



**PERMIT APPLICATION
REVIEW SUMMARY**

**New Hampshire Department of Environmental Services
Air Resources Division
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Facility: Wheelabrator-Concord	Engineer: Padmaja Baru
Location: Penacook, NH	
AFS #: 3301300102	Application #: FY05-0095
	Date: 6/12/2008
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APPLICATION & OTHER COMMUNICATION

3/31/05 Application received

FACILITY DESCRIPTION

Wheelabrator Concord Company, L.P. (Wheelabrator) operates two large municipal waste combustors (MWC) in Penacook, New Hampshire. Wheelabrator burns municipal solid waste (MSW) in two identical mass burn waterwall boilers to generate steam. Each boiler is equipped with two auxiliary propane-fired burners. A single steam driven turbine/generator uses the steam to generate electricity for sale to the local utility. The gross generating capacity of the turbine/generator is 16 MW. The facility is permitted to burn types 0, 1, 2, 3, and 6 wastes, as those terms are defined in Env-A 101. Each boiler stack is equipped with a continuous opacity monitoring system (COMS) and a continuous emissions monitoring system (CEMS), which measures nitrogen oxides (NOx), sulfur dioxide (SO₂) and carbon monoxide (CO) emissions. The two large MWC units are subject to Section 129(e) of the 1990 Clean Air Act Amendments and the facility therefore requires a Title V Operating Permit

PERMITTING HISTORY

On 9/29/2000, Title V operating permit TV-OP-032 was issued to Wheelabrator Concord. This permit expired on 9/30/2005. The facility has application shield.

PROJECT DESCRIPTION

The purpose of this project is to renew the Title V operating permit for the facility.

PROCESS/DEVICE DESCRIPTION

Emission Unit #	Description of Emission Unit	Install Date	Maximum Design/Permitted Capacity
EU1	MSW Boiler Unit #1 Babcock and Wilcox Serial No. 137-1012	1988	Heat input rate: 107.82 MMBtu/hr of MSW types 0, 1, 2, 3, and 6 wastes. Maximum fuel charge rate: of 23,960 lb/hr and 104,950 tpy of MSW ¹ Maximum steam production: 68,900 lb/hr (8-hour rolling average) Auxiliary burners: 2 burners, 18 MMBtu/hr each equivalent to 383 gal/hr of propane ²
EU2	MSW Boiler Unit #2 Babcock and Wilcox Serial No. 137-1013	1988	Heat input rate: 107.82 MMBtu/hr of MSW types 0, 1, 2, 3, and 6 wastes. Maximum fuel charge rate: of 23,960 lb/hr and 104,950 tpy of MSW Maximum steam production: 68,900 lb/hr (8-hour rolling average) Auxiliary burners: 2 burners, 18 MMBtu/hr each equivalent to 383 gal/hr of propane
EU3	Emergency Generator Caterpillar Serial No. 5YF00349	1987	Heat input rate: 1.64 MMBtu/hr equivalent to 11.7 gal/hr of diesel ³

¹ Based on a heating value of 4,500 Btu/lb for type 2 waste
² Based on a heating value of 94,000 Btu/gal for propane
³ Based on a heating value of 137,000 Btu/gal for diesel

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POLLUTION CONTROL EQUIPMENT

Pollution Control Equipment Number	Description of Equipment	Pollutant controlled	Emission Unit Number
PCE1	Baghouse (Pulse Jet)	PM & regulated metals	EU1
PCE2	SDA-lime injection	Acid gas HCl & SO ₂	
PCE3	Powdered Activated Carbon Injection	Hg	
PCE4	SNCR-Urea injection	NOx	
PCE5	Baghouse (Pulse Jet)	PM & regulated metals	EU2
PCE6	SDA-lime injection	Acid gas HCl & SO ₂	
PCE7	Powdered Activated Carbon Injection	Hg	
PCE8	SNCR- Urea injection	NOx	

INSIGNIFICANT ACTIVITIES

Device/Process	Description
Propane vaporizer	0.20 MMBtu/hr
Waste oil heater	0.14 MMBtu/hr, annual emissions~ 68 lbs/yr
Package Boiler	0.835 MMBtu/hr
Propane Space Heaters (25)	Each rated at 0.17 MMBtu/hr
Parts washer	This parts washer uses products that are non-hazardous, non-flammable, non-caustic, non-toxic and contain no VOCs.
Lime Storage Silo	Particulate emissions are less than 1,000 lb/yr
Diesel Fuel Storage Tanks	One 500 gal and two 200 gal aboveground tanks
Urea storage tank	6,000 gal urea storage tank for SNCR

Facility also operates a diesel fire pump which is rated at 2.24 MMBtu/hr. This is an exempt activity.

