolids are used at the landfill as alternative landfill cover and in the future possibly for fertilizer products.

The Fenton Dryers and three-stage emission control system in its current configuration has not passed all required emission source tests and has not been able to operate effectively on a consistent basis. Specifically, the reactive organic compound (ROC) emission limit of Condition No. C.3.e has not been achieved. It has been determined that the current Bay Products, Inc. Biofilter is not operating as an effective emission control device as designed. This is may be due in part to the fact that the Fenton Dryers are operated as a batch process and have not been able to operate on a consistent and continuous basis. A "biofilter" is considered to be a passive emission control device that depends on proper temperature, moisture content, and nutrient supply for the biological media to achieve the desired control efficiency. The Bay Products Inc. Carbon Filter was originally designed to act as a "polishing" filter downstream of the Biofilter. ROC monitoring results have shown that the control efficiency of the Biofilter is well below 90% and not 98% as designed. The Carbon Filter has been seeing more ROCs than designed and is not effective in tandem with an ineffective Biofilter. The applicant has proposed to replace the carbon adsorption portion of the emission control system with a thermal oxidizer. The Bay Products, Inc. Biofilter will remain in place as it is effective in controlling emissions of ammonia and hydrogen sulfide that are emitted from the Fenton Dryers. The thermal oxidizer will more effectively destroy ROC and other hydrocarbon emissions than the Biofilter due to fact that is an active control system that is not sensitive to various process parameters. The thermal oxidizer will be effective on both batch and continuous operation of the Fenton Dryers and will not be sensitive to prolonged down time.

APPLICATION DESCRIPTION

Authority to Construct Application No. 07340-160 was submitted on January 17, 2012 to modify the Biosolids Drying System, as described below:

Remove The Following Existing Equipment:

Bay Products, Inc. Carbon Filter, 1,500 actual cubic feet per minute (acfm) capacity, 1,500 pounds carbon, 6" bed, 2.7 seconds contact time

Install The Following New Equipment:

4.0 MMBTU/hr Gulf Coast Environmental Systems LLC, Direct Fired Thermal Oxidizer, Model 20-TO, maximum capacity 2,000 acfm maximum capacity, design operating temperature: 1600 degrees Fahrenheit (max temperature 1800 degrees F), equipped with a low NOx burner and fired on landfill gas. The Thermal Oxidizer is equipped with an upstream blower with a maximum rated capacity of 2,000 acfm. The Thermal Oxidizer is also equipped with a temperature measurement device and continuous recorder.

The application states that the minimum ROC destruction removal efficiency is 98 percent or 20 ppmv. The unit is made up of a shell material of carbon steel with internal zinc coating and an insulation material of ceramic fiber modules.

Revise The Three-Stage Emission Control System As Follows:

Authority to Construct No. 07340-130 authorized the following three-stage emission control system for the biosolids drying system exhaust: 1) a Bay Products, Inc. Biofilter, 2) followed by a Bay Products Inc. Carbon Filter, 3) followed by a Lifetime Industries HEPA Filter. The proposed Thermal Oxidizer will be the third and final control system of the three stages. The three-stage emission control system will now consist of the following:

- Bay Products, Inc. Biofilter, 1,500 acfm, 22' x 7' x 8', consisting of 65% shredded wood, 25% nugget bark, and 10% compost (first stage of biofilter is a 24" x 84" x 96" humidification moisture integrator chamber with acid injection pH adjustment for ammonia removal prior to entry into the biofilter stage)

- Lifetime Industries HEPA Filter, 1,500 acfm, 99.97 – 99.99% rated emission control efficiency

- 4.0 MMBTU/hr Gulf Coast Environmental Systems LLC, Direct Fired Thermal Oxidizer, Model 20-TO, maximum capacity 2,000 acfm maximum capacity, maximum temperature 1800 degrees Fahrenheit, equipped with a low NOx burner and fired on landfill gas.

The emission control system has an existing 3,000 acfm capacity blower located upstream of the Bay Products, Inc. Biofilter. The emission control system is equipped with manual draft dampers and fresh air dilution valves to maintain the proper draft through the dryers and to maintain the Bay Products, Inc. Biofilter inlet temperature at the design set point as to not damage the biofilter's biological media. The three-stage emission control system has a nominal exhaust flow rate of 1500 acfm and 1350 dscfm.

All other equipment and components of the Biosolids Drying System will remain as described in Authority to Construct No. 07340-130.

There are no other changes to the Biosolids Drying System as described in Authority to Construct No. 07340-130. Note that the Ingersoll Rand Microturbines listed in Authority to Construct No. 07340-130 have been permitted on Part 70 Permit No. 07340 pursuant to Application No. 07340-132.

