

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\CRT Proposed Action - Const Area.urb924

Project Name: CRT Proposed Action - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	55.87	2.24	58.11	11.67	2.06	13.73
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	22.83	2.24	25.07	4.77	2.06	6.83
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010 Active Days: 66	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>55.87</u>	<u>2.24</u>	<u>58.11</u>	<u>11.67</u>	<u>2.06</u>	<u>13.73</u>
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	55.86	1.36	57.22	11.67	1.25	12.92
Mass Grading Dust	0.00	0.00	0.00	0.00	55.84	0.00	55.84	11.66	0.00	11.66
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active Days: 260	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active Days: 261	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active Days: 64	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active Days: 65	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01

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Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 2.25

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Low

  Onsite Cut/Fill: 30.3 cubic yards/day; Offsite Cut/Fill: 106.06 cubic yards/day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010 Active Days: 66	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>22.83</u>	<u>2.24</u>	<u>25.07</u>	<u>4.77</u>	<u>2.06</u>	<u>6.83</u>
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	22.83	1.36	24.19	4.77	1.25	6.02
Mass Grading Dust	0.00	0.00	0.00	0.00	22.81	0.00	22.81	4.76	0.00	4.76
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active Days: 260	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active Days: 261	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03

Time Slice 1/1/2013-3/29/2013 Active Days: 64	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active Days: 65	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\CRT Proposed Action - Operational.urb924

Project Name: CRT Proposed Action - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	3.13	2.33	24.87	0.03	4.60	0.88

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	3.13	2.33	24.87	0.03	4.60	0.88

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>
R&D Center	3.13	2.33	24.87	0.03	4.60	0.88
TOTALS (lbs/day, unmitigated)	3.13	2.33	24.87	0.03	4.60	0.88

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	135.00	373.95	2,677.95
					373.95	2,677.95

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0



Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\CRT Proposed Action - Const Area.urb924

Project Name: CRT Proposed Action - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	55.87	2.24	58.11	11.67	2.06	13.73
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	22.83	2.24	25.07	4.77	2.06	6.83
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>55.87</u>	<u>2.24</u>	<u>58.11</u>	<u>11.67</u>	<u>2.06</u>	<u>13.73</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	55.86	1.36	57.22	11.67	1.25	12.92
Mass Grading Dust	0.00	0.00	0.00	0.00	55.84	0.00	55.84	11.66	0.00	11.66
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	<u>1.24</u>	<u>8.41</u>	<u>12.48</u>	<u>0.01</u>	<u>0.05</u>	<u>0.48</u>	<u>0.52</u>	<u>0.02</u>	<u>0.43</u>	<u>0.45</u>
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Days: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01

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Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 2.25

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 30.3 cubic yards/day; Offsite Cut/Fill: 106.06 cubic yards/day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

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Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description  
 Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>22.83</u>	<u>2.24</u>	<u>25.07</u>	<u>4.77</u>	<u>2.06</u>	<u>6.83</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	22.83	1.36	24.19	4.77	1.25	6.02
Mass Grading Dust	0.00	0.00	0.00	0.00	22.81	0.00	22.81	4.76	0.00	4.76
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03

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Time Slice 4/1/2013-6/28/2013 Active Days: 65	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

Area Source Changes to Defaults

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\CRT Proposed Action - Operational.urb924

Project Name: CRT Proposed Action - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	2.33	3.47	26.37	0.02	4.60	0.88

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	2.33	3.47	26.37	0.02	4.60	0.88

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25
R&D Center	2.33	3.47	26.37	0.02	4.60	0.88
TOTALS (lbs/day, unmitigated)	2.33	3.47	26.37	0.02	4.60	0.88

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	135.00	373.95	2,677.95
					373.95	2,677.95

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0



Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\CRT Proposed Action - Const Area.urb924

Project Name: CRT Proposed Action - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (tons/year unmitigated)	0.18	1.51	0.79	0.00	1.84	0.07	1.92	0.39	0.07	0.45	151.56
2010 TOTALS (tons/year mitigated)	0.18	1.51	0.79	0.00	0.75	0.07	0.83	0.16	0.07	0.23	151.56
Percent Reduction	0.00	0.00	0.00	0.00	59.13	0.00	56.85	59.11	0.00	50.25	0.00
2011 TOTALS (tons/year unmitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
2011 TOTALS (tons/year mitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2012 TOTALS (tons/year unmitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
2012 TOTALS (tons/year mitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2013 TOTALS (tons/year unmitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
2013 TOTALS (tons/year mitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.15	0.15	0.27	0.00	0.00	0.00	184.21



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Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 2.25

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 30.3 cubic yards/day; Offsite Cut/Fill: 106.06 cubic yards/day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day



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Building Worker Trips

0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.38
------	------	------	------	------	------	------	------	------	------	--------

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2013	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Building 01/01/2011-06/30/2013	0.08	0.54	0.81	0.00	0.00	0.03	0.03	0.00	0.03	0.03	123.85
Building Off Road Diesel	0.06	0.47	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	57.62
Building Vendor Trips	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.12
Building Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.10
Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.01	0.15	0.13	0.00	0.00	0.00	183.96
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.13						
<b>TOTALS (tons/year, unmitigated)</b>	<b>0.15</b>	<b>0.15</b>	<b>0.27</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>184.21</b>

Area Source Changes to Defaults

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\CRT Proposed Action - Operational.urb924

Project Name: CRT Proposed Action - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.52	0.49	4.63	0.00	0.84	0.16	456.03

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.52	0.49	4.63	0.00	0.84	0.16	456.03

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25	CO2
R&D Center	0.52	0.49	4.63	0.00	0.84	0.16	456.03
TOTALS (tons/year, unmitigated)	0.52	0.49	4.63	0.00	0.84	0.16	456.03

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	135.00	373.95	2,677.95
					373.95	2,677.95

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7



Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

**Computational Research and Theory Facility  
Stationary Source Emissions  
Proposed Action & Alternatives 1-4**

**Table STA-1  
Summary of Stationary Source Emissions**

Equipment	Criteria Pollutants						Greenhouse Gases	
	(pounds per day)						(metric tons per year)	
Emission Source	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	CO <sub>2</sub> e
New Boiler	0.12	0.78	1.78	0.01	0.16	0.16	418.33	419.40
New Cooling Towers	—	—	—	—	2.36	2.36	—	—
750 kW Generator	0.07	11.80	0.53	0.01	0.05	0.05	26.24	26.50
600 kW Generator	0.05	9.44	0.43	0.01	0.04	0.04	21.00	21.21
<b>Total New Stationary Sources</b>	<b>0.18</b>	<b>12.58</b>	<b>2.31</b>	<b>0.02</b>	<b>2.57</b>	<b>2.57</b>	<b>465.56</b>	<b>467.11</b>
	(tons per year)							
New Boiler	0.02	0.14	0.32	0.00	0.03	0.03		
New Cooling Towers	—	—	—	—	0.05	0.05		
750 kW Generator	0.00	0.29	0.01	0.00	0.00	0.00		
600 kW Generator	0.00	0.24	0.01	0.00	0.00	0.00		
<b>Total New Stationary Sources</b>	<b>0.02</b>	<b>0.67</b>	<b>0.35</b>	<b>0.00</b>	<b>0.08</b>	<b>0.08</b>		

**Computational Research and Theory Facility  
Boilers  
Proposed Action & Alternatives 1-4**

Boilers  
 Nominal Rating per Boiler: 0.9 MMBtu/hr  
 Number of New Boilers: 1  
 Operational hours: 24 hr/day  
 8,760 hr/yr  
 Capacity Factor: 100%  
 Standard Temp 60 deg F  
 Molar Volume 379.70 scf/mole  
 Heat Content of Natural Gas 1,020 Btu/scf

**Table STA-2  
Boiler Emissions**

Units	Criteria Pollutants						Greenhouse Gases			
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
ppm @ 3% O <sub>2</sub>		30.00								
lbs/MMBtu	0.0054	0.0360	0.0824	0.0006	0.0075	0.0075	116.98	0.0110	0.0002	117.28
lbs/hr	0.00	0.03	0.07	0.00	0.01	0.01	105.28	0.01	0.00	105.55
lbs/day	0.12	0.78	1.78	0.01	0.16	0.16	2,526.71	0.24	0.00	4,906.07
lbs/yr	42.51	283.82	649.27	4.64	58.74	58.74	922,248.79	86.91	1.74	924,612.63
tons/yr	0.02	0.14	0.32	0.00	0.03	0.03	461.12	0.04	0.00	462.31
metric tons/yr							418.33	0.04	0.00	419.40

Notes:

1. Emission Factors for ROG, CO, PM<sub>10</sub>, and SO<sub>x</sub>: U.S. Environmental Protection Agency, *AP-42 Compilation of Air Pollutant Emission Factors*, Chapter 1.4, Table 1.4-1 and 1.4-2.
2. Emission factor for PM<sub>2.5</sub> assumes all PM is less than 1 micron in diameter.
3. Concentration limit for NO<sub>x</sub>: Lochinvar Manufacturer Specifications.
4. Emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O: California Climate Action Registry, *General Reporting Protocol*, Version 3.1, (2009) 101, 103.
5. Emissions of CO<sub>2</sub>e assumes the following global warming potentials: CO<sub>2</sub> = 1, CH<sub>4</sub> = 21, N<sub>2</sub>O = 310.

**Computational Research and Theory Facility  
Cooling Towers  
Proposed Action & Alternatives 1-4**

Cooling Towers Daily Emissions

High Flow Rate: 1,465 Gallons per Minute  
 Maximum Drift: 0.005% Percent  
 Water Density: 8.34 Pounds per gallon  
 Number of Units: 5 Cooling Towers  
 Operating Hours: 24 hr/day

Cooling Towers Annual Emissions

Standard Flow Rate: 735 Gallons per Minute  
 Maximum Drift: 0.005% Percent  
 Water Density: 8.34 Pounds per gallon  
 Operating Hours: 24 hr/day  
 90 day/yr

**Table STA-3  
Cooling Tower Emissions**

Units	PM <sub>10</sub>	PM <sub>2.5</sub>	ROG
TDS ppm	536	536	—
lbs/hr	0.10	0.10	—
lbs/day	2.36	2.36	—

Units	PM <sub>10</sub>	PM <sub>2.5</sub>	ROG
TDS ppm	536	536	—
lbs/yr	106.45	106.45	—
tons/yr	0.05	0.05	—

Notes:

1. Total dissolved solids (TDS) is based on a maximum electrical conductivity of 800 micromhos per centimeter, which is a TDS of approximately 536 ppm.
2. Cooling towers are assumed to operate up to 90 days per year.