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EMISSION CALCULATIONS

The potential to emit (PTE) calculations below are based on limits listed in Title V permit Table 5, Item 1.

Pollutant	Emission limit ⁴ (at 7% O ₂)	Potential Emissions (for each MWC unit)	
		lb/hr	tpy
PM	25 mg/dscm	2.42	4.38
Cd	0.035 mg/dscm	0.0034	0.015
Pb	0.4 mg/dscm	0.039	0.17
Dioxins/Furans	30 ng/dscm	2.91e-06	1.27e-05
NOx	205 ppmdv	38	166.4
SO ₂	29 ppmdv	7.47	32.73
CO	100 ppmdv	11.3	49.38
Hg	0.028 mg/dscm	0.00271	0.012
HCl	29 ppmdv	4.26	18.7
Ammonia	20 ppmdv (FP-T-0042)	1.4	6

Sample calculations:

Maximum heat input for each unit = 107.82 MMBtu/hr

F-factor for refuse = 9570 dscf/MMBtu @ 0% O₂

PM

$$25 \text{ mg/dscm} \times 1 \text{ lb}/453,592 \text{ mg} \times 1 \text{ m}^3/35.32 \text{ ft}^3 \times 9570 \text{ dscf/MMBtu} \times (20.9-0\% \text{ O}_2/20.9-7\% \text{ O}_2) \times 107.82 \text{ MMBtu/hr} = 2.42 \text{ lb/hr}$$

SO₂

$$29/10^6 \times 64 \text{ lb/lb-mole} \times 1 \text{ lb-mole}/385.3 \text{ dscf} \times 9570 \text{ dscf/MMBtu} \times (20.9-0\% \text{ O}_2/20.9-7\% \text{ O}_2) \times 107.82 \text{ MMBtu/hr} = 7.47 \text{ lb/hr}$$

Dioxins/furans

$$30 \text{ ng/dscm} \times 1 \text{ lb}/453.6 \times 10^9 \text{ ng} \times 1 \text{ dscm}/35.31 \text{ dscf} \times 9570 \text{ dscf/MMBtu} \times (20.9-0\% \text{ O}_2/20.9-7\% \text{ O}_2) \times 107.82 \text{ MMBtu/hr} = 2.91 \times 10^{-6} \text{ lb/hr}$$

⁴ Env-A 3300

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MODELING

No modifications were made to the facility since the issuance of the initial Title V permit in 2000. Therefore, an air dispersion modeling is not required at this time. The most recent modeling was done on 2000. Criteria pollutant emissions are in compliance with NAAQS. Also, the impacts of RTAPs are below the AALs. Please see modeling memo dated 6/5/2000.

EMISSION TESTING

Stack Test Results (Concentrations at 7% O ₂)						
Pollutant	MWC1	MWC2	Units	Limit	% Removal Efficiency Unit1/Unit2	Test Date
Particulate matter	0.3	1.73	mg/dscm	25		March 6-9, 2007
Cadmium	0.001	0.0006	mg/dscm	0.035		March 6-9, 2007
Lead	0.009	0.00267	mg/dscm	0.40		March 6-9, 2007
Dioxins/furans	7.28	2.04	ng/dscm (total mass)	30		March 6-9, 2007 (MWC1) March 14-17, 2006 (MWC2)
Mercury	0.003	0.01	mg/dscm	0.028	95.7/94.7	March 6-9, 2007
Hydrogen chloride	12	17.5	ppmdv	29	97.8/97.5	March 6-9, 2007
Fugitive ash	0	0	% opacity	5		March 6-9, 2007
Opacity	0	0	% opacity	10		March 6-9, 2007
Ammonia	0.7	0.6	ppmdv	20		March 6-9, 2007
Steam Flow Rate	68,600	68,490	lb/hr	68,900 (8-hr rolling avg-PSD limit) 110% of tested load (4-hr block avg Env-A 3300)		March 6-9, 2007 (MWC1) March 14-17, 2006 (MWC2)
Highest 4-hr block average inlet baghouse temp	311	314	°F	341.6/344.6 (30.6°F above tested condition)		March 6-9, 2007 (MWC1) March 14-17, 2006 (MWC2)
Carbon Feed Rate	2	2	lb/hr			March 6-9, 2007 (MWC1) March 14-17, 2006 (MWC2)

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SITE VISITS/INSPECTIONS

3/6/2008 Site visit conducted by Padmaja Baru
9/27/2007 Off-site compliance inspection was conducted by Alan Moulton. No deficiencies were found.
5/17/2005 On-site compliance inspection was conducted by Jack Glenn. No deficiencies were found.

