

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court, Suite 103; Davis, CA 95618

Fugitive Landfill Emission Evaluation

ENGINEER:

René Toledo

ATC #	C-07-164
SIC Code #	4953
UTM E	613.9 km
UTM N	4272.2 km

FACILITY NAME:

Yolo County Central Landfill

LOCATION:

The equipment is located at 44090 County Road 28H in Woodland. The equipment is not located within 1000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6.

PROPOSAL:

As summarized in Yolo County Central Landfill's (YCCL's) Joint Technical Document (Page 1 - excerpt attached to application), the source is proposing to modify Permit to Operate (PTO) P-15-05 by:

- Increasing the overall design capacity of the landfill to 49,035,200 cubic yards;
- Increasing the overall capture and control efficiency of the landfill from 75.0% to 75.5%;
- Increasing the number of waste management units operated as bioreactors;
- Installing a landfill-based anaerobic digester for the specific composting of green-, food-, and other organic wastes;
- Mining landfill waste located in bioreactor cells that have reached the end of their methane generation cycle;
- Use a biocover as intermediate soil cover for the new waste cells; and
- Installing a permanent household hazardous waste collection facility (currently exempt from air district permitting).

As part of this emission evaluation, the District will calculate the landfill's revised potential to emit using EPA's Landfill Gas Emissions Model (LandGEM) Version 3.02 (released May 2005) software using revised emissions data received from the source as part of this evaluation.

It should be noted that two (2) other stationary sources currently operate at the Yolo County Central Landfill:

- o MM Yolo Power LLC and NEO Yolo LLC (commonly operated by MM Yolo Power LLC) consisting of a landfill gas collection system (serving YCCL), five (5) landfill gas fired internal combustion (IC) engines, and (1) landfill gas fired flare; and
- o Recycle America Alliance consisting of one (1) diesel fired IC engine driving a greenwaste trommel screen, and one (1) emergency diesel fired IC engine powering a water pump.

PROCESS:

Municipal solid waste (MSW) landfill fugitive emissions

The majority of the landfilling process consists of placing waste into active waste management cells that are covered daily with soil or chipped greenwaste. Once a cell is filled to capacity, it is covered with a final layer of soil and the waste is allowed to degrade naturally. In general, as the waste decomposes it produces landfill gases that contain large amounts of methane (CH₄) and carbon dioxide (CO₂), as well as, relatively small amounts of non-methane organic compounds (NMOC) and hazardous air pollutants (HAP's). Overtime these gases migrate upward through the waste cells and emitted as fugitive emissions. Conservatively, this evaluation assumes that all of the NMOC emissions are volatile organic compounds (VOC's).

In conjunction with the normal landfilling cells, the facility also operates two types of bioreactors. These bioreactor cells accelerate the degradation of waste by circulating fluids and air within the stored waste, and as a result it increases the cell's landfill methane production rate. In the anaerobic bioreactors, only liquids are circulated within the landfilled waste. While in the aerobic bioreactors both air and liquids are circulated. In order to maximize the amount of landfill gas captured from the existing bioreactor cells, the final soil cover is substituted by a plastic membrane. This allows the facility to minimize the amount of fugitive gas that is released into the atmosphere from the anaerobic bioreactor cells, while maximizing the amount of gas routed to the collection system (assumed to be 75.5% of the total amount of gas produced). Emissions from the existing aerobic cells are currently routed to the gas collection system or a biofilter unit. As part of the construction of the new bioreactors, YCCL is proposing to use a biocover over the intermediate soil cover in these cells.

The facility's landfill gas collection system is permitted under Permit to Operate (PTO) P-26-98(t1). The system is composed of a network of wells, pipes, valves, and a central gas blower. The collected gas is then used as fuel for the NEO Yolo LLC and MM Yolo LLC equipment. Any gases not captured by the collection system are assumed to be emitted as fugitive emissions through the surface of the waste management cells.

In order to maximize the use of existing anaerobic digester and aerobic bioreactor cells, the landfill has proposed the mining (excavation) and sorting of landfilled waste. As proposed, the mining will only occur for cells that have reached the end of their methane gas generation cycle and have not had leachate (or other liquids) circulated for more than one year. The District will not differentiate the composting of green- or food-waste in the anaerobic bioreactor from any other bioreactors currently operated at the site.

For reference, the District has previously exempted the household hazardous waste collection facility (see exemption letters dated February 5, 2004 and August 20, 2007).

FLOW DIAGRAM: See application.

EQUIPMENT: MSW landfill not to exceed a total maximum design capacity of 49.0352 million cubic yards

CONTROL EQUIPMENT: Negative pressure landfill gas collection system serving the conventional (non-bioreactor) and bioreactor portions of the landfill and LFG Specialties, F-2000 enclosed flare (shared with P-26-98*)

* Although the landfill cells are served by a gas collection system, the equipment is not owned or operated by YCCL (see PTO P-26-98(t1)). Since the collection system's capture efficiency of 75.5% will be applied to the site's total fugitive emissions calculation, the District will reference the collection system and its operating permit number in YCCL's permit.

APPLICATION DATA:

<u>Proposed Design Parameters</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Proposed Maximum Design Capacity =	49,035,200 million cubic yards (air space)	-	Applicant ^a
Proposed Maximum Design Capacity =	21,533,210 megagrams (waste in place)	-	Applicant ^a
Initial Year of Operation =	1976	Open	Applicant ^a
Last Year of Known Acceptance =	2007	A	Applicant ^b
Estimated Year of Closure =	2082	Closed	Applicant ^c

^a Proposed designed capacity after proposed height increase (see JTD, Appendix K - submitted 07/2007).

^b Based on the site's 2007 Throughput/Production report.

^c Yolo County currently estimates the landfill's closure date as 2082. The closure date has been developed using the current refuse acceptance rate (adjusted for the region's expected population growth) and a maximum waste design capacity of 49,035,200 cubic yards (see the facility's revised solid waste permit submitted on 12/11/2007 and design capacity calculations received 01/30/2008).

<u>Proposed Process Limits</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Daily Throughput =	1,800 tons MSW	TA	Applicant *
1st Quarter Throughput =	161,550 tons MSW	-	Applicant
2nd Quarter Throughput =	161,550 tons MSW	-	Applicant
3rd Quarter Throughput =	161,550 tons MSW	-	Applicant
4th Quarter Throughput =	161,550 tons MSW	-	Applicant
Max. Yearly Throughput =	646,200 tons MSW	TY	Applicant

* In order to maintain a high level of operational flexibility, the source has requested that the ATC's acceptance rates equal the acceptance rates of it's amended solid waste permit (1800 tons/day, 161,550 tons/quarter, and 646,200 tons/year). If the landfill was to operate at this large daily acceptance rate, the landfill would be expected to prematurely achieve capacity in the 2034 calendar year. Conservatively, this value represents the total amount of waste landfilled (i.e. no diverted waste).

ASSUMPTIONS:

<u>Gas Collection System</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Min. Collection Capture Efficiency =	75.5 %	CE	Applicant

<u>Miscellaneous Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
1 megagram (Mg) =	1.1023 tons	MG	District
Standard Molar Volume =	385 cubic feet/lb-mole	MV	District
NMOC Molecular Weight =	86.18 g/g-mole	MW	AP-42, Section 2.4, Equation-4 (11/1998)

EMISSION FACTORS:

<u>Analytical Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Landfill Gas Temperature =	25 ° K (= 77 °F)	T	AP-42, Section 2.4, Equation-4 Default Value
Conventional Methane Generation Rate =	0.02 (unitless)	kc	40 CFR, Section 60.754 ^a
Bioreactor Methane Generation Rate =	0.20 (unitless)	kb	Applicant ^b
Methane Generation Potential =	110.0 m ³ /Mg	L _θ	Applicant ^b
Uncorrected NMOC Concentration =	250.0 ppmv, as C ₆	NMOC	Applicant ^c
Avg. Methane (CH ₄) Concentration =	453,000 ppmv	MC	From Emission Eval. C-03-226 ^d
Avg. Carbon Dioxide (CO ₂) Concentration =	370,000 ppmv	CC	From Emission Eval. C-03-226 ^d
Avg. Nitrogen Oxide (NO ₂) Concentration =	193,000 ppmv	NC	From Emission Eval. C-03-226 ^d
Avg. Oxygen (O ₂) Concentration =	5,000 ppmv	OC	From Emission Eval. C-03-226 ^d

^a Based on the average 30 year rainfall measurements, the Sacramento region receives an average of 17.52 inches of rain per year. As such, a methane constant value (k) of 0.02 will be used.

