Asarco Mission Emissions Summary

(1) Criteria Pollutants

Pollutant Name	Total Emissions Fugitive + Non-fugitive (tpy)	Total Emissions Fugitive (tpy)	Total Emissions Non-Fugitive (tpy)
CO	283.63	275.50	8.13
NOx	80.81	69.90	10.90
SOx	8.98	8.22	0.76
VOC	7.47	2.08	5.39
PM	7,390.39	7,205.18	185.21
PM_{10}	2,658.38	2,491.56	166.82

(2) HAPs

Total facility-wide HAP Emissions =	5.18	tpy
HAPs included in VOC Emissions =	4.46	tpy
HAPs included in PM Emissions =	0.31	tpy
HAPs Not Part of Other Pollutants =	0.41	tpy

POTENTIAL TO EMIT
CRITERIA AIR POLLUTANTS
ASARCO MISSION COMPLEX

Number	Emissions Source/Activity	Emissions (Uncontrolled)														Emissions (Controlled)						Control Device	Emissions Summary		
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$		PM	PM_{10}	$PM_{2.5}$
		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)		(ton/yr)	(ton/yr)	(ton/yr)
Facility-wide		**136.26**	**76.75**	**20.18**	**137.22**	**34.93**	**3.36**	**3.32**	**763.72**	**471.24**	**103.51**	**283.63**	**80.81**	**8.98**	**7.47**	**1,620.37**	**552.43**	**119.08**	**6,626.66**	**2,187.14**	**455.78**		**7,390.39**	**2,658.38**	**559.29**
Mining Subtotal		72.26	46.12	14.36	62.90	15.96	1.88	0.00	487.83	341.45	82.41	275.50	69.90	8.22	0.00	1,238.24	353.32	36.85	5,423.49	1,547.54	161.41		5,911.32	1,888.99	243.82
OFMA-1	Drilling	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.69	1.69	1.69	7.39	7.39	7.39	Shields/water	7.39	7.39	7.39
OFMA-2	Blasting	9.64	5.01	0.29	62.90	15.96	1.88	n/a	42.20	21.95	1.27	275.50	69.90	8.22	n/a	n/a	n/a	n/a	n/a	n/a	n/a	None	42.20	21.95	1.27
VFMA-1	Haulage	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	976.75	277.75	27.78	4,278.15	1,216.55	121.66	Road watering	4,278.15	1,216.55	121.66
VFMA-2	Dozing	14.17	10.63	1.49	n/a	n/a	n/a	n/a	248.04	186.03	26.04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	None	248.04	186.03	26.04
VFMA-3	Grading	25.53	15.32	0.79	n/a	n/a	n/a	n/a	111.80	67.08	3.47	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	None	111.80	67.08	3.47
VFMA-4	Rubber Tire Rigs	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	124.78	35.48	3.55	546.54	155.42	15.54	Road watering	546.54	155.42	15.54
VFMA-5	Land Clearing	11.19	11.19	11.19	n/a	n/a	n/a	n/a	49.00	49.00	49.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	None	49.00	49.00	49.00
VFMA-6	Misc. Vehicles	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	135.02	38.40	3.84	591.40	168.17	16.82	Road watering	591.40	168.17	16.82
HFMA-1	Unloading	8.40	3.97	0.60	n/a	n/a	n/a	n/a	36.79	17.40	2.63	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	None	36.79	17.40	2.63

POTENTIAL TO EMIT
CRITERIA AIR POLLUTANTS
ASARCO MISSION COMPLEX

Number	Emissions Source/Activity	Emissions (Uncontrolled)														Emissions (Controlled)						Control Device	Emissions Summary		
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$		PM	PM_{10}	$PM_{2.5}$
Mission Circuit Subtotal		3.49	1.40	0.39	0.00	0.00	0.00	0.24	15.30	6.13	1.73	0.00	0.00	0.00	1.04	167.35	98.56	49.24	732.97	431.69	215.67		748.27	437.82	217.40
SSOPM-1	Primary Crusher	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.55	1.55	1.55	6.81	6.81	6.81	Scrubber	6.81	6.81	6.81
SSOPM-2a	Transfer to Secondary (North)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.06	2.06	2.06	9.02	9.02	9.02	Scrubber	9.02	9.02	9.02
SSOPM-2b	Transfer to Secondary (South)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.06	2.06	2.06	9.02	9.02	9.02	Scrubber	9.02	9.02	9.02
SSOPM-3	(307-108A); Sec. & Tertiary Crushing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.87	1.87	1.87	8.20	8.20	8.20	Scrubber	8.20	8.20	8.20
SSOPM-3	(307-108B); Sec. & Tertiary Crushing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.87	1.87	1.87	8.20	8.20	8.20	Scrubber	8.20	8.20	8.20
SSOPM-4	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.72	0.72	0.72	3.15	3.15	3.15	Scrubber	3.15	3.15	3.15
SSOPM-5	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.72	0.72	0.72	3.15	3.15	3.15	Scrubber	3.15	3.15	3.15
SSOPM-6	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.72	0.72	0.72	3.15	3.15	3.15	Scrubber	3.15	3.15	3.15
SSOPM-7	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.72	0.72	0.72	3.15	3.15	3.15	Scrubber	3.15	3.15	3.15
SSOPM-8	Transfer Ore to Tripper Car	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.40	1.40	1.40	6.15	6.15	6.15	Baghouse	6.15	6.15	6.15
SSOPM-9	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.52	0.52	0.52	2.26	2.26	2.26	Baghouse	2.26	2.26	2.26
SSOPM-10	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.52	0.52	0.52	2.26	2.26	2.26	Baghouse	2.26	2.26	2.26
SSOPM-11	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.52	0.52	0.52	2.26	2.26	2.26	Baghouse	2.26	2.26	2.26
SSOPM-12	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.52	0.52	0.52	2.26	2.26	2.26	Baghouse	2.26	2.26	2.26
SSOPM-13	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.52	0.52	0.52	2.26	2.26	2.26	Baghouse	2.26	2.26	2.26
SSOPM-14	Transfer to Rod Mill	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.50	1.50	1.50	6.57	6.57	6.57	Scrubber	6.57	6.57	6.57
SSOPM-15	Transfer to Rod Mill	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.50	1.50	1.50	6.57	6.57	6.57	Scrubber	6.57	6.57	6.57
SSOPM-16	Transfer to Rod Mill	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.50	1.50	1.50	6.57	6.57	6.57	Scrubber	6.57	6.57	6.57
SSOPN-6	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.18	1.18	1.18	5.18	5.18	5.18	Dry Dust Collector	5.18	5.18	5.18
SSOPN-7	Transfer to Ball Mills	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.16	3.16	3.16	13.86	13.86	13.86	Wet Scrubber	13.86	13.86	13.86
SSOPM-17	Lime Conveyance	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.14	0.14	0.14	0.63	0.63	0.63	Dry Dust Collector	0.63	0.63	0.63
SSOPM-18	Lime Transfer feeder to Conveyor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.14	0.14	0.14	0.63	0.63	0.63	Dry Dust Collector	0.63	0.63	0.63
HFOPM-5	Mission Mill Lime Feeder Conveyor	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.36	4.36	4.36	19.10	19.10	19.10	Enclosure	19.10	19.10	19.10
HFOPM-1	Dump Pocket	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	68.70	34.35	9.72	300.91	150.45	42.58	Water spray	300.91	150.45	42.58
HFOPM-2	Transfer to Coarse Ore Storage	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	68.70	34.35	9.72	300.91	150.45	42.58	Water spray	300.91	150.45	42.58
HFOPM-3	Transfer of Concentrate	0.87	0.35	0.10	n/a	n/a	n/a	n/a	3.80	1.52	0.43	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Wet Material	3.80	1.52	0.43
HFOPM-4	Transfer of Concentrate	2.60	1.04	0.29	n/a	n/a	n/a	n/a	11.40	4.56	1.29	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Wet Material	11.40	4.56	1.29
HFOPN-3	Transfer to Cleanup Conveyer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.17	0.09	0.02	0.75	0.37	0.11	Enclosure	0.75	0.37	0.11
WFOPM-1	Coarse ore storage	0.02	0.01	0.00	n/a	n/a	n/a	n/a	0.07	0.04	0.01	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Wet Material	0.07	0.04	0.01
WFOPM-2	Concentrate Storage Pile	0.01	0.00	0.00	n/a	n/a	n/a	n/a	0.02	0.01	0.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Wet Material	0.02	0.01	0.00
N/A	PAX Usage	n/a	n/a	n/a	n/a	n/a	n/a	0.24	n/a	n/a	n/a	n/a	n/a	n/a	1.04	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a

POTENTIAL TO EMIT
CRITERIA AIR POLLUTANTS
ASARCO MISSION COMPLEX

Number	Emissions Source/Activity	Emissions (Uncontrolled)														Emissions (Controlled)						Control Device	Emissions Summary		
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$		PM	PM_{10}	$PM_{2.5}$
	South Circuit Subtotal	0.03	0.02	0.00	0.00	0.00	0.00	0.24	0.14	0.07	0.01	0.00	0.00	0.00	1.04	195.03	98.23	30.67	383.66	197.73	68.52		383.81	197.80	68.53
SSOPS-1	Primary Crushing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.54	0.54	0.54	2.37	2.37	2.37	Dry Dust Collector	2.37	2.37	2.37
SSOPS-2	Transfer to Stacker	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.38	0.38	0.38	1.68	1.68	1.68	Wet Scrubber	1.68	1.68	1.68
SSOPS-3	(30-150A); Trans. to SAG	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.32	0.32	0.32	1.41	1.41	1.41	Dry Dust Collector	1.41	1.41	1.41
SSOPS-3	(30-150B); Trans. to SAG	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.32	0.32	0.32	1.41	1.41	1.41	Dry Dust Collector	1.41	1.41	1.41
SSOPS-4	Omni Cone Crusher and Bypass	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.11	1.11	1.11	4.88	4.88	4.88	Wet Scrubber	4.88	4.88	4.88
SSOPS-4A	Transf. from Intermediate stockpile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.27	1.27	1.27	5.56	5.56	5.56	Wet Scrubber	5.56	5.56	5.56
SSOPS-6	Lime Loading	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.05	0.05	0.05	0.23	0.23	0.23	Dry Dust Collector	0.23	0.23	0.23
HFOPS-1	Transfer of Ore - Dump Pocket	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	59.40	29.70	8.41	112.50	56.25	15.92	Water sprays/encl.	112.50	56.25	15.92
HFOPS-2	Transfer Point of Crushed Ore	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	118.80	59.40	16.81	225.00	112.50	31.84	Water sprays	225.00	112.50	31.84
WFOPS-1	Coarse Ore Storage	0.02	0.01	0.00	n/a	n/a	n/a	n/a	0.10	0.05	0.01	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	None	0.10	0.05	0.01
PFOPS-8	Omnicone Circuit	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.00	1.20	0.34	13.14	5.26	1.49	Wet process/encl.	13.14	5.26	1.49
HFOPS-3	Transfer to Inter. Ore Stockpile	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.00	1.20	0.34	13.14	5.26	1.49	Wet process/encl.	13.14	5.26	1.49
WFOPS-2	Intermediate stockpile	0.01	0.00	0.00	n/a	n/a	n/a	n/a	0.02	0.01	0.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	None	0.02	0.01	0.00
HFOPS-4	Conveyer to Concentrate Stacking	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.95	0.78	0.22	0.68	0.27	0.08	Wet process/encl.	0.68	0.27	0.08
HFOPS-5	Concentrate Loading	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.88	1.95	0.55	1.69	0.68	0.19	Wet process/encl.	1.69	0.68	0.19
WFOPS-3	Concentrate Storage Pile	0.01	0.00	0.00	n/a	n/a	n/a	n/a	0.02	0.01	0.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Wet process/encl.	0.02	0.01	0.00
N/A	PAX Usage	n/a	n/a	n/a	n/a	n/a	n/a	0.24	n/a	n/a	n/a	n/a	n/a	n/a	1.04	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a
	By-Products Subtotal	0.04	0.04	0.04	0.48	0.57	0.00	0.03	0.19	0.19	0.19	2.10	2.50	0.02	0.14	1.31	1.31	1.31	5.74	5.74	5.74		5.93	5.93	5.93
SSMP-1	Dryer	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.31	1.31	1.31	5.74	5.74	5.74	Wet Scrubber	5.74	5.74	5.74
CFMP-1	Roasters	0.02	0.02	0.02	0.24	0.29	0.00	0.02	0.10	0.10	0.10	1.05	1.25	0.01	0.07	n/a	n/a	n/a	n/a	n/a	n/a	None	0.10	0.10	0.10
CFMP-2	Roasters	0.02	0.02	0.02	0.24	0.29	0.00	0.02	0.10	0.10	0.10	1.05	1.25	0.01	0.07	n/a	n/a	n/a	n/a	n/a	n/a	None	0.10	0.10	0.10
	Petroleum Storage Tanks Subtotal	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00	0.00	4.34	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
n/a	Gasoline tank (20,000 gallon)	n/a	n/a	n/a	n/a	n/a	n/a	0.76	n/a	n/a	n/a	n/a	n/a	n/a	3.31	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a
n/a	Gasoline Dispensing	n/a	n/a	n/a	n/a	n/a	n/a	0.15	n/a	n/a	n/a	n/a	n/a	n/a	0.66	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a
n/a	Diesel tank (250,000 gallon)	n/a	n/a	n/a	n/a	n/a	n/a	0.07	n/a	n/a	n/a	n/a	n/a	n/a	0.30	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a
n/a	Diesel tank (20,000 gallon)	n/a	n/a	n/a	n/a	n/a	n/a	0.01	n/a	n/a	n/a	n/a	n/a	n/a	0.02	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a
n/a	Diesel tank (20,000 gallon)	n/a	n/a	n/a	n/a	n/a	n/a	0.01	n/a	n/a	n/a	n/a	n/a	n/a	0.02	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a
n/a	Diesel tank (20,000 gallon)	n/a	n/a	n/a	n/a	n/a	n/a	0.01	n/a	n/a	n/a	n/a	n/a	n/a	0.02	n/a	n/a	n/a	n/a	n/a	n/a	None	n/a	n/a	n/a

