Chicago Grade Landfill

Attachment F – Site Records

Flare Test Results
Landfill Capacity Data

Table 2-2
Summary of Results
Chicago Grade Landfill
Landfill Gas Flare
November 25, 2008

	LANDFILL GAS				FLARE EXHAUST			
Run Number	1	2	3	Avg.	1	2	3	Avg.
STACK GAS CHARACTERISTICS								
Temperature, degrees F	-	-	-	-	1,632	1,592	1,604	1,609
Flow Rate, dscfm	240	242	241	241	2,040	2,034	2,000	2,025
Fixed Gases								
Oxygen, %	3.82	3.29	3.53	8.00	11.94	11.76	11.70	11.80
Carbon Dioxide, %	28.9	29.4	29.3	29.2	8.22	8.33	8.29	8.28
Methane, %	35.0	35.5	35.1	35.2	-	-	-	-
BTU Value, Btu/scf	354	359	355	356	-	-	-	-
EMISSIONS								
Oxides of Nitrogen								
ppm	-	-	-	-	9.86	9.96	10.05	9.96
ppm @ 3 % O2	-	-	-	-	19.7	19.5	19.6	19.6
lb/hr	-	-	-	-	0.144	0.145	0.144	0.145
lb/MMBtu	-	-	-	-	0.0284	0.0280	0.0281	0.0282
Carbon Monoxide								
ppm	-	-	-	-	< 1.00	< 1.00	< 1.00	< 1.00
ppm @ 3 % O2	-	-	-	-	< 2.00	< 1.96	< 1.95	< 1.97
lb/hr	-	-	-	-	< 0.00890	< 0.00887	< 0.00873	< 0.00883
lb/MMBtu	-	-	-	-	< 0.00175	< 0.00171	< 0.00170	< 0.00172
Total Non-Methane Hydrocarbons								
ppm	1,826	2,406	2,245	2,159	1.00	4.07	3.80	2.96
ppm @ 3 % O2	-	-	-	-	2.0	8.0	7.4	5.8
lb/hr	1.092	1.448	1.348	1.295	0.0051	0.0206	0.0189	0.0149
Destuction Efficiency	-	-	-	-	99.5	98.6	98.6	98.9

Table 2-1
Summary of Results
Chicago Grade Landfill
Landfill Gas Flare

Parameter	Measured Emission Rate*	Permitted Emission Rate
Oxides of Nitrogen, as NO_2	0.0282 lb/MMBtu 0.145 lbs/hr	0.06 lb/MMBtu
Carbon Monoxide	<0.00172 lb/MMBtu <0.00883 lb/hr	0.20 lb/MMBtu
Reactive Organic Compounds, as CH_4	5.8 ppm @ 3% O_2 0.0149 lb/hr	30 ppm @ 3% O_2
ROC Destruction Efficiency	98.9%	98%

* Measured emission rates shown are the average of three test runs.

Table 5-2
Trace Organic Species Destruction Efficiency Results
Chicago Grade Landfill
Febuary 1, 1999

Flare Run 1		INLET Flow rate	75 dscfm			OUTLET Flow rate	415 dscfm		DEST. EFF.
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	Conc. (ppb)		Conc. (mg/dscf)	Em. Rate (lb/hr)		(%)
Benzene	466.0	4.34E-02	4.31E-04	1.90		1.77E-04	9.72E-06		97.744
Dichloromethane	444.0	4.51E-02	4.47E-04	0.20	<	2.03E-05 <	1.12E-06	>	99.751
Perchloroethene	598.0	1.69E-01	1.68E-03	0.20	<	5.66E-05 <	3.11E-06	>	99.815
Styrene	93.4	1.16E-02	1.15E-04	0.58		7.22E-05	3.96E-06		96.564
Trichloroethene	334.0	5.23E-02	5.19E-04	0.20	<	3.13E-05 <	1.72E-06	>	99.669
Vinyl Chloride	1290.0	9.64E-02	9.56E-04	0.20	<	1.49E-05 <	8.20E-07	>	99.914
1,4-Dichlorobenzene	216.0	3.80E-02	3.76E-04	0.20	<	3.51E-05 <	1.93E-06	>	99.488
TNMHC	1420000.0	2.72E+01	2.69E-01	5360.0		1.02E-01	5.63E-03		97.911

Table 5-1
Summary of Results
Chicago Grade Landfill
Landfill Gas Flare

	LANDFILL GAS			FLARE EXHAUST		
	Run #1	Run #2	Run #3	Run #1	Run #2	Run #3
STACK GAS CHARACTERISTICS						
Flow Rate (dscfm)	75	75	75	415*	421*	421*
Fixed Gases						
Oxygen (%)	7.0	7.0	7.0	9.9	10.0	10.0
Carbon Dioxide (%)	22.5	22.5	22.5	9.6	9.3	9.3
Methane (%)	25.4	25.4	25.4	<0.0001	0.0001	<0.0001
BTU Value (btu/scf)	257	257	257	----	----	----
EMISSIONS						
Oxides of Nitrogen						
ppm	----	----	----	11.1	11.4	11.8
lb/hr	----	----	----	0.033	0.035	0.036
lb/MMBtu	----	----	----	0.0295	0.0307	0.0318
Carbon Monoxide						
ppm	----	----	----	<10	<10	<10
lb/hr	----	----	----	<0.018	<0.019	<0.019
lb/MMBtu	----	----	----	<0.0162	<0.0164	<0.0164
Total Non Methane Hydrocarbons						
ppm	1420	1420	1420	5.4	1.6	8.5
ppm @ 3% O_2	----	----	----	8.8	2.6	14.0
lb/hr	0.269	0.269	0.269	0.0056	0.0017	0.0091
lb/MMBtu	----	----	----	0.0050	0.0015	0.0080
Destruction Efficiency	----	----	----	97.9	99.4	96.6
Oxides of Suflur						
ppm	----	----	----	<5.0	<5.0	<5.0
ppm @ 3% O_2	----	----	----	<8.1	<8.2	<8.2
lb/hr	----	----	----	<0.021	<0.021	<0.021
lb/MMBtu	----	----	----	<0.0185	<0.0187	<0.0188
Total Sulfur Compounds, ppm as H_2S	15.9	15.9	15.9	----	----	----
grains/100 dscf	0.999	0.999	0.999	----	----	----

* Calculated stoichiometrically using US EPA Method 19.

