

Air Quality Assessment

for

Sierra Meadows Project

Submitted To:

**City of Clovis
Engineering Division
Department of Planning and Development Services
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January 21, 2011

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1.0 Introduction

This report presents an assessment of potential air quality impacts associated with the construction and operations associated with the proposed Sierra Meadows project in the City of Clovis, California. The project involves construction and operation of an animal adoption facility, which is 15,650 square feet with a future 6,850 square foot expansion for a total of 22,500 square feet. The project also involves the master planning of the park site, including a wildlife rehabilitation and education center that is approximately 40,000 square feet.

The project is located on Temperance Avenue at Sierra Avenue. The project site plan is shown in Figure 1. The site is currently undeveloped and will be constructed on a disturbed area. The project will include construction of the buildings on the site, along with internal streets, parking areas, and landscaping.

The following sections describe the existing air quality in the vicinity of the project site, and present an analysis of the potential impacts to the ambient air quality associated with project construction and operation.

2.0 Existing Conditions

2.1 Meteorology/Climate

The climate of the Clovis area is dominated by a semi-permanent high pressure cell located over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. Figure 2 provides a graphic representation of the prevailing winds in the project vicinity, as measured at the Fresno Airport (the closest meteorological monitoring station to the site). The high pressure cell also creates two types of temperature inversions that may act to degrade local air quality.



SIERRA MEADOWS PARK MASTER PLAN
 Incorporating the Clovis Animal Services & Pet Adoption Center and Nature Education & Rehabilitation Center
 Clovis, California

Figure 1. Project Site Plan

Subsidence inversions occur during the warmer months as descending air associated with the Pacific high pressure cell comes into contact with cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. The other type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce ozone, commonly known as smog.

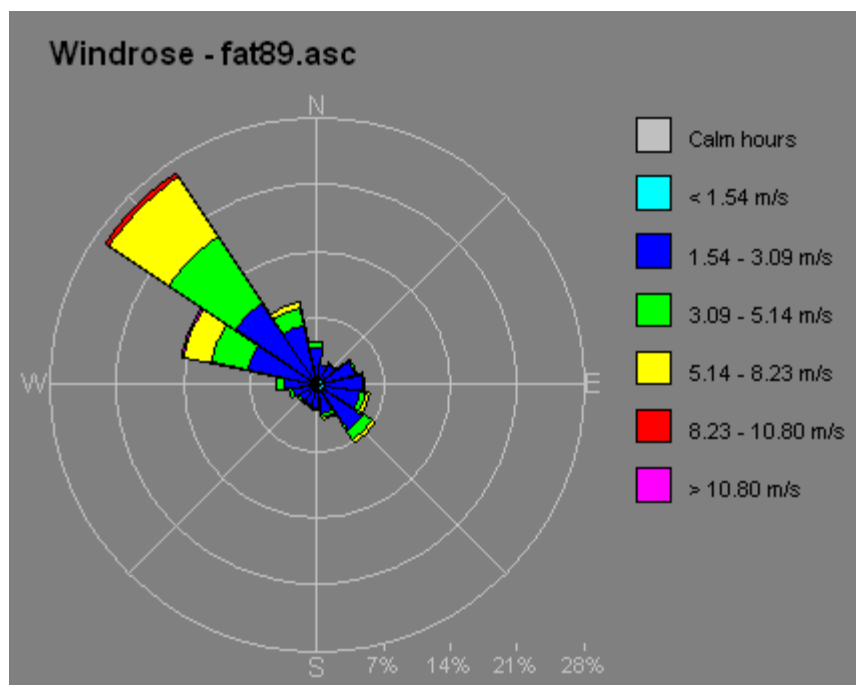


Figure 2. Wind Rose – Fresno Airport

2.2 Regulatory Setting

Air quality is defined by ambient air concentrations of specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several pollutants (called “criteria” pollutants). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. Areas that do not meet the NAAQS for a particular pollutant are considered to be “nonattainment areas” for that pollutant.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The California Air Resources Board (ARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles.