**Computational Research and Theory Facility  
Emergency Generators  
Proposed Action & Alternatives 1-4**

Standby Emergency Generator  
 Rating: 750 kW  
 1,006 HP  
 Number of Units: 1  
 Operating Hours per Unit: 1 hours/day  
 50 hours/year

**Table STA-4  
Standby Emergency Generator Emissions**

Units	Criteria Pollutants						Greenhouse Gases	
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	CO <sub>2</sub> e
g/HP-hr	0.03	5.32	0.24	0.0055	0.022	0.022	521.64	526.91
lbs/hr	0.07	11.80	0.53	0.01	0.05	0.05	1,156.92	1,168.61
lbs/day	0.07	11.80	0.53	0.01	0.05	0.05	1,156.92	1,168.61
lbs/yr	3.33	589.95	26.61	0.61	2.44	2.44	57,845.97	58,430.27
tons/yr	0.00	0.29	0.01	0.00	0.00	0.00	28.92	29.22
metric tons/yr	—	—	—	—	—	—	26.24	26.50

Notes:

1. Emission factors for all pollutants (except SO<sub>x</sub> and CO<sub>2</sub>): Caterpillar C27 ATAAC Standby Diesel Generator Set 750 ekW 938 kVA (U.S. EPA Tier 2 emission standards). All particulate matter is assumed to be PM<sub>2.5</sub>.
2. Emission factor for SO<sub>x</sub>: U.S. Environmental Protection Agency, *AP-42 Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 3.4, Table 3.4-1. Emission Factor for SO<sub>x</sub> is based on 15 ppm (0.0015%) S1 and assumes complete conversion to SO<sub>2</sub>.
3. Emission factor for CO<sub>2</sub>: U.S. Environmental Protection Agency, *AP-42 Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 3.3, Table 3.3-1.
4. Emissions of CO<sub>2</sub>e assume 99% of the greenhouse emissions occur as CO<sub>2</sub>. This is consistent with off-road diesel engines.

**Computational Research and Theory Facility  
Emergency Generators  
Proposed Action & Alternatives 1-4**

Standby Emergency Generator  
 Rating: 600 kW  
 805 HP  
 Number of Units: 1  
 Operating Hours per Unit: 1 hours/day  
 50 hours/year

**Table STA-4  
Standby Emergency Generator Emissions**

Units	Criteria Pollutants						Greenhouse Gases	
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	CO <sub>2</sub> e
g/HP-hr	0.03	5.32	0.24	0.0055	0.022	0.022	521.64	526.91
lbs/hr	0.05	9.44	0.43	0.01	0.04	0.04	925.77	935.12
lbs/day	0.05	9.44	0.43	0.01	0.04	0.04	925.77	935.12
lbs/yr	2.66	472.08	21.30	0.49	1.95	1.95	46,288.28	46,755.83
tons/yr	0.00	0.24	0.01	0.00	0.00	0.00	23.14	23.38
metric tons/yr	—	—	—	—	—	—	21.00	21.21

Notes:

1. Emission factors for all pollutants (except SO<sub>x</sub> and CO<sub>2</sub>): Caterpillar C27 ATAAC Standby Diesel Generator Set 750 ekW 938 kVA (U.S. EPA Tier 2 emission standards). All particulate matter is assumed to be PM<sub>2.5</sub>.
2. Emission factor for SO<sub>x</sub>: U.S. Environmental Protection Agency, *AP-42 Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 3.4, Table 3.4-1. Emission Factor for SO<sub>x</sub> is based on 15 ppm (0.0015%) S1 and assumes complete conversion to SO<sub>2</sub>.
3. Emission factor for CO<sub>2</sub>: U.S. Environmental Protection Agency, *AP-42 Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 3.3, Table 3.3-1.
4. Emissions of CO<sub>2</sub>e assume 99% of the greenhouse emissions occur as CO<sub>2</sub>. This is consistent with off-road diesel engines.

**Computational Research and Theory Facility  
AERMOD - Model Emission Rate Inputs  
BAAQMD PM2.5 Modeling**

**Table AER-1  
AERMOD Source Characteristics**

Emission Source	Source Type	Release Height (m)	Length of Side (m)	Initial Vertical (m)	Vertical Dimention (m)	Exit Temperature (F)	Inside Diameter (ft)	Exit Flow Rate (ft <sup>3</sup> /s)
Construction Off-Road	Volume	3.00	20.00	1.40	6.00			
Construction On-Road	Line		24.00					
Operation Area	Area	0		1.00				
Operation Boiler	Point	16.00				949.80	0.67	93.93
Operation Cooling Tower	Point	16.00				-10	7.50	1,428.67
Operation Emergency Generator	Point	16.00				949.80	0.67	93.93

**Computational Research and Theory Facility  
AERMOD - Model Emission Rate Inputs  
BAAQMD PM2.5 Modeling**

**Table AER-2  
Calculated AERMOD Source Emission Rates - Proposed Action**

Emissions Source	Model Source Group	Source ID	Source Type	Number of Sources	Time Slice Begin	Time Slice End	Averaging Period (hours/day)	Modeled Emission Rate	
								PM <sub>2.5</sub> (DPM) (lbs/day)	(g/s)
Proposed Action									
Construction (2010)									
Grading/Trenching Off-Road	CONS1	VOL01-15	Volume	15	10/1/2010	12/31/2010	8	1.96	2.06E-03
Grading/Trenching On-Road	CONS1	LIN01	Line	1	10/1/2010	12/31/2010	8	0.10	1.58E-03
Construction (2011)									
Building Off-Road	CONS2	VOL16-30	Volume	15	1/1/2011	12/31/2011	8	0.50	5.25E-04
Building On-Road	CONS2	LIN02	Line	1	1/1/2011	12/31/2011	8	0.03	4.73E-04
Operation									
Area	OPER	ARE01	Area	1			24	0.01	5.25E-05
Boiler	OPER	PNT01	Point	1			24	0.16	8.40E-04
Cooling Tower 1	OPER	PNT02	Point	1			24	0.06	3.06E-04
Cooling Tower 2	OPER	PNT03	Point	1			24	0.06	3.06E-04
Cooling Tower 3	OPER	PNT04	Point	1			24	0.06	3.06E-04
Cooling Tower 4	OPER	PNT05	Point	1			24	0.06	3.06E-04
Cooling Tower 5	OPER	PNT06	Point	1			24	0.06	3.06E-04
Emergency Generator 1	OPER	PNT07	Point	1			24	0.01	3.51E-05
Emergency Generator 2	OPER	PNT08	Point	1			24	0.01	2.80E-05

Note: Cooling tower and emergency generator emission rates were calculated based on the estimated annual emissions.



**Computational Research and Theory Facility**  
**Evaluation of Health Impacts from Off-Road Construction Equipment and On-Road Haul/Vendor Trucks**

**Table HRA-1**  
**Maximum Individual Cancer Risk (MICR) at Maximally Exposed Individual (MEI)**

Model Run	Pollutant	CPF	C <sub>AIR,ANN</sub>	DBR	A	EF	ED	AT	Mult Factor	MICR	Threshold	Over?
Construction (2010)	DPM	1.10E+00	2.17E-02	302	1	350	9	25550	40.96	0.9	10	NO
Construction (2011)	DPM	1.10E+00	1.79E-02	302	1	350	9	25550	40.96	0.7	10	NO

Exposure factors used to calculate cancer risk:

- CPF Cancer Potency Factor (mg/kg-day)<sup>-1</sup>.
- C<sub>AIR,ANN</sub> Modeled annual concentration (µg/m<sup>3</sup>).
- DBR Daily breathing rate (L/kg (body weight) per day).  
 DBR Sources:  
 1. California Air Resources Board and Office of Environmental Health Hazard Assessment, *Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk*, (2003).  
 2. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, (2003).
- A Inhalation absorption factor (default = 1).
- EF Exposure frequency (days/year).
- ED Exposure duration (years).
- AT Average time period over which exposure is averaged in days (days).
- Mult Factor Multiplying Factor =  $CPF \times (DBR \times A \times EF \times ED \times 10^{-6} / AT) \times 10^6$ .



Construction (2010)

\* AERMOD (07026): C:\ISC-AERMOD\924.06\MODEL021710\PM25\PM25.ISC

\* MODELING OPTIONS USED:

\* CONC DFAULT ELEV  
 \* PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: CONS1  
 \* FOR A TOTAL OF 2837 RECEPTORS.  
 \* FORMAT: (3(1X,F13.5),3(1X,F8.2),2X,A6,2X,A8,2X,I8.8,2X,A8)

