APPENDIX E-2

Residence Time Calculations

Combustion Mass & Energy Balance Results
TAPI Puerto Rico

Incinerator

Stream Number	1	2	3	4	5
Stream Name / Property or Component	Organic Waste to Burner	Aqueous Waste to Chamber	Kerosene to Burner	Total Combustion Air	Combustion Gas
Water (lb/h)	0.000	1698.661	0.000	-----	-----
Carbon	268.477	62.496	69.402	-----	0.000
Hydrogen	51.865	15.261	9.298	-----	0.000
Oxygen	224.457	40.332	0.000	-----	0.000
Nitrogen	0.000	0.000	0.000	-----	0.000
Sulphur	0.000	0.000	0.158	-----	0.000
Chlorine	0.000	0.000	0.000	-----	0.000
Fluorine	0.000	0.000	0.000	-----	0.000
Bromine	0.000	0.000	0.000	-----	0.000
Iodine	0.000	0.000	0.000	-----	0.000
Phosphorpus	0.000	0.000	0.000	-----	0.000
Silicon	0.000	0.000	0.000	-----	0.000
Inerts/Ash	0.000	0.000	0.008	-----	-----
Salts	0.000	0.000	0.000	-----	-----
Volatile metals	0.000	0.000	0.000	-----	-----
Non-volatile metals	0.000	0.000	0.000	-----	-----
Feed Material Phase	Liquid/Solid	Liquid/Solid	Liquid/Solid	-----	Vapor
H_2O vapor (lb/h)	-----	-----	-----	83.941	2465.578
CO_2	-----	-----	-----	-----	1467.052
O_2	-----	-----	-----	1671.940	263.343
N_2	-----	-----	-----	5506.311	5506.311
CO	-----	-----	-----	-----	0.000
SO_2	-----	-----	-----	-----	0.315
HCl	-----	-----	-----	-----	0.000
Cl_2	-----	-----	-----	-----	0.000
HF	-----	-----	-----	-----	0.000
HBr	-----	-----	-----	-----	0.000
Br_2	-----	-----	-----	-----	0.000
HI	-----	-----	-----	-----	0.000
I_2	-----	-----	-----	-----	0.000
NOx as NO	-----	-----	-----	-----	0.000
P_2O_5	-----	-----	-----	-----	0.000
SiO_2	-----	-----	-----	-----	0.000
Inerts/Ash	-----	-----	-----	-----	0.008
Salts	-----	-----	-----	-----	0.000
Volatile metals	-----	-----	-----	-----	0.000
Non-volatile metals	-----	-----	-----	-----	0.000
Total (lb/h)	544.799	1816.750	78.866	7262.192	9702.607
Heating value (Btu/lb)	10021	718	18839	-----	0.000
Cp (Btu/lb ºF)	0.5	0.5	0.5	-----	-----
Temperature (ºF)	68	68	68	68	1857
Pressure (in. H_2O gauge) [psig]	[43.5]	[43.5]	[72.5]	152.957	148.943
Pressure (in. H_2O abs)	-----	-----	-----	559.740	555.725
Density (lb/acf)	64.9251	64.9251	57.7459	0.102	0.021
Enthalpy (MM Btu/h)	0.000	0.000	0.000	0.089	8.338
Actual flow (acfm)	-----	-----	-----	1182.379	7739.053
Standard flow (scfm)	-----	-----	-----	1626.905	2409.003
Standard dry flow (dscfm)	-----	-----	-----	1596.998	1529.787
O_2 (vol%, dry)	-----	-----	-----	21.0	3.5
O_2 (vol%, wet)	-----	-----	-----	20.6	2.2
CO_2 (vol%, dry)	-----	-----	-----	-----	14.0
H_2O (vol%)	-----	-----	-----	1.8	36.5

Standard conditions: 68°F, 1.0 atm; concentrations corrected to 7% oxygen, dry.

Residence Time Calculations
TAPI Puerto Rico

Incinerator

Parameter	Value	Units	Value	Units	Basis
Gas flow through incinerator	7739.053	acfm	2409.003	scfm, wet	Calculated based on planned CPT conditions. See CPT Plan, Rev.6, December 2011
Incinerator temperature	1014	ºC	1857	ºF	Planned CPT conditions
Incinerator gas pressure	371	mbar	149	in. H_2O	Fan capacity, RCRA Part B
Incinerator Dimensions					
Inside diameter	3.81	ft			RCRA Part B
Length	22.7	ft			RCRA Part B
Volume	259.1	cu. ft.			Calculated
Residence time	2.01	seconds			Calculated