APPENDIX B GREENHOUSE GAS EMISSIONS CALCULATIONS

Prepared by:

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FULLERTON COMMUNITY CENTER - GREENHOUSE GAS EMISSIONS - 062510

							Percent of New
Emission Source	Quantity	Unit	Annual Usage Factor	Total Esti	mated Annual Emissions		Emissions
	Propo	sed Project at B	uildout				0%
Residential Electricity	0	residence	7,300 kwh/res/yr	0 kwh/yr	0 kg CO2	0 MTCO ₂	0.0%
Commercial Electricity	57,538	gsf	13.63 kwh/gsf/yr	784,243 kwh/yr	257,546 kg CO2	258 MTCO ₂	70.7%
Residential Water Consumption	0	residence	110,000.0 gallons/yr/res	0.00 MG/yr 0 kwh/year	0 kg CO2	0 MTCO ₂	0.0%
Commercial Water Consumption	57,538	gsf	123.0 gallons/yr/gsf	7.1 MG/yr 92,159 kwh/year	30,265 kg CO2	30 MTCO ₂	8.3%
Combined Natural Gas and Landscape	from URBEMIS				85 ton CO2	77 MTCO ₂	21%
Private Vehicle Trips	from URBEMIS				0 ton CO2	0 MTCO ₂	0%
Total, Proposed Project Buildout						364 MTCO ₂	100%
	Exist	ing Land Uses o	n Site				0%
Residential Electricity	0	residence	7,300 kwh/res/yr	0 kwh/yr	0 kg CO2	0 MTCO ₂	0.0%
Commercial Electricity	37,127		13.63 kwh/gsf/yr	506,041 kwh/yr	166,184 kg CO2	166 MTCO ₂	70.5%
Residential Water Consumption	0	residence	110,000.0 gallons/yr/res	0.00 MG/yr 0 kwh/year	0 kg CO2	0 MTCO ₂	0%
Commercial Water Consumption	37,127	gsf	123.0 gallons/yr/gsf	4.6 MG/yr 59,467 kwh/year	19,529 kg CO2	20 MTCO ₂	5.4%
Combined Natural Gas and Landscape	from URBEMIS				55 ton CO2	50 MTCO ₂	13.7%
Private Vehicle Trips	from URBEMIS				0 ton CO2	0 MTCO ₂	0.0%
Total, Existing Land Uses						236 MTCO ₂	
Net Increase in Emissions = Project - Existing 129 MTCO ₂							
Percentage Increase in Annual Emissions: Existing to Project 54.6%							

Emission Category	CO2 Emission Factor			
Purchased Electricity Emergency Diesel Generators	0.72 9.96	lbs/kwh kg/gallon	CCAR GRP 3.1	
Propane Liquid Gas	5.67	kg/gallon		
Purchased Campus Natural Gas	53.06	kg/mmBTU	CCAR GRP 3.1	
Water	Ene	ergy Usage Factor		
Indoor Potable Water Consumption Outdoor Potable Water Consumption	13,022 11.111	kwh/MG kwh/MG		

Convert	
Pounds to Metric Tons, multiply poun	0.000453592
Tons to Metric Tons, multiply tons by:	0.90718474
Kilogram to pounds, multiply kg by:	2.2046
Pound to kilograms, multiply lbs. by:	0.45359237
kilogram to Metric Tons, multiply kg b	0.001
kBTU to kilowatt hours, multiply kBTU	0.293071083
kBTU to megawatt hours, multiply kB	0.000293071

Notes:

kg = kilogram CO₂ = carbon dioxide MT = Metric Tons

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\BonTerra User\My Documents\Current\Fullerton Community Center\Air

Project Name: Fullerton Community Center

Project Location: Orange County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

S	um	m	ary	R	e	oc	rt:

CONSTRUCTION EMISSION ESTIMATES

	<u>CO2</u>	MTCO2e- metric tons
2011 TOTALS (tons/year unmitigated)	111.02	
2011 TOTALS (tons/year mitigated)	111.02	101
Percent Reduction	0.00	
2012 TOTALS (tons/year unmitigated)	118.69	
2012 TOTALS (tons/year mitigated)	118.69	108
Percent Reduction	0.00	

208 total

6.9 amortized over 30 years

AREA SOURCE EMISSION ESTIMATES

CO2

TOTALS (tons/year, unmitigated) 84.46 77

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

CO2

TOTALS (tons/year, unmitigated) 84.46

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	<u>CO2</u>
2011	111.02
Demolition 06/06/2011-07/29/2011	23.09
Fugitive Dust	0.00
Demo Off Road Diesel	14.01
Demo On Road Diesel	6.59
Demo Worker Trips	2.49
Fine Grading 08/01/2011-	23.72
08/26/2011 Fine Grading Dust	0.00
Fine Grading Off Road Diesel	22.47
Fine Grading On Road Diesel	0.00
Fine Grading Worker Trips	1.24

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Trenching 08/29/2011-09/16/2011	12.81
Trenching Off Road Diesel	11.87
Trenching Worker Trips	0.93
Building 09/19/2011-08/03/2012	51.41
Building Off Road Diesel	29.82
Building Vendor Trips	4.42
Building Worker Trips	17.17
2012	118.69
Building 09/19/2011-08/03/2012	106.24
Building Off Road Diesel	61.63
Building Vendor Trips	9.13
Building Worker Trips	35.48
Asphalt 02/01/2012-02/22/2012	11.55
Paving Off-Gas	0.00
Paving Off Road Diesel	7.83
Paving On Road Diesel	1.98
Paving Worker Trips	1.74
Coating 07/02/2012-07/27/2012	0.89
Architectural Coating	0.00
Coating Worker Trips	0.89

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 8/1/2011 - 8/26/2011 - Default Fine Site Grading/Excavation Description

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

PM10: 55% PM25: 55%

 $For Soil \ Stablizing \ Measures, the \ Equipment \ loading/unloading \ mitigation \ reduces \ emissions \ by:$

PM10: 69% PM25: 69%

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

Source <u>CO2</u> 83.95

Landscape

Natural Gas Hearth

0.51

Consumer Products

Architectural Coatings

TOTALS (tons/year, unmitigated) 84.46

Area Source Changes to Defaults

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\BonTerra User\My Documents\Current\Fullerton Community Center\Air quality\Urbemis\Existing.urb924

Project Name: Fullerton Community Center - existing

Project Location: Orange County

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

CO2

TOTALS (tons/year, unmitigated) 55.24

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

<u>CO2</u>

TOTALS (tons/year, unmitigated) 55.24

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u> <u>CO2</u> 54.21

Hearth

Natural Gas

Landscape 1.03

Consumer Products

Architectural Coatings

TOTALS (tons/year, unmitigated) 55.24

Area Source Changes to Defaults