The San Joaquin Valley is currently considered an extreme nonattainment area for the 8-hour NAAQS for O₃. In the past, the San Joaquin Valley has been characterized as a serious nonattainment area for the NAAQS for PM₁₀, however recent monitoring data have indicated that the Valley has been attaining the PM₁₀ standard and EPA has redesignated the air basin as a maintenance area. The San Joaquin Valley is also a nonattainment area for the NAAQS for PM_{2.5} and for the CAAQS for O₃, PM₁₀, and PM_{2.5}. The San Joaquin Valley is in attainment or unclassified for other criteria pollutants.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the CAAQS. The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The San Joaquin Valley Air Pollution Control District (SJVAPCD) is the local agency responsible for the administration and enforcement of air quality regulations for Fresno County.

Table 1 presents a summary of the ambient air quality standards adopted by the federal and California Clean Air Acts.

**Table 1
Ambient Air Quality Standards**

POLLUTANT	AVE. TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Measurement Method	Primary	Secondary	Measurement Method
Ozone (O ₃)	1 hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence
	8 hour	0.070 ppm (137 µg/m ³)		0.075 ppm (147 µg/m ³)	0.075 ppm (147 µg/m ³)	
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m ³)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m ³)	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m ³)		35 ppm (40 mg/m ³)		
Nitrogen Dioxide (NO ₂)	Annual Average	0.030 ppm (56 µg/m ³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (338 µg/m ³)		0.100 ppm (188 µg/m ³)	--	
Sulfur Dioxide (SO ₂)	24 hours	0.04 ppm (105 µg/m ³)	Ultraviolet Fluorescence	--	--	Pararosaniline
	3 hours	--		--	0.5 ppm (1300 µg/m ³)	
	1 hour	0.25 ppm (655 µg/m ³)		0.075 ppm (196 µg/m ³)	--	
Respirable Particulate Matter (PM ₁₀)	24 hours	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	150 µg/m ³	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		--	--	
Fine Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	15 µg/m ³	15 µg/m ³	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 µg/m ³	35 µg/m ³	
Sulfates	24 hours	25 µg/m ³	Ion Chromatography	--	--	--
Lead (Pb)	30-day Average	1.5 µg/m ³	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 µg/m ³	1.5 µg/m ³	
	3-month Rolling Average	--		0.15 µg/m ³	0.15 µg/m ³	
Hydrogen Sulfide (H ₂ S)	1 hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hours	0.010 ppm (26 µg/m ³)	Gas Chromatography	--	--	--

ppm= parts per million

µg/m³ = micrograms per cubic meter

mg/m³ = milligrams per cubic meter

Source: California Air Resources Board 2010, www.arb.ca.gov

2.3 Background Air Quality

The ARB and local air quality management districts operate a network of ambient air monitoring stations throughout the state of California. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest ambient monitoring station to the project site is the Clovis Airport monitoring station on North Villa Avenue, which measures ozone, NO₂, CO, PM₁₀, and PM_{2.5}. Ambient concentrations of pollutants over period from 2005 to 2009 are presented in Table 2.

During the period from 2005 through 2009, the 8-hour NAAQS for ozone was regularly exceeded at the Clovis monitoring station. The Clovis monitoring station measured exceedances of the state PM₁₀ and PM_{2.5} standards during the period as well. The data from the monitoring stations indicate that air quality is in attainment of all other federal standards.

Table 2 Ambient Background Concentrations, Clovis Monitoring Station ppm (unless otherwise indicated)							
Pollutant	Averaging Time	2005	2006	2007	2008	2009	Most Stringent Air Quality Standard
Ozone	8 hour	0.096	0.096	0.101	0.127	0.105	0.070
	1 hour	0.127	0.127	0.121	0.156	0.119	0.09
PM ₁₀	Annual Arithmetic Mean	33.5	36.1	34.0	35.3	NA	20
	24 hour	87	104	116	80.5	62.3	50
PM _{2.5}	Annual Arithmetic Mean	16.3	16.4	16.4	16.1	NA	12
	24 hour	77.0	65.8	91.0	95.3	45.4	35
NO ₂	Annual	0.014	0.014	0.015	0.013	0.011	0.030
	1 hour	0.079	0.069	0.064	0.067	0.061	0.100
CO	8 hour	2.30	2.23	1.84	1.50	1.66	9
	1 hour	3.1	3.6	2.9	2.3	NA	20