The following process description is a revision to the process description of the wet vapor processing and emission control systems section of the process description, as described in the analysis for Application No. 07340-130:

The wet odorous vapors from each of the two biosolids dehydration chambers will be routed to a single, two-stage water cooled condenser/heat exchanger. The operating schedules of the biosolids dryers will be staggered, such that only one dryer at a time will exhaust steam to the condenser. The condenser is a custom fabricated indirect heat exchanger consisting of four banks of 22 platecoils each, with a total condensing surface area of 4,400 square feet. The vapor stream is cooled from 240 degrees F to 160 degrees F. The vapor will be condensed from 5,000 acfm to 500 acfm. As necessary, ambient air of up to 1,000 acfm can added to the 500 acfm and further reduce the temperature to 120 degrees F. The 1500 acfm (approximately 1350 dscfm) of exhaust from the condenser / heat exchanger will pass through a three-stage emission control system.

The revised control system is comprised of a biofilter to remove ammonia and sulfur compounds such as hydrogen sulfide, a HEPA filter to remove fine particulate matter, and a thermal oxidizer for control of ROC and hydrocarbon emissions. Most of any remaining ammonia that enters the thermal oxidizer will be converted to NOx.

Revise Condition Nos. D.2 and G.2 of Authority to Construct No. 07340-130

As proposed by the permittee, lower the landfill gas sulfur concentration limit from 60 ppmv to 20 ppmv. Therefore, all landfill gas fired in the 16.8 MMBTU/Hr Fenton Thermal Oil Heaters, 250 KW Ingersoll Rand Microturbines, and 4.0 MMBTU/hr Gulf Coast Environmental Systems LLC Direct Fired Thermal Oxidizer shall not exceed a sulfur concentration of 20 ppmv, calculated as hydrogen sulfide at standard conditions.

PERMITTED EMISSIONS

The permitted emissions for the initial system were based on a September 20, 2005 source test of a demonstration (pilot) biosolids drying project at the Toland Road Landfill. The emissions were then scaled up from the pilot project flow rate to the “as-built” flow rate. Source testing conducted on the current system on July 13, 2010 and August 4, 2011 yielded exhaust flow rates of 1813 dscfm and 407 dscfm, respectively. The difference in flow rate was due to the differing amounts of dilution air. In the current system, dilution air can be varied as necessary to achieve the proper temperature range for the Biofilter. The source testing showed compliance with all of the emission limits and permitted emissions of Authority to Construct No. 07340-130, except for ROC as described above.

There are some differences in the permitted emissions between the two emission control systems, mainly due to the addition of the thermal oxidizer combustion emissions. The ROC and PM permitted emissions will not change. The Thermal Oxidizer will burn landfill gas resulting in

new emissions of NOx, SOx, and CO. As detailed below, NH3 permitted emissions will decrease.

ROC Emissions – The Reactive Organic Compound permitted emissions will not change from the 57 ppmv and 0.191 lb/hr BACT limits of Authority to Construct No. 07340-130. VRSD has proposed a nominal exhaust flow rate of 1,350 dscfm that has not changed. Therefore, permitted emissions of ROC are calculated as:

(57 ppmv)(1350 dscfm)(16 lbCH4/lbmole)(60 min/hr)(lbmole/385 dscf)($1/10^6$) = 0.191 lb/hr ROC

at 8760 hr/yr = 0.84 tpy ROC

NOx Emissions – There are NOx emissions from the combustion of the landfill gas in the Thermal Oxidizer and NOx emissions from the thermal conversion of ammonia (NH3) in the Fenton Dryer exhaust to NOx. The combustion NOx emissions are based on the use of low NOx burners with an exhaust concentration of 30 ppmv at 3% oxygen. The measured EPA Method 19 F Factor of the landfill gas of 9272 dscf/MMBTU has been used:

(9272 dscf/MMBTU)(46 lb NOx/lbmole)(20.9/20.9-3)(lb mole/385 dscf)(30 ppm/10^6)

= 0.0388 lb NOx/MMBTU

at 4.0 MMBTU/hr = 0.16 lb/hr NOx

at 8760 hours per year = 35,040 MMBTU/yr = 0.70 tpy NOx

VRSD proposes a maximum ammonia concentration of 200 ppm in the Fenton Dryer exhaust (after the Biofilter) and that 50% of this ammonia is converted to NOx. Therefore, the NOx emissions are calculated as:

(100 ppm)(1350 dscfm)(46 lb NOx/lbmole) (60 min/hr)(lbmole/385 dscf)($1/10^6$) = 0.97 lb/hr NOx

at 8760 hr/yr = 4.25 tpy NOx

Total NOx is 0.16 + 0.97 = 1.13 lb/hr NOx and 0.70 + 4.25 = 4.95 tpy NOx

Note that these NOx permitted emissions may be increased based on actual source test results of the Thermal Oxidizer, provided that any increase in NOx emissions comply with all APCD rules and regulations.