^b As proposed by the source, the methane generation potential will be adjusted to reflect the data collected from bioreactor sampling data and Tier 2 testing (see source's request dated 04/28/2008).

^c As proposed by the source, the uncorrected NMOC concentration will be set to 250.0 ppmv (as hexane) in order to better reflect the site specific concentrations achieved by the site for both the conventional and bioreactor WMU (see source's request dated 04/28/2008). ATC C-03-226 previously used an uncorrected value of 940 ppmv (as C₆).

^d Average Tier 2 emission values used in the District's last emission evaluation of the source (see Emission Evaluation C-03-226).

<u>EPA LandGEM Emission Summary</u> ^{a,b}	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Uncontrolled NMOC Generation Rate =	90.34 Mg/year	M _{NMOC}	Calculated for Calendar Year 2080 ^c
Max. Uncontrolled CH ₄ Generation Rate =	51,206,725 m ³ /year	Q _{CH4}	Calculated for Calendar Year 2080 ^c

^a Previously, the District evaluated the source's potential to emit at the end of the landfill's useful life using the equations listed in AP-42, Section 2.4 by conservatively applying the maximum yearly acceptance rate to all future years of operation. In a departure from this methodology, the District has, at the request of EPA, used the LandGEM software to evaluate the site's uncontrolled NMOC and CH₄ emissions using the projected acceptance rates for the site.

^b The District has also chosen to use YCCL's projected acceptance rates contained in the JTD, Appendix O (07/2007). As explained in YCCL's LandGEM evaluation, the landfill's acceptance rate projections are based on the projected population growth for Yolo County (as presented in Appendix L). It is expected that this new methodology better reflects the operation's growth and emission potential.

^c LandGEM emission estimates for calendar year 2080 (two years prior to the landfill's expected closure date). Since the YCCL expects to deposit waste in both conventional cells and bioreactor cells, the two different operating scenarios have been evaluated and the cumulative emissions have been calculated (see attached "Summary Table: LandGEM Results for Both Conventional and Bioreactor WMU's").

EMISSION CALCULATIONS:

1. Determine Ratio of Nitrogen to Oxygen Observed in Landfill Gas Testing:

$$\text{Ratio of NO}_2 : \text{O}_2 = \text{NC} / \text{OC} = 39 \text{ (unitless)}$$

2. Determine Air-Infiltration Corrected NMOC Concentration for Use in LandGEM Model:

$$\text{Air-infiltration Corrected NMOC Concentration} = (\text{NMOC} * 10^6) / (\text{CC} + \text{MC} + \text{NC} + \text{OC}) = 246.1 \text{ ppm}^*$$

* Per AP-42, Section 2.4, Equation-2 (11/1998), because the ratio of NO₂ to O₂ is greater than 4, Equation-2 requires that the air infiltration correction equation also be adjusted for the concentration of nitrogen. As such, the calculated NMOC concentration (CNMOC) has been corrected for nitrogen. For reference, the previous emission factor was evaluated as 940 ppmv as C₆.

3. Determine Maximum Fugitive VOC* Emissions From Landfill:

Max. Daily VOC Emissions = M _{NMOC} * MG * (2,000 lbs/ton) * (1 year/365 days) * (100% - CE) =	133.7 lbs/day **	Formula Symbol
Max. 1st Quarter VOC Emissions = MD * (90 days/quarter) =	12,032 lbs/quarter **	MD
Max. 2nd Quarter VOC Emissions = MD * (91 days/quarter) =	12,165 lbs/quarter **	
Max. 3rd Quarter VOC Emissions = MD * (92 days/quarter) =	12,299 lbs/quarter **	
Max. 4th Quarter VOC Emissions = MD * (92 days/quarter) =	12,299 lbs/quarter **	
Max. Yearly VOC Emissions = M _{NMOC} * MG * (100% - CE) =	24.40 tons/year **	

* For permitting purposes, the NMOC emissions will be conservatively assumed to be 100% VOC.

** Due to several factors affecting the decomposition of waste, a linear relationship does not exist between the amount of waste being deposited and the amount of fugitive NMOC emissions released by the landfill (see the attached LandGEM emission model summary for Year 1976 and 2015).

RULE & REGULATION COMPLIANCE EVALUATION:

District Rule 2.3-Ringelmann

Visible emissions from the operation are expected to comply with the 40% opacity rule limit.

District Rule 2.5-Nuisance

The operation is expected to comply with the rule requirement of no discharge which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or the public. A condition will not be placed on the ATC, but will be added to the PTO upon implementation.

District Rule 2.38-Standards for Municipal Solid Waste Landfills

As discussed below, upon modifying the landfill to allow for the capacity expansion, YCCL will become subject to the requirements of 40 CFR Part 60, Subpart WWW. Therefore, per Section 103.1, YCCL is no longer subject to the requirements of this rule.

District Rule 3.4-New Source Review

The following section will compare the current emission limits for PTO P-15-05 against the emission limits of proposed ATC C-07-164. Previously, the landfill's total VOC potential to emit (PTE) was calculated using the standard equations of EPA AP-42, Section 2.4 (Municipal Solid Waste Landfills) and several landfill gas values (e.g. methane generation potential (Lo) and NMOC concentration (NMOC)) that were larger than the values determined during the recent Tier II testing. Although as part of this modification YCCL proposes an increase of the site's overall waste disposal capacity, the District's use of EPA's LandGEM program and refined Lo and NMOC values results in a more accurate PTE for the site. As such, even though YCCL has proposed to double the landfill's capacity, the final emissions of ATC C-07-164 have not doubled since this evaluation uses the refined landfill parameters and the LandGEM program.

PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT

	<u>Daily</u>	<u>Yearly</u>	
VOC	133.7 lb	24.40 tons	Use for annual billing
CO	0.0 lb	0.00 tons	Use for annual billing
NOx	0.0 lb	0.00 tons	Use for annual billing
SOx	0.0 lb	0.00 tons	Use for annual billing
PM10	0.0 lb	0.00 tons	Use for annual billing

	<u>Quarterly</u>			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	12,032	12,165	12,299	12,299
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

Previous quarterly potential to emit for modified permit *

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	VOC (lb)	12,193	12,329	12,464
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* Potential to Emit (PTE) from P-15-05 (issued 04/14/2005). Please note that the PTE listed in PTO P-15-05 reflects the source's worst case emissions expected at it's previous closure date of 2021.

Historic potential emissions for modified permit *

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	VOC (lb)	12,193	12,329	12,464
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* Section 220 of Rule 3.4 defines "historical potential emissions" (HPE) as the emissions of a unit prior to a modification based on the emission limits listed in the unit's previous Authority to Construct (ATC) or Permit to Operate (PTO). Section 220 also states that emission limitations are treated as part of an emission unit's design only if the limitations are representative of "normal operations". Lastly, Section 220 specifies that "normal operation" is the usual or typical operation of an emissions unit resulting in "actual emissions" which are at least 80% of the specific limits contained in the unit's previous ATC or PTO.

When evaluating the landfill in respect to the requirements of Section 220, the District will consider the following:

- The landfill accepts waste on an on-demand basis which is directly related to the population of Yolo County and the amount of waste in-place equals the total amount of waste disposed in the facility since its opening in 1976 (see 2007 JTD Section 2.2, Page 5-6).
- The landfill consists of several waste management units (WMU or cells), with each WMU having a specific waste capacity and design. At any given time only a few of the units are being actively used. Furthermore, YCCL only constructs additional cells when the capacity of the active cells is about to be reached (see 2007 JTD Section 4.3, Page 24-25). As such, the landfill's operating capacity will not reflect it's maximum design capacity until the last year of operation.
- The landfill's total uncontrolled VOC emission rate is directly related to the age and the amount of waste in-place, and the design characteristics of each active and closed WMU cell. Therefore, the landfill's total VOC emissions will increase (until closure) or decrease (after closure) in direct accordance with the landfill's waste acceptance and disposal rates (see attached LandGEM emission model).
- As listed on PTO P-15-05, the landfill's previous PTE limits represent the landfill's expected maximum VOC emissions after having achieved a final capacity of 26.6 million cubic yards of waste in-place in the calendar year of 2021 (see Emission Evaluation C-03-226).