POTENTIAL TO EMIT
CRITERIA AIR POLLUTANTS
ASARCO MISSION COMPLEX

Number	Emissions Source/Activity	Emissions (Uncontrolled)														Emissions (Controlled)						Control Device	Emissions Summary		
		PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$		PM	PM_{10}	$PM_{2.5}$
Emergency Engines Subtotal		1.14	1.14	1.14	73.84	18.40	1.48	1.82	0.57	0.57	0.57	6.03	8.40	0.74	0.91	0.00	0.00	0.00	0.00	0.00	0.00		0.57	0.57	0.57
n/a	North Mill Admin Generator	0.00	0.00	0.00	0.62	0.42	0.15	0.19	0.00	0.00	0.00	0.31	0.21	0.08	0.09	n/a	n/a	n/a	n/a	n/a	n/a	None	0.00	0.00	0.00
n/a	North Mill Thickener Generator	0.06	0.06	0.06	0.69	0.65	0.17	0.21	0.03	0.03	0.03	0.35	0.33	0.09	0.11	n/a	n/a	n/a	n/a	n/a	n/a	None	0.03	0.03	0.03
n/a	Dispatch Location Generator	0.00	0.00	0.00	0.62	0.42	0.15	0.19	0.00	0.00	0.00	0.31	0.21	0.08	0.09	n/a	n/a	n/a	n/a	n/a	n/a	None	0.00	0.00	0.00
n/a	South Mill Generator	1.07	1.07	1.07	3.26	15.13	1.00	1.23	0.54	0.54	0.54	1.63	7.57	0.50	0.61	n/a	n/a	n/a	n/a	n/a	n/a	None	0.54	0.54	0.54
n/a	South Mill Tank Hill Generator	0.00	0.00	0.00	68.65	1.77	0.00	0.01	0.00	0.00	0.00	3.43	0.09	0.00	0.00	n/a	n/a	n/a	n/a	n/a	n/a	None	0.00	0.00	0.00
Wind Erosion Subtotal		59.29	28.04	4.25	0.00	0.00	0.00	0.00	259.69	122.83	18.60	0.00	0.00	0.00	0.00	18.45	1.01	1.01	80.80	4.44	4.44		340.49	127.27	23.04
WFDA-1	Wind Erosion - Tailings Dams	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	18.45	1.01	1.01	80.80	4.44	4.44	Chemical app.	80.80	4.44	4.44
WFDA-2	Wind Erosion--Overburden	59.29	28.04	4.25	n/a	n/a	n/a	n/a	259.69	122.83	18.60	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Chemical app.	259.69	122.83	18.60

POTENTIAL TO EMIT
HAZARDOUS AIR POLLUTANT SUMMARY
ASARCO MISSION COMPLEX

Emission Point	Emissions Source/Activity	Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	2-Methylnaphthalene	3-Methylchloranthrene	7,12-Dimethylbenz(a)anthracene
	TOTAL	0.00	0.01	0.00	0.00	0.02	0.01	0.02	0.62	0.00	0.00	0.00	0.20	0.60	0.60	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mining Activities: Sub-total (Fugitive & Non-Fugitive)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
OFMA-1	Drilling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFMA-2	Blasting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CFMA-1	Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CFMA-2	Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CFMA-3	Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-1	Haulage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-2	Dozing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-3	Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-4	Rubber Tire Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-5	Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-6	Misc. Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFMA-1	Unloading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mission Circuit: Sub-total(Fugitive & Non-Fugitive)	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.36**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SSOPM-1	Primary Crusher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-2a	Transfer to Secondary (North)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-2b	Transfer to Secondary (South)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-3	(307-108A); Sec. & Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-3	(307-108B); Sec. & Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-4	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-5	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-6	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-7	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-8	Transfer Ore to Tripper Car	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-9	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-10	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-11	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-12	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-13	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-14	Transfer to Rod Mill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-15	Transfer to Rod Mill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-16	Transfer to Rod Mill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPN-6	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPN-7	Transfer to Ball Mills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-17	Lime Conveyance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-18	Lime Transfer feeder to Conveyor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-5	Mission Mill Lime Feeder Conveyor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-1	Dump Pocket	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-2	Transfer to Coarse Ore Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-3	Transfer of Concentrate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-4	Transfer of Concentrate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPN-3	Transfer to Cleanup Conveyer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPM-1	Coarse ore storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPM-2	Concentrate Storage Pile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	PAX Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

POTENTIAL TO EMIT
HAZARDOUS AIR POLLUTANT SUMMARY
ASARCO MISSION COMPLEX

Emission Point	Emissions Source/Activity	Dichlorobenzene	Hexane	Ethylbenzene	Xylene - p	Xylelene-m	Xylene-o	MTBE	Carbon Disulfide	MDI	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,3-Dichloropropene	Total (tons/yr)
	TOTAL	0.00	0.24	0.12	0.00	0.00	0.00	0.60	2.08	0.00	0.00	0.00	0.00	5.18

	Mining Activities: Sub-total (Fugitive & Non-Fugitive)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.03**
OFMA-1	Drilling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFMA-2	Blasting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
CFMA-1	Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CFMA-2	Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
CFMA-3	Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
VFMA-1	Haulage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-2	Dozing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-3	Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-4	Rubber Tire Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-5	Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VFMA-6	Misc. Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFMA-1	Unloading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Mission Circuit: Sub-total(Fugitive & Non-Fugitive)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.04**	**0.00**	**0.00**	**0.00**	**0.00**	**1.43**
SSOPM-1	Primary Crusher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-2a	Transfer to Secondary (North)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-2b	Transfer to Secondary (South)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-3	(307-108A); Sec. & Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-3	(307-108B); Sec. & Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-4	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-5	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-6	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-7	Secondary and Tertiary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-8	Transfer Ore to Tripper Car	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-9	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-10	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-11	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-12	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-13	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-14	Transfer to Rod Mill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-15	Transfer to Rod Mill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-16	Transfer to Rod Mill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPN-6	Transfer to Fine Ore Bin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPN-7	Transfer to Ball Mills	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-17	Lime Conveyance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-18	Lime Transfer feeder to Conveyor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-5	Mission Mill Lime Feeder Conveyor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-1	Dump Pocket	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
HFOPM-2	Transfer to Coarse Ore Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
HFOPM-3	Transfer of Concentrate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-4	Transfer of Concentrate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
HFOPN-3	Transfer to Cleanup Conveyer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPM-1	Coarse ore storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPM-2	Concentrate Storage Pile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	PAX Usage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00	1.04

POTENTIAL TO EMIT
HAZARDOUS AIR POLLUTANT SUMMARY
ASARCO MISSION COMPLEX

Emission Point	Emissions Source/Activity	Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se	Benzene	Toluene	Xylenes	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	2-Methylnaphthalene	3-Methylchloranthrene	7,12-Dimethylbenz(a)anthracene
South Circuit: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SSOPS-1	Primary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-2	Transfer to Stacker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-3	(30-150A); Trans. to SAG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-3	(30-150B); Trans. to SAG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-4	Omni Cone Crusher and Bypass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-4A	Intermediate stockpile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-6	Lime Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PFOPS-0	Transfer of Ore - Dump Pocket	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-2	Transfer Point of Crushed Ore	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPS-1	Coarse Ore Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PFOPS-8	Omnicone Circuit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-3	Transfer to Inter. Ore Stockpile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPS-2	Intermediate stockpile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-4	Conveyer to Concentrate Stacking	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-5	Concentrate Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPS-3	Concentrate Storage Pile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	Xanthate Use	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind Erosion: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
WFDA-1	Tailings Dams	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFDA-2	Overburden Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moly Plant: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SSMP-1	Dryer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CFMP-1	Roasters	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CFMP-2	Roasters	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanks: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.19**	**0.60**	**0.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
N/A	Gasoline Storage Tank (UST)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.50	0.50	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	Gasoline Dispensing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.10	0.10	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	Diesel Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Engines: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
N/A	North Mill Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	North Mill Thickener Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	Dispatch Location Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	South Mill Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	South Mill Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

POTENTIAL TO EMIT
HAZARDOUS AIR POLLUTANT SUMMARY
ASARCO MISSION COMPLEX

Emission Point	Emissions Source/Activity	Dichlorobenzene	Hexane	Ethylbenzene	Xylene - p	Xylelene-m	Xylene-o	MTBE	Carbon Disulfide	MDI	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,3-Dichloropropene	Total (tons/yr)
South Circuit: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.04**	**0.00**	**0.00**	**0.00**	**0.00**	**1.25**
SSOPS-1	Primary Crushing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-2	Transfer to Stacker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-3	(30-150A); Trans. to SAG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-3	(30-150B); Trans. to SAG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-4	Omni Cone Crusher and Bypass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-4A	Intermediate stockpile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-6	Lime Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PFOPS-0	Transfer of Ore - Dump Pocket	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
HFOPS-2	Transfer Point of Crushed Ore	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
WFOPS-1	Coarse Ore Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PFOPS-8	Omnicone Circuit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
HFOPS-3	Transfer to Inter. Ore Stockpile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
WFOPS-2	Intermediate stockpile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-4	Conveyer to Concentrate Stacking	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-5	Concentrate Loading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPS-3	Concentrate Storage Pile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	Xanthate Use	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00	1.04
Wind Erosion: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**
WFDA-1	Tailings Dams	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
WFDA-2	Overburden Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moly Plant: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.05**
SSMP-1	Dryer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CFMP-1	Roasters	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
CFMP-2	Roasters	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Tanks: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.20**	**0.12**	**0.00**	**0.00**	**0.00**	**0.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.38**
N/A	Gasoline Storage Tank (UST)	0.00	0.17	0.10	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	1.99
N/A	Gasoline Dispensing	0.00	0.03	0.02	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.40
N/A	Diesel Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Engines: Sub Total (Fugitive & Non-Fugitive)		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
N/A	North Mill Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	North Mill Thickener Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	Dispatch Location Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	South Mill Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N/A	South Mill Emergency Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

POTENTIAL TO EMIT
GREENHOUSE GAS EMISSIONS
ASARCO MISSION COMPLEX

Number	Emissions Source/Activity	CO2 (ton/yr)	CH4 (ton/yr)	N2O (ton/yr)	CO2e (ton/yr)
	Facility-wide	**9,636.27**	**0.17**	**0.08**	**9,663.20**

	Mining Subtotal	6,215.50	0.10	0.02	6,223.74
OFMA-1	Drilling	n/a	n/a	n/a	n/a
OFMA-2	Blasting	n/a	n/a	n/a	n/a
CFMA-1	Generator	67.50	0.00	0.00	67.59
CFMA-2	Generator	2,320.00	0.04	0.01	2,323.47
CFMA-3	Generator	3,828.00	0.06	0.01	3,832.68
VFMA-1	Haulage	n/a	n/a	n/a	n/a
VFMA-2	Dozing	n/a	n/a	n/a	n/a
VFMA-3	Grading	n/a	n/a	n/a	n/a
VFMA-4	Rubber Tire Rigs	n/a	n/a	n/a	n/a
VFMA-5	Land Clearing	n/a	n/a	n/a	n/a
VFMA-6	Misc. Vehicles	n/a	n/a	n/a	n/a
HFMA-1	Unloading	n/a	n/a	n/a	n/a

	Mission Circuit Subtotal	0.00	0.00	0.00	0.00
SSOPM-1	Primary Crusher	n/a	n/a	n/a	n/a
SSOPM-2a	Transfer to Secondary (North)	n/a	n/a	n/a	n/a
SSOPM-2b	Transfer to Secondary (South)	n/a	n/a	n/a	n/a
SSOPM-3	(307-108A); Sec. & Tertiary Crushing	n/a	n/a	n/a	n/a
SSOPM-3	(307-108B); Sec. & Tertiary Crushing	n/a	n/a	n/a	n/a
SSOPM-4	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a
SSOPM-5	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a
SSOPM-6	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a
SSOPM-7	Secondary and Tertiary Crushing	n/a	n/a	n/a	n/a
SSOPM-8	Transfer Ore to Tripper Car	n/a	n/a	n/a	n/a
SSOPM-9	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a
SSOPM-10	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a
SSOPM-11	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a
SSOPM-12	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a
SSOPM-13	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a
SSOPM-14	Transfer to Rod Mill	n/a	n/a	n/a	n/a
SSOPM-15	Transfer to Rod Mill	n/a	n/a	n/a	n/a
SSOPM-16	Transfer to Rod Mill	n/a	n/a	n/a	n/a
SSOPN-6	Transfer to Fine Ore Bin	n/a	n/a	n/a	n/a
SSOPN-7	Transfer to Ball Mills	n/a	n/a	n/a	n/a
SSOPM-17	Lime Conveyance	n/a	n/a	n/a	n/a
SSOPM-18	Lime Transfer feeder to Conveyor	n/a	n/a	n/a	n/a
HFOPM-5	Mission Mill Lime Feeder Conveyor	n/a	n/a	n/a	n/a
HFOPM-1	Dump Pocket	n/a	n/a	n/a	n/a
HFOPM-2	Transfer to Coarse Ore Storage	n/a	n/a	n/a	n/a
HFOPM-3	Transfer of Concentrate	n/a	n/a	n/a	n/a
HFOPM-4	Transfer of Concentrate	n/a	n/a	n/a	n/a
WFOPM-1	Coarse ore storage	n/a	n/a	n/a	n/a
WFOPM-2	Concentrate Storage Pile	n/a	n/a	n/a	n/a
N/A	PAX Usage	n/a	n/a	n/a	n/a