PM Emissions – Particulate Matter permitted emissions will remain at the existing Authority to Construct No. 07340-130 limit of 0.07 lb/hr; and at 8,760 hr/yr the tons per year permitted

emissions are 0.31 tpy. Permitted emissions were originally based on the pilot project source testing. Particulate matter testing on July 13, 2010 and August 4, 2011 yielded results of 0.02 lb/hr and 0.01 lb/hr, respectively.

SOx Emissions – There are SOx emissions from the combustion of the landfill gas in the Thermal Oxidizer. The SOx permitted emissions are based on the Authority to Construct concentration limit of 20 ppmv TRS as H_2S in the combusted landfill gas. The emission factor for 20 ppmv SOx in the combusted landfill gas is calculated based on the mass balance that 1 mole of H2S produces 1 mole of SO2 as follows:

(20 ppmv/10^6)(34 lb H_2S/lbmole H_2S)(lbmole/385 scf)(scf/577 BTU)
(10^6 BTU/MMBTU)(64lbSO_2/34 lbH_2S) = 0.006 lbSO_2/MMBTU heat input

at 4.0 MMBTU/hr = 0.024 lb/hr SO_2

at 35,040 MMBTU/yr (8760 hr/yr) = 0.11 tpy

There may be some residual sulfur compounds in the Fenton Dryer exhaust (following the Biofilter) that enters the Thermal Oxidizer. SOx permitted emissions from the dryer exhaust for the previous three-stage control system (AC No. 07340-130) were, coincidentally also calculated at 0.02 pounds per hour and 0.11 tons per year, but the calculation was based on 3.4 ppm at 1350 dscm. However, previous source testing (without the thermal oxidizer LFG combustion) yielded negligible results. The source testing conducted to date shows that SOx emission from sulfur in the dryer exhaust is expected to be negligible after the Thermal Oxidizer as compared to the sulfur compounds in the landfill gas that will be combusted to SOx as detailed above.

CO Emissions – CO emissions are based on the combustion of the landfill gas in the thermal oxidizer with a 50 ppmv at 3% oxygen emissions limit. The measured EPA Method 19 F Factor of the landfill gas of 9272 dscf/MMBTU has been used as follows to calculate permitted emissions:

(9272 dscf/MMBTU)(28 lb CO/lbmole)(lbmole/385 dscf)(20.9/20.9-3)(50 ppmv/10^6)

= 0.0394 lb CO/MMBTU

at 4.0 MMBTU/hr = 0.16 lb/hr CO

at 35,040 MMBTU/yr (8760 hr/yr) = 0.70 tpy CO

The CO emission limit of 50 ppmv at 3% is an estimate provided by the applicant and will be applied pursuant to Rule 29, "Conditions on Permits". The addition of the dryer exhaust to the combustion in the thermal oxidizer should have no effect on the CO mass emissions. As discussed below, the CO emissions are not subject to the BACT and emission offset requirements of Rule 26, "New Source Review". Therefore, the CO permitted emissions may be

adjusted based on actual source test results of the Thermal Oxidizer provided that CO emissions are less than the 2,000 ppmvd limit of Rule 68, "Carbon Monoxide".

NH3 Emissions – As discussed above, the application proposes a maximum estimate of 200 ppmv NH_3 in the Fenton Dryer exhaust (following the Biofilter) with 50 percent being converted to NOx. Therefore, NH_3 permitted emissions are based on an emissions limit of 100 ppmv at the exhaust of the Thermal Oxidizer:

(100 ppmv)(1350 dscfm)(17 lbNH_3/lbmole)(60 min/hr)(lbmole/385 dscf)(1/10^6) = 0.36 lb/hr NH_3

at 8760 hr/yr = 1.58 tpy NH_3

There will be decreases to the SOx permitted emissions for the existing 85.8 MMBTU/Hr LFG Flare and the two 16.8 MMBTU/Hr Fenton Thermal Oil Heaters as a result of the applicant's proposal to lower the landfill gas sulfur concentration limit from 60 ppmv to 20 ppmv. These SOx permitted emission decreases will be calculated separately as a part of Application No. 07340-131 and are not reflected in the permitted emission summary directly below.

Permitted Emissions (PE) Summary:

Tons Per Year	ROC	NOx	PM	SOx	CO	NH_3
AC 07340-160 Biosolids Processing Exhaust (New 3-Stage)	0.84	4.95	0.31	0.11	0.70	1.58
AC 07340-130 Biosolids Processing Exhaust	0.84		0.31	0.11		7.18
Change from AC 07340-160	0.00	+4.95	0.00	0.00	+0.70	-5.60

Pounds Per Hour	ROC	NOx	PM	SOx	CO	NH_3
AC 07340-160 Biosolids Processing Exhaust (New 3-Stage)	0.19	1.13	0.07	0.02	0.16	0.36
AC 07340-130 Biosolids Processing Exhaust	0.19		0.07	0.02		1.64
Change from AC 07340-160	0.00	+1.13	0.00	0.00	+0.16	-1.28

