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Mr. Vrajesh Patel
Senior Environmental Engineer
Michigan Department of Environmental Quality
Air Quality Division
P.O. Box 30473
Lansing, MI 48909

November 14, 2008
NTH Project No. 16-060556

RE: Updated Application Support Materials
Holland Board of Public Works
Application 25-07

Dear Mr. Patel:

Per your e-mail, dated October 24, 2008 and from recent meetings and discussions, we are forwarding certain updated application support materials as a result of recent correspondence with MDEQ. Specifically, we are including the following information:

1. Updated Table 6-6
2. Updated Table 3-14
3. Updated Table B-1
4. Updated Table B-5
5. Updated Tables B-16 through B-18
6. Updated Control Cost Spreadsheet for Acid Gases
7. Updated Emissions Spreadsheet Reflecting 100% Fuel Usage
8. Updated TAC Modeling Analysis
9. Updated Table B-25 for Cooling Tower Emissions
10. Spreadsheet Summarizing Hg Modeling Input Parameters
11. New Table B-26 for Road Emissions
12. 1 CD with Updated PM_{10} Modeling to Include Roads and Cooling Towers
13. 1 CD with Updated Hg Deposition Modeling Files
14. Updated PM_{10} Background Concentrations for years 2005 – 2007
15. ProUCL Results for Various Bituminous Coals

This information updates the netting analysis to adjust the "look-back" period to 2003-2007, provides a final emission spreadsheet based on 100% alternate fuel usage, updates the TAC modeling analysis, and details the control costs for a dry FGD to further control acid gases.

Further, based on other recent discussions with MDEQ regarding the potential chlorine content of the bituminous coals that HBPW proposes to consider as fuel for Unit 10 and a request that the MACT analysis address the worst-case fuel chlorine content, we are providing a revised MACT analysis for acid gases. The HCl limit proposed in the revised MACT is based upon a review of various bituminous coals contained in the USGS CoalQUAL database. The highest chlorine content was found in bituminous coals from Pennsylvania and ranged from 26 ppm to 2,828 ppm. For the MACT analysis, the 99% upper confidence on the mean (UCL) was used to set the MACT Floor. Specifically, HBPW is proposing a MACT Floor limit of 0.063 lb/MMBtu based upon use of the 99% UCL for Pennsylvania bituminous coal. Our analysis shows a control cost of $15,614 per ton of acid gas removed using the 99% UCL for HCl.

Important to this analysis is the fact that this MACT limit and control cost represents the worst-case fuel that HBPW would consider or receive. As previously mentioned and discussed in the MACT determination, HBPW intends to burn a blend of fuels in Unit 10 and utilizing 100% of any given fuel is highly unlikely. Therefore, the control cost for acid gases is expected to be much higher than shown since lower chlorine fuels would be blended with this higher chlorine coal. See the following table for a summary of control costs based upon various coal blends.

Table 1. Summary of Acid Gas Control Costs for Varying Bituminous Coal Blends.

Bituminous Coal Blends			
100% PA	**80% PA / 20% CO**	**50% PA / 50% CO**	**100% CO**
$15,614	**$20,370**	**$27,772**	**$70,430**

If you have any further questions, please feel free to contact us at (517) 484-6900.

Sincerely,

NTH Consultants, Ltd.

Delbert Rector, P.E.
Project Manager

Jeffrey P. Jaros
Vice President

Attachments
cc: Mr. David Koster, Holland Board of Public Works
Mr. Daniel Mitas, HDR|CB

DR/JPJ/mjb

Table 6-6. PM_{10} Emission Rates – Future Potential Emissions (NAAQS Modeling Analysis)

Point Sources			Potential Emission Rates (lbs/hr)	Modeled Emission Rates (gram/sec)
New CFB Boiler Unit #10 Baghouse			21.63	2.72
Existing Unit #4 (ESP Control) - Based on ROP Limit			75.53	9.517E+00
Existing Unit #5 (ESP Control) - Based on ROP Limit			95.74	1.206E+01
Transfer/Crusher House Baghouse			0.34	0.043
Unit #10 Coal Storage Silos Baghouse			0.51	0.064
Unit #10 Limestone Bin Filter			0.17	0.021
Unit #10 Fly Ash Silo Vent			0.04	0.005
Cooling Tower			0.22	0.004
Roads			0.326	0.041
Unit #4 and #5 Existing Fly Ash Silo Vent			5.17E-04	6.51E-05
Fugitive Area Sources	**Source Area (m^2)**	**Maximum Net Emission Rate (lbs/day)**	**Potential Emission Rates (lbs/hr)**	**Modeled Emission Rates (gram/sec/m^2)**
Active Coal Pile [1]	8,803.0	35.42	1.476	2.112E-05
Compacted Coal Pile [2]	13,274.0	2.93	0.122	1.159E-06
Fugitive Volume Sources			**Potential Emission Rate (lbs/hr)**	**Modeled Emission Rate (gram/sec)**
Underground Loading Hopper			0.0142	1.785E-03

[1] The fugitive emission rate for the active coal pile is the sum of the maximum daily emissions for the coal drop from ship unloading, bull dozer activities, wind erosion on the active pile (normal daily activities) and wind erosion during shipments. The potential emission rate represents the maximum daily emissions at the increased coal usage rate proposed in this modification and takes into account the control strategies that will be implemented.

[2] The fugitive emission rate for the compacted coal pile is the maximum potential daily emission rate from wind erosion on the compacted area of the coal pile (normal daily activities). The emission rate represents the maximum daily emissions and takes into account post-modification control strategies that will be implemented

Revised November 14, 2008

Table 3-14. Emission Netting Analysis

Pollutant	Unit #3 (2-year Past Actual)	Unit #3 Past-Actual Fugitive	Unit #10 (New CFB Boiler)					NSPS		Cooling Tower (7 Cells)	Fugitive Emissions (Roads, Piles, Silos)	Net Change		Significant Emission Rates
	tpy	tpy	lb/ $MWhr_{gross}$	lb/ $MMBtu^{1}$	lb/ hr	lb/ yr	tpy	lb/ $MWhr_{gross}$	lb/ MMBtu	tpy	tpy	tpy	lb/ yr	tpy
PM	10.13	2.48		0.011	9.52		41.68		0.015	0.95	12.51	42.53		25
$PM_{10}/PM_{2.5}$	10.13	0.66		0.025	21.63		94.72		0.015	0.95	6.47	91.35		15
NO_x	425.82		1.0	0.09	78.0		341.64	1.0				-84.18		40
SO_2	531.99		1.4	0.126	109.2		478.30	1.4				-53.69		40
CO	10.58			0.15	129.75		568.31					557.73		100
VOC	0.0041			0.0036	3.11		13.64					13.64		40
Lead	0.0088			2.17E-05	0.019		0.082					0.073		0.6
H_2SO_4	32.69			0.006	5.28		23.11					-9.58		7
HF	4.82			0.0017	1.47		6.44					1.62		3
Mercury	0.00093		7.80E-06	7.03E-07	6.08E-04	5.33	2.66E-03	20E-06				0.002	3.47	

Holland Board of Public Works

PSD Applicability

Table B-1. Netting Demonstration

Pollutant	2-year Past Actual		New CFB Boiler						NSPS		Net Change		Significance Level
	Unit #3		Unit #10										
	tpy	Fugitives (tpy)	lb/MWhr$_{gross}$	lb/MMBTU	lb/hr	lb/yr	tpy	Fugitives (tpy)	lb/MWhr$_{gross}$	lb/MMBTU	tpy	lb/yr	tpy
PM [1]	10.13	2.48		0.011	9.52		41.68	13.46		0.015	42.53		15
$PM_{10}/PM_{2.5}$	10.13	0.66		0.025	21.63		94.72	7.42		0.015	91.35		25
NO_x	425.73		1.00	0.09	78.00		341.64		1.0		-84.09		40
SO_2	531.99		1.40	0.126	109.20		478.30		1.4		-53.69		40
H_2SO_4	32.69			6.10E-03	5.28		23.11				-9.58		7
CO	10.58			0.150	129.75		568.31				557.73		100
VOC	0.0041			0.005	4.33		18.94				18.94		40
HF	4.82			0.0017	1.47		6.44				1.62		3
Lead	0.0088			2.17E-05	0.02		0.08				0.07		0.6
Mercury [2]	0.00093		7.80E-06	7.03E-07	6.08E-04	5.33	2.66E-03				0.002	3.47	

[1] The PM emission factor for Unit #10 is based on the MACT limit using PM as a surrogate for non-mercury metal HAPs.

[2] The mercury emission factor for Unit #10 is based on the MACT limit.

Holland Board of Public Works

Baseline Emission Rates

Table B-5. Baseline Emission Rates

Emission	2000				2001				2002				2003			
	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)
PM_{10} Total	3.2	8.64	38.04	49.88	2.96	8.26	39.29	50.51	3.35	7.5	32.5	43.25	5.93	31.02	42.87	79.82
NO_x	392.11	725.64	464.09	1581.84	362.1	694.36	496.31	1552.81	410.3	625.8	417.2	1453.34	370.8	722.6	499.7	1593.02
SO_2	589.71	1054.16	1437.92	3081.79	581.1	1076.55	1406.49	3064.17	680.1	1002.5	1273.2	2955.82	634.1	1194.9	1582.4	3411.44
H_2SO_4	30.47				32.14				33.24				30.03			
CO	8.82	15.75	19.48	44.05	8.38	15.54	19.83	43.75	9.52	14.0	16.8	40.31	8.65	16.1	20.1	44.91
Lead	0.010	0.01	0.02	0.04	0.007	0.01	0.02	0.04	0.008	0.01	0.01	0.03	0.0072	0.01	0.02	0.04
HF	4.03				3.84				4.35				3.92			
Total VOCs	0.002				0.001				0.000				0.008			
Mercury	8.54E-04				7.89E-04				8.94E-04				8.07E-04	1.98E-03	1.15E-03	0.0039

Emission	2004				2005				2006				2007			
	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)
PM_{10} Total	4.28	26.53	36.79	67.60	6.77	31.00	35.42	73.19	13.49	1.35	2.69	17.53	2.38	6.83	2.80	12.01
NO_x	267.5	618.02	419.11	1304.64	422.5	722.00	383.10	1527.60	429.0	532.31	319.30	1280.58	412.0	557.25	382.35	1351.62
SO_2	381.8	851.90	1299.10	2532.75	536.1	885.41	874.50	2296.01	471.5	564.87	792.00	1828.35	592.5	774.13	784.70	2151.33
H_2SO_4	28.32				44.72				33.35				32.02			
CO	6.52	14.64	17.40	38.56	10.13	16.66	17.00	43.79	10.65	12.79	14.91	38.35	10.51	13.79	15.49	39.79
Lead	0.000	0.01	0.01	0.02	0.008	0.01	0.01	0.04	0.009	0.01	0.01	0.03	0.009	0.01	0.01	0.03
HF	2.97				4.60				4.84				4.80			
Total VOCs	0.000			0.0165	0.000				0.000							
Mercury	5.83E-04	1.70E-03	9.80E-04	0.0033	9.20E-04	2.00E-03	9.46E-04	0.0039	9.35E-04	1.00E-03	7.96E-03	0.0099	8.98E-04	5.40E-04	8.33E-04	0.0023

Table B-6. 24-Month Average Emission Rates

Emission	2000-2001 Average				2001-2002 Average				2002-2003 Average				2003-2004 Average			
	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)
PM_{10} Total	3.08	8.45	38.67	50.19	3.16	7.86	35.87	25.35	4.64	19.24	37.66	61.54	5.10	28.78	39.83	73.71
NO_x	377.13	710.00	480.20	1567.33	386.22	660.09	456.78	1039.57	390.52	674.21	458.45	1523.18	319.13	670.31	459.39	1448.83
SO_2	585.42	1065.36	1422.21	3072.98	630.62	1039.53	1339.85	1979.17	657.13	1098.70	1427.81	3183.63	507.95	1023.39	1440.76	2972.10
H_2SO_4	31.30				32.69				31.63				29.17			
CO	8.60	15.65	19.66	43.90	8.95	14.77	18.31	27.16	9.09	15.07	18.46	42.61	7.58	15.39	18.76	41.73
Lead	0.009	0.010	0.020	0.04	0.007	0.010	0.015	0.02	0.008	0.010	0.015	0.03	0.004	0.010	0.015	0.03
HF	3.937				4.093				4.133				3.444			
Total VOCs	0.001				0.000				0.004				0.004			
Mercury	8.22E-04				8.42E-04				8.51E-04	1.98E-03	1.15E-03		6.95E-04	1.84E-03	1.06E-03	

Emission	2004-2005 Average				2005-2006 Average				2006-2007 Average				Max 24-month	
	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Unit 4 (tons)	Unit 5 (tons)	Total (tons)	Unit 3 (tons)	Total (tons)
PM_{10} Total	5.53	28.77	36.11	70.40	10.13	16.18	19.06	45.36	7.94	4.09	2.75	14.77	**10.13**	73.71
NO_x	345.00	670.01	401.11	1416.12	425.73	627.16	351.20	1404.09	420.50	544.78	350.83	1316.10	**425.73**	1567.33
SO_2	458.93	868.66	1086.80	2414.38	503.79	725.14	833.25	2062.18	531.99	669.50	788.35	1989.84	**531.99**	3183.63
H_2SO_4	36.52				39.04				32.69				**39.04**	
CO	8.32	15.65	17.20	41.17	10.39	14.73	15.96	41.07	10.58	13.29	15.20	39.07	**10.58**	43.90
Lead	0.004	0.012	0.012	0.03	0.008	0.013	0.012	0.03	0.009	0.011	0.012	0.03	**0.01**	0.04
HF	3.784				4.721				4.820				**4.82**	0.00
Total VOCs	0.000				0.000				0.000				**0.00**	0.00
Mercury	7.51E-04	1.85E-03	9.63E-04		9.27E-04	1.50E-03	4.45E-03		9.16E-04	7.70E-04	4.40E-03		**0.00**	0.00

			2000	2001	2002	2003	2004	2005	2006	2007
		MMBtu/yr	902252.2	833632.4	944222.2	852963.7	615548	972090.1	987656.35	948242.35
		TPY Coal	35075.7	33396.1	37784.0	34094.0	25794.0	40007.0	42096.0	41725.0
NOx Emission Factors from TEST run:		0.847 lb/MMBtu	382.10	353.04	399.88	361.23	260.68	411.68	418.27	401.58
Coal Only		0.878 lb/MMBtu	396.09	365.96	414.51	374.45	270.23	426.75	433.58	416.28
		0.881 lb/MMBtu	397.44	367.22	415.93	375.73	271.15	428.21	435.06	417.70
	Average	0.869 lb/MMBTU	391.88	362.07	410.11	370.47	267.35	422.21	428.97	411.85
Oil Only		TPY	0.23	0.07	0.18	0.285	0.155	0.286	0.286	0.17
	Total	TPY	392.11	362.14	410.29	370.76	267.51	422.50	429.26	412.02
Hg Emission Factors from TEST Run:		2.51E-06 lb/MMBtu	1.13E-03	1.05E-03	1.18E-03	1.07E-03	7.73E-04	1.22E-03	1.24E-03	1.19E-03
		1.52E-06 lb/MMBtu	6.86E-04	6.34E-04	7.18E-04	6.48E-04	4.68E-04	7.39E-04	7.51E-04	7.21E-04
		1.65E-06 lb/MMBtu	7.44E-04	6.88E-04	7.79E-04	7.04E-04	5.08E-04	8.02E-04	8.15E-04	7.82E-04
		1.89E-06 lb/MMBTU	8.54E-04	7.89E-04	8.94E-04	8.07E-04	5.83E-04	9.20E-04	9.35E-04	8.98E-04

	2000	2001	2002	2003	2004	2005	2006	2007
MMBtu/hr	114.0	120.3	124.4	112.4	106.0	167.4	124.8	119.8

NOTE: HF Emissions are calculated based upon an emission factor of 0.23 lb/ton, consistent with recommendations by USEPA. Details of this emission factor are found in EPA 745-B-00-004, EPCRA Section 313 Guidance for calculating HF emissions for TRI.
Netting analysis look-back period adjusted to 2003-2007.

