

Summary Report

Landfill Name or Identifier: Palo Alto Landfill - October 2018 NMOC Data

Date: Monday, July 29, 2019

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1955	
Landfill Closure Year (with 80-year limit)	2011	
Actual Closure Year (without limit)	2011	
Have Model Calculate Closure Year?	No	
Waste Design Capacity		<i>megagrams</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	170	<i>m³/Mg</i>
NMOC Concentration	83	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1955	110,408	121,449	0	0
1956	110,408	121,449	110,408	121,449
1957	110,408	121,449	220,816	242,898
1958	110,408	121,449	331,225	364,347
1959	110,408	121,449	441,633	485,796
1960	110,408	121,449	552,041	607,245
1961	110,408	121,449	662,449	728,694
1962	110,408	121,449	772,857	850,143
1963	110,408	121,449	883,265	971,592
1964	110,408	121,449	993,674	1,093,041
1965	110,408	121,449	1,104,082	1,214,490
1966	110,408	121,449	1,214,490	1,335,939
1967	110,408	121,449	1,324,898	1,457,388
1968	110,408	121,449	1,435,306	1,578,837
1969	110,408	121,449	1,545,715	1,700,286
1970	110,408	121,449	1,656,123	1,821,735
1971	110,408	121,449	1,766,531	1,943,184
1972	110,408	121,449	1,876,939	2,064,633
1973	110,408	121,449	1,987,347	2,186,082
1974	110,408	121,449	2,097,755	2,307,531
1975	110,408	121,449	2,208,164	2,428,980
1976	110,408	121,449	2,318,572	2,550,429
1977	110,408	121,449	2,428,980	2,671,878
1978	110,408	121,449	2,539,388	2,793,327
1979	80,784	88,862	2,649,796	2,914,776
1980	84,809	93,290	2,730,580	3,003,638
1981	86,155	94,771	2,815,389	3,096,928
1982	89,491	98,440	2,901,545	3,191,699
1983	94,047	103,452	2,991,035	3,290,139
1984	105,866	116,453	3,085,083	3,393,591
1985	113,622	124,984	3,190,949	3,510,044
1986	110,130	121,143	3,304,571	3,635,028
1987	94,748	104,223	3,414,701	3,756,171
1988	87,713	96,484	3,509,449	3,860,394
1989	95,408	104,949	3,597,162	3,956,878
1990	78,794	86,673	3,692,570	4,061,827
1991	82,578	90,836	3,771,364	4,148,500
1992	76,309	83,940	3,853,942	4,239,336
1993	67,201	73,921	3,930,251	4,323,276
1994	29,856	32,842	3,997,452	4,397,197

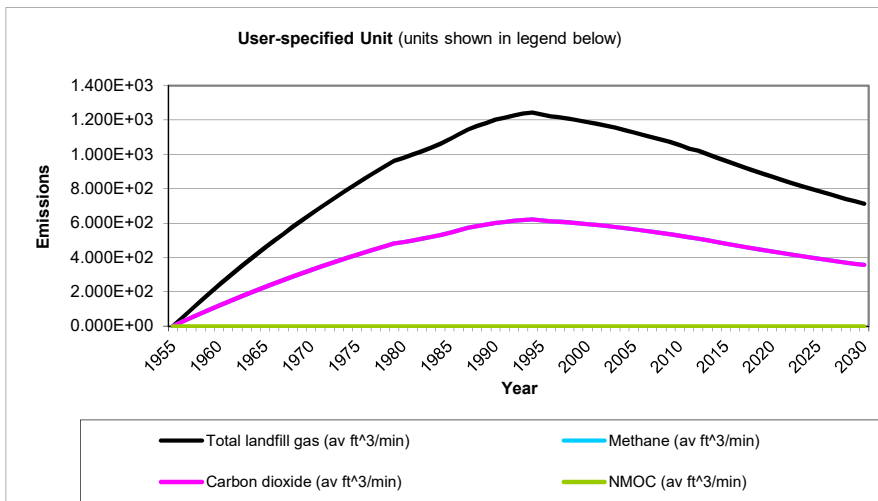
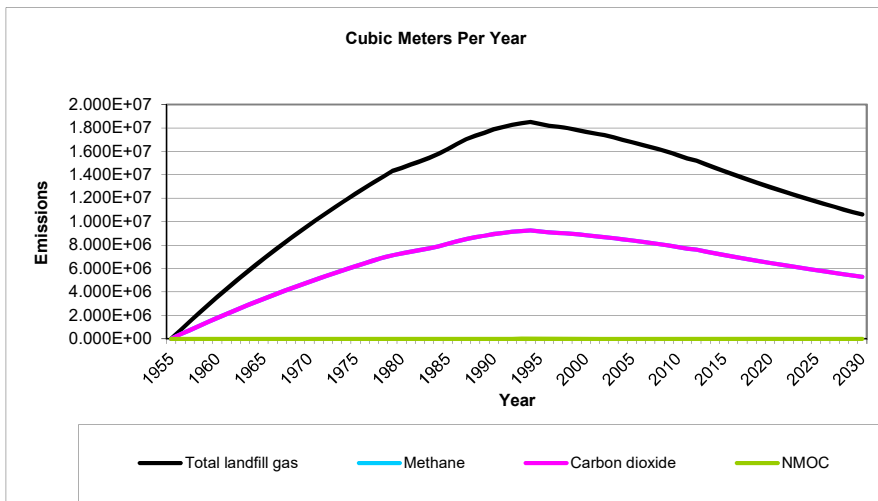
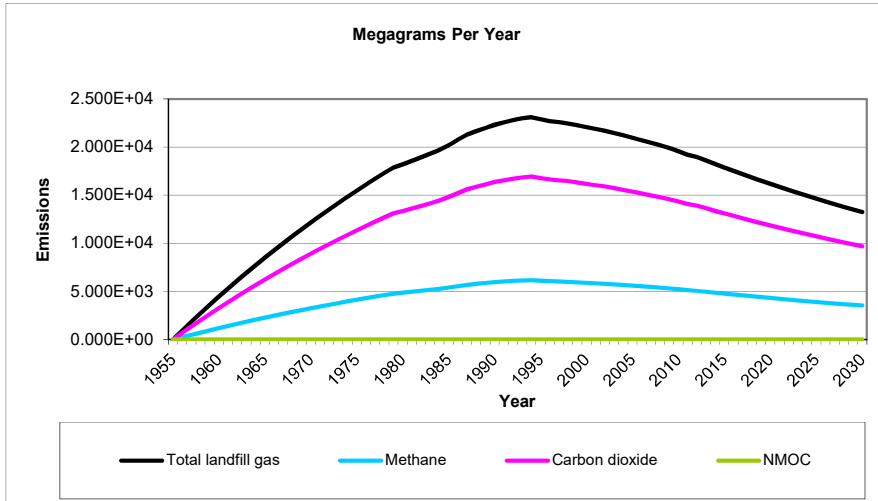
WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1995	30,203	33,223	4,027,308	4,430,039
1996	40,439	44,483	4,057,511	4,463,262
1997	38,703	42,573	4,097,950	4,507,745
1998	28,165	30,982	4,136,653	4,550,318
1999	29,949	32,944	4,164,818	4,581,300
2000	31,485	34,634	4,194,767	4,614,244
2001	28,170	30,987	4,226,253	4,648,878
2002	23,421	25,763	4,254,423	4,679,865
2003	20,502	22,552	4,277,844	4,705,628
2004	19,873	21,860	4,298,345	4,728,180
2005	18,173	19,990	4,318,218	4,750,040
2006	19,802	21,782	4,336,391	4,770,030
2007	15,601	17,161	4,356,193	4,791,812
2008	14,980	16,478	4,371,794	4,808,973
2009	5,821	6,403	4,386,774	4,825,451
2010	4,285	4,714	4,392,595	4,831,854
2011	17,530	19,283	4,396,880	4,836,568
2012	0	0	4,414,410	4,855,851
2013	0	0	4,414,410	4,855,851
2014	0	0	4,414,410	4,855,851
2015	0	0	4,414,410	4,855,851
2016	0	0	4,414,410	4,855,851
2017	0	0	4,414,410	4,855,851
2018	0	0	4,414,410	4,855,851
2019	0	0	4,414,410	4,855,851
2020	0	0	4,414,410	4,855,851
2021	0	0	4,414,410	4,855,851
2022	0	0	4,414,410	4,855,851
2023	0	0	4,414,410	4,855,851
2024	0	0	4,414,410	4,855,851
2025	0	0	4,414,410	4,855,851
2026	0	0	4,414,410	4,855,851
2027	0	0	4,414,410	4,855,851
2028	0	0	4,414,410	4,855,851
2029	0	0	4,414,410	4,855,851
2030	0	0	4,414,410	4,855,851
2031	0	0	4,414,410	4,855,851
2032	0	0	4,414,410	4,855,851
2033	0	0	4,414,410	4,855,851
2034	0	0	4,414,410	4,855,851

Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,1,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