	South Circuit Subtotal	0.00	0.00	0.00	0.00
SSOPS-1	Primary Crushing	n/a	n/a	n/a	n/a
SSOPS-2	Transfer to Stacker	n/a	n/a	n/a	n/a
SSOPS-3	(30-150A); Trans. to SAG	n/a	n/a	n/a	n/a
SSOPS-3	(30-150B); Trans. to SAG	n/a	n/a	n/a	n/a
SSOPS-4	Omni Cone Crusher and Bypass	n/a	n/a	n/a	n/a
SSOPS-4A	Transf. from Intermediate stockpile	n/a	n/a	n/a	n/a
SSOPS-6	Lime Loading	n/a	n/a	n/a	n/a
PFOPS-0	Transfer of Ore - Dump Pocket	n/a	n/a	n/a	n/a
HFOPS-2	Transfer Point of Crushed Ore	n/a	n/a	n/a	n/a
WFOPS-1	Coarse Ore Storage	n/a	n/a	n/a	n/a
PFOPS-8	Omnicone Circuit	n/a	n/a	n/a	n/a
HFOPS-3	Transfer to Inter. Ore Stockpile	n/a	n/a	n/a	n/a
WFOPS-2	Intermediate stockpile	n/a	n/a	n/a	n/a
HFOPS-4	Conveyer to Concentrate Stacking	n/a	n/a	n/a	n/a
HFOPS-5	Concentrate Loading	n/a	n/a	n/a	n/a
WFOPS-3	Concentrate Storage Pile	n/a	n/a	n/a	n/a
N/A	PAX Usage	n/a	n/a	n/a	n/a

	By-Products Subtotal	3,003.43	0.06	0.06	3,021.28
SSMP-1	Dryer	n/a	n/a	n/a	n/a
CFMP-1	Roasters	1,501.71	0.03	0.03	1,510.64
CFMP-2	Roasters	1,501.71	0.03	0.03	1,510.64

	Petroleum Storage Tanks Subtotal	0.00	0.00	0.00	0.00
n/a	Gasoline tank (20,000 gallon)	n/a	n/a	n/a	n/a
n/a	Gasoline Dispensing	n/a	n/a	n/a	n/a
n/a	Diesel tank (250,000 gallon)	n/a	n/a	n/a	n/a
n/a	Diesel tank (20,000 gallon)	n/a	n/a	n/a	n/a
n/a	Diesel tank (20,000 gallon)	n/a	n/a	n/a	n/a
n/a	Diesel tank (20,000 gallon)	n/a	n/a	n/a	n/a

	Emergency Engines Subtotal	417.35	0.02	0.00	418.18
n/a	North Mill Admin Generator	43.16	0.00	0.00	43.22
n/a	North Mill Thickener Generator	48.56	0.00	0.00	48.62
n/a	Dispatch Location Generator	43.16	0.00	0.00	43.22
n/a	South Mill Generator	281.33	0.00	0.00	281.68
n/a	South Mill Tank Hill Generator	1.13	0.01	0.00	1.45

	Wind Erosion Subtotal	0.00	0.00	0.00	0.00
WFDA-1	Wind Erosion - Tailings Dams	n/a	n/a	n/a	n/a
WFDA-2	Wind Erosion--Overburden	n/a	n/a	n/a	n/a

OFMA-1 Drilling

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Number of holes}\left(\frac{holes}{year}\right) x \text{ Emission Factor}\left(\frac{lb}{hole}\right) x \text{ Control Efficiency (\%)}\, x \frac{1}{8{,}760}\left(\frac{year}{hour}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Number of holes}\left(\frac{holes}{year}\right) x \text{ Emission Factor}\left(\frac{lb}{hole}\right) \text{x Control Efficiency (\%)}\, x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

Holes Drilled =	22,750	holes/yr	
Emission Factor (TSP) =	1.30	(lb/hole)	(Reference: AP-42, Table 11.9-4, Drilling)
Emission Factor (PM_{10}) =	1.30	(lb/hole)	(Note: Assumed PM = PM_{10} = $PM_{2.5}$ to provide a conservative estimate of potential emissions)
Emission Factor ($PM_{2.5}$) =	1.30	(lb/hole)	(Note: Assumed PM = PM_{10} = $PM_{2.5}$ to provide a conservative estimate of potential emissions)
Control Efficiency (Note #1)	50%		
Annual Operating Hours =	8,760	hours	

Emissions (Controlled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
1.69	1.69	1.69	7.39	7.39	7.39

Ore Assay										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

HAP Emissions										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFMA-2 Blasting

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{blast}\right) x \text{ Number of Blasts } \left(\frac{blasts}{year}\right) x \frac{1}{8{,}760}\left(\frac{year}{hour}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{blast}\right) x \text{ Number of Blasts } \left(\frac{blasts}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

$$\text{Emission Factor}\left(\frac{lb}{blast}\right) = 0.000014 \text{ x Area Blasted}^{1.5}$$

$$\text{Area Blasted}\left(\frac{ft^2}{blast}\right) = \text{Total Area Blasted } \left(\frac{ft^2}{year}\right) x \frac{1}{\text{Blasts per Year}}\left(\frac{year}{blasts}\right)$$

Holes Drilled	22,750	holes/yr
Blast Pattern (max)	1,050	ft^2 (Based on a blast area of 30 feet x 35 feet for each hole)
Blasts	375	blasts/yr
Total Area Blasted	23,887,500	ft^2/yr
Area	63,700	ft^2/blast
Annual Operating Hours	8,760	hours

Emission Factor (TSP) = 0.000014 (A)^1.5 (lb/blast) (Reference: AP-42, Table 11.9-1, Blasting Coal or Overburden)
Where: A = Area Blasted in ft^2

Emission Factor (TSP) =	225.08	lb/blast	
Emission Factor (PM_{10}) =	117.04	lb/blast	(Reference: Calculated as 0.52 * PM per in AP - 42, Table 11.9-1, Blasting Scaling Factors)
Emission Factor ($PM_{2.5}$) =	6.75	lb/blast	(Reference: Calculated as 0.03 * PM per in AP - 42, Table 11.9-1, Blasting Scaling Factors)

Emissions (Uncontrolled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	PM_{10}
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
9.64	5.01	0.29	42.20	21.95	1.27

Ore Assay										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

HAP Emissions										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00

OFMA-2 Blasting (Continued)

$$\text{Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{ton}\right) x \text{ Ammonium Nitrate}\left(\frac{ton}{year}\right) x \frac{1}{8{,}760}\left(\frac{year}{hour}\right)$$

$$\text{Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{ton}\right) x \text{ Ammonium Nitrate}\left(\frac{ton}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{year}\right)$$

Ammonium Nitrate Usage =	8,224	tons/yr	
Annual Operating Hours	8,760	hours	
Emission Factor (CO) =	67	lb/ton	(Reference: AP-42 Table 13.3-1, ANFO)
Emission Factor (NOx) =	17	lb/ton	(Reference: AP-42 Table 13.3-1, ANFO)
Emission Factor (SO_2) =	2	lb/ton	(Reference: AP-42 Table 13.3-1, ANFO)

Emissions (Uncontrolled)					
CO	NO_X	SO_2	CO	NO_X	SO_2
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
62.90	15.96	1.88	275.50	69.90	8.22

CFMA-1, CFMA -2, and CFMA-3 Generators

$$\text{Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{hp-hr}\right) x\ \text{Engine Rated Capacity}(hp)$$

$$\text{Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{hp-hr}\right) x\ \text{Engine Rated Capacity}(hp)\ x\ \text{Annual Operating Hours}\left(\frac{hours}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

Engine ID	Capacity	Operating Hours	Fuel Use	Fuel Use
	(hp)	(hours)	(gal/hr)	(gal/yr)
		(Note #2)		
CFMA-1	500	250	10	2,500
CFMA-2	1,000	4,000	25	100,000
CFMA-3	2,200	3,000	45	135,000

Emission Factors for CFMA-1

Criteria Pollutants (Reference: AP-42, Table 3.3-1, Diesel Fuel)

Emission Factor (NOx) =	0.031	lb/hp-hr	
Emission Factor (CO) =	6.68E-03	lb/hp-hr	
Emission Factor (SOx) =	2.05E-03	lb/hp-hr	
Emission Factor ($PM/PM_{10/}PM_{2.5}$) =	2.20E-03	lb/hp-hr	
Emission Factor (VOC) =	6.88E-03	lb/hp-hr	
Emission Factor (CO2) =	1.08	lb/hp-hr	
Emission Factor (CH4) =	6.60E-03	lb/MMBtu	(Reference: 40 CFR Part 98, Subpart C, Table C-2)
Emission Factor (N2O) =	1.32E-03	lb/MMBtu	(Reference: 40 CFR Part 98, Subpart C, Table C-2)

HAPs (Reference: AP-42, Table 3.3-2)

Emission Factor (Benzene) =	9.33E-04	lb/MMBtu
Emission Factor (Toluene) =	4.09E-04	lb/MMBtu
Emission Factor (Xylenes) =	2.85E-04	lb/MMBtu
Emission Factor (Butadiene) =	3.91E-05	lb/MMBtu
Emission Factor(Formaldehyde) =	1.18E-03	lb/MMBtu
Emission Factor (Acetaldehyde) =	7.67E-04	lb/MMBtu
Emission Factor (Acrolein) =	9.25E-05	lb/MMBtu
Emission Factor (Naphthalene) =	8.48E-05	lb/MMBtu
Emission Factor (Acenaphthylene) =	5.06E-06	lb/MMBtu
Emission Factor (Acenaphthene) =	1.42E-06	lb/MMBtu
Emission Factor (Fluorene) =	2.92E-05	lb/MMBtu
Emission Factor (Phenanthrene) =	2.94E-05	lb/MMBtu
Emission Factor (Anthracene) =	1.87E-06	lb/MMBtu
Emission Factor (Fluoranthene) =	7.61E-06	lb/MMBtu
Emission Factor (Pyrene) =	4.78E-06	lb/MMBtu
Emission Factor (Benz(a)anthracene) =	1.68E-06	lb/MMBtu
Emission Factor (Chrysene) =	3.53E-07	lb/MMBtu
Emission Factor (Benzo(b)fluoranthene) =	9.91E-08	lb/MMBtu
Emission Factor (Benzo(k)fluoranthene) =	1.55E-07	lb/MMBtu
Emission Factor (Benzo(a)pyrene) =	1.88E-07	lb/MMBtu
Emission Factor (Indeno(1,2,3-cd)pyrene) =	3.75E-07	lb/MMBtu
Emission Factor (Dibenz(a,h)anthracene) =	5.83E-07	lb/MMBtu
Emission Factor (Benzo(g,h,l)perylene) =	4.89E-07	lb/MMBtu

Emission Factors for CFMA-2 and CFMA-3

Criteria Pollutants (Reference: AP-42, Table 3.4-1, Diesel Fuel)

Emission Factor (NOx) =	0.0240	lb/hp-hr	
Emission Factor (CO) =	5.5E-03	lb/hp-hr	
Emission Factor (SOx) =	8.09E-03	lb/hp-hr	
Emission Factor ($PM/PM_{10/}PM_{2.5}$) =	0.0007	lb/hp-hr	
Emission Factor (VOC) =	7.05E-04	lb/hp-hr	
Emission Factor (CO2) =	1.16	lb/hp-hr	
Emission Factor (CH4) =	6.60E-03	lb/MMBtu	(Reference: 40 CFR Part 98, Subpart C, Table C-2)
Emission Factor (N2O) =	1.32E-03	lb/MMBtu	(Reference: 40 CFR Part 98, Subpart C, Table C-2)

HAPs (Reference: AP-42, Table 3.4-3)

Emission Factor (Benzene) =	7.76E-04	lb/MMBtu
Emission Factor (Toluene) =	2.81E-04	lb/MMBtu
Emission Factor (Xylenes) =	1.93E-04	lb/MMBtu
Emission Factor(Formaldehyde) =	7.89E-05	lb/MMBtu
Emission Factor (Acetaldehyde) =	2.52E-05	lb/MMBtu
Emission Factor (Acrolein) =	7.88E-06	lb/MMBtu
Emission Factor (Naphthalene) =	1.30E-04	lb/MMBtu
Emission Factor (Acenaphthylene) =	9.23E-06	lb/MMBtu
Emission Factor (Acenaphthene) =	4.68E-06	lb/MMBtu
Emission Factor (Fluorene) =	1.28E-05	lb/MMBtu
Emission Factor (Phenanthrene) =	4.08E-04	lb/MMBtu
Emission Factor (Anthracene) =	1.23E-06	lb/MMBtu
Emission Factor (Fluoranthene) =	4.03E-06	lb/MMBtu
Emission Factor (Pyrene) =	3.71E-06	lb/MMBtu
Emission Factor (Benz(a)anthracene) =	6.22E-07	lb/MMBtu
Emission Factor (Chrysene) =	1.53E-06	lb/MMBtu
Emission Factor (Benzo(b)fluoranthene) =	1.11E-06	lb/MMBtu
Emission Factor (Benzo(k)fluoranthene) =	2.18E-07	lb/MMBtu
Emission Factor (Benzo(a)pyrene) =	2.57E-07	lb/MMBtu
Emission Factor (Indeno(1,2,3-cd)pyrene) =	4.14E-07	lb/MMBtu
Emission Factor (Dibenz(a,h)anthracene) =	3.46E-07	lb/MMBtu
Emission Factor (Benzo(g,h,l)perylene) =	5.56E-07	lb/MMBtu

CFMA-1, CFMA -2, and CFMA-3 Generators (Continued)