Holland Board of Public Works Fugitives
Summary and Working Emissions for 150-day Coal Supply
Revised November 3, 2008

Table B-15. New Transfer/Crusher House Baghouse

Baghouse (scfm)	10000	
Baghouse (gr /scf)	**0.004**	**BACT**
Baghouse Emissions (lb /hr)	0.34	
Operating Time (hr /day)	**24**	**NTH**
Operating Time (day/ year)	**365**	
Baghouse Emissions (lb/day)	8.23	
Baghouse Emissions (tpy)	1.50	

Table B-16. Unit 10 Storage Silos (3) with Baghouse Control

Flow Rate of Baghouse (scfm)	15000	
Baghouse (gr /scf)	**0.004**	**BACT**
Emissions (lb /hr)	0.51	
Operating Time (hr /day)	**24**	**NTH**
Operating Time (day/ year)	**365**	
Baghouse Emissions (lb/day)	12.34	
Emissions (tpy)	2.25	

Table B-17. Unit 10 Limestone Feed Storage Baghouse

Flow Rate of Baghouse (scfm)	5000	
Baghouse (gr /scf)	**0.004**	**BACT**
Emissions (lb /hr)	0.17	
Operating Time (hr /day)	**24**	**NTH**
Operating Time (day/ year)	**365**	
Baghouse Emissions (lb/day)	4.11	
Emissions (tpy)	0.75	

Table B-18. New Fly Ash Silo Baghouse (Unit 10 Only)

Flow Rate of Baghouse (scfm)	1100	
Baghouse (gr /scf)	**0.004**	**BACT**
Emissions (lb /hr)	0.04	
Operating Time (hr /day)	**24**	**NTH**
Operating Time (day/ year)	**365**	
Baghouse Emissions (lb/day)	0.91	
Emissions (tpy)	0.17	

Table B-19. Existing Fly Ash Bin Filter (Units 4 & 5)

Size of Silo (ft^3)	**8,482**	20 ft diam by 27 ft tall storage capacity
Density of ash (lb/ft3)	**37**	from MAERS
Bin Filter (gr /scf)	**0.02**	
Bin Filter Emissions (lb /hr)	0.00052	
Operating Hours	24	
Bin Filter Emissions (lb/day)	0.0124	
Bin Filter Emissions (tpy)	0.0023	

Appendix C

Control Technology Cost Basis for Dry Flue Gas Desulfurization for Acid Gas Control

One (1) 78 MW Circulating Fluidized Bed Boiler - Bituminous Coal (1,005 ppm Chloride Case)

REVISED: November 10, 2008

Cost Item	Cost Description	Cost Factor		Cost 2007 $
DIRECT CAPITAL INVESTMENTS (DCI)				
	Buildings		$	524,000
	Site Preparation		$	34,500
	Installation Cost		$	3,910,000
	Purchased Equipment		$	9,340,000
	Taxes on Real Property Only	No taxes applied to Production Equipment	$	35,700
	TOTAL DCI		**$**	**13,840,000**
INDIRECT CAPITAL INVESTMENT (ICI)				
	Engineering and Proj Management		$	824,000
	Construction & Field Expenses		$	922,000
	Contractor Fees	Included with Field Expense		
	Start-up	Included with Field Expense		
	Performance Test	Included with Field Expense		
	Contingencies		$	3,120,000
	TOTAL ICI		**$**	**4,866,000**
TOTAL CAPITAL INVESTMENT (TCI)	DCI + ICI		**$**	**18,706,000**
DIRECT OPERATING COSTS (DOC)				
	Labor			
	- Operator	2 equivalent operators @ $115,000/year	$	230,000
	- Supervisory	20% of Operator Labor Cost	$	46,000
	- Maintenance	1 technician @ $115,000/year	$	115,000
	Materials			
	- Maintenance Materials	3.5% of DCI	$	484,400
	- Reagent (Lime)	$70 per ton	$	44,600
	- Limestone	NA	$	-
	- Water	650 gpm	$	2,100
	Utilities		$	-
	- Electricity	450 kW @ $60/MWh	$	237,000
	- Fuel		$	-
	- Pressure Drop	4.5 " pressure drop	$	100,000
	- Waste Disposal	Incremental Waste Solids, 1,400 tpy at $12/ton	$	16,500
	TOTAL DOC		**$**	**1,275,600**
INDIRECT OPERATING COSTS (IOC)				
	Overhead	60% of Operator labor & Maintenance	$	234,600
	Property Taxes	Applicable to Project - Assume $0 - Conservative	$	-
	Insurance	1% of TCI	$	187,060
	Administrative Charges	2% of TCI	$	374,120
	Capital Recovery	20 years; 7% interest = 0.0944 CRF	$	1,765,846
	TOTAL IOC			**2,561,626**
RECOVERY CREDITS (RC)				
	Materials			-
	SO2 Market Credits	320.5 tpy based on 67% removal @ $400/ton	$	(128,200)
	TOTAL RC		**$**	**(128,200)**
TOTAL ANNUALIZED COSTS (TAC)	DOC + IOC - RC		**$**	**3,709,026**
HF EMISSIONS	80% Control	0.0017 lb/MMBtu		6.44
	98% Control	0.0002 lb/MMBtu		0.76
	TOTAL REDUCTION			**5.68**
	Cost-Effectivness	$ per ton of HF removed	**$**	**652,647**
HCl EMISSIONS	30% Control	0.063 lb/MMBtu		238.69
	98% Control	0.0018 lb/MMBtu		6.82
	TOTAL REDUCTION			**231.87**
	Cost-Effectivness	$ per ton of HCl removed	**$**	**15,996**
	Cost Effectiveness - Total Acid Gas	$ per ton of Acid Gas Removed	**$**	**15,614**

Table B2. Boiler Specifications

Boiler Parameters	Specification
Boiler Type	CFB
Maximum Rated Heat Input, (MMBtu/hr)	865
Gross Output (MW/hr)	78

Table B3. Raw Material Specifications

Material	Sulfur Content	Material Usage (%)	Heat Input (MMBtu/hr)	Heating Value (Btu/lb)	Material Throughput (lb/hr)	Material Throughput (tph)	Material Throughput (tpy)
Coal, Western Bituminous	0.50%	100.0%	865	13,118	65,940	32.97	288,817
Coal, Southern Illinois	4.30%	100.0%	865	11,484	75,322	37.66	329,911
Coal, Western Sub-bituminous	0.50%	100.0%	865	8,800	98,295	49.15	430,534
Petcoke	5.00%	50.0%	432.5	15,000	28,833	14.42	126,290
Sewage Sludge	0.00%	20.0%	173	7,000	15,817	7.91	69,279
Tire Derived Fuel	1.33%	30.0%	259.5	13,500	19,222	9.61	84,193
Waste Wood	0.00%	30.0%	259.5	8,000	32,438	16.22	142,076