REPORTS/EMISSION FEES

Reports	Date Received
Emissions Report for 2007	4/18/2008
2007 Annual Compliance Certification	4/17/2007
Semi-annual Deviation/Monitoring (for July-Dec. 2007)	2/4/2008

ACTUAL EMISSIONS SUMMARY

Year	PT	SO ₂	NO ₂	CO	VOC	HAPs/TAPs
tons						
2007	0.84	39.49	289.57	12.63	1.28	21.27
2006	1.65	42.57	292.29	12.16	1.29	15.92
2005	3.33	37.09	292.21	13.69	1.29	15.40
2004	1.66	40.84	293.27	12.81	1.30	19.66
2003	12.59	43.13	292.82	12.21	1.30	18.58

CHANGES FROM PREVIOUS PERMIT

- Item #6 of Table 6b of the old permit (auxiliary propane usage) is not included in the new permit because it is no longer applicable to the facility pursuant to 40 CFR 60.40b(k).
- The new permit includes requirements from Env-A 3300 which was amended in February 2008.

REVIEW OF REGULATIONS**State Regulations**

Env-A 300 AAQS; Applicable - Facility is in compliance
Env-A 609 Title V Operating Permits; Applicable
Env-A 700 Permit Fee System; Applicable - Facility has paid emission-based fees through 2007
Env-A 800 Testing & Monitoring Procedures; Applicable
Env-A 900 Owner/Operator Recordkeeping Obligations; Applicable
Env-A 1211.01 NOx RACT - Applicable-Both the MWC units are subject to the NOx RACT requirements of Env-A 1211.09 (c). Env-A 3300 limit is more stringent.
Env-A 1400 RTAPs; Applicable; Facility is in compliance.
Env-A 1600 Fuel specifications; Applicable
Env-A 2000 Fuel burning devices; Applicable
Env-A 3300 Municipal Waste Combustion; Applicable

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FEDERAL REGULATIONS

NSPS Yes; 40 CFR 60.30b Subpart Cb

Wheelabrator-Concord is not subject to NSPS Subpart E pursuant to 40 CFR 60.50(c).

MACT No;

Title V Yes;

NSR Wheelabrator-Concord is a major source for NSR because each of the MWC units is capable of charging greater than 250 tons/day of refuse. Facility belongs to the list of 28 source categories which have a major source threshold of 100 tpy. PSD permit #037-121NH04 was issued on 8/7/1987 when the facility was originally built. Please note that Env-A 3300 limits are more stringent.

112(r) Wheelabrator-Concord is subject to general duty clause;

40 CFR 64 (Compliance Assurance Monitoring) Not applicable

Wheelabrator-Concord is subject to Env-A 3300 (eff. 2/2/2008) which incorporated the requirements of 40 CFR 60 Subpart Cb. NSPS Subpart Cb was proposed after November 15, 1990 and therefore the MWC units are exempt from CAM pursuant to 40 CFR 64.2(b)(1)(i).

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Note:

Pollutant	Limit- PSD Permit 037-121NH04	Limit-Env-A 3300	Limit-Env-A 1211.09(c)
PM		25 mg/dscm (7% O₂), 3-run average	
SO ₂	0.195 lb/MMBtu or 21 lb/hr (24 hr avg) whichever is more stringent	29 ppmv or 25% of the potential SO ₂ emission conc., (7% O ₂ , dry), 24-hr daily block geometric average	
NOx	0.61 lb/MMBtu or 65.8 lb/hr (24 hr avg), whichever is more stringent	205 ppm_{dv} 24-hr daily arithmetic average	0.53 lb/MMBtu, 24-hr average
CO	0.11 lb/MMBtu or 11.86 lb/hr (4-day avg) 0.25 lb/MMBtu or 30.2 lb/hr (8 hr avg), whichever is more stringent	100 ppm_{vd} (4-hr block arithmetic average)	
Pb	0.0034 lb/MMBtu or 0.37 lb/hr (3 month avg), whichever is more stringent	0.4 mg/dscm (7% O₂), 3-run average	
HCl		29 ppm or 5% of potential HCl concentration, (7% O ₂ , dry), 3-run average	
Dioxins/Furans		30 ng/dscm (total mass), (7% O ₂), 3-run average	
Cadmium		0.035 mg/dscm (7% O₂), 3-run average	
Hg		0.028 mg/dscm (7% O₂) or 85% control eff., 3-run average	
Opacity		10% (30 6-min averages)	
Fugitive Ash		No visible emissions in excess of 5% of the observation period (i.e., 9 minutes per 3-hr period)	
Inlet Temperature to baghouse	Less than 200 deg F	Less than or equal 17 deg C or 30.6 deg F above the max temp measured during the most recent stack test (4-hour block arithmetic average)	
Ammonia	20 ppm_{dv} / FP-T-0042		
Steam load	68,900 lbs/hr (8-hr rolling avg)	110% of the maximum demonstrated load (4-hour block arithmetic average)	

The most stringent limits are in bold.