The following tables summarize the entire Biosolids Drying System with the modification to the three-stage control system:

Tons Per Year	ROC	NOx	PM	SOx + H_2S	CO	NH_3

Wet Biosolids Handling	0.39			0.04		0.35
2 – 15 MMBTU/hr Heaters	0.54	1.18	0.74	1.95	32.00	
Truck Loading			0.01			
New 3-Stage Emission Control	0.84	4.95	0.31	0.11	0.70	1.58
Total - Biosolids Drying System (Emission Increase for Project)	**1.77**	**6.13**	**1.06**	**2.10**	**32.70**	**1.93**
Stationary Source - Pre Biosolids Drying System (Current PE)	2.88	13.50	3.60	4.50	45.00	0.00
Stationary Source - Post Biosolids Drying System (Proposed PE)	**4.65**	**19.63**	**4.66**	**6.60**	**77.70**	**1.93**

Pounds Per Hour	ROC	NOx	PM	SOx + H_2S	CO	NH_3
Wet Biosolids Handling	0.09			0.01		0.08
2 – 15 MMBTU/hr Heaters	0.18	0.40	0.25	0.66	10.91	
Truck Loading			0.01			
New 3-Stage Emission Control	0.19	1.13	0.07	0.02	0.16	0.36
Total - Biosolids Drying System	**0.46**	**1.53**	**0.33**	**0.69**	**11.07**	**0.44**
Stationary Source - Pre Biosolids Drying System (Current PE)	1.89	5.15	1.37	1.72	17.16	0.00
Stationary Source - Post Biosolids Drying System (Proposed PE)	**2.35**	**6.68**	**1.70**	**2.41**	**28.23**	**0.44**

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

Rule 26.2.A details the BACT requirements for new, replacement, modified, or relocated emissions units. This rule has a zero threshold for BACT for ROC, NOx, PM-10, and SOx. There is no BACT requirement for CO.

The Biosolids Drying System described above was considered to be (under Authority to Construct No. 07340-130) a new emissions unit and still is considered to be a new emissions unit (under this Authority to Construct Application No. 07340-160) therefore BACT is required. The Biosolids Dryers are known to emit mostly hydrocarbons (ROC) and particulate matter (PM-10) along with smaller amounts of hydrogen sulfide, sulfur compounds and ammonia. As described above, this new Authority to Construct No. 07340-160 has been submitted to modify the emission control system.

As discussed in further detail below, installation and use of the proposed three-stage control system: (1) Biofilter (2) HEPA Filter and (3) Thermal Oxidizer is considered to be BACT for the

control of ROC and PM emissions from the Biosolids Dryers for this Authority to Construct No. 07340-160. The application includes a BACT analysis that concludes that the Thermal Oxidizer is a technologically feasible control strategy and is expected to have the greatest control efficiency over other control options studied. The thermal oxidizer ROC destruction efficiency is expected to be on the order of 98%.

The APCD agrees with the applicant's BACT control equipment determination and in addition will impose the following ROC and PM numerical BACT limitations:

- 0.191 pounds per hour ROC per hour and 57 ppmvd ROC as methane
- 0.07 pounds per hour PM

These ROC and PM limitations have not changed from Authority to Construct No. 07340-130. In addition, the APCD will impose numerical emission limits on hydrogen sulfide, sulfur compounds and ammonia as these pollutants are also precursors to particulate matter. These additional limits have also been applied pursuant to Rule 51, "Nuisance", and Rule 54, "Sulfur Compounds". The Biofilter will be located upstream of the Thermal Oxidizer and will serve to reduce the emissions of hydrogen sulfide, sulfur compounds and ammonia. The Thermal Oxidizer will also serve to oxidize any residual hydrogen sulfide, sulfur compounds and ammonia (exiting the Biofilter) to SOx and NOx. The APCD has limited both concentration and mass flow rate in this case as the air dilution rate in the system can vary significantly and the nominal and expected exhaust flow rate is well below the system's blower and fan maximum capacity.

The Thermal Oxidizer proposed will be fired on landfill gas and will be equipped with a low NOx burner that is designed to meet an emissions limit of 30 ppmvd NOx at 3% oxygen. The Thermal Oxidizer will introduce new emissions of NOx, SOx, and CO to this facility. As discussed above, the CO emissions are not subject BACT, however they will be limited to 50 ppmvd at 3% oxygen and 0.16 pounds per hour as proposed by the applicant and pursuant to Rule 29, "Conditions on Permit". For SOx BACT, the APCD will require that the landfill gas to be combusted in the Thermal Oxidizer be treated to a sulfur content of less than or equal to 20 ppmvd, calculated as hydrogen sulfide at standard conditions. For NOx BACT, the APCD will impose the requirement to install low NOx burners, but however, will impose a NOx limit of 1.11 pounds per hour as to acknowledge the fact that NOx emissions will also result for the combustion of residual ammonia that exits the Biofilter that is upstream of the Thermal Oxidizer. As discussed above and below, ammonia emissions are also subject Rule 51, "Nuisance" and will be limited to 100 ppmvd and 0.36 pounds per hour.