The current amount of waste in-place is approximately 26% of the facility's proposed design capacity and the site's current VOC emission are well below the maximum PTE of PTO P-15-05. Due to this method of permitting, the source could not realistically be within 80% of the permitted PTE until sometime prior to 2053. Therefore, for the purpose of determining whether the limitations are representative of normal operations, the District will check whether the source has had any one year out of the last five where the actual waste in-place amounts came within 80% of the Projected amounts entered in LandGEM.

Although YCCL has been in operation since 1976, the source has only been operating under the requirements of PTO P-15-05 since the 2nd quarter of the 2005 calendar year. The highest throughput for this permit after 2005 was 237,497.41 tons of waste received in 2006, which was 36.8% of the permitted throughput of PTO P-15-05 (646,200 tons). From Appendix O of the 2007 JTD (Pages 643-644), the actual waste in-place amount for the 2006 calendar year was 5,415,825 Mg, which was 85% of the expected design capacity (i.e. waste in-place) for that operating year (6,726,686 Mg - see Emission Evaluation C-03-226). As such, under the provisions of Section 220, the emission limitations are representative of normal operations and the HPE is equal the previous PTE.

<u>Pollutant</u>	<u>Trigger</u> (lb/day)	<u>BACT</u>	<u>Quarterly Increase</u>	<u>BACT</u>
		<u>Proposed</u> (lb/day)		
VOC	10	134	No	No
CO	250	0	No	No
NOx	10	0	No	No
SOx	80	0	No	No
PM10	80	0	No	No

OFFSETS

Quarterly permitted emissions for other permits at the stationary source *

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	VOC (lb)	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0

PM10 (lb) 0 0 0 0

* Per Policy 25, the calculated PTE for all other permitted units not including the emergency-use IC engines (see Quarterly PTE worksheet dated 01/26/2009).

Quarterly permitted emissions for the stationary source including proposed emissions *

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	12,032	12,165	12,299	12,299
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* Not including emergency engines.

Offset triggers

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	7,500	7,500	7,500	7,500
CO (lb)	49,500	49,500	49,500	49,500
NOx (lb)	7,500	7,500	7,500	7,500
SOx (lb)	13,650	13,650	13,650	13,650
PM10 (lb)	13,650	13,650	13,650	13,650

Quantity of offsets required

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

MAJOR MODIFICATION

Facility Total Potential to Emit*

24.41 TPY VOC
0.05 TPY CO
0.41 TPY NOx
0.01 TPY SOx
0.00 TPY PM10

Major Source Thresholds

25 TPY VOC
100 TPY CO
25 TPY NOx
100 TPY SOx
100 TPY PM10

* See the attached Quarterly PTE worksheet (dated 01/26/2009).

Last five year emission aggregate*

0.01 TPY VOC
0.05 TPY CO
0.41 TPY NOx
0.01 TPY SOx
0.00 TPY PM10

Major Modification Thresholds

25 TPY VOC
100 TPY CO
25 TPY NOx
40 TPY SOx
25 TPY PM10

* See attached 5-Year Emission Aggregate worksheet (dated 01/26/2009).

Result: The proposed modification is not a major modification

PUBLIC NOTICE

"Increase in historic potential to emit"

-161 lb VOC/quarter
0 lb CO/quarter
0 lb NOx/quarter
0 lb SOx/quarter
0 lb PM10/quarter

Exemption level for notification

7,500 lb VOC/quarter
49,500 lb CO/quarter
7,500 lb NOx/quarter
13,650 lb SOx/quarter
13,650 lb PM10/quarter

Result: Public notice is not required

District Rule 3.8-Federal Operating Permits

The source is subject to the rule pursuant to Section 102.5, and is operating under a valid Title V permit. For reference, Section 102.5 requires that sources subject to Section 111 of the Federal Clean Air Act (CAA) comply with this rule. Specifically, Section 111(d) of the CAA required California to submit a State Plan that identified and established performance standards for existing sources of significant amounts of air pollution. California's State Plan was promulgated as 40 CFR Part 62, Subpart F (Part 60.1115-62.1130), which requires that existing MSW landfills (for which construction, reconstruction, or modification was commenced before May 30, 1991) comply with the provisions of 40 CFR Part 60, Subpart Cc. YCCL is currently operating in compliance with the requirements of Subpart Cc and will become subject to the Subpart WWW requirements upon beginning construction to increase capacity.

The facility's current Title V permit (F-01392-2) was issued on August 20, 2007, and will be amended to incorporate the process and emission limits evaluated

for this application. The source has requested that the District process the Title V amendments and this application concurrently through the provisions of Enhanced New Source Review. Section 302.6(b) of the rule requires that the source maintain all records on site for a period of five (5) years from the date of entry and make these records readily available to the District upon request.

District Rule 3.20-Ozone Transport Mitigation

As documented above, the facility total PTE is above 10 tons per year for VOC or NOx, and therefore the post-project Stationary Source Potential to Emit (SSPE) will be calculated.

Annual permitted emissions for the stationary source including proposed emissions

VOC (lb)	48,813	lbs
NOx (lb)	826	lbs

Annual permitted emissions for equipment which is exempt from Rule 3.4*

VOC (lb)	13	lbs
NOx (lb)	826	lbs

* Emissions from PTO's P-71-05 and P-25-07 (see the attached Quarterly PTE worksheet dated 11/05/2008)).

Post -project Stationary Source Potential to Emit (SSPE)

VOC (lb)	48,800	lbs
NOx (lb)	0	lbs

Because the post-project SSPE is greater than 10 tons (20,000 lbs) per year for VOC or NOx, per section 301.1, calculations shall be performed to determine the quantity of mitigation required, if any.

Pre -project Stationary Source Potential to Emit (SSPE)

VOC (lb)	49,460	lbs
NOx (lb)	0	lbs

Quantity of offsets required by Rule 3.4*

VOC (lb)	0	lbs
NOx (lb)	0	lbs

* Sum of quarterly offset amounts required per Rule 3.4 evaluation.

Quantity of Mitigation required by Rule 3.20

VOC (lb)	0	lbs
NOx (lb)	0	lbs

District Rule 8.1-New Source Performance Standards

This rule adopts by reference the Federal New Source Performance Standards (NSPS) for specific sources as promulgated by the EPA in 40 CFR 60. Because the source is subject to the requirements of 40 CFR 60, Subpart WWW (see below), it is subject to the requirements of this rule. Since Rule 8.1 does not establish any additional requirements not already included in Subpart WWW, the permit will not reference this rule.

District Risk Management Plan and Risk Assessment Guidelines

As part of this project, the District will conservatively perform a health risk assessment that accounts for the increase in the facility's capacity and calculates the health risks associated with the landfill's proposed operating parameters. This assessment will first determine the total amount of uncontrolled HAP emissions for all landfill gas constituent outputs of the LandGEM program (see attached). Then the District will apply a 24.5% fugitive emission factor to all HAPs specifically identified in the Federal Clean Air Act (CAA) or the District's RMPRAG.

The District's guidelines require that any new or modified emission unit with an individual cancer risk greater than 1 and not exceeding 10 in a million, or a hazardous index (acute or chronic) greater than 1, satisfy Toxic-Best Available Control Technology (T-BACT). While any or project with a total cancer risk above 10 in a million is considered unapprovable. The landfill's health risk assessment is summarized below.