X	Y	AVERAGE CONC	ZELEV	ZHILL	ZFLAG	AVE	GRP	NUM YRS	NET ID
567211.06250	4192470.25000	0.00046	339.14	532.00	0.00	ANNUAL	CONS1	00000002	
567198.18750	4192424.00000	0.00049	331.20	532.00	0.00	ANNUAL	CONS1	00000002	
567185.25000	4192377.50000	0.00053	310.33	532.00	0.00	ANNUAL	CONS1	00000002	
567172.37500	4192331.00000	0.00060	279.08	532.00	0.00	ANNUAL	CONS1	00000002	
567114.31250	4192290.50000	0.00069	262.53	532.00	0.00	ANNUAL	CONS1	00000002	
567069.18750	4192296.50000	0.00072	267.23	532.00	0.00	ANNUAL	CONS1	00000002	
566989.43750	4192335.75000	0.00085	248.74	532.00	0.00	ANNUAL	CONS1	00000002	
566954.81250	4192368.75000	0.00088	246.74	532.00	0.00	ANNUAL	CONS1	00000002	
566879.62500	4192376.25000	0.00096	250.61	532.00	0.00	ANNUAL	CONS1	00000002	
566839.00000	4192350.75000	0.00107	246.63	532.00	0.00	ANNUAL	CONS1	00000002	
566784.81250	4192284.50000	0.00123	247.42	532.00	0.00	ANNUAL	CONS1	00000002	
566771.25000	4192244.00000	0.00130	241.98	532.00	0.00	ANNUAL	CONS1	00000002	
566787.06250	4192171.75000	0.00124	220.99	532.00	0.00	ANNUAL	CONS1	00000002	
566850.25000	4192083.75000	0.00103	208.97	532.00	0.00	ANNUAL	CONS1	00000002	
566802.87500	4192016.75000	0.00100	198.83	532.00	0.00	ANNUAL	CONS1	00000002	
566762.25000	4191997.25000	0.00101	197.25	532.00	0.00	ANNUAL	CONS1	00000002	
566686.75000	4192003.50000	0.00113	206.29	532.00	0.00	ANNUAL	CONS1	00000002	
566651.93750	4192029.50000	0.00127	212.43	532.00	0.00	ANNUAL	CONS1	00000002	
566621.93750	4192100.00000	0.00155	222.80	532.00	0.00	ANNUAL	CONS1	00000002	
566586.18750	4192156.75000	0.00180	215.49	532.00	0.00	ANNUAL	CONS1	00000002	
566545.56250	4192168.75000	0.00200	213.09	532.00	0.00	ANNUAL	CONS1	00000002	
566457.56250	4192176.25000	0.00249	208.60	532.00	0.00	ANNUAL	CONS1	00000002	
566410.18750	4192171.75000	0.00282	220.42	532.00	0.00	ANNUAL	CONS1	00000002	
566362.75000	4192167.25000	0.00322	232.53	532.00	0.00	ANNUAL	CONS1	00000002	
566317.62500	4192131.00000	0.00313	213.02	532.00	0.00	ANNUAL	CONS1	00000002	
566277.00000	4192124.25000	0.00332	208.19	532.00	0.00	ANNUAL	CONS1	00000002	
566222.81250	4192140.25000	0.00422	232.89	532.00	0.00	ANNUAL	CONS1	00000002	
566136.56250	4192134.50000	0.00489	222.40	532.00	0.00	ANNUAL	CONS1	00000002	
566064.06250	4192169.25000	0.00626	255.51	532.00	0.00	ANNUAL	CONS1	00000002	
565997.25000	4192185.75000	0.00797	256.40	532.00	0.00	ANNUAL	CONS1	00000002	
565955.00000	4192180.00000	0.00959	243.37	532.00	0.00	ANNUAL	CONS1	00000002	
565867.25000	4192155.25000	0.00931	207.62	532.00	0.00	ANNUAL	CONS1	00000002	
565806.12500	4192195.00000	0.01353	186.77	532.00	0.00	ANNUAL	CONS1	00000002	
565772.56250	4192223.25000	0.01850	185.50	532.00	0.00	ANNUAL	CONS1	00000002	
565739.00000	4192251.25000	0.02167	194.37	532.00	0.00	ANNUAL	CONS1	00000002	
565705.50000	4192279.25000	0.02020	191.57	532.00	0.00	ANNUAL	CONS1	00000002	
565671.93750	4192307.25000	0.01614	190.44	532.00	0.00	ANNUAL	CONS1	00000002	
565638.37500	4192335.25000	0.01184	180.83	532.00	0.00	ANNUAL	CONS1	00000002	
565600.12500	4192407.50000	0.00797	187.46	532.00	0.00	ANNUAL	CONS1	00000002	
565595.50000	4192451.75000	0.00687	183.26	532.00	0.00	ANNUAL	CONS1	00000002	
565590.81250	4192496.00000	0.00562	166.91	532.00	0.00	ANNUAL	CONS1	00000002	
565586.18750	4192540.50000	0.00486	180.32	532.00	0.00	ANNUAL	CONS1	00000002	
565581.50000	4192584.75000	0.00450	205.65	532.00	0.00	ANNUAL	CONS1	00000002	
565615.62500	4192654.75000	0.00427	231.76	532.00	0.00	ANNUAL	CONS1	00000002	
565649.37500	4192723.50000	0.00333	244.97	532.00	0.00	ANNUAL	CONS1	00000002	
565644.37500	4192766.25000	0.00232	257.98	532.00	0.00	ANNUAL	CONS1	00000002	
565639.31250	4192809.25000	0.00191	258.79	532.00	0.00	ANNUAL	CONS1	00000002	
565634.31250	4192852.25000	0.00145	269.05	532.00	0.00	ANNUAL	CONS1	00000002	
565914.75000	4192891.25000	0.00070	305.87	532.00	0.00	ANNUAL	CONS1	00000002	
565983.25000	4192793.50000	0.00089	300.92	532.00	0.00	ANNUAL	CONS1	00000002	
566097.37500	4192816.25000	0.00064	316.63	532.00	0.00	ANNUAL	CONS1	00000002	
566123.50000	4192705.50000	0.00103	302.96	532.00	0.00	ANNUAL	CONS1	00000002	
566192.00000	4192650.00000	0.00112	332.16	532.00	0.00	ANNUAL	CONS1	00000002	
566257.18750	4192653.25000	0.00098	344.65	532.00	0.00	ANNUAL	CONS1	00000002	
566335.50000	4192565.25000	0.00128	318.13	532.00	0.00	ANNUAL	CONS1	00000002	
566397.43750	4192552.25000	0.00125	302.59	532.00	0.00	ANNUAL	CONS1	00000002	
566446.37500	4192659.75000	0.00071	354.75	532.00	0.00	ANNUAL	CONS1	00000002	
566557.25000	4192578.25000	0.00082	334.92	532.00	0.00	ANNUAL	CONS1	00000002	
566850.75000	4192813.00000	0.00031	368.12	532.00	0.00	ANNUAL	CONS1	00000002	
567006.00000	4192636.75000	0.00045	315.00	532.00	0.00	ANNUAL	CONS1	00000002	
567132.37500	4192659.25000	0.00037	348.92	532.00	0.00	ANNUAL	CONS1	00000002	
567249.75000	4192609.50000	0.00037	357.00	532.00	0.00	ANNUAL	CONS1	00000002	
567159.50000	4192284.50000	0.00068	254.71	532.00	0.00	ANNUAL	CONS1	00000002	
567024.06250	4192302.75000	0.00081	251.87	532.00	0.00	ANNUAL	CONS1	00000002	
566920.25000	4192402.00000	0.00088	251.46	532.00	0.00	ANNUAL	CONS1	00000002	
566798.37500	4192325.25000	0.00116	249.96	532.00	0.00	ANNUAL	CONS1	00000002	

Construction (2011)

\* AERMOD (07026): C:\ISC-AERMOD\924.06\MODEL021710\PM25\PM25.ISC

\* MODELING OPTIONS USED:

\* CONC

DFAULT ELEV

\* PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: CONS2

\* FOR A TOTAL OF 2837 RECEPTORS.

\* FORMAT: (3(1X,F13.5),3(1X,F8.2),2X,A6,2X,A8,2X,I8.8,2X,A8)

X	Y	AVERAGE CONC	ZELEV	ZHILL	ZFLAG	AVE	GRP	NUM YRS	NET ID
567223.93750	4192516.75000	0.00040	350.38	532.00	0.00	ANNUAL	CONS2	00000002	
567211.06250	4192470.25000	0.00042	339.14	532.00	0.00	ANNUAL	CONS2	00000002	
567198.18750	4192424.00000	0.00044	331.20	532.00	0.00	ANNUAL	CONS2	00000002	
567185.25000	4192377.50000	0.00047	310.33	532.00	0.00	ANNUAL	CONS2	00000002	
567172.37500	4192331.00000	0.00051	279.08	532.00	0.00	ANNUAL	CONS2	00000002	
567114.31250	4192290.50000	0.00057	262.53	532.00	0.00	ANNUAL	CONS2	00000002	
567069.18750	4192296.50000	0.00060	267.23	532.00	0.00	ANNUAL	CONS2	00000002	
566989.43750	4192335.75000	0.00071	248.74	532.00	0.00	ANNUAL	CONS2	00000002	
566954.81250	4192368.75000	0.00074	246.74	532.00	0.00	ANNUAL	CONS2	00000002	
566879.62500	4192376.25000	0.00082	250.61	532.00	0.00	ANNUAL	CONS2	00000002	
566839.00000	4192350.75000	0.00091	246.63	532.00	0.00	ANNUAL	CONS2	00000002	
566784.81250	4192284.50000	0.00103	247.42	532.00	0.00	ANNUAL	CONS2	00000002	
566771.25000	4192244.00000	0.00108	241.98	532.00	0.00	ANNUAL	CONS2	00000002	
566787.06250	4192171.75000	0.00105	220.99	532.00	0.00	ANNUAL	CONS2	00000002	
566850.25000	4192083.75000	0.00087	208.97	532.00	0.00	ANNUAL	CONS2	00000002	
566802.87500	4192016.75000	0.00084	198.83	532.00	0.00	ANNUAL	CONS2	00000002	
566762.25000	4191997.25000	0.00085	197.25	532.00	0.00	ANNUAL	CONS2	00000002	
566686.75000	4192003.50000	0.00095	206.29	532.00	0.00	ANNUAL	CONS2	00000002	
566651.93750	4192029.50000	0.00106	212.43	532.00	0.00	ANNUAL	CONS2	00000002	
566621.93750	4192100.00000	0.00131	222.80	532.00	0.00	ANNUAL	CONS2	00000002	
566586.18750	4192156.75000	0.00154	215.49	532.00	0.00	ANNUAL	CONS2	00000002	
566545.56250	4192168.75000	0.00172	213.09	532.00	0.00	ANNUAL	CONS2	00000002	
566457.56250	4192176.25000	0.00217	208.60	532.00	0.00	ANNUAL	CONS2	00000002	
566410.18750	4192171.75000	0.00244	220.42	532.00	0.00	ANNUAL	CONS2	00000002	
566362.75000	4192167.25000	0.00275	232.53	532.00	0.00	ANNUAL	CONS2	00000002	
566317.62500	4192131.00000	0.00271	213.02	532.00	0.00	ANNUAL	CONS2	00000002	
566277.00000	4192124.25000	0.00288	208.19	532.00	0.00	ANNUAL	CONS2	00000002	
566222.81250	4192140.25000	0.00357	232.89	532.00	0.00	ANNUAL	CONS2	00000002	
566136.56250	4192134.50000	0.00420	222.40	532.00	0.00	ANNUAL	CONS2	00000002	
566064.06250	4192169.25000	0.00535	255.51	532.00	0.00	ANNUAL	CONS2	00000002	
565997.25000	4192185.75000	0.00690	256.40	532.00	0.00	ANNUAL	CONS2	00000002	
565955.00000	4192180.00000	0.00774	243.37	532.00	0.00	ANNUAL	CONS2	00000002	
565867.25000	4192155.25000	0.00705	207.62	532.00	0.00	ANNUAL	CONS2	00000002	
565806.12500	4192195.00000	0.01067	186.77	532.00	0.00	ANNUAL	CONS2	00000002	
565772.56250	4192223.25000	0.01516	185.50	532.00	0.00	ANNUAL	CONS2	00000002	
565739.00000	4192251.25000	0.01787	194.37	532.00	0.00	ANNUAL	CONS2	00000002	
565705.50000	4192279.25000	0.01631	191.57	532.00	0.00	ANNUAL	CONS2	00000002	
565671.93750	4192307.25000	0.01271	190.44	532.00	0.00	ANNUAL	CONS2	00000002	
565638.37500	4192335.25000	0.00919	180.83	532.00	0.00	ANNUAL	CONS2	00000002	
565600.12500	4192407.50000	0.00646	187.46	532.00	0.00	ANNUAL	CONS2	00000002	
565595.50000	4192451.75000	0.00577	183.26	532.00	0.00	ANNUAL	CONS2	00000002	
565590.81250	4192496.00000	0.00487	166.91	532.00	0.00	ANNUAL	CONS2	00000002	
565586.18750	4192540.50000	0.00432	180.32	532.00	0.00	ANNUAL	CONS2	00000002	
565581.50000	4192584.75000	0.00413	205.65	532.00	0.00	ANNUAL	CONS2	00000002	
565565.62500	4192654.75000	0.00401	231.76	532.00	0.00	ANNUAL	CONS2	00000002	
565649.37500	4192723.50000	0.00314	244.97	532.00	0.00	ANNUAL	CONS2	00000002	
565644.37500	4192766.25000	0.00231	257.98	532.00	0.00	ANNUAL	CONS2	00000002	
565639.31250	4192809.25000	0.00190	258.79	532.00	0.00	ANNUAL	CONS2	00000002	
565634.31250	4192852.25000	0.00150	269.05	532.00	0.00	ANNUAL	CONS2	00000002	
565914.75000	4192891.25000	0.00098	305.87	532.00	0.00	ANNUAL	CONS2	00000002	
565983.25000	4192793.50000	0.00119	300.92	532.00	0.00	ANNUAL	CONS2	00000002	
566097.37500	4192816.25000	0.00082	316.63	532.00	0.00	ANNUAL	CONS2	00000002	
566123.50000	4192705.50000	0.00125	302.96	532.00	0.00	ANNUAL	CONS2	00000002	
566192.00000	4192650.00000	0.00135	332.16	532.00	0.00	ANNUAL	CONS2	00000002	
566257.18750	4192653.25000	0.00118	344.65	532.00	0.00	ANNUAL	CONS2	00000002	
566335.50000	4192565.25000	0.00154	318.13	532.00	0.00	ANNUAL	CONS2	00000002	
566397.43750	4192552.25000	0.00146	302.59	532.00	0.00	ANNUAL	CONS2	00000002	
566446.37500	4192659.75000	0.00086	354.75	532.00	0.00	ANNUAL	CONS2	00000002	
566557.25000	4192578.25000	0.00093	334.92	532.00	0.00	ANNUAL	CONS2	00000002	
566850.75000	4192813.00000	0.00038	368.12	532.00	0.00	ANNUAL	CONS2	00000002	
567006.00000	4192636.75000	0.00046	315.00	532.00	0.00	ANNUAL	CONS2	00000002	
567132.37500	4192659.25000	0.00038	348.92	532.00	0.00	ANNUAL	CONS2	00000002	
567249.75000	4192609.50000	0.00036	357.00	532.00	0.00	ANNUAL	CONS2	00000002	
567159.50000	4192284.50000	0.00055	254.71	532.00	0.00	ANNUAL	CONS2	00000002	
567024.06250	4192302.75000	0.00067	251.87	532.00	0.00	ANNUAL	CONS2	00000002	
566920.25000	4192402.00000	0.00075	251.46	532.00	0.00	ANNUAL	CONS2	00000002	