Graphs



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1955	0	0	0	0	0	0
1956	9.292E+02	7.441E+05	4.999E+01	2.482E+02	3.720E+05	2.500E+01
1957	1.840E+03	1.473E+06	9.900E+01	4.915E+02	7.367E+05	4.950E+01
1958	2.733E+03	2.188E+06	1.470E+02	7.300E+02	1.094E+06	7.351E+01
1959	3.608E+03	2.889E+06	1.941E+02	9.637E+02	1.445E+06	9.706E+01
1960	4.466E+03	3.576E+06	2.403E+02	1.193E+03	1.788E+06	1.201E+02
1961	5.306E+03	4.249E+06	2.855E+02	1.417E+03	2.125E+06	1.427E+02
1962	6.131E+03	4.909E+06	3.298E+02	1.638E+03	2.455E+06	1.649E+02
1963	6.938E+03	5.556E+06	3.733E+02	1.853E+03	2.778E+06	1.866E+02
1964	7.730E+03	6.190E+06	4.159E+02	2.065E+03	3.095E+06	2.080E+02
1965	8.506E+03	6.811E+06	4.577E+02	2.272E+03	3.406E+06	2.288E+02
1966	9.267E+03	7.421E+06	4.986E+02	2.475E+03	3.710E+06	2.493E+02
1967	1.001E+04	8.018E+06	5.387E+02	2.675E+03	4.009E+06	2.694E+02
1968	1.074E+04	8.603E+06	5.780E+02	2.870E+03	4.302E+06	2.890E+02
1969	1.146E+04	9.177E+06	6.166E+02	3.061E+03	4.588E+06	3.083E+02
1970	1.216E+04	9.739E+06	6.544E+02	3.249E+03	4.870E+06	3.272E+02
1971	1.285E+04	1.029E+07	6.914E+02	3.433E+03	5.145E+06	3.457E+02
1972	1.353E+04	1.083E+07	7.277E+02	3.613E+03	5.415E+06	3.639E+02
1973	1.419E+04	1.136E+07	7.633E+02	3.789E+03	5.680E+06	3.816E+02
1974	1.484E+04	1.188E+07	7.982E+02	3.963E+03	5.940E+06	3.991E+02
1975	1.547E+04	1.239E+07	8.324E+02	4.132E+03	6.194E+06	4.162E+02
1976	1.609E+04	1.289E+07	8.659E+02	4.299E+03	6.443E+06	4.329E+02
1977	1.670E+04	1.338E+07	8.987E+02	4.462E+03	6.688E+06	4.494E+02
1978	1.730E+04	1.386E+07	9.309E+02	4.622E+03	6.928E+06	4.655E+02
1979	1.789E+04	1.432E+07	9.625E+02	4.778E+03	7.162E+06	4.812E+02
1980	1.821E+04	1.459E+07	9.800E+02	4.865E+03	7.293E+06	4.900E+02
1981	1.857E+04	1.487E+07	9.990E+02	4.960E+03	7.434E+06	4.995E+02
1982	1.893E+04	1.515E+07	1.018E+03	5.055E+03	7.577E+06	5.091E+02
1983	1.930E+04	1.546E+07	1.039E+03	5.156E+03	7.729E+06	5.193E+02
1984	1.971E+04	1.579E+07	1.061E+03	5.266E+03	7.893E+06	5.303E+02
1985	2.021E+04	1.619E+07	1.088E+03	5.399E+03	8.093E+06	5.438E+02
1986	2.077E+04	1.663E+07	1.117E+03	5.548E+03	8.316E+06	5.587E+02
1987	2.129E+04	1.704E+07	1.145E+03	5.685E+03	8.522E+06	5.726E+02
1988	2.166E+04	1.735E+07	1.165E+03	5.786E+03	8.673E+06	5.827E+02
1989	2.197E+04	1.759E+07	1.182E+03	5.869E+03	8.796E+06	5.910E+02
1990	2.234E+04	1.789E+07	1.202E+03	5.967E+03	8.944E+06	6.009E+02
1991	2.256E+04	1.806E+07	1.214E+03	6.026E+03	9.032E+06	6.069E+02
1992	2.281E+04	1.826E+07	1.227E+03	6.092E+03	9.132E+06	6.135E+02
1993	2.300E+04	1.842E+07	1.237E+03	6.143E+03	9.208E+06	6.187E+02
1994	2.311E+04	1.850E+07	1.243E+03	6.172E+03	9.252E+06	6.216E+02
1995	2.290E+04	1.834E+07	1.232E+03	6.117E+03	9.169E+06	6.161E+02
1996	2.270E+04	1.818E+07	1.221E+03	6.064E+03	9.090E+06	6.107E+02
1997	2.259E+04	1.809E+07	1.216E+03	6.035E+03	9.046E+06	6.078E+02
1998	2.247E+04	1.799E+07	1.209E+03	6.002E+03	8.997E+06	6.045E+02
1999	2.226E+04	1.783E+07	1.198E+03	5.947E+03	8.914E+06	5.989E+02
2000	2.207E+04	1.768E+07	1.188E+03	5.896E+03	8.838E+06	5.938E+02
2001	2.190E+04	1.754E+07	1.178E+03	5.850E+03	8.769E+06	5.892E+02
2002	2.171E+04	1.738E+07	1.168E+03	5.798E+03	8.691E+06	5.839E+02
2003	2.147E+04	1.719E+07	1.155E+03	5.736E+03	8.597E+06	5.777E+02
2004	2.122E+04	1.699E+07	1.142E+03	5.668E+03	8.496E+06	5.709E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	2.097E+04	1.679E+07	1.128E+03	5.601E+03	8.395E+06	5.641E+02
2006	2.071E+04	1.658E+07	1.114E+03	5.531E+03	8.290E+06	5.570E+02
2007	2.046E+04	1.639E+07	1.101E+03	5.466E+03	8.193E+06	5.505E+02
2008	2.019E+04	1.617E+07	1.086E+03	5.393E+03	8.083E+06	5.431E+02
2009	1.991E+04	1.595E+07	1.071E+03	5.319E+03	7.973E+06	5.357E+02
2010	1.957E+04	1.567E+07	1.053E+03	5.227E+03	7.835E+06	5.264E+02
2011	1.922E+04	1.539E+07	1.034E+03	5.133E+03	7.694E+06	5.170E+02
2012	1.898E+04	1.520E+07	1.021E+03	5.071E+03	7.601E+06	5.107E+02
2013	1.861E+04	1.490E+07	1.001E+03	4.971E+03	7.451E+06	5.006E+02
2014	1.824E+04	1.461E+07	9.814E+02	4.872E+03	7.303E+06	4.907E+02
2015	1.788E+04	1.432E+07	9.620E+02	4.776E+03	7.158E+06	4.810E+02
2016	1.753E+04	1.403E+07	9.429E+02	4.681E+03	7.017E+06	4.715E+02
2017	1.718E+04	1.376E+07	9.242E+02	4.589E+03	6.878E+06	4.621E+02
2018	1.684E+04	1.348E+07	9.059E+02	4.498E+03	6.742E+06	4.530E+02
2019	1.650E+04	1.322E+07	8.880E+02	4.409E+03	6.608E+06	4.440E+02
2020	1.618E+04	1.295E+07	8.704E+02	4.321E+03	6.477E+06	4.352E+02
2021	1.586E+04	1.270E+07	8.532E+02	4.236E+03	6.349E+06	4.266E+02
2022	1.554E+04	1.245E+07	8.363E+02	4.152E+03	6.223E+06	4.181E+02
2023	1.524E+04	1.220E+07	8.197E+02	4.070E+03	6.100E+06	4.099E+02
2024	1.493E+04	1.196E+07	8.035E+02	3.989E+03	5.979E+06	4.017E+02
2025	1.464E+04	1.172E+07	7.876E+02	3.910E+03	5.861E+06	3.938E+02
2026	1.435E+04	1.149E+07	7.720E+02	3.833E+03	5.745E+06	3.860E+02
2027	1.406E+04	1.126E+07	7.567E+02	3.757E+03	5.631E+06	3.783E+02
2028	1.379E+04	1.104E+07	7.417E+02	3.682E+03	5.520E+06	3.709E+02
2029	1.351E+04	1.082E+07	7.270E+02	3.609E+03	5.410E+06	3.635E+02
2030	1.325E+04	1.061E+07	7.126E+02	3.538E+03	5.303E+06	3.563E+02
2031	1.298E+04	1.040E+07	6.985E+02	3.468E+03	5.198E+06	3.493E+02
2032	1.273E+04	1.019E+07	6.847E+02	3.399E+03	5.095E+06	3.423E+02
2033	1.247E+04	9.989E+06	6.711E+02	3.332E+03	4.994E+06	3.356E+02
2034	1.223E+04	9.791E+06	6.578E+02	3.266E+03	4.895E+06	3.289E+02
2035	1.198E+04	9.597E+06	6.448E+02	3.201E+03	4.798E+06	3.224E+02
2036	1.175E+04	9.407E+06	6.320E+02	3.138E+03	4.703E+06	3.160E+02
2037	1.151E+04	9.221E+06	6.195E+02	3.076E+03	4.610E+06	3.098E+02
2038	1.129E+04	9.038E+06	6.073E+02	3.015E+03	4.519E+06	3.036E+02
2039	1.106E+04	8.859E+06	5.952E+02	2.955E+03	4.430E+06	2.976E+02
2040	1.084E+04	8.684E+06	5.835E+02	2.897E+03	4.342E+06	2.917E+02
2041	1.063E+04	8.512E+06	5.719E+02	2.839E+03	4.256E+06	2.860E+02
2042	1.042E+04	8.343E+06	5.606E+02	2.783E+03	4.172E+06	2.803E+02
2043	1.021E+04	8.178E+06	5.495E+02	2.728E+03	4.089E+06	2.747E+02
2044	1.001E+04	8.016E+06	5.386E+02	2.674E+03	4.008E+06	2.693E+02
2045	9.812E+03	7.857E+06	5.279E+02	2.621E+03	3.929E+06	2.640E+02
2046	9.618E+03	7.702E+06	5.175E+02	2.569E+03	3.851E+06	2.587E+02
2047	9.428E+03	7.549E+06	5.072E+02	2.518E+03	3.775E+06	2.536E+02
2048	9.241E+03	7.400E+06	4.972E+02	2.468E+03	3.700E+06	2.486E+02
2049	9.058E+03	7.253E+06	4.873E+02	2.419E+03	3.627E+06	2.437E+02
2050	8.879E+03	7.110E+06	4.777E+02	2.372E+03	3.555E+06	2.388E+02
2051	8.703E+03	6.969E+06	4.682E+02	2.325E+03	3.484E+06	2.341E+02
2052	8.530E+03	6.831E+06	4.590E+02	2.279E+03	3.415E+06	2.295E+02
2053	8.362E+03	6.696E+06	4.499E+02	2.233E+03	3.348E+06	2.249E+02
2054	8.196E+03	6.563E+06	4.410E+02	2.189E+03	3.281E+06	2.205E+02
2055	8.034E+03	6.433E+06	4.322E+02	2.146E+03	3.217E+06	2.161E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2056	7.875E+03	6.306E+06	4.237E+02	2.103E+03	3.153E+06	2.118E+02
2057	7.719E+03	6.181E+06	4.153E+02	2.062E+03	3.090E+06	2.076E+02
2058	7.566E+03	6.058E+06	4.071E+02	2.021E+03	3.029E+06	2.035E+02
2059	7.416E+03	5.938E+06	3.990E+02	1.981E+03	2.969E+06	1.995E+02
2060	7.269E+03	5.821E+06	3.911E+02	1.942E+03	2.910E+06	1.956E+02
2061	7.125E+03	5.706E+06	3.834E+02	1.903E+03	2.853E+06	1.917E+02
2062	6.984E+03	5.593E+06	3.758E+02	1.866E+03	2.796E+06	1.879E+02
2063	6.846E+03	5.482E+06	3.683E+02	1.829E+03	2.741E+06	1.842E+02
2064	6.710E+03	5.373E+06	3.610E+02	1.792E+03	2.687E+06	1.805E+02
2065	6.577E+03	5.267E+06	3.539E+02	1.757E+03	2.633E+06	1.769E+02
2066	6.447E+03	5.163E+06	3.469E+02	1.722E+03	2.581E+06	1.734E+02
2067	6.320E+03	5.060E+06	3.400E+02	1.688E+03	2.530E+06	1.700E+02
2068	6.194E+03	4.960E+06	3.333E+02	1.655E+03	2.480E+06	1.666E+02
2069	6.072E+03	4.862E+06	3.267E+02	1.622E+03	2.431E+06	1.633E+02
2070	5.952E+03	4.766E+06	3.202E+02	1.590E+03	2.383E+06	1.601E+02
2071	5.834E+03	4.671E+06	3.139E+02	1.558E+03	2.336E+06	1.569E+02
2072	5.718E+03	4.579E+06	3.077E+02	1.527E+03	2.289E+06	1.538E+02
2073	5.605E+03	4.488E+06	3.016E+02	1.497E+03	2.244E+06	1.508E+02
2074	5.494E+03	4.399E+06	2.956E+02	1.467E+03	2.200E+06	1.478E+02
2075	5.385E+03	4.312E+06	2.897E+02	1.438E+03	2.156E+06	1.449E+02
2076	5.279E+03	4.227E+06	2.840E+02	1.410E+03	2.113E+06	1.420E+02
2077	5.174E+03	4.143E+06	2.784E+02	1.382E+03	2.072E+06	1.392E+02
2078	5.072E+03	4.061E+06	2.729E+02	1.355E+03	2.031E+06	1.364E+02
2079	4.971E+03	3.981E+06	2.675E+02	1.328E+03	1.990E+06	1.337E+02
2080	4.873E+03	3.902E+06	2.622E+02	1.302E+03	1.951E+06	1.311E+02
2081	4.776E+03	3.825E+06	2.570E+02	1.276E+03	1.912E+06	1.285E+02
2082	4.682E+03	3.749E+06	2.519E+02	1.251E+03	1.874E+06	1.259E+02
2083	4.589E+03	3.675E+06	2.469E+02	1.226E+03	1.837E+06	1.234E+02
2084	4.498E+03	3.602E+06	2.420E+02	1.201E+03	1.801E+06	1.210E+02
2085	4.409E+03	3.531E+06	2.372E+02	1.178E+03	1.765E+06	1.186E+02
2086	4.322E+03	3.461E+06	2.325E+02	1.154E+03	1.730E+06	1.163E+02
2087	4.236E+03	3.392E+06	2.279E+02	1.132E+03	1.696E+06	1.140E+02
2088	4.152E+03	3.325E+06	2.234E+02	1.109E+03	1.662E+06	1.117E+02
2089	4.070E+03	3.259E+06	2.190E+02	1.087E+03	1.630E+06	1.095E+02
2090	3.989E+03	3.195E+06	2.146E+02	1.066E+03	1.597E+06	1.073E+02
2091	3.910E+03	3.131E+06	2.104E+02	1.045E+03	1.566E+06	1.052E+02
2092	3.833E+03	3.069E+06	2.062E+02	1.024E+03	1.535E+06	1.031E+02
2093	3.757E+03	3.009E+06	2.021E+02	1.004E+03	1.504E+06	1.011E+02
2094	3.683E+03	2.949E+06	1.981E+02	9.837E+02	1.474E+06	9.907E+01
2095	3.610E+03	2.891E+06	1.942E+02	9.642E+02	1.445E+06	9.711E+01

Results (Continued)