1. All Constituents Present in Uncontrolled Landfill Gas Produced by the Yolo County Central Landfill:

Pollutant Prioritization ^a	CAS Number	Clean Air Act	RMPRAG	LandGEM Output for Calendar Year 2080			
		Listed HAP ^b (Yes / No)	Listed HAP ^c (Yes / No)	Conventional (Mg/yr)	Bioreactor (Mg/yr)	Total Uncontrolled HAPs (Mg/yr) (lb/yr)	
1,1,1-Trichloroethane (methyl chloroform) =	71556	Yes	Yes	0.0157	0.2571	0.2728	601
1,1,2,2-Tetrachloroethane =	79345	No	No	0.0452	0.7413	0.7865	1,734
1,1-Dichloroethane (ethylidene dichloride) =	75343	Yes	No	0.0581	0.9536	1.0118	2,231
1,1-Dichloroethene (vinylidene chloride) =	75354	Yes	Yes	0.0047	0.0778	0.0826	182
1,2-Dichloroethane (ethylene dichloride) =	107062	Yes	Yes	0.0099	0.1629	0.1728	381
1,2-Dichloropropane (propylene dichloride) =	78875	Yes	No	0.0050	0.0817	0.0866	191
2-Propanol (isopropyl alcohol) =	67630	No	Yes	0.7357	12.0667	12.8024	28,224

Acetone =	-	No	No	0.0995	1.6323	1.7318	3,818
Acrylonitrile =	107131	Yes	Yes	0.0818	1.3421	1.4239	3,139
Benzene (No Co-disposal) ^d =	71432	Yes	Yes	0.0363	0.5958	0.6322	1,394
Bromodichloromethane =	75274	No	No	0.1243	2.0390	2.1634	4,769
Butane =	-	No	No	0.0711	1.1667	1.2379	2,729
Carbon disulfide =	75150	Yes	Yes	0.0108	0.1773	0.1881	415
Carbon monoxide =	42101	No	No	0.9599	15.7439	16.7038	36,825
Carbon tetrachloride =	56235	Yes	Yes	0.0002	0.0025	0.0026	5.8
Carbonyl sulfide =	463581	Yes	No	0.0072	0.1182	0.1254	276
Chlorobenzene =	108907	Yes	Yes	0.0069	0.1130	0.1199	264
Chlorodifluoromethane =	75456	No	No	0.0275	0.4513	0.4788	1,056
Chloroethane (ethyl chloride) =	75003	Yes	No	0.0205	0.3368	0.3573	788
Chloroform =	67663	Yes	Yes	0.0009	0.0144	0.0153	33.6
Chloromethane (methyl chloride) =	74873	Yes	No	0.0148	0.2433	0.2581	569
Dichlorobenzene =	25321226	No	Yes	0.0076	0.1239	0.1315	290
Dichlorodifluoromethane =	-	No	No	0.4736	7.7670	8.2406	18,167
Dichlorofluoromethane =	75434	No	No	0.0655	1.0743	1.1399	2,513
Dichloromethane (methylene chloride) =	75092	Yes	No	0.2911	4.7743	5.0654	11,167
Dimethyl sulfide (methyl sulfide) =	-	No	No	0.1186	1.9457	2.0643	4,551
Ethane =	-	No	No	6.5511	107.4472	113.9983	251,321
Ethanol =	-	No	No	0.3046	4.9951	5.2997	11,684
Ethyl mercaptan (ethanethiol) =	-	No	No	0.0350	0.5737	0.6087	1,342
Ethyl benzene =	100414	Yes	Yes	0.1195	1.9606	2.0801	4,586
Ethylene dibromide (Dibromoethane) =	106934	Yes	Yes	0.0000	0.0008	0.0008	1.76
Fluorotrichloromethane =	-	No	No	0.0256	0.4192	0.4447	980
Hexane =	110543	Yes	Yes	0.1392	2.2836	2.4228	5,341
Hydrogen =	-	No	No	0.3003	4.9258	5.2261	11,521
Mercury (total) =	7439976	Yes	Yes	0.00001	0.0002	0.0002	0.55
Methyl ethyl ketone =	78933	Yes	Yes	0.1253	2.0555	2.1809	4,808
Methyl isobutyl ketone =	108101	Yes	No	0.0466	0.7640	0.8106	1,787
Methyl mercaptan =	-	No	No	0.0294	0.4829	0.5123	1,129
Pentane =	-	No	No	0.0583	0.9559	1.0142	2,236
Perchloroethylene (tetrachloroethylene) =	127184	Yes	Yes	0.1502	2.4634	2.6136	5,762
Propane =	-	No	No	0.1187	1.9472	2.0659	4,554
t-1,2-dichloroethene =	-	No	No	0.0664	1.0898	1.1562	2,549
Toluene (No Co-disposal) ^d =	108883	Yes	Yes	0.8795	14.4257	15.3053	33,742
Trichloroethylene (trichloroethene) =	79016	Yes	Yes	0.0901	1.4772	1.5672	3,455
Vinyl chloride =	75014	Yes	Yes	0.1117	1.8318	1.9435	4,285
Xylenes =	1330207	Yes	Yes	0.3118	5.1146	5.4265	11,963

^a Landfill gas constituent molar weight and default concentrations listed in AP-42, Section 2.4, Table 2.4-1 and Table 2.4-2 (11/1998).

^b This column indicates whether the listed constituent is a HAP contained in the Federal Clean Air Act.

^c This column indicates whether the listed constituent is a HAP contained in the District's RMPRAG.

^d Per the LandGEM - Ver. 3.02 User's Guide, Section 3.3 (Page 17), the "No or Unknown Co-disposal" values for benzene and toluene should be used if the landfill has not co-disposed of hazardous waste with the MSW. Since the site's specific-NMOC concentration value of 250 ppmv is lower than the default NMOC value of 600 ppmv, the District will use the "No or Unknown Co-disposal" HAP values instead of the higher "Co-disposal" HAP amounts.

2. Fugitive Emission of Listed HAPs from Yolo County Central Landfill in the Year 2080:

The landfill is served by the active gas collection system under PTO P-26-98(t1) and has been evaluated to have an overall gas collection efficiency of 75.5%. As evaluated below, the remaining 24.5% of uncollected landfill gas will be conservatively assumed to be fugitive emissions.

Pollutant Prioritization ^a	CAS Number	Fugitive HAP Emissions ^b			RMPRAG Screening Level (lb/year)	Less than RMPRAG Screening (Yes / No)
		(lb/hr)	[HAP _v] (lb/year)	(ton/year)		
1,1,1-Trichloroethane (methyl chloroform) =	71556	1.68E-02	147.3	0.07	61,800	Yes
1,1-Dichloroethane (ethylidene dichloride) =	75343	6.24E-02	546.5	0.27	-	-
1,1-Dichloroethene (vinylidene chloride) =	75354	5.09E-03	44.61	0.02	6,180	Yes
1,2-Dichloroethane (ethylene dichloride) =	107062	1.07E-02	93.35	0.05	9.70	No
1,2-Dichloropropane (propylene dichloride) =	78875	5.34E-03	46.79	0.02	-	-
2-Propanol (isopropyl alcohol) =	67630	7.89E-01	6,915	3.46	440,000	Yes
Acrylonitrile =	107131	8.78E-02	769.1	0.38	0.67	No
Benzene =	71432	3.90E-02	341.5	0.17	6.70	No
Carbon disulfide =	75150	1.16E-02	101.6	0.05	14,300	Yes
Carbon tetrachloride =	56235	1.62E-04	1.42	0.00	4.60	Yes
Carbonyl sulfide =	463581	7.73E-03	67.72	0.03	-	-
Chlorobenzene =	108907	7.39E-03	64.74	0.03	13,500	Yes
Chloroethane (ethyl chloride) =	75003	2.20E-02	192.98	0.10	-	-

Chloroform =	67663	9.41E-04	8.24	0.00	36.0	Yes
Chloromethane (methyl chloride) =	74873	1.59E-02	139.40	0.07	-	-
Dichlorobenzene =	25321226	8.11E-03	71.02	0.04	68.0	No
Dichloromethane (methylene chloride) =	75092	3.12E-01	2,736	1.37	-	-
Ethyl benzene =	100414	1.28E-01	1,123.5	0.56	193,000	Yes
Ethylene dibromide (Dibromoethane) =	106934	4.93E-05	0.4323	0.00	2.70	Yes
Hexane =	110543	1.49E-01	1,308.6	0.65	83,000	Yes
Mercury (total) =	7439976	1.53E-05	0.134	0.00	57.9	Yes
Methyl ethyl ketone =	78933	1.34E-01	1,177.9	0.59	149,000	Yes
Methyl isobutyl ketone =	108101	5.00E-02	437.8	0.22	-	-
Perchloroethylene (tetrachloroethylene) =	127184	1.61E-01	1,411.7	0.71	33.0	No
Toluene =	108883	9.44E-01	8,266.8	4.13	38,600	Yes
Trichloroethylene (trichloroethene) =	79016	9.66E-02	846.5	0.42	97.0	No
Vinyl chloride =	75014	1.20E-01	1,049.7	0.52	2.50	No
Xylenes =	1330207	3.35E-01	2,931	1.47	57,900	Yes
Maximum Yearly Single Fugitive HAP Emission Rate in 2080 (tons/year) =				4.13		
Maximum Yearly Fugitive HAPS Emission Rate in 2080 (tons/year) =				15.42		

Formula
Symbol
HAPS

^a Only emissions from the landfill gas constituents contained in the Federal CCA or the RMPRAG have been evaluated.