ADDITIONAL BACT DETERMINATION DISCUSSION

Source testing conducted on the two existing Biosolids Dryers has shown that the exhaust consists of approximately 90 to 95% air (oxygen and nitrogen), water vapor (approximately 5% to 10%), and carbon dioxide (1% to 2%). The speciation test results showed parts per million

levels of methane and other hydrocarbons such as benzene, toluene, ethyl benzene, and xylene. Methane and carbon dioxide may be the result of biosolids that have not been totally digested at the waste water treatment plant. The various hydrocarbons can result from the biological breakdown of the biosolids and from products such as paints, solvents, and other household chemicals that may have been flushed down the drain and into the sewer. The Biosolids Dryers have also been shown to emit particulate matter, hydrogen sulfide, sulfur compounds and ammonia. Note that the source testing was conducted after the condenser and heat exchanger that removes most of the water vapor produced from the Biosolids Dryers.

The District's best available control technology (BACT) determinations are based on the definition of BACT in Rule 26.1, "New Source Review – Definitions".

For the majority of applications, BACT is determined to be either the most stringent emission limitation or control technology for an emissions unit which:

a. Has been achieved in practice for such emissions unit category, or

b. Any other emission limitation or control technology, including, but not limited to, replacement of such emissions unit with a lower emitting emissions unit, application of control equipment or process modifications, determined by the APCO to be technologically feasible for such emissions unit and cost effective as compared to the BACT cost effectiveness threshold adopted by the Ventura County Air Pollution Control Board.

When making a BACT determination, the District first looks at the rule books of other air districts in California, such as the South Coast AQMD, Bay Area AQMD, or the San Joaquin Valley APCD. If a rule exists for the subject emissions unit, its limitation is considered to be both "achieved in practice" and "technologically feasible and cost effective". The District has required such a limit to be BACT, even if it is more stringent than a Ventura County APCD rule.

As district rules are considered to be best available retrofit control technology (BARCT) for existing equipment, the District also looks at the published BACT guidelines of other Districts as these determinations are also considered to be both "achieved in practice" and "technologically feasible and cost effective" for new emissions units. In some cases, the District looks to many other sources of information such as the CAPCOA and EPA BACT guidelines, permits issued by other districts for similar equipment, and information from vendors or manufacturers that may be available on the internet.

In this specific case there are very few, if any, published BACT determinations and BARCT rules for Biosolids Dryers. In EPA's "Biosolids and Residuals Fact Sheet – Odor Control in Biosolids Management" (September 2000) the EPA identified biofilters, wet chemical scrubbers, and regenerative thermal oxidizers as air emission control technology that was achieved in practice at biosolids production facilities.

In this publication, EPA identified biofilters as an effective, low cost method of treating low to moderate odorous air when well operated and well maintained. In this same publication, EPA

had only identified a few applications of regenerative thermal oxidizers but stated that they were well suited to treating low volume high strength air streams. The major disadvantage of a thermal oxidizer is the cost of natural gas for fuel, however, in this case burning landfill gas reduces the fuel costs significantly.

The existing three-stage emission control system (biofilter, carbon, HEPA filter) has not been effective in reducing ROC emissions. A biofilter is considered to be a "sensitive" emission control device that is dependent on the proper temperature, humidity, nutrient content, etc. to be a consistent and effective control device. For various reasons, the biofilter has not been effective and the carbon filter was "overwhelmed" as it was designed to be a polishing filter and not the primary ROC emission control device. Although the exact reason(s) why the biofilter has not been effective are not known, it is suspected that the batch process nature of the Fenton Dryers and their inconsistent operating schedule contributed to the failure of the biofilter.

NUMERICAL ROC BACT EMISISON LIMITATION

For this Authority to Construct Application No. 07340-160, BACT has been determined to be use of the proposed three-stage control system: (1) Biofilter (2) HEPA Filter and (3) Thermal Oxidizer.

As discussed above, the APCD will impose the following ROC numerical BACT limitation:

- 0.191 pounds per hour ROC per hour and 57 ppmvd ROC as methane

The Ventura County APCD has one of the lowest ROC BACT thresholds (zero) and ROC offset thresholds (5 tons per year) in the United States. Therefore, it is necessary to impose ROC numerical emission limits that enforce both BACT and offset requirements. For example, the use of a percent reduction limit (say 98%) without the use of a concentration or mass emissions limit does not enforce the tons per year permitted emissions.