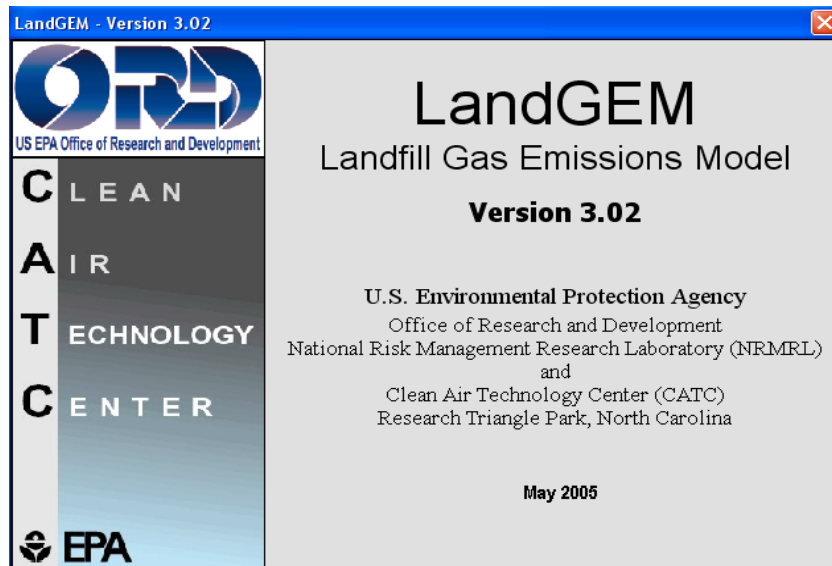
Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1955	0	0	0	0	0	0
1956	6.810E+02	3.720E+05	2.500E+01	2.200E-01	6.139E+01	4.124E-03
1957	1.349E+03	7.367E+05	4.950E+01	4.357E-01	1.216E+02	8.167E-03
1958	2.003E+03	1.094E+06	7.351E+01	6.471E-01	1.805E+02	1.213E-02
1959	2.644E+03	1.445E+06	9.706E+01	8.543E-01	2.383E+02	1.601E-02
1960	3.273E+03	1.788E+06	1.201E+02	1.057E+00	2.950E+02	1.982E-02
1961	3.889E+03	2.125E+06	1.427E+02	1.257E+00	3.506E+02	2.355E-02
1962	4.493E+03	2.455E+06	1.649E+02	1.452E+00	4.050E+02	2.721E-02
1963	5.085E+03	2.778E+06	1.866E+02	1.643E+00	4.584E+02	3.080E-02
1964	5.665E+03	3.095E+06	2.080E+02	1.830E+00	5.107E+02	3.431E-02
1965	6.234E+03	3.406E+06	2.288E+02	2.014E+00	5.619E+02	3.776E-02
1966	6.792E+03	3.710E+06	2.493E+02	2.194E+00	6.122E+02	4.113E-02
1967	7.338E+03	4.009E+06	2.694E+02	2.371E+00	6.615E+02	4.444E-02
1968	7.874E+03	4.302E+06	2.890E+02	2.544E+00	7.098E+02	4.769E-02
1969	8.399E+03	4.588E+06	3.083E+02	2.714E+00	7.571E+02	5.087E-02
1970	8.914E+03	4.870E+06	3.272E+02	2.880E+00	8.035E+02	5.399E-02
1971	9.418E+03	5.145E+06	3.457E+02	3.043E+00	8.490E+02	5.704E-02
1972	9.913E+03	5.415E+06	3.639E+02	3.203E+00	8.935E+02	6.004E-02
1973	1.040E+04	5.680E+06	3.816E+02	3.359E+00	9.372E+02	6.297E-02
1974	1.087E+04	5.940E+06	3.991E+02	3.513E+00	9.800E+02	6.585E-02
1975	1.134E+04	6.194E+06	4.162E+02	3.663E+00	1.022E+03	6.867E-02
1976	1.179E+04	6.443E+06	4.329E+02	3.811E+00	1.063E+03	7.143E-02
1977	1.224E+04	6.688E+06	4.494E+02	3.955E+00	1.104E+03	7.414E-02
1978	1.268E+04	6.928E+06	4.655E+02	4.097E+00	1.143E+03	7.680E-02
1979	1.311E+04	7.162E+06	4.812E+02	4.236E+00	1.182E+03	7.940E-02
1980	1.335E+04	7.293E+06	4.900E+02	4.313E+00	1.203E+03	8.085E-02
1981	1.361E+04	7.434E+06	4.995E+02	4.397E+00	1.227E+03	8.242E-02
1982	1.387E+04	7.577E+06	5.091E+02	4.481E+00	1.250E+03	8.400E-02
1983	1.415E+04	7.729E+06	5.193E+02	4.571E+00	1.275E+03	8.568E-02
1984	1.445E+04	7.893E+06	5.303E+02	4.668E+00	1.302E+03	8.750E-02
1985	1.481E+04	8.093E+06	5.438E+02	4.787E+00	1.335E+03	8.972E-02
1986	1.522E+04	8.316E+06	5.587E+02	4.918E+00	1.372E+03	9.219E-02
1987	1.560E+04	8.522E+06	5.726E+02	5.040E+00	1.406E+03	9.448E-02
1988	1.588E+04	8.673E+06	5.827E+02	5.129E+00	1.431E+03	9.615E-02
1989	1.610E+04	8.796E+06	5.910E+02	5.203E+00	1.451E+03	9.752E-02
1990	1.637E+04	8.944E+06	6.009E+02	5.290E+00	1.476E+03	9.915E-02
1991	1.653E+04	9.032E+06	6.069E+02	5.342E+00	1.490E+03	1.001E-01
1992	1.672E+04	9.132E+06	6.135E+02	5.401E+00	1.507E+03	1.012E-01
1993	1.685E+04	9.208E+06	6.187E+02	5.446E+00	1.519E+03	1.021E-01
1994	1.694E+04	9.252E+06	6.216E+02	5.472E+00	1.527E+03	1.026E-01
1995	1.678E+04	9.169E+06	6.161E+02	5.423E+00	1.513E+03	1.017E-01
1996	1.664E+04	9.090E+06	6.107E+02	5.376E+00	1.500E+03	1.008E-01
1997	1.656E+04	9.046E+06	6.078E+02	5.350E+00	1.493E+03	1.003E-01
1998	1.647E+04	8.997E+06	6.045E+02	5.321E+00	1.485E+03	9.975E-02
1999	1.632E+04	8.914E+06	5.989E+02	5.272E+00	1.471E+03	9.882E-02
2000	1.618E+04	8.838E+06	5.938E+02	5.227E+00	1.458E+03	9.798E-02
2001	1.605E+04	8.769E+06	5.892E+02	5.187E+00	1.447E+03	9.722E-02
2002	1.591E+04	8.691E+06	5.839E+02	5.140E+00	1.434E+03	9.635E-02
2003	1.574E+04	8.597E+06	5.777E+02	5.085E+00	1.419E+03	9.531E-02
2004	1.555E+04	8.496E+06	5.709E+02	5.025E+00	1.402E+03	9.419E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	1.537E+04	8.395E+06	5.641E+02	4.965E+00	1.385E+03	9.307E-02
2006	1.517E+04	8.290E+06	5.570E+02	4.903E+00	1.368E+03	9.191E-02
2007	1.500E+04	8.193E+06	5.505E+02	4.845E+00	1.352E+03	9.083E-02
2008	1.480E+04	8.083E+06	5.431E+02	4.781E+00	1.334E+03	8.961E-02
2009	1.460E+04	7.973E+06	5.357E+02	4.716E+00	1.316E+03	8.840E-02
2010	1.434E+04	7.835E+06	5.264E+02	4.634E+00	1.293E+03	8.686E-02
2011	1.408E+04	7.694E+06	5.170E+02	4.551E+00	1.270E+03	8.530E-02
2012	1.391E+04	7.601E+06	5.107E+02	4.496E+00	1.254E+03	8.427E-02
2013	1.364E+04	7.451E+06	5.006E+02	4.407E+00	1.229E+03	8.260E-02
2014	1.337E+04	7.303E+06	4.907E+02	4.319E+00	1.205E+03	8.096E-02
2015	1.310E+04	7.158E+06	4.810E+02	4.234E+00	1.181E+03	7.936E-02
2016	1.284E+04	7.017E+06	4.715E+02	4.150E+00	1.158E+03	7.779E-02
2017	1.259E+04	6.878E+06	4.621E+02	4.068E+00	1.135E+03	7.625E-02
2018	1.234E+04	6.742E+06	4.530E+02	3.987E+00	1.112E+03	7.474E-02
2019	1.210E+04	6.608E+06	4.440E+02	3.908E+00	1.090E+03	7.326E-02
2020	1.186E+04	6.477E+06	4.352E+02	3.831E+00	1.069E+03	7.181E-02
2021	1.162E+04	6.349E+06	4.266E+02	3.755E+00	1.048E+03	7.039E-02
2022	1.139E+04	6.223E+06	4.181E+02	3.681E+00	1.027E+03	6.899E-02
2023	1.117E+04	6.100E+06	4.099E+02	3.608E+00	1.007E+03	6.763E-02
2024	1.095E+04	5.979E+06	4.017E+02	3.536E+00	9.866E+02	6.629E-02
2025	1.073E+04	5.861E+06	3.938E+02	3.466E+00	9.670E+02	6.498E-02
2026	1.052E+04	5.745E+06	3.860E+02	3.398E+00	9.479E+02	6.369E-02
2027	1.031E+04	5.631E+06	3.783E+02	3.330E+00	9.291E+02	6.243E-02
2028	1.010E+04	5.520E+06	3.709E+02	3.264E+00	9.107E+02	6.119E-02
2029	9.903E+03	5.410E+06	3.635E+02	3.200E+00	8.927E+02	5.998E-02
2030	9.707E+03	5.303E+06	3.563E+02	3.136E+00	8.750E+02	5.879E-02
2031	9.515E+03	5.198E+06	3.493E+02	3.074E+00	8.577E+02	5.763E-02
2032	9.327E+03	5.095E+06	3.423E+02	3.013E+00	8.407E+02	5.649E-02
2033	9.142E+03	4.994E+06	3.356E+02	2.954E+00	8.241E+02	5.537E-02
2034	8.961E+03	4.895E+06	3.289E+02	2.895E+00	8.077E+02	5.427E-02
2035	8.784E+03	4.798E+06	3.224E+02	2.838E+00	7.917E+02	5.320E-02
2036	8.610E+03	4.703E+06	3.160E+02	2.782E+00	7.761E+02	5.214E-02
2037	8.439E+03	4.610E+06	3.098E+02	2.727E+00	7.607E+02	5.111E-02
2038	8.272E+03	4.519E+06	3.036E+02	2.673E+00	7.456E+02	5.010E-02
2039	8.108E+03	4.430E+06	2.976E+02	2.620E+00	7.309E+02	4.911E-02
2040	7.948E+03	4.342E+06	2.917E+02	2.568E+00	7.164E+02	4.813E-02
2041	7.790E+03	4.256E+06	2.860E+02	2.517E+00	7.022E+02	4.718E-02
2042	7.636E+03	4.172E+06	2.803E+02	2.467E+00	6.883E+02	4.625E-02
2043	7.485E+03	4.089E+06	2.747E+02	2.418E+00	6.747E+02	4.533E-02
2044	7.337E+03	4.008E+06	2.693E+02	2.370E+00	6.613E+02	4.443E-02
2045	7.191E+03	3.929E+06	2.640E+02	2.324E+00	6.482E+02	4.355E-02
2046	7.049E+03	3.851E+06	2.587E+02	2.278E+00	6.354E+02	4.269E-02
2047	6.909E+03	3.775E+06	2.536E+02	2.232E+00	6.228E+02	4.185E-02
2048	6.773E+03	3.700E+06	2.486E+02	2.188E+00	6.105E+02	4.102E-02
2049	6.638E+03	3.627E+06	2.437E+02	2.145E+00	5.984E+02	4.021E-02
2050	6.507E+03	3.555E+06	2.388E+02	2.102E+00	5.865E+02	3.941E-02
2051	6.378E+03	3.484E+06	2.341E+02	2.061E+00	5.749E+02	3.863E-02
2052	6.252E+03	3.415E+06	2.295E+02	2.020E+00	5.635E+02	3.786E-02
2053	6.128E+03	3.348E+06	2.249E+02	1.980E+00	5.524E+02	3.711E-02
2054	6.007E+03	3.281E+06	2.205E+02	1.941E+00	5.414E+02	3.638E-02
2055	5.888E+03	3.217E+06	2.161E+02	1.902E+00	5.307E+02	3.566E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2056	5.771E+03	3.153E+06	2.118E+02	1.865E+00	5.202E+02	3.495E-02
2057	5.657E+03	3.090E+06	2.076E+02	1.828E+00	5.099E+02	3.426E-02
2058	5.545E+03	3.029E+06	2.035E+02	1.792E+00	4.998E+02	3.358E-02
2059	5.435E+03	2.969E+06	1.995E+02	1.756E+00	4.899E+02	3.292E-02
2060	5.328E+03	2.910E+06	1.956E+02	1.721E+00	4.802E+02	3.227E-02
2061	5.222E+03	2.853E+06	1.917E+02	1.687E+00	4.707E+02	3.163E-02
2062	5.119E+03	2.796E+06	1.879E+02	1.654E+00	4.614E+02	3.100E-02
2063	5.017E+03	2.741E+06	1.842E+02	1.621E+00	4.523E+02	3.039E-02
2064	4.918E+03	2.687E+06	1.805E+02	1.589E+00	4.433E+02	2.979E-02
2065	4.821E+03	2.633E+06	1.769E+02	1.558E+00	4.345E+02	2.920E-02
2066	4.725E+03	2.581E+06	1.734E+02	1.527E+00	4.259E+02	2.862E-02
2067	4.632E+03	2.530E+06	1.700E+02	1.496E+00	4.175E+02	2.805E-02
2068	4.540E+03	2.480E+06	1.666E+02	1.467E+00	4.092E+02	2.750E-02
2069	4.450E+03	2.431E+06	1.633E+02	1.438E+00	4.011E+02	2.695E-02
2070	4.362E+03	2.383E+06	1.601E+02	1.409E+00	3.932E+02	2.642E-02
2071	4.275E+03	2.336E+06	1.569E+02	1.381E+00	3.854E+02	2.589E-02
2072	4.191E+03	2.289E+06	1.538E+02	1.354E+00	3.778E+02	2.538E-02
2073	4.108E+03	2.244E+06	1.508E+02	1.327E+00	3.703E+02	2.488E-02
2074	4.026E+03	2.200E+06	1.478E+02	1.301E+00	3.629E+02	2.439E-02
2075	3.947E+03	2.156E+06	1.449E+02	1.275E+00	3.558E+02	2.390E-02
2076	3.869E+03	2.113E+06	1.420E+02	1.250E+00	3.487E+02	2.343E-02
2077	3.792E+03	2.072E+06	1.392E+02	1.225E+00	3.418E+02	2.297E-02
2078	3.717E+03	2.031E+06	1.364E+02	1.201E+00	3.350E+02	2.251E-02
2079	3.643E+03	1.990E+06	1.337E+02	1.177E+00	3.284E+02	2.207E-02
2080	3.571E+03	1.951E+06	1.311E+02	1.154E+00	3.219E+02	2.163E-02
2081	3.500E+03	1.912E+06	1.285E+02	1.131E+00	3.155E+02	2.120E-02
2082	3.431E+03	1.874E+06	1.259E+02	1.109E+00	3.093E+02	2.078E-02
2083	3.363E+03	1.837E+06	1.234E+02	1.087E+00	3.032E+02	2.037E-02
2084	3.297E+03	1.801E+06	1.210E+02	1.065E+00	2.972E+02	1.997E-02
2085	3.231E+03	1.765E+06	1.186E+02	1.044E+00	2.913E+02	1.957E-02
2086	3.167E+03	1.730E+06	1.163E+02	1.023E+00	2.855E+02	1.918E-02
2087	3.105E+03	1.696E+06	1.140E+02	1.003E+00	2.798E+02	1.880E-02
2088	3.043E+03	1.662E+06	1.117E+02	9.832E-01	2.743E+02	1.843E-02
2089	2.983E+03	1.630E+06	1.095E+02	9.638E-01	2.689E+02	1.807E-02
2090	2.924E+03	1.597E+06	1.073E+02	9.447E-01	2.635E+02	1.771E-02
2091	2.866E+03	1.566E+06	1.052E+02	9.260E-01	2.583E+02	1.736E-02
2092	2.809E+03	1.535E+06	1.031E+02	9.076E-01	2.532E+02	1.701E-02
2093	2.754E+03	1.504E+06	1.011E+02	8.897E-01	2.482E+02	1.668E-02
2094	2.699E+03	1.474E+06	9.907E+01	8.721E-01	2.433E+02	1.635E-02
2095	2.646E+03	1.445E+06	9.711E+01	8.548E-01	2.385E+02	1.602E-02



Summary Report

Landfill Name or Identifier: Palo Alto Landfill - January 2019 NMOC Data

Date: Monday, July 29, 2019

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1955	
Landfill Closure Year (with 80-year limit)	2011	
Actual Closure Year (without limit)	2011	
Have Model Calculate Closure Year?	No	
Waste Design Capacity		<i>megagrams</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	170	<i>m³/Mg</i>
NMOC Concentration	82	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1955	110,408	121,449	0	0
1956	110,408	121,449	110,408	121,449
1957	110,408	121,449	220,816	242,898
1958	110,408	121,449	331,225	364,347
1959	110,408	121,449	441,633	485,796
1960	110,408	121,449	552,041	607,245
1961	110,408	121,449	662,449	728,694
1962	110,408	121,449	772,857	850,143
1963	110,408	121,449	883,265	971,592
1964	110,408	121,449	993,674	1,093,041
1965	110,408	121,449	1,104,082	1,214,490
1966	110,408	121,449	1,214,490	1,335,939
1967	110,408	121,449	1,324,898	1,457,388
1968	110,408	121,449	1,435,306	1,578,837
1969	110,408	121,449	1,545,715	1,700,286
1970	110,408	121,449	1,656,123	1,821,735
1971	110,408	121,449	1,766,531	1,943,184
1972	110,408	121,449	1,876,939	2,064,633
1973	110,408	121,449	1,987,347	2,186,082
1974	110,408	121,449	2,097,755	2,307,531
1975	110,408	121,449	2,208,164	2,428,980
1976	110,408	121,449	2,318,572	2,550,429
1977	110,408	121,449	2,428,980	2,671,878
1978	110,408	121,449	2,539,388	2,793,327
1979	80,784	88,862	2,649,796	2,914,776
1980	84,809	93,290	2,730,580	3,003,638
1981	86,155	94,771	2,815,389	3,096,928
1982	89,491	98,440	2,901,545	3,191,699
1983	94,047	103,452	2,991,035	3,290,139
1984	105,866	116,453	3,085,083	3,393,591
1985	113,622	124,984	3,190,949	3,510,044
1986	110,130	121,143	3,304,571	3,635,028
1987	94,748	104,223	3,414,701	3,756,171
1988	87,713	96,484	3,509,449	3,860,394
1989	95,408	104,949	3,597,162	3,956,878
1990	78,794	86,673	3,692,570	4,061,827
1991	82,578	90,836	3,771,364	4,148,500
1992	76,309	83,940	3,853,942	4,239,336
1993	67,201	73,921	3,930,251	4,323,276
1994	29,856	32,842	3,997,452	4,397,197