^b Uncontrolled Fugitive Mass Emission Formula: $[HAP]_{yr} = [C_{UNC}] * (100\% - CE)$

Because the emissions from several HAPs were above their respective prioritization levels, a health risk assessment was performed for this project. The dispersion modeling and health risks were evaluated using CARB's Hotspots Analysis Reporting Program (HARP) which accounts for site specific parameters (e.g. area source dimensions, UTM location, meteorological data, etc.).

3. Summary of Health Risk Analysis for the Fugitive Landfill Emissions in the Year 2080:

The District is using the highest risk values of each receptor type to demonstrate compliance with the RMPRAG requirements. The cancer and hazard indexes were evaluated over a 4,000 meter by 4,000 meter grid. The residential receptor's cancer risk has been modeled over a 70 year period, while the worksite receptor's risk has been modeled over 46 years, using the landfill's highest methane generation rate of Q_{CH_4} (51,206,725 $m^3/year$) for the year 2080.

Specifically, the site was modeled as a rectangular area source with a total surface area of 473 acres (or 20,603,880 square feet) and a width to length ratio 1:2. The emission release height was calculated as the average height of the two final WMU design heights of 81.4 feet (for Units 1-6D) and 141.4 feet (for Units 6E-7P). Currently, the nearest residential receptor is located 0.25 miles (400 meters) south of the YCCL property. The nearest worksite receptor is the Davis Wastewater Treatment Plant whose main office building is located southeast of the landfill and roughly 0.33 miles (500 meters) from the nearest property line (see the attached risk isopleths). The health risk assessment results are summarized below.

Receptor Type	Receptor No.	Acute Hazard Index (unitless)	Chronic Hazard Index (unitless)	Individual Cancer Risk (per million)
Residential - Rural Home	1392	0.0004	0.0003	0.6
Worksite - Wastewater Treatment Plant	1391	0.0004	0.0009	0.4

When evaluated at the highest methane production rate, the facility's acute and chronic hazard indexes are each calculated to be less than 1, and the maximum residential cancer risk is not greater than 1 in a million. As such, the application does not trigger T-BACT requirements.

4. Final HAP Emission for all Collocated Facilities Including the Yolo County Central Landfill:

For the purposes of 40 CFR Part 63, Subpart AAAAA (Municipal Solid Waste Landfills), the following table lists the total HAP emissions currently permitted for the other collocated facilities at the landfill, as well as other permitted equipment operated by Yolo County. The emission totals will be used in the applicability determination of Subpart AAAAA. The collocated facilities include the control emissions of MM Yolo Power LLC and NEO Yolo LLC, and the uncontrolled diesel emissions from the diesel fired IC engines operated by Recycle America Alliance and Yolo County.

As summarized below, the highest quantity of any single HAP emitted annually at the landfill is 4.2 tons (Toluene), while the total amount of HAPs emitted from all of the collocated facilities is 17.1 tons.

Pollutant Prioritization	CAS Number	Controlled HAP Emissions		Uncontrolled HAP Emissions			Total Speciated HAP Emissions (tons/year)
		MM Yolo Power LLC ^a (lb/year)	NEO Yolo LLC ^b (tons/year)	Recycle America ^c (tons/year)	YCCL Diesel Engines ^d (tons/year)	YCCL Fugitive Emissions (tons/year)	
1,1,1-Trichloroethane (methyl chloroform) =	71556	0.00367	0.00197	-	-	0.07367	0.07931
1,1-Dichloroethane (ethylidene dichloride) =	75343	-	0.00716	-	-	0.27325	0.28041
1,1-Dichloroethene (vinylidene chloride) =	75354	-	0.00060	-	-	0.02230	0.02290
1,2-Dichloroethane (ethylene dichloride) =	107062	0.00184	0.00125	-	-	0.04668	0.04976
1,2-Dichloropropane (propylene dichloride) =	78875	-	0.00063	-	-	0.02340	0.02402
2-Propanol (isopropyl alcohol) =	67630	-	0.09272	-	-	3.45746	3.55019
Acetaldehyde =	75070	-	-	0.00064	0.00026	-	0.00090
Acroline =	107028	-	-	0.00008	0.00003	-	0.00011
Acrylonitrile =	107131	-	0.01034	-	-	0.38455	0.39489
Benzene =	71432	0.06418	0.00459	0.00078	0.00032	0.17073	0.24060

1,3-Butadiene =	106990	-	-	0.00003	0.00001	-	0.00005
Carbon disulfide =	75150	-	0.00136	-	-	0.05080	0.05215
Carbon tetrachloride =	56235	0.00285	0.00002	-	-	0.00071	0.00358
Carbonyl sulfide =	463581	-	0.00091	-	-	0.03386	0.03477
Chlorobenzene =	108907	-	0.00087	-	-	0.03237	0.03324
Chloroethane (ethyl chloride) =	75003	-	0.00248	-	-	0.09649	0.09897
Chloroform =	67663	0.00221	0.00011	-	-	0.00412	0.00644
Chloromethane (methyl chloride) =	74873	-	0.00188	-	-	0.06970	0.07158
Dichlorobenzene =	25321226	-	0.00095	-	-	0.03551	0.03646
Dichloromethane (methylene chloride) =	75092	0.08178	0.03740	-	-	1.36798	1.48717
Ethyl benzene =	100414	-	0.01507	-	-	0.56177	0.57684
Ethylene dibromide (Dibromoethane) =	106934	0.00349	0.00001	-	-	0.00022	0.00371
Formaldehyde =	50000	0.47310	-	0.00098	0.00041	-	0.47449
Hexane =	110543	-	0.01743	-	-	0.65432	0.67175
Hydrogen chloride =	-	0.55012	-	-	-	-	0.55012
Mercury (total) ^e =	7439976	0.00009	0.00009	-	-	0.00007	0.00025
Methyl ethyl ketone =	78933	-	0.01574	-	-	0.58897	0.60471
Methyl isobutyl ketone =	108101	-	0.00577	-	-	0.21892	0.22469
Unspeciated PAHs =	-	0.00333	-	-	-	-	0.00333
PAH - Benzo(a)anthracene =	-	0.00008	-	0.000001	0.0000006	-	0.00008
PAH - Benzo(a)pyrene =	50328	0.00013	-	0.0000001	0.00000005	-	0.00013
PAH - Benzo(b)fluoranthene =	205992	0.00019	-	0.00000008	0.00000003	-	0.00019
PAH - Benzo(k)fluoranthene =	207089	0.00016	-	-	-	-	0.00016
PAH - Dibenzo(a,h)anthracene =	-	0.00020	-	0.0000005	0.0000002	-	0.00020
PAH - Indeno[1,2,3-cd]pyrene =	193395	-	-	-	0.0000001	-	0.0000001
PAH - Naphthalene =	91203	0.03568	-	0.00007	0.00003	-	0.03578
Perchloroethylene (tetrachloroethylene) =	127184	0.00462	0.01904	-	-	0.70584	0.72950
Propylene =	115071	-	-	0.002	0.0009	-	0.00303
t-1,2-dichloroethene =	-	-	-	0.0000003	-	-	0.0000003
Toluene =	108883	-	0.11148	0.00034	0.00014	4.13339	4.24535
Trichloroethylene (trichloroethene) =	79016	0.00305	0.01141	-	-	0.42325	0.43770
Vinyl chloride =	75014	0.00145	0.01412	-	-	0.52486	0.54043
Xylenes =	1330207	-	0.03955	0.00024	0.00010	1.46549	1.50538
Max. Single HAP Yearly Emission Rate (tons/year) =		0.550	0.111	0.002	0.001	4.133	4.245
Max. HAPS Yearly Emission Rate (tons/year) =		1.23	0.41	0.005	0.002	15.421	17.075