NA – data not available

Source: www.arb.ca.gov (all pollutants except 1-hour CO)
www.epa.gov/air/data/monvals.html (1-hour CO)

3.0 Impacts

CEQA guidance sets forth the following significance thresholds to assess whether a project has the potential to cause a significant impact on the ambient air quality. A project may have a significant air quality environmental impact if it could:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (Including release emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors (i.e., day care centers, schools, retirement homes, and hospitals or medical patients in residential homes which could be impacted by air pollutants) to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people; or
- Release air contaminants beyond the boundaries of the premises upon which the use emitting the contaminants is located.

In addition, the SJVAPCD has published a *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2002), in which they set forth thresholds of significance for construction and operational impacts. According to the guide, the SJVAPCD's approach to CEQA analyses of construction PM₁₀ impacts is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emissions. Thresholds of significance for operational impacts for ozone precursors are set forth at 10 tons per year for VOCs and NO_x. The threshold of significance for carbon monoxide relies on the NAAQS and CAAQS for CO; if a project could result in an exceedance of the CO standards, it would have a significant adverse impact on the ambient air quality.

3.1 Animal Adoption Center

Construction Impacts

The URBEMIS Model, Version 9.2.4, was used to estimate emission associated with the construction of the Project. The URBEMIS Model is the model recommended by the SJVAPCD in their *Guide for Assessing and Mitigation Air Quality Impacts* (SJVAPCD 2002). It was assumed that the initial phase of project construction, which involves construction of the Animal Adoption Center and associated infrastructure, would require approximately 12 months to complete. Construction equipment requirements for the grading and site preparation phase and building construction phase were estimated as shown in Table 3 below.

Table 3 Construction Equipment Animal Adoption Center		
Construction Phase	Equipment	Number
Grading and Site Preparation	Dozer	1
	Water truck	1
	Motor grader	1
	Tractor/Loader/Backhoe	2
Utilities/Trenching	Excavator	2
	Tractor/Loader/Backhoe	1
Building Construction	Crane	1
	Tractor/Loader/Backhoe	1
	Forklifts	2
Paving	Pavers	1
	Rollers	1
	Tractor/Loader/Backhoe	1
	Cement Mixers	2

Table 4 presents the results of the URBEMIS calculations, assuming construction of the Animal Adoption Center would commence in April 2011, and would be completed by March 2012.

Table 4						
Estimated Construction Emissions						
Animal Adoption Center						
Emission Source	ROG	NOx	CO	SOx	PM₁₀	PM_{2.5}
tons/year						
<i>Grading and Site Preparation</i>						
Fugitive Dust	-	-	-	-	0.22	0.05
Off-Road Diesel	0.05	0.41	0.22	-	0.02	0.02
Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00
TOTAL	0.05	0.41	0.24	0.00	0.24	0.07
<i>Trenching/Utilities</i>						
Off-Road Diesel	0.01	0.05	0.04	-	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.01	0.05	0.04	0.00	0.00	0.00
<i>Building Construction/Paving</i>						
Asphalt Offgassing	0.00	-	-	-	-	-
Paving Off-Road Diesel	0.15	0.90	0.55	0.00	0.08	0.07
Paving On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00
Building Off-Road Diesel	0.09	0.70	0.39	0.00	0.04	0.04
Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.00
Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00
Architectural Coatings	0.24	-	-	-	-	-
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.48	1.63	1.24	0.00	0.12	0.11

URBEMIS outputs are presented in Appendix A.

According to the SJVAPCD's *Guide for Assessing and Mitigating Air Impacts*, (SJVAPCD 2002), a project's construction phase produces many types of emissions, but PM₁₀ is the pollutant of greatest concern. The SJVAPCD has determined that emissions of carbon monoxide and ozone precursors may cause a significant impact only in the cases of very large or very intense construction projects. As the proposed construction of the Sierra Meadows Animal Adoption Center is relatively small, and would not involve very intense construction, emissions of carbon monoxide and ozone precursors (NOx and ROG) would not cause a significant impact.