Diesel Heating Value = 124,238 Btu/gal

Emission Unit	Emissions (Uncontrolled)									
	NOx	CO	SO_X	$PM/PM_{10}/PM_{2.5}$	VOC	NO_X	CO	SOx	$PM/PM_{10}/PM_{2.5}$	VOC
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/year)	(ton/year)	(ton/year)	(ton/year)	(ton/year)
CFMA-1	15.50	3.34	1.03	1.10	3.44	1.94	0.42	0.13	0.14	0.43
CFMA-2	24.00	5.50	8.09	0.70	0.71	48.00	11.00	16.18	1.40	1.41
CFMA-3	52.80	12.10	17.80	1.54	1.55	79.20	18.15	26.70	2.31	2.33
Subtotal	92.30	20.94	26.91	3.34	5.70	129.14	29.57	43.01	3.85	4.17

Emission Unit	Emissions (Uncontrolled)			
	CO2	CH4	N2O	CO2e
	(ton/year)	(ton/year)	(ton/year)	(ton/year)
CFMA-1	67.50	0.00	0.00	67.59
CFMA-2	2,320.00	0.04	0.01	2323.47
CFMA-3	3,828.00	0.06	0.01	3832.68
Subtotal	6215.50	0.10	0.02	6223.74

CFMA-1, CFMA -2, and CFMA-3 Generators (Continued)

Pollutant	Emissions (Uncontrolled)		
	CFMA-1	CFMA-2	CFMA-3
	(ton/yr)	(ton/yr)	(ton/yr)
Benzene	0.00	4.82E-03	6.51E-03
Toluene	0.00	1.75E-03	2.36E-03
Xylenes	0.00	1.20E-03	1.62E-03
1,3-Butadiene	0.00	n/a	n/a
Formaldehyde	0.00	4.90E-04	6.62E-04
Acetaldehyde	0.00	1.57E-04	2.11E-04
Acrolein	0.00	4.89E-05	6.61E-05
Naphthalene	0.00	8.08E-04	1.09E-03
Acenaphthylene	0.00	5.73E-05	7.74E-05
Acenaphthene	0.00	2.91E-05	3.92E-05
Fluorene	0.00	7.95E-05	1.07E-04
Phenanthrene	0.00	2.53E-03	3.42E-03
Anthracene	0.00	7.64E-06	1.03E-05
Fluoranthene	0.00	2.50E-05	3.38E-05
Pyrene	0.00	2.30E-05	3.11E-05
Benz(a)anthracene	0.00	3.86E-06	5.22E-06
Chrysene	0.00	9.50E-06	1.28E-05
Benzo(b)fluoranthene	0.00	6.90E-06	9.31E-06
Benzo(k)fluoranthene	0.00	1.35E-06	1.83E-06
Benzo(a)pyrene	0.00	1.60E-06	2.16E-06
Indeno(1,2,3-cd)pyrene	0.00	2.57E-06	3.47E-06
Dibenz(a,h)anthracene	0.00	2.15E-06	2.90E-06
Benzo(g,h,l)perylene	0.00	3.45E-06	4.66E-06
Subtotal	0.00	0.01	0.02

VFMA-1 Haulage

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{vehicle\ miles\ travelled}\right) x\ V\text{ehicle Miles Travelled}\left(\frac{miles}{year}\right) x\ \left(\frac{1}{8{,}760}\right)\left(\frac{year}{hours}\right) x\ (1 - \text{Control Efficiency (\%)})$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{vehicle\ miles\ travelled}\right) x\ V\text{ehicle Miles Travelled}\left(\frac{miles}{year}\right) x\ \left(\frac{1}{2{,}000}\right)\left(\frac{ton}{pound}\right) x\ (1 - \text{Control Efficiency (\%)})$$

PM and PM_{10} Emission Factor (lb/VMT) = k(s/12)^a*(W/3)^b *[365-P)/365] (Reference: AP-42, Section 13.2.2 Unpaved Roads)

Where

	TSP	PM10	PM2.5
k =	4.9	1.5	0.15
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

s, surface material silt content (%) =	8.3	%	(Reference: AP-42, Table 13.2.2-1, Stone Quarrying and Processing)
P, days in year with at least 0.01 in. of precipitation =	0	days/yr	(See Note #3)
Average Mean Vehicle Weight (W) =	400	ton	(See Note #4)
Vehicle Miles Travelled (VMT) =	1,000,000	mile/yr	
Road Watering Control Efficiency =	75%		(See Note #5)

Emission Factor (PM) =	34.23	lb/VMT
Emission Factor (PM_{10}) =	9.73	lb/VMT
Emission Factor ($PM_{2.5}$) =	0.97	lb/VMT

Emissions (Controlled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
976.75	277.75	27.78	4,278.15	1,216.55	121.66

VFMA-2 Dozing

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{hr}\right) x \text{ Annual Operating Hours } \left(\frac{hours}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pounds}\right)$$

Emission Factor (TSP) =	5.7(s)^1.2/(M)^1.3		(Ref: AP-42, Table 11.9-1, Bulldozing Overburden)
s, Silt Content of Road =	8.3	%	(Reference: AP-42, Table 13.2.2-1, Stone Quarrying and Processing)
M, Moisture Content =	3.5	%	
Hours of Dozing	35,000	hr/yr	
Emission Factor (PM) =	14.17	lb/hr	
Emission Factor (PM_{10}) =	10.63	lb/hr	(Reference: PM_{10} is 0.75 * PM, AP-42, Table 11.9-1, Overburden)
Emission Factor ($PM_{2.5}$) =	1.49	lb/hr	(Reference: $PM_{2.5}$ is 0.105 * PM, AP-42, Table 11.9-1, Overburden)

Emissions (Uncontrolled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
14.17	10.63	1.49	248.04	186.03	26.04

VFMA-3 Grading

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{mile}\right) x \text{ Annual Miles Travelled}\left(\frac{miles}{year}\right) x \frac{1}{8{,}760}\left(\frac{year}{hours}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{mile}\right) x \text{ Annual Miles Travelled}\left(\frac{miles}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

Emission Factor in lb/VMT (TSP) = 0.040*(S^2.5) (Reference: AP-42, Table 11.9-1, Grading)

S, Mean Vehicle Speed	5	mph
Blading Hours	20,000	hours/yr
Annual Miles Travelled (VMT)	100,000	miles/yr
Annual Operating Hours =	8,760	hours/yr

Emission Factor (PM) =	2.24	lb/mile	
Emission Factor (PM_{10}) =	1.34	lb/mile	(Reference: PM_{10} is 0.6 * PM, AP-42, Table 11.9-1, Grading)
Emission Factor ($PM_{2.5}$) =	0.07	lb/mile	(Reference: $PM_{2.5}$ is 0.031 * PM, AP-42, Table 11.9-1, Grading)

Emissions (Uncontrolled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	PM_{10}
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
25.5	15.3	0.8	111.8	67.1	3.5

VFMA-4 Rubber Tire Rigs

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{hour}\right) x \text{ Annual Hours Operated}\left(\frac{hours}{year}\right) x\frac{1}{8{,}760}\left(\frac{year}{hours}\right)$$

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{miles\ travelled}\right) x \text{ Annual Miles Travelled}\left(\frac{miles}{year}\right) x\frac{1}{8{,}760}\left(\frac{year}{hours}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{hour}\right) x \text{ Annual Hours Operated}\left(\frac{hours}{year}\right) x\frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{miles\ travelled}\right) x \text{ Annual Miles Travelled}\left(\frac{miles}{year}\right) x\frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

PM and PM_{10} Emission Factor (lb/VMT) = k(s/12)^a*(W/3)^b *[365-P)/365] (Reference: AP-42, Section 13.2.2 Unpaved Roads)

Where

	TSP	PM10	PM2.5
k =	4.9	1.5	0.15
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

s, surface material silt content (%) =	8.3	%	(Reference: AP-42, Table 13.2.2-1, Stone Quarrying and Processing)
P, days in year with at least 0.01 in. of precipitation =	0	days/year	(See Note #3)
Average Mean Vehicle Weight (W) =	60		(See Note #6)
Vehicle Miles Travelled (VMT) =	300,000	mile/yr	(Dozers, excavators, backhoes, water trucks, etc.)
Road Watering Control Efficiency =	75%		(See Note #5)

Emission Factor (PM) =	14.57	lb/VMT
Emission Factor (PM_{10}) =	4.14	lb/VMT
Emission Factor ($PM_{2.5}$) =	0.41	lb/VMT

Emissions (Controlled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	PM_{10}
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
124.8	35.5	3.5	546.5	155.4	15.5

VFMA-5 Land Clearing

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{ton}\right) x \text{ Top Soil Removed } \left(\frac{ton}{year}\right) x \frac{1}{8{,}760}\left(\frac{year}{hours}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{ton}\right) x \text{ Top Soil Removed } \left(\frac{ton}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

Topsoil Removed by Scraper =	1,000,000	tons/yr
Topsoil Unloaded by Scraper =	1,000,000	tons/yr

Emission Factor, Scraper (PM) =	0.058	lb/ton	(Reference: AP-42, Table 11.9-4, Topsoil Removal by Scraper)
Emission Factor, Scraper (PM_{10}) =	0.058	lb/ton	(Reference: No PM_{10} emission factor available. PM_{10} is conservatively assumed to be equal to PM)
Emission Factor, Scraper ($PM_{2.5}$) =	0.058	lb/ton	(Reference: No $PM_{2.5}$ emission factor available. $PM_{2.5}$ is conservatively assumed to be equal to PM)
Emission Factor, Unloading (TSP) =	0.04	lb/ton	(Reference: AP-42, Table 11.9-4, Scraper Unloading)
Emission Factor, Unloading (PM_{10}) =	0.04	lb/ton	(Reference: No PM_{10} emission factor available. PM_{10} is conservatively assumed to be equal to PM)
Emission Factor, Unloading ($PM_{2.5}$) =	0.04	lb/ton	(Reference: No $PM_{2.5}$ emission factor available. $PM_{2.5}$ is conservatively assumed to be equal to PM)

	Emissions (Uncontrolled)					
	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
Topsoil Removal	6.62	6.62	6.62	29.00	29.00	29.00
Topsoil Unloading	4.57	4.57	4.57	20.00	20.00	20.00
Subtotal	11.19	11.19	11.19	49.00	49.00	49.00

VFMA-6 Miscellaneous Vehicle Traffic

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{miles\ travelled}\right) x\ \text{Annual Miles Travelled}\left(\frac{miles}{year}\right) x \frac{1}{8{,}760}\left(\frac{year}{hours}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{miles\ travelled}\right) x\ \text{Annual Miles Travelled}\left(\frac{miles}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

PM and PM_{10} Emission Factor (lb/VMT) = k(s/12)^a*(W/3)^b *[365-P)/365] (Reference: AP-42, Section 13.2.2 Unpaved Roads)

Where

	TSP	PM10	PM2.5
k =	4.9	1.5	0.15
a =	0.7	0.9	0.9
b =	0.45	0.45	0.45

s, surface material silt content (%) =	8.3	%	(Reference: AP-42, Table 13.2.2-1, Stone Quarrying and Processing)
P, days in year with at least 0.01 in. of precipitation =	0	days/year	(See Note #3)
Average Mean Vehicle Weight (W) =	2	tons	
Vehicle Miles Travelled (VMT) =	1,500,000	miles/yr	
Control Efficiency (Road Watering)	75%		(See Note #5)

Emission Factor (PM) =	3.15	lb/VMT
Emission Factor (PM_{10}) =	0.90	lb/VMT
Emission Factor ($PM_{2.5}$) =	0.09	lb/VMT

Emissions (Controlled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
135.0	38.4	3.8	591.4	168.2	16.8

HFMA-1 Unloading Overburden

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{lb}{ton}\right) x \text{ Overburden Removed}\left(\frac{ton}{year}\right) x \frac{1}{8{,}760}\left(\frac{year}{hours}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{lb}{ton}\right) x \text{ Overburden Removed}\left(\frac{ton}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

Emission Factor for Unloading = k*(0.0032)*((U/5)^1.3/(M/2)^1.4) (Reference: AP-42, Section 13.2.4.3)

Where:

k, Particle size Multiplier for TSP = 0.74

k, Particle size Multiplier for PM_{10} = 0.35

k, Particle size Multiplier for $PM_{2.5}$ = 0.053

U = Mean Wind Speed 10 miles/hr (see Note #7)

M = Moisture Content (%) 2.6 %

Overburden Unloaded 24,804,200 tons/yr

Emission Factor (TSP) = 0.00297 lb/ton

Emission Factor (PM_{10}) = 0.00140 lb/ton

Emission Factor ($PM_{2.5}$) = 0.00021 lb/ton

Emissions (Uncontrolled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
8.40	3.97	0.60	36.79	17.40	2.63

Footnotes

Note #1 - Dust shields and water suppression are used at the facility to control dust emissions from drilling activities. Per NIOSH, “Handbook for Dust Control in Mining,” the use of water suppression during drilling activities has demonstrated control efficiencies from 9.1% to 96.3%. The use of 50% provides a conservative control efficiency for the drilling activity.

Note #2 - Operating hours for CFMA-1, 2, and 3 represent the annual operating time spent by these portable engines as a replacement to existing stationary engines.

Note #3 - The mine receives, on average 50 - 60 days of precipitation above 0.01". However, for developing a PTE for the site, 0 days of precipitation above 0.01" is assumed to provide a conservative estimate of the annual emissions from the haul road.

Note #4 - The mine operates haul trucks with average mean vehicles ranging from 300 ton - 400 ton. For the purposes of this PTE, the a conservative estimate of 400 ton is used for the mean vehicle weight.

Note #5 - The control efficiency was estimated using calculations found in the "Watering and Control Efficiency" technical paper published in the Technology Transfer Network (TTN) based upon the control efficiency/moisture ratio established in AP-42 Figure 13.2.2-2 This 75% control efficiency is consistent with the watered road control efficiency accepted by Maricopa County.