Operational

\* AERMOD (07026): C:\ISC-AERMOD\924.06\MODEL021710\PM25\PM25.ISC

\* MODELING OPTIONS USED:

\* CONC

DFault ELEV

\* PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL

\* FOR A TOTAL OF 1959 RECEPTORS.

\* FORMAT: (3(1X,F13.5),3(1X,F8.2),2X,A6,2X,A8,2X,I8.8,2X,A8)

X	Y	AVERAGE CONC	ZELEV	ZHILL	ZFLAG	AVE	GRP	NUM YRS	NET ID
566787.06250	4192171.75000	0.00172	220.99	532.00	0.00	ANNUAL	ALL	00000002	
566850.25000	4192083.75000	0.00144	208.97	532.00	0.00	ANNUAL	ALL	00000002	
566802.87500	4192016.75000	0.00150	198.83	532.00	0.00	ANNUAL	ALL	00000002	
566762.25000	4191997.25000	0.00158	197.25	532.00	0.00	ANNUAL	ALL	00000002	
566686.75000	4192003.50000	0.00182	206.29	532.00	0.00	ANNUAL	ALL	00000002	
566651.93750	4192029.50000	0.00201	212.43	532.00	0.00	ANNUAL	ALL	00000002	
566621.93750	4192100.00000	0.00231	222.80	532.00	0.00	ANNUAL	ALL	00000002	
566586.18750	4192156.75000	0.00239	215.49	532.00	0.00	ANNUAL	ALL	00000002	
566545.56250	4192168.75000	0.00258	213.09	532.00	0.00	ANNUAL	ALL	00000002	
566457.56250	4192176.25000	0.00309	208.60	532.00	0.00	ANNUAL	ALL	00000002	
566410.18750	4192171.75000	0.00368	220.42	532.00	0.00	ANNUAL	ALL	00000002	
566362.75000	4192167.25000	0.00445	232.53	532.00	0.00	ANNUAL	ALL	00000002	
566317.62500	4192131.00000	0.00416	213.02	532.00	0.00	ANNUAL	ALL	00000002	
566277.00000	4192124.25000	0.00435	208.19	532.00	0.00	ANNUAL	ALL	00000002	
566222.81250	4192140.25000	0.00596	232.89	532.00	0.00	ANNUAL	ALL	00000002	
566136.56250	4192134.50000	0.00637	222.40	532.00	0.00	ANNUAL	ALL	00000002	
566064.06250	4192169.25000	0.00832	255.50	532.00	0.00	ANNUAL	ALL	00000002	
565997.25000	4192185.75000	0.01016	256.40	532.00	0.00	ANNUAL	ALL	00000002	
565955.00000	4192180.00000	0.01242	243.37	532.00	0.00	ANNUAL	ALL	00000002	
565867.25000	4192155.25000	0.00979	207.62	532.00	0.00	ANNUAL	ALL	00000002	
565806.12500	4192195.00000	0.00726	186.77	532.00	0.00	ANNUAL	ALL	00000002	
565772.56250	4192223.25000	0.00567	185.50	532.00	0.00	ANNUAL	ALL	00000002	
565739.00000	4192251.25000	0.00442	194.37	532.00	0.00	ANNUAL	ALL	00000002	
565705.50000	4192279.25000	0.00460	191.57	532.00	0.00	ANNUAL	ALL	00000002	
565671.93750	4192307.25000	0.00622	190.44	532.00	0.00	ANNUAL	ALL	00000002	
565638.37500	4192335.25000	0.00786	180.83	532.00	0.00	ANNUAL	ALL	00000002	
565600.12500	4192407.50000	0.01293	187.46	532.00	0.00	ANNUAL	ALL	00000002	
565595.50000	4192451.75000	0.01565	183.26	532.00	0.00	ANNUAL	ALL	00000002	
565590.81250	4192496.00000	0.01574	166.91	532.00	0.00	ANNUAL	ALL	00000002	
565586.18750	4192540.50000	0.01360	180.32	532.00	0.00	ANNUAL	ALL	00000002	
565581.50000	4192584.75000	0.01147	205.65	532.00	0.00	ANNUAL	ALL	00000002	
565615.62500	4192654.75000	0.00900	231.76	532.00	0.00	ANNUAL	ALL	00000002	
565649.37500	4192723.50000	0.00533	244.97	532.00	0.00	ANNUAL	ALL	00000002	
565644.37500	4192766.25000	0.00413	257.98	532.00	0.00	ANNUAL	ALL	00000002	
565639.31250	4192809.25000	0.00346	258.79	532.00	0.00	ANNUAL	ALL	00000002	
565634.31250	4192852.25000	0.00316	269.05	532.00	0.00	ANNUAL	ALL	00000002	
565914.75000	4192891.25000	0.00165	305.87	532.00	0.00	ANNUAL	ALL	00000002	
565983.25000	4192793.50000	0.00198	300.92	532.00	0.00	ANNUAL	ALL	00000002	
566097.37500	4192816.25000	0.00138	316.63	532.00	0.00	ANNUAL	ALL	00000002	
566123.50000	4192705.50000	0.00206	302.96	532.00	0.00	ANNUAL	ALL	00000002	
566192.00000	4192650.00000	0.00186	332.16	532.00	0.00	ANNUAL	ALL	00000002	
566257.18750	4192653.25000	0.00164	344.65	532.00	0.00	ANNUAL	ALL	00000002	
566335.50000	4192565.25000	0.00231	318.13	532.00	0.00	ANNUAL	ALL	00000002	
566397.43750	4192552.25000	0.00241	302.59	532.00	0.00	ANNUAL	ALL	00000002	
566446.37500	4192659.75000	0.00127	354.75	532.00	0.00	ANNUAL	ALL	00000002	
566557.25000	4192578.25000	0.00139	334.92	532.00	0.00	ANNUAL	ALL	00000002	
566850.75000	4192813.00000	0.00058	368.12	532.00	0.00	ANNUAL	ALL	00000002	
567006.00000	4192636.75000	0.00077	315.00	532.00	0.00	ANNUAL	ALL	00000002	
567132.37500	4192659.25000	0.00052	348.92	532.00	0.00	ANNUAL	ALL	00000002	
567249.75000	4192609.50000	0.00046	357.00	532.00	0.00	ANNUAL	ALL	00000002	
567159.50000	4192284.50000	0.00108	254.71	532.00	0.00	ANNUAL	ALL	00000002	
567024.06250	4192302.75000	0.00128	251.87	532.00	0.00	ANNUAL	ALL	00000002	
566920.25000	4192402.00000	0.00146	251.46	532.00	0.00	ANNUAL	ALL	00000002	
566798.37500	4192325.25000	0.00180	249.96	532.00	0.00	ANNUAL	ALL	00000002	
566757.75000	4192203.25000	0.00196	233.57	532.00	0.00	ANNUAL	ALL	00000002	
566816.43750	4192140.25000	0.00153	209.15	532.00	0.00	ANNUAL	ALL	00000002	
566857.06250	4192131.00000	0.00143	208.30	532.00	0.00	ANNUAL	ALL	00000002	
566843.50000	4192036.25000	0.00143	206.01	532.00	0.00	ANNUAL	ALL	00000002	
566721.62500	4191977.75000	0.00164	190.85	532.00	0.00	ANNUAL	ALL	00000002	
566617.12500	4192055.50000	0.00220	214.74	532.00	0.00	ANNUAL	ALL	00000002	
566626.81250	4192144.75000	0.00237	227.10	532.00	0.00	ANNUAL	ALL	00000002	
566504.93750	4192180.75000	0.00283	211.80	532.00	0.00	ANNUAL	ALL	00000002	
566315.37500	4192162.75000	0.00484	228.02	532.00	0.00	ANNUAL	ALL	00000002	
566319.87500	4192099.50000	0.00368	199.66	532.00	0.00	ANNUAL	ALL	00000002	
566292.81250	4192090.50000	0.00376	195.98	532.00	0.00	ANNUAL	ALL	00000002	
566261.18750	4192158.25000	0.00533	224.06	532.00	0.00	ANNUAL	ALL	00000002	