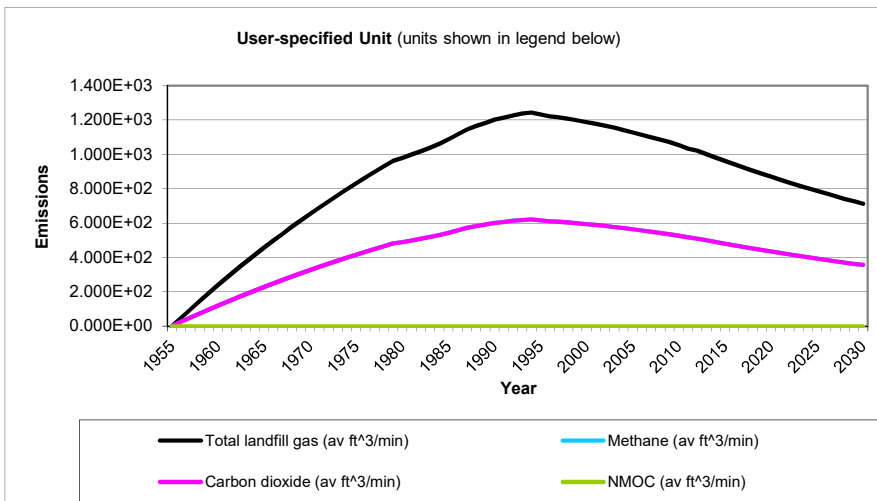
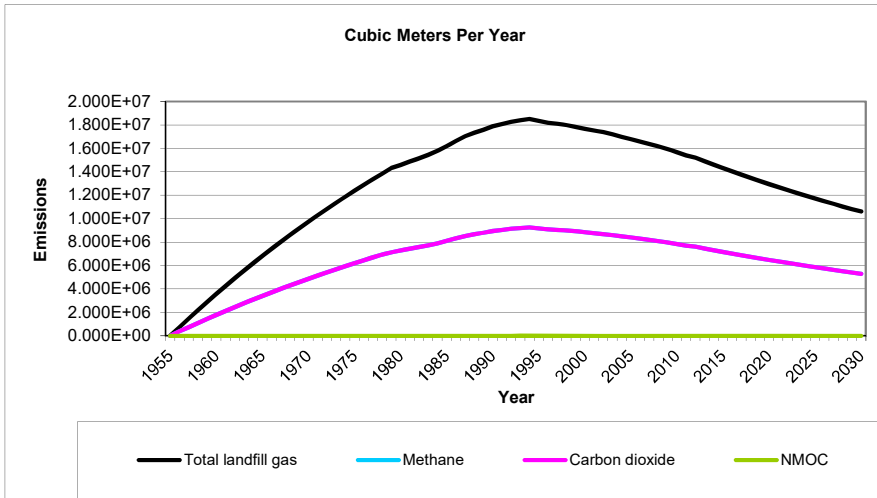
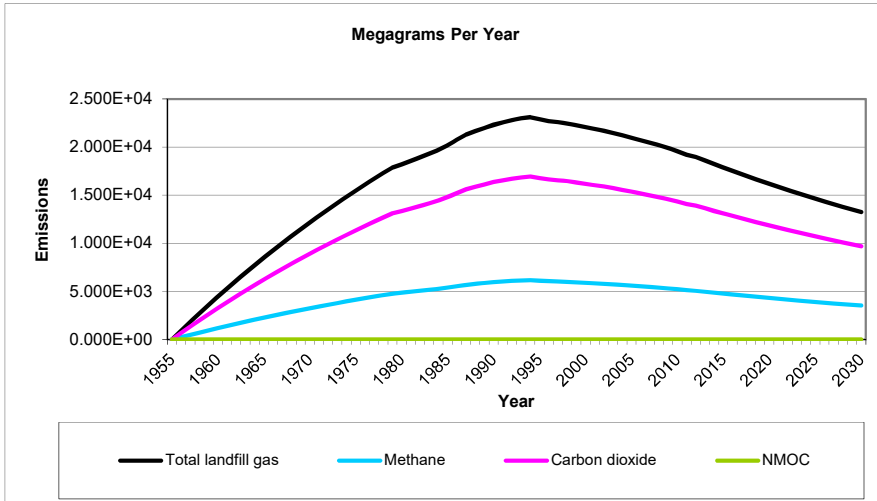
WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1995	30,203	33,223	4,027,308	4,430,039
1996	40,439	44,483	4,057,511	4,463,262
1997	38,703	42,573	4,097,950	4,507,745
1998	28,165	30,982	4,136,653	4,550,318
1999	29,949	32,944	4,164,818	4,581,300
2000	31,485	34,634	4,194,767	4,614,244
2001	28,170	30,987	4,226,253	4,648,878
2002	23,421	25,763	4,254,423	4,679,865
2003	20,502	22,552	4,277,844	4,705,628
2004	19,873	21,860	4,298,345	4,728,180
2005	18,173	19,990	4,318,218	4,750,040
2006	19,802	21,782	4,336,391	4,770,030
2007	15,601	17,161	4,356,193	4,791,812
2008	14,980	16,478	4,371,794	4,808,973
2009	5,821	6,403	4,386,774	4,825,451
2010	4,285	4,714	4,392,595	4,831,854
2011	17,530	19,283	4,396,880	4,836,568
2012	0	0	4,414,410	4,855,851
2013	0	0	4,414,410	4,855,851
2014	0	0	4,414,410	4,855,851
2015	0	0	4,414,410	4,855,851
2016	0	0	4,414,410	4,855,851
2017	0	0	4,414,410	4,855,851
2018	0	0	4,414,410	4,855,851
2019	0	0	4,414,410	4,855,851
2020	0	0	4,414,410	4,855,851
2021	0	0	4,414,410	4,855,851
2022	0	0	4,414,410	4,855,851
2023	0	0	4,414,410	4,855,851
2024	0	0	4,414,410	4,855,851
2025	0	0	4,414,410	4,855,851
2026	0	0	4,414,410	4,855,851
2027	0	0	4,414,410	4,855,851
2028	0	0	4,414,410	4,855,851
2029	0	0	4,414,410	4,855,851
2030	0	0	4,414,410	4,855,851
2031	0	0	4,414,410	4,855,851
2032	0	0	4,414,410	4,855,851
2033	0	0	4,414,410	4,855,851
2034	0	0	4,414,410	4,855,851

Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,1,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

