

APPENDIX C
AIR QUALITY DATA

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\DMorrow\Application Data\Urbemis\Version9a\Projects\11.17_Clayton Sunday.urb924

Project Name: Clayton Community Church-Sunday

Project Location: Contra Costa County

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>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>
2011 TOTALS (tons/year unmitigated)	0.61	1.15	0.79	0.15	0.07	0.22	0.03	0.06	0.09	132.76
2011 TOTALS (tons/year mitigated)	0.61	1.15	0.79	0.04	0.07	0.11	0.01	0.06	0.07	132.76
Percent Reduction	0.00	0.00	0.00	73.16	0.00	50.09	72.85	0.00	24.14	0.00

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.07	0.07	0.20	0.00	0.00	89.59
TOTALS (tons/year, mitigated)	0.06	0.06	0.19	0.00	0.00	76.19
Percent Reduction	14.29	14.29	5.00	NaN	NaN	14.96

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.76	0.89	8.06	1.30	0.25	706.52
TOTALS (tons/year, mitigated)	0.65	0.75	6.84	1.10	0.21	599.50
Percent Reduction	14.47	15.73	15.14	15.38	16.00	15.15

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.83	0.96	8.26	1.30	0.25	796.11
TOTALS (tons/year, mitigated)	0.71	0.81	7.03	1.10	0.21	675.69
Percent Reduction	14.46	15.63	14.89	15.38	16.00	15.13

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Phase Assumptions

Phase: Fine Grading 2/28/2011 - 4/11/2011 - Default Fine Site Grading Description

Total Acres Disturbed: 1.94

Maximum Daily Acreage Disturbed: 0.48

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

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: Paving 3/28/2011 - 4/11/2011 - Default Paving Description

Acres to be Paved: 0.48

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 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 4/11/2011 - 11/22/2011 - 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 11/8/2011 - 12/5/2011 - Default Architectural Coating Description

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

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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>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>
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2011	0.61	1.15	0.79	0.04	0.07	0.11	0.01	0.06	0.07	132.76
Fine Grading 02/28/2011-04/11/2011	0.04	0.36	0.20	0.04	0.02	0.06	0.01	0.02	0.02	35.73
Fine Grading Dust	0.00	0.00	0.00	0.04	0.00	0.04	0.01	0.00	0.01	0.00
Fine Grading Off Road Diesel	0.04	0.36	0.19	0.00	0.02	0.02	0.00	0.02	0.02	34.83
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.89
Asphalt 03/28/2011-04/11/2011	0.01	0.06	0.05	0.00	0.01	0.01	0.00	0.01	0.01	6.23
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.01	0.06	0.04	0.00	0.01	0.01	0.00	0.00	0.00	5.39
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Paving Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.56
Building 04/11/2011-11/22/2011	0.10	0.72	0.55	0.00	0.05	0.05	0.00	0.04	0.04	90.50
Building Off Road Diesel	0.09	0.69	0.38	0.00	0.04	0.04	0.00	0.04	0.04	72.36
Building Vendor Trips	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	5.52
Building Worker Trips	0.01	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	12.62
Coating 11/08/2011-12/05/2011	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
Architectural Coating	0.45	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 2/28/2011 - 4/11/2011 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stabilizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

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For Soil Stabilizing Measures, the Water exposed surfaces 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>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.01	0.07	0.06	0.00	0.00	89.34
Hearth	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.01	0.00	0.14	0.00	0.00	0.25
Consumer Products	0.00					
Architectural Coatings	0.05					
TOTALS (tons/year, unmitigated)	0.07	0.07	0.20	0.00	0.00	89.59

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.00	0.06	0.05	0.00	0.00	75.94
Hearth	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.01	0.00	0.14	0.00	0.00	0.25
Consumer Products	0.00					
Architectural Coatings	0.05					
TOTALS (tons/year, mitigated)	0.06	0.06	0.19	0.00	0.00	76.19

Area Source Mitigation Measures Selected

<u>Mitigation Description</u>	<u>Percent Reduction</u>
Residential Increase Energy Efficiency Beyond Title 24	15.00
Commercial Increase Energy Efficiency Beyond Title 24	15.00
Industrial Increase Energy Efficiency Beyond Title 24	15.00

Area Source Changes to Defaults

- Percentage of residences with wood stoves changed from 35% to 0%
- Percentage of residences with wood fireplaces changed from 10% to 0%
- Percentage of residences with natural gas fireplaces changed from 55% to 0%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	PM10	PM25	CO2
Place of worship	0.76	0.89	8.06	1.30	0.25	706.52
TOTALS (tons/year, unmitigated)	0.76	0.89	8.06	1.30	0.25	706.52

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOX	CO	PM10	PM25	CO2
Place of worship	0.65	0.75	6.84	1.10	0.21	599.50
TOTALS (tons/year, mitigated)	0.65	0.75	6.84	1.10	0.21	599.50

Operational Mitigation Options Selected

Residential Mitigation Measures

Nonresidential Mitigation Measures

Non-Residential Mix of Uses Mitigation

Percent Reduction in Trips is 7.67%

Inputs Selected:

The number of housing units within a 1/2 mile radius of the project, plus the number of residential units included in the project are 125.

The employment for the study area (within a 1/2 mile radius of the project) is 150.

Non-Residential Local-Serving Retail Mitigation

Nonresidential Mitigation Measures

Percent Reduction in Trips is 2%

Inputs Selected:

The Presence of Local-Serving Retail checkbox was selected.

Non-Residential Transit Service Mitigation

Percent Reduction in Trips is 0%

Inputs Selected:

The Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 0

The Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 0

The Number of Dedicated Daily Shuttle Trips is 0

Non-Residential Pedestrian/Bicycle Friendliness Mitigation

Percent Reduction in Trips is 5.48%

Inputs Selected:

The Number of Intersections per Square Mile is 100

The Percent of Streets with Sidewalks on One Side is 50%

The Percent of Streets with Sidewalks on Both Sides is 50%

The Percent of Arterials/Collectors with Bike Lanes or where Suitable,

Direct Parallel Routes Exist is 100%

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 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
Place of worship		18.57	1000 sq ft	42.20	783.65	4,145.72
					783.65	4,145.72

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	0.8	99.0	0.2
Light Truck < 3750 lbs	13.2	1.5	95.5	3.0
Light Truck 3751-5750 lbs	20.4	0.5	99.5	0.0
Med Truck 5751-8500 lbs	7.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.1	0.0	72.7	27.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.7	59.5	40.5	0.0
School Bus	0.4	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	5.9	5.9	5.9	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)						
Place of worship				3.0	1.5	95.5

Operational Changes to Defaults

- Home-based work urban trip length changed from 10.8 miles to 5.9 miles
- Home-based shop urban trip length changed from 7.3 miles to 5.9 miles
- Home-based other urban trip length changed from 7.5 miles to 5.9 miles