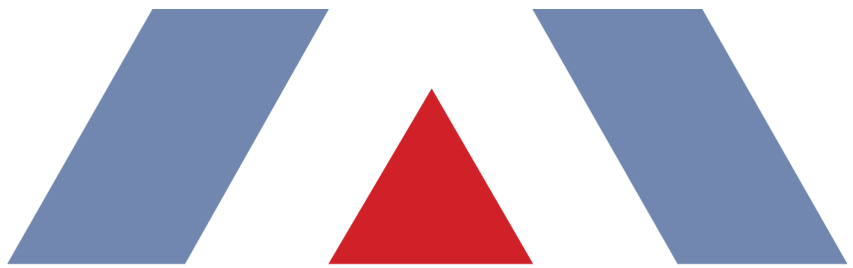

APPENDIX H

Health Risk Assessment

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HEALTH RISK ASSESSMENT

Oliveira Dairy Expansion

**4235 Oak Avenue
Merced, CA 95340
Merced County**

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1. EXECUTIVE SUMMARY

This document contains the health risk assessment performed on behalf of Environmental Planning Partners, Inc. for an expansion of the existing Oliveira Dairy operation in Merced County, California. As part of the development requirements for the project, an assessment is required of the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed dairy expansion.

Emissions of hazardous air pollutants attributable to proposed increases in construction activities, animal movement, manure management and on-site mobile sources were calculated using generally accepted emission factors and the California Emissions Estimator Model version 2016.3.2 (CalEEMod). Ambient air concentrations were predicted with dispersion modeling to arrive at a conservative estimate of increased individual carcinogenic risk that might occur as a result of continuous exposure over a 70-year lifetime. Similarly, concentrations of compounds with non-cancer adverse health effects were used to calculate hazard indices (HIs), which are the ratio of expected exposure to acceptable exposure.