Note #6 - The mine operates rubber tire rigs (dozers, excavators, water trucks, etc.) with average mean vehicles ranging from 40 ton - 60 ton. For the purposes of this PTE, the a conservative estimate of 60 ton is used for the mean vehicle weight.

Note #7 - The annual average wind speed for the site ranges from about 6 mph to 7 mph. This PTE estimate uses 10 mph as a the average annual wind speed to provide a conservative estimate of the emissions.

Mission Circuit

Calculation Methodology

A. Scrubbers and Baghouses

1. Annual Emission $\left(\frac{ton}{year}\right)$ = Emission Factor $\left(\frac{pound}{ton}\right)$ x Annual Throughput $\left(\frac{ton}{year}\right)$ $x\frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$

2. Annual Emission $\left(\frac{ton}{year}\right)$ = Emission Factor $\left(\frac{pound}{hour}\right)$ x 8,760 $\left(\frac{hours}{year}\right)$ $x\frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$

B. Transfer Points

3. Annual Emission $\left(\frac{ton}{year}\right)$ = Emission Factor $\left(\frac{pound}{ton}\right)$ x Annual Throughput $\left(\frac{ton}{year}\right)$ $x\frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$ x (1 − Control Efficiency)(%)

4 Annual Emission $\left(\frac{ton}{year}\right)$ = Emission Factor $\left(\frac{pound}{ton}\right)$ x Daily Throughput $\left(\frac{ton}{day}\right)$ $x\frac{1}{24}$ $\left(\frac{day}{hour}\right)$ x 8,760 $\left(\frac{hour}{year}\right)$ x $\frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$ x (1 − Control Efficiency)(%)

C. CS2 Emissions from Xanthate Usage

5. Annual Emission $\left(\frac{ton}{year}\right)$ = Annual PAX Usage $\left(\frac{pound}{year}\right)$ x Decomposition Rate of PAX(%) x Molar Mass Ratio of CS2 to Pax $\left(\frac{g/gmol}{g/gmol}\right)$ x $\frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$

Operational Information

Mission Circuit Ore Throughput =	2,290	ton/hr
Mission Circuit Ore Throughput =	20,060,400	ton/yr
Annual Lime Throughput =	28,470	ton/yr
Copper Concentrate Produced =	760,000	ton/yr
Annual Operating Hours =	8,760	hr/yr

Emission Unit	Emission Rate	Exhaust Flow	Emission Rate					
			PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
	(gr/dscf)	(scfm)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
SSOPM-1 (Note #1)	0.004	41,503	1.55	1.55	1.55	6.81	6.81	6.81
SSOPM-2 (305-07a) (Note #2)	0.022	11,000	2.06	2.06	2.06	9.02	9.02	9.02
SSOPM-2 (305-07b) (Note #2)	0.022	11,000	2.06	2.06	2.06	9.02	9.02	9.02
SSOPM-3 (307-108A) (Note #3)	0.022	10,000	1.87	1.87	1.87	8.20	8.20	8.20
SSOPM-3 (307-108B) (Note #3)	0.022	10,000	1.87	1.87	1.87	8.20	8.20	8.20
SSOPM-4 (Note #4)	0.002	42,000	0.72	0.72	0.72	3.15	3.15	3.15
SSOPM-5 (Note #4)	0.002	42,000	0.72	0.72	0.72	3.15	3.15	3.15
SSOPM-6 (Note #4)	0.002	42,000	0.72	0.72	0.72	3.15	3.15	3.15
SSOPM-7 (Note #4)	0.002	42,000	0.72	0.72	0.72	3.15	3.15	3.15
SSOPM-8 (Note #5)	0.022	7,500	1.40	1.40	1.40	6.15	6.15	6.15
SSOPM-9 (Note #5)	0.022	2,750	0.52	0.52	0.52	2.26	2.26	2.26
SSOPM-10 (Note #5)	0.022	2,750	0.52	0.52	0.52	2.26	2.26	2.26
SSOPM-11 (Note #5)	0.022	2,750	0.52	0.52	0.52	2.26	2.26	2.26
SSOPM-12 (Note #5)	0.022	2,750	0.52	0.52	0.52	2.26	2.26	2.26
SSOPM-13 (Note #5)	0.022	2,750	0.52	0.52	0.52	2.26	2.26	2.26
SSOPM-14	0.01	17,500	1.50	1.50	1.50	6.57	6.57	6.57
SSOPM-15	0.01	17,500	1.50	1.50	1.50	6.57	6.57	6.57
SSOPM-16	0.01	17,500	1.50	1.50	1.50	6.57	6.57	6.57
SSOPN-6	0.02	6,312	1.18	1.18	1.18	5.18	5.18	5.18
SSOPN-7	0.02	16,899	3.16	3.16	3.16	13.86	13.86	13.86
		Subtotal	25.13	25.13	25.13	110.06	110.06	110.06

Ore Assay										
Sb (mg/kg)	As (mg/kg)	Be (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Co (mg/kg)	Pb (mg/kg)	Mn (mg/kg)	Hg (mg/kg)	Ni (mg/kg)	Se (mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

Emission Unit	HAP Emissions										
	Sb (ton/yr)	As (ton/yr)	Be (ton/yr)	Cd (ton/yr)	Cr (ton/yr)	Co (ton/yr)	Pb (ton/yr)	Mn (ton/yr)	Hg (ton/yr)	Ni (ton/yr)	Se (ton/yr)
SSOPM-1 (Note #1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-2 (305-07a) (Note #2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-2 (305-07b) (Note #2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-3 (307-108A) (Note #3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-3 (307-108B) (Note #3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-4 (Note #4)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-5 (Note #4)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-6 (Note #4)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-7 (Note #4)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-8 (Note #5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-9 (Note #5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-10 (Note #5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-11 (Note #5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-12 (Note #5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-13 (Note #5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPM-16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPN-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPN-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Subtotal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00

Source - SSOPM-17
Description - Lime Transfer

Lime Throughput	28,470	tons/yr	
Emission Factor (TSP) =	2.2	lb/ton	(Reference: AP-42, Table 11.17-4, Product Transfer and Conveying)
Emission Factor (PM_{10}) =	2.2	lb/ton	(Reference: PM10 is assumed to be equal to PM as AP-42, Table 11.17-4, has no data available)
Emission Factor ($PM_{2.5}$) =	2.2	lb/ton	(Reference: No data available. Assumed $PM_{2.5} = PM_{10}$)
Number of Transfer Points SSOPM-17	2		
Control Efficiency (Baghouse 328-E6) =	99%		

Source - SSOPM-18
Description - Lime Transfer from 328-E44 to 328-E11, and 328-E11 to 328-E14

Lime Throughput	28,470	tons/yr	
Emission Factor (TSP) =	2.2	lb/ton	(Reference: AP-42, Table 11.17-4, Product Transfer and Conveying)
Emission Factor (PM_{10}) =	2.2	lb/ton	(Reference: PM10 is assumed to be equal to PM as AP-42, Table 11.17-4, has no data available)
Emission Factor ($PM_{2.5}$) =	2.2	lb/ton	(Reference: No data available. Assumed $PM_{2.5} = PM_{10}$)
Number of Transfer Points SSOPM-18	2		
Control Efficiency (Baghouse 328-E6) =	99%		

Source - HFOPM-5
Description - Mission Mill Lime Feeder Conveyor

Lime Throughput	28,470	tons/yr	
Emission Factor (TSP) =	2.2	lb/ton	(Reference: AP-42, Table 11.17-4, Product Transfer and Conveying)
Emission Factor (PM_{10}) =	2.2	lb/ton	(Reference: PM10 is assumed to be equal to PM as AP-42, Table 11.17-4, has no data available)
Emission Factor (PM_{10}) =	2.2	lb/ton	(Reference: PM2.5 is assumed to be equal to PM as AP-42, Table 11.17-4, has no data available)
Number of Transfer Point =	2	(Controlled by Enclosure)	
Number of Transfer Point =	1	(Controlled by Baghouse)	
Controlled with enclosure =	70%		
Control Efficiency (Baghouse 328-E6) =	99%		

Source - HFOPM-1
Description - Dump Pocket

Annual Ore Throughput	20,060,400	ton/yr	
Emission Factor (TSP) =	0.12	lb/ton	(Reference: AP-42, Table 11.24-2, Low Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.06	lb/ton	(Reference: AP-42, Table 11.24-2, Low Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.02	lb/ton	(Reference: $PM_{2.5}$ is assumed to be 28.6% of PM_{10})
Controlled with water sprays/dust suppressant =	75%		

Source - HFOPM-2
Description - Transfer Point of Crushed Ore to the Coarse Ore Stockpile

Ore Throughput	20,060,400	ton/yr	
Emission Factor (TSP) =	0.12	lb/ton	(Reference: AP-42, Table 11.24-2, Low Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.06	lb/ton	(Reference: AP-42, Table 11.24-2, Low Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.02	lb/ton	(Reference: $PM_{2.5}$ is assumed to be 28.6% of PM_{10})
Controlled with water sprays/dust suppressant =	75%		

Source - HFOPM-3
Description - Transfer Point of Concentrate Prodouct Into Rail Cars at Concentrate Loading Area East

Conc. Prod. Throughput	760,000	ton/yr	
Emission Factor (TSP) =	0.01	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.004	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.001	lb/ton	(Reference: $PM_{2.5}$ is assumed to be 28.6% of PM_{10})
Number of Transfer Points =	1		

Source - HFOPM-4
Description - Transfer Point of Conc. Prod at Concentrate Loading Area North. Transfer points included are:
(1) Transfer of concentrate from conveyer belt into haul truck
(2) Transfer of concentrate from the haul truck to concrete pad
(3) Loading of concentrate from concrete pad into semi truck for offsite transfer

Ore Throughput	760,000	ton/yr	
Emission Factor (TSP) =	0.01	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.004	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.001	lb/ton	(Reference: $PM_{2.5}$ is assumed to be 28.6% of PM_{10})
Number of Transfer Points =	3		

Source - HFOPN-3
Description - Transfer of Ore to Cleanup Conveyer 311-96a

Ore Throughput	41,600	ton/yr	
Emission Factor (TSP) =	0.12	lb/ton	(Reference: AP-42, Table 11.24-2, Low Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.06	lb/ton	(Reference: AP-42, Table 11.24-2, Low Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.017	lb/ton	(Reference: $PM_{2.5}$ is assumed to be 28.6% of PM_{10})
Controlled with Enclosure =	70%		

Source - WFOPM-1
Description - Coarse ore storage

Emission Factor (TSP) =	1.7 * (s/1.5) * (f/15)		(WRAP, Section 9.3)
Where			
s, silt content of material (weight %) =	4.3		(Reference: AP-42, Table 13.2.4-1, Pellet Ore)
f, % of time the wind speed > 12 mph =	100		(See Note #6)
Emission Factor (TSP) =	32.49	lb/year/acre	
Emission Factor (PM_{10}) =	16.24	lb/year/acre	
Emission Factor ($PM_{2.5}$) =	2.44	lb/year/acre	
Stockpile Height =	50	ft	(Reference: Google Earth©)
Stockpile Radius =	175	ft	(Reference: Google Earth©)
Stockpile Surface Area =	196,298	ft2	
Stockpile Surface Area =	5	acres	

Source - WFOPM-2
Description - Concentrate Storage Pile (Wind Erosion)

Emission Factor (TSP) =	1.7 * (s/1.5) * (f/15)	(WRAP, Section 9.3)
Where		
s, silt content of material (weight %) =	4.3	(Reference: AP-42, Table 13.2.4-1, Pellet Ore)
f, % of time the wind speed > 12 mph =	100	(See Note #6)

Emission Factor (TSP) =	32.49	lb/year/acre	
Emission Factor (PM_{10}) =	16.24	lb/year/acre	
Emission Factor ($PM_{2.5}$) =	2.44	lb/year/acre	
Stockpile Height =	25	ft	(Reference: Google Earth©)
Stockpile Radius =	100	ft	(Reference: Google Earth©)
Stockpile Surface Area =	63,807	ft2	
Stockpile Surface Area =	1	acres	

Emission Unit	Emissions (Uncontrolled)						Emissions (Controlled)					
	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
SSOPM-17	n/a	n/a	n/a	n/a	n/a	n/a	0.14	0.14	0.14	0.63	0.63	0.63
SSOPM-18	n/a	n/a	n/a	n/a	n/a	n/a	0.14	0.14	0.14	0.63	0.63	0.63
HFOPM-5	n/a	n/a	n/a	n/a	n/a	n/a	4.36	4.36	4.36	19.10	19.10	19.10
HFOPM-1	n/a	n/a	n/a	n/a	n/a	n/a	68.70	34.35	9.72	300.91	150.45	42.58
HFOPM-2	n/a	n/a	n/a	n/a	n/a	n/a	68.70	34.35	9.72	300.91	150.45	42.58
HFOPM-3	0.87	0.35	0.10	3.80	1.52	0.43	n/a	n/a	n/a	n/a	n/a	n/a
HFOPM-4	2.60	1.04	0.29	11.40	4.56	1.29	n/a	n/a	n/a	n/a	n/a	n/a
HFOPN-3	n/a	n/a	n/a	n/a	n/a	n/a	0.17	0.09	0.02	0.75	0.37	0.11
WFOPM-1	0.02	0.01	0.00	0.07	0.04	0.01	n/a	n/a	n/a	n/a	n/a	n/a
WFOPM-2	0.01	0.00	0.00	0.02	0.01	0.00	n/a	n/a	n/a	n/a	n/a	n/a
Subtotal	3.49	1.40	0.39	15.30	6.13	1.73	142.22	73.43	24.11	622.92	321.64	105.62

Ore Assay										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

Emission Unit	HAP Emissions										
	Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
HFOPM-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
HFOPM-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
HFOPM-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPM-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
HFOPN-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPM-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPM-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.31	0.00	0.00	0.00

Source - Mission Concentrator

Quantity of PAX Used in the Mission Circuit = 700,000 lb
Quantity of PAX Used in the Mission Circuit = 350 ton

Decomposition rate of PAX = 1.58% (See Note #7)
Mole ratio of CS2 to PAX (Decomposition Coefficient) = 0.50

Note: It is assumed that 3 moles of CS2 are formed for every six moles of PAX that decompose:
6ROCS2- + 3H2O ---> 6ROH + CO3(2-) + 3CS2 + 2CS3(2-)

Molecular weight of PAX = 202.4 gram/gram-mol
Molecular weight of CS2 = 76.14 gram/gram-mol

Quantity of CS2 Formed = 2,080.31 lb
Quantity of CS2 Formed = 0.24 lb/hr (Annual Average)
Quantity of CS2 Formed = 1.04 ton

Footnotes:

Note #1 - SSOPM-1 is limited to an emission rate of 0.01 grams/dscm (Condition Part B, Section 1, I.B.1). This emission rate is converted to grains/dscf, as follows, to support the emissions calculations.

