

## Chris Garrett

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**From:** Louis Thanukos [lcthanukos@jbrenv.com]  
**Sent:** Thursday, February 28, 2013 3:12 PM  
**To:** Louis Thanukos; Brad Sohm  
**Cc:** Chris Garrett; Daniel Whitley; Kathy Arnold; Amber Summers; Shantanu Kongara; Kathleen Vance; Dave Strohm  
**Subject:** RE: Rosemont Copper Project - Request for Total Annualized Emissions (TPY)  
**Attachments:** Rosemont - February 2012 - Emissions Summary Tables - 2013-02-28.xlsx

Hi Brad,

Attached please find an Excel Workbook with the following spreadsheets:

1. "Facility-Wide Emissions". This spreadsheet provides annual summaries of all air quality pollutants, including Pb and CO<sub>2</sub>e, from all equipment at Rosemont based on the assumption that all process equipment will operate for the Mine Plan of Operation and all Alternatives,
2. "SX/EW Emissions". This spreadsheet provides an annual summary of all air quality pollutants from the SX/EW operations (excluding the PLS Pond Area Emergency Generator). Although emissions from this equipment are included in each of the annual summaries, this equipment will not operate during Year 12 of the Barrel Alternative because the oxide ore will have been exhausted. The PLS Pond Area Emergency Generator may operate during Year 12 of the Barrel Alternative, and consequently is not included in this spreadsheet.

Louis

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Rosemont Copper Company - Summary of Emissions for the Mine Plan of Operations and Each Alternative

Operating Scenario and Corresponding Year of Operation	Emissions Source	Emissions (tpy)														
		PM/TSP <sup>1</sup>	PM <sub>10</sub> <sup>1</sup>	PM <sub>2.5</sub> <sup>1</sup>	Lead	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC	H <sub>2</sub> SO <sub>4</sub>	SO <sub>4</sub> <sup>2</sup>	Soot <sup>2</sup>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
Mine Plan of Operations Year 1	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	2,791	765	88.3	0.33	635.8	161.3	18.98	3.77	0	-	-	5,376	0.218	0.0436	5,394
	Tailpipe Emissions	29.4	29.4	29.4	-	832.0	1,017	1.54	72.8	-	0.030	22.3	163,786	-	-	163,786
	<b>Total Emissions</b>	<b>2,899.1</b>	<b>833.6</b>	<b>128.0</b>	<b>0.33</b>	<b>1,476.8</b>	<b>1,194.8</b>	<b>20.6</b>	<b>78.1</b>	<b>0.018</b>	<b>0.030</b>	<b>22.3</b>	<b>175,202</b>	-	-	<b>175,240</b>
Mine Plan of Operations Year 5	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,238	875	99.2	0.38	606.2	153.8	18.10	3.77	0	-	-	5,125	0.208	0.0416	5,142
	Tailpipe Emissions	29.4	29.4	29.4	-	829.2	1,016	1.54	72.7	-	0.030	22.3	163,248	-	-	163,248
	<b>Total Emissions</b>	<b>3,345.9</b>	<b>943.2</b>	<b>138.9</b>	<b>0.39</b>	<b>1,444.4</b>	<b>1,186.9</b>	<b>19.7</b>	<b>78.0</b>	<b>0.018</b>	<b>0.030</b>	<b>22.3</b>	<b>174,413</b>	-	-	<b>174,451</b>
Phased Tailings Alternative Year 1	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	2,791	765	88.3	0.33	635.8	161.3	18.98	3.77	0	-	-	5,376	0.218	0.0436	5,394
	Tailpipe Emissions	29.4	29.4	29.4	-	832.0	1,017	1.54	72.8	-	0.030	22.3	163,786	-	-	163,786
	<b>Total Emissions</b>	<b>2,899.1</b>	<b>833.6</b>	<b>128.0</b>	<b>0.33</b>	<b>1,476.8</b>	<b>1,194.8</b>	<b>20.6</b>	<b>78.1</b>	<b>0.018</b>	<b>0.030</b>	<b>22.3</b>	<b>175,202</b>	-	-	<b>175,240</b>
Phased Tailings Alternative Year 5	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,238	875	99.2	0.38	606.2	153.8	18.10	3.77	0	-	-	5,125	0.208	0.0416	5,142
	Tailpipe Emissions	29.4	29.4	29.4	-	829.2	1,016	1.54	72.7	-	0.030	22.3	163,248	-	-	163,248
	<b>Total Emissions</b>	<b>3,345.9</b>	<b>943.2</b>	<b>138.9</b>	<b>0.39</b>	<b>1,444.4</b>	<b>1,186.9</b>	<b>19.7</b>	<b>78.0</b>	<b>0.018</b>	<b>0.030</b>	<b>22.3</b>	<b>174,413</b>	-	-	<b>174,451</b>
Barrel Alternative Year 1	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,110	847	96.5	0.37	635.8	161.3	18.98	3.77	0	-	-	5,376	0.218	0.0436	5,394
	Tailpipe Emissions	29.4	29.4	29.4	-	832.0	1,017	1.54	72.8	-	0.030	22.3	163,786	-	-	163,786
	<b>Total Emissions</b>	<b>3,218.3</b>	<b>915.8</b>	<b>136.2</b>	<b>0.37</b>	<b>1,476.8</b>	<b>1,194.8</b>	<b>20.6</b>	<b>78.1</b>	<b>0.018</b>	<b>0.030</b>	<b>22.3</b>	<b>175,202</b>	-	-	<b>175,240</b>
Barrel Alternative Year 12 <sup>3</sup>	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,627	970	108.5	0.43	527.8	133.9	15.76	3.77	0	-	-	4,462	0.181	0.0362	4,478
	Tailpipe Emissions	29.4	29.4	29.4	-	828.9	1,016	1.54	72.7	-	0.030	22.3	163,196	-	-	163,196
	<b>Total Emissions</b>	<b>3,734.5</b>	<b>1,038.2</b>	<b>148.1</b>	<b>0.43</b>	<b>1,365.7</b>	<b>1,167.0</b>	<b>17.3</b>	<b>78.0</b>	<b>0.018</b>	<b>0.030</b>	<b>22.3</b>	<b>173,699</b>	-	-	<b>173,734</b>
Barrel Trail Alternative Year 1	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,023	825	94.3	0.36	635.8	161.3	18.98	3.77	0	-	-	5,376	0.218	0.0436	5,394
	Tailpipe Emissions	30.0	30.0	30.0	-	880.1	1,065	1.54	75.5	-	0.030	22.7	172,990	-	-	172,990
	<b>Total Emissions</b>	<b>3,131.0</b>	<b>893.6</b>	<b>134.4</b>	<b>0.36</b>	<b>1,524.9</b>	<b>1,243.1</b>	<b>20.6</b>	<b>80.7</b>	<b>0.018</b>	<b>0.030</b>	<b>22.7</b>	<b>184,406</b>	-	-	<b>184,444</b>
Barrel Trail Alternative Year 5	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,469	934	105.2	0.41	606.2	153.8	18.10	3.77	0	-	-	5,125	0.208	0.0416	5,142
	Tailpipe Emissions	29.9	29.9	29.9	-	877.3	1,065	1.54	75.3	-	0.030	22.7	172,452	-	-	172,452
	<b>Total Emissions</b>	<b>3,577.2</b>	<b>1,003.1</b>	<b>145.3</b>	<b>0.42</b>	<b>1,492.5</b>	<b>1,235.2</b>	<b>19.7</b>	<b>80.6</b>	<b>0.018</b>	<b>0.030</b>	<b>22.7</b>	<b>183,617</b>	-	-	<b>183,655</b>
Scholefield-McLeary Alternative Year 1	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,177	864	98.2	0.38	635.8	161.3	18.98	3.77	0	-	-	5,376	0.218	0.0436	5,394
	Tailpipe Emissions	31.2	31.2	31.2	-	992.4	1,178	1.54	81.6	-	0.030	23.7	194,465	-	-	194,465
	<b>Total Emissions</b>	<b>3,287.2</b>	<b>934.7</b>	<b>139.7</b>	<b>0.38</b>	<b>1,637.2</b>	<b>1,355.8</b>	<b>20.6</b>	<b>86.9</b>	<b>0.018</b>	<b>0.030</b>	<b>23.7</b>	<b>205,881</b>	-	-	<b>205,920</b>
Scholefield-McLeary Alternative Year 5	Non-Fugitive Emissions	78.5	39.0	10.2	0.005	9.0	16.8	0.056	1.51	0.018	-	-	6,040	0.245	0.0490	6,061
	Fugitive Emissions	3,879	1,040	115.7	0.46	606.2	153.8	18.10	3.77	0	-	-	5,125	0.208	0.0416	5,142
	Tailpipe Emissions	31.2	31.2	31.2	-	989.6	1,177	1.54	81.4	-	0.030	23.7	193,927	-	-	193,927
	<b>Total Emissions</b>	<b>3,988.7</b>	<b>1,109.8</b>	<b>157.2</b>	<b>0.46</b>	<b>1,604.8</b>	<b>1,348.0</b>	<b>19.7</b>	<b>86.7</b>	<b>0.018</b>	<b>0.030</b>	<b>23.7</b>	<b>205,093</b>	-	-	<b>205,130</b>