Table B4. Emission Factors and Emission Rates

Compound	Coal, Western Bituminous					Coal, Southern Illinois					Coal, Western Sub-bituminous				
	Emission Factors			Emission Rates		Emission Factors			Emission Rates		Emission Factors			Emission Rates	
	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)
PM_{10}	0.025	lb/MMBtu	PSD-BACT	21.6	94.7	0.025	lb/MMBtu	PSD-BACT	21.6	94.7	0.025	lb/MMBtu	PSD-BACT	21.6	94.7
PM	0.011	lb/MMBtu	PSD-BACT	9.5	41.7	0.011	lb/MMBtu	PSD-BACT	9.52	41.68	0.011	lb/MMBtu	PSD-BACT	9.5	41.7
SO_2	1.4	lb/MW_{hr}	NSPS	109.2	478.3	1.4	lb/MW_{hr}	NSPS	109.2	478.3	1.4	lb/MW_{hr}	NSPS	109.2	478.3
NO_x	1.0	lb/MW_{hr}	NSPS	78.0	341.6	1.0	lb/MW_{hr}	NSPS	78.0	341.6	1.0	lb/MW_{hr}	NSPS	78.0	341.6
CO	0.15	lb/MMBtu	PSD-BACT	129.8	568.3	0.15	lb/MMBtu	PSD-BACT	129.8	568.3	0.15	lb/MMBtu	PSD-BACT	129.8	568.3
Lead	2.17E-05	lb/MMBtu	99% Control	0.02	0.082	2.17E-05	lb/MMBtu	99% Control	0.02	0.082	2.17E-05	lb/MMBtu	99% Control	0.02	0.082
VOC	0.0036	lb/MMBtu	MACT	3.11	13.64	0.0036	lb/MMBtu	MACT	3.11	13.64	0.0036	lb/MMBtu	MACT	3.11	13.64
Mercury	7.034E-07	lb/MMBtu	MACT	6.08E-04	2.66E-03	7.034E-07	lb/MMBtu	MACT	6.08E-04	2.66E-03	7.034E-07	lb/MMBtu	MACT	6.08E-04	2.66E-03
Hydrogen chloride (HCl) [4]	0.063	lb/MMBtu	MACT	54.50	215.96	0.063	lb/MMBtu	MACT	54.50	215.96	0.063	lb/MMBtu	MACT	54.50	215.96
Hydrogen fluoride (HF)	0.0017	lb/MMBtu	MACT	1.47	6.4	0.0017	lb/MMBtu	MACT	1.47	6.4	0.0017	lb/MMBtu	MACT	1.47	6.4
Sulfuric Acid Mist (H_2SO_4)	6.10E-03	lb/MMBtu	PSD-BACT	5.28	23.11	6.10E-03	lb/MMBtu	PSD-BACT	5.28	23.11	6.10E-03	lb/MMBtu	PSD-BACT	5.28	23.11
Total Dioxin/Furan	2.32E-09	lb/ton	AP-42 [5]	7.66E-08	3.35E-07	2.32E-09	lb/ton	AP-42 [5]	8.75E-08	3.83E-07	2.32E-09	lb/ton	AP-42 [5]	1.14E-07	5.00E-07
Hazardous Air Pollutants															
Acetaldehyde	6.56E-04	lb/ton	AP-42 [5]	2.16E-02	9.47E-02	6.56E-04	lb/ton	AP-42 [5]	2.47E-02	1.08E-01	6.56E-04	lb/ton	AP-42 [5]	3.22E-02	1.41E-01
Acetophenone	1.73E-05	lb/ton	AP-42 [5]	5.69E-04	2.49E-03	1.73E-05	lb/ton	AP-42 [5]	6.50E-04	2.85E-03	1.73E-05	lb/ton	AP-42 [5]	8.48E-04	3.71E-03
Acrolein [2]	3.34E-04	lb/ton	AP-42 [5]	1.10E-02	4.82E-02	3.34E-04	lb/ton	AP-42 [5]	1.26E-02	5.50E-02	3.34E-04	lb/ton	AP-42 [5]	1.64E-02	7.18E-02
Acrylonitrile															
Antimony	2.07E-05	lb/ton	AP-42 [5]	6.82E-04	2.99E-03	2.07E-05	lb/ton	AP-42 [5]	7.80E-04	3.41E-03	2.07E-05	lb/ton	AP-42 [5]	1.02E-03	4.46E-03
Arsenic	4.72E-04	lb/ton	AP-42 [5]	1.55E-02	6.81E-02	4.72E-04	lb/ton	AP-42 [5]	1.78E-02	7.78E-02	4.72E-04	lb/ton	AP-42 [5]	2.32E-02	1.01E-01
Benzene	1.50E-03	lb/ton	AP-42 [5]	4.93E-02	2.16E-01	1.50E-03	lb/ton	AP-42 [5]	5.63E-02	2.47E-01	1.50E-03	lb/ton	AP-42 [5]	7.35E-02	3.22E-01
Benzyl chloride	8.05E-04	lb/ton	AP-42 [5]	2.65E-02	1.16E-01	8.05E-04	lb/ton	AP-42 [5]	3.03E-02	1.33E-01	8.05E-04	lb/ton	AP-42 [5]	3.96E-02	1.73E-01
Beryllium	2.42E-05	lb/ton	AP-42 [5]	7.96E-04	3.49E-03	2.42E-05	lb/ton	AP-42 [5]	9.10E-04	3.98E-03	2.42E-05	lb/ton	AP-42 [5]	1.19E-03	5.20E-03
Bis(2-Ethylhexyl)phthalate	8.40E-05	lb/ton	AP-42 [5]	2.77E-03	1.21E-02	8.40E-05	lb/ton	AP-42 [5]	3.16E-03	1.38E-02	8.40E-05	lb/ton	AP-42 [5]	4.13E-03	1.81E-02
Bromoform	4.49E-05	lb/ton	AP-42 [5]	1.48E-03	6.48E-03	4.49E-05	lb/ton	AP-42 [5]	1.69E-03	7.40E-03	4.49E-05	lb/ton	AP-42 [5]	2.20E-03	9.65E-03
Bromomethane (Methyl bromide)	1.84E-04	lb/ton	AP-42 [5]	6.07E-03	2.66E-02	1.84E-04	lb/ton	AP-42 [5]	6.93E-03	3.04E-02	1.84E-04	lb/ton	AP-42 [5]	9.04E-03	3.96E-02
Cadmium	5.87E-05	lb/ton	AP-42 [5]	1.93E-03	8.47E-03	5.87E-05	lb/ton	AP-42 [5]	2.21E-03	9.67E-03	5.87E-05	lb/ton	AP-42 [5]	2.88E-03	1.26E-02
Carbon disulfide	1.50E-04	lb/ton	AP-42 [5]	4.93E-03	2.16E-02	1.50E-04	lb/ton	AP-42 [5]	5.63E-03	2.47E-02	1.50E-04	lb/ton	AP-42 [5]	7.35E-03	3.22E-02
Carbon tetrachloride															
Chlorine															
Chlorobenzene	2.53E-05	lb/ton	AP-42 [5]	8.34E-04	3.65E-03	2.53E-05	lb/ton	AP-42 [5]	9.53E-04	4.17E-03	2.53E-05	lb/ton	AP-42 [5]	1.24E-03	5.45E-03
Chloroform	6.79E-05	lb/ton	AP-42 [5]	2.24E-03	9.80E-03	6.79E-05	lb/ton	AP-42 [5]	2.56E-03	1.12E-02	6.79E-05	lb/ton	AP-42 [5]	3.33E-03	1.46E-02
Chromium, total	2.99E-04	lb/ton	AP-42 [5]	9.86E-03	4.32E-02	2.99E-04	lb/ton	AP-42 [5]	1.13E-02	4.93E-02	2.99E-04	lb/ton	AP-42 [5]	1.47E-02	6.44E-02
Chromium, hexavalent	9.09E-05	lb/ton	AP-42 [5]	3.00E-03	1.31E-02	9.09E-05	lb/ton	AP-42 [5]	3.42E-03	1.50E-02	9.09E-05	lb/ton	AP-42 [5]	4.47E-03	1.96E-02
Cobalt	1.15E-04	lb/ton	AP-42 [5]	3.79E-03	1.66E-02	1.15E-04	lb/ton	AP-42 [5]	4.33E-03	1.90E-02	1.15E-04	lb/ton	AP-42 [5]	5.65E-03	2.48E-02
Cumene	6.10E-06	lb/ton	AP-42 [5]	2.01E-04	8.80E-04	6.10E-06	lb/ton	AP-42 [5]	2.30E-04	1.01E-03	6.10E-06	lb/ton	AP-42 [5]	3.00E-04	1.31E-03
Cyanide	2.88E-03	lb/ton	AP-42 [5]	9.48E-02	4.15E-01	2.88E-03	lb/ton	AP-42 [5]	1.08E-01	4.74E-01	2.88E-03	lb/ton	AP-42 [5]	1.41E-01	6.19E-01
1,4-Dichlorobenzene															
1,2-Dichloroethane (Ethylene dichloride)	4.60E-05	lb/ton	AP-42 [5]	1.52E-03	6.64E-03	4.60E-05	lb/ton	AP-42 [5]	1.73E-03	7.59E-03	4.60E-05	lb/ton	AP-42 [5]	2.26E-03	9.90E-03
Dichloromethane (Methylene chloride)	3.34E-04	lb/ton	AP-42 [5]	1.10E-02	4.82E-02	3.34E-04	lb/ton	AP-42 [5]	1.26E-02	5.50E-02	3.34E-04	lb/ton	AP-42 [5]	1.64E-02	7.18E-02
1,2-Dichloropropane (Propylene dichloride)															
Dimethyl sulfate	5.52E-05	lb/ton	AP-42 [5]	1.82E-03	7.97E-03	5.52E-05	lb/ton	AP-42 [5]	2.08E-03	9.11E-03	5.52E-05	lb/ton	AP-42 [5]	2.71E-03	1.19E-02
2,4-Dinitrophenol															
2,4-Dinitrotoluene	3.22E-07	lb/ton	AP-42 [5]	1.06E-05	4.65E-05	3.22E-07	lb/ton	AP-42 [5]	1.21E-05	5.31E-05	3.22E-07	lb/ton	AP-42 [5]	1.58E-05	6.93E-05
Ethylbenzene	1.08E-04	lb/ton	AP-42 [5]	3.56E-03	1.56E-02	1.08E-04	lb/ton	AP-42 [5]	4.07E-03	1.78E-02	1.08E-04	lb/ton	AP-42 [5]	5.31E-03	2.33E-02
Ethylchloride (Chloroethane)	4.83E-05	lb/ton	AP-42 [5]	1.59E-03	6.97E-03	4.83E-05	lb/ton	AP-42 [5]	1.82E-03	7.97E-03	4.83E-05	lb/ton	AP-42 [5]	2.37E-03	1.04E-02
Ethylene dibromide (Dibromoethane)	1.38E-06	lb/ton	AP-42 [5]	4.55E-05	1.99E-04	1.38E-06	lb/ton	AP-42 [5]	5.20E-05	2.28E-04	1.38E-06	lb/ton	AP-42 [5]	6.78E-05	2.97E-04
Formaldehyde	2.76E-04	lb/ton	AP-42 [5]	9.10E-03	3.99E-02	2.76E-04	lb/ton	AP-42 [5]	1.04E-02	4.55E-02	2.76E-04	lb/ton	AP-42 [5]	1.36E-02	5.94E-02
Hexane	7.71E-05	lb/ton	AP-42 [5]	2.54E-03	1.11E-02	7.71E-05	lb/ton	AP-42 [5]	2.90E-03	1.27E-02	7.71E-05	lb/ton	AP-42 [5]	3.79E-03	1.66E-02
Hydrogen chloride (HCl)	0.063	lb/MMBtu	MACT	54.50	215.96	0.063	lb/MMBtu	MACT	5.45E+01	215.96	0.063	lb/MMBtu	MACT	5.45E+01	215.96
Hydrogen fluoride (HF)	0.0017	lb/MMBtu	MACT	1.47	6.44	0.0017	lb/MMBtu	MACT	1.47E+00	6.44	0.0017	lb/MMBtu	MACT	1.47E+00	6.44
Isophorone	6.67E-04	lb/ton	AP-42 [5]	2.20E-02	9.63E-02	6.67E-04	lb/ton	AP-42 [5]	2.51E-02	1.10E-01	6.67E-04	lb/ton	AP-42 [5]	3.28E-02	1.44E-01
Lead (IS NOT A TAC)	2.17E-05	lb/MMBtu	PSD-BACT	1.88E-02	8.22E-02	2.17E-05	lb/MMBtu	AP-42 [5]	1.88E-02	8.22E-02	2.17E-05	lb/MMBtu	AP-42 [5]	1.88E-02	8.22E-02
Manganese [3]	5.64E-04	lb/ton	AP-42 [5]	1.86E-04	8.14E-04	5.64E-04	lb/ton	AP-42 [5]	2.12E-04	9.30E-04	5.64E-04	lb/ton	AP-42 [5]	2.77E-04	1.21E-03
Mercury	7.03E-07	lb/MMBtu	MACT	6.08E-04	2.66E-03	7.03E-07	lb/MMBtu	MACT	6.08E-04	2.66E-03	7.03E-07	lb/MMBtu	MACT	6.08E-04	2.66E-03
Methyl chloride (Chloromethane)	6.10E-04	lb/ton	AP-42 [5]	2.01E-02	8.80E-02	6.10E-04	lb/ton	AP-42 [5]	2.30E-02	1.01E-01	6.10E-04	lb/ton	AP-42 [5]	3.00E-02	1.31E-01
Methyl hydrazine	1.96E-04	lb/ton	AP-42 [5]	6.45E-03	2.82E-02	1.96E-04	lb/ton	AP-42 [5]	7.36E-03	3.22E-02	1.96E-04	lb/ton	AP-42 [5]	9.61E-03	4.21E-02
Methyl methacrylate	2.30E-05	lb/ton	AP-42 [5]	7.58E-04	3.32E-03	2.30E-05	lb/ton	AP-42 [5]	8.66E-04	3.79E-03	2.30E-05	lb/ton	AP-42 [5]	1.13E-03	4.95E-03
Methyl tert butyl ether	4.03E-05	lb/ton	AP-42 [5]	1.33E-03	5.81E-03	4.03E-05	lb/ton	AP-42 [5]	1.52E-03	6.64E-03	4.03E-05	lb/ton	AP-42 [5]	1.98E-03	8.66E-03
Nickel	3.22E-04	lb/ton	AP-42 [5]	1.06E-02	4.65E-02	3.22E-04	lb/ton	AP-42 [5]	1.21E-02	5.31E-02	3.22E-04	lb/ton	AP-42 [5]	1.58E-02	6.93E-02
4-Nitrophenol															
Pentachlorophenol															
Phenol	1.84E-05	lb/ton	AP-42 [5]	6.07E-04	2.66E-03	1.84E-05	lb/ton	AP-42 [5]	6.93E-04	3.04E-03	1.84E-05	lb/ton	AP-42 [5]	9.04E-04	3.96E-03
Phosphorus															
Propionaldehyde (Propanal)	4.37E-04	lb/ton	AP-42 [5]	1.44E-02	6.31E-02	4.37E-04	lb/ton	AP-42 [5]	1.65E-02	7.21E-02	4.37E-04	lb/ton	AP-42 [5]	2.15E-02	9.41E-02
Selenium	1.50E-03	lb/ton	AP-42 [5]	4.93E-02	2.16E-01	1.50E-03	lb/ton	AP-42 [5]	5.63E-02	2.47E-01	1.50E-03	lb/ton	AP-42 [5]	7.35E-02	3.22E-01
Styrene	2.88E-05	lb/ton	AP-42 [5]	9.48E-04	4.15E-03	2.88E-05	lb/ton	AP-42 [5]	1.08E-03	4.74E-03	2.88E-05	lb/ton	AP-42 [5]	1.41E-03	6.19E-03
1,1,1-Trichloroethane (Methyl chloroform)	2.30E-05	lb/ton	AP-42 [5]	7.58E-04	3.32E-03	2.30E-05	lb/ton	AP-42 [5]	8.66E-04	3.79E-03	2.30E-05	lb/ton	AP-42 [5]	1.13E-03	4.95E-03
Tetrachloroethylene (Perchloroethylene)	4.95E-05	lb/ton	AP-42 [5]	1.63E-03	7.14E-03	4.95E-05	lb/ton	AP-42 [5]	1.86E-03	8.16E-03	4.95E-05	lb/ton	AP-42 [5]	2.43E-03	1.06E-02
Toluene	2.76E-04	lb/ton	AP-42 [5]	9.10E-03	3.99E-02	2.76E-04	lb/ton	AP-42 [5]	1.04E-02	4.55E-02	2.76E-04	lb/ton	AP-42 [5]	1.36E-02	5.94E-02
Trichlorethene (Trichloroethylene)															
2,4,6-Trichlorophenol															
Vinyl acetate	8.74E-05	lb/ton	AP-42 [5]	2.88E-03	1.26E-02	8.74E-05	lb/ton	AP-42 [5]	3.29E-03	1.44E-02	8.74E-05	lb/ton	AP-42 [5]	4.30E-03	1.88E-02
Vinyl Chloride															
Xylenes	4.26E-05	lb/ton	AP-42 [5]	1.40E-03	6.14E-03	4.26E-05	lb/ton	AP-42 [5]	1.60E-03	7.02E-03	4.26E-05	lb/ton	AP-42 [5]	2.09E-03	9.16E-03
o-Xylene															
Polycylic Organic Matter (POMs)															
2-Chloroacetophenone	8.05E-06	lb/ton	AP-42 [5]	2.65E-04	1.16E-03	8.05E-06	lb/ton	AP-42 [5]	3.03E-04	1.33E-03	8.05E-06	lb/ton	AP-42 [5]	3.96E-04	1.73E-03
2-Chloronaphthalene															
2-Methylnaphthalene															
3-Methylcholanthrene															
5-Methyl chrysene	2.53E-08	lb/ton	AP-42 [5]	8.34E-07	3.65E-06	2.53E-08	lb/ton	AP-42 [5]	9.53E-07	4.17E-06	2.53E-08	lb/ton	AP-42 [5]	1.24E-06	5.45E-06
Acenaphthene	5.87E-07	lb/ton	AP-42 [5]	1.93E-05	8.47E-05	5.87E-07	lb/ton	AP-42 [5]	2.21E-05	9.67E-05	5.87E-07	lb/ton	AP-42 [5]	2.88E-05	1.26E-04
Acenaphthylene	2.88E-07	lb/ton	AP-42 [5]	9.48E-06	4.15E-05	2.88E-07	lb/ton	AP-42 [5]	1.08E-05	4.74E-05	2.88E-07	lb/ton	AP-42 [5]	1.41E-05	6.19E-05
Anthracene	2.42E-07	lb/ton	AP-42 [5]	7.96E-06	3.49E-05	2.42E-07	lb/ton	AP-42 [5]	9.10E-06	3.98E-05	2.42E-07	lb/ton	AP-42 [5]	1.19E-05	5.20E-05
Benz(a)anthracene [1]	9.20E-08	lb/ton	AP-42 [5]	3.03E-06	1.33E-05	9.20E-08	lb/ton	AP-42 [5]	3.46E-06	1.52E-05	9.20E-08	lb/ton	AP-42 [5]	4.52E-06	1.98E-05
Benzo(a)pyrene [1]	4.37E-08	lb/ton	AP-42 [5]	1.44E-06	6.31E-06	4.37E-08	lb/ton	AP-42 [5]	1.65E-06	7.21E-06	4.37E-08	lb/ton	AP-42 [5]	2.15E-06	9.41E-06
Benzo(b)fluoranthene [1]															
Benzo(b,j,k) fluoranthene	1.27E-07	lb/ton	AP-42 [5]	4.17E-06	1.83E-05	1.27E-07	lb/ton	AP-42 [5]	4.76E-06	2.09E-05	1.27E-07	lb/ton	AP-42 [5]	6.22E-06	2.72E-05
Benzo(e)pyrene															
Benzo(g,h,i)perylene	3.11E-08	lb/ton	AP-42 [5]	1.02E-06	4.48E-06	3.11E-08	lb/ton	AP-42 [5]	1.17E-06	5.12E-06	3.11E-08	lb/ton	AP-42 [5]	1.53E-06	6.68E-06
Benzo(j,k)fluoranthene															
Benzo(k)fluoranthene															