Permitted emission rate =	0.01	grams/dscm
1 gram =	15.43	grains
1 cubic meter =	35.31	cubic feet
Permitted emission rate =	0.0043699	grains/dscf

Note #2 - SSOPM-2 is limited to an emission rate of 0.05 grams/dscm (Condition Part B, Section 1, I.B.2). This emission rate is converted to grains/dscf, as follows, to support the emissions calculations.

Permitted emission rate =	0.05	grams/dscm
1 gram =	15.43	grains
1 cubic meter =	35.31	cubic feet
Permitted emission rate =	0.022	grains/dscf

Note #3 - SSOPM-3 is limited to an emission rate of 0.05 grams/dscm (Condition Part B, Section 2, I.B.1). This emission rate is converted to grains/dscf, as follows, to support the emissions calculations.

Permitted emission rate =	0.05	grams/dscm
1 gram =	15.43	grains
1 cubic meter =	35.31	cubic feet
Permitted emission rate =	0.022	grains/dscf

Note #4 - The emission rate used for SSOPM-4 through SSOPM-7 is 0.002 grain/dscf. Although Condition Part B, Section 2, I.B.1 of the permit limits the emission rate to 0.05 grams/dscm, Asarco submitted an application to PDEQ limiting the exhaust particulate emission rate of SSOPM4 through 7 to 0.002 grains/dscf. Note that Asarco is required to operate only three of the four control devices at all times. For the purposes of this PTE, emissions from all four control devices are included and is therefore considered conservative.

Note #5 - SSOPM-3 is limited to an emission rate of 0.05 grams/dscm (Condition Part B, Section 3, I.B.1.a). This emission rate is converted to grains/dscf, as follows, to support the emissions calculations.

Permitted emission rate =	0.05	grams/dscm
1 gram =	15.43	grains
1 cubic meter =	35.31	cubic feet
Permitted emission rate =	0.022	grains/dscf

Note #6 - The annual average wind speed for the site ranges from about 6 mph to 7 mph. For the purposes of developing an emission factor for the PTE average wind greater than 12 mph are assumed for a 100 percent of the time to provide a conservative estimate.

Note #7 -

(1) CS2 emissions are estimated using the emissions calculation methods provided in "Stationary and Mobile Source Emission Calculations for the NorthMet Project – Combined Report (RS57) PolyMet Mining Inc, November 2008.

(2) CS2 emissions are estimated by considering the annual usage of PAX powder (lb/year) and the decomposition rate for PAX when in solution

(3) Decomposition of PAX in solution and hence formation of CS2 is dependent on a number of factors , including temperature and pH. A higher pH results in a reduced decomposition rate of the PAX while the rate of decomposition increases with increasing temperature. Mission Mine's floatation systems at both the North and South Mills are operated at a relative high pH (10 - 11) and ambient temperatures (around 25 C). It is known that in acidic solution xanthate decomposes to carbon disulfide and fresh xanthate solutions are neutral. Under these conditions the formation of CS2 is greatly reduced . Therefore, CS2 emissions estimated above are conservative.

(4) The emissions reporting assumes that the decomposition product CS2 is emitted to the atmosphere adding to the conservativeness of the estimate.

(5) We continue to investigate available literature to further refine and update, as necessary, the CS2 emissions estimation for the conditions at the Mission and South Mills.

Calculation Methodology

A. Scrubbers and Baghouses

1. Annual Emission $\left(\frac{ton}{year}\right)$ = Emission Factor $\left(\frac{pound}{ton}\right)$ x Annual Throughput $\left(\frac{ton}{year}\right)$ $x \frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$

2. Annual Emission $\left(\frac{ton}{year}\right)$ = Emission Factor $\left(\frac{pound}{hour}\right)$ x 8,760 $\left(\frac{hours}{year}\right)$ $x \frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$

B. Transfer Points

3. Annual Emission $\left(\frac{ton}{year}\right)$ = Emission Factor $\left(\frac{pound}{ton}\right)$ x Annual Throughput $\left(\frac{ton}{year}\right)$ $x \frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$ x (1 − Control Efficiency)(%)

4. Annual Emission $\left(\frac{ton}{year}\right)$
= Emission Factor $\left(\frac{pound}{ton}\right)$ x Daily Throughput $\left(\frac{ton}{day}\right)$ $x \frac{1}{24}$ $\left(\frac{day}{hour}\right)$ x 8,760 $\left(\frac{hour}{year}\right)$ x $\frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$ x (1 − Control Efficiency)(%)

C. CS2 Emissions from Xanthate Usage

5. Annual Emission $\left(\frac{ton}{year}\right)$ = Annual PAX Usage $\left(\frac{pound}{year}\right)$ x Decomposition Rate of PAX(%) x Molar Mass Ratio of CS2 to Pax $\left(\frac{g/gmol}{g/gmol}\right)$ x $\frac{1}{2{,}000}$ $\left(\frac{ton}{pound}\right)$

Operational Information

South Mill Circuit Permitted Ore Throughput =	12,500,000	ton/yr
South Mill Circuit Permitted Ore Throughput =	3,300	ton/hr
Omnicone Circuit Throughput =	8,760,000	ton/yr
Omnicone Circuit Throughput =	1,000	ton/hr
Concentrate Throughput =	450,000	ton/yr
Concentrate Throughput =	650	ton/hr
Lime Throughput =	20,000	ton/yr
Lime Throughput =	100	ton/hr
Annual Operating Hours =	8,760	hours

Emission Unit	Emission Rate	Exhaust Flow	Emissions (Controlled)					
			PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
	(gr/dscf)	(scfm)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
SSOPS-1	0.003	21,000	0.54	0.54	0.54	2.37	2.37	2.37
SSOPS-2	0.01	4,471	0.38	0.38	0.38	1.68	1.68	1.68
SSOPS-3 (30-150A)	0.003	12,500	0.32	0.32	0.32	1.41	1.41	1.41
SSOPS-3 (30-150B)	0.003	12,500	0.32	0.32	0.32	1.41	1.41	1.41
SSOPS-4	0.01	13,000	1.11	1.11	1.11	4.88	4.88	4.88
SSOPS-4a	0.01	14,800	1.27	1.27	1.27	5.56	5.56	5.56
SSOPS-6	0.003	2,000	0.05	0.05	0.05	0.23	0.23	0.23
		Subtotal	4.00	4.00	4.00	17.52	17.52	17.52

Ore Assay										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

Emission Unit	HAP Emissions										
	Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
SSOPS-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-3 (30-150A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-3 (30-150B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSOPS-4a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00

Source - HFOPS-1
Description - Transfer Point of Crushed Ore - Dump Pocket

Ore Throughput	12,500,000	ton/year	
Ore Throughput	3,300	ton/hr	
Emission Factor (TSP) =	0.12	lb/ton	(Reference: AP-42, Table 11.24-2, Low-moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.06	lb/ton	(Reference: AP-42, Table 11.24-2, Low-moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.017	lb/ton	($PM_{2.5}$ = 0.283*PM_{10} - Reference: South Mill Expansion Permit Application)
Controlled with enclosure =	25%	percent	(Reference: South Mill Expansion Permit Application)
Controlled with water sprays =	80%	percent	(Reference: South Mill Expansion Permit Application)
Overall control achieved =	85%	percent	(Reference: South Mill Expansion Permit Application)

Source - HFOPS-2
Description - Transfer Point of Crushed Ore to the Stockpile
AP-42, Table 11.24-2: Material Handling and Transfer

Ore Throughput	12,500,000	ton/year	
Ore Throughput	3,300	ton/hr	
Emission Factor (TSP) =	0.12	lb/ton	(Reference: AP-42, Table 11.24-2, Low-moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.06	lb/ton	(Reference: AP-42, Table 11.24-2, Low-moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.017	lb/ton	($PM_{2.5}$ = 0.283*PM_{10} - Reference: South Mill Expansion Permit Application)
Controlled with water sprays =	70%	percent	

Source - WFOPS-1
Description - Coarse ore storage

Emission Factor (TSP) =	1.7 * (s/1.5) * (f/15)		(WRAP, Section 9.3)
Where			
s, silt content of material (weight %) =	4.3		(Reference: AP-42, Table 13.2.4-1, Pellet Ore)
f, % of time the wind speed > 12 mph =	100		(See Note #1)
Emission Factor (TSP) =	32.49	lb/year/acre	
Emission Factor (PM_{10}) =	16.24	lb/year/acre	
Emission Factor ($PM_{2.5}$) =	2.44	lb/year/acre	
Stockpile Height =	60	ft	(Reference: Google Earth©)
Stockpile Radius =	200	ft	(Reference: Google Earth©)
Stockpile Surface Area =	256,894	ft2	
Stockpile Surface Area =	6	acres	

Source PFOPS-6 and 7
Description - SAG Reclaim Circuit; Belt 20-244/245 to 20-266/268
Note: Emissions from this emission point are controlled by SSOPS-3 (30-150A and 30-150B) and are therefore not calculated separately.

Source PFOPS-8
Description - Omnicone Circuit; Belt 20-238/241 to 20-250

Annual Ore Throughput =	8,760,000	ton/yr	
Hourly Ore Throughput =	1,000	ton/hr	
Emission Factor (TSP) =	0.01	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.004	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.001	lb/ton	($PM_{2.5}$ = 0.283*PM_{10} - Reference: South Mill Expansion Permit Application)
Controlled (wet process and enclosure) =	70%	percent	

Source - PSOPS-11
Description - Transfer from Omnicone crushers
Note: Emissions from this emission point are controlled by SSOPS-4 and are therefore not calculated separately.

Source - PSOPS-12
Description - Transfer from Omnicone crushers (bypass)
Note: Emissions from this emission point are controlled by SSOPS-4 and are therefore not calculated separately.

Source - PSOPS-13
Description - Transfer from Omnicone crushers (Return)
Note: Emissions from this emission point are controlled by SSOPS-3 (30-150A and 30-150B) and are therefore not calculated separately.

Source - HFOPS-3
Description - Transfer of oversize ore to intermediate ore stockpile from Belt 20-250

Ore Throughput =	8,760,000	ton/yr	
Ore Throughput =	1,000	ton/hr	
Emission Factor (TSP) =	0.01	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.004	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.001	lb/ton	($PM_{2.5}$ = 0.283*PM_{10} - Reference: South Mill Expansion Permit Application)
Control achieved (Wet process and enclosure) =	70%	percent	

Source - WFOPS-2
Description - Intermediate Ore Storage Pile (Wind Erosion)

Emission Factor (TSP) =	1.7 * (s/1.5) * (f/15)		(WRAP, Section 9.3)
Where			
s, silt content of material (weight %) =	4.3		(Reference: AP-42, Table 13.2.4-1, Pellet Ore)
f, % of time the wind speed > 12 mph =	100		(See Note #1)

Emission Factor (TSP) =	32.49	lb/year/acre	
Emission Factor (PM_{10}) =	16.24	lb/year/acre	
Emission Factor ($PM_{2.5}$) =	2.44	lb/year/acre	
Stockpile Height =	20	ft	
Stockpile Radius =	100	ft	
Stockpile Surface Area =	63,462	ft2	
Stockpile Surface Area =	1	acres	

Source - HFOPS-4
Description - Conveyer to Concentrate Stacking

Concentrate Throughput =	450,000	ton/yr	
Concentrate Throughput =	650	ton/hr	
Emission Factor (TSP) =	0.01	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.004	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.001	lb/ton	($PM_{2.5}$ = 0.283*PM_{10} - Reference: South Mill Expansion Permit Application)
Control achieved (Wet process and enclosure) =	70%	percent	

Source - HFOPS-5
Description - Concentrate Loading
AP-42, Table 11.24-2: Material Handling and Transfer

Concentrate Throughput =	450,000	ton/yr	
Concentrate Throughput =	650	ton/hr	
Emission Factor (TSP) =	0.01	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.004	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.001	lb/ton	($PM_{2.5}$ = 0.283*PM_{10} - Reference: South Mill Expansion Permit Application)
Control achieved (Wet process and enclosure) =	25%	percent	

Source - WFOPS-3
Description - Concentrate Storage Pile (Wind Erosion)

Emission Factor (TSP) =	1.7 * (s/1.5) * (f/15)	(WRAP, Section 9.3)
Where		
s, silt content of material (weight %) =	4.3	(Reference: AP-42, Table 13.2.4-1, Pellet Ore)
f, % of time the wind speed > 12 mph =	100	(See Note #1)

Emission Factor (TSP) =	32.49	lb/year/acre
Emission Factor (PM_{10}) =	16.24	lb/year/acre
Emission Factor ($PM_{2.5}$) =	2.44	lb/year/acre
Stockpile Height =	25	ft
Stockpile Radius =	100	ft
Stockpile Surface Area =	63,807	ft2
Stockpile Surface Area =	1	acres

Source - PFOPS-16
Description - Lime loading to Lime Bin (Pneumatic)
Note: Emissions from this emission point are controlled by SSOPS-6 and are therefore not calculated separately.