Graphs



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1955	0	0	0	0	0	0
1956	9.292E+02	7.441E+05	4.999E+01	2.482E+02	3.720E+05	2.500E+01
1957	1.840E+03	1.473E+06	9.900E+01	4.915E+02	7.367E+05	4.950E+01
1958	2.733E+03	2.188E+06	1.470E+02	7.300E+02	1.094E+06	7.351E+01
1959	3.608E+03	2.889E+06	1.941E+02	9.637E+02	1.445E+06	9.706E+01
1960	4.466E+03	3.576E+06	2.403E+02	1.193E+03	1.788E+06	1.201E+02
1961	5.306E+03	4.249E+06	2.855E+02	1.417E+03	2.125E+06	1.427E+02
1962	6.131E+03	4.909E+06	3.298E+02	1.638E+03	2.455E+06	1.649E+02
1963	6.938E+03	5.556E+06	3.733E+02	1.853E+03	2.778E+06	1.866E+02
1964	7.730E+03	6.190E+06	4.159E+02	2.065E+03	3.095E+06	2.080E+02
1965	8.506E+03	6.811E+06	4.577E+02	2.272E+03	3.406E+06	2.288E+02
1966	9.267E+03	7.421E+06	4.986E+02	2.475E+03	3.710E+06	2.493E+02
1967	1.001E+04	8.018E+06	5.387E+02	2.675E+03	4.009E+06	2.694E+02
1968	1.074E+04	8.603E+06	5.780E+02	2.870E+03	4.302E+06	2.890E+02
1969	1.146E+04	9.177E+06	6.166E+02	3.061E+03	4.588E+06	3.083E+02
1970	1.216E+04	9.739E+06	6.544E+02	3.249E+03	4.870E+06	3.272E+02
1971	1.285E+04	1.029E+07	6.914E+02	3.433E+03	5.145E+06	3.457E+02
1972	1.353E+04	1.083E+07	7.277E+02	3.613E+03	5.415E+06	3.639E+02
1973	1.419E+04	1.136E+07	7.633E+02	3.789E+03	5.680E+06	3.816E+02
1974	1.484E+04	1.188E+07	7.982E+02	3.963E+03	5.940E+06	3.991E+02
1975	1.547E+04	1.239E+07	8.324E+02	4.132E+03	6.194E+06	4.162E+02
1976	1.609E+04	1.289E+07	8.659E+02	4.299E+03	6.443E+06	4.329E+02
1977	1.670E+04	1.338E+07	8.987E+02	4.462E+03	6.688E+06	4.494E+02
1978	1.730E+04	1.386E+07	9.309E+02	4.622E+03	6.928E+06	4.655E+02
1979	1.789E+04	1.432E+07	9.625E+02	4.778E+03	7.162E+06	4.812E+02
1980	1.821E+04	1.459E+07	9.800E+02	4.865E+03	7.293E+06	4.900E+02
1981	1.857E+04	1.487E+07	9.990E+02	4.960E+03	7.434E+06	4.995E+02
1982	1.893E+04	1.515E+07	1.018E+03	5.055E+03	7.577E+06	5.091E+02
1983	1.930E+04	1.546E+07	1.039E+03	5.156E+03	7.729E+06	5.193E+02
1984	1.971E+04	1.579E+07	1.061E+03	5.266E+03	7.893E+06	5.303E+02
1985	2.021E+04	1.619E+07	1.088E+03	5.399E+03	8.093E+06	5.438E+02
1986	2.077E+04	1.663E+07	1.117E+03	5.548E+03	8.316E+06	5.587E+02
1987	2.129E+04	1.704E+07	1.145E+03	5.685E+03	8.522E+06	5.726E+02
1988	2.166E+04	1.735E+07	1.165E+03	5.786E+03	8.673E+06	5.827E+02
1989	2.197E+04	1.759E+07	1.182E+03	5.869E+03	8.796E+06	5.910E+02
1990	2.234E+04	1.789E+07	1.202E+03	5.967E+03	8.944E+06	6.009E+02
1991	2.256E+04	1.806E+07	1.214E+03	6.026E+03	9.032E+06	6.069E+02
1992	2.281E+04	1.826E+07	1.227E+03	6.092E+03	9.132E+06	6.135E+02
1993	2.300E+04	1.842E+07	1.237E+03	6.143E+03	9.208E+06	6.187E+02
1994	2.311E+04	1.850E+07	1.243E+03	6.172E+03	9.252E+06	6.216E+02
1995	2.290E+04	1.834E+07	1.232E+03	6.117E+03	9.169E+06	6.161E+02
1996	2.270E+04	1.818E+07	1.221E+03	6.064E+03	9.090E+06	6.107E+02
1997	2.259E+04	1.809E+07	1.216E+03	6.035E+03	9.046E+06	6.078E+02
1998	2.247E+04	1.799E+07	1.209E+03	6.002E+03	8.997E+06	6.045E+02
1999	2.226E+04	1.783E+07	1.198E+03	5.947E+03	8.914E+06	5.989E+02
2000	2.207E+04	1.768E+07	1.188E+03	5.896E+03	8.838E+06	5.938E+02
2001	2.190E+04	1.754E+07	1.178E+03	5.850E+03	8.769E+06	5.892E+02
2002	2.171E+04	1.738E+07	1.168E+03	5.798E+03	8.691E+06	5.839E+02
2003	2.147E+04	1.719E+07	1.155E+03	5.736E+03	8.597E+06	5.777E+02
2004	2.122E+04	1.699E+07	1.142E+03	5.668E+03	8.496E+06	5.709E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	2.097E+04	1.679E+07	1.128E+03	5.601E+03	8.395E+06	5.641E+02
2006	2.071E+04	1.658E+07	1.114E+03	5.531E+03	8.290E+06	5.570E+02
2007	2.046E+04	1.639E+07	1.101E+03	5.466E+03	8.193E+06	5.505E+02
2008	2.019E+04	1.617E+07	1.086E+03	5.393E+03	8.083E+06	5.431E+02
2009	1.991E+04	1.595E+07	1.071E+03	5.319E+03	7.973E+06	5.357E+02
2010	1.957E+04	1.567E+07	1.053E+03	5.227E+03	7.835E+06	5.264E+02
2011	1.922E+04	1.539E+07	1.034E+03	5.133E+03	7.694E+06	5.170E+02
2012	1.898E+04	1.520E+07	1.021E+03	5.071E+03	7.601E+06	5.107E+02
2013	1.861E+04	1.490E+07	1.001E+03	4.971E+03	7.451E+06	5.006E+02
2014	1.824E+04	1.461E+07	9.814E+02	4.872E+03	7.303E+06	4.907E+02
2015	1.788E+04	1.432E+07	9.620E+02	4.776E+03	7.158E+06	4.810E+02
2016	1.753E+04	1.403E+07	9.429E+02	4.681E+03	7.017E+06	4.715E+02
2017	1.718E+04	1.376E+07	9.242E+02	4.589E+03	6.878E+06	4.621E+02
2018	1.684E+04	1.348E+07	9.059E+02	4.498E+03	6.742E+06	4.530E+02
2019	1.650E+04	1.322E+07	8.880E+02	4.409E+03	6.608E+06	4.440E+02
2020	1.618E+04	1.295E+07	8.704E+02	4.321E+03	6.477E+06	4.352E+02
2021	1.586E+04	1.270E+07	8.532E+02	4.236E+03	6.349E+06	4.266E+02
2022	1.554E+04	1.245E+07	8.363E+02	4.152E+03	6.223E+06	4.181E+02
2023	1.524E+04	1.220E+07	8.197E+02	4.070E+03	6.100E+06	4.099E+02
2024	1.493E+04	1.196E+07	8.035E+02	3.989E+03	5.979E+06	4.017E+02
2025	1.464E+04	1.172E+07	7.876E+02	3.910E+03	5.861E+06	3.938E+02
2026	1.435E+04	1.149E+07	7.720E+02	3.833E+03	5.745E+06	3.860E+02
2027	1.406E+04	1.126E+07	7.567E+02	3.757E+03	5.631E+06	3.783E+02
2028	1.379E+04	1.104E+07	7.417E+02	3.682E+03	5.520E+06	3.709E+02
2029	1.351E+04	1.082E+07	7.270E+02	3.609E+03	5.410E+06	3.635E+02
2030	1.325E+04	1.061E+07	7.126E+02	3.538E+03	5.303E+06	3.563E+02
2031	1.298E+04	1.040E+07	6.985E+02	3.468E+03	5.198E+06	3.493E+02
2032	1.273E+04	1.019E+07	6.847E+02	3.399E+03	5.095E+06	3.423E+02
2033	1.247E+04	9.989E+06	6.711E+02	3.332E+03	4.994E+06	3.356E+02
2034	1.223E+04	9.791E+06	6.578E+02	3.266E+03	4.895E+06	3.289E+02
2035	1.198E+04	9.597E+06	6.448E+02	3.201E+03	4.798E+06	3.224E+02
2036	1.175E+04	9.407E+06	6.320E+02	3.138E+03	4.703E+06	3.160E+02
2037	1.151E+04	9.221E+06	6.195E+02	3.076E+03	4.610E+06	3.098E+02
2038	1.129E+04	9.038E+06	6.073E+02	3.015E+03	4.519E+06	3.036E+02
2039	1.106E+04	8.859E+06	5.952E+02	2.955E+03	4.430E+06	2.976E+02
2040	1.084E+04	8.684E+06	5.835E+02	2.897E+03	4.342E+06	2.917E+02
2041	1.063E+04	8.512E+06	5.719E+02	2.839E+03	4.256E+06	2.860E+02
2042	1.042E+04	8.343E+06	5.606E+02	2.783E+03	4.172E+06	2.803E+02
2043	1.021E+04	8.178E+06	5.495E+02	2.728E+03	4.089E+06	2.747E+02
2044	1.001E+04	8.016E+06	5.386E+02	2.674E+03	4.008E+06	2.693E+02
2045	9.812E+03	7.857E+06	5.279E+02	2.621E+03	3.929E+06	2.640E+02
2046	9.618E+03	7.702E+06	5.175E+02	2.569E+03	3.851E+06	2.587E+02
2047	9.428E+03	7.549E+06	5.072E+02	2.518E+03	3.775E+06	2.536E+02
2048	9.241E+03	7.400E+06	4.972E+02	2.468E+03	3.700E+06	2.486E+02
2049	9.058E+03	7.253E+06	4.873E+02	2.419E+03	3.627E+06	2.437E+02
2050	8.879E+03	7.110E+06	4.777E+02	2.372E+03	3.555E+06	2.388E+02
2051	8.703E+03	6.969E+06	4.682E+02	2.325E+03	3.484E+06	2.341E+02
2052	8.530E+03	6.831E+06	4.590E+02	2.279E+03	3.415E+06	2.295E+02
2053	8.362E+03	6.696E+06	4.499E+02	2.233E+03	3.348E+06	2.249E+02
2054	8.196E+03	6.563E+06	4.410E+02	2.189E+03	3.281E+06	2.205E+02
2055	8.034E+03	6.433E+06	4.322E+02	2.146E+03	3.217E+06	2.161E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2056	7.875E+03	6.306E+06	4.237E+02	2.103E+03	3.153E+06	2.118E+02
2057	7.719E+03	6.181E+06	4.153E+02	2.062E+03	3.090E+06	2.076E+02
2058	7.566E+03	6.058E+06	4.071E+02	2.021E+03	3.029E+06	2.035E+02
2059	7.416E+03	5.938E+06	3.990E+02	1.981E+03	2.969E+06	1.995E+02
2060	7.269E+03	5.821E+06	3.911E+02	1.942E+03	2.910E+06	1.956E+02
2061	7.125E+03	5.706E+06	3.834E+02	1.903E+03	2.853E+06	1.917E+02
2062	6.984E+03	5.593E+06	3.758E+02	1.866E+03	2.796E+06	1.879E+02
2063	6.846E+03	5.482E+06	3.683E+02	1.829E+03	2.741E+06	1.842E+02
2064	6.710E+03	5.373E+06	3.610E+02	1.792E+03	2.687E+06	1.805E+02
2065	6.577E+03	5.267E+06	3.539E+02	1.757E+03	2.633E+06	1.769E+02
2066	6.447E+03	5.163E+06	3.469E+02	1.722E+03	2.581E+06	1.734E+02
2067	6.320E+03	5.060E+06	3.400E+02	1.688E+03	2.530E+06	1.700E+02
2068	6.194E+03	4.960E+06	3.333E+02	1.655E+03	2.480E+06	1.666E+02
2069	6.072E+03	4.862E+06	3.267E+02	1.622E+03	2.431E+06	1.633E+02
2070	5.952E+03	4.766E+06	3.202E+02	1.590E+03	2.383E+06	1.601E+02
2071	5.834E+03	4.671E+06	3.139E+02	1.558E+03	2.336E+06	1.569E+02
2072	5.718E+03	4.579E+06	3.077E+02	1.527E+03	2.289E+06	1.538E+02
2073	5.605E+03	4.488E+06	3.016E+02	1.497E+03	2.244E+06	1.508E+02
2074	5.494E+03	4.399E+06	2.956E+02	1.467E+03	2.200E+06	1.478E+02
2075	5.385E+03	4.312E+06	2.897E+02	1.438E+03	2.156E+06	1.449E+02
2076	5.279E+03	4.227E+06	2.840E+02	1.410E+03	2.113E+06	1.420E+02
2077	5.174E+03	4.143E+06	2.784E+02	1.382E+03	2.072E+06	1.392E+02
2078	5.072E+03	4.061E+06	2.729E+02	1.355E+03	2.031E+06	1.364E+02
2079	4.971E+03	3.981E+06	2.675E+02	1.328E+03	1.990E+06	1.337E+02
2080	4.873E+03	3.902E+06	2.622E+02	1.302E+03	1.951E+06	1.311E+02
2081	4.776E+03	3.825E+06	2.570E+02	1.276E+03	1.912E+06	1.285E+02
2082	4.682E+03	3.749E+06	2.519E+02	1.251E+03	1.874E+06	1.259E+02
2083	4.589E+03	3.675E+06	2.469E+02	1.226E+03	1.837E+06	1.234E+02
2084	4.498E+03	3.602E+06	2.420E+02	1.201E+03	1.801E+06	1.210E+02
2085	4.409E+03	3.531E+06	2.372E+02	1.178E+03	1.765E+06	1.186E+02
2086	4.322E+03	3.461E+06	2.325E+02	1.154E+03	1.730E+06	1.163E+02
2087	4.236E+03	3.392E+06	2.279E+02	1.132E+03	1.696E+06	1.140E+02
2088	4.152E+03	3.325E+06	2.234E+02	1.109E+03	1.662E+06	1.117E+02
2089	4.070E+03	3.259E+06	2.190E+02	1.087E+03	1.630E+06	1.095E+02
2090	3.989E+03	3.195E+06	2.146E+02	1.066E+03	1.597E+06	1.073E+02
2091	3.910E+03	3.131E+06	2.104E+02	1.045E+03	1.566E+06	1.052E+02
2092	3.833E+03	3.069E+06	2.062E+02	1.024E+03	1.535E+06	1.031E+02
2093	3.757E+03	3.009E+06	2.021E+02	1.004E+03	1.504E+06	1.011E+02
2094	3.683E+03	2.949E+06	1.981E+02	9.837E+02	1.474E+06	9.907E+01
2095	3.610E+03	2.891E+06	1.942E+02	9.642E+02	1.445E+06	9.711E+01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1955	0	0	0	0	0	0
1956	6.810E+02	3.720E+05	2.500E+01	2.192E-01	6.114E+01	4.108E-03
1957	1.349E+03	7.367E+05	4.950E+01	4.340E-01	1.211E+02	8.135E-03
1958	2.003E+03	1.094E+06	7.351E+01	6.445E-01	1.798E+02	1.208E-02
1959	2.644E+03	1.445E+06	9.706E+01	8.509E-01	2.374E+02	1.595E-02
1960	3.273E+03	1.788E+06	1.201E+02	1.053E+00	2.938E+02	1.974E-02
1961	3.889E+03	2.125E+06	1.427E+02	1.252E+00	3.491E+02	2.346E-02
1962	4.493E+03	2.455E+06	1.649E+02	1.446E+00	4.034E+02	2.710E-02
1963	5.085E+03	2.778E+06	1.866E+02	1.636E+00	4.565E+02	3.067E-02
1964	5.665E+03	3.095E+06	2.080E+02	1.823E+00	5.086E+02	3.417E-02
1965	6.234E+03	3.406E+06	2.288E+02	2.006E+00	5.597E+02	3.761E-02
1966	6.792E+03	3.710E+06	2.493E+02	2.186E+00	6.098E+02	4.097E-02
1967	7.338E+03	4.009E+06	2.694E+02	2.362E+00	6.588E+02	4.427E-02
1968	7.874E+03	4.302E+06	2.890E+02	2.534E+00	7.069E+02	4.750E-02
1969	8.399E+03	4.588E+06	3.083E+02	2.703E+00	7.541E+02	5.066E-02
1970	8.914E+03	4.870E+06	3.272E+02	2.869E+00	8.003E+02	5.377E-02
1971	9.418E+03	5.145E+06	3.457E+02	3.031E+00	8.456E+02	5.681E-02
1972	9.913E+03	5.415E+06	3.639E+02	3.190E+00	8.900E+02	5.980E-02
1973	1.040E+04	5.680E+06	3.816E+02	3.346E+00	9.335E+02	6.272E-02
1974	1.087E+04	5.940E+06	3.991E+02	3.499E+00	9.761E+02	6.559E-02
1975	1.134E+04	6.194E+06	4.162E+02	3.649E+00	1.018E+03	6.839E-02
1976	1.179E+04	6.443E+06	4.329E+02	3.796E+00	1.059E+03	7.115E-02
1977	1.224E+04	6.688E+06	4.494E+02	3.940E+00	1.099E+03	7.385E-02
1978	1.268E+04	6.928E+06	4.655E+02	4.081E+00	1.138E+03	7.649E-02
1979	1.311E+04	7.162E+06	4.812E+02	4.219E+00	1.177E+03	7.909E-02
1980	1.335E+04	7.293E+06	4.900E+02	4.296E+00	1.198E+03	8.053E-02
1981	1.361E+04	7.434E+06	4.995E+02	4.379E+00	1.222E+03	8.209E-02
1982	1.387E+04	7.577E+06	5.091E+02	4.464E+00	1.245E+03	8.367E-02
1983	1.415E+04	7.729E+06	5.193E+02	4.553E+00	1.270E+03	8.534E-02
1984	1.445E+04	7.893E+06	5.303E+02	4.649E+00	1.297E+03	8.715E-02
1985	1.481E+04	8.093E+06	5.438E+02	4.767E+00	1.330E+03	8.936E-02
1986	1.522E+04	8.316E+06	5.587E+02	4.899E+00	1.367E+03	9.182E-02
1987	1.560E+04	8.522E+06	5.726E+02	5.020E+00	1.401E+03	9.410E-02
1988	1.588E+04	8.673E+06	5.827E+02	5.109E+00	1.425E+03	9.576E-02
1989	1.610E+04	8.796E+06	5.910E+02	5.182E+00	1.446E+03	9.713E-02
1990	1.637E+04	8.944E+06	6.009E+02	5.268E+00	1.470E+03	9.876E-02
1991	1.653E+04	9.032E+06	6.069E+02	5.321E+00	1.484E+03	9.973E-02
1992	1.672E+04	9.132E+06	6.135E+02	5.379E+00	1.501E+03	1.008E-01
1993	1.685E+04	9.208E+06	6.187E+02	5.424E+00	1.513E+03	1.017E-01
1994	1.694E+04	9.252E+06	6.216E+02	5.450E+00	1.520E+03	1.022E-01
1995	1.678E+04	9.169E+06	6.161E+02	5.401E+00	1.507E+03	1.012E-01
1996	1.664E+04	9.090E+06	6.107E+02	5.354E+00	1.494E+03	1.004E-01
1997	1.656E+04	9.046E+06	6.078E+02	5.329E+00	1.487E+03	9.988E-02
1998	1.647E+04	8.997E+06	6.045E+02	5.300E+00	1.479E+03	9.935E-02
1999	1.632E+04	8.914E+06	5.989E+02	5.251E+00	1.465E+03	9.843E-02
2000	1.618E+04	8.838E+06	5.938E+02	5.206E+00	1.452E+03	9.759E-02
2001	1.605E+04	8.769E+06	5.892E+02	5.166E+00	1.441E+03	9.683E-02
2002	1.591E+04	8.691E+06	5.839E+02	5.119E+00	1.428E+03	9.596E-02
2003	1.574E+04	8.597E+06	5.777E+02	5.065E+00	1.413E+03	9.493E-02
2004	1.555E+04	8.496E+06	5.709E+02	5.005E+00	1.396E+03	9.382E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	1.537E+04	8.395E+06	5.641E+02	4.945E+00	1.380E+03	9.270E-02
2006	1.517E+04	8.290E+06	5.570E+02	4.883E+00	1.362E+03	9.154E-02
2007	1.500E+04	8.193E+06	5.505E+02	4.826E+00	1.346E+03	9.046E-02
2008	1.480E+04	8.083E+06	5.431E+02	4.761E+00	1.328E+03	8.925E-02
2009	1.460E+04	7.973E+06	5.357E+02	4.697E+00	1.310E+03	8.804E-02
2010	1.434E+04	7.835E+06	5.264E+02	4.615E+00	1.288E+03	8.652E-02
2011	1.408E+04	7.694E+06	5.170E+02	4.533E+00	1.265E+03	8.496E-02
2012	1.391E+04	7.601E+06	5.107E+02	4.478E+00	1.249E+03	8.393E-02
2013	1.364E+04	7.451E+06	5.006E+02	4.389E+00	1.224E+03	8.227E-02
2014	1.337E+04	7.303E+06	4.907E+02	4.302E+00	1.200E+03	8.064E-02
2015	1.310E+04	7.158E+06	4.810E+02	4.217E+00	1.176E+03	7.904E-02
2016	1.284E+04	7.017E+06	4.715E+02	4.133E+00	1.153E+03	7.748E-02
2017	1.259E+04	6.878E+06	4.621E+02	4.052E+00	1.130E+03	7.594E-02
2018	1.234E+04	6.742E+06	4.530E+02	3.971E+00	1.108E+03	7.444E-02
2019	1.210E+04	6.608E+06	4.440E+02	3.893E+00	1.086E+03	7.297E-02
2020	1.186E+04	6.477E+06	4.352E+02	3.816E+00	1.064E+03	7.152E-02
2021	1.162E+04	6.349E+06	4.266E+02	3.740E+00	1.043E+03	7.011E-02
2022	1.139E+04	6.223E+06	4.181E+02	3.666E+00	1.023E+03	6.872E-02
2023	1.117E+04	6.100E+06	4.099E+02	3.593E+00	1.002E+03	6.736E-02
2024	1.095E+04	5.979E+06	4.017E+02	3.522E+00	9.826E+02	6.602E-02
2025	1.073E+04	5.861E+06	3.938E+02	3.452E+00	9.632E+02	6.472E-02
2026	1.052E+04	5.745E+06	3.860E+02	3.384E+00	9.441E+02	6.343E-02
2027	1.031E+04	5.631E+06	3.783E+02	3.317E+00	9.254E+02	6.218E-02
2028	1.010E+04	5.520E+06	3.709E+02	3.251E+00	9.071E+02	6.095E-02
2029	9.903E+03	5.410E+06	3.635E+02	3.187E+00	8.891E+02	5.974E-02
2030	9.707E+03	5.303E+06	3.563E+02	3.124E+00	8.715E+02	5.856E-02
2031	9.515E+03	5.198E+06	3.493E+02	3.062E+00	8.543E+02	5.740E-02
2032	9.327E+03	5.095E+06	3.423E+02	3.001E+00	8.373E+02	5.626E-02
2033	9.142E+03	4.994E+06	3.356E+02	2.942E+00	8.208E+02	5.515E-02
2034	8.961E+03	4.895E+06	3.289E+02	2.884E+00	8.045E+02	5.405E-02
2035	8.784E+03	4.798E+06	3.224E+02	2.827E+00	7.886E+02	5.298E-02
2036	8.610E+03	4.703E+06	3.160E+02	2.771E+00	7.730E+02	5.194E-02
2037	8.439E+03	4.610E+06	3.098E+02	2.716E+00	7.577E+02	5.091E-02
2038	8.272E+03	4.519E+06	3.036E+02	2.662E+00	7.427E+02	4.990E-02
2039	8.108E+03	4.430E+06	2.976E+02	2.609E+00	7.280E+02	4.891E-02
2040	7.948E+03	4.342E+06	2.917E+02	2.558E+00	7.135E+02	4.794E-02
2041	7.790E+03	4.256E+06	2.860E+02	2.507E+00	6.994E+02	4.699E-02
2042	7.636E+03	4.172E+06	2.803E+02	2.457E+00	6.856E+02	4.606E-02
2043	7.485E+03	4.089E+06	2.747E+02	2.409E+00	6.720E+02	4.515E-02
2044	7.337E+03	4.008E+06	2.693E+02	2.361E+00	6.587E+02	4.426E-02
2045	7.191E+03	3.929E+06	2.640E+02	2.314E+00	6.456E+02	4.338E-02
2046	7.049E+03	3.851E+06	2.587E+02	2.268E+00	6.329E+02	4.252E-02
2047	6.909E+03	3.775E+06	2.536E+02	2.224E+00	6.203E+02	4.168E-02
2048	6.773E+03	3.700E+06	2.486E+02	2.179E+00	6.080E+02	4.085E-02
2049	6.638E+03	3.627E+06	2.437E+02	2.136E+00	5.960E+02	4.004E-02
2050	6.507E+03	3.555E+06	2.388E+02	2.094E+00	5.842E+02	3.925E-02
2051	6.378E+03	3.484E+06	2.341E+02	2.053E+00	5.726E+02	3.847E-02
2052	6.252E+03	3.415E+06	2.295E+02	2.012E+00	5.613E+02	3.771E-02
2053	6.128E+03	3.348E+06	2.249E+02	1.972E+00	5.502E+02	3.697E-02
2054	6.007E+03	3.281E+06	2.205E+02	1.933E+00	5.393E+02	3.623E-02
2055	5.888E+03	3.217E+06	2.161E+02	1.895E+00	5.286E+02	3.552E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2056	5.771E+03	3.153E+06	2.118E+02	1.857E+00	5.181E+02	3.481E-02
2057	5.657E+03	3.090E+06	2.076E+02	1.820E+00	5.079E+02	3.412E-02
2058	5.545E+03	3.029E+06	2.035E+02	1.784E+00	4.978E+02	3.345E-02
2059	5.435E+03	2.969E+06	1.995E+02	1.749E+00	4.880E+02	3.279E-02
2060	5.328E+03	2.910E+06	1.956E+02	1.714E+00	4.783E+02	3.214E-02
2061	5.222E+03	2.853E+06	1.917E+02	1.680E+00	4.688E+02	3.150E-02
2062	5.119E+03	2.796E+06	1.879E+02	1.647E+00	4.595E+02	3.088E-02
2063	5.017E+03	2.741E+06	1.842E+02	1.615E+00	4.504E+02	3.027E-02
2064	4.918E+03	2.687E+06	1.805E+02	1.583E+00	4.415E+02	2.967E-02
2065	4.821E+03	2.633E+06	1.769E+02	1.551E+00	4.328E+02	2.908E-02
2066	4.725E+03	2.581E+06	1.734E+02	1.521E+00	4.242E+02	2.850E-02
2067	4.632E+03	2.530E+06	1.700E+02	1.490E+00	4.158E+02	2.794E-02
2068	4.540E+03	2.480E+06	1.666E+02	1.461E+00	4.076E+02	2.739E-02
2069	4.450E+03	2.431E+06	1.633E+02	1.432E+00	3.995E+02	2.684E-02
2070	4.362E+03	2.383E+06	1.601E+02	1.404E+00	3.916E+02	2.631E-02
2071	4.275E+03	2.336E+06	1.569E+02	1.376E+00	3.838E+02	2.579E-02
2072	4.191E+03	2.289E+06	1.538E+02	1.349E+00	3.762E+02	2.528E-02
2073	4.108E+03	2.244E+06	1.508E+02	1.322E+00	3.688E+02	2.478E-02
2074	4.026E+03	2.200E+06	1.478E+02	1.296E+00	3.615E+02	2.429E-02
2075	3.947E+03	2.156E+06	1.449E+02	1.270E+00	3.543E+02	2.381E-02
2076	3.869E+03	2.113E+06	1.420E+02	1.245E+00	3.473E+02	2.334E-02
2077	3.792E+03	2.072E+06	1.392E+02	1.220E+00	3.404E+02	2.287E-02
2078	3.717E+03	2.031E+06	1.364E+02	1.196E+00	3.337E+02	2.242E-02
2079	3.643E+03	1.990E+06	1.337E+02	1.172E+00	3.271E+02	2.198E-02
2080	3.571E+03	1.951E+06	1.311E+02	1.149E+00	3.206E+02	2.154E-02
2081	3.500E+03	1.912E+06	1.285E+02	1.126E+00	3.143E+02	2.112E-02
2082	3.431E+03	1.874E+06	1.259E+02	1.104E+00	3.080E+02	2.070E-02
2083	3.363E+03	1.837E+06	1.234E+02	1.082E+00	3.019E+02	2.029E-02
2084	3.297E+03	1.801E+06	1.210E+02	1.061E+00	2.960E+02	1.989E-02
2085	3.231E+03	1.765E+06	1.186E+02	1.040E+00	2.901E+02	1.949E-02
2086	3.167E+03	1.730E+06	1.163E+02	1.019E+00	2.844E+02	1.911E-02
2087	3.105E+03	1.696E+06	1.140E+02	9.991E-01	2.787E+02	1.873E-02
2088	3.043E+03	1.662E+06	1.117E+02	9.793E-01	2.732E+02	1.836E-02
2089	2.983E+03	1.630E+06	1.095E+02	9.599E-01	2.678E+02	1.799E-02
2090	2.924E+03	1.597E+06	1.073E+02	9.409E-01	2.625E+02	1.764E-02
2091	2.866E+03	1.566E+06	1.052E+02	9.223E-01	2.573E+02	1.729E-02
2092	2.809E+03	1.535E+06	1.031E+02	9.040E-01	2.522E+02	1.695E-02
2093	2.754E+03	1.504E+06	1.011E+02	8.861E-01	2.472E+02	1.661E-02
2094	2.699E+03	1.474E+06	9.907E+01	8.686E-01	2.423E+02	1.628E-02
2095	2.646E+03	1.445E+06	9.711E+01	8.514E-01	2.375E+02	1.596E-02