**Demolition Calculations**  
**Dimensions of Building are Known with Additional Pavement**

Demolition Schedule

Months	<input type="text" value="0.6"/> months	entered
Days/Month	22 days/mo	URBEMIS default

Actual Building Dimensions

Length	<input type="text" value="1"/> feet	entered
Width	<input type="text" value="1"/> feet	entered
Height	<input type="text" value="1"/> feet	entered
Building Volume	1 cubic feet	calculated

Pavement Removed

Area	<input type="text" value="52,500"/> square feet	entered
Depth	<input type="text" value="0.3"/> foot	assumed

Revised Building Volume with Pavement

Length	263.25 feet	calculated
Width	263.25 feet	calculated
Height	1 feet	same as building
Volume	69,301 cubic feet	calculated

Daily Building Volume

Length	70.36 feet	calculated
Width	70.36 feet	calculated
Height	1 feet	same as building
Volume	4,950 cubic feet	calculated

Demolition Debris

% of Bldg. Volume	25%	URBEMIS default
Daily Debris Volume	45.8 cubic yards	calculated

Haul Trucks

Capacity	<input type="text" value="20"/> cubic yards	URBEMIS default
Number of Trips	2.3 trips/day	calculated
Round Trip Length	<input type="text" value="30"/> miles	URBEMIS default
VMT	69.00 miles/day	calculated

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 1\CRT Alt 1 - Const Area.urb924

Project Name: CRT Alternative 1 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.37	46.54	24.18	0.01	11.23	2.27	13.50	2.35	2.08	4.43
2010 TOTALS (lbs/day mitigated)	5.37	46.54	24.18	0.01	4.60	2.27	6.87	0.97	2.08	3.05
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

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## Construction Unmitigated Detail Report:

## CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Active Days: 13										
Demolition 10/01/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Fugitive Dust	0.00	0.00	0.00	0.00	2.08	0.00	2.08	0.43	0.00	0.43
Demo Off Road Diesel	1.14	7.68	4.68	0.00	0.00	0.59	0.59	0.00	0.54	0.54
Demo On Road Diesel	0.12	1.95	0.62	0.00	0.01	0.07	0.08	0.00	0.07	0.07
Demo Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 10/20/2010-12/31/2010	<u>5.37</u>	<u>46.54</u>	<u>24.18</u>	<u>0.01</u>	<u>11.23</u>	<u>2.27</u>	<u>13.50</u>	<u>2.35</u>	<u>2.08</u>	<u>4.43</u>
Active Days: 53										
Mass Grading 10/20/2010-12/31/2010	3.27	28.79	14.81	0.01	11.22	1.39	12.61	2.35	1.28	3.62
Mass Grading Dust	0.00	0.00	0.00	0.00	11.20	0.00	11.20	2.34	0.00	2.34
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.23	3.73	1.19	0.00	0.02	0.14	0.15	0.01	0.13	0.13
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/20/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03



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Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active	<b>45.09</b>	<b>22.26</b>	<b>23.70</b>	<b>0.01</b>	<b>0.06</b>	<b>1.63</b>	<b>1.69</b>	<b>0.02</b>	<b>1.50</b>	<b>1.52</b>
Days: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Demolition 10/1/2010 - 10/19/2010 - Type Your Description Here

Building Volume Total (cubic feet): 69326.88

Building Volume Daily (cubic feet): 4956.16

On Road Truck Travel (VMT): 68.84

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

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Phase: Mass Grading 10/20/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 2.25

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 132.08

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/20/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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## Construction Mitigated Detail Report:

## CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Active Days: 13										
Demolition 10/01/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Fugitive Dust	0.00	0.00	0.00	0.00	2.08	0.00	2.08	0.43	0.00	0.43
Demo Off Road Diesel	1.14	7.68	4.68	0.00	0.00	0.59	0.59	0.00	0.54	0.54
Demo On Road Diesel	0.12	1.95	0.62	0.00	0.01	0.07	0.08	0.00	0.07	0.07
Demo Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 10/20/2010-12/31/2010	<u>5.37</u>	<u>46.54</u>	<u>24.18</u>	<u>0.01</u>	<u>4.60</u>	<u>2.27</u>	<u>6.87</u>	<u>0.97</u>	<u>2.08</u>	<u>3.05</u>
Active Days: 53										
Mass Grading 10/20/2010-12/31/2010	3.27	28.79	14.81	0.01	4.60	1.39	5.99	0.96	1.28	2.24
Mass Grading Dust	0.00	0.00	0.00	0.00	4.57	0.00	4.57	0.96	0.00	0.96
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.23	3.73	1.19	0.00	0.02	0.14	0.15	0.01	0.13	0.13
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/20/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03

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Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Days: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/20/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

Area Source Changes to Defaults

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 1\CRT Alt 1 - Operational.urb924

Project Name: CRT Alternative 1 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	3.13	2.33	24.87	0.03	4.60	0.88

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	3.13	2.33	24.87	0.03	4.60	0.88

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>
R&D Center	3.13	2.33	24.87	0.03	4.60	0.88
TOTALS (lbs/day, unmitigated)	3.13	2.33	24.87	0.03	4.60	0.88

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	135.00	373.95	2,677.95
					373.95	2,677.95

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0



Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 1\CRT Alt 1 - Const Area.urb924

Project Name: CRT Alternative 1 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.37	46.54	24.18	0.01	11.23	2.27	13.50	2.35	2.08	4.43
2010 TOTALS (lbs/day mitigated)	5.37	46.54	24.18	0.01	4.60	2.27	6.87	0.97	2.08	3.05
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Active Days: 13										
Demolition 10/01/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Fugitive Dust	0.00	0.00	0.00	0.00	2.08	0.00	2.08	0.43	0.00	0.43
Demo Off Road Diesel	1.14	7.68	4.68	0.00	0.00	0.59	0.59	0.00	0.54	0.54
Demo On Road Diesel	0.12	1.95	0.62	0.00	0.01	0.07	0.08	0.00	0.07	0.07
Demo Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 10/20/2010-12/31/2010	<u>5.37</u>	<u>46.54</u>	<u>24.18</u>	<u>0.01</u>	<u>11.23</u>	<u>2.27</u>	<u>13.50</u>	<u>2.35</u>	<u>2.08</u>	<u>4.43</u>
Active Days: 53										
Mass Grading 10/20/2010-12/31/2010	3.27	28.79	14.81	0.01	11.22	1.39	12.61	2.35	1.28	3.62
Mass Grading Dust	0.00	0.00	0.00	0.00	11.20	0.00	11.20	2.34	0.00	2.34
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.23	3.73	1.19	0.00	0.02	0.14	0.15	0.01	0.13	0.13
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/20/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03

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Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Davs: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active	<b>45.09</b>	<b>22.26</b>	<b>23.70</b>	<b>0.01</b>	<b>0.06</b>	<b>1.63</b>	<b>1.69</b>	<b>0.02</b>	<b>1.50</b>	<b>1.52</b>
Davs: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Demolition 10/1/2010 - 10/19/2010 - Type Your Description Here

Building Volume Total (cubic feet): 69326.88

Building Volume Daily (cubic feet): 4956.16

On Road Truck Travel (VMT): 68.84

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 10/20/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 2.25

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

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On Road Truck Travel (VMT): 132.08

Off-Road Equipment:

- 1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
- 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/20/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

- 2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Active Days: 13										
Demolition 10/01/2010-10/19/2010	1.30	9.69	6.46	0.00	2.10	0.66	2.76	0.44	0.61	1.04
Fugitive Dust	0.00	0.00	0.00	0.00	2.08	0.00	2.08	0.43	0.00	0.43
Demo Off Road Diesel	1.14	7.68	4.68	0.00	0.00	0.59	0.59	0.00	0.54	0.54
Demo On Road Diesel	0.12	1.95	0.62	0.00	0.01	0.07	0.08	0.00	0.07	0.07
Demo Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 10/20/2010-12/31/2010	<u>5.37</u>	<u>46.54</u>	<u>24.18</u>	<u>0.01</u>	<u>4.60</u>	<u>2.27</u>	<u>6.87</u>	<u>0.97</u>	<u>2.08</u>	<u>3.05</u>
Active Days: 53										
Mass Grading 10/20/2010-12/31/2010	3.27	28.79	14.81	0.01	4.60	1.39	5.99	0.96	1.28	2.24
Mass Grading Dust	0.00	0.00	0.00	0.00	4.57	0.00	4.57	0.96	0.00	0.96
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.23	3.73	1.19	0.00	0.02	0.14	0.15	0.01	0.13	0.13
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/20/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03

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Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Davs: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active	<b>45.09</b>	<b>22.26</b>	<b>23.70</b>	<b>0.01</b>	<b>0.06</b>	<b>1.63</b>	<b>1.69</b>	<b>0.02</b>	<b>1.50</b>	<b>1.52</b>
Davs: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/20/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

Area Source Changes to Defaults

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 1\CRT Alt 1 - Operational.urb924

Project Name: CRT Alternative 1 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	2.33	3.47	26.37	0.02	4.60	0.88

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	2.33	3.47	26.37	0.02	4.60	0.88

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25
R&D Center	2.33	3.47	26.37	0.02	4.60	0.88
TOTALS (lbs/day, unmitigated)	2.33	3.47	26.37	0.02	4.60	0.88



Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	135.00	373.95	2,677.95
					373.95	2,677.95

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commuter	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 1\CRT Alt 1 - Const Area.urb924