Source - PFOPS-17
Description - Lime Bin to Feeder
Note: Emissions from this emission point are controlled by SSOPS-6 and are therefore not calculated separately.

Source - PFOPS-18
Description - Belt Conveyer from the Lime Silo to the Ball Mill
Note: PFOPS-18 is the belt conveyer itself and is not an emission point.

Source - PFOPS-19
Description - Lime Ball Mill
Note: PFOPS-18 is the belt conveyer itself and is not an emission point.

Emission Unit	Uncontrolled Emissions						Controlled Emissions					
	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
PFOPS-0	n/a	n/a	n/a	n/a	n/a	n/a	59.40	29.70	8.41	112.50	56.25	15.92
HFOPS-2	n/a	n/a	n/a	n/a	n/a	n/a	118.80	59.40	16.81	225.00	112.50	31.84
WFOPS-1	0.02	0.01	0.00	0.10	0.05	0.01	n/a	n/a	n/a	n/a	n/a	n/a
PFOPS-8	n/a	n/a	n/a	n/a	n/a	n/a	3.00	1.20	0.34	13.14	5.26	1.49
HFOPS-3	n/a	n/a	n/a	n/a	n/a	n/a	3.00	1.20	0.34	13.14	5.26	1.49
WFOPS-2	0.01	0.00	0.00	0.02	0.01	0.00	n/a	n/a	n/a	n/a	n/a	n/a
HFOPS-4	n/a	n/a	n/a	n/a	n/a	n/a	1.95	0.78	0.22	0.68	0.27	0.08
HFOPS-5	n/a	n/a	n/a	n/a	n/a	n/a	4.88	1.95	0.55	1.69	0.68	0.19
WFOPS-3	0.01	0.00	0.00	0.02	0.01	0.00	n/a	n/a	n/a	n/a	n/a	n/a
Subtotal	0.03	0.02	0.00	0.14	0.07	0.01	191.03	94.23	26.67	366.14	180.21	51.00

Ore Assay										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

Emission Unit	HAP Emissions										
	Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
PFOPS-0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00
HFOPS-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
WFOPS-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PFOPS-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
HFOPS-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
WFOPS-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFOPS-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WFOPS-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00

CS2 Emissions From Xanthate Use - South Circuit

Quantity of PAX Used in the Mission Circuit =	700,000	lb
Quantity of PAX Used in the Mission Circuit =	350.00	ton

Decomposition rate of PAX =	1.58%	(See Note #2)
Mole ratio of CS2 to PAX (Decomposition Coefficient) =	0.50	

Note: It is assumed that 3 moles of CS2 are evaporated for every six moles of PAX that decompose:

$6ROCS2^- + 3H2O \rightarrow 6ROH + CO3(2-) + 3CS2 + 2CS3(2-)$

Molecular weight of PAX =	202.4	gram/gram-mol
Molecular weight of CS2 =	76.14	gram/gram-mol

Quantity of CS2 Formed =	2080.31	lbs
Quantity of CS2 Formed =	0.24	lb/hr (Annual Average)
Quantity of CS2 Formed =	1.04	ton

Footnote:

Note #1 - The annual average wind speed for the site ranges from about 6 mph to 7 mph. For the purposes of developing an emission factor for the PTE average wind greater than 12 mph are assumed for a 100 percent of the time to provide a conservative estimate.

Note #2 -

(1) CS2 emissions are estimated using the emissions calculation methods provided in "Stationary and Mobile Source Emission Calculations for the NorthMet Project – Combined Report (RS57) PolyMet Mining Inc, November 2008.

(2) CS2 emissions are estimated by considering the annual usage of PAX powder (lb/year) and the decomposition rate for PAX when in solution

(3) Decomposition of PAX in solution and hence formation of CS2 is dependent on a number of factors , including temperature and pH. A higher pH results in a reduced decomposition rate of the PAX while the rate of decomposition increases with increasing temperature. Mission Mine's floatation systems at both the North and South Mills are operated at a relative high pH (10 - 11) and ambient temperatures (around 25 C). It is known that in acidic solution xanthate decomposes to carbon disulfide and fresh xanthate solutions are neutral. Under these conditions the formation of CS2 is greatly reduced . Therefore, CS2 emissions estimated above are conservative.

(4) The emissions reporting assumes that the decomposition product CS2 is emitted to the atmosphere adding to the conservativeness of the estimate.

(5) We continue to investigate available literature to further refine and update, as necessary, the CS2 emissions estimation for the conditions at the Mission and South Mills.

Concentrate Throughput =	2,000	lb/hr	
Concentrate Throughput =	8,760	tons/year	
Operating hours	8,760	hours	

(1) Filter Press Drop to Dryers

Description - Transfer Point of Moly Concentrate

Ore Throughput	2,000	lb/hr	
Ore Throughput	8,760	ton/year	
Emission Factor (TSP) =	0.01	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.004	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.0017	lb/ton	(Moly Plant Restart Minor Permit Application)
Percent Capture =	90%		

(2) Dryer Drop to Product Packaging

Description - Transfer Point of Moly Concentrate

Ore Throughput	2,000	lb/hr	
Ore Throughput	8,760	ton/year	
Emission Factor (TSP) =	0.12	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.06	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.017	lb/ton	(Moly Plant Restart Minor Permit Application)
Percent Capture =	90%		

(3) Product Packaging

Description - Transfer Point of Moly Concentrate

Ore Throughput	2,000	lb/hr	
Ore Throughput	8,760	ton/year	
Emission Factor (TSP) =	0.12	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor (PM_{10}) =	0.06	lb/ton	(Reference: AP-42, Table 11.24-2, High Moisture Ore, Material Handling)
Emission Factor ($PM_{2.5}$) =	0.0170	lb/ton	(Moly Plant Restart Minor Permit Application)
Percent Capture =	90%		

Emission Unit	Emission Rate	Exhaust Flow	Emissions (Controlled)					
			PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
	(gr/dscf)	(scfm)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
Filter Press Drop to Dryers (see Note #1)	n/a	n/a	0.001	0.0004	0.00017	0.004	0.002	0.002
SSMP-1; Moly Scrubber (see Note #2)	0.022	7,000	1.31	1.31	1.31	5.74	5.74	5.74
Dryer Drop to Product Packaging (see Note #1)	n/a	n/a	0.01	0.006	0.0017	0.05	0.03	0.01
Product Packaging (see Note #1)	n/a	n/a	0.01	0.006	0.0017	0.05	0.03	0.01
					Subtotal	5.85	5.80	5.76

Ore Assay										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

Emission Unit	HAP Emissions										
	Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
Filter Press Drop to Dryers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSMP-1; Moly Scrubber	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dryer Drop to Product Packaging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Product Packaging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CFMP-1 and CFMP-2 Dryers

Dryer	Size	Gas Fire Rate	Operating Hours
	(Btu/hr)	(ft3/hr)	(hours)
CFMP-1	3,000,000	2,857	8,760
CFMP-2	3,000,000	2,857	8,760

Emission Factors for CFMP-1 and CFMP-2 Dryers

Criteria Pollutants (Reference: AP-42, Table 1.4-1 and 1.4-2)

Emission Factor (SO_2)	0.6	lb/MMscf
Emission Factor (NO_2)	100	lb/MMscf
Emission Factor (CO)	84	lb/MMscf
Emission Factor (PM Total)	7.6	lb/MMscf
Emission Factor (VOC)	5.5	lb/MMscf
Emission Factor (CO2) =	120,000	lb/MMscf
Emission Factor (CH4) =	2.3	lb/MMscf
Emission Factor (N2O) =	2.2	lb/MMscf

HAPs (Reference: AP-42, Table 1.4-3)

Emission Factor (2-Methylnaphthalene)	2.40E-05	lb/MMscf
Emission Factor (3-Methylchloranthrene)	1.80E-06	lb/MMscf
Emission Factor (7,12-Dimethylbenz(a)anthracene)	1.60E-05	lb/MMscf
Emission Factor (Acenaphthene)	1.80E-06	lb/MMscf
Emission Factor (Acenaphthylene)	1.80E-06	lb/MMscf
Emission Factor (Anthracene)	2.40E-06	lb/MMscf
Emission Factor (Benz(a)anthracene)	1.80E-06	lb/MMscf
Emission Factor (Benzene)	2.10E-03	lb/MMscf
Emission Factor (Benzo(a)pyrene)	1.20E-06	lb/MMscf
Emission Factor (Benzo(b)fluoranthene)	1.80E-06	lb/MMscf
Emission Factor (Benzo(g,h,i)perylene)	1.20E-06	lb/MMscf
Emission Factor (Benzo(k)fluoranthene)	1.80E-06	lb/MMscf
Emission Factor (Chrysene)	1.80E-06	lb/MMscf
Emission Factor (Dibenzo(a,h)anthracene)	1.20E-06	lb/MMscf
Emission Factor (Dichlorobenzene)	1.20E-03	lb/MMscf
Emission Factor (Fluoranthene)	3.00E-06	lb/MMscf
Emission Factor (Fluorene)	2.80E-06	lb/MMscf
Emission Factor (Formaldehyde)	7.50E-02	lb/MMscf
Emission Factor (Hexane)	1.80E+00	lb/MMscf
Emission Factor (Indeno(1,2,3-cd)pyrene)	1.80E-06	lb/MMscf
Emission Factor (Naphthalene)	6.10E-04	lb/MMscf
Emission Factor (Phenanathrene)	1.70E-05	lb/MMscf
Emission Factor (Pyrene)	5.00E-06	lb/MMscf
Emission Factor (Toluene)	3.40E-03	lb/MMscf
Emission Factor (Arsenic)	2.00E-04	lb/MMscf
Emission Factor (Beryllium)	1.25E-05	lb/MMscf
Emission Factor (Cadmium)	1.10E-03	lb/MMscf
Emission Factor (Chromium)	1.40E-03	lb/MMscf
Emission Factor (Cobalt)	8.40E-05	lb/MMscf
Emission Factor (Manganese)	3.80E-04	lb/MMscf
Emission Factor (Mercury)	2.60E-04	lb/MMscf
Emission Factor (Nickel)	2.10E-03	lb/MMscf
Emission Factor (Selenium)	2.40E-05	lb/MMscf

Emission Unit	Emissions (Uncontrolled)									
	SO_2	NO_2	CO	PM	VOC	SO_2	NO_2	CO	$PM/PM_{10}/PM_{2.5}$	VOC
	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
CFMP-1 Dryer	0.002	0.286	0.240	0.022	0.016	0.008	1.251	1.051	0.095	0.069
CFMP-2 Dryer	0.002	0.286	0.240	0.022	0.016	0.008	1.251	1.051	0.095	0.069
TOTAL	0.00	0.57	0.48	0.04	0.03	0.02	2.50	2.10	0.19	0.14

Emission Unit	Emissions (Uncontrolled)			
	CO2	CH4	N2O	CO2e
	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
CFMP-1 Dryer	1,501.71	0.03	0.03	1,510.64
CFMP-2 Dryer	1,501.71	0.03	0.03	1,510.64
TOTAL	3,003.43	0.06	0.06	3,021.28

HAP	CFMP-1	CFMP-2
	(ton/yr)	(ton/yr)
2-Methylnaphthalene	0.000	0.000
3-Methylchloranthrene	0.000	0.000
7,12-Dimethylbenz(a)anthracene	0.000	0.000
Acenaphthene	0.000	0.000
Acenaphthylene	0.000	0.000
Anthracene	0.000	0.000
Benz(a)anthracene	0.000	0.000
Benzene	0.000	0.000
Benzo(a)pyrene	0.000	0.000
Benzo(b)fluoranthene	0.000	0.000
Benzo(g,h,i)perylene	0.000	0.000
Benzo(k)fluoranthene	0.000	0.000
Chrysene	0.000	0.000
Dibenzo(a,h)anthracene	0.000	0.000
Dichlorobenzene	0.000	0.000
Fluoranthene	0.000	0.000
Fluorene	0.000	0.000
Formaldehyde	0.001	0.001
Hexane	0.023	0.023
Indeno(1,2,3-cd)pyrene	0.000	0.000
Naphthalene	0.000	0.000
Phenanathrene	0.000	0.000
Pyrene	0.000	0.000
Toluene	0.000	0.000
Arsenic	0.000	0.000
Beryllium	0.000	0.000

Cadmium	0.000	0.000
Chromium	0.000	0.000
Cobalt	0.000	0.000
Manganese	0.000	0.000
Mercury	0.000	0.000
Nickel	0.000	0.000
Selenium	0.000	0.000
Total	0.02	0.02

Footnotes:

Note #1 - Particulate emissions from (1) Filter Press Drop to Dryers, (2) Dryer Drop to Product Packaging, and (3) Product Packaging are controlled by scrubber SSMP-1. Emission collection points are not completely enclosed which may not provide for complete capture and are therefore assigned a 90% capture efficiency.

Note #2 - SSMP-1 is limited to an emission rate of 0.05 grams/dscm (Condition Part B, Section 11, II.B.1). This emission rate is converted to grains/dscf, as follows, to support the emissions calculations.