- ^a Sum of HAP emissions totals from ATC emission evaluations C-04-151, C-04-152, C-04-153, C-04-179, and C-04-180 (five landfill gas fired IC engines).
- ^b Per AP-42, Table 2.4-3 (11/1998), using the minimum HAP destruction efficiency for combustion of landfill gas in a flare (halogenated species).
- ^c Sum of HAP emissions totals from ATC emission evaluations C-00-119 and C-00-120 (two diesel fired IC engines).
- ^d Sum of HAP emissions totals from ATC emission evaluations C-06-116 and C-06-169 (two diesel fired IC engines).
- ^e Per AP-42, Table 2.4-3, footnote (b), zero destruction associated with the combustion of mercury in any landfill gas control devices.

40 CFR Part 60, Subpart A-General Provisions

The regulation applies to any affected facility that is subject to the NSPS regulations listed in the 40 CFR Part 60, Subpart A. Specifically, since the source will now be subject to the emission standards of Subpart WWW (40 CFR Part 60.750), the source is subject to the requirements of Subpart A. The subpart establishes a source's notification, testing, and compliance reporting requirements in respect to the listed New Source Performance Standards of Section 60.4. Section 60.18 contains general requirements for the design and operation of control devices at designated sources. However, since the source is not subject to the control device provisions of Section 60.752(b)(2), the source is not subject to the requirements of Section 60.18.

40 CFR 60, Subpart Cc-Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

As discussed for Rule 2.38, Subpart Cc establishes emission guidelines for existing MSW landfills (modified, constructed, or modified prior to May 30, 1991). Although the landfill has been accepting waste since 1976, the proposed modification will make it subject to the requirements of 40 CFR Subpart WWW. As such, the requirements of this regulation do not apply to the source.

40 CFR Part 60, Subpart WWW-Standards of Performance for Municipal Solid Waste Landfills

The source is subject to the requirements of this regulation, since the facility's most recent proposed modification (to be authorized by this ATC) will occur after May 1991. Section 60.752(b) requires that sources shall either:

- Comply with the requirements for a landfill with an emission rate over 50 Mg/year; or
- Calculate a NMOC emission rate using site specific data and testing (procedures specified in Section 60.754).

If the calculated emission rate is determined to be less than 50 Mg/year, Section 60.752(b)(1) requires that the source submit an annual emission report, and recalculate the NMOC emission rate annually (or every 5 years as allowed by Section 60.757(b)(ii)).

Section 60.757(b)(1)(ii)(A), requires that if the calculated emissions rate ever exceeds 50 MG/year, the source then install and operate a compliant gas collection and control system.

In addition, Section 60.757(a) requires landfills submit an initial capacity design report, and Section 60.758(a) requires the source to document the design capacity report, the current amount of in-place waste, and the year-to-year waste acceptance rate. The records are to be kept on-site, readily accessible, and retained for at least five (5) years.

As part of the information required to process ATC application C-03-226, the YCCL submitted the site's initial capacity design report in March 2004 (see Emission Eval./Application File 2000-2005). In response to the landfill's capacity increase, Appendix K of the 2007 JTD amends this previous report (see attached). Based on the Tier 2 testing results submitted in January 2004 (see ATC application C-03-226 file), the estimated NMOC emission rate for the landfill was 11.55 Mg/year. These results were reviewed by District staff and approved in a letter dated March 24, 2004. As of the time of this evaluation, the source had not yet submitted the 2008 Tier 2 testing results. It is expected that the landfill's NMOC emissions remain under the 50 Mg/year threshold. As such, YCCL will continue to be subject to the sampling, testing, and reporting requirements of this Subpart.

40 CFR Part 61, Subpart M-National Emission Standards for Asbestos

The source is subject to this subpart because they receive non-friable asbestos containing waste from construction and demolition sources. The site's Waste Discharge Requirements (WDRs) approved in December 2007, by the California Regional Water Quality Control Board (Order No. R5-2007-0180) prohibits the landfill from accepting any waste containing friable asbestos. Specifically, because the facility only disposes of the asbestos containing waste (e.g. is not a mill, an applicator, or a manufacturer of asbestos), it is subject only to the requirements of Section 61.154.

Section 61.154(a) requires that there be no visible emissions to the outside air from any active waste disposal site where asbestos containing waste material has been deposited, except as allowed by Section 61.154(c) or (d). Because Section 61.154(b) pertains to fencing and warning sign requirements not specifically relating to air quality requirements, the conditions of the section will not be listed on the permit. Also, Sections 61.154(e), (i) and (j), require specific noticing and records be maintained on site covering the acceptance, disposal, and mining of waste at the facility (see 2007 JTD, Appendix E).

40 CFR Part 63, Subpart A-National Emission Standards for Hazardous Air Pollutants, General Provisions

This regulation establishes the general provisions for major sources of hazardous air pollutants (HAPs). The regulation applies to any source that emits or has the potential to emit 10 tons per year or more of any single HAP, or 25 tons per year or more of any combination of HAPs. As previously discussed in the RMPRAG section, under the proposed design capacity and waste acceptance rate, the source's HAP emissions are not expected to exceed 10 tons of any single HAP or 25 tons of any combination of HAPs prior to closure in 2080. As such, no condition specific to this regulation is required.

40 CFR Part 63, Subpart AAAA-Municipal Solid Waste Landfills

This regulation establishes HAP emission standards for certain landfills. Per Section 63.1935, this subpart applies to all existing or new MSW landfills that have accepted waste since November 8, 1987, and that satisfy at least one of the following conditions:

- The landfill is a major source of HAPs that emits any single HAP above 10 tons per year, or any combination of HAPs above 25 tons per year (as defined in 40 CFR Part 63.2);
- The landfill is collocated with a major source of HAPs;
- The landfill is an area source with a design capacity equal to or greater than 2.5 million megagrams and an NMOC emission rate equal to or greater than 50 megagrams per year; or
- The landfill is an area source with a design capacity equal to or greater than 2.5 million megagrams and operates a bioreactor(s) (as defined in Section 63.1990).

Section 63.1990 of this subpart defines a bioreactor as "a MSW landfill or portion of a MSW landfill where any liquid other than leachate (leachate includes landfill gas condensate) is added in a controlled fashion into the waste mass (often in combination with recirculating leachate) to reach a minimum average moisture content of at least 40% by weight, calculated on a wet weight basis, to accelerate or enhance the anaerobic (without oxygen) biodegradation of the waste."

As evaluated, the Yolo County Central Landfill:

- does not currently emit more than 10 tons of a single HAP, or 25 tons of any combination of HAPs (see RMPRAG section and 40 CFR Part 63 discussion above);
 - is not collocated with a major source of HAPs (see RMPRAG section);
 - has a design capacity above 2.5 million megagrams, but is not expected to exceed the an NMOC emission rate of 50 Mg per year prior to closure; and
 - is not permitted to operate any bioreactor (conventional or non-conventional) waste cells with a moisture content exceeding 40% (see comments below).
- As such, the Yolo County Central Landfill will not become subject to the requirements of this subpart prior to the landfills closure in the year 2080.

In order to ensure that the facility is not subject to this subpart, the District will prohibit the facility from:

- achieving an average moisture content of 40% or greater (by weight) in any conventional or non-conventional bioreactor cell installed at the facility; and
- verify the moisture content of an affected cell through the required monitoring and reporting the moisture contents (on a six month basis).
- monitor moisture until such time that liquid addition has permanently ceased.