Project Name: CRT Alternative 1 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (tons/year unmitigated)	0.15	1.30	0.68	0.00	0.31	0.06	0.38	0.07	0.06	0.12	131.50
2010 TOTALS (tons/year mitigated)	0.15	1.30	0.68	0.00	0.14	0.06	0.20	0.03	0.06	0.09	131.50
Percent Reduction	0.00	0.00	0.00	0.00	56.42	0.00	46.75	56.34	0.00	29.50	0.00
2011 TOTALS (tons/year unmitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
2011 TOTALS (tons/year mitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2012 TOTALS (tons/year unmitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
2012 TOTALS (tons/year mitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2013 TOTALS (tons/year unmitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
2013 TOTALS (tons/year mitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.15	0.15	0.27	0.00	0.00	0.00	184.21

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SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.15	0.15	0.27	0.00	0.00	0.00	184.21

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010	0.15	1.30	0.68	0.00	0.31	0.06	0.38	0.07	0.06	0.12	131.50
Demolition 10/01/2010-10/19/2010	0.01	0.06	0.04	0.00	0.01	0.00	0.02	0.00	0.00	0.01	7.02
Fugitive Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.01	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55
Demo On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80
Demo Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
Mass Grading 10/20/2010-12/31/2010	0.09	0.76	0.39	0.00	0.30	0.04	0.33	0.06	0.03	0.10	76.35
Mass Grading Dust	0.00	0.00	0.00	0.00	0.30	0.00	0.30	0.06	0.00	0.06	0.00
Mass Grading Off Road Diesel	0.08	0.66	0.33	0.00	0.00	0.03	0.03	0.00	0.03	0.03	59.55
Mass Grading On Road Diesel	0.01	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.09
Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
Trenching 10/20/2010-12/31/2010	0.06	0.47	0.25	0.00	0.00	0.02	0.02	0.00	0.02	0.02	48.14
Trenching Off Road Diesel	0.05	0.47	0.22	0.00	0.00	0.02	0.02	0.00	0.02	0.02	45.44
Trenching Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
2011	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building 01/01/2011-06/30/2013	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building Off Road Diesel	0.14	1.11	0.61	0.00	0.00	0.07	0.07	0.00	0.06	0.06	116.14
Building Vendor Trips	0.01	0.12	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	26.45
Building Worker Trips	0.04	0.06	1.12	0.00	0.01	0.00	0.01	0.00	0.00	0.00	106.90
2012	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building 01/01/2011-06/30/2013	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building Off Road Diesel	0.13	1.03	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	116.59
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.55
Building Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.38

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2013	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Building 01/01/2011-06/30/2013	0.08	0.54	0.81	0.00	0.00	0.03	0.03	0.00	0.03	0.03	123.85
Building Off Road Diesel	0.06	0.47	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	57.62
Building Vendor Trips	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.12
Building Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.10
Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Phase Assumptions

Phase: Demolition 10/1/2010 - 10/19/2010 - Type Your Description Here

Building Volume Total (cubic feet): 69326.88

Building Volume Daily (cubic feet): 4956.16

On Road Truck Travel (VMT): 68.84

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Mass Grading 10/20/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 2.25

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 132.08

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Phase: Trenching 10/20/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010	0.15	1.30	0.68	0.00	0.14	0.06	0.20	0.03	0.06	0.09	131.50
Demolition 10/01/2010-10/19/2010	0.01	0.06	0.04	0.00	0.01	0.00	0.02	0.00	0.00	0.01	7.02
Fugitive Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.01	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.55
Demo On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80
Demo Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
Mass Grading 10/20/2010-12/31/2010	0.09	0.76	0.39	0.00	0.12	0.04	0.16	0.03	0.03	0.06	76.35
Mass Grading Dust	0.00	0.00	0.00	0.00	0.12	0.00	0.12	0.03	0.00	0.03	0.00
Mass Grading Off Road Diesel	0.08	0.66	0.33	0.00	0.00	0.03	0.03	0.00	0.03	0.03	59.55
Mass Grading On Road Diesel	0.01	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.09
Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
Trenching 10/20/2010-12/31/2010	0.06	0.47	0.25	0.00	0.00	0.02	0.02	0.00	0.02	0.02	48.14
Trenching Off Road Diesel	0.05	0.47	0.22	0.00	0.00	0.02	0.02	0.00	0.02	0.02	45.44
Trenching Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
2011	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building 01/01/2011-06/30/2013	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building Off Road Diesel	0.14	1.11	0.61	0.00	0.00	0.07	0.07	0.00	0.06	0.06	116.14
Building Vendor Trips	0.01	0.12	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	26.45
Building Worker Trips	0.04	0.06	1.12	0.00	0.01	0.00	0.01	0.00	0.00	0.00	106.90
2012	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building 01/01/2011-06/30/2013	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building Off Road Diesel	0.13	1.03	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	116.59
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.55
Building Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.38

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2013	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Building 01/01/2011-06/30/2013	0.08	0.54	0.81	0.00	0.00	0.03	0.03	0.00	0.03	0.03	123.85
Building Off Road Diesel	0.06	0.47	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	57.62
Building Vendor Trips	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.12
Building Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.10
Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/20/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.01	0.15	0.13	0.00	0.00	0.00	183.96
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.13						
TOTALS (tons/year, unmitigated)	0.15	0.15	0.27	0.00	0.00	0.00	184.21

Area Source Changes to Defaults



Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 1\CRT Alt 1 - Operational.urb924

Project Name: CRT Alternative 1 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.52	0.49	4.63	0.00	0.84	0.16	456.03

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.52	0.49	4.63	0.00	0.84	0.16	456.03

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
R&D Center	0.52	0.49	4.63	0.00	0.84	0.16	456.03
TOTALS (tons/year, unmitigated)	0.52	0.49	4.63	0.00	0.84	0.16	456.03

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	135.00	373.95	2,677.95
					373.95	2,677.95

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Const Area.urb924

Project Name: CRT Alternative 2 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	16.02	2.24	18.26	3.35	2.06	5.41
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	6.56	2.24	8.80	1.37	2.06	3.43
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

3/31/2010 11:59:10 AM

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>16.02</u>	<u>2.24</u>	<u>18.26</u>	<u>3.35</u>	<u>2.06</u>	<u>5.41</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	16.02	1.36	17.38	3.35	1.25	4.60
Mass Grading Dust	0.00	0.00	0.00	0.00	16.00	0.00	16.00	3.34	0.00	3.34
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03

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Time Slice	4/1/2013-6/28/2013	Active	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Days: 65												
Asphalt	04/01/2013-06/30/2013		2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas			0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel			2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel			0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips			0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building	01/01/2011-06/30/2013		1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel			0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips			0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips			0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating	04/01/2013-06/30/2013		41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating			41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips			0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 3.2

Maximum Daily Acreage Disturbed: 0.8

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

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Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

- Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>6.56</u>	<u>2.24</u>	<u>8.80</u>	<u>1.37</u>	<u>2.06</u>	<u>3.43</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	6.55	1.36	7.92	1.37	1.25	2.62
Mass Grading Dust	0.00	0.00	0.00	0.00	6.53	0.00	6.53	1.36	0.00	1.36
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00





Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

Area Source Changes to Defaults

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Operational.urb924

Project Name: CRT Alternative 2 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	6.96	5.18	55.27	0.06	10.22	1.95

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	6.96	5.18	55.27	0.06	10.22	1.95

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>
R&D Center	6.96	5.18	55.27	0.06	10.22	1.95
TOTALS (lbs/day, unmitigated)	6.96	5.18	55.27	0.06	10.22	1.95

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	300.00	831.00	5,951.00
					831.00	5,951.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Const Area.urb924

Project Name: CRT Alternative 2 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	16.02	2.24	18.26	3.35	2.06	5.41
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	6.56	2.24	8.80	1.37	2.06	3.43
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>16.02</u>	<u>2.24</u>	<u>18.26</u>	<u>3.35</u>	<u>2.06</u>	<u>5.41</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	16.02	1.36	17.38	3.35	1.25	4.60
Mass Grading Dust	0.00	0.00	0.00	0.00	16.00	0.00	16.00	3.34	0.00	3.34
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	<u>1.24</u>	<u>8.41</u>	<u>12.48</u>	<u>0.01</u>	<u>0.05</u>	<u>0.48</u>	<u>0.52</u>	<u>0.02</u>	<u>0.43</u>	<u>0.45</u>
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Days: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01

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Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 3.2

Maximum Daily Acreage Disturbed: 0.8

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description  
 Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>6.56</u>	<u>2.24</u>	<u>8.80</u>	<u>1.37</u>	<u>2.06</u>	<u>3.43</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	6.55	1.36	7.92	1.37	1.25	2.62
Mass Grading Dust	0.00	0.00	0.00	0.00	6.53	0.00	6.53	1.36	0.00	1.36
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03



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Time Slice 4/1/2013-6/28/2013 Active Days: 65	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

Area Source Changes to Defaults

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Operational.urb924

Project Name: CRT Alternative 2 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	5.17	7.72	58.59	0.05	10.22	1.95

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	5.17	7.72	58.59	0.05	10.22	1.95

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25
R&D Center	5.17	7.72	58.59	0.05	10.22	1.95
TOTALS (lbs/day, unmitigated)	5.17	7.72	58.59	0.05	10.22	1.95

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	300.00	831.00	5,951.00
					831.00	5,951.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Const Area.urb924

Project Name: CRT Alternative 2 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (tons/year unmitigated)	0.18	1.51	0.79	0.00	0.53	0.07	0.60	0.11	0.07	0.18	151.56
2010 TOTALS (tons/year mitigated)	0.18	1.51	0.79	0.00	0.22	0.07	0.29	0.05	0.07	0.11	151.56
Percent Reduction	0.00	0.00	0.00	0.00	59.07	0.00	51.82	59.01	0.00	36.54	0.00
2011 TOTALS (tons/year unmitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
2011 TOTALS (tons/year mitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2012 TOTALS (tons/year unmitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
2012 TOTALS (tons/year mitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2013 TOTALS (tons/year unmitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
2013 TOTALS (tons/year mitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.15	0.15	0.27	0.00	0.00	0.00	184.21



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Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 3.2