With regard to PM₁₀ emissions, the SJVAPCD's approach to CEQA analyses of these impacts is to require implementation of effective and comprehensive control measures rather than to evaluate emissions on a quantitative basis. The project will be subject to the requirements of the SJVAPCD for control of fugitive dust during construction.

According to District Regulation VIII, Fugitive PM₁₀ Prohibitions, the project developer will be required to develop a Dust Control Plan for the District's approval at least 30 days before construction activities begin if a non-residential project cumulatively encompasses 5 acres or more or will move more than 2,500 cubic yards per day of material on at least three days of the project. The project developer will therefore be required to submit a Dust Control Plan for the project. The Dust Control Plan should contain the following information:

- Name, address, and phone number of the owner/operator responsible for implementation of the Dust Control Plan.
- Plot plan showing the surface area to be disturbed
- The total area of land surface to be disturbed, daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site.
- The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site.
- The actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads; entrances and exits where carryout/trackout may occur; and traffic areas.
- Dust suppressants to be applied, including: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.
- Specific surface treatment(s) and/or control measures utilized to control material carryout, trackout, and sedimentation where unpaved and/or access points join paved public access roads.

In addition, according to Rule 8021, at least one key individual representing the owner/operator or any person who prepares a Dust Control Plan must complete a Dust Control Training Class conducted by the District. The District will conduct Dust Control Training Classes on an as needed basis.

Application of the dust control measures required by Regulation VIII will further reduce the potential impacts associated with fugitive dust emissions during construction.

Operational Impacts

Emissions associated with operation of the facility include emissions from Project-related traffic and area sources, including energy use and landscaping. According to the traffic analysis (Peters Engineering 2010), it is anticipated that the Animal Adoption Center will generate a total of 192 average daily trips (ADT) for customers, full-time employees, part-time employees, and volunteers. Emission calculations to estimate emissions associated with project operations were conducted based on default assumptions in the URBEMIS Model, Version 9.2.4, for 2012 for Fresno County.

According to the SJVAPCD's *Guide for Assessing and Mitigating Air Impacts* (SJVAPCD 2002), the SJVAPCD has set an emission threshold of 10 tons per year for ozone precursor emissions (NO_x and ROG). For CO, the potential for localized CO impacts should be evaluated to assess whether exceedances of the California Ambient Air Quality Standards would be anticipated. Based on the maximum number of daily trips generated by the project (192 ADT), the project would fall under the Small Project Analysis Level as set forth in the SJVAPCD's guide, which indicates that no significant impacts would be anticipated for an institutional project with less than 1,707 trips per day. Thus the project's trips would not contribute to a localized CO impact.

Table 5 presents the results of the emission estimates for the operational phase of the project. Emissions of ozone precursors are below the SJVAPCD's threshold of 10 tons per year. As discussed above, no CO impacts are anticipated. Emissions of PM₁₀ and SO_x are minor.

The project is not anticipated to be a source of toxic air contaminants or objectionable odors that would affect a substantial number of individuals. Operational impacts are therefore not significant.

Table 5 Total Operational Emissions Animal Adoption Center						
	ROG	NOx	CO	SOx	PM₁₀	PM_{2.5}
	Tons/year					
Energy Use	0.00	0.03	0.02	0.00	0.00	0.00
Landscaping	0.01	0.00	0.14	0.00	0.00	0.00
Architectural Coatings	0.02	-	-	-	-	-
Vehicular Emissions	0.25	0.44	2.83	0.00	0.23	0.05
TOTAL	0.28	0.47	2.99	0.00	0.23	0.05
Significance Criteria	10	10	N/A	N/A	N/A	N/A
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

URBEMIS model results are presented in Attachment A.

3.2 Nature Education and Rehabilitation Center

The Master Plan for the Sierra Meadows Park includes development of a Nature Education and Rehabilitation Center. The Center will include the construction of an additional 40,000 square feet of building space and will provide educational services as part of its planned uses. The schedule for future development is unknown at this time; however, the buildout of the park will occur after the Animal Adoption Center is complete and operational. This analysis provides estimates of potential construction and operational impacts associated with the buildout of the Master Plan.