This ROC BACT emissions limit has not changed from the original Authority to Construct. The emission limit of 0.191 pounds per hour was originally proposed by VRSD in their letter dated December 31, 2008 based on an actual source test of a pilot biosolids drying unit with identical emission controls. The APCD calculated the ROC concentration limit of 57 ppmvd as methane based on the nominal system flow rate of 1350 dscfm.

In the original Authority to Construct application, the Bay Products Biofilter (with carbon polishing unit) had a design ROC control efficiency of 98% by weight. As portable analyzer testing of the actual Fenton Dryers indicated ROC concentrations (prior to control) on the order of 1000 to 3000 ppmvd, the anticipated ROC concentrations after control calculate to be 20 to 60 ppmvd at 98% control efficiency.

This ROC BACT emission limitation is considered to be both "achieved in practice for such emissions unit category" and "technologically feasible for such emissions unit and cost effective" as detailed in the APCD's definition of BACT in Rule 26.1 above. The APCD has a number of

carbon adsorption units and oxidizers (both catalytic and thermal) controlling ROC / hydrocarbon emissions from sources such as contaminated soil vapor extraction systems, coating operations, solvent operations, baking operations, and semiconductor operations. In some cases, the APCD only imposes a reduction efficiency requirement when there is also an associated material usage limit. For the Fenton Dryers, there are biosolids loads from many different waste water plants and each load of biosolids has variable and unknown ROC emissions potential. Therefore, for this permit the APCD has chosen to impose only a concentration and mass emissions limit and not a reduction efficiency limit. The APCD does not favor a reduction efficiency-only limit when the ROC emissions stream is varying and when there is dilution air involved. It is possible to have a very low ROC concentration situation that may not be able to meet a reduction efficiency requirement. In addition, for this case both an ROC concentration limit and ROC mass emissions rate limit are necessary as the nominal exhaust flow rate of 1,350 dscfm varies with dilution air and is significantly lower than the maximum blower and fan rated capacity.

EMISSION OFFSET REQUIREMENTS

Rule 26.2.B details the emission offset requirements for new, replacement, modified, or relocated emissions units for ROC, NOx, PM, and SOx. The rule does not require offsets for CO. The addition of the Biosolids Drying System includes new emissions units. This application is a modification to the Biosolids Drying System. The tables above show the revised emission increases.

The ROC, PM, and SOx post project stationary source permitted emissions are all less than the thresholds requiring offsets (Rule 26.2.B.1). The offset thresholds are 5.0 tons per year for ROC and 15.0 tons per year for PM and SOx. Therefore, the permittee is not required to supply offsets for the ROC, PM, or SOx emission increases.

The NOx post project permitted emissions are greater than the offset threshold of 5.0 tons per year; however, publicly owned biosolids processing facilities are an “essential public service” as defined in Rule 26.1.12, and the offset requirements are governed by Rule 26.2.B.3. The Toland Road Landfill, operated by VRSD, is publicly owned. The tradeoff ratio is 1.0:1. The revised NOx emission increase for the biosolids drying system is 6.13 tons per year. Therefore, 6.13 tons per year is offset with essential public service credits provided that the NOx permitted emissions for the stationary source are less than 25 tons per year. The NOx emission increase for the existing biosolids drying system was 1.18 tons per year (from the two Fenton Dryers).

RULE COMPLIANCE

Rule 74.17, “Solid Waste Disposal Sites”

Pursuant to Section F.3 of Rule 74.17, Rule 74.17 does not apply to the Toland Road Landfill because VRSD has shown compliance with Sections H and B of Rule 74.17.1, “Municipal Solid Waste Landfills”.

Rule 74.17.1, "Municipal Solid Waste Landfills"
40 CFR Part 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills"

The 4.0 MMBTU/hr landfill gas fired thermal oxidizer is subject to 40 CFR Part 60, Subpart WWW, "Standards of Performance for Municipal Solid Waste Landfills". The unit is subject to the control device requirements of a 98% NMOC reduction efficiency or a 20 ppmvd NMOC (as hexane at 3% oxygen) outlet limitation of 40 CFR Section 60.752(b)(2)(iii)(B). The subpart includes monitoring, recordkeeping, reporting, and initial and periodic source testing requirements.

As an alternative, the permittee can request and receive a compliance determination from EPA stating that the LFG meets the "treated" requirements of 40 CFR Section 60.752(b)(2)(iii)(C). With such a determination, the unit will not be subject to the control requirements of Section 60.752(b)(2)(iii)(B). VRSD has received this compliance determination from EPA for the combustion of the landfill gas in the thermal oil heaters and the microturbines at the stationary source.

The Authority to Construct will require the permittee to request and receive a compliance determination from EPA stating that the LFG meets the "treated" requirements and is subject to Section 60.752(b)(2)(iii)(C) and not subject to the control requirements of 40 CFR Section 60.752(b)(2)(iii)(B) and the associated monitoring, recordkeeping, and reporting for such control devices. Without the EPA determination, the thermal oxidizer will be subject to the Section 60.752(b)(2)(iii)(B) and the required initial and periodic source testing.