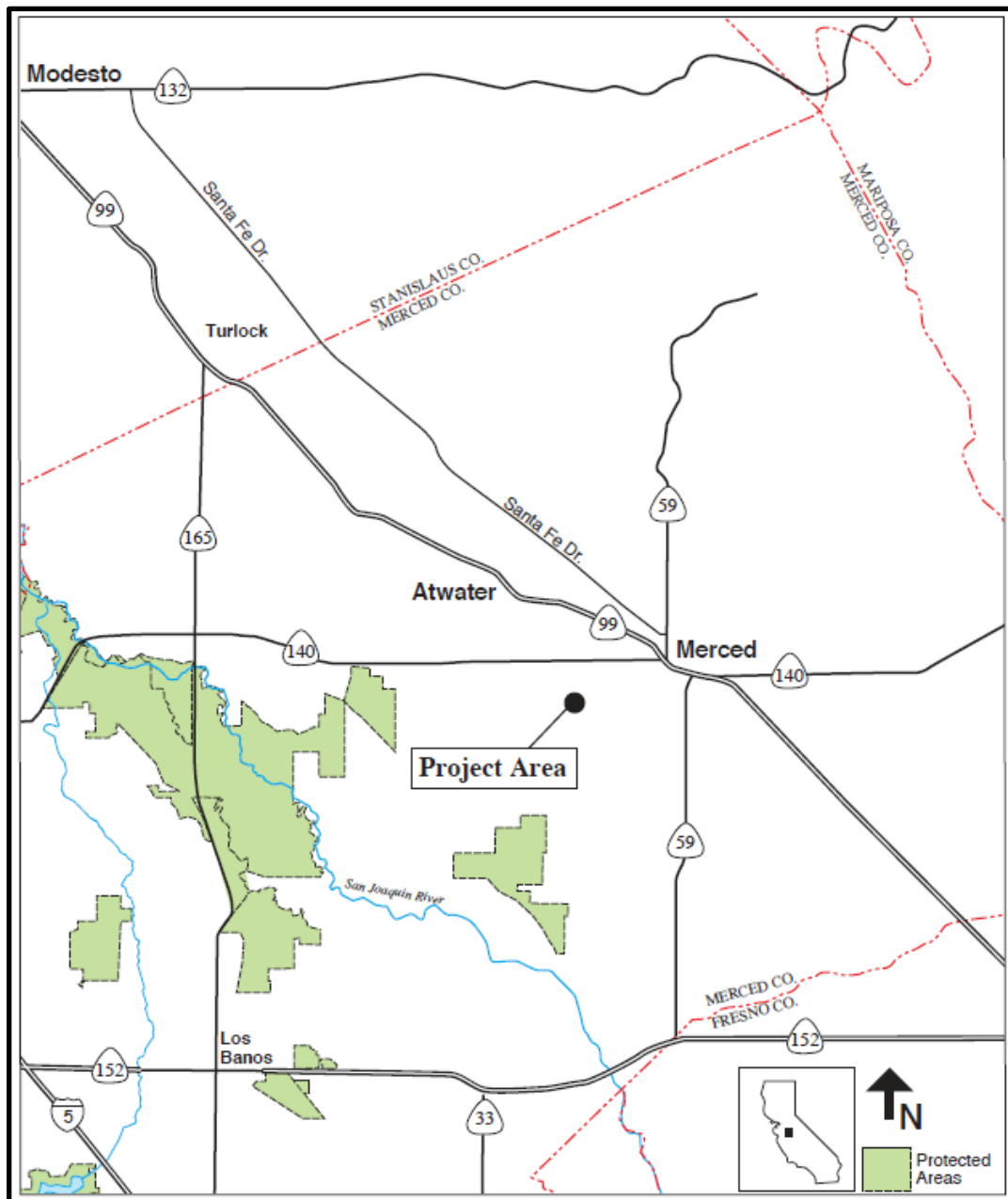
The San Joaquin Valley Air Pollution Control District (SJVAPCD) has set the level of significance for carcinogenic risk to twenty in one million (20×10^{-6}), which is understood as the possibility of causing twenty additional cancer cases in a population of one million people. The level of significance for acute and chronic non-cancer risk is a hazard index of 1.0. The maximum predicted cancer risk among the modeled receptors is 16.4 in one million, which is below the significance level of twenty in one million. The maximum predicted acute and chronic non-cancer hazard indices among the modeled receptors are 0.369 and 0.156, respectively, which is below the significance level for chronic and acute significance level.

In accordance with the SJVAPCD's *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a) and policies (SJVAPCD 2015b; SJVAPCD 2015c) the potential health risk attributable to the proposed project is determined to be less than significant.

2. INTRODUCTION

This Health Risk Assessment (HRA) is provided as a service of Insight Environmental Consultants, Inc., a Trinity Consultants company, performed on behalf of Environmental Planning Partners, Inc. for an expansion of the existing Oliveira Dairy operation in Merced County, California (**Figure 2-1**). As part of the development requirements for the property, an HRA is required.

Figure 2-1. Location Map



(Source: Planning Partners, 2016)

2.1. PROJECT DESCRIPTION

The existing dairy is located at 4235 Oak Avenue in Merced, California, which is in the County of Merced. The facility will not be located within 1,000 feet of a K-12 school.

The proposed structure construction would occur over two phases. Phase 1 construction would consist of a new 30,500 square foot milking parlor during the first year after application approval. Phase 2 construction would consist of new animal shelters totaling 185,000 square feet sometime during the first 10 years after Phase 1 totaling six months of actual construction activities. All proposed construction would occur within the existing facility footprint.

After modification, the dairy will house approximately 4,400 head of cattle. The existing and proposed herd configuration is provided in Table 2-1. The dairy will continue to operate 24 hours per day and 365 days per year. After expansion, the dairy will be operated on approximately 28 acres of the 290-acre facility. Approximately 242 acres of the project site will be used for the production of crops and the application of lagoon effluent and/or solid manure. The project cropland application areas are located on portions of six parcel.