Summary Report

Landfill Name or Identifier: Palo Alto Landfill - May 2019 NMOC Data

Date: Monday, July 29, 2019

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1955	
Landfill Closure Year (with 80-year limit)	2011	
Actual Closure Year (without limit)	2011	
Have Model Calculate Closure Year?	No	
Waste Design Capacity		<i>megagrams</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	170	<i>m³/Mg</i>
NMOC Concentration	154	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1955	110,408	121,449	0	0
1956	110,408	121,449	110,408	121,449
1957	110,408	121,449	220,816	242,898
1958	110,408	121,449	331,225	364,347
1959	110,408	121,449	441,633	485,796
1960	110,408	121,449	552,041	607,245
1961	110,408	121,449	662,449	728,694
1962	110,408	121,449	772,857	850,143
1963	110,408	121,449	883,265	971,592
1964	110,408	121,449	993,674	1,093,041
1965	110,408	121,449	1,104,082	1,214,490
1966	110,408	121,449	1,214,490	1,335,939
1967	110,408	121,449	1,324,898	1,457,388
1968	110,408	121,449	1,435,306	1,578,837
1969	110,408	121,449	1,545,715	1,700,286
1970	110,408	121,449	1,656,123	1,821,735
1971	110,408	121,449	1,766,531	1,943,184
1972	110,408	121,449	1,876,939	2,064,633
1973	110,408	121,449	1,987,347	2,186,082
1974	110,408	121,449	2,097,755	2,307,531
1975	110,408	121,449	2,208,164	2,428,980
1976	110,408	121,449	2,318,572	2,550,429
1977	110,408	121,449	2,428,980	2,671,878
1978	110,408	121,449	2,539,388	2,793,327
1979	80,784	88,862	2,649,796	2,914,776
1980	84,809	93,290	2,730,580	3,003,638
1981	86,155	94,771	2,815,389	3,096,928
1982	89,491	98,440	2,901,545	3,191,699
1983	94,047	103,452	2,991,035	3,290,139
1984	105,866	116,453	3,085,083	3,393,591
1985	113,622	124,984	3,190,949	3,510,044
1986	110,130	121,143	3,304,571	3,635,028
1987	94,748	104,223	3,414,701	3,756,171
1988	87,713	96,484	3,509,449	3,860,394
1989	95,408	104,949	3,597,162	3,956,878
1990	78,794	86,673	3,692,570	4,061,827
1991	82,578	90,836	3,771,364	4,148,500
1992	76,309	83,940	3,853,942	4,239,336
1993	67,201	73,921	3,930,251	4,323,276
1994	29,856	32,842	3,997,452	4,397,197

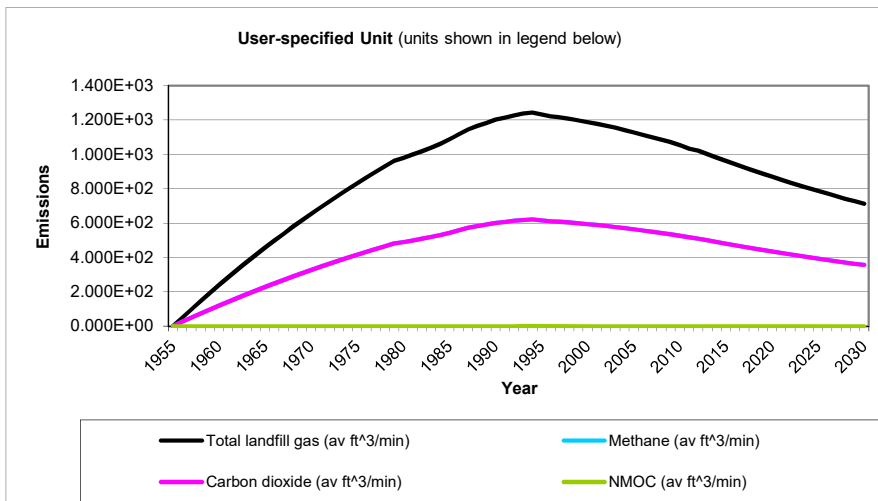
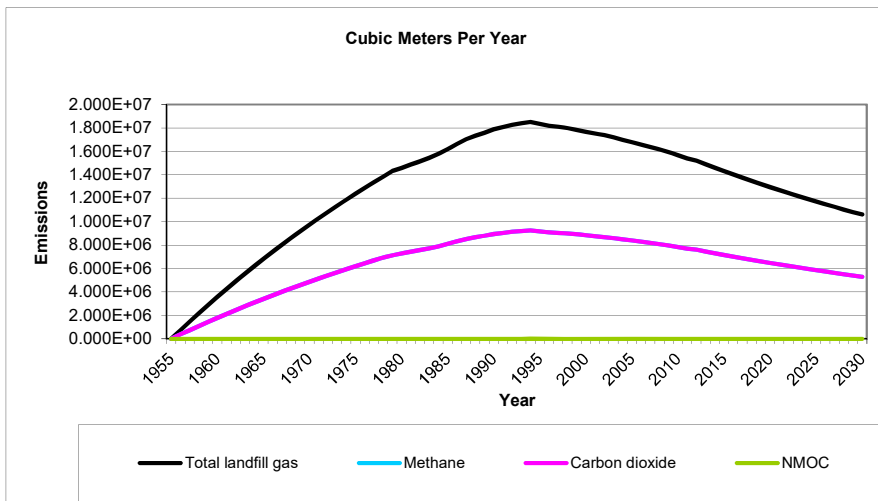
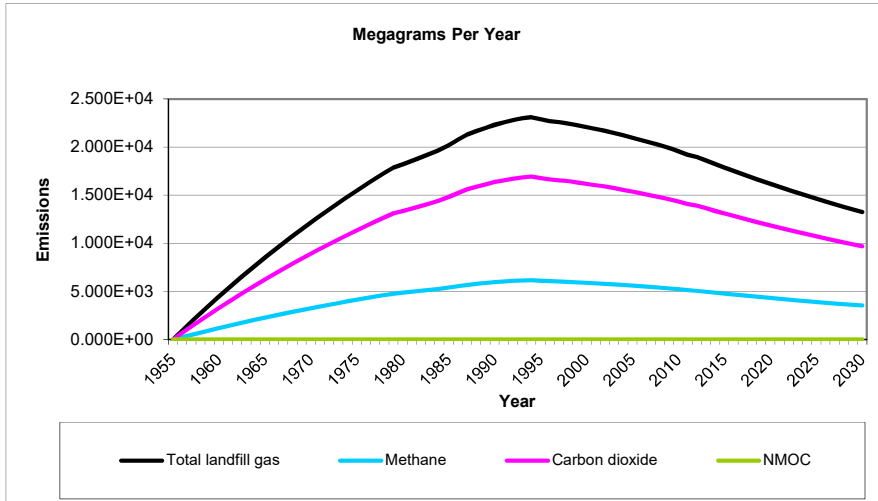
WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1995	30,203	33,223	4,027,308	4,430,039
1996	40,439	44,483	4,057,511	4,463,262
1997	38,703	42,573	4,097,950	4,507,745
1998	28,165	30,982	4,136,653	4,550,318
1999	29,949	32,944	4,164,818	4,581,300
2000	31,485	34,634	4,194,767	4,614,244
2001	28,170	30,987	4,226,253	4,648,878
2002	23,421	25,763	4,254,423	4,679,865
2003	20,502	22,552	4,277,844	4,705,628
2004	19,873	21,860	4,298,345	4,728,180
2005	18,173	19,990	4,318,218	4,750,040
2006	19,802	21,782	4,336,391	4,770,030
2007	15,601	17,161	4,356,193	4,791,812
2008	14,980	16,478	4,371,794	4,808,973
2009	5,821	6,403	4,386,774	4,825,451
2010	4,285	4,714	4,392,595	4,831,854
2011	17,530	19,283	4,396,880	4,836,568
2012	0	0	4,414,410	4,855,851
2013	0	0	4,414,410	4,855,851
2014	0	0	4,414,410	4,855,851
2015	0	0	4,414,410	4,855,851
2016	0	0	4,414,410	4,855,851
2017	0	0	4,414,410	4,855,851
2018	0	0	4,414,410	4,855,851
2019	0	0	4,414,410	4,855,851
2020	0	0	4,414,410	4,855,851
2021	0	0	4,414,410	4,855,851
2022	0	0	4,414,410	4,855,851
2023	0	0	4,414,410	4,855,851
2024	0	0	4,414,410	4,855,851
2025	0	0	4,414,410	4,855,851
2026	0	0	4,414,410	4,855,851
2027	0	0	4,414,410	4,855,851
2028	0	0	4,414,410	4,855,851
2029	0	0	4,414,410	4,855,851
2030	0	0	4,414,410	4,855,851
2031	0	0	4,414,410	4,855,851
2032	0	0	4,414,410	4,855,851
2033	0	0	4,414,410	4,855,851
2034	0	0	4,414,410	4,855,851

Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,1,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