Rule 52, "Particulate Matter – Concentration (Grain Loading)

Particulate matter concentration emissions from the dehydration dryers and associated emission control system are expected to comply with Rule 52. The rule allows up to 0.176 grains per cubic foot of dry gas at exhaust flow rates of up to 1,400 dry standard cubic feet dry gas per minute. The exhaust flow rate from the Fenton dryers and associated emission control system is expected to be approximately 1500 cfm (approximately 1350 dscfm) after the addition of dilution air. The measured particulate concentration for the September 20, 2005 demonstration source test was 0.0000735 gr/dscf. Therefore, even with the contingency factor of 20 the concentration is still expected to be significantly less than the requirement of 0.176 gr/dscf. Source test results of 0.002 gr/dscf were yielded during testing of the system with the carbon filter on both July 13, 2010 and August 4, 2011. Authority to Construct No. 07340-160 will also require CARB Method 5 PM source testing at the three stage emission control system exhaust.

Rule 53, "Particulate Matter – Process Weight

Particulate matter process weight emissions from the Fenton dryers and associated emission control system are expected to comply with Rule 53. The rule limits the maximum particulate matter discharge rate (pounds per hour) based on the process weight per hour (pounds per hour). Each biosolids dryer is expected to process 90 tons of wet biosolids per day and operate 24 hours

per day. Emissions from two dryers are controlled and exhausted together. Therefore, the process weight is 180 tons per day or 15,000 pounds per hour. The rule limit is a discharge rate of 11.0 pounds per hour for this process rate. The particulate matter permitted emissions for this exhaust point have been limited to be 0.03 pounds per hour. Source test results of 0.01 lb/hr and 0.02 lb/hr were yielded during testing of the system with the carbon filter on July 13, 2010 and August 4, 2011. Authority to Construct No. 07340-160 will also require CARB Method 5 PM source testing at the three stage emission control system exhaust.

Rule 54, "Sulfur Compounds"

The emissions of SO_2 and H_2S from this project are expected to comply with the standards of Rule 54. An updated dispersion modeling (report dated January 2012) has been conducted and demonstrates compliance with the SO_2 and H_2S property line concentration limits. The District has reviewed the submitted modeling report and found it to be consistent with dispersion modeling practices. The emission limits of the proposed Authority to Construct will ensure compliance with Rule 54.

Rule 64, "Sulfur Content of Fuels"

Rule 64 requires that the sulfur content of the fuel not exceed 50 grains per 100 cubic feet of gas (788 ppmv) as H_2S. An October 19, 2011 source test report for the existing 85.8 MMBTU/hr landfill gas flare includes a landfill gas sulfur content of 13.21 ppm as H_2S. As discussed above, the SOx permitted emissions are based, in part, on a landfill gas sulfur content of 20 ppmv, as H_2S. Therefore, the thermal oxidizer is expected to operate in compliance with Rule 64. Section D.3 of Rule 64 requires monitoring of the sulfur content of the landfill gas on a quarterly or annual frequency as applicable.

Rule 68, "Carbon Monoxide"

Carbon Monoxide (CO) emissions from the Fenton dryers and associated emission control system, including the landfill gas fired thermal oxidizer, are expected to comply with Rule 68. The rule limits CO emissions to 2000 ppmvd at standard conditions. The application proposes a limit of 50 ppmvd for CO. The District has calculated permitted emissions based on 50 ppmvd but can modify the permitted emissions based on required source testing.

RULE 26.13 PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

Rule 26.13, "New Source Review – Prevention Of Significant Deterioration", applies to new major sources or to major modifications as defined in 40 CFR Part 52.21(b)(1) and 40 CFR Part 52.21(b)(2), respectively. In order to be a major source for PSD, the potential for any regulated pollutant must exceed 250 tons per year or 100,000 tons per year for greenhouse gases (GHGs). The post project permitted emissions for Biosolids Drying Project are all below 250 tons per year and the greenhouse gases (GHGs) are less than 100,000 tons per year, therefore Rule 26.10 does not apply. The application incudes an analysis of the greenhouse gas emissions for the stationary source. The report includes the calculated actual GHG emissions from landfill fugitive emissions of 1,325 CO_{2e} tons per year. The application uses GHG emission factors for CH_4 and N_2O from