Table 2-1. Herd Configuration – Existing and Proposed

	Current	Proposed	Increment
Milk Cows	1,063	2,500	1,437
Dry Cows	158	400	242
Bred Heifers 15-24 mos.	467	375	-92
Heifers 7-14 mos.	344	375	31
Heifers 4-6 mos.	0	375	375
Calves 0-3 mos.	186	375	189
Bulls	0	0	0
TOTAL	2,550	4,400	2,182

The proposed structure construction would consist of two new freestall barns, two new shade structures and a new milking parlor. The proposed expansion would include construction of 215,000 square feet of new buildings for a total of 312,700 square feet of building structures once construction is complete. With construction of the proposed facilities, approximately seven acres of cropped acreage would be converted to active dairy facilities.

3. RISK ASSESSMENT METHODOLOGY

This section describes the methodology used to predict the potential health risk to the population attributable to emissions of hazardous air pollutants from the proposed expansion of the dairy operation.

3.1. HAZARD IDENTIFICATION

The basis for evaluating potential health risk is the identification of sources of hazardous air pollutants (HAPs). The proposed dairy will include sources with the potential to emit HAPs. Pursuant to guidance by the San Joaquin Valley Air Pollution Control District¹ (SJVAPCD), emissions based on the current configuration of the dairy are considered to be existing emissions. Based on this fact, the facility's existing emissions are not included in the emissions proposed for the subject project. Therefore, emissions from the dairy modifications will be restricted to incremental emissions attributable to construction activities, animal movement, manure management, and land application of wastewater based on the proposed increase in the number of cattle (**Table 2-1**) and the additional on-site mobile sources required for the expansion.

Construction equipment sources include diesel-fueled dozers, loaders, backhoes, excavators, graders, cranes, forklifts, generator sets, concrete/industrial saws, and welders. CalEEMod default equipment listing for general light industrial usages were utilized. Default horsepower, daily operating hours, and load factors were also used. Operational mobile sources include a diesel-fueled feed loading tractor, a manure scraping tractor, a manure loading tractor, a feed delivery tractor, a bedding delivery tractor, milk tankers, commodity delivery trucks, manure removal trucks, and rendering services trucks. The increased herd size will require additional tractor use for feed loading and delivery, bedding delivery, and solid manure scraping and loading. Additional truck trips will be required for milk tankers, commodity delivery trucks, solid manure removal trucks, and rendering trucks. There will also be emission increases from the new freestalls, existing corrals, milk barn, lagoons and land application areas associated with increased herd size. HRA emission sources HRA are listed in **Table 3-1**.

Table 3-1. Sources of Potential Emissions

Source ID	Description
STCK1	Milk Truck Idling
STCK2	Commodity Delivery Idling
STCK3	Solid Manure Removal Truck Idling
STCK4	Rendering Truck Idling
STCK5	Feed Loading
STCK6	Solids Removal (Loader)
SLINE1	Milk Delivery Truck Travel
SLINE2	Commodity Delivery
SLINE3	Solid Manure Transport Offsite
SLINE4	Rendering Truck Travel
SLINE5-6	Feed and Bedding Delivery
PAREA1	New Freestalls and Scraping
PAREA2	Milk Barn
PAREA3-4	Lagoons
PAREA5-8	Land Application Areas
PAREA9-11	Construction Activities
PAREA12	Existing Corrals

¹ Personal Communication with Leland Villalvazo, San Joaquin Valley Air Pollution Control District, June 15, 2007.

Table 3-2 lists the toxic substances emitted from each of these activities and also presents the classification of these species as to their potential for producing carcinogenic and non-cancer acute or chronic health impacts, if any.