Permitted emission rate =	0.05	grams/dscm
1 gram =	15.43	grains
1 cubic meter =	35.31	cubic feet
Permitted emission rate =	0.022	grains/dscf

Gasoline Storage Tank

Tank volume = 20,000 gallons
Annual throughput = 120,000 gallons

(referenced from MSDS)	Benzene	Ethyl Benzene	Butyl Ether	Naphthalene	Xylene	Toluene	Hexane
Percent by Weight	4.90%	3.00%	15%	2.00%	15.00%	15.00%	5.00%

VOC Emissions = 6,628.81 pounds/yr
VOC Emissions = 0.76 pounds/hr
VOC Emissions = 3.31 tons/yr

HAP Emission (Uncontrolled) - Gasoline Storage Tank						
Benzene	Ethyl Benzene	Butyl Ether	Naphthalene	Xylene	Toluene	Hexane
(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
0.162	0.099	0.497	0.066	0.497	0.497	0.166

Gasoline Dispensing

Annual throughput = 120,000 gallons

(referenced from MSDS)	Benzene	Ethyl Benzene	Butyl Ether	Naphthalene	Xylene	Toluene	Hexane
Percent by Weight	4.90%	3.00%	15%	2.00%	15.00%	15.00%	5.00%

VOC Emission Factor = 11 lb/1,000 gallon (Ref: US, EPA, AP-42, Chapter 5.2, Table 5.2-7)

VOC Emissions = 1,320.00 pounds/yr
VOC Emissions = 0.15 pounds/hr
VOC Emissions = 0.66 tons/yr

HAP Emission (Uncontrolled) - Gasoline Dispensing						
Benzene	Ethyl Benzene	Butyl Ether	Naphthalene	Xylene	Toluene	Hexane
0.007	0.005	0.023	0.003	0.023	0.023	0.008
0.032	**0.020**	**0.099**	**0.013**	**0.099**	**0.099**	**0.033**

Diesel Storage Tank

Location	Name	Contents	Annual Throughput	Height (ft)	Diameter (ft)	Capacity (gallons)	VOC Emissions (lbs/yr)	VOC Emissions (lbs/hr)	VOC Emissions (tons/yr)
Tank Farm	Storage Tank	Diesel	6,979,909	30	38	250,000	595.69	0.07	0.30
Tank Farm	Storage Tank	Diesel	2,326,636	30	10.65	20,000	46.69	0.01	0.02
Tank Farm	Storage Tank	Diesel	2,326,636	30	10.65	20,000	46.69	0.01	0.02
Tank Farm	Storage Tank	Diesel	2,326,636	30	10.65	20,000	46.69	0.01	0.02

(referenced from MSDS)	Naphthalene
Percent by Weight	1.00%

Emission Point	Naphthalene (ton/yr)
Diesel Tanks	0.00

Engines

(1) North Mill Admin Generator

Annual operating hours =	1,000	hours		
Rated capacity =	56	kW	75	bhp
Rated capacity =	0.19	MMBtu/hr		

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
			(lb/hr)	(ton/year)	
NOx	2.53	g/bhp-hr	0.42	0.21	Exhaust emission data sheet
SOx	2.05E-03	lb/hp-hr	0.15	0.08	AP-42, Ch: 3.3, Table 3.3-1
VOC	0.0025141	lb/hp-hr	0.19	0.09	AP-42, Ch: 3.3, Table 3.3-1
PM	0.0149	g/bhp-hr	0.00	0.00	Exhaust emission data sheet
PM_{10}	0.0149	g/bhp-hr	0.00	0.00	Exhaust emission data sheet
$PM_{2.5}$	0.0149	g/bhp-hr	0.00	0.00	Assumed $PM_{2.5} = PM_{10}$
CO	3.72	g/bhp-hr	0.62	0.31	Exhaust emission data sheet
CO2	1.15	lb/hp-hr	86.33	43.16	AP-42, Ch: 3.3, Table 3.3-1
CH4	6.60E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
N2O	1.32E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
CO2e	n/a	n/a	86.43	43.22	n/a
Benzene	9.33E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Toluene	4.09E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Xylenes	2.85E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
1,3-Butadiene	3.91E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Formaldehyde	1.18E-03	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acetaldehyde	7.67E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acrolein	9.25E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Naphthalene	8.48E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2

(2) North Mill Thickener Generator

Annual operating hours =	1,000	hours		
Rated capacity =	63	kW	84	bhp
Rated capacity =	0.21	MMBtu/hr		

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
			(lb/hr)	(ton/year)	
NOx	4.7	g/kW-hr	0.65	0.33	Title V permit
SOx	1.25E-03	kg/kw-hr	0.17	0.09	AP-42, Ch: 3.3, Table 3.3-1
VOC	0.001528573	kg/kw-hr	0.21	0.11	AP-42, Ch: 3.3, Table 3.3-1
PM	0.4	g/kW-hr	0.06	0.03	Title V permit
PM_{10}	0.4	g/kW-hr	0.06	0.03	Title V permit
$PM_{2.5}$	0.4	g/kW-hr	0.06	0.03	Assumed $PM_{2.5} = PM_{10}$
CO	5	g/kW-hr	0.69	0.35	Title V permit
CO2	1.15	lb/hp-hr	97.12	48.56	AP-42, Ch: 3.3, Table 3.3-1
CH4	6.60E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
N2O	1.32E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
CO2e	n/a	n/a	97.24	48.62	n/a
Benzene	9.33E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Toluene	4.09E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Xylenes	2.85E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
1,3-Butadiene	3.91E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Formaldehyde	1.18E-03	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acetaldehyde	7.67E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acrolein	9.25E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Naphthalene	8.48E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2

(3) Dispatch Location Generator

Annual operating hours =	1,000	hours		
Rated capacity =	56	kW	75	bhp
Rated capacity =	0.19	MMBtu/hr		

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
			(lb/hr)	(ton/year)	
NOx	2.53	g/bhp-hr	0.42	0.21	Exhaust emission data sheet
SOx	1.25E-03	kg/kw-hr	0.15	0.08	AP-42, Ch: 3.3, Table 3.3-1
VOC	0.001528573	kg/kw-hr	0.19	0.09	AP-42, Ch: 3.3, Table 3.3-1
PM	0.0149	g/bhp-hr	0.00	0.00	Exhaust emission data sheet
PM_{10}	0.0149	g/bhp-hr	0.00	0.00	Exhaust emission data sheet
$PM_{2.5}$	0.0149	g/bhp-hr	0.00	0.00	Assumed $PM_{2.5} = PM_{10}$
CO	3.72	g/bhp-hr	0.62	0.31	Exhaust emission data sheet
CO2	1.15	lb/hp-hr	86.33	43.16	AP-42, Ch: 3.3, Table 3.3-1
CH4	6.60E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
N2O	1.32E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
CO2e	n/a	n/a	86.43	43.22	n/a
Benzene	9.33E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Toluene	4.09E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Xylenes	2.85E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
1,3-Butadiene	3.91E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Formaldehyde	1.18E-03	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acetaldehyde	7.67E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acrolein	9.25E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Naphthalene	8.48E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2

(4) South Mill Generator

Annual operating hours =	1000	hours		
Rated capacity =	365	kW	489	bhp
Rated capacity =	1.25	MMBtu/hr		

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
			(lb/hr)	(ton/year)	
NOx	0.018848	kg/kw-hr	15.13	7.57	Title V permit
SOx	1.25E-03	kg/kw-hr	1.00	0.50	AP-42, Ch: 3.3, Table 3.3-1
VOC	0.001528573	kg/kw-hr	1.23	0.61	AP-42, Ch: 3.3, Table 3.3-1
PM	1.34E-03	kg/kw-hr	1.07	0.54	Title V permit
PM_{10}	1.34E-03	kg/kw-hr	1.07	0.54	Title V permit
$PM_{2.5}$	1.34E-03	kg/kw-hr	1.07	0.54	Assumed $PM_{2.5} = PM_{10}$
CO	4.06E-03	kg/kw-hr	3.26	1.63	Title V permit
CO2	1.15	lb/hp-hr	562.67	281.33	AP-42, Ch: 3.3, Table 3.3-1
CH4	6.60E-03	lb/MMBtu	0.01	0.00	40 CFR Part 98, Table C-2
N2O	1.32E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
CO2e	n/a	n/a	563.36	281.68	n/a
Benzene	9.33E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Toluene	4.09E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Xylenes	2.85E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
1,3-Butadiene	3.91E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Formaldehyde	1.18E-03	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acetaldehyde	7.67E-04	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Acrolein	9.25E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2
Naphthalene	8.48E-05	lb/MMBtu	0.00	0.00	AP-42, Ch: 3.3, Table 3.3-2

(5) South Mill Tank Hill Generator

Annual operating hours =	100	hours		
Rated capacity =	60	kW	80	bhp
Rated capacity =	0.20	MMBtu/hr		

Pollutant	Emission Factor		Emission Rate		Emission Factor Reference
			(lb/hr)	(ton/year)	
NOx	13.4	gram/kW-hr	1.77	0.09	Title V permit
SOx	5.88E-04	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
VOC	2.96E-02	lb/MMBtu	0.01	0.00	AP-42, Table 3.2-2
PM	9.99E-03	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
PM_{10}	9.99E-03	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
$PM_{2.5}$	9.99E-03	lb/MMBtu	0.00	0.00	Assumed $PM_{2.5} = PM_{10}$
CO	519.00	gram/kW-hr	68.65	3.43	Title V permit
CO2	1.10E+02	lb/MMBtu	22.52	1.13	AP-42, Table 3.2-2
CH4	1.25E+00	lb/MMBtu	0.26	0.01	AP-42, Table 3.2-2
N2O	1.32E-03	lb/MMBtu	0.00	0.00	40 CFR Part 98, Table C-2
CO2e	n/a	n/a	29.00	1.45	n/a
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
1,3-Dichloropropene	1.27E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Benzene	1.58E-03	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Toluene	5.58E-04	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Xylenes	1.95E-04	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Formaldehyde	2.05E-02	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Acetaldehyde	2.79E-03	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Acrolein	2.63E-03	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Naphthalene	9.71E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Carbon Tetrachloride	1.77E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Chlorobenzene	1.29E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Chloroform	1.37E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Ethylbenzene	2.48E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Ethylene Dibromide	2.13E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Methanol	3.06E-03	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Methylene Chloride	4.12E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
PAH	1.41E-04	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Styrene	1.19E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2
Vinyl Chloride	7.18E-06	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-2

Wind Erosion-Tailings Dams (WFDA-1)

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{pound}{acre}\right)\ x\ \text{Acres}\left(\frac{acres}{year}\right) x\frac{1}{8{,}760}\left(\frac{year}{hours}\right) x\ (1 - \text{Percent Control (\%)})$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{pound}{acre}\right)\ x\ \text{Acres}\left(\frac{acres}{year}\right) x\frac{1}{2{,}000}\left(\frac{ton}{pound}\right) x\ (1 - \text{Percent Control (\%)})$$

Emission Factor (PM) =	3,513	lbs/acre-yr	(Reference: The emission factors are from the Hayden Mine SIP, Appendix E.)
Emission Factor (PM_{10}) =	193	lbs/acre-yr	(Reference: The emission factors are from the Hayden Mine SIP, Appendix E.)
Emission Factor ($PM_{2.5}$) =	193	lbs/acre-yr	(Reference: Conservatively assumed to be equal to PM_{10})
Total Tailing Acres	4,600	acre	

Controlled with chemical application = 99% (See Note #1)

Emissions (Controlled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
18.45	1.01	1.01	80.80	4.44	4.44

Ore Assay										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
2.5	6.6	0.025	1.7	13	5.2	13	500	0.025	0.9	0.5

HAP Emission										
Sb	As	Be	Cd	Cr	Co	Pb	Mn	Hg	Ni	Se
(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00

Wind Erosion-Overburden Deposition Areas (WFDA-2)

$$\text{PM Emissions}\left(\frac{lb}{hr}\right) = \text{Emission Factor}\left(\frac{pound}{ton}\right) x\ \text{Overburden Deposited}\left(\frac{ton}{year}\right) x \frac{1}{8{,}760}\left(\frac{year}{hours}\right)$$

$$\text{PM Emissions}\left(\frac{ton}{year}\right) = \text{Emission Factor}\left(\frac{pound}{ton}\right) x\ \text{Overburden Deposited}\left(\frac{ton}{year}\right) x \frac{1}{2{,}000}\left(\frac{ton}{pound}\right)$$

Overburden (waste Dumps) 128,615,469 tons/yr

Emissions Calculations

E = k(0.0032)((U/5)^1.3/(M/2^1.4) Reference: AP-42, Table 13.2.4.3: Aggregate Handling and Storage Piles

k =	0.74	TSP	
k =	0.35	PM_{10}	
k =	0.053	$PM_{2.5}$	
U =	10	miles/hr	(see Note #2)
M =	2.6	moisture (%)	(see Note #3)

Emission Factor (TSP) =	0.00404	lb/ton	(Note #4)
Emission Factor (PM_{10}) =	0.00191	lb/ton	
Emission Factor ($PM_{2.5}$) =	0.00029	lb/ton	

Emissions (Uncontrolled)					
PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
(lb/hr)	(lb/hr)	(lb/hr)	(ton/yr)	(ton/yr)	(ton/yr)
59.29	28.04	4.25	259.69	122.83	18.60

Footnotes

Note #1- AP-42 Chapter 13.2.4 states that the continuous chemical treating of storage piles can have a control efficiency of up to 90%, however based on operations and activity, a higher control factor (fugitive) is applied to this source (tailing) based on the the chemical application and wetting operations at the facility.

Note #2 - The annual average wind speed for the site ranges from about 6 mph to 7 mph. This PTE estimate uses 10 mph as a the average annual wind speed to provide a conservative estimate of the emissions.

Note #3 - Average site ore moisture content

Note #4 - Windblown emissions are considered to be minial as theseare primarily rock dumps. Emissions are therefore considered very conservative.

Rev1	Deleted North Primary Crushing
Rev2	Added fugitive and points emissions
Rev3	Changed ID PFOPS-0 to HFOPS-1
Rev4	Updated Moly plant emissions calculations based on the last permit app