Compound	Petcoke					Sewage Sludge					Tire Derived Fuel				
	Emission Factor			Emission Rate		Emission Factor			Emission Rate		Emission Factor			Emission Rate	
	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)
PM_{10}	0.025	lb/MMBtu	PSD-BACT	21.6	47.4	0.025	lb/MMBtu	PSD-BACT	21.6	18.9	0.025	lb/MMBtu	PSD-BACT	21.6	28.42
PM	0.011	lb/MMBtu	PSD-BACT	9.5	20.8	0.011	lb/MMBtu	PSD-BACT	9.5	8.3	0.011	lb/MMBtu	PSD-BACT	9.5	12.5
SO_2	1.4	lb/MW_{hr}	NSPS	109.2	239.1	1.4	lb/MW_{hr}	NSPS	109.2	95.7	1.4	lb/MW_{hr}	NSPS	109.2	143.5
NO_x	1.0	lb/MW_{hr}	NSPS	78.0	170.8	1.0	lb/MW_{hr}	NSPS	78.0	68.3	1.0	lb/MW_{hr}	NSPS	78.0	102.5
CO	0.15	lb/MMBtu	PSD-BACT	129.8	284.2	0.15	lb/MMBtu	PSD-BACT	129.8	113.7	0.15	lb/MMBtu	PSD-BACT	129.8	170.49
Lead	2.17E-05	lb/MMBtu	99% Control	0.02	0.041	2.17E-05	lb/MMBtu	99% Control	1.88E-02	1.64E-02	2.17E-05	lb/MMBtu	99% Control	0.019	0.02
VOC	0.0036	lb/MMBtu	MACT	3.11	6.82	0.0036	lb/MMBtu	MACT	3.1	2.7	0.0036	lb/MMBtu	MACT	3.114	4.09
Mercury	7.034E-07	lb/MMBtu	MACT	6.08E-04	1.33E-03	7.034E-07	lb/MMBtu	MACT	6.08E-04	5.33E-04	7.034E-07	lb/MMBtu	MACT	6.08E-04	7.99E-04
Hydrogen chloride (HCl) [4]	0.063	lb/MMBtu	MACT	54.50	215.96	0.063	lb/MMBtu	MACT	54.5	215.96	0.063	lb/MMBtu	MACT	54.50	215.96
Hydrogen fluoride (HF)	0.0017	lb/MMBtu	MACT	1.47	3.2	0.0017	lb/MMBtu	MACT	1.5	1.3	0.0017	lb/MMBtu	MACT	1.471	1.93
Sulfuric Acid Mist (H_2SO_4)	6.10E-03	lb/MMBtu	PSD-BACT	5.28	11.56										
Total Dioxin/Furan	2.32E-09	lb/ton	Stack Test [2]	3.35E-08	7.33E-08	4.4E-09	lb/ton	AP-42 [6]	3.48E-08	3.05E-08					
Hazardous Air Pollutants															
Acetaldehyde	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Acetophenone	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Acrolein [2]	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Acrylonitrile															
Antimony	2.07E-05	lb/ton	AP-42	2.98E-04	6.54E-04										
Arsenic	4.72E-04	lb/ton	AP-42	6.80E-03	1.49E-02	3.45E-05	lb/ton	AP-42 [6]	2.73E-04	2.39E-04	7.67E-07	lb/MMBtu	Stack Test [1]	6.63E-04	8.72E-04
Benzene	3.83E-05	lb/MMBtu	CLECO [8]	3.31E-02	7.26E-02	4.60E-04	lb/ton	AP-42 [6]	3.64E-03	3.19E-03					
Benzyl chloride	2.06E-05	lb/MMBtu	CLECO [8]	1.78E-02	3.90E-02										
Beryllium	2.42E-05	lb/ton	AP-42	3.48E-04	7.62E-04	4.60E-07	lb/ton	AP-42 [6]	3.64E-06	3.19E-06	2.00E-08	lb/MMBtu	Stack Test [1]	1.73E-05	2.27E-05
Bis(2-Ethylhexyl)phthalate	2.00E-06	lb/MMBtu	CLECO [8]	1.73E-03	3.79E-03	9.43E-02	lb/ton	AP-42 [6]	7.46E-01	0.65					
Bromoform	9.98E-07	lb/MMBtu	CLECO [8]	8.63E-04	1.89E-03										
Bromomethane (Methyl bromide)	1.84E-04	lb/ton	AP-42	2.65E-03	5.81E-03										
Cadmium	5.87E-05	lb/ton	AP-42	8.46E-04	1.85E-03	1.27E-03	lb/ton	AP-42 [6]	1.00E-02	8.76E-03	9.59E-08	lb/MMBtu	Stack Test [1]	8.30E-05	1.09E-04
Carbon disulfide	3.66E-06	lb/MMBtu	CLECO [8]	3.17E-03	6.93E-03										
Carbon tetrachloride						2.76E-05	lb/ton	AP-42 [6]	2.18E-04	1.91E-04					
Chlorine															
Chlorobenzene	6.65E-07	lb/MMBtu	CLECO [8]	5.75E-04	1.26E-03	1.15E-05	lb/ton	AP-42 [6]	9.09E-05	7.97E-05					
Chloroform	6.79E-05	lb/ton	AP-42	9.78E-04	2.14E-03	4.60E-03	lb/ton	AP-42 [6]	3.64E-02	3.19E-02					
Chromium, total	2.99E-04	lb/ton	AP-42	4.31E-03	9.44E-03	57.5	ppm	Analytical	1.24E-03	1.09E-03	1.20E-06	lb/MMBtu	Stack Test [1]	1.03E-03	1.36E-03
Chromium, hexavalent	9.09E-05	lb/ton	AP-42	1.31E-03	2.87E-03										
Cobalt	1.15E-04	lb/ton	AP-42	1.66E-03	3.63E-03										
Cumene	6.10E-06	lb/ton	AP-42	8.79E-05	1.92E-04										
Cyanide	7.35E-05	lb/MMBtu	CLECO [8]	6.36E-02	1.39E-01										
1,4-Dichlorobenzene						0.552	lb/ton	AP-42 [6]	4.37E+00	3.82E+00					
1,2-Dichloroethane (Ethylene dichloride)	4.60E-05	lb/ton	AP-42	6.63E-04	1.45E-03										
Dichloromethane (Methylene chloride)	3.34E-04	lb/ton	AP-42	4.81E-03	1.05E-02	1.61E-03	lb/ton	AP-42 [6]	1.27E-02	1.12E-02					
1,2-Dichloropropane (Propylene dichloride)															
Dimethyl sulfate	1.33E-06	lb/MMBtu	CLECO [8]	1.15E-03	2.52E-03										
2,4-Dinitrophenol															
2,4-Dinitrotoluene	3.22E-07	lb/ton	AP-42	4.64E-06	1.02E-05										
Ethylbenzene	2.66E-06	lb/MMBtu	CLECO [8]	2.30E-03	5.04E-03	5.75E-05	lb/ton	AP-42 [6]	4.55E-04	3.98E-04					
Ethylchloride (Chloroethane)	1.33E-06	lb/MMBtu	CLECO [8]	1.15E-03	2.52E-03										
Ethylene dibromide (Dibromoethane)	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Formaldehyde	6.99E-06	lb/MMBtu	CLECO [8]	6.05E-03	1.32E-02										
Hexane	2.00E-06	lb/MMBtu	CLECO [8]	1.73E-03	3.79E-03										
Hydrogen chloride (HCl)	0.063	lb/MMBtu	MACT	5.45E+01	215.96	0.063	lb/MMBtu	MACT	5.45E+01	215.96					
Hydrogen fluoride (HF)	0.0017	lb/MMBtu	MACT	1.47E+00	3.22										
Isophorone	1.70E-05	lb/MMBtu	CLECO [8]	1.47E-02	3.22E-02										
Lead (IS NOT A TAC)	2.17E-05	lb/MMBtu	AP-42	1.88E-02	4.11E-02	2.17E-05	lb/MMBtu	AP-42 [6]	1.88E-02	1.64E-02	3.15E-06	lb/MMBtu	Stack Test [1]	2.73E-03	3.58E-03
Manganese [3]	5.64E-04	lb/ton	AP-42	8.12E-05	1.78E-04	6.90E-04	lb/ton	AP-42 [6]	5.46E-05	4.78E-05	9.30E-06	lb/MMBtu	Stack Test [1]	8.05E-05	1.06E-04
Mercury	7.03E-07	lb/MMBtu	MACT	6.08E-04	1.33E-03	7.03E-07	lb/MMBtu	MACT	6.08E-04	5.33E-04	2.00E-08	lb/MMBtu	Stack Test [1]	1.73E-05	2.27E-05
Methyl chloride (Chloromethane)	1.56E-05	lb/MMBtu	CLECO [8]	1.35E-02	2.96E-02	6.90E-04	lb/ton	AP-42 [6]	5.46E-03	4.78E-03					
Methyl hydrazine	4.99E-06	lb/MMBtu	CLECO [8]	4.32E-03	9.45E-03										
Methyl methacrylate	6.65E-07	lb/MMBtu	CLECO [8]	5.75E-04	1.26E-03										
Methyl tert butyl ether	9.98E-07	lb/MMBtu	CLECO [8]	8.63E-04	1.89E-03										
Nickel	3.22E-04	lb/ton	AP-42	4.64E-03	1.02E-02	3.91E-03	lb/ton	AP-42 [6]	3.09E-02	2.71E-02	1.67E-06	lb/MMBtu	Stack Test [1]	1.44E-03	1.90E-03
4-Nitrophenol															
Pentachlorophenol															
Phenol	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Phosphorus						26,450	ppm	Analytical	5.72E-01	0.50					
Propionaldehyde (Propanal)	1.13E-05	lb/MMBtu	CLECO [8]	9.77E-03	2.14E-02										
Selenium	1.50E-03	lb/ton	AP-42	2.16E-02	4.72E-02	8.28	ppm	Analytical	1.79E-04	1.57E-04					
Styrene	6.65E-07	lb/MMBtu	CLECO [8]	5.75E-04	1.26E-03										
1,1,1-Trichloroethane (Methyl chloroform)	2.30E-05	lb/ton	AP-42	3.32E-04	7.26E-04										
Tetrachloroethylene (Perchloroethylene)	1.33E-06	lb/MMBtu	CLECO [8]	1.15E-03	2.52E-03										
Toluene	6.99E-06	lb/MMBtu	CLECO [8]	6.05E-03	1.32E-02	8.05E-04	lb/ton	AP-42 [6]	6.37E-03	5.58E-03					
Trichlorethene (Trichloroethylene)						6.90E-05	lb/ton	AP-42 [6]	5.46E-04	4.78E-04					
2,4,6-Trichlorophenol															
Vinyl acetate	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Vinyl Chloride															
Xylenes	9.98E-07	lb/MMBtu	CLECO [8]	8.63E-04	1.89E-03										
o-Xylene															
Polycylic Organic Matter (POMs)															
2-Chloroacetophenone	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
2-Chloronaphthalene															
2-Methylnaphthalene											2.94E-06	lb/MMBtu	Stack Test [1]	2.55E-03	3.35E-03
3-Methylcholanthrene						0.15	lb/ton	AP-42 [6]	1.18E+00	1.04					
5-Methyl chrysene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Acenaphthene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						1.64E-08	lb/MMBtu	Stack Test [1]	1.42E-05	1.87E-05
Acenaphthylene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						1.27E-07	lb/MMBtu	Stack Test [1]	1.09E-04	1.44E-04
Anthracene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						5.45E-07	lb/MMBtu	Stack Test [1]	4.72E-04	6.20E-04
Benz(a)anthracene [1]	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						4.28E-08	lb/MMBtu	Stack Test [1]	3.70E-05	4.86E-05
Benzo(a)pyrene [1]	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						3.30E-09	lb/MMBtu	Stack Test [1]	2.85E-06	3.75E-06
Benzo(b)fluoranthene [1]	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Benzo(b,j,k) fluoranthene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Benzo(e)pyrene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						1.54E-08	lb/MMBtu	Stack Test [1]	1.33E-05	1.75E-05
Benzo(g,h,i)perylene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Benzo(j,k)fluoranthene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04										
Benzo(k)fluoranthene	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						6.64E-09	lb/MMBtu	Stack Test [1]	5.74E-06	7.54E-06