Table 3-2. Chemicals of Potential Concern

CAS	Pollutant	Source	Cancer	Non-Cancer	
				Acute	Chronic
9901	Diesel Exhaust, Particulate Matter	Tractors, Diesel Trucks	X		X
9960	Sulfates	Animal Movement		X	X
50000	Formaldehyde	Animal Movement	X	X	X
56235	Carbon tetrachloride	Animal Movement, Lagoons	X	X	X
67630	Isopropyl Alcohol	Animal Movement		X	X
67663	Chloroform	Animal Movement, Lagoons	X	X	X
71432	Benzene	Animal Movement, Lagoons	X	X	X
71556	1,1,1-trichloroethane	Lagoons		X	X
74873	Methyl Chloride	Animal Movement	X	X	X
75003	Ethyl Chloride	Animal Movement			X
75070	Acetaldehyde	Animal Movement	X		X
75150	Carbon disulfide	Animal Movement		X	X
75252	Tribromomethane *	Lagoons			
75694	Trichloromonofluoromethane *	Lagoons			
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	Lagoons			X
78933	Methyl Ethyl Ketone (MEK)	Animal Movement, Lagoons		X	X
79005	1,1,2-Trichloroethane	Animal Movement	X		
79016	Trichloroethylene	Animal Movement, Lagoons	X		X
79345	1,1,2,2-Tetrachloroethane	Animal Movement	X		
91203	Naphthalene	Animal Movement	X		X
95501	1,2-Dichlorobenzene *	Animal Movement, Lagoons			
95636	1,2,4-Trichlorobenzene *	Lagoons			
96128	1,2-Dibromo-3-chloropropane	Animal Movement	X		X
96184	1,2,3-Trichloropropane *	Animal Movement			
98828	Cumene *	Animal Movement			
100414	Ethylbenzene	Animal Movement			X
100425	Styrene	Animal Movement, Lagoons		X	X
100447	Benzyl chloride	Animal Movement	X	X	X
106467	1,4-Dichlorobenzene	Animal Movement, Lagoons	X		X
106934	1,2-Dibromoethane (EDB)	Animal Movement	X		X
106990	1,3-Butadiene	Lagoons	X		X
107062	1,2-Dichloroethane (EDC)	Animal Movement	X		X
107131	Acrylonitrile	Animal Movement	X		X
108054	Vinyl acetate	Animal Movement, Lagoons			X
108101	Methyl Isobutyl Ketone *	Animal Movement, Lagoons			
108883	Toluene	Animal Movement, Lagoons		X	X

CAS	Pollutant	Source	Cancer	Non-Cancer	
				Acute	Chronic
108907	Chlorobenzene	Animal Movement			X
110543	Hexane	Animal Movement			X
110827	Cyclohexane *	Animal Movement, Lagoons			
115071	Propylene	Lagoons			X
120821	1,2,4-Trichlorobenzene *	Animal Movement			
123728	Butyraldehyde *	Animal Movement			
123911	1,4 Dioxane	Animal Movement	X	X	X
127184	Tetrachloroethene	Animal Movement	X	X	X
541731	1,3-Dichlorobenzene *	Animal Movement, Lagoons			
764410	t-1,4-Dichloro-2-butene *	Animal Movement			
1330207	Xylene Isomers	Animal Movement, Lagoons		X	X
4170303	Crotonaldehyde *	Animal Movement			
7429905	Aluminum *	Animal Movement			
7439921	Lead	Animal Movement	X		
7439965	Manganese	Animal Movement			X
7439976	Mercury	Animal Movement		X	X
7440020	Nickel	Animal Movement	X	X	X
7440360	Antimony *	Animal Movement			
7440382	Arsenic	Animal Movement	X	X	X
7440393	Barium *	Animal Movement			
7440439	Cadmium	Animal Movement	X		X
7440473	Chromium *	Animal Movement			
7440508	Copper	Animal Movement		X	X
7440622	Vanadium	Animal Movement	X		
7440666	Zinc	Animal Movement			X
7664417	Ammonia	Animal Movement, Lagoons Wastewater Application		X	X
7723140	Phosphorus *	Animal Movement			
7726956	Bromine	Animal Movement			X
7782492	Selenium	Animal Movement			X
7782505	Chlorine	Animal Movement		X	X
18540299	Hexavalent Chromium	Animal Movement	X	X	X

*Health risk assessment values have not yet been assigned for this chemical.