Construction Impacts

The URBEMIS Model, Version 9.2.4, was used to estimate emission associated with the construction of the Project. The URBEMIS Model is the model recommended by the SJVAPCD in their *Guide for Assessing and Mitigation Air Quality Impacts* (SJVAPCD 2002). For conservative purposes, it was assumed that the second phase of project construction, which would involve construction of an additional 40,000 square feet of building space to house the Nature Education and Wildlife Rehabilitation Center, would require approximately 12 months to complete. Construction equipment requirements for

the grading and site preparation phase and building construction phase were estimated as shown in Table 6 below.

Table 6 Construction Equipment Nature Education and Wildlife Rehabilitation Center		
Construction Phase	Equipment	Number
Grading and Site Preparation	Dozer	1
	Water truck	1
	Motor grader	1
	Tractor/Loader/Backhoe	2
Utilities/Trenching	Excavator	2
	Tractor/Loader/Backhoe	1
Building Construction	Crane	1
	Generator Set	1
	Welders	3
	Tractor/Loader/Backhoe	1
	Forklifts	2
Paving	Pavers	1
	Rollers	1
	Tractor/Loader/Backhoe	2
	Cement Mixers	2

Emissions were estimated based on default assumptions for construction of single-family dwellings in the URBEMIS Model. Table 7 presents the results of the URBEMIS calculations, assuming construction of the Nature Education and Wildlife Rehabilitation Center and remaining park facilities would commence in January 2013, and would be completed by December 2013. Because emission factors decrease in future years, this analysis represents a conservative estimate of potential impacts.

Table 7
Estimated Construction Emissions
Nature Education and Rehabilitation Center

Emission Source	ROG	NOx	CO	SOx	PM₁₀	PM_{2.5}
tons/year						
<i>Grading and Site Preparation</i>						
Fugitive Dust	-	-	-	-	2.37	0.49
Off-Road Diesel	0.06	0.50	0.28	-	0.03	0.02
Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00
TOTAL	0.06	0.50	0.30	0.00	0.57	0.13
<i>Trenching/Utilities</i>						
Off-Road Diesel	0.01	0.09	0.07	-	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.01	0.09	0.07	0.00	0.00	0.00
<i>Building Construction/Paving</i>						
Asphalt Offgassing	0.01	-	-	-	-	-
Paving Off-Road Diesel	0.19	1.21	0.83	0.00	0.10	0.09
Paving On-Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00
Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00
Building Off-Road Diesel	0.28	1.37	1.01	0.00	0.09	0.08
Vendor Trips	0.00	0.02	0.02	0.00	0.00	0.00
Worker Trips	0.01	0.01	0.20	0.00	0.00	0.00
Architectural Coatings	0.43	-	-	-	-	-
Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00
TOTAL	0.93	2.65	2.24	0.00	0.19	0.17

URBEMIS outputs are presented in Appendix A.

As discussed above for the Animal Adoption Center, the proposed construction of the Sierra Meadows Park Master Plan is relatively small, and would not involve very intense construction, emissions of carbon monoxide and ozone precursors (NOx and ROG) would not cause a significant impact. The Nature Education and Wildlife Rehabilitation Center and remaining park facilities will be required to develop a dust control plan as required for the Animal Adoption Center. Application of the dust control measures required by Regulation VIII will further reduce the potential impacts associated with fugitive dust emissions during construction.

Operational Impacts

Emissions associated with operation of the facility include emissions from Project-related traffic and area sources, including energy use and landscaping. Based on the traffic analysis (Peters Engineering 2010), the Center would generate an additional 101 ADT. Emission calculations to estimate emissions associated with project operations were conducted based on default assumptions in the URBEMIS Model, Version 9.2.4, for 2014 for Fresno County.

According to the SJVAPCD's *Guide for Assessing and Mitigating Air Impacts* (SJVAPCD 2002), the SJVAPCD has set an emission threshold of 10 tons per year for ozone precursor emissions (NO_x and ROG). For CO, the potential for localized CO impacts should be evaluated to assess whether exceedances of the California Ambient Air Quality Standards would be anticipated. Based on the maximum number of daily trips generated by the project (101 ADT), the project would fall under the Small Project Analysis Level as set forth in the SJVAPCD's guide, which indicates that no significant impacts would be anticipated for an institutional project with less than 1,707 trips per day. Thus the project's trips would not contribute to a localized CO impact.