Compound	Waste Wood					Maximum Short-term Emissions	
	Emission Factor			Emission Rate			
	Value	Units	Basis	(lb/hr)	(tpy)	(lb/hr)	Fuel
PM_{10}	0.025	lb/MMBtu	PSD-BACT	21.6	28.42	21.6	Coal, Western Bituminous
PM	0.011	lb/MMBtu	PSD-BACT	9.5	12.5	9.5	Coal, Western Bituminous
SO_2	1.4	lb/MW_{hr}	NSPS	109.2	143.5	109.2	Coal, Western Bituminous
NO_x	1.0	lb/MW_{hr}	NSPS	78.0	102.5	78.0	Coal, Western Bituminous
CO	0.15	lb/MMBtu	PSD-BACT	129.8	170.4915	129.8	Coal, Western Bituminous
Lead	2.17E-05	lb/MMBtu	99% Control	0.019	2.47E-02	0.019	Coal, Western Bituminous
VOC	0.0036	lb/MMBtu	MACT	3.11	4.092	3.11	Coal, Western Bituminous
Mercury	7.034E-07	lb/MMBtu	MACT	6.08E-04	7.99E-04	6.08E-04	Coal, Western Bituminous
Hydrogen chloride (HCl) [4]	0.063	lb/MMBtu	MACT	54.50	215.96	54.50	Coal, Western Bituminous
Hydrogen fluoride (HF)	0.0017	lb/MMBtu	MACT	1.47	1.932	1.47	Coal, Western Bituminous
Sulfuric Acid Mist (H_2SO_4)						5.28	Coal, Western Bituminous
Total Dioxin/Furan						1.14E-07	Coal, Western Sub-bituminous
Hazardous Air Pollutants							
Acetaldehyde	9.55E-04	lb/MMBtu	AP-42 [7]	8.26E-01	1.08E+00	8.26E-01	Waste Wood
Acetophenone	3.68E-09	lb/MMBtu	AP-42 [7]	3.18E-06	4.18E-06	8.48E-04	Coal, Western Sub-bituminous
Acrolein [2]	3.60E-03	lb/MMBtu	MACT	7.47E-01	9.82E-01	7.47E-01	Waste Wood
Acrylonitrile							
Antimony	9.09E-06	lb/MMBtu	AP-42 [7]	7.86E-03	1.03E-02	7.86E-03	Waste Wood
Arsenic	2.53E-05	lb/MMBtu	AP-42 [7]	2.19E-02	2.88E-02	2.32E-02	Coal, Western Sub-bituminous
Benzene	4.83E-03	lb/MMBtu	AP-42 [7]	4.18E+00	5.49E+00	4.18E+00	Waste Wood
Benzyl chloride						3.96E-02	Coal, Western Sub-bituminous
Beryllium	1.27E-06	lb/MMBtu	AP-42 [7]	1.09E-03	1.44E-03	1.19E-03	Coal, Western Sub-bituminous
Bis(2-Ethylhexyl)phthalate	5.41E-08	lb/MMBtu	AP-42 [7]	4.68E-05	6.14E-05	7.46E-01	Sewage Sludge
Bromoform						2.20E-03	Coal, Western Sub-bituminous
Bromomethane (Methyl bromide)	1.73E-05	lb/MMBtu	AP-42 [7]	1.49E-02	1.96E-02	1.49E-02	Waste Wood
Cadmium	4.72E-06	lb/MMBtu	AP-42 [7]	4.08E-03	5.36E-03	1.00E-02	Sewage Sludge
Carbon disulfide						7.35E-03	Coal, Western Sub-bituminous
Carbon tetrachloride	5.18E-05	lb/MMBtu	AP-42 [7]	4.48E-02	5.88E-02	4.48E-02	Waste Wood
Chlorine	9.09E-04	lb/MMBtu	AP-42 [7]	7.86E-01	1.03E+00	7.86E-01	Waste Wood
Chlorobenzene	3.80E-05	lb/MMBtu	AP-42 [7]	3.28E-02	4.31E-02	3.28E-02	Waste Wood
Chloroform	3.22E-05	lb/MMBtu	AP-42 [7]	2.79E-02	3.66E-02	3.64E-02	Sewage Sludge
Chromium, total	2.42E-05	lb/MMBtu	AP-42 [7]	2.09E-02	2.74E-02	2.09E-02	Waste Wood
Chromium, hexavalent	4.03E-06	lb/MMBtu	AP-42 [7]	3.48E-03	4.57E-03	4.47E-03	Coal, Western Sub-bituminous
Cobalt	7.48E-06	lb/MMBtu	AP-42 [7]	6.47E-03	8.50E-03	6.47E-03	Waste Wood
Cumene						3.00E-04	Coal, Western Sub-bituminous
Cyanide						1.41E-01	Coal, Western Sub-bituminous
1,4-Dichlorobenzene						4.37E+00	Sewage Sludge
1,2-Dichloroethane (Ethylene dichloride)	3.34E-05	lb/MMBtu	AP-42 [7]	2.88E-02	3.79E-02	2.88E-02	Waste Wood
Dichloromethane (Methylene chloride)	3.34E-04	lb/MMBtu	AP-42 [7]	2.88E-01	3.79E-01	2.88E-01	Waste Wood
1,2-Dichloropropane (Propylene dichloride)	3.80E-05	lb/MMBtu	AP-42 [7]	3.28E-02	4.31E-02	3.28E-02	Waste Wood
Dimethyl sulfate						2.71E-03	Coal, Western Sub-bituminous
2,4-Dinitrophenol	2.07E-07	lb/MMBtu	AP-42 [7]	1.79E-04	2.35E-04	1.79E-04	Waste Wood
2,4-Dinitrotoluene						1.58E-05	Coal, Western Sub-bituminous
Ethylbenzene	3.57E-05	lb/MMBtu	AP-42 [7]	3.08E-02	4.05E-02	3.08E-02	Waste Wood
Ethylchloride (Chloroethane)						2.37E-03	Coal, Western Sub-bituminous
Ethylene dibromide (Dibromoethane)						2.88E-04	Petcoke
Formaldehyde	5.06E-03	lb/MMBtu	AP-42 [7]	4.38E+00	5.75E+00	4.38E+00	Waste Wood
Hexane						3.79E-03	Coal, Western Sub-bituminous
Hydrogen chloride (HCl)						5.45E+01	Coal, Western Bituminous
Hydrogen fluoride (HF)						1.47E+00	Coal, Western Bituminous
Isophorone						3.28E-02	Coal, Western Sub-bituminous
Lead (IS NOT A TAC)	0.00E+00	lb/MMBtu	AP-42 [7]	0.00E+00	0.00E+00	1.88E-02	Coal, Western Bituminous
Manganese [3]	1.84E-03	lb/MMBtu	AP-42 [7]	1.59E-02	2.09E-02	1.59E-02	Waste Wood
Mercury						6.08E-04	Coal, Western Bituminous
Methyl chloride (Chloromethane)	2.65E-05	lb/MMBtu	AP-42 [7]	2.29E-02	3.01E-02	3.00E-02	Coal, Western Sub-bituminous
Methyl hydrazine						9.61E-03	Coal, Western Sub-bituminous
Methyl methacrylate						1.13E-03	Coal, Western Sub-bituminous
Methyl tert butyl ether						1.98E-03	Coal, Western Sub-bituminous
Nickel	3.80E-05	lb/MMBtu	AP-42 [7]	3.28E-02	4.31E-02	3.28E-02	Waste Wood
4-Nitrophenol	1.27E-07	lb/MMBtu	AP-42 [7]	1.09E-04	1.44E-04	1.09E-04	Waste Wood
Pentachlorophenol	5.87E-08	lb/MMBtu	AP-42 [7]	5.07E-05	6.67E-05	5.07E-05	Waste Wood
Phenol	5.87E-05	lb/MMBtu	AP-42 [7]	5.07E-02	6.67E-02	5.07E-02	Waste Wood
Phosphorus	3.11E-05	lb/MMBtu	AP-42 [7]	2.69E-02	3.53E-02	5.72E-01	Sewage Sludge
Propionaldehyde (Propanal)	7.02E-05	lb/MMBtu	AP-42 [7]	6.07E-02	7.97E-02	6.07E-02	Waste Wood
Selenium	3.22E-06	lb/MMBtu	AP-42 [7]	2.79E-03	3.66E-03	7.35E-02	Coal, Western Sub-bituminous
Styrene	2.19E-03	lb/MMBtu	AP-42 [7]	1.89E+00	2.48E+00	1.89E+00	Waste Wood
1,1,1-Trichloroethane (Methyl chloroform)	3.57E-05	lb/MMBtu	AP-42 [7]	3.08E-02	4.05E-02	3.08E-02	Waste Wood
Tetrachloroethylene (Perchloroethylene)	4.37E-05	lb/MMBtu	AP-42 [7]	3.78E-02	4.97E-02	3.78E-02	Waste Wood
Toluene	1.06E-03	lb/MMBtu	AP-42 [7]	9.15E-01	1.20E+00	9.15E-01	Waste Wood
Trichlorethene (Trichloroethylene)	3.45E-05	lb/MMBtu	AP-42 [7]	2.98E-02	3.92E-02	2.98E-02	Waste Wood
2,4,6-Trichlorophenol	2.53E-08	lb/MMBtu	AP-42 [7]	2.19E-05	2.88E-05	2.19E-05	Waste Wood
Vinyl acetate						4.30E-03	Coal, Western Sub-bituminous
Vinyl Chloride	2.07E-05	lb/MMBtu	AP-42 [7]	1.79E-02	2.35E-02	1.79E-02	Waste Wood
Xylenes						2.09E-03	Coal, Western Sub-bituminous
o-Xylene	2.88E-05	lb/MMBtu	AP-42 [7]	2.49E-02	3.27E-02	2.49E-02	Waste Wood
Polycylic Organic Matter (POMs)							
2-Chloroacetophenone	2.76E-09	lb/MMBtu	AP-42 [7]	2.39E-06	3.14E-06	3.96E-04	Coal, Western Sub-bituminous
2-Chloronaphthalene	2.76E-09	lb/MMBtu	AP-42 [7]	2.39E-06	3.14E-06	2.39E-06	Waste Wood
2-Methylnaphthalene	1.84E-07	lb/MMBtu	AP-42 [7]	1.59E-04	2.09E-04	2.55E-03	Tire Derived Fuel
3-Methylcholanthrene						1.18E+00	Sewage Sludge
5-Methyl chrysene	9.89E-12	lb/MMBtu	AP-42 [7]	8.55E-09	1.12E-08	2.88E-04	Petcoke
Acenaphthene	1.05E-06	lb/MMBtu	AP-42 [7]	9.05E-04	1.19E-03	9.05E-04	Waste Wood
Acenaphthylene	5.75E-06	lb/MMBtu	AP-42 [7]	4.97E-03	6.54E-03	4.97E-03	Waste Wood
Anthracene	3.45E-06	lb/MMBtu	AP-42 [7]	2.98E-03	3.92E-03	2.98E-03	Waste Wood
Benz(a)anthracene [1]	7.48E-08	lb/MMBtu	AP-42 [7]	6.47E-05	8.50E-05	2.88E-04	Petcoke
Benzo(a)pyrene [1]	2.99E-06	lb/MMBtu	AP-42 [7]	2.59E-03	3.40E-03	2.59E-03	Waste Wood
Benzo(b)fluoranthene [1]	1.15E-07	lb/MMBtu	AP-42 [7]	9.95E-05	1.31E-04	2.88E-04	Petcoke
Benzo(b,j,k) fluoranthene	1.15E-07	lb/MMBtu	AP-42 [7]	9.95E-05	1.31E-04	2.88E-04	Petcoke
Benzo(e)pyrene	2.99E-09	lb/MMBtu	AP-42 [7]	2.59E-06	3.40E-06	2.88E-04	Petcoke
Benzo(g,h,i)perylene	1.07E-07	lb/MMBtu	AP-42 [7]	9.25E-05	1.22E-04	2.88E-04	Petcoke
Benzo(j,k)fluoranthene	1.84E-07	lb/MMBtu	AP-42 [7]	1.59E-04	2.09E-04	2.88E-04	Petcoke
Benzo(k)fluoranthene	4.14E-08	lb/MMBtu	AP-42 [7]	3.58E-05	4.71E-05	2.88E-04	Petcoke

Table B2. Boiler Specifications

Boiler Parameters	Specification
Boiler Type	CFB
Maximum Rated Heat Input, (MMBtu/hr)	865
Gross Output (MW/hr)	78

Table B3. Raw Material Specifications

Material	Sulfur Content	Material Usage (%)	Heat Input (MMBtu/hr)	Heating Value (Btu/lb)	Material Throughput (lb/hr)	Material Throughput (tph)	Material Throughput (tpy)
Coal, Western Bituminous	0.50%	100.0%	865	13,118	65,940	32.97	288,817
Coal, Southern Illinois	4.30%	100.0%	865	11,484	75,322	37.66	329,911
Coal, Western Sub-bituminous	0.50%	100.0%	865	8,800	98,295	49.15	430,534
Petcoke	5.00%	50.0%	432.5	15,000	28,833	14.42	126,290
Sewage Sludge	0.00%	20.0%	173	7,000	15,817	7.91	69,279
Tire Derived Fuel	1.33%	30.0%	259.5	13,500	19,222	9.61	84,193
Waste Wood	0.00%	30.0%	259.5	8,000	32,438	16.22	142,076