Maximum Daily Acreage Disturbed: 0.8

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010	0.18	1.51	0.79	0.00	0.22	0.07	0.29	0.05	0.07	0.11	151.56
Mass Grading 10/01/2010-12/31/2010	0.11	0.93	0.48	0.00	0.22	0.04	0.26	0.05	0.04	0.09	91.62
Mass Grading Dust	0.00	0.00	0.00	0.00	0.22	0.00	0.22	0.05	0.00	0.05	0.00
Mass Grading Off Road Diesel	0.10	0.82	0.41	0.00	0.00	0.04	0.04	0.00	0.04	0.04	74.16
Mass Grading On Road Diesel	0.01	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.09
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36
Trenching 10/01/2010-12/31/2010	0.07	0.59	0.31	0.00	0.00	0.03	0.03	0.00	0.03	0.03	59.95
Trenching Off Road Diesel	0.07	0.58	0.27	0.00	0.00	0.03	0.03	0.00	0.03	0.03	56.58
Trenching Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36
2011	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building 01/01/2011-06/30/2013	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building Off Road Diesel	0.14	1.11	0.61	0.00	0.00	0.07	0.07	0.00	0.06	0.06	116.14
Building Vendor Trips	0.01	0.12	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	26.45
Building Worker Trips	0.04	0.06	1.12	0.00	0.01	0.00	0.01	0.00	0.00	0.00	106.90
2012	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building 01/01/2011-06/30/2013	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building Off Road Diesel	0.13	1.03	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	116.59
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.55
Building Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.38



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2013	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Building 01/01/2011-06/30/2013	0.08	0.54	0.81	0.00	0.00	0.03	0.03	0.00	0.03	0.03	123.85
Building Off Road Diesel	0.06	0.47	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	57.62
Building Vendor Trips	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.12
Building Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.10
Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.01	0.15	0.13	0.00	0.00	0.00	183.96
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.13						
<b>TOTALS (tons/year, unmitigated)</b>	<b>0.15</b>	<b>0.15</b>	<b>0.27</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>184.21</b>

Area Source Changes to Defaults

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Operational.urb924

Project Name: CRT Alternative 2 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25	CO2
R&D Center	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41
TOTALS (tons/year, unmitigated)	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	300.00	831.00	5,951.00
					831.00	5,951.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Const Area.urb924

Project Name: CRT Alternative 2 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	16.02	2.24	18.26	3.35	2.06	5.41
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	6.56	2.24	8.80	1.37	2.06	3.43
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 3\CRT Alt 3 - Const Area.urb924

Project Name: CRT Alternative 3 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	6.02	2.24	8.26	1.26	2.06	3.32
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	2.48	2.24	4.72	0.52	2.06	2.58
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>6.02</u>	<u>2.24</u>	<u>8.26</u>	<u>1.26</u>	<u>2.06</u>	<u>3.32</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	6.02	1.36	7.38	1.26	1.25	2.51
Mass Grading Dust	0.00	0.00	0.00	0.00	6.00	0.00	6.00	1.25	0.00	1.25
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03

**3/31/2010 12:02:54 PM**

Time Slice 4/1/2013-6/28/2013 Active	<b>45.09</b>	<b>22.26</b>	<b>23.70</b>	<b>0.01</b>	<b>0.06</b>	<b>1.63</b>	<b>1.69</b>	<b>0.02</b>	<b>1.50</b>	<b>1.52</b>
Days: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 1.2

Maximum Daily Acreage Disturbed: 0.3

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day



3/31/2010 12:02:54 PM

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>2.48</u>	<u>2.24</u>	<u>4.72</u>	<u>0.52</u>	<u>2.06</u>	<u>2.58</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	2.47	1.36	3.83	0.52	1.25	1.77
Mass Grading Dust	0.00	0.00	0.00	0.00	2.45	0.00	2.45	0.51	0.00	0.51
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00



Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

Area Source Changes to Defaults

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 3\CRT Alt 3 - Operational.urb924

Project Name: CRT Alternative 3 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	5.28	3.10	33.12	0.03	6.13	1.17

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	5.28	3.10	33.12	0.03	6.13	1.17

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25
R&D Center	5.28	3.10	33.12	0.03	6.13	1.17
TOTALS (lbs/day, unmitigated)	5.28	3.10	33.12	0.03	6.13	1.17

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		1.66	unknown	300.00	498.00	3,566.30
					498.00	3,566.30

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 3\CRT Alt 3 - Const Area.urb924

Project Name: CRT Alternative 3 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	6.02	2.24	8.26	1.26	2.06	3.32
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	2.48	2.24	4.72	0.52	2.06	2.58
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>6.02</u>	<u>2.24</u>	<u>8.26</u>	<u>1.26</u>	<u>2.06</u>	<u>3.32</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	6.02	1.36	7.38	1.26	1.25	2.51
Mass Grading Dust	0.00	0.00	0.00	0.00	6.00	0.00	6.00	1.25	0.00	1.25
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03



**3/31/2010 12:03:28 PM**

Time Slice 4/1/2013-6/28/2013 Active	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Days: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 1.2

Maximum Daily Acreage Disturbed: 0.3

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

3/31/2010 12:03:28 PM

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>2.48</u>	<u>2.24</u>	<u>4.72</u>	<u>0.52</u>	<u>2.06</u>	<u>2.58</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	2.47	1.36	3.83	0.52	1.25	1.77
Mass Grading Dust	0.00	0.00	0.00	0.00	2.45	0.00	2.45	0.51	0.00	0.51
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00



Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

Area Source Changes to Defaults

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 3\CRT Alt 3 - Operational.urb924

Project Name: CRT Alternative 3 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	3.10	4.63	35.11	0.03	6.13	1.17

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	3.10	4.63	35.11	0.03	6.13	1.17

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25
R&D Center	3.10	4.63	35.11	0.03	6.13	1.17
TOTALS (lbs/day, unmitigated)	3.10	4.63	35.11	0.03	6.13	1.17

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		1.66	unknown	300.00	498.00	3,566.30
					498.00	3,566.30

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 3\CRT Alt 3 - Const Area.urb924

Project Name: CRT Alternative 3 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (tons/year unmitigated)	0.18	1.51	0.79	0.00	0.20	0.07	0.27	0.04	0.07	0.11	151.56
2010 TOTALS (tons/year mitigated)	0.18	1.51	0.79	0.00	0.08	0.07	0.16	0.02	0.07	0.09	151.56
Percent Reduction	0.00	0.00	0.00	0.00	58.91	0.00	42.95	58.76	0.00	22.32	0.00
2011 TOTALS (tons/year unmitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
2011 TOTALS (tons/year mitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2012 TOTALS (tons/year unmitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
2012 TOTALS (tons/year mitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2013 TOTALS (tons/year unmitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
2013 TOTALS (tons/year mitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.15	0.15	0.27	0.00	0.00	0.00	184.21





**3/31/2010 12:03:45 PM**

Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 1.2

Maximum Daily Acreage Disturbed: 0.3

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

**3/31/2010 12:03:45 PM**

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010	0.18	1.51	0.79	0.00	0.08	0.07	0.16	0.02	0.07	0.09	151.56
Mass Grading 10/01/2010-12/31/2010	0.11	0.93	0.48	0.00	0.08	0.04	0.13	0.02	0.04	0.06	91.62
Mass Grading Dust	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	0.10	0.82	0.41	0.00	0.00	0.04	0.04	0.00	0.04	0.04	74.16
Mass Grading On Road Diesel	0.01	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.09
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36
Trenching 10/01/2010-12/31/2010	0.07	0.59	0.31	0.00	0.00	0.03	0.03	0.00	0.03	0.03	59.95
Trenching Off Road Diesel	0.07	0.58	0.27	0.00	0.00	0.03	0.03	0.00	0.03	0.03	56.58
Trenching Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36
2011	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building 01/01/2011-06/30/2013	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building Off Road Diesel	0.14	1.11	0.61	0.00	0.00	0.07	0.07	0.00	0.06	0.06	116.14
Building Vendor Trips	0.01	0.12	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	26.45
Building Worker Trips	0.04	0.06	1.12	0.00	0.01	0.00	0.01	0.00	0.00	0.00	106.90
2012	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building 01/01/2011-06/30/2013	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building Off Road Diesel	0.13	1.03	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	116.59
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.55
Building Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.38

3/31/2010 12:03:45 PM

2013	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Building 01/01/2011-06/30/2013	0.08	0.54	0.81	0.00	0.00	0.03	0.03	0.00	0.03	0.03	123.85
Building Off Road Diesel	0.06	0.47	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	57.62
Building Vendor Trips	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.12
Building Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.10
Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>RQG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.01	0.15	0.13	0.00	0.00	0.00	183.96
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.13						
<b>TOTALS (tons/year, unmitigated)</b>	<b>0.15</b>	<b>0.15</b>	<b>0.27</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>184.21</b>

Area Source Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 3\CRT Alt 3 - Operational.urb924

Project Name: CRT Alternative 3 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.83	0.66	6.17	0.01	1.12	0.21	607.31

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.83	0.66	6.17	0.01	1.12	0.21	607.31

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25	CO2
R&D Center	0.83	0.66	6.17	0.01	1.12	0.21	607.31
TOTALS (tons/year, unmitigated)	0.83	0.66	6.17	0.01	1.12	0.21	607.31

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		1.66	unknown	300.00	498.00	3,566.30
					498.00	3,566.30

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

3/31/2010 11:59:10 AM

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>16.02</u>	<u>2.24</u>	<u>18.26</u>	<u>3.35</u>	<u>2.06</u>	<u>5.41</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	16.02	1.36	17.38	3.35	1.25	4.60
Mass Grading Dust	0.00	0.00	0.00	0.00	16.00	0.00	16.00	3.34	0.00	3.34
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03



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Time Slice	4/1/2013-6/28/2013	Active	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Days: 65												
Asphalt	04/01/2013-06/30/2013		2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas			0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel			2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel			0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips			0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building	01/01/2011-06/30/2013		1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel			0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips			0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips			0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating	04/01/2013-06/30/2013		41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating			41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips			0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 3.2

Maximum Daily Acreage Disturbed: 0.8

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

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Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

- Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
- Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>6.56</u>	<u>2.24</u>	<u>8.80</u>	<u>1.37</u>	<u>2.06</u>	<u>3.43</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	6.55	1.36	7.92	1.37	1.25	2.62
Mass Grading Dust	0.00	0.00	0.00	0.00	6.53	0.00	6.53	1.36	0.00	1.36
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00



Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.92	0.86	2.26	0.00	0.01	0.01

Area Source Changes to Defaults

Combined Summer Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Operational.urb924

Project Name: CRT Alternative 2 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	6.96	5.18	55.27	0.06	10.22	1.95

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	6.96	5.18	55.27	0.06	10.22	1.95

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>
R&D Center	6.96	5.18	55.27	0.06	10.22	1.95
TOTALS (lbs/day, unmitigated)	6.96	5.18	55.27	0.06	10.22	1.95