Table 8 presents the results of the emission estimates for the operational phase of the project. Table 8 includes operational emissions from the Animal Adoption Center, as operations of the center would coincide with operations for the Master Plan buildout.

Emissions of ozone precursors are below the SJVAPCD's threshold of 10 tons per year. As discussed above, no CO impacts are anticipated. Emissions of PM₁₀ and SO_x are minor.

The project is not anticipated to be a source of toxic air contaminants or objectionable odors that would affect a substantial number of individuals. Operational impacts are therefore not significant.

Table 8
Total Operational Emissions
Nature Education and Wildlife Rehabilitation Center

	ROG	NOx	CO	SOx	PM₁₀	PM_{2.5}
	Tons/year					
Energy Use	0.00	0.05	0.04	0.00	0.00	0.00
Landscaping	0.01	0.00	0.14	0.00	0.00	0.00
Architectural Coatings	0.04	-	-	-	-	-
Vehicular Emissions	0.14	0.19	1.24	0.00	0.12	0.03
TOTAL	0.29	0.24	1.42	0.00	0.12	0.03
Animal Adoption Center	0.28	0.46	2.99	0.00	0.23	0.05
TOTAL Emissions	0.57	0.70	4.41	0.00	0.35	0.08
Significance Criteria	10	10	N/A	N/A	N/A	N/A
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

URBEMIS model results are presented in Attachment A.

4.0 Cumulative Impacts

In accordance with the SJVAPCD’s guidance, an adequate cumulative impact analysis considers a project over time and in conjunction with other related past, present, and reasonably foreseeable future projects whose impacts might compound or interrelate with those of the project being assessed.

Because of the small size of the Animal Adoption Center and the Nature Education and Wildlife Rehabilitation Center, emissions would not exceed the thresholds for ozone precursors (ROG and NOx). Because emissions are below the thresholds, they would not be anticipated to result in a cumulatively considerable impact.

The SJVAPCD does not currently recommend a quantitative analysis of PM₁₀ emissions for cumulative impact analysis. For cumulative analysis, the SJVAPCD recommends examining the potential PM₁₀ exposure to sensitive receptors near the project site. Because the project will result in limited PM₁₀ emissions during construction, and

because the project will implement dust control measures to reduce emissions of fugitive dust, impacts would be less than cumulatively considerable.

Traffic projections indicate that the ADT is below the level recommended for further analysis of CO “hot spots”, and no cumulative CO impacts would result.

5.0 Conclusions

In conclusion, the Sierra Meadows Park Master Plan involves the construction and operation of an Animal Adoption Center in the first phase, and a Nature Education and Wildlife Rehabilitation Center in the second phase of buildout. Project construction and operations for both phases would result in less than significant air quality impacts. The project also would not result in cumulatively considerable impacts to air quality.

6.0 References

California Air Resources Board. 2007. EMFAC2007 Emissions Model.

Peters Engineering Group. 2010. *Traffic Impact Study, Proposed Sierra Meadows Park Master Plan*. December 3.

Rimpo and Associates. 2007. URBEMIS Model. Version 9.2.4.

San Joaquin Valley Air Pollution Control District. 2002. *Guide for Assessing and Mitigating Air Impacts*.

APPENDIX A

URBEMIS Model Outputs

Page: 1

1/21/2011 4:52:57 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\Sierra Meadows Animal Adoption Ctr.urb924

Project Name: Sierra Meadows

Project Location: Fresno 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>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>
2011 TOTALS (tons/year unmitigated)	0.30	2.09	1.43	0.00	0.22	0.15	0.37	0.05	0.14	0.18	223.76
2011 TOTALS (tons/year mitigated)	0.30	2.09	1.43	0.00	0.09	0.15	0.24	0.02	0.14	0.16	223.76
Percent Reduction	0.00	0.00	0.00	0.00	60.63	0.00	36.12	60.37	0.00	15.18	0.00
2012 TOTALS (tons/year unmitigated)	0.33	0.60	0.44	0.00	0.00	0.05	0.05	0.00	0.04	0.04	69.88
2012 TOTALS (tons/year mitigated)	0.33	0.60	0.44	0.00	0.00	0.05	0.05	0.00	0.04	0.04	69.88
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)	0.03	0.03	0.16	0.00	0.00	0.00	33.10