Table B4. Emission Factors and Emission Rates

Compound	Coal, Western Bituminous					Coal, Southern Illinois					Coal, Western Sub-bituminous					Petcoke					Sewage Sludge					Tire Derived Fuel					Waste Wood					Maximum Short-term Emissions	
	Emission Factors			Emission Rates		Emission Factors			Emission Rates		Emission Factors			Emission Rates		Emission Factor			Emission Rate		Emission Factor			Emission Rate		Emission Factor			Emission Rate		Emission Factor			Emission Rate			
	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	Value	Units	Basis	(lb/hr)	(tpy)	(lb/hr)	Fuel
Biphenyl	1.96E-06	lb/ton	AP-42 [5]	6.45E-05	2.82E-04	1.96E-06	lb/ton	AP-42 [5]	7.36E-05	3.22E-04	1.96E-06	lb/ton	AP-42 [5]	9.61E-05	4.21E-04	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04																2.88E-04	Petcoke
Carbazole																														2.07E-06	lb/MMBtu	AP-42 [7]	1.79E-03	2.35E-03	1.79E-03	Waste Wood
Chrysene	1.15E-07	lb/ton	AP-42 [5]	3.79E-06	1.66E-05	1.15E-07	lb/ton	AP-42 [5]	4.33E-06	1.90E-05	1.15E-07	lb/ton	AP-42 [5]	5.65E-06	2.48E-05	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						5.09E-08	lb/MMBtu	Stack Test [1]	4.41E-05	5.79E-05	4.37E-08	lb/MMBtu	AP-42 [7]	3.78E-05	4.97E-05	2.88E-04	Petcoke
Crotonaldehyde																														1.14E-05	lb/MMBtu	AP-42 [7]	9.85E-03	1.29E-02	9.85E-03	Waste Wood
Dibenzo(a,h)anthracene																														1.05E-08	lb/MMBtu	AP-42 [7]	9.05E-06	1.19E-05	9.05E-06	Waste Wood
Fluoranthene	8.17E-07	lb/ton	AP-42 [5]	2.69E-05	1.18E-04	8.17E-07	lb/ton	AP-42 [5]	3.08E-05	1.35E-04	8.17E-07	lb/ton	AP-42 [5]	4.01E-05	1.76E-04	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						8.11E-07	lb/MMBtu	Stack Test [1]	7.01E-04	9.22E-04	1.84E-06	lb/MMBtu	AP-42 [7]	1.59E-03	2.09E-03	1.59E-03	Waste Wood
Fluorene	1.05E-06	lb/ton	AP-42 [5]	3.45E-05	1.51E-04	1.05E-06	lb/ton	AP-42 [5]	3.94E-05	1.73E-04	1.05E-06	lb/ton	AP-42 [5]	5.14E-05	2.25E-04	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						2.23E-07	lb/MMBtu	Stack Test [1]	1.93E-04	2.54E-04	3.91E-06	lb/MMBtu	AP-42 [7]	3.38E-03	4.44E-03	3.38E-03	Waste Wood
Indeno(1,2,3,c,d)pyrene	7.02E-08	lb/ton	AP-42 [5]	2.31E-06	1.01E-05	7.02E-08	lb/ton	AP-42 [5]	2.64E-06	1.16E-05	7.02E-08	lb/ton	AP-42 [5]	3.45E-06	1.51E-05	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						3.55E-09	lb/MMBtu	Stack Test [1]	3.07E-06	4.04E-06	1.00E-07	lb/MMBtu	AP-42 [7]	8.65E-05	1.14E-04	2.88E-04	Petcoke
Naphthalene	1.50E-05	lb/ton	AP-42 [5]	4.93E-04	2.16E-03	1.50E-05	lb/ton	AP-42 [5]	5.63E-04	2.47E-03	1.50E-05	lb/ton	AP-42 [5]	7.35E-04	3.22E-03	6.65E-07	lb/MMBtu	CLECO [8]	5.75E-04	1.26E-03	0.22	lb/ton	AP-42 [6]	1.73E+00	1.51	2.88E-05	lb/MMBtu	Stack Test [1]	2.49E-02	3.27E-02	1.12E-04	lb/MMBtu	AP-42 [7]	9.65E-02	1.27E-01	1.73E+00	Sewage Sludge
Pyrene	3.80E-07	lb/ton	AP-42 [5]	1.25E-05	5.48E-05	3.80E-07	lb/ton	AP-42 [5]	1.43E-05	6.26E-05	3.80E-07	lb/ton	AP-42 [5]	1.87E-05	8.17E-05	3.33E-07	lb/MMBtu	CLECO [8]	2.88E-04	6.31E-04						3.86E-07	lb/MMBtu	Stack Test [1]	3.34E-04	4.39E-04	4.26E-06	lb/MMBtu	AP-42 [7]	3.68E-03	4.84E-03	3.68E-03	Waste Wood
Total Dioxin/Furan	2.32E-09	lb/ton	AP-42 [5]	7.66E-08	3.35E-07	2.32E-09	lb/ton	AP-42 [5]	8.75E-08	3.83E-07	2.32E-09	lb/ton	AP-42 [5]	1.14E-07	5.00E-07	2.32E-09	lb/ton	AP-42	3.35E-08	7.33E-08	4.40E-09	lb/ton	AP-42 [6]	3.48E-08	3.05E-08											1.14E-07	Coal, Western Sub-bituminous
Monochlorobiphenyl																														2.53E-10	lb/MMBtu	AP-42 [7]	2.19E-07	2.88E-07	2.19E-07	Waste Wood
Decachlorobiphenyl																														3.11E-10	lb/MMBtu	AP-42 [7]	2.69E-07	3.53E-07	2.69E-07	Waste Wood
Dichlorobiphenyl																														8.51E-10	lb/MMBtu	AP-42 [7]	7.36E-07	9.67E-07	7.36E-07	Waste Wood
Heptachlorobiphenyl																														7.59E-11	lb/MMBtu	AP-42 [7]	6.57E-08	8.63E-08	6.57E-08	Waste Wood
Hexachlorobiphenyl																														6.33E-10	lb/MMBtu	AP-42 [7]	5.47E-07	7.19E-07	5.47E-07	Waste Wood
Pentachlorobiphenyl																														1.38E-09	lb/MMBtu	AP-42 [7]	1.19E-06	1.57E-06	1.19E-06	Waste Wood
Tetrachlorobiphenyl																														2.88E-09	lb/MMBtu	AP-42 [7]	2.49E-06	3.27E-06	2.49E-06	Waste Wood
Trichlorobiphenyl																														2.99E-09	lb/MMBtu	AP-42 [7]	2.59E-06	3.40E-06	2.59E-06	Waste Wood
Total PCBs																																	8.10E-06	1.06E-05	8.10E-06	Waste Wood
Total POMs				1.05E-03	4.61E-03				1.20E-03	5.27E-03				1.57E-03	6.87E-03				6.38E-03	1.40E-02				2.91E+00	2.55E+00				2.93E-02	3.86E-02				1.36E-01	1.79E-01	2.91E+00	Sewage Sludge
Total HAPs				**54.50**	**215.96**				**54.50**	**215.96**				**54.50**	**215.96**				**54.50**	**215.96**				**54.50**	**215.96**				**0.03**	**0.04**				**4.38**	**5.75**	**54.50**	**Coal, Western Bituminous**
Maximum Single HAP (HCl)				**56.42**	**224.38**				**56.48**	**224.65**				**56.63**	**225.31**				**56.23**	**219.76**				**63.22**	**223.60**				**0.04**	**0.05**				**14.78**	**19.42**	**63.22**	**Sewage Sludge**
Non-HAP Toxic Air Contaminants																																					
Acetone																														2.19E-04	lb/MMBtu	AP-42 [7]	1.89E-01	2.48E-01	1.89E-01	Waste Wood
Aluminum																					4.37E-03	lb/ton	AP-42 [6]	3.46E-02	3.03E-02											0.03456046	Sewage Sludge
Barium																					5.52E-04	lb/ton	AP-42 [6]	4.37E-03	3.82E-03	7.31E-06	lb/MMBtu	Stack Test [1]	6.33E-03	8.31E-03	1.96E-04	lb/MMBtu	AP-42 [7]	1.69E-01	2.22E-01	1.69E-01	Waste Wood
Benzaldehyde																														9.78E-07	lb/MMBtu	AP-42 [7]	8.46E-04	1.11E-03	8.46E-04	Waste Wood
Benzoic acid																														5.41E-08	lb/MMBtu	AP-42 [7]	4.68E-05	6.14E-05	4.68E-05	Waste Wood
Calcium																					1.15E-02	lb/ton	AP-42 [6]	9.09E-02	7.97E-02											9.09E-02	Sewage Sludge
2-Chlorophenol																														2.76E-08	lb/MMBtu	AP-42 [7]	2.39E-05	3.14E-05	2.39E-05	Waste Wood
Copper																					240.35	ppm	AP-42 [6]	5.20E-03	4.55E-03						5.64E-05	lb/MMBtu	AP-42 [7]	4.87E-02	6.40E-02	4.87E-02	Waste Wood
1,2-Dibromoethene																														6.33E-05	lb/MMBtu	AP-42 [7]	5.47E-02	7.19E-02	5.47E-02	Waste Wood
Dichlorodifluoromethane																														8.05E-06	lb/MMBtu	AP-42 [7]	6.96E-03	9.15E-03	6.96E-03	Waste Wood
Iron																														1.14E-03	lb/MMBtu	AP-42 [7]	9.85E-01	1.29E+00	9.85E-01	Waste Wood
Isobutyraldehyde																														1.38E-05	lb/MMBtu	AP-42 [7]	1.19E-02	1.57E-02	1.19E-02	Waste Wood
Magnesium	1.27E-02	lb/ton	AP-42 [5]	4.17E-01	1.83E+00	1.27E-02	lb/ton	AP-42 [5]	4.76E-01	2.09E+00	1.27E-02	lb/ton	AP-42 [5]	6.22E-01	2.72E+00	1.27E-02	lb/ton	AP-42	1.82E-01	3.99E-01	1.38E-03	lb/ton	AP-42 [6]	1.09E-02	9.56E-03											6.22E-01	Coal, Western Sub-bituminous
Methyl ethyl ketone	4.49E-04	lb/ton	AP-42 [5]	1.48E-02	6.48E-02	4.49E-04	lb/ton	AP-42 [5]	1.69E-02	7.40E-02	4.49E-04	lb/ton	AP-42 [5]	2.20E-02	9.65E-02	4.49E-04	lb/ton	AP-42	6.47E-03	1.42E-02																6.21E-06	lb/MMBtu	AP-42 [7]	5.37E-03	7.06E-03	2.20E-02	Coal, Western Sub-bituminous
Molybdenum																					63.25	ppm	Analytical	1.37E-03	1.20E-03										2.42E-06	lb/MMBtu	AP-42 [7]	2.09E-03	2.74E-03	2.09E-03	Waste Wood
2-Nitrophenol																														2.76E-07	lb/MMBtu	AP-42 [7]	2.39E-04	3.14E-04	2.39E-04	Waste Wood
Perylene																														5.98E-10	lb/MMBtu	AP-42 [7]	5.17E-07	6.80E-07	5.17E-07	Waste Wood
Potassium																					8050	ppm	Analytical	1.74E-03	1.52E-03						4.49E-02	lb/MMBtu	AP-42 [7]	3.88E-01	5.10E-01	3.88E-01	Waste Wood
Silicon																					0.00736	lb/ton	AP-42 [6]	5.82E-02	5.10E-02											5.82E-02	Sewage Sludge
Silver																														1.96E-03	lb/MMBtu	AP-42 [7]	1.69E-02	2.22E-02	1.69E-02	Waste Wood
Sodium																														4.14E-04	lb/MMBtu	AP-42 [7]	3.58E-01	4.71E-01	3.58E-01	Waste Wood
Sulfuric Acid	6.10E-03	lb/MMBtu	BACT	5.28	23.11	6.10E-03	lb/MMBtu	BACT	5.28E+00	23.11	6.10E-03	lb/MMBtu	BACT	5.28E+00	23.11	6.10E-03	lb/MMBtu	BACT	5.28E+00	11.56																5.28E+00	Coal, Western Bituminous
Strontium																														1.15E-05	lb/MMBtu	AP-42 [7]	9.95E-03	1.31E-02	9.95E-03	Waste Wood
Tin																					8.05E-04	lb/ton	AP-42 [6]	6.37E-03	5.58E-03						2.65E-05	lb/MMBtu	AP-42 [7]	2.29E-02	3.01E-02	2.29E-02	Waste Wood
Titanium																					9.20E-04	lb/ton	AP-42 [6]	7.28E-03	6.37E-03						2.30E-05	lb/MMBtu	AP-42 [7]	1.99E-02	2.61E-02	1.99E-02	Waste Wood
o-Tolualdehyde																														8.28E-06	lb/MMBtu	AP-42 [7]	7.16E-03	9.41E-03	7.16E-03	Waste Wood
p-Tolualdehyde																														1.27E-05	lb/MMBtu	AP-42 [7]	1.09E-02	1.44E-02	1.09E-02	Waste Wood
Trichlorofluoromethane																														4.72E-05	lb/MMBtu	AP-42 [7]	4.08E-02	5.36E-02	4.08E-02	Waste Wood
Vanadium																										1.60E-06	lb/MMBtu	Stack Test [1]	1.38E-03	1.82E-03	1.13E-06	lb/MMBtu	AP-42 [7]	9.75E-04	1.28E-03	1.38E-03	Tire Derived Fuel
Yttrium																														3.45E-07	lb/MMBtu	AP-42 [7]	2.98E-04	3.92E-04	2.98E-04	Waste Wood
Zinc (as ZnO)																					399.05	ppm	Analytical	8.63E-03	7.56E-03	2.83E-04	lb/MMBtu	Stack Test [1]	2.45E-01	3.22E-01	4.83E-04	lb/MMBtu	AP-42 [7]	4.18E-01	5.49E-01	4.18E-01	Waste Wood

These shaded areas indicate no data available.

NOTE: TPY emission rates reflect annual heat input limit.

Unless otherwise noted below, emission factors have been increased by a 15% safety factor.

[1] Emission factors for TDF are based upon Wyandotte Municipal Power Plant stack test results. Fuel firing was 70% coal with 30% TDF.

[2] Acrolein emissions for wood-firing based upon Organic HAP MACT using VOC as a surrogate. From AP-42, Acrolein emissions are 24% of Total VOC emissions for wood. Therefore, Acrolein emissions were calculated as 0.0036 lb/MMBtu * 0.24.

[3] Emissions of manganese, potassium, and silver are based upon 99% control factor of metal emissions from use of fabric filter

[4] Short-term (pph) emission rate for HCl based upon short-term MACT limit of 0.063 lb/MMBtu; Long-term (tpy) emission rate based upon 95% UCL MACT limit of 0.057 lb/MMBtu.

[5] Emission Factors for Coal from U.S. EPA AP-42, Chapter 1.1

[6] Emission Factors for Sewage Sludge from U.S. EPA AP-42, Chapter 2.2 for Fluidized Bed Combustion

[7] Emission Factors for Wood Waste from U.S. EPA AP-42, Chapter 1.6

[8] Emission Factors for Petcoke from Cleco Power, LLC - Rodemacher Brownfield Unit 3; Louisiana Permit No. 2927-V0

Holland BPW - New CFB Boiler (Unit #10)
Toxic Air Contaminant Modeling Results
REVISED 11/14/2008