EPA 40 CFR Part 98 Mandatory Greenhouse Gas Reporting Table C-2 for biogas of 3.2 grams CH_4 per MMBTU and 0.63 grams N_2O per MMBTU. The Global Warming Potentials (GWP) of 21 for CH_4 and 310 for N_2O are used. The overall GHG emissions are calculated to be 28,212 tons CO_{2e} per year. The District used the factor of 52.07 kg CO2/MMBTU for biogas (40 CFR Part 98 Mandatory Greenhouse Gas Reporting Table C-1). The calculated stationary source GHG emissions for the landfill gas combustion units (including the proposed thermal oxidizer) is 76,610 tons CO_{2e} per year. Combined with the fugitive landfill emissions, the stationary source potential to emit is 77,900 tons CO_{2e} per year; which is less than the PSD threshold of 100,000 tons per year. However, biogenic CO2 emissions are currently not included in major source PSD determinations as stated in EPA's final rule dated July 20, 2011 "Deferral for CO2 Emissions From Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs". In any case, the Biosolids Drying System does not increase the amount of landfill gas combustion as all gas that would have been combusted in the existing flare is now combusted in the microturbines and Fenton Dryers and will also be combusted in the Thermal Oxidizer.

RULE 51 (NUISANCE) REQUIREMENTS FOR TOXIC EMISSIONS

VRSD has submitted an updated health risk assessment which includes the proposed thermal oxidizer. The HRA includes all emissions units at the stationary source. The HRA has been reviewed by the District. The cancer risks and acute and chronic noncancer risks remained below the District's permit issuance levels. The cancer risk and chronic noncancer hazard index increased about 10% due to the addition of the thermal oxidizer. The acute hazard index, which was driven by the ammonia from the condensate application decreased. This was due to a change in dimension and location of the dust control areas. See the District memo dated February 28, 2012 for additional information. The revised condensate application area will be included in Authority to Construct No. 07340-160.

The calculated cancer risks at the calculated maximum impact and the nearest residence for a 9-year exposure are 0.478 in a million and 0.168 in a million, respectively. This calculation included the following sources of emissions at the stationary source: (1) two process heaters; (2) biosolids dryer exhaust; (3) nine microturbines; (4) biosolids receiving, storage, and feed hoppers; and (5) application of biosolids condensate (water) for dust control at the landfill. The composition of the biosolids dryer exhaust includes five criteria pollutants: oxides of nitrogen (NOx), carbon monoxide (CO), oxides of sulfur (SOx), particulate matter (PM), and reactive organic compounds (ROC). Toxic emissions include ammonia, hydrogen sulfide, sulfur compounds, hydrogen chloride, hydrogen fluoride, formaldehyde, benzene, chlorobenzene, and toluene. The HRA assumption for ammonia emissions at the dryer exhaust is 0.358 pounds per hour which is equivalent to the permitted emissions and the emission limit.

The new Authority to Construct application also included an Odor Impact Analysis. The ammonia emissions from the application of the condensate for dust control is considered to be the greatest source of odor for the system. The analysis demonstrates that the ammonia concentrations are below the odor threshold. See the District memo dated February 28, 2012 for additional information.

The new Thermal Oxidizer will significantly reduce the biosolids odor potential from the Fenton Dryers. Potential odors from the other components of the Biosolids Drying System are being addressed through the County of Ventura Conditional Use Permit (CUP) No. 3141. Condition No. 66 of this CUP allows for an Odor Control Plan and on April 13, 2012 the Odor Control Plan was significantly revised to require additional odor mitigation measures. The combination of the new Thermal Oxidizer and revised Odor Control Plan is expected fully mitigate the potential for odors from the Biosolids Drying System.

PUBLIC NOTIFICATION REQUIREMENTS

This application does not trigger the newspaper notification requirements of Rule 26.7 since the potential to emit of the new, replacement, modified, or relocated emissions units covered by this application are below the thresholds of Table B-1 of Rule 26.7.

This application does not trigger the public notification requirements of H&SC Section 42301.6 since the applicant has stated that this source is not located within 1,000 feet from the outer boundary of a school site.

Once the biosolids drying project is installed and a Part 70 Permit Modification application is submitted, notification is required by Rule 33.7, "Part 70 Permits – Notification". The District is required to submit a copy of the Permit to Operate application, the proposed changes to the Part 70 permit, and the District's analysis of the application to EPA Region 9 for a 45 day review period. Rule 33.7 does not require public notice for a Minor Part 70 Permit Modification.

CONDITIONAL USE PERMIT / CEQA PROCESS

A modification to add the biosolids drying system was required for the Conditional Use Permit that VRSD holds for the Toland Road Landfill (CUP 3141). The Ventura County Resource Management Agency Planning Division was the lead agency for the CEQA process. The modification is defined as a Minor Modification and is referred to as "LU06-0111". The modification was approved by the Ventura County Board of Supervisors on September 25, 2007.

No changes to the CUP are required for replacing the carbon filter component of the emission control system with a thermal oxidizer. As discussed above, Condition No. 66 of this CUP allows for an Odor Control Plan and on April 13, 2012 the Odor Control Plan was significantly revised to require additional odor mitigation measures.