CHICAGO GRADE LANDFILL

TOTAL WASTE
1970-2009

YEAR	NET TONS	CUBIC YARDS (WASTE W/OUT DAILY COVER)
1970-2000	-	1,267,873
2001	42,311	70,490
2002	67,725	112,829
2003	68,917	114,815
2004	84,234	140,330
2005	85,813	122,590
2006	79,763	113,947
2007	73,411	104,873
2008	63,047	90,067
2009	56,757	90,067

Totals **621,978 Tons** **2, 218, 895 Cubic Yards**

TABLE 2-SITE LIFE
MODULES 1-7

Year	Annual Waste (tons/year)	Annual Waste (cubic yards)	Annual Daily Cover (cubic yards)	Amount Landfilled Per Year (cubic yards)	Cumulative Waste & Daily Cover (cubic yards)	Cumulative Waste (tons)
2007	73,412	104,245	41,698	145,943	145,943	73,412
2008	63,049	89,530	35,812	125,341	271,284	136,461
2009	56,757	80,595	32,238	112,833	384,117	193,218
2010	57,892	82,207	32,883	115,089	499,207	251,110
2011	59,050	83,851	33,540	117,391	616,598	310,160
2012	60,230	85,527	34,211	119,737	736,335	370,390
2013	61,436	87,239	34,896	122,135	858,470	431,826
2014	62,664	88,983	35,593	124,576	983,046	494,490
2015	63,918	90,764	36,305	127,069	1,110,115	558,408
2016	65,196	92,578	37,031	129,610	1,239,725	623,604
2017	66,500	94,430	37,772	132,202	1,371,927	690,104
2018	67,830	96,319	38,527	134,846	1,632,114	820,983
2019	69,186	98,244	39,298	137,542	1,769,656	890,169
2020	70,570	100,209	40,084	140,293	1,909,949	960,739
2021	71,982	102,214	40,886	143,100	2,053,049	1,032,721
2022	73,421	104,258	41,703	145,961	2,199,010	1,106,142
2023	74,890	106,344	42,538	148,881	2,347,892	1,181,032
2024	76,387	108,470	43,388	151,857	2,499,749	1,257,419
2025	77,915	110,639	44,256	154,895	2,654,644	1,335,334
2026	79,473	112,852	45,141	157,992	2,812,636	1,414,807
2027	81,063	115,109	46,044	161,153	2,973,790	1,495,870
2028	82,684	117,411	46,965	164,376	3,138,165	1,578,554
2029	84,328	119,746	47,898	167,644	3,305,809	1,662,882
2030	86,025	122,156	48,862	171,018	3,476,827	1,748,907
2031	87,945	124,882	49,953	174,835	3,651,662	1,836,852
2032	89,500	127,090	50,836	177,926	3,829,588	1,926,352
2033	91,290	129,632	51,853	181,485	4,011,072	2,017,642
2034	93,116	132,225	52,890	185,115	4,196,187	2,110,758
2035	94,978	134,869	53,948	188,816	4,385,003	2,205,736
2036	96,878	137,567	55,027	192,593	4,577,597	2,302,614
2037	98,815	140,317	56,127	196,444	4,774,041	2,401,429
2038	100,792	143,125	57,250	200,374	4,974,415	2,502,221
2039	102,807	145,986	58,394	204,380	5,178,796	2,605,028
2040	104,864	148,907	59,563	208,470	5,387,265	2,709,892
2041	106,961	151,885	60,754	212,638	5,599,904	2,816,853
2042	109,100	154,922	61,969	216,891	5,816,795	2,925,953
2043	111,282	158,020	63,208	221,229	6,038,024	3,037,235
2044	113,508	161,181	64,473	225,654	6,263,678	3,150,743
2045	115,778	164,405	65,762	230,167	6,493,845	3,266,521
2046	118,093	167,692	67,077	234,769	6,724,011	3,382,299
2047	120,955	171,756	68,702	240,459	6,958,780	3,503,254
2048	122,864	174,467	69,787	244,254	7,199,239	3,626,118
2049	125,322	177,957	71,183	249,140	7,443,492	3,751,440
2050	127,828	181,516	72,606	254,122	7,692,632	3,879,268
2051	130,384	185,145	74,058	259,203	7,946,754	3,924,562
2052	132,992	188,849	75,539	264,388	8,504,567	4,277,951
2053	45,294	64,317	25,727	90,044	8,330,223	4,190,253

Total Waste Capacity - Tons	4,190,253
Total Waste Capacity - CY	5,950,159
Total Daily Cover - CY	2,380,064
Final Cover - CY	620,000
Total Waste, Daily and Final Cover - CY	8,950,223
Total Air Space - cubic yards	8,950,223
Active Life (yr) from 01/06/10-modules 1-7	42

Assumptions:

1. 2% growth in waste stream
2. 1,400 pcy waste density (wst tons x 1.428 = waste yds)
3. Waste/soil ratio 2.5:1