Toxic Air Contaminants	CAS	Potential Emission Rate (lb/hour)	Potential Emission Rate (gram/sec)	ITSL (ug/m3)	Averaging Period	Ambient Impact (ug/m3)	% of ITSL	IRSL (ug/m3)	Ambient Impact (ug/m3)	% of IRSL
Acetaldehyde	75070	8.26E-01	1.04E-01	9	24 hour	3.70E-02	0.41%	0.5	4.19E-03	0.84%
Acetophenone	98862	8.48E-04	1.07E-04	490	8 hour	8.75E-05	0.00%			
Acrolein	107028	7.47E-01	9.42E-02	0.02	Annual	3.79E-03	18.95%			
Acrolein	107028	7.47E-01	9.42E-02	5	1 hour	1.08E-01	2.15%			
Antimony	7440360	7.86E-03	9.90E-04	0.2	24 hour	3.52E-04	0.18%			
Arsenic	7440382	2.32E-02	2.92E-03					0.0002	1.18E-04	58.76%
Benzene	71432	4.18E+00	5.26E-01	30	24 hour	1.87E-01	0.62%	0.1	2.12E-02	21.19%
Benzyl chloride	100447	3.96E-02	4.98E-03		Annual			0.02	2.01E-04	1.00%
Beryllium	7440417	1.19E-03	1.50E-04	0.02	24 hour	5.32E-05	0.27%	0.0004	6.02E-06	1.50%
Bis(2-Ethylhexyl)phthalate	117817	7.46E-01	9.40E-02					0.2	3.78E-03	1.89%
Bromoform	75252	2.20E-03	2.78E-04					0.9	1.12E-05	0.00%
Bromomethane (Methyl bromide)	74839	1.49E-02	1.88E-03	5	24 hour	6.69E-04	0.01%			
Cadmium	7440439	1.00E-02	1.26E-03					0.0006	5.07E-05	8.46%
Carbon disulfide	75150	7.35E-03	9.26E-04	700	24 hour	3.29E-04	0.00%			
Carbon tetrachloride	56235	4.48E-02	5.64E-03					0.07	2.27E-04	0.32%
Chlorine	7782505	7.86E-01	9.90E-02	15	8 hour	8.11E-02	0.54%			
Chlorobenzene	108907	3.28E-02	4.14E-03	70	24 hour	1.47E-03	0.00%			
Chloroform	67663	3.64E-02	4.58E-03					0.4	1.84E-04	0.05%
Chromium, total	7440473	2.09E-02	2.63E-03	**0.1**	Annual	1.06E-04	0.11%			
Chromium, hexavalent	18540299	4.47E-03	5.63E-04	0.1	24 hour	2.00E-04	0.20%	8.30E-05	2.26E-05	27.28%
Cobalt	7440484	6.47E-03	8.15E-04	0.2	8 hour	6.67E-04	0.33%			
Cumene	98828	3.00E-04	3.77E-05	400	24 hour	1.34E-05	0.00%			
Cyanide	57125	1.41E-01	1.78E-02	50	1 hour	2.03E-02	0.04%			
1,4-Dichlorobenzene	106467	4.37E+00	5.50E-01	800	24 hour	1.96E-01	0.02%	0.14	2.21E-02	15.81%
1,2-Dichloroethane (Ethylene dichloride)	107062	2.88E-02	3.63E-03					0.04	1.46E-04	0.37%
Dichloromethane (Methylene chloride)	75092	2.88E-01	3.63E-02					2	1.46E-03	0.07%
1,2-Dichloropropane (Propylene dichloride)	78875	3.28E-02	4.14E-03	4	24 hour	1.47E-03	0.04%			
Dimethyl sulfate	77781	2.71E-03	3.42E-04	0.5	8 hour	2.80E-04	0.06%			
2,4-Dinitrophenol	51285	1.79E-04	2.26E-05	7	24 hour	8.02E-06	0.00%			
2,4-Dinitrotoluene	121142	1.58E-05	1.99E-06	2	8 hour	1.63E-06	0.00%	0.009	8.03E-08	0.00%
Ethylbenzene	100414	3.08E-02	3.89E-03	1000	24 hour	1.38E-03	0.00%	3	1.56E-04	0.01%
Ethylchloride (Chloroethane)	75003	2.37E-03	2.99E-04	10000	24 hour	1.06E-04	0.00%			
Ethylene dibromide (Dibromoethane)	106934	2.88E-04	3.63E-05	9	24 hour	1.29E-05	0.00%	0.002	1.46E-06	0.07%
Formaldehyde	50000	4.38E+00	5.51E-01					0.08	2.22E-02	27.75%
Hexane	110543	3.79E-03	4.77E-04	700	24 hour	1.70E-04	0.00%			
Hydrogen chloride (HCl)	7647010	5.45E+01	6.87E+00	20	24 hour	2.44E+00	12.21%			
Hydrogen fluoride (HF)	7664393	1.47E+00	1.85E-01	26	1 hour	2.12E-01	0.81%			
Isophorone	78591	3.28E-02	4.13E-03	280	1 hour	4.72E-03	0.00%	3.7	1.66E-04	0.00%
Manganese	7439965	1.59E-02	2.01E-03	0.05	24 hour	7.13E-04	1.43%			
Methyl chloride (Chloromethane)	74873	3.00E-02	3.77E-03	90	24 hour	1.34E-03	0.00%	1.6	1.52E-04	0.01%
Methyl hydrazine	60344	9.61E-03	1.21E-03	0.03	24 hour	4.30E-04	1.43%	0.0087	4.87E-05	0.56%
Methyl methacrylate	80626	1.13E-03	1.42E-04	700	24 hour	5.06E-05	0.00%			
Methyl tert butyl ether	1634044	1.98E-03	2.49E-04	3000	24 hour	8.86E-05	0.00%			
Nickel	7440020	3.28E-02	4.14E-03					0.0042	1.66E-04	3.96%
4-Nitrophenol	100027	1.09E-04	1.38E-05	0.7	Annual	5.55E-07	0.00%			
Pentachlorophenol	87865	5.07E-05	6.39E-06	100	24 hour	2.27E-06	0.00%	0.03	2.57E-07	0.00%
Phenol	108952	5.07E-02	6.39E-03	600	1 hour	7.30E-03	0.00%			
Phosphorus	7723140	5.72E-01	7.21E-02	1	8 hour	5.90E-02	5.90%			
Propionaldehyde (Propanal)	123386	6.07E-02	7.65E-03	8	24 hour	2.72E-03	0.03%			
Selenium	7782492	7.35E-02	9.26E-03	2	8 hour	7.59E-03	0.38%			
Styrene	100425	1.89E+00	2.38E-01	1000	24 hour	8.47E-02	0.01%	1.7	9.59E-03	0.56%
1,1,1-Trichloroethane (Methyl chloroform)	71556	3.08E-02	3.89E-03	6000	24 hour	1.38E-03	0.00%			
Tetrachloroethylene (Perchloroethylene)	127184	3.78E-02	4.76E-03					1.7	1.92E-04	0.01%
Toluene	108883	9.15E-01	1.15E-01	5000	24 hour	4.10E-02	0.00%			
Trichlorethene (Trichloroethylene)	79016	2.98E-02	3.76E-03					0.6	1.51E-04	0.03%
2,4,6-Trichlorophenol	88062	2.19E-05	2.76E-06					0.3	1.11E-07	0.00%
Vinyl acetate	108054	4.30E-03	5.41E-04	200	24 hour	1.92E-04	0.00%			
Vinyl Chloride	75014	1.79E-02	2.26E-03	100	24 hour	8.02E-04	0.00%	0.11	9.08E-05	0.08%
Xylenes	1330207	2.70E-02	3.40E-03	100	24 hour	1.21E-03	0.00%			
o-Xylene	95476	2.49E-02	3.13E-03	100	24 hour	1.11E-03	0.00%			
Polycylic Organic Matter (POMs)										
2-Chloroacetophenone	532274	3.96E-04	4.98E-05	0.03	24 hour	1.77E-05	0.06%			
2-Chloronaphthalene	91587	2.39E-06	3.01E-07	**0.1**	Annual	1.21E-08	0.00%			
2-Methylnaphthalene	91576	2.55E-03	3.21E-04	10	Annual	1.29E-05	0.00%			
3-Methylcholanthrene	56495	1.18E+00	1.49E-01	**0.1**	Annual	6.00E-03	6.00%			
5-Methyl chrysene	3697243	2.88E-04	3.63E-05	**0.1**	Annual	1.46E-06	0.00%			
Acenaphthene	83329	9.05E-04	1.14E-04	210	24 hour	4.06E-05	0.00%			
Acenaphthylene	208968	4.97E-03	6.27E-04	35	24 hour	2.23E-04	0.00%			
Anthracene	120127	2.98E-03	3.76E-04	1000	24 hour	1.34E-04	0.00%			
Benz(a)anthracene[1]	56553	2.88E-05	3.63E-06		Annual					
Benzo(a)pyrene[1]	50328	2.59E-03	3.26E-04					0.0005	1.31E-05	2.62%
Benzo(b)fluoranthene	205992	2.88E-05	3.63E-06	5	Annual	1.46E-07	0.00%			
Benzo(b,k)fluoranthene		2.88E-06	3.63E-07	5	Annual	1.46E-08	0.00%			
Benzo(b,j,k)fluoranthene		2.88E-04	3.63E-05	**0.1**	Annual	1.46E-06	0.00%			
Benzo(e)pyrene	192972	2.88E-04	3.63E-05	**0.1**	Annual	1.46E-06	0.00%			

Prepared by: NTH Consultants, Ltd.

Holland BPW - New CFB Boiler (Unit #10)
Toxic Air Contaminant Modeling Results
REVISED 11/14/2008

Benzo(g,h,i)perylene	191242	2.88E-04	3.63E-05	12	24 hour	1.29E-05	0.00%			
Benzo(j,k)fluoranthene		2.88E-04	3.63E-05	**0.1**	Annual	1.46E-06	0.00%			
Benzo(k)fluoranthene[1]	205823	2.88E-06	3.63E-07		Annual					
Biphenyl	92524	2.88E-04	3.63E-05	15	8 hour	2.97E-05	0.00%			
Carbazole	86748	1.79E-03	2.26E-04					0.02	9.08E-06	0.05%
Chrysene[1]	218019	2.88E-07	3.63E-08		Annual					
Crotonaldehyde	4170303	9.85E-03	1.24E-03	9	1 hour	1.42E-03	0.02%			
Dibenz(a,h)anthracene[1]	53703	9.05E-06	1.14E-06	**0.1**	Annual	4.59E-08	0.00%			
Fluoranthene	206440	1.59E-03	2.01E-04	140	24 hour	7.13E-05	0.00%			
Fluorene	86737	3.38E-03	4.26E-04	140	24 hour	1.52E-04	0.00%			
Indeno(1,2,3,c,d)pyrene[1]	193395	2.88E-04	3.63E-05	**0.1**	Annual	1.46E-06	0.00%			
Naphthalene	91203	1.73E+00	2.18E-01	3	24 hour	7.74E-02	2.58%	0.08	8.76E-03	10.95%
Phenanthrene	85018	6.96E-03	8.77E-04	0.1	Annual	3.53E-05	0.04%			
Pyrene	129000	3.68E-03	4.64E-04	100	24 hour	1.65E-04	0.00%			
Total Dioxin/Furan	1746016 & 132649	1.14E-07	1.44E-08					2.00E-08	5.79E-10	2.90%
Polychlorinated Biphenyls (PCBs)										
Monochlorobiphenyl	27323188	2.19E-07	2.76E-08	**0.1**	Annual	1.11E-09	0.00%			
Decachlorobiphenyl	2051243	2.69E-07	3.38E-08	**0.1**	Annual	1.36E-09	0.00%			
Dichlorobiphenyl	several isomers	7.36E-07	9.27E-08	**0.1**	Annual	3.73E-09	0.00%			
Heptachlorobiphenyl	28655712	6.57E-08	8.27E-09	**0.1**	Annual	3.33E-10	0.00%			
Hexachlorobiphenyl	26601649	5.47E-07	6.89E-08	**0.1**	Annual	2.77E-09	0.00%			
Pentachlorobiphenyl	several isomers	1.19E-06	1.50E-07	**0.1**	Annual	6.05E-09	0.00%			
Tetrachlorobiphenyl	several isomers	2.49E-06	3.13E-07	**0.1**	Annual	1.26E-08	0.00%			
Trichlorobiphenyl	several isomers	2.59E-06	3.26E-07	**0.1**	Annual	1.31E-08	0.00%			
Carcinogenic PAHs		2.92E-03	3.67E-04					0.0005	1.48E-05	2.96%
Total PCBs		8.10E-06	1.02E-06	**0.1**	Annual	4.11E-08	0.00%			
Total POMs		2.91E+00	3.67E-01	**0.1**	Annual	1.48E-02	14.76%			
Non-HAP Toxic Air Contaminants										
Acetone	67641	1.89E-01	2.38E-02	5900	8 hour	0.01951122	0.00%			
Aluminum	7429905	3.46E-02	4.35E-03	**0.1**	Annual	0.00017527	0.18%			
Barium	7440393	1.69E-01	2.13E-02	5	8 hour	1.75E-02	0.35%			
Benzaldehyde	100527	8.46E-04	1.07E-04					0.4	4.29E-06	0.00%
Benzoic acid	65850	4.68E-05	5.89E-06	**0.1**	Annual	2.37E-07	0.00%			
Calcium	7440702	9.09E-02	1.15E-02	**0.1**	Annual	4.61E-04	0.46%			
2-Chlorophenol	95578	2.39E-05	3.01E-06	18	24 hour	1.07E-06	0.00%			
Copper	7440508	4.87E-02	6.14E-03	2	8 hour	5.03E-03	0.25%			
1,2-Dibromoethene	540498	5.47E-02	6.89E-03	**0.1**	Annual	2.77E-04	0.28%			
Dichlorodifluoromethane	75718	6.96E-03	8.77E-04	49500	8 hour	7.19E-04	0.00%			
Iron	7439896	9.85E-01	1.24E-01	**0.1**	Annual	4.99E-03	4.99%			
Isobutyraldehyde	78842	1.19E-02	1.50E-03	160	24 hour	5.35E-04	0.00%			
Magnesium	7439954	6.22E-01	7.83E-02	100	8 hour	6.42E-02	0.06%			
Methyl ethyl ketone	78933	2.20E-02	2.78E-03	5000	24 hour	9.88E-04	0.00%			
Molybdenum	7439987	2.09E-03	2.63E-04	**0.1**	Annual	1.06E-05	0.01%			
2-Nitrophenol	88755	2.39E-04	3.01E-05	**0.1**	Annual	1.21E-06	0.00%			
Perylene	198550	5.17E-07	6.52E-08	**0.1**	Annual	2.62E-09	0.00%			
Potassium	7440097	3.88E-01	4.89E-02	**0.1**	Annual	1.97E-03	1.97%			
Silicon	7440213	5.82E-02	7.33E-03	**0.1**	Annual	2.95E-04	0.30%			
Silver	7440224	1.69E-02	2.13E-03	0.1	8 hour	1.75E-03	1.75%			
Sodium	7440235	3.58E-01	4.51E-02	**0.1**	Annual	1.82E-03	1.82%			
Strontium	7440246	5.28E+00	6.65E-01	**0.1**	Annual	2.68E-02	26.76%			
Sulfuric Acid	7664939	9.95E-03	1.25E-03	10	8 hour	1.03E-03	0.01%			
Tin	7440315	2.29E-02	2.88E-03	20	8 hour	2.36E-03	0.01%			
Titanium	7440326	1.99E-02	2.51E-03	**0.1**	Annual	1.01E-04	0.10%			
o-Tolualdehyde	529204	7.16E-03	9.02E-04	**0.1**	Annual	3.63E-05	0.04%			
p-Tolualdehyde	104870	1.09E-02	1.38E-03	440	24 hour	4.90E-04	0.00%			
Trichlorofluoromethane	75694	4.08E-02	5.14E-03	56200	1 hour	5.87E-03	0.00%			
Vanadium	7440622	1.38E-03	1.74E-04	**0.1**	Annual	7.01E-06	0.01%			
Yttrium	7440655	2.98E-04	3.76E-05	**0.1**	Annual	1.51E-06	0.00%			
Zinc (as ZnO)	7440666	4.18E-01	5.26E-02	50	8 hour	4.31E-02	0.09%			

Note: An ITSL of 0.1 that is red bolded is a default screening level per AQD air toxics policy

[1] The screening level for the seven carcinogenic polycyclic aromatic hydrocarbons (PAHs) can be determined by methods utilizing the estimated order of potential potency

Holland Board of Public Works

Cooling Tower Summary

Table B-25. Cooling Tower

Pumping rate of recirculation pumps (gal/min)	70,000
Flow of cooling water (lb/hr)	34,986,000.0
TDS of blowdown (mg/l or ppmw)	***4000***
Flow of dissolved solids (lb/hr)	139,944.0
Fraction of flow producing drift [1]	0.31
Control effiency of drift elminators	0.0005%
Particulate emissions from tower (lb/hr)	0.22
Particulate emissions from tower (tpy)	0.95
Particulate emissions from tower (g/sec)	0.027
Tower cells	***7***
Particulate emissions from each cell (g/sec)	0.004

[1] Technical Report EPA-600-7-79-251a, p63

Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift - Volume 1

Modeled Mercury Emission	CFB Boiler	Boiler 3	Boiler 4	Boiler 5	
		898,593	1,579,237	2,257,818	Past
Basis (assume: 865 mmbtu/hr)	**7,577,400**	**1,108,140**	**2,119,920**	**2,794,440**	**Potential**
Basis Units	mmbtu/year	mmbtu/year	mmbtu/year	mmbtu/year	
Hg Emission Factor	**7.034E-07**	**1.890E-06**	**2.470E-06**	**9.860E-07**	
EF Units	lb/mmbtu	lb/mmbtu	lb/mmbtu	lb/mmbtu	
Total Emissions (lb/year)	5.330E+00	2.094E+00	5.236E+00	2.755E+00	
Total Emissions (lb/hour)	**6.084E-04**	**2.391E-04**	**5.977E-04**	**3.145E-04**	
Partitioning (lb/hour)					**Partition %**
Hg 0 (vapor)	3.042E-04	1.195E-04	2.989E-04	1.573E-04	50.00%
Hg 2+ (vapor)	1.825E-04	7.173E-05	1.793E-04	9.436E-05	30.00%
Hg p (particulate)	1.217E-04	4.782E-05	1.195E-04	6.291E-05	20.00%