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)	0.25	0.44	2.83	0.00	0.23	0.05	264.25

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)	0.28	0.47	2.99	0.00	0.23	0.05	297.35

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

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2012	0.33	0.60	0.44	0.00	0.00	0.05	0.05	0.00	0.04	0.04	69.88
Asphalt 05/16/2011-03/31/2012	0.06	0.34	0.25	0.00	0.00	0.03	0.03	0.00	0.03	0.03	34.58
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	0.05	0.33	0.21	0.00	0.00	0.03	0.03	0.00	0.03	0.03	30.29
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Paving Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16
Building 05/16/2011-03/31/2012	0.04	0.26	0.19	0.00	0.00	0.02	0.02	0.00	0.01	0.01	35.01
Building Off Road Diesel	0.03	0.26	0.15	0.00	0.00	0.02	0.02	0.00	0.01	0.01	29.04
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18
Building Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.80
Coating 02/01/2012-03/31/2012	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Architectural Coating	0.24	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29

Phase Assumptions

Phase: Fine Grading 4/1/2011 - 5/15/2011 - Default Fine Site Grading Description

Total Acres Disturbed: 2.83

Maximum Daily Acreage Disturbed: 0.71

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

2 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 5/1/2011 - 5/15/2011 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 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 5/16/2011 - 3/31/2012 - Default Paving Description

Acres to be Paved: 0.71

Off-Road Equipment:

2 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 5/16/2011 - 3/31/2012 - 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 2/1/2012 - 3/31/2012 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

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

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2012	0.33	0.60	0.44	0.00	0.00	0.05	0.05	0.00	0.04	0.04	69.88
Asphalt 05/16/2011-03/31/2012	0.06	0.34	0.25	0.00	0.00	0.03	0.03	0.00	0.03	0.03	34.58
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	0.05	0.33	0.21	0.00	0.00	0.03	0.03	0.00	0.03	0.03	30.29
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Paving Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16
Building 05/16/2011-03/31/2012	0.04	0.26	0.19	0.00	0.00	0.02	0.02	0.00	0.01	0.01	35.01
Building Off Road Diesel	0.03	0.26	0.15	0.00	0.00	0.02	0.02	0.00	0.01	0.01	29.04
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18
Building Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.80
Coating 02/01/2012-03/31/2012	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Architectural Coating	0.24	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 4/1/2011 - 5/15/2011 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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	0.00	0.03	0.02	0.00	0.00	0.00	32.85
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products							
Architectural Coatings	0.02						
TOTALS (tons/year, unmitigated)	0.03	0.03	0.16	0.00	0.00	0.00	33.10

Area Source Changes to Defaults

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>
Animal Adoption Center	0.25	0.44	2.83	0.00	0.23	0.05	264.25
TOTALS (tons/year, unmitigated)	0.25	0.44	2.83	0.00	0.23	0.05	264.25

Operational Settings:

Does not include 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
Animal Adoption Center		8.53	1000 sq ft	22.50	191.92	1,418.90
					191.92	1,418.90

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.3	0.9	98.9	0.2
Light Truck < 3750 lbs	10.7	1.9	93.4	4.7
Light Truck 3751-5750 lbs	21.9	0.9	98.6	0.5
Med Truck 5751-8500 lbs	12.0	0.8	99.2	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.8	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.4	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	2.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	60.0	40.0	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commuter	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
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)						
Animal Adoption Center				2.0	1.0	97.0

Operational Changes to Defaults

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\Sierra Meadows Nature Center.urb924

Project Name: Sierra Meadows Nature Center

Project Location: Fresno 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>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>
2013 TOTALS (tons/year unmitigated)	1.00	3.22	2.56	0.00	2.37	0.23	2.59	0.49	0.21	0.70	400.40
2013 TOTALS (tons/year mitigated)	1.00	3.22	2.56	0.00	0.92	0.23	1.15	0.19	0.21	0.40	400.40
Percent Reduction	0.00	0.00	0.00	0.00	60.93	0.00	55.61	60.89	0.00	42.84	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)	0.05	0.05	0.18	0.00	0.00	0.00	58.65

