

Appendix 4-5
Worksheets showing Calculation of Dust Emission Rates,
Decommissioning Phase Dust Emission Impact Assessment

Decommissioning Phase

Types of Dust Emission	Coordinates		Source ID (in order of FDM input data file)	No. of operation/ truck load per hour (Peak operation)	No. of operation/ truck load per hour (Normal Operation)	Emission Rate for Peak Hourly TSP Level Modelling	Emission Rate for Averaged Daily TSP Level Modelling under Normal Operation	Unit	Note
	X	Y							
Material Handling at Barging Facility	845704	815093	1	100	100	0.1536	0.1536	g/s	1
Material Handling (Stockpiling Area)	846184	814759	2	125	125	0.1920	0.1920	g/s	1
Wind erosion	846184	814759	3	NA	NA	0.8080	0.8080	g/s	2
Excavation	846184	814759	4	NA	NA	0.1920	0.1920	g/s	1
Haul Road (R1 & R2)	See Figure 4A	See Figure 4A	5, 6	30 (laden)	25 (laden)	0.0003	0.0002	g/m/s	3
Haul Road (R3)	See Figure 4A	See Figure 4A	7	100 (unladen) + 100 (laden)	100 (unladen) + 100 (laden)	0.0015	0.0015	g/m/s	3
Haul Road (R4 to R11)	See Figure 4A	See Figure 4A	8 to 15	30 (unladen)	25 (unladen)	0.0002	0.0001	g/m/s	3
Haul Road (R12 to R14)	See Figure 4A	See Figure 4A	16 to 18	130 (unladen) + 100 (laden)	125 (unladen) + 100 (laden)	0.0017	0.0017	g/m/s	3
Haul Road (R15)	See Figure 4A	See Figure 4A	19	125 (unladen) + 125 (laden)	125 (unladen) + 125 (laden)	0.0025	0.0025	g/m/s	3
Disposal Route	See Figure 4A	See Figure 4A	21 to 28	176 (unladen) + 176 (laden)	109 (unladen) + 109 (laden)	0.0029	0.0018	g/m/s	3

Note

1 Emission rate for material handling/excavation derived based on USEPA AP-42 Section 13.2.4 (edition 01/95), $E (kg/Mg) = k(0.0016)(U/2.2)^{1.5}/(M/2)^{1.4}$

Where $k = 0.74$, $U = 2.1m/s$, $M = 2.0\%$
 Density of the public fill (kg/m^3) = 2500
 Capacity of a typical truck = 6.5 m³
 Control efficiency = 70%

(Information from CED)
 (Information from CED)

(USEPA AP-42 Section 13.2.4.4 - Control efficiency up to 90% by continuous chemical treating of materials, coupled with watering)

2 Emission rate derived for wind erosion based on USEPA AP-42 Section 11.9 (edition 10/98), $E (Mg/ha/yr) = 0.85$

Where stockpiling area (ha) = 60
 Control efficiency = 50%

3 Emission rates for haul road based on USEPA AP-42 Section 13.2.2 (edition 09/98) $E (kg/v-km) = k(s/12)^2(W/3)^3/(M/0.2)^2(S/15)$

Where $k = 10$, $s=4.8$, $a = 0.8$, $b = 0.5$, $c = 0.4$, $S = 6.2$ mph, $M = 10\%$
 For Haul Road R1 to R14 with Area 137, $s = 4.8\%$
 For Haul Road R15 & R16 with Area 137, $s = 7.1\%$
 For Disposal Route within SENT, $s = 6.4\%$
 For Haul Roads R1 to R16, $W = 8$ ton (unladen) & 24 ton (laden)
 For Disposal Routes within SENT, $W = 9.8$ ton (unladen) & 13.8 ton (laden) (Information from SENT Landfill/EPD)
 Control efficiency = 90%

(average vehicle speed = 10km/h; moisture content of 10% based on presence of water spraying)

(silt content based on Table 13.2.2-1 - plant road for sand/ gravel processing in AP-42;)

(silt content based on Table 13.2.2-1 - material storage area for sand/ gravel processing in AP-42;)

(silt content based on Table 13.2.2-1 - disposal route for municipal solid waste landfills in AP-42;)

(Information based on typical unladen truck weight and typical truckload of 6.5m³)

(Control Techniques for Particulate Emissions from Stationary Sources Vo.2 Section 9.12.2.2.1 - a dust control efficiency of up to 95% is achievable when a dust suppression chemical is used)

- * Max. excavation rate (m³/hr) = 813
- Density of the public fill (kg/m^3) = 2500
- Max. excavation rate (Mg/hr) = 2033
- Particle distribution - 80% (30µm) & 20% (10µm)

(Guide to Rock and Soil Descriptions issued by Geotechnical Control Office, Civil Engineering Department, Hong Kong (1988))