Specifically, the permit will require that the monitoring and testing is to be conducted per the requirements of 40 CFR Part 63.1980 and a report submitted at least once every six (6) months.

40 CFR Part 82, Subpart F-Protection of Stratospheric Ozone

The source is subject to this subpart because the site accepts certain affected appliances and equipment containing ozone depleting substances. The subpart requires that these ozone depleting substances be properly removed and handled prior to the equipment being disposed of at the site. As such, the permit will list a condition that the facility comply with the requirements of this subpart.

COMMENTS:

The application does not trigger BACT or offsets. The application will require noticing per Title-V permitting requirements.

To ensure the source's compliance with the findings of this evaluation, the following requirements will be placed on the permit as part of New Source Review (Rule 3.4):

General Opacity Condition: The District will require that the source comply with a tighter opacity limit that that which is currently required by Rule 2.3.

- The Permit Holder shall not discharge into the atmosphere from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:
 - a. As dark or darker in shade than No. 1 on the Ringelmann Chart; or
 - b. Greater than 20% opacity.

Landfill Surface Emission Monitoring: As previously discussed the source is not yet subject to the collection and capture requirements of Subpart WWW, however, in order to assure that the existing gas collection system is properly maintained and operated, the District will place the following operating conditions on the permit (as modeled after San Joaquin Valley APCD Rule 4642, Solid Waste Disposal Sites):

- Except for active disposal areas, or areas undergoing maintenance, repair, modification or closure, the surface emissions at any point on the surface of the landfill or along the gas transfer path of the gas collection system shall not exceed a non-methane organic compound (NMOC) concentration of 500 ppmv (measured as methane). Any reading of 500 ppm or more above background at any location shall be recorded as a monitored exceedance and the actions specified in 40 CFR Part 60.755(c)(4)(i) through (c)(4)(v) shall be taken by the owner or operator of the gas collection system. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of this permit or 40 CFR Part 60.753(d).

- The Permit Holder shall perform surface emission testing using a portable hydrocarbon detection test instrument to measure the surface emission concentrations of the landfill and gas collection system. The instrument shall be calibrated before and after each test using zero air and an approximately 500 ppmv methane based standard calibration gas in accordance with the manufacturer's recommendations. The instrument serial number and instrument calibration data shall be recorded for each calibration and maintained as a permanent record.

- The Permit Holder or operator shall perform the surface emission monitoring using the following procedure:
 - a. The detector is to be held within three (3) inches of the surface while walking a pattern of parallel paths not more than 90 feet apart over:
 - i. the entire surface area of the landfill site which contains buried refuse;
 - ii. the gas transfer path of the gas collection system;
 - iii. cracks, holes and other breaches in the solid waste disposal site cover; and
 - iv. the WMU perimeters (i.e. accessible areas where buried waste interfaces with undisturbed native soil).
 - b. The operator shall monitor the instrument readings at least once every 30 seconds, at normal walking speed (approximately 2 miles per hour), record only the readings that exceed 500 ppmv, and geographically locate the specific area on the landfill surface where the exceedances occur.
 - c. Sampling is not required on steep slopes or other areas posing an unavoidable hazard to testing personnel.
 - d. Average wind speed shall be determined on a ten-minute average using an on-site anemometer.
 - e. Testing shall be terminated when the average wind speed exceeds five (5) miles per hour, or the instantaneous wind speed exceeds ten (10) miles per hour.
 - f. Testing shall be conducted when there has been no rain for 72 hours prior to the testing event and no rain is falling.

- The Permit Holder shall perform surface emission testing at the landfill at least once every six (6) consecutive calendar months. The Permit Holder may reduce the testing frequency to a twelve (12) consecutive calendar month period, after the completion of two (2) successive semi-annual tests without an exceedance of the 500 ppmv standard, other than non-repeatable momentary readings. Subsequent exceedances of the 500 ppmv emission concentration shall result in the re-establishment of the six (6) month testing frequency. A non-resettable momentary reading shall be defined as a portable hydrocarbon detection test instrument reading which persists for less than five (5) seconds and does not recur when the sampling probe is placed in the same location.

Bioreactor Moisture Content Limit: The permit will require that the anaerobic bioreactor portions of the landfill be operated with an average moisture content of less than 40% by weight.

Landfill Cell Mining and Emission Monitoring: As outlined in Appendix Q of YCCL's 2007 JTD (see attached), the source has proposed the operation of a pilot program that will mine and sort waste (including composted green- and food-wastes) from only a specific existing anaerobic bioreactor waste cell. As such, the District will place the following conditions on the permit.

- The Permit Holder shall only mine (e.g. excavate, reclaim, etc.) and sort waste from the aerobic bioreactor cell located in WMU 6D-Phase 1 (WMU 6D-1) and anaerobic digester cell located in WMU 6D-Phase 2 (WMU 6D-2). The mining operations shall only be allowed for waste cells that meet the following criteria:
 - a. Waste cells not used in the disposal of asbestos-containing materials;
 - b. Waste cells that have achieved the end of their landfill gas production cycle as determined through long term gas sampling and/or emission modeling using U.S. EPA's LandGEM program or other approved modeling software;
 - c. Waste cells that have not had leachate or other liquids circulated within the cell for more than one (1) calendar year; and
 - d. Any other specifications determined significant by the District. [District Rule 3.4]

- The Permit Holder shall monitor the landfill gas emissions from any open faces, active mining surfaces, and/or any liquids present during the mining of a waste cell in order to determine that the NMOC surface emission

concentration limit of 500 ppmv (measured as methane) is not exceeded.

- The permit will require that the source perform surface emission monitoring of the mined cells using the methods contained in 40 CFR Part 60.755(c)(3) at start-up and at least once every fourteen (14) days thereafter. Specifically, Section 60.755(c)(3) requires that the surface emissions be monitored in accordance with Section 4.3.1 of Method 21, except that the probe inlet be placed 5 to 10 centimeters above ground, and that the sampling be conducted during typical meteorological conditions. It is expected that the District will place more detailed mining related operating conditions (e.g. notification, particulate matter emission control, process limits, etc.) on the operating permit pertaining specifically to the screening and sorting operation.

- Whenever buried solid waste is brought to the surface during the installation or preparation of wells, trenches, piping, or other equipment or when landfill solid waste is excavated or moved, the Permit Holder shall cover the excavated solid waste using fresh soil, plastic sheeting, or vapor retarding foam as necessary in order to prevent odorous emissions and to minimize the release of landfill gas (modeled from SJVAPCD Rule 4642).

Biofilter use with Anaerobic Digester Cell:

- The Permit Holder shall install and operate a biofilter that serves the anaerobic digester cell located on WMU 6D-Phase 2 during aerobic composting phase of the waste. (Note that there is no emission control factor currently for the biofilter).

Emission and Process Limit Reporting Requirements:

- The Permit Holder shall submit a non-methane organic compound (NMOC) report to the District using the procedures specified in 40 CFR Part 60.754(a) at least once every twelve (12) months, except as provided in 40 CFR Part 60.757(b)(1)(ii) or 40 CFR Part 60.757(b)(3).

- The District must be notified prior to any NMOC related sampling event and a protocol must be submitted for approval 14 days prior to sampling. The results of a sampling event shall be submitted to the District within 60 days of the sample date. The protocol and report shall be mailed to the attention of the Supervising Air Quality Engineer.

- Upon achieving a calculated NMOC emission rate of 50 megagrams or greater per year, the Permit Holder shall comply with the requirements of 40 CFR Part 60.752(b)(2).

- The Permit Holder shall maintain daily records (in tons) of the total amount of MSW accepted at the landfill.

- The Permit Holder shall maintain daily records (in tons) of the amount of MSW placed in the anaerobic bioreactor portions of the landfill until such time that placement has permanently ceased.

- The Permit Holder shall maintain records of all surface emissions tests that include the time, weather conditions, areas sampled, areas not sampled due to steep slopes or other safety hazards, portable hydrocarbon detection test instrument calibration records, and emission test results.

The following conditions reflect the findings of regulations discussed in the "Rule & Regulation Compliance Evaluation" section above:

- The Permit Holder shall operate the anaerobic bioreactor portions of the landfill with an average moisture content of less than 40% by weight.