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)	0.14	0.19	1.24	0.00	0.12	0.03	139.35

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)	0.19	0.24	1.42	0.00	0.12	0.03	198.00

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>
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2013	1.00	3.22	2.56	0.00	2.37	0.23	2.59	0.49	0.21	0.70	400.40
Fine Grading 01/01/2013-02/28/2013	0.06	0.50	0.30	0.00	2.37	0.03	2.39	0.49	0.02	0.52	57.23
Fine Grading Dust	0.00	0.00	0.00	0.00	2.37	0.00	2.37	0.49	0.00	0.49	0.00
Fine Grading Off Road Diesel	0.06	0.50	0.28	0.00	0.00	0.03	0.03	0.00	0.02	0.02	54.48
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	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76
Trenching 03/01/2013-03/31/2013	0.01	0.09	0.07	0.00	0.00	0.01	0.01	0.00	0.00	0.00	12.30
Trenching Off Road Diesel	0.01	0.09	0.07	0.00	0.00	0.01	0.01	0.00	0.00	0.00	11.49
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Asphalt 04/01/2013-12/31/2013	0.20	1.23	0.95	0.00	0.00	0.10	0.10	0.00	0.09	0.09	138.46
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.19	1.21	0.83	0.00	0.00	0.10	0.10	0.00	0.09	0.09	120.03
Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.28
Paving Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.15
Building 04/01/2013-12/31/2013	0.29	1.40	1.23	0.00	0.00	0.09	0.09	0.00	0.09	0.09	191.90
Building Off Road Diesel	0.28	1.37	1.01	0.00	0.00	0.09	0.09	0.00	0.08	0.08	159.69
Building Vendor Trips	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.36
Building Worker Trips	0.01	0.01	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.85
Coating 10/01/2013-12/31/2013	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Architectural Coating	0.43	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51

Phase Assumptions

Phase: Fine Grading 1/1/2013 - 2/28/2013 - Default Fine Site Grading Description

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Total Acres Disturbed: 22

Maximum Daily Acreage Disturbed: 5.5

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

2 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 3/1/2013 - 3/31/2013 - Type Your Description Here

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 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 - 12/31/2013 - Default Paving Description

Acres to be Paved: 5.5

Off-Road Equipment:

2 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

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

Phase: Building Construction 4/1/2013 - 12/31/2013 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

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

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 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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Asphalt 04/01/2013-12/31/2013	0.20	1.23	0.95	0.00	0.00	0.10	0.10	0.00	0.09	0.09	138.46
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.19	1.21	0.83	0.00	0.00	0.10	0.10	0.00	0.09	0.09	120.03
Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.28
Paving Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.15
Building 04/01/2013-12/31/2013	0.29	1.40	1.23	0.00	0.00	0.09	0.09	0.00	0.09	0.09	191.90
Building Off Road Diesel	0.28	1.37	1.01	0.00	0.00	0.09	0.09	0.00	0.08	0.08	159.69
Building Vendor Trips	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.36
Building Worker Trips	0.01	0.01	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.85
Coating 10/01/2013-12/31/2013	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Architectural Coating	0.43	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2013 - 2/28/2013 - Default Fine Site Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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	0.00	0.05	0.04	0.00	0.00	0.00	58.40
Hearth							
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products							
Architectural Coatings	0.04						
TOTALS (tons/year, unmitigated)	0.05	0.05	0.18	0.00	0.00	0.00	58.65

Area Source Changes to Defaults

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>
Nature Center	0.14	0.19	1.24	0.00	0.12	0.03	139.35
TOTALS (tons/year, unmitigated)	0.14	0.19	1.24	0.00	0.12	0.03	139.35

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 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
Nature Center		2.53	1000 sq ft	40.00	101.20	748.17
					101.20	748.17

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.3	0.5	99.3	0.2
Light Truck < 3750 lbs	10.7	0.9	95.4	3.7
Light Truck 3751-5750 lbs	21.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	12.0	0.8	99.2	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.8	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.4	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	2.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	51.4	48.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commute	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
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)						
Nature Center				2.0	1.0	97.0

Operational Changes to Defaults