NOTES:

<sup>1</sup> PM/TSP, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions shown in this summary are the controlled emissions. See Emission Inventories for additional details.

<sup>2</sup> SO<sub>4</sub> and Soot emissions are from operation of diesel-fueled vehicles.

<sup>3</sup> Barrel Alternative Year 12 includes emissions from SX/EW Operations even though these operations will not occur during this year. See the "SX\_EW Emissions" sheet for a summary of emissions from the SX/EW Operations.

**Rosemont Copper Company - Summary of SX/EW Emissions <sup>1</sup>**

Emissions Source	Emissions (tpy)														
	PM/TSP	PM <sub>10</sub>	PM <sub>2.5</sub>	Lead	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC	H <sub>2</sub> SO <sub>4</sub>	SO <sub>4</sub>	Soot	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
Solvent Extraction	-	-	-	-	-	-	-	3.77	-	-	-	-	-	-	-
Electrowinning	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-
Diesel Electrowinning Hot Water Generator	0.63	0.44	0.30	0.0002	0.96	3.84	0.04	0.04	-	-	-	4,453.51	0.18	0.04	4,469
Electrowinning Building Emergency Generator	0.01	0.01	0.01	-	0.14	0.12	0.0002	0.007	-	-	-	19.13	0.0008	0.0002	19
SX/EW Fire Water Pump	0.03	0.03	0.03	-	0.58	0.61	0.001	0.04	-	-	-	114.14	0.005	0.0009	115
<b>Total Emissions</b>	<b>0.68</b>	<b>0.49</b>	<b>0.34</b>	<b>0.0002</b>	<b>1.67</b>	<b>4.57</b>	<b>0.04</b>	<b>3.86</b>	<b>0.02</b>	<b>-</b>	<b>-</b>	<b>4,587</b>	<b>0.19</b>	<b>0.04</b>	<b>4,602</b>

NOTES:

<sup>1</sup> Emissions from SX/EW Operations are identical for the Mine Plan of Operations and each alternative.