- The Permit Holder shall submit a moisture report to the District for the anaerobic bioreactor portions of the landfill documenting the average moisture content by weight using the procedures specified in 40 CFR Part 63.1980(g) and (h) or other District approved methods.

- The Permit Holder shall submit the moisture report to the District for the anaerobic portions of the landfill, in accordance with 40 CFR 63.1980, at least once every six (6) months until such time that liquid addition has permanently ceased.

RECOMMENDATIONS:

Begin the required public and regulatory comment period.

Engineer: Rene Toledo

Date: 02/20/2009

Reviewed by: Sus - KONG Lu

Date: 2/20/09

New Source Review
Quarterly Potential To Emit Determination
NSR Version 08/13/1998

Evaluation to be used on existing permits to obtain their quarterly PTE.

Engineer: René Toledo

SIC Code # 4953

Facility Name: Yolo County Central Services (YCCL) and Yolo County General Services Department (YCGSD)

Location: 44090 County Road 28H; Woodland, CA

Date of Initial Quarterly PTE Determination: 09/07/2006

Date of Previous Quarterly PTE Determination: 04/03/2007

Date of Current Quarterly PTE Determination: 01/26/2009

CURRENT APPLICATIONS:

*ATC's
C-07-164

Process Description	VOC Emissions				CO Emissions				NOx Emissions				SOx Emissions				PM10 Emissions							
	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)				
Current Permits																								
P-15-05	12,193	12,329	12,464	12,464	24,73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
P-17-04	14,892	15,165	15,229	15,229	24,41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
PRE-PROJECT SSPE ¹ (lbs)	12,193	12,329	12,464	12,464	49,460	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
POST-PROJECT SSPE ¹ (lbs)	12,032	12,165	12,299	12,299	48,800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Emergency IC Engine (157 BHP)	13	13	13	13	0.01	52	52	52	52	0.03	306	306	306	306	0.15	13	13	13	13	0.01	10	10	10	10
Emergency IC Engine (325 BHP)	0	0	0	0	0.00	40	40	40	40	0.02	520	520	520	520	0.26	1	1	1	1	0.00	7	7	7	7
PRE-PROJECT TOTAL PTE ²	12,212	12,348	12,483	12,483	24,74	92	92	92	92	0.05	826	826	826	826	0.41	14	14	14	14	0.01	17	17	17	17
POST-PROJECT TOTAL PTE ²	12,051	12,184	12,318	12,318	24,41	92	92	92	92	0.05	826	826	826	826	0.41	14	14	14	14	0.01	17	17	17	17

¹ Per the requirements of Rule 3.20, the facility's pre- and post-project Stationary Source Potential to Emit (SSPE) calculations do not include any emissions from permitted emergency equipment.

² The ownership of PTO P-71-06(t) has been transferred to the Yolo County General Services Department (formerly names the Yolo County Central Services Division) since they primarily operate and maintain the engine.

³ The facility's pre- and post-project Total Potential to Emit (PTE) calculations include all permitted equipment operating at the site.

Post-Project Stationary Source Potential to Emit (SSPE)

	Quarter #1 (lbs)	Quarter #2 (lbs)	Quarter #3 (lbs)	Quarter #4 (lbs)	Yearly (lbs)
VOC	12,032	12,165	12,299	12,299	48,800
CO	0	0	0	0	0
NOx	0	0	0	0	0
SOx	0	0	0	0	0
PM10	0	0	0	0	0

MITIGATION THRESHOLDS

	Yearly (lbs/year)	Annual (lbs)
VOC	20,000	-
CO	-	-
NOx	-	-
SOx	-	-
PM10	-	-

SSPE Comparison to Rule 3.20 Triggers

	Quarter #1	Quarter #2	Quarter #3	Quarter #4
VOC	Above	Above	Above	Above
CO	Below	Below	Below	Below
NOx	Below	Below	Below	Below
SOx	Below	Below	Below	Below
PM10	Below	Below	Below	Below

Post-Project Total Quarterly Potential to Emit (PTE)

	Quarter #1 (lbs)	Quarter #2 (lbs)	Quarter #3 (lbs)	Quarter #4 (lbs)	Yearly (lbs)
VOC	12,051	12,184	12,318	12,318	24,41
CO	92	92	92	92	0.05
NOx	826	826	826	826	0.41
SOx	14	14	14	14	0.01
PM10	17	17	17	17	0.00

OFFSET THRESHOLDS

	Quarterly (lbs/quarter)	Yearly (lbs/year)
VOC	7,500	20,000
CO	49,500	-
NOx	7,500	-
SOx	13,650	-
PM10	13,650	-

PTE Comparison to NSR Triggers

	Quarter #1	Quarter #2	Quarter #3	Quarter #4
VOC	Above	Above	Above	Above
CO	Below	Below	Below	Below
NOx	Below	Below	Below	Below
SOx	Below	Below	Below	Below
PM10	Below	Below	Below	Below

COMMENTS: This quarterly PTE evaluation was updated for YCCL's ATC C-07-164 located at 44090 County Road 28H in Woodland. Also permitted at this site are the YCGSD (emergency engine), MM Yolo Power LLC (five landfill fired IC engines), NEO Yolo LLC (landfill gas flare), and Recycle America Alliance (two diesel fired IC engines) which are in the same industrial grouping as the landfill (Group 49, Electric, Gas, & Sanitary Services).

Because the MM Yolo Power, NEO Yolo, and Recycle America units are not owned or operated by YCCL, the other facility permits are not considered part of this stationary source and are not represented here. Although the Permit Holder of PTO P-71-06(t) is currently YCGSD, the District considers the engine part of this stationary source since the engine is specifically used for communication between the YCCL staff at the site and the Yolo County staff located in Woodland.

Engineer: René Toledo

Reviewed by: Susana D. Nijgh

Date: 02/20/2009

Date: 2/20/09

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT
 1947 Galileo Court, Suite 103; Davis, CA 95618

New Source Review
Last Five Year Activity

Engineer: René Toledo

Facility Name: Yolo County Central Services (YCCL)
 Yolo County General Services Department (YCGSD)

SIC Code # 4953
 Date of Initial Determination: 09/07/2006
 Date of Previous Determination: 04/03/2007
 Date of Current Determination: 01/26/2009

Location: 44090 County Road 28H; Woodland, CA

Process	PTO	Date PTO Issued	ATC	Date ATC Issued	VOC (tpy)	CO (tpy)	NOx (tpy)	SOx (tpy)	PM10 (tpy)
Municipal Solid Waste Landfill ^a	P-15-05	04/14/2005	C-03-226	01/18/2005	24.73	0.00	0.00	0.00	0.00
Limited-Use IC Engine (71 BHP) ^a	P-53-05	10/27/2005	C-05-185	09/12/2005	0.04	0.21	0.86	0.02	0.09
Emergency IC Engine (157 BHP)	P-71-06	02/07/2007	C-06-116	11/15/2006	0.01	0.03	0.15	0.01	0.00
Emergency IC Engine (325 BHP)	P-25-07	08/16/2007	C-06-169	05/18/2007	0.00	0.02	0.26	0.00	0.00
Municipal Solid Waste Landfill	P-15-05(a)	-	C-07-164	PENDING	0.00	0.00	0.00	0.00	0.00
TOTAL ^b					0.01	0.05	0.41	0.01	0.00

^a. Existing emission units that are grandfathered into the District's permitting program are not subject to the New Source Review provisions during their initial permitting actions (see file). As such, the five year emission average calculations will not include the PTE increase from the identified emission units.

^b. All decreases in PTE are treated as zero net change and not included in the Total 5-Year Aggregate summation.

COMMENTS: This quarterly PTE evaluation was updated for ATC C-07-164.

These permits are sorted by the ATC issue date. According to Rule 3.4, Section 221, a major modification is calculated based on all creditable increases and decreases from the source over the period of five consecutive years before the application, including the calendar year of the most recent application. The applicable period ranges from November 2003 through August 2007.

Engineer: René Toledo

Date: 02/20/2009

Reviewed by: Juse KONG M

Date: 2/20/09