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	300.00	831.00	5,951.00
					831.00	5,951.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Const Area.urb924

Project Name: CRT Alternative 2 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
2010 TOTALS (lbs/day unmitigated)	5.32	45.81	23.95	0.01	16.02	2.24	18.26	3.35	2.06	5.41
2010 TOTALS (lbs/day mitigated)	5.32	45.81	23.95	0.01	6.56	2.24	8.80	1.37	2.06	3.43
2011 TOTALS (lbs/day unmitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2011 TOTALS (lbs/day mitigated)	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
2012 TOTALS (lbs/day unmitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2012 TOTALS (lbs/day mitigated)	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
2013 TOTALS (lbs/day unmitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52
2013 TOTALS (lbs/day mitigated)	45.09	22.26	23.70	0.01	0.06	1.63	1.69	0.02	1.50	1.52

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00



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Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>16.02</u>	<u>2.24</u>	<u>18.26</u>	<u>3.35</u>	<u>2.06</u>	<u>5.41</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	16.02	1.36	17.38	3.35	1.25	4.60
Mass Grading Dust	0.00	0.00	0.00	0.00	16.00	0.00	16.00	3.34	0.00	3.34
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	<u>1.24</u>	<u>8.41</u>	<u>12.48</u>	<u>0.01</u>	<u>0.05</u>	<u>0.48</u>	<u>0.52</u>	<u>0.02</u>	<u>0.43</u>	<u>0.45</u>
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 4/1/2013-6/28/2013 Active	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Days: 65										
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01

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Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 3.2

Maximum Daily Acreage Disturbed: 0.8

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description  
 Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250  
 Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>
Time Slice 10/1/2010-12/31/2010	<u>5.32</u>	<u>45.81</u>	<u>23.95</u>	<u>0.01</u>	<u>6.56</u>	<u>2.24</u>	<u>8.80</u>	<u>1.37</u>	<u>2.06</u>	<u>3.43</u>
Active Days: 66										
Mass Grading 10/01/2010-12/31/2010	3.23	28.05	14.57	0.00	6.55	1.36	7.92	1.37	1.25	2.62
Mass Grading Dust	0.00	0.00	0.00	0.00	6.53	0.00	6.53	1.36	0.00	1.36
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15
Mass Grading On Road Diesel	0.19	3.00	0.95	0.00	0.01	0.11	0.12	0.00	0.10	0.11
Mass Grading Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 10/01/2010-12/31/2010	2.10	17.75	9.37	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81
Trenching Worker Trips	0.04	0.07	1.16	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/3/2011-12/30/2011 Active	<u>1.46</u>	<u>9.90</u>	<u>14.07</u>	<u>0.01</u>	<u>0.05</u>	<u>0.60</u>	<u>0.65</u>	<u>0.02</u>	<u>0.55</u>	<u>0.56</u>
Days: 260										
Building 01/01/2011-06/30/2013	1.46	9.90	14.07	0.01	0.05	0.60	0.65	0.02	0.55	0.56
Building Off Road Diesel	1.11	8.51	4.68	0.00	0.00	0.54	0.54	0.00	0.50	0.50
Building Vendor Trips	0.07	0.91	0.77	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.28	0.48	8.63	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/2/2012-12/31/2012 Active	<u>1.35</u>	<u>9.12</u>	<u>13.24</u>	<u>0.01</u>	<u>0.05</u>	<u>0.54</u>	<u>0.58</u>	<u>0.02</u>	<u>0.49</u>	<u>0.51</u>
Days: 261										
Building 01/01/2011-06/30/2013	1.35	9.12	13.24	0.01	0.05	0.54	0.58	0.02	0.49	0.51
Building Off Road Diesel	1.03	7.87	4.56	0.00	0.00	0.49	0.49	0.00	0.45	0.45
Building Vendor Trips	0.06	0.81	0.72	0.00	0.01	0.03	0.04	0.00	0.03	0.03
Building Worker Trips	0.25	0.44	7.96	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 1/1/2013-3/29/2013 Active	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Days: 64										
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03

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Time Slice 4/1/2013-6/28/2013 Active Days: 65	<u>45.09</u>	<u>22.26</u>	<u>23.70</u>	<u>0.01</u>	<u>0.06</u>	<u>1.63</u>	<u>1.69</u>	<u>0.02</u>	<u>1.50</u>	<u>1.52</u>
Asphalt 04/01/2013-06/30/2013	2.31	13.82	10.78	0.00	0.01	1.16	1.17	0.00	1.06	1.07
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.19	13.60	8.91	0.00	0.00	1.15	1.15	0.00	1.05	1.05
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paving Worker Trips	0.06	0.10	1.82	0.00	0.01	0.01	0.02	0.00	0.00	0.01
Building 01/01/2011-06/30/2013	1.24	8.41	12.48	0.01	0.05	0.48	0.52	0.02	0.43	0.45
Building Off Road Diesel	0.95	7.29	4.48	0.00	0.00	0.43	0.43	0.00	0.39	0.39
Building Vendor Trips	0.06	0.72	0.67	0.00	0.01	0.03	0.03	0.00	0.02	0.03
Building Worker Trips	0.23	0.40	7.33	0.01	0.04	0.02	0.06	0.01	0.02	0.03
Coating 04/01/2013-06/30/2013	41.54	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	41.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
Natural Gas	0.06	0.84	0.71	0.00	0.00	0.00
Hearth						
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	0.74					
TOTALS (lbs/day, unmitigated)	0.80	0.84	0.71	0.00	0.00	0.00

Area Source Changes to Defaults

Combined Winter Emissions Reports (Pounds/Day)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Operational.urb924

Project Name: CRT Alternative 2 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	5.17	7.72	58.59	0.05	10.22	1.95

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	5.17	7.72	58.59	0.05	10.22	1.95

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25
R&D Center	5.17	7.72	58.59	0.05	10.22	1.95
TOTALS (lbs/day, unmitigated)	5.17	7.72	58.59	0.05	10.22	1.95

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	300.00	831.00	5,951.00
					831.00	5,951.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commuter	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Const Area.urb924

Project Name: CRT Alternative 2 - Construction and Area Source

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (tons/year unmitigated)	0.18	1.51	0.79	0.00	0.53	0.07	0.60	0.11	0.07	0.18	151.56
2010 TOTALS (tons/year mitigated)	0.18	1.51	0.79	0.00	0.22	0.07	0.29	0.05	0.07	0.11	151.56
Percent Reduction	0.00	0.00	0.00	0.00	59.07	0.00	51.82	59.01	0.00	36.54	0.00
2011 TOTALS (tons/year unmitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
2011 TOTALS (tons/year mitigated)	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2012 TOTALS (tons/year unmitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
2012 TOTALS (tons/year mitigated)	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2013 TOTALS (tons/year unmitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
2013 TOTALS (tons/year mitigated)	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.15	0.15	0.27	0.00	0.00	0.00	184.21





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Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Phase Assumptions

Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 3.2

Maximum Daily Acreage Disturbed: 0.8

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.06

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2010 - 12/31/2010 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 4/1/2013 - 6/30/2013 - Default Paving Description

Acres to be Paved: 1.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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Phase: Building Construction 1/1/2011 - 6/30/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 4/1/2013 - 6/30/2013 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010	0.18	1.51	0.79	0.00	0.22	0.07	0.29	0.05	0.07	0.11	151.56
Mass Grading 10/01/2010-12/31/2010	0.11	0.93	0.48	0.00	0.22	0.04	0.26	0.05	0.04	0.09	91.62
Mass Grading Dust	0.00	0.00	0.00	0.00	0.22	0.00	0.22	0.05	0.00	0.05	0.00
Mass Grading Off Road Diesel	0.10	0.82	0.41	0.00	0.00	0.04	0.04	0.00	0.04	0.04	74.16
Mass Grading On Road Diesel	0.01	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.09
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36
Trenching 10/01/2010-12/31/2010	0.07	0.59	0.31	0.00	0.00	0.03	0.03	0.00	0.03	0.03	59.95
Trenching Off Road Diesel	0.07	0.58	0.27	0.00	0.00	0.03	0.03	0.00	0.03	0.03	56.58
Trenching Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36
2011	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building 01/01/2011-06/30/2013	0.19	1.29	1.83	0.00	0.01	0.08	0.08	0.00	0.07	0.07	249.49
Building Off Road Diesel	0.14	1.11	0.61	0.00	0.00	0.07	0.07	0.00	0.06	0.06	116.14
Building Vendor Trips	0.01	0.12	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	26.45
Building Worker Trips	0.04	0.06	1.12	0.00	0.01	0.00	0.01	0.00	0.00	0.00	106.90
2012	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building 01/01/2011-06/30/2013	0.18	1.19	1.73	0.00	0.01	0.07	0.08	0.00	0.06	0.07	250.51
Building Off Road Diesel	0.13	1.03	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	116.59
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.55
Building Worker Trips	0.03	0.06	1.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.38

3/31/2010 11:59:53 AM

2013	1.51	0.99	1.17	0.00	0.00	0.07	0.07	0.00	0.06	0.06	174.24
Building 01/01/2011-06/30/2013	0.08	0.54	0.81	0.00	0.00	0.03	0.03	0.00	0.03	0.03	123.85
Building Off Road Diesel	0.06	0.47	0.29	0.00	0.00	0.03	0.03	0.00	0.03	0.03	57.62
Building Vendor Trips	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.12
Building Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.10
Asphalt 04/01/2013-06/30/2013	0.08	0.45	0.35	0.00	0.00	0.04	0.04	0.00	0.03	0.03	48.79
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.07	0.44	0.29	0.00	0.00	0.04	0.04	0.00	0.03	0.03	41.34
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Paving Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.64
Coating 04/01/2013-06/30/2013	1.35	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Architectural Coating	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2010 - 12/31/2010 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.01	0.15	0.13	0.00	0.00	0.00	183.96
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.13						
<b>TOTALS (tons/year, unmitigated)</b>	<b>0.15</b>	<b>0.15</b>	<b>0.27</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>184.21</b>

Area Source Changes to Defaults

Combined Annual Emissions Reports (Tons/Year)

File Name: Z:\Alan Sako\924.06 CRT\Emissions\Alt 2\CRT Alt 2 - Operational.urb924

Project Name: CRT Alternative 2 - Operations

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25	CO2
R&D Center	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41
TOTALS (tons/year, unmitigated)	1.16	1.10	10.29	0.01	1.87	0.36	1,013.41

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
R&D Center		2.77	unknown	300.00	831.00	5,951.00
					831.00	5,951.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
R&D Center				50.0	25.0	25.0