Graphs



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1955	0	0	0	0	0	0
1956	9.292E+02	7.441E+05	4.999E+01	2.482E+02	3.720E+05	2.500E+01
1957	1.840E+03	1.473E+06	9.900E+01	4.915E+02	7.367E+05	4.950E+01
1958	2.733E+03	2.188E+06	1.470E+02	7.300E+02	1.094E+06	7.351E+01
1959	3.608E+03	2.889E+06	1.941E+02	9.637E+02	1.445E+06	9.706E+01
1960	4.466E+03	3.576E+06	2.403E+02	1.193E+03	1.788E+06	1.201E+02
1961	5.306E+03	4.249E+06	2.855E+02	1.417E+03	2.125E+06	1.427E+02
1962	6.131E+03	4.909E+06	3.298E+02	1.638E+03	2.455E+06	1.649E+02
1963	6.938E+03	5.556E+06	3.733E+02	1.853E+03	2.778E+06	1.866E+02
1964	7.730E+03	6.190E+06	4.159E+02	2.065E+03	3.095E+06	2.080E+02
1965	8.506E+03	6.811E+06	4.577E+02	2.272E+03	3.406E+06	2.288E+02
1966	9.267E+03	7.421E+06	4.986E+02	2.475E+03	3.710E+06	2.493E+02
1967	1.001E+04	8.018E+06	5.387E+02	2.675E+03	4.009E+06	2.694E+02
1968	1.074E+04	8.603E+06	5.780E+02	2.870E+03	4.302E+06	2.890E+02
1969	1.146E+04	9.177E+06	6.166E+02	3.061E+03	4.588E+06	3.083E+02
1970	1.216E+04	9.739E+06	6.544E+02	3.249E+03	4.870E+06	3.272E+02
1971	1.285E+04	1.029E+07	6.914E+02	3.433E+03	5.145E+06	3.457E+02
1972	1.353E+04	1.083E+07	7.277E+02	3.613E+03	5.415E+06	3.639E+02
1973	1.419E+04	1.136E+07	7.633E+02	3.789E+03	5.680E+06	3.816E+02
1974	1.484E+04	1.188E+07	7.982E+02	3.963E+03	5.940E+06	3.991E+02
1975	1.547E+04	1.239E+07	8.324E+02	4.132E+03	6.194E+06	4.162E+02
1976	1.609E+04	1.289E+07	8.659E+02	4.299E+03	6.443E+06	4.329E+02
1977	1.670E+04	1.338E+07	8.987E+02	4.462E+03	6.688E+06	4.494E+02
1978	1.730E+04	1.386E+07	9.309E+02	4.622E+03	6.928E+06	4.655E+02
1979	1.789E+04	1.432E+07	9.625E+02	4.778E+03	7.162E+06	4.812E+02
1980	1.821E+04	1.459E+07	9.800E+02	4.865E+03	7.293E+06	4.900E+02
1981	1.857E+04	1.487E+07	9.990E+02	4.960E+03	7.434E+06	4.995E+02
1982	1.893E+04	1.515E+07	1.018E+03	5.055E+03	7.577E+06	5.091E+02
1983	1.930E+04	1.546E+07	1.039E+03	5.156E+03	7.729E+06	5.193E+02
1984	1.971E+04	1.579E+07	1.061E+03	5.266E+03	7.893E+06	5.303E+02
1985	2.021E+04	1.619E+07	1.088E+03	5.399E+03	8.093E+06	5.438E+02
1986	2.077E+04	1.663E+07	1.117E+03	5.548E+03	8.316E+06	5.587E+02
1987	2.129E+04	1.704E+07	1.145E+03	5.685E+03	8.522E+06	5.726E+02
1988	2.166E+04	1.735E+07	1.165E+03	5.786E+03	8.673E+06	5.827E+02
1989	2.197E+04	1.759E+07	1.182E+03	5.869E+03	8.796E+06	5.910E+02
1990	2.234E+04	1.789E+07	1.202E+03	5.967E+03	8.944E+06	6.009E+02
1991	2.256E+04	1.806E+07	1.214E+03	6.026E+03	9.032E+06	6.069E+02
1992	2.281E+04	1.826E+07	1.227E+03	6.092E+03	9.132E+06	6.135E+02
1993	2.300E+04	1.842E+07	1.237E+03	6.143E+03	9.208E+06	6.187E+02
1994	2.311E+04	1.850E+07	1.243E+03	6.172E+03	9.252E+06	6.216E+02
1995	2.290E+04	1.834E+07	1.232E+03	6.117E+03	9.169E+06	6.161E+02
1996	2.270E+04	1.818E+07	1.221E+03	6.064E+03	9.090E+06	6.107E+02
1997	2.259E+04	1.809E+07	1.216E+03	6.035E+03	9.046E+06	6.078E+02
1998	2.247E+04	1.799E+07	1.209E+03	6.002E+03	8.997E+06	6.045E+02
1999	2.226E+04	1.783E+07	1.198E+03	5.947E+03	8.914E+06	5.989E+02
2000	2.207E+04	1.768E+07	1.188E+03	5.896E+03	8.838E+06	5.938E+02
2001	2.190E+04	1.754E+07	1.178E+03	5.850E+03	8.769E+06	5.892E+02
2002	2.171E+04	1.738E+07	1.168E+03	5.798E+03	8.691E+06	5.839E+02
2003	2.147E+04	1.719E+07	1.155E+03	5.736E+03	8.597E+06	5.777E+02
2004	2.122E+04	1.699E+07	1.142E+03	5.668E+03	8.496E+06	5.709E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	2.097E+04	1.679E+07	1.128E+03	5.601E+03	8.395E+06	5.641E+02
2006	2.071E+04	1.658E+07	1.114E+03	5.531E+03	8.290E+06	5.570E+02
2007	2.046E+04	1.639E+07	1.101E+03	5.466E+03	8.193E+06	5.505E+02
2008	2.019E+04	1.617E+07	1.086E+03	5.393E+03	8.083E+06	5.431E+02
2009	1.991E+04	1.595E+07	1.071E+03	5.319E+03	7.973E+06	5.357E+02
2010	1.957E+04	1.567E+07	1.053E+03	5.227E+03	7.835E+06	5.264E+02
2011	1.922E+04	1.539E+07	1.034E+03	5.133E+03	7.694E+06	5.170E+02
2012	1.898E+04	1.520E+07	1.021E+03	5.071E+03	7.601E+06	5.107E+02
2013	1.861E+04	1.490E+07	1.001E+03	4.971E+03	7.451E+06	5.006E+02
2014	1.824E+04	1.461E+07	9.814E+02	4.872E+03	7.303E+06	4.907E+02
2015	1.788E+04	1.432E+07	9.620E+02	4.776E+03	7.158E+06	4.810E+02
2016	1.753E+04	1.403E+07	9.429E+02	4.681E+03	7.017E+06	4.715E+02
2017	1.718E+04	1.376E+07	9.242E+02	4.589E+03	6.878E+06	4.621E+02
2018	1.684E+04	1.348E+07	9.059E+02	4.498E+03	6.742E+06	4.530E+02
2019	1.650E+04	1.322E+07	8.880E+02	4.409E+03	6.608E+06	4.440E+02
2020	1.618E+04	1.295E+07	8.704E+02	4.321E+03	6.477E+06	4.352E+02
2021	1.586E+04	1.270E+07	8.532E+02	4.236E+03	6.349E+06	4.266E+02
2022	1.554E+04	1.245E+07	8.363E+02	4.152E+03	6.223E+06	4.181E+02
2023	1.524E+04	1.220E+07	8.197E+02	4.070E+03	6.100E+06	4.099E+02
2024	1.493E+04	1.196E+07	8.035E+02	3.989E+03	5.979E+06	4.017E+02
2025	1.464E+04	1.172E+07	7.876E+02	3.910E+03	5.861E+06	3.938E+02
2026	1.435E+04	1.149E+07	7.720E+02	3.833E+03	5.745E+06	3.860E+02
2027	1.406E+04	1.126E+07	7.567E+02	3.757E+03	5.631E+06	3.783E+02
2028	1.379E+04	1.104E+07	7.417E+02	3.682E+03	5.520E+06	3.709E+02
2029	1.351E+04	1.082E+07	7.270E+02	3.609E+03	5.410E+06	3.635E+02
2030	1.325E+04	1.061E+07	7.126E+02	3.538E+03	5.303E+06	3.563E+02
2031	1.298E+04	1.040E+07	6.985E+02	3.468E+03	5.198E+06	3.493E+02
2032	1.273E+04	1.019E+07	6.847E+02	3.399E+03	5.095E+06	3.423E+02
2033	1.247E+04	9.989E+06	6.711E+02	3.332E+03	4.994E+06	3.356E+02
2034	1.223E+04	9.791E+06	6.578E+02	3.266E+03	4.895E+06	3.289E+02
2035	1.198E+04	9.597E+06	6.448E+02	3.201E+03	4.798E+06	3.224E+02
2036	1.175E+04	9.407E+06	6.320E+02	3.138E+03	4.703E+06	3.160E+02
2037	1.151E+04	9.221E+06	6.195E+02	3.076E+03	4.610E+06	3.098E+02
2038	1.129E+04	9.038E+06	6.073E+02	3.015E+03	4.519E+06	3.036E+02
2039	1.106E+04	8.859E+06	5.952E+02	2.955E+03	4.430E+06	2.976E+02
2040	1.084E+04	8.684E+06	5.835E+02	2.897E+03	4.342E+06	2.917E+02
2041	1.063E+04	8.512E+06	5.719E+02	2.839E+03	4.256E+06	2.860E+02
2042	1.042E+04	8.343E+06	5.606E+02	2.783E+03	4.172E+06	2.803E+02
2043	1.021E+04	8.178E+06	5.495E+02	2.728E+03	4.089E+06	2.747E+02
2044	1.001E+04	8.016E+06	5.386E+02	2.674E+03	4.008E+06	2.693E+02
2045	9.812E+03	7.857E+06	5.279E+02	2.621E+03	3.929E+06	2.640E+02
2046	9.618E+03	7.702E+06	5.175E+02	2.569E+03	3.851E+06	2.587E+02
2047	9.428E+03	7.549E+06	5.072E+02	2.518E+03	3.775E+06	2.536E+02
2048	9.241E+03	7.400E+06	4.972E+02	2.468E+03	3.700E+06	2.486E+02
2049	9.058E+03	7.253E+06	4.873E+02	2.419E+03	3.627E+06	2.437E+02
2050	8.879E+03	7.110E+06	4.777E+02	2.372E+03	3.555E+06	2.388E+02
2051	8.703E+03	6.969E+06	4.682E+02	2.325E+03	3.484E+06	2.341E+02
2052	8.530E+03	6.831E+06	4.590E+02	2.279E+03	3.415E+06	2.295E+02
2053	8.362E+03	6.696E+06	4.499E+02	2.233E+03	3.348E+06	2.249E+02
2054	8.196E+03	6.563E+06	4.410E+02	2.189E+03	3.281E+06	2.205E+02
2055	8.034E+03	6.433E+06	4.322E+02	2.146E+03	3.217E+06	2.161E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2056	7.875E+03	6.306E+06	4.237E+02	2.103E+03	3.153E+06	2.118E+02
2057	7.719E+03	6.181E+06	4.153E+02	2.062E+03	3.090E+06	2.076E+02
2058	7.566E+03	6.058E+06	4.071E+02	2.021E+03	3.029E+06	2.035E+02
2059	7.416E+03	5.938E+06	3.990E+02	1.981E+03	2.969E+06	1.995E+02
2060	7.269E+03	5.821E+06	3.911E+02	1.942E+03	2.910E+06	1.956E+02
2061	7.125E+03	5.706E+06	3.834E+02	1.903E+03	2.853E+06	1.917E+02
2062	6.984E+03	5.593E+06	3.758E+02	1.866E+03	2.796E+06	1.879E+02
2063	6.846E+03	5.482E+06	3.683E+02	1.829E+03	2.741E+06	1.842E+02
2064	6.710E+03	5.373E+06	3.610E+02	1.792E+03	2.687E+06	1.805E+02
2065	6.577E+03	5.267E+06	3.539E+02	1.757E+03	2.633E+06	1.769E+02
2066	6.447E+03	5.163E+06	3.469E+02	1.722E+03	2.581E+06	1.734E+02
2067	6.320E+03	5.060E+06	3.400E+02	1.688E+03	2.530E+06	1.700E+02
2068	6.194E+03	4.960E+06	3.333E+02	1.655E+03	2.480E+06	1.666E+02
2069	6.072E+03	4.862E+06	3.267E+02	1.622E+03	2.431E+06	1.633E+02
2070	5.952E+03	4.766E+06	3.202E+02	1.590E+03	2.383E+06	1.601E+02
2071	5.834E+03	4.671E+06	3.139E+02	1.558E+03	2.336E+06	1.569E+02
2072	5.718E+03	4.579E+06	3.077E+02	1.527E+03	2.289E+06	1.538E+02
2073	5.605E+03	4.488E+06	3.016E+02	1.497E+03	2.244E+06	1.508E+02
2074	5.494E+03	4.399E+06	2.956E+02	1.467E+03	2.200E+06	1.478E+02
2075	5.385E+03	4.312E+06	2.897E+02	1.438E+03	2.156E+06	1.449E+02
2076	5.279E+03	4.227E+06	2.840E+02	1.410E+03	2.113E+06	1.420E+02
2077	5.174E+03	4.143E+06	2.784E+02	1.382E+03	2.072E+06	1.392E+02
2078	5.072E+03	4.061E+06	2.729E+02	1.355E+03	2.031E+06	1.364E+02
2079	4.971E+03	3.981E+06	2.675E+02	1.328E+03	1.990E+06	1.337E+02
2080	4.873E+03	3.902E+06	2.622E+02	1.302E+03	1.951E+06	1.311E+02
2081	4.776E+03	3.825E+06	2.570E+02	1.276E+03	1.912E+06	1.285E+02
2082	4.682E+03	3.749E+06	2.519E+02	1.251E+03	1.874E+06	1.259E+02
2083	4.589E+03	3.675E+06	2.469E+02	1.226E+03	1.837E+06	1.234E+02
2084	4.498E+03	3.602E+06	2.420E+02	1.201E+03	1.801E+06	1.210E+02
2085	4.409E+03	3.531E+06	2.372E+02	1.178E+03	1.765E+06	1.186E+02
2086	4.322E+03	3.461E+06	2.325E+02	1.154E+03	1.730E+06	1.163E+02
2087	4.236E+03	3.392E+06	2.279E+02	1.132E+03	1.696E+06	1.140E+02
2088	4.152E+03	3.325E+06	2.234E+02	1.109E+03	1.662E+06	1.117E+02
2089	4.070E+03	3.259E+06	2.190E+02	1.087E+03	1.630E+06	1.095E+02
2090	3.989E+03	3.195E+06	2.146E+02	1.066E+03	1.597E+06	1.073E+02
2091	3.910E+03	3.131E+06	2.104E+02	1.045E+03	1.566E+06	1.052E+02
2092	3.833E+03	3.069E+06	2.062E+02	1.024E+03	1.535E+06	1.031E+02
2093	3.757E+03	3.009E+06	2.021E+02	1.004E+03	1.504E+06	1.011E+02
2094	3.683E+03	2.949E+06	1.981E+02	9.837E+02	1.474E+06	9.907E+01