Modeled Emission Rates (g/sec)	CFB Boiler	Boiler 3	Boiler 4	Boiler 5
Hg 0 (vapor)	3.833E-05	1.506E-05	3.766E-05	1.982E-05
Hg 2+ (vapor)	2.300E-05	9.037E-06	2.259E-05	1.189E-05
Hg p (particulate)	1.533E-05	6.025E-06	1.506E-05	7.926E-06

	2000	2001	2002	2003	2004
	mmbtu/year	mmbtu/year	mmbtu/year	mmbtu/year	mmbtu/year
Unit 3	902,252.23	833,632.45	944,222.16	852,963.69	615,548.02
	averages	867,942.34	888,927.30	**898,592.93**	734,255.85
		00-01	01-02	**02-03**	03-04
Unit 4	1,614,061.66	1,544,411.42	1,391,818.05	1,607,181.34	1,373,635.70
	averages	**1,579,236.54**	1,468,114.74	1,499,499.69	1,490,408.52
		00-01	01-02	02-03	03-04
Unit 5	2,229,975.00	2,285,660.00	1,903,517.00	2,323,746.00	1,993,582.00
	averages	**2,257,817.50**	2,094,588.50	2,113,631.50	2,158,664.00
		00-01	01-02	02-03	03-04

Dry Gas Deposition Inputs	Hg 0 (vapor)	Hg 2+ (vapor)			
Control Pathway Parameters					5.329584
Reactivity Factor	0	1			
Green Leaf LAI (autumn)	0.5	0.5			
Green Leaf LAI (transition spring)	0.25	0.25			
Source Pathway Parameters					
Da (diffusivity in air; cm2/s)	7.0E-02	6.0E-02			
Dw (diffusivity in water; cm2/s)	8.0E-06	8.0E-06			
Rcl (cuticular resist - individual leaves; s/m)	1.0E+07	1.0E+07	1.0E+05	s/cm	
Henry's Law (Pa m3/mol)	150	6.0E-06			

Fugitive Emissions

Table B-26. Summary of Fugitive Emissions from Roads

Emission Source	PM (lb/hr)	PM (tpy)	PM_{10} (lb/hr)	PM_{10} (tpy)	$PM_{2.5}$ (lb/hr)	$PM_{2.5}$ (tpy)
Paved Main Entrance Road	3.33E-03	1.46E-02	6.44E-04	2.82E-03	9.28E-05	4.07E-04
Paved Employee Driveway	5.98E-03	2.62E-02	1.14E-03	5.01E-03	1.55E-04	6.79E-04
Paved Limestone Delivery Road	7.31E-03	3.20E-02	1.43E-03	6.24E-03	2.13E-04	9.35E-04
Paved Alternate Fuels Delivery Road	3.66E-01	1.60E+00	7.13E-02	3.12E-01	1.07E-02	4.68E-02
Total Fugitive Emissions from Roads	**3.82E-01**	**1.67E+00**	**7.45E-02**	**3.26E-01**	**1.11E-02**	**4.88E-02**

AP-42 Equations for Paved Roads

Equation 1, for short-term emissions

$$E = \left(k \left(\frac{sL}{2} \right)^{0.65} \left(\frac{W}{3} \right)^{1.5} - C \right)$$

Equation 2, for annual emissions

$$E = \left(k \left(\frac{sL}{2} \right)^{0.65} \left(\frac{W}{3} \right)^{1.5} - C \right) \left(1 - \frac{P}{4N} \right)$$

Parameter	PM	PM_{10}	$PM_{2.5}$	
k, Particle size multiplier for PM	0.082	0.016	0.0024	From Table 13.2.1-1
C, Exhaust, brake wear, and tire wear for PM	0.00047	0.00047	0.00036	From Table 13.2.1-2
sL, silt loading	7.4	7.4	7.4	From Table 13.2.1-4 for MSWLF
$(sL/2)^{0.65}$ =	2.34	2.34	2.34	
W, mean vehicle weight (tons)	Shown Below			From HBPW
P, number of days of precipitation in one year	120	120	120	From Figure 13.2.1-2
N, number of days in the averageing period	365	365	365	
Control Efficiency	80%	80%	80%	

Main Entrance Road

Vehicle Type	Length Traveled (feet)	Vehicle weight (tons)	Vehicle Miles Traveled (VMT)	Vehicles (trips) per day	Percentage of Total Vehicles	Percentage of Vehicle Weight	VMT per day
Limestone Trucks (Full)	131.2	40	0.02	1.0	1.6%	0.63	0.02
Limestone Trucks (Empty)	131.2	15	0.02	1.0	1.6%	0.23	0.02
Alternative Fuels Trucks (Full)	131.2	40	0.02	1.0	1.6%	0.63	0.02
Alternative Fuel Trucks (Empty)	131.2	15	0.02	1.0	1.6%	0.23	0.02
Visitor/Employee/Maintenance Vehicles	131.2	2	0.02	60	93.8%	1.88	1.49

Mean Vehicle Weight, W (tons) 3.6
Total Miles Traveled on Paved Roads 1.6

Parameter	PM	PM_{10}	$PM_{2.5}$
Short-term emission factor (lb/VMT)	5.02E-02	9.73E-03	1.40E-03
Long-term emission factor (lb/VMT)	4.61E-02	8.93E-03	1.29E-03
Short-term Emissions (lb/hr)	**3.33E-03**	**6.44E-04**	**9.28E-05**
Long-term Emissions (tpy)	**1.46E-02**	**2.82E-03**	**4.07E-04**

Employee Road

Vehicle Type	Length Traveled (feet)	Vehicle weight (tons)	Vehicle Miles Traveled (VMT)	Vehicles (trips) per day	Percentage of Total Vehicles	Percentage of Vehicle Weight	VMT per day
Visitor/Employee/Maintenance Vehicles	606.8	2	0.11	60.0	100.0%	2.00	6.90

Mean Vehicle Weight, W (tons) 2.0
Total Miles Traveled on Paved Roads 6.9

Parameter	PM	PM_{10}	$PM_{2.5}$
Short-term emission factor (lb/VMT)	2.08E-02	3.98E-03	5.40E-04
Long-term emission factor (lb/VMT)	1.91E-02	3.66E-03	4.95E-04
Short-term Emissions (lb/hr)	**5.98E-03**	**1.14E-03**	**1.55E-04**
Long-term Emissions (tpy)	**2.62E-02**	**5.01E-03**	**6.79E-04**

Limestone Delivery Road

Vehicle Type	Length Traveled (feet)	Vehicle weight (tons)	Vehicle Miles Traveled	Vehicles (trips) per day	Percentage of Total Vehicles	Percentage of Vehicle Weight	VMT per day
Hydrated Lime Trucks (Full)	623.2	40	0.12	1.0	50.0%	20.00	0.12
Hydrated Lime Trucks (Empty)	246	15	0.05	1.0	50.0%	7.50	0.05

Mean Vehicle Weight, W (tons) 27.5
Total Miles Traveled on Paved Roads 0.2

Parameter	PM	PM_{10}	$PM_{2.5}$
Short-term emission factor (lb/VMT)	1.07E+00	2.08E-01	3.11E-02
Long-term emission factor (lb/VMT)	9.78E-01	1.91E-01	2.86E-02
Short-term Emissions (lb/hr)	**7.31E-03**	**1.43E-03**	**2.13E-04**
Long-term Emissions (tpy)	**3.20E-02**	**6.24E-03**	**9.35E-04**

Alternative Fuels Delivery Road

Vehicle Type	Length Traveled (feet)	Vehicle weight (tons)	Vehicle Miles Traveled	Vehicles (trips) per day	Percentage of Total Vehicles	Percentage of Vehicle Weight	VMT per day
Alternative Fuels Trucks (Full)	590.4	40	0.11	52.0	50.0%	20.00	5.81
Alternative Fuel Trucks (Empty)	246	15	0.05	52.0	50.0%	7.50	2.42

Mean Vehicle Weight, W (tons) 27.5
Total Miles Traveled on Paved Roads 8.2

Parameter	PM	PM_{10}	$PM_{2.5}$
Short-term emission factor (lb/VMT)	1.07E+00	2.08E-01	3.11E-02
Long-term emission factor (lb/VMT)	9.78E-01	1.91E-01	2.86E-02
Short-term Emissions (lb/hr)	**3.66E-01**	**7.13E-02**	**1.07E-02**
Long-term Emissions (tpy)	**1.60E+00**	**3.12E-01**	**4.68E-02**

BACKGROUND CONCENTRATIONS

CITY	ADDRESS	TYPE	YEAR	24-HR	ANNUAL
PM10 Grand Rapids	509 Wealthy	Urban	2005	66.0	21.0
PM10 Grand Rapids	509 Wealthy	Urban	2006	39.0	18.0
PM10 Grand Rapids	509 Wealthy	Urban	2007	59.0	20.0
				51.0	21.0
				4th High	

Holland Board of Public Works - Application 25-07
ProUCL Results of COALQUAL Bituminous Data
November 10, 2008

COLORADO

	Btu/lb	Cl (lb/MMBtu)	HCl (lb/MMBtu)	Equivalent Cl (ppm)
Number of Samples	290		290	290
Number of Non-Zeroes	216		143	143
Minimum	7,705	0.005	0.005	37
Maximum	14,766	0.096	0.099	1,423
Mean	11,250	0.014	0.014	155
Standard Deviation	1,355	0.015	0.015	
Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution
95% UCL	11,403	0.019	0.020	220
99% UCL	11,466	0.026	0.027	302
99% Percentile	14,639	0.096	0.099	1,407

ILLINOIS

	Btu/lb	Cl (lb/MMBtu)	HCl (lb/MMBtu)	Equivalent Cl (ppm)
Number of Samples	16		16	16
Number of Non-Zeroes	16		0	0
Minimum	10,449		0	0
Maximum	12,882		0	0
Mean	11,605		0	0
Standard Deviation	639		0	0
Distribution	Normal	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution
95% UCL	11,885		No chlorine data available	No chlorine data available
99% UCL	12,021			
99% Percentile	13,091			

PENNSYLVANIA

	Btu/lb	Cl (lb/MMBtu)	HCl (lb/MMBtu)	Equivalent Cl (ppm)
Number of Samples	759		759	759
Number of Non-Zeroes	701		590	590
Minimum	7,151	0.004	0.004	26
Maximum	15,043	0.188	0.194	2,828
Mean	12,760	0.072	0.074	915
Standard Deviation	985	0.038	0.039	
Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution
95% UCL	12,821	0.078	0.081	1,005
99% UCL	12,847	0.087	0.090	1,118
99% Percentile	14,351	0.165	0.170	2,368

UTAH

	Btu/lb	Cl (lb/MMBtu)	HCl (lb/MMBtu)	Equivalent Cl (ppm)
Number of Samples	159		159	159
Number of Non-Zeroes	151		73	73
Minimum	3,674	0.005	0.005	20
Maximum	13,370	0.024	0.025	321
Mean	10,061	0.009	0.009	89
Standard Deviation	2,611	0.005	0.005	
Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution
95% UCL	10,413	0.010	0.010	102
99% UCL	10,561	0.010	0.010	107
99% Percentile	13,334	0.024	0.025	320

WYOMING

	Btu/lb	Cl (lb/MMBtu)	HCl (lb/MMBtu)	Equivalent Cl (ppm)
Number of Samples	45		45	45
Number of Non-Zeroes	41		24	24
Minimum	9,080	0.006	0.006	52
Maximum	14,880	0.013	0.013	189
Mean	10,996	0.007	0.007	77
Standard Deviation	985	0.002	0.002	
Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution
95% UCL	11,253	0.008	0.008	87
99% UCL	11,361	0.008	0.008	91
99% Percentile	13,408	0.013	0.013	170

MONTANA

	Btu/lb	Cl (lb/MMBtu)	HCl (lb/MMBtu)	Equivalent Cl (ppm)
Number of Samples	7	7	7	7
Number of Non-Zeroes	7	7	7	7
Minimum	5,075	0.007	0.008	38
Maximum	9,382	0.014	0.014	129
Mean	6,790	0.011	0.011	73
Standard Deviation	1,562	0.002	0.002	
Distribution	Normal	No Discernable Distribution	No Discernable Distribution	No Discernable Distribution
95% UCL	Not enough data available to generate reliable conclusions.			
99% UCL				
99% Percentile				

Table 6-5. PM_{10} Emission Rates – Net Emissions (PSD Increment Analysis)

Point Sources			Emission Rates (lbs/hr)	Modeled Emission Rates (gram/sec)
New CFB Boiler Unit #10 Baghouse			21.625	2.725
Existing Unit #3 (ESP Control) – Shut down			-2.31	-0.29
Transfer/Crusher House Baghouse			0.34	0.043
Unit 10 Coal Storage Silos Baghouse			0.51	0.064
Unit 10 Limestone Bin Filter			0.75	0.095
Unit 10 Fly Ash Silo Vent			0.17	0.021
Cooling Tower			0.22	0.027
Fugitive Area Sources	**Source Area (m^2)**	**Maximum Net Emission Rate (lbs/day)**	**Maximum Net Emission Rates (lbs/hr)**	**Modeled Emission Rates (gram/sec/m^2)**
Active Coal Pile [1]	8,803.0	3.08	0.13	1.837E-06
Compacted Coal Pile [2]	13,274.0	-41.86	-1.74	-1.656E-05
Fugitive Volume Sources			**Net Emission Rate (lbs/hr)**	**Modeled Emission Rate (gram/sec)**
Underground Loading Hopper			0.0092	1.155E-03
Roads			0.326	0.0411

[1] The fugitive emission rate for the active coal pile is the sum of the maximum daily emissions for the coal drop from ship unloading, bull dozer activities, wind erosion on the active pile (normal daily activities) and wind erosion during shipments. The net emission rate represents the increase in daily emissions resulting from the increased coal usage proposed in this modification and takes into account the control strategies that will be implemented.

[2] The fugitive emission rate for the compacted coal pile is the maximum daily emission rate resulting from wind erosion on the compacted area of the coal pile (normal daily activities). The net emission rate represents the decrease in daily emissions that will result from post-modification control strategies that will be implemented.