2095	3.610E+03	2.891E+06	1.942E+02	9.642E+02	1.445E+06	9.711E+01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1955	0	0	0	0	0	0
1956	6.810E+02	3.720E+05	2.500E+01	4.099E-01	1.144E+02	7.684E-03
1957	1.349E+03	7.367E+05	4.950E+01	8.117E-01	2.265E+02	1.522E-02
1958	2.003E+03	1.094E+06	7.351E+01	1.206E+00	3.363E+02	2.260E-02
1959	2.644E+03	1.445E+06	9.706E+01	1.592E+00	4.440E+02	2.984E-02
1960	3.273E+03	1.788E+06	1.201E+02	1.970E+00	5.496E+02	3.693E-02
1961	3.889E+03	2.125E+06	1.427E+02	2.341E+00	6.531E+02	4.388E-02
1962	4.493E+03	2.455E+06	1.649E+02	2.705E+00	7.545E+02	5.070E-02
1963	5.085E+03	2.778E+06	1.866E+02	3.061E+00	8.539E+02	5.738E-02
1964	5.665E+03	3.095E+06	2.080E+02	3.410E+00	9.514E+02	6.392E-02
1965	6.234E+03	3.406E+06	2.288E+02	3.753E+00	1.047E+03	7.034E-02
1966	6.792E+03	3.710E+06	2.493E+02	4.088E+00	1.141E+03	7.663E-02
1967	7.338E+03	4.009E+06	2.694E+02	4.417E+00	1.232E+03	8.280E-02
1968	7.874E+03	4.302E+06	2.890E+02	4.740E+00	1.322E+03	8.884E-02
1969	8.399E+03	4.588E+06	3.083E+02	5.056E+00	1.410E+03	9.477E-02
1970	8.914E+03	4.870E+06	3.272E+02	5.366E+00	1.497E+03	1.006E-01
1971	9.418E+03	5.145E+06	3.457E+02	5.669E+00	1.582E+03	1.063E-01
1972	9.913E+03	5.415E+06	3.639E+02	5.967E+00	1.665E+03	1.118E-01
1973	1.040E+04	5.680E+06	3.816E+02	6.259E+00	1.746E+03	1.173E-01
1974	1.087E+04	5.940E+06	3.991E+02	6.545E+00	1.826E+03	1.227E-01
1975	1.134E+04	6.194E+06	4.162E+02	6.825E+00	1.904E+03	1.279E-01
1976	1.179E+04	6.443E+06	4.329E+02	7.100E+00	1.981E+03	1.331E-01
1977	1.224E+04	6.688E+06	4.494E+02	7.369E+00	2.056E+03	1.381E-01
1978	1.268E+04	6.928E+06	4.655E+02	7.633E+00	2.130E+03	1.431E-01
1979	1.311E+04	7.162E+06	4.812E+02	7.892E+00	2.202E+03	1.479E-01
1980	1.335E+04	7.293E+06	4.900E+02	8.036E+00	2.242E+03	1.506E-01
1981	1.361E+04	7.434E+06	4.995E+02	8.191E+00	2.285E+03	1.535E-01
1982	1.387E+04	7.577E+06	5.091E+02	8.349E+00	2.329E+03	1.565E-01
1983	1.415E+04	7.729E+06	5.193E+02	8.516E+00	2.376E+03	1.596E-01
1984	1.445E+04	7.893E+06	5.303E+02	8.697E+00	2.426E+03	1.630E-01
1985	1.481E+04	8.093E+06	5.438E+02	8.917E+00	2.488E+03	1.672E-01
1986	1.522E+04	8.316E+06	5.587E+02	9.163E+00	2.556E+03	1.718E-01
1987	1.560E+04	8.522E+06	5.726E+02	9.390E+00	2.620E+03	1.760E-01
1988	1.588E+04	8.673E+06	5.827E+02	9.556E+00	2.666E+03	1.791E-01
1989	1.610E+04	8.796E+06	5.910E+02	9.692E+00	2.704E+03	1.817E-01
1990	1.637E+04	8.944E+06	6.009E+02	9.855E+00	2.749E+03	1.847E-01
1991	1.653E+04	9.032E+06	6.069E+02	9.952E+00	2.776E+03	1.866E-01
1992	1.672E+04	9.132E+06	6.135E+02	1.006E+01	2.807E+03	1.886E-01
1993	1.685E+04	9.208E+06	6.187E+02	1.015E+01	2.830E+03	1.902E-01
1994	1.694E+04	9.252E+06	6.216E+02	1.019E+01	2.844E+03	1.911E-01
1995	1.678E+04	9.169E+06	6.161E+02	1.010E+01	2.819E+03	1.894E-01
1996	1.664E+04	9.090E+06	6.107E+02	1.002E+01	2.794E+03	1.877E-01
1997	1.656E+04	9.046E+06	6.078E+02	9.967E+00	2.781E+03	1.868E-01
1998	1.647E+04	8.997E+06	6.045E+02	9.914E+00	2.766E+03	1.858E-01
1999	1.632E+04	8.914E+06	5.989E+02	9.822E+00	2.740E+03	1.841E-01
2000	1.618E+04	8.838E+06	5.938E+02	9.739E+00	2.717E+03	1.825E-01
2001	1.605E+04	8.769E+06	5.892E+02	9.663E+00	2.696E+03	1.811E-01
2002	1.591E+04	8.691E+06	5.839E+02	9.576E+00	2.672E+03	1.795E-01
2003	1.574E+04	8.597E+06	5.777E+02	9.473E+00	2.643E+03	1.776E-01
2004	1.555E+04	8.496E+06	5.709E+02	9.362E+00	2.612E+03	1.755E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2005	1.537E+04	8.395E+06	5.641E+02	9.250E+00	2.581E+03	1.734E-01
2006	1.517E+04	8.290E+06	5.570E+02	9.135E+00	2.548E+03	1.712E-01
2007	1.500E+04	8.193E+06	5.505E+02	9.027E+00	2.518E+03	1.692E-01
2008	1.480E+04	8.083E+06	5.431E+02	8.906E+00	2.485E+03	1.669E-01
2009	1.460E+04	7.973E+06	5.357E+02	8.786E+00	2.451E+03	1.647E-01
2010	1.434E+04	7.835E+06	5.264E+02	8.633E+00	2.409E+03	1.618E-01
2011	1.408E+04	7.694E+06	5.170E+02	8.478E+00	2.365E+03	1.589E-01
2012	1.391E+04	7.601E+06	5.107E+02	8.375E+00	2.337E+03	1.570E-01
2013	1.364E+04	7.451E+06	5.006E+02	8.210E+00	2.290E+03	1.539E-01
2014	1.337E+04	7.303E+06	4.907E+02	8.047E+00	2.245E+03	1.508E-01
2015	1.310E+04	7.158E+06	4.810E+02	7.888E+00	2.201E+03	1.479E-01
2016	1.284E+04	7.017E+06	4.715E+02	7.731E+00	2.157E+03	1.449E-01
2017	1.259E+04	6.878E+06	4.621E+02	7.578E+00	2.114E+03	1.421E-01
2018	1.234E+04	6.742E+06	4.530E+02	7.428E+00	2.072E+03	1.392E-01
2019	1.210E+04	6.608E+06	4.440E+02	7.281E+00	2.031E+03	1.365E-01
2020	1.186E+04	6.477E+06	4.352E+02	7.137E+00	1.991E+03	1.338E-01
2021	1.162E+04	6.349E+06	4.266E+02	6.996E+00	1.952E+03	1.311E-01
2022	1.139E+04	6.223E+06	4.181E+02	6.857E+00	1.913E+03	1.285E-01
2023	1.117E+04	6.100E+06	4.099E+02	6.721E+00	1.875E+03	1.260E-01
2024	1.095E+04	5.979E+06	4.017E+02	6.588E+00	1.838E+03	1.235E-01
2025	1.073E+04	5.861E+06	3.938E+02	6.458E+00	1.802E+03	1.211E-01
2026	1.052E+04	5.745E+06	3.860E+02	6.330E+00	1.766E+03	1.187E-01
2027	1.031E+04	5.631E+06	3.783E+02	6.205E+00	1.731E+03	1.163E-01
2028	1.010E+04	5.520E+06	3.709E+02	6.082E+00	1.697E+03	1.140E-01
2029	9.903E+03	5.410E+06	3.635E+02	5.961E+00	1.663E+03	1.117E-01
2030	9.707E+03	5.303E+06	3.563E+02	5.843E+00	1.630E+03	1.095E-01
2031	9.515E+03	5.198E+06	3.493E+02	5.728E+00	1.598E+03	1.074E-01
2032	9.327E+03	5.095E+06	3.423E+02	5.614E+00	1.566E+03	1.052E-01
2033	9.142E+03	4.994E+06	3.356E+02	5.503E+00	1.535E+03	1.032E-01
2034	8.961E+03	4.895E+06	3.289E+02	5.394E+00	1.505E+03	1.011E-01
2035	8.784E+03	4.798E+06	3.224E+02	5.287E+00	1.475E+03	9.911E-02
2036	8.610E+03	4.703E+06	3.160E+02	5.183E+00	1.446E+03	9.715E-02
2037	8.439E+03	4.610E+06	3.098E+02	5.080E+00	1.417E+03	9.522E-02
2038	8.272E+03	4.519E+06	3.036E+02	4.979E+00	1.389E+03	9.334E-02
2039	8.108E+03	4.430E+06	2.976E+02	4.881E+00	1.362E+03	9.149E-02
2040	7.948E+03	4.342E+06	2.917E+02	4.784E+00	1.335E+03	8.968E-02
2041	7.790E+03	4.256E+06	2.860E+02	4.689E+00	1.308E+03	8.790E-02
2042	7.636E+03	4.172E+06	2.803E+02	4.597E+00	1.282E+03	8.616E-02
2043	7.485E+03	4.089E+06	2.747E+02	4.506E+00	1.257E+03	8.445E-02
2044	7.337E+03	4.008E+06	2.693E+02	4.416E+00	1.232E+03	8.278E-02
2045	7.191E+03	3.929E+06	2.640E+02	4.329E+00	1.208E+03	8.114E-02
2046	7.049E+03	3.851E+06	2.587E+02	4.243E+00	1.184E+03	7.954E-02
2047	6.909E+03	3.775E+06	2.536E+02	4.159E+00	1.160E+03	7.796E-02
2048	6.773E+03	3.700E+06	2.486E+02	4.077E+00	1.137E+03	7.642E-02
2049	6.638E+03	3.627E+06	2.437E+02	3.996E+00	1.115E+03	7.490E-02
2050	6.507E+03	3.555E+06	2.388E+02	3.917E+00	1.093E+03	7.342E-02
2051	6.378E+03	3.484E+06	2.341E+02	3.839E+00	1.071E+03	7.197E-02
2052	6.252E+03	3.415E+06	2.295E+02	3.763E+00	1.050E+03	7.054E-02
2053	6.128E+03	3.348E+06	2.249E+02	3.689E+00	1.029E+03	6.915E-02
2054	6.007E+03	3.281E+06	2.205E+02	3.616E+00	1.009E+03	6.778E-02
2055	5.888E+03	3.217E+06	2.161E+02	3.544E+00	9.888E+02	6.643E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2056	5.771E+03	3.153E+06	2.118E+02	3.474E+00	9.692E+02	6.512E-02
2057	5.657E+03	3.090E+06	2.076E+02	3.405E+00	9.500E+02	6.383E-02
2058	5.545E+03	3.029E+06	2.035E+02	3.338E+00	9.312E+02	6.257E-02
2059	5.435E+03	2.969E+06	1.995E+02	3.272E+00	9.127E+02	6.133E-02
2060	5.328E+03	2.910E+06	1.956E+02	3.207E+00	8.947E+02	6.011E-02
2061	5.222E+03	2.853E+06	1.917E+02	3.143E+00	8.769E+02	5.892E-02
2062	5.119E+03	2.796E+06	1.879E+02	3.081E+00	8.596E+02	5.776E-02
2063	5.017E+03	2.741E+06	1.842E+02	3.020E+00	8.426E+02	5.661E-02
2064	4.918E+03	2.687E+06	1.805E+02	2.960E+00	8.259E+02	5.549E-02
2065	4.821E+03	2.633E+06	1.769E+02	2.902E+00	8.095E+02	5.439E-02
2066	4.725E+03	2.581E+06	1.734E+02	2.844E+00	7.935E+02	5.331E-02
2067	4.632E+03	2.530E+06	1.700E+02	2.788E+00	7.778E+02	5.226E-02
2068	4.540E+03	2.480E+06	1.666E+02	2.733E+00	7.624E+02	5.122E-02
2069	4.450E+03	2.431E+06	1.633E+02	2.679E+00	7.473E+02	5.021E-02
2070	4.362E+03	2.383E+06	1.601E+02	2.626E+00	7.325E+02	4.922E-02
2071	4.275E+03	2.336E+06	1.569E+02	2.574E+00	7.180E+02	4.824E-02
2072	4.191E+03	2.289E+06	1.538E+02	2.523E+00	7.038E+02	4.729E-02
2073	4.108E+03	2.244E+06	1.508E+02	2.473E+00	6.898E+02	4.635E-02
2074	4.026E+03	2.200E+06	1.478E+02	2.424E+00	6.762E+02	4.543E-02
2075	3.947E+03	2.156E+06	1.449E+02	2.376E+00	6.628E+02	4.453E-02
2076	3.869E+03	2.113E+06	1.420E+02	2.329E+00	6.497E+02	4.365E-02
2077	3.792E+03	2.072E+06	1.392E+02	2.283E+00	6.368E+02	4.279E-02
2078	3.717E+03	2.031E+06	1.364E+02	2.237E+00	6.242E+02	4.194E-02
2079	3.643E+03	1.990E+06	1.337E+02	2.193E+00	6.118E+02	4.111E-02
2080	3.571E+03	1.951E+06	1.311E+02	2.150E+00	5.997E+02	4.029E-02
2081	3.500E+03	1.912E+06	1.285E+02	2.107E+00	5.878E+02	3.950E-02
2082	3.431E+03	1.874E+06	1.259E+02	2.065E+00	5.762E+02	3.871E-02
2083	3.363E+03	1.837E+06	1.234E+02	2.024E+00	5.648E+02	3.795E-02
2084	3.297E+03	1.801E+06	1.210E+02	1.984E+00	5.536E+02	3.720E-02
2085	3.231E+03	1.765E+06	1.186E+02	1.945E+00	5.426E+02	3.646E-02
2086	3.167E+03	1.730E+06	1.163E+02	1.907E+00	5.319E+02	3.574E-02
2087	3.105E+03	1.696E+06	1.140E+02	1.869E+00	5.214E+02	3.503E-02
2088	3.043E+03	1.662E+06	1.117E+02	1.832E+00	5.110E+02	3.434E-02
2089	2.983E+03	1.630E+06	1.095E+02	1.796E+00	5.009E+02	3.366E-02
2090	2.924E+03	1.597E+06	1.073E+02	1.760E+00	4.910E+02	3.299E-02
2091	2.866E+03	1.566E+06	1.052E+02	1.725E+00	4.813E+02	3.234E-02
2092	2.809E+03	1.535E+06	1.031E+02	1.691E+00	4.717E+02	3.170E-02
2093	2.754E+03	1.504E+06	1.011E+02	1.657E+00	4.624E+02	3.107E-02
2094	2.699E+03	1.474E+06	9.907E+01	1.625E+00	4.533E+02	3.045E-02
2095	2.646E+03	1.445E+06	9.711E+01	1.592E+00	4.443E+02	2.985E-02