3.2. EXPOSURE ASSESSMENT

3.2.1. Source Emissions and Characterization

Peak one-hour emission rates and annual-averaged emission rates were calculated for all pollutants for each modeled source. Emissions attribute to animal movement and manure management were estimated using PM₁₀ emission factors and HAPs speciation spreadsheets currently used by the SJVAPCD. Control efficiencies were applied to PM₁₀ emission factors for providing shaded areas, sprinklers, feed young stock at dusk, and planting upwind and downwind shelter breaks. The incremental increase in emissions attributable to cattle were calculated by comparing the emissions from each source based on the number and type of cattle pre and post

project. The project applicant provided pre and post cattle numbers. Emissions for tractors were calculated using the EPA's *Nonroad Compression-Ignition Engines - Exhaust Emission Standards* for the appropriate engine horsepower (HP) and year and load factors for the appropriate engine horsepower from California Emissions Estimator Model (CalEEMod) Appendix D, Tables 3.3 and 3.4. Diesel truck running and idling emissions are based on EMFAC2017 emission factors specific to Merced County for vehicle category "T7 Ag." Diesel trucks were assumed to have 15 minutes of idling per visit. There will be no increases in 1-hour emissions because additional truck and tractor usage will not occur in the same 1-hour period as the existing equipment. In order to have a possible increase in the worst case one-hour emissions from the Oliveira Dairy, one of the three following scenarios would need to occur and be evaluated:

- New equipment must operate at the facility as a result of the project;
- An existing on-site piece of equipment must operate less than one hour during the worst-case 1-hour period pre-project and then must increase the operational time during the worst-case 1-hour period post-project.
- The project must increase the number trucks entering and exiting the facility over the number of pre-project trucks entering and exiting the facility during the worst-case 1-hour period.

The Oliveira Dairy Expansion Project does not propose any new pieces of equipment and all existing equipment currently operates the full hour during the worst-case hour. The project also does not propose an increase over the current worst-case 1-hour period of trucks entering or exiting the facility. The same methodology principals as applied to 1-hour emissions above also result in no max 3-hour emissions increases (except for milk trucks and bedding delivery) and no max 8-hour and daily emission increases from manure removal trucks, rendering trucks, scraping and manure loading.

The SJVAPCD's *Dairy H₂S AERMOD Hourly Emission File Generator* states that H₂S emissions are only generated at dairies in lagoons used to store or treat collected waste material. The generator calculates emissions based on the surface area of the lagoon. As there will be no increase in the surface area of the existing lagoons, there will be no increase in H₂S emission associated with the proposed expansion.

The actual total construction activities of both Phase 1 and Phase 2 will be 1.5 years. Therefore, for the purposes of this HRA the total construction emissions will be average over a 70-year period to calculate an average annual emission rates for each source/phase. Total emissions for each phase were divided by 70 years to calculate the annual average emission rate. Phase 1 emissions were divided between two sources based on area of each source.

The calculation worksheets and CalEEMod output files for the emissions are provided in **Appendix A**. Hourly and annual emissions for each source are also provided in the HARP output files, electronic copies of which are provided on a CD in **Appendix B**.

3.2.2. Dispersion Modeling

A version of EPA's AMS/EPA Regulatory Model - AERMOD (recompiled for the Lakes ISC-AERMOD View interface) was used to predict the dispersion of emissions from the proposed dairy expansion. The construction activities, animal housing areas, manure scraping, milk barn, lagoon and land application areas were modeled as area sources. Unit emission rates for the area sources of 1 g/sec divided by the area of the source were input into AERMOD. The travel route for the feed and bedding delivery tractors, solid manure removal trucks, milk trucks, commodity trucks, and rendering trucks were modeled as line sources, which represents a series of volume sources, with a unit emission rate of 1 g/sec. The feed loading tractor, manure loading tractor, manure

truck idling, milk truck idling rendering services truck idling, commodity truck idling, and rendering truck idling were modeled as point sources, with a unit emission rate of 1 g/sec. Modeled sources are identified in **Table 3-1**.

All of the AERMOD regulatory default parameters were employed. Rural dispersion parameters were used because the facility and surrounding land are considered "rural" under the Auer land use classification method. The AERMOD files are provided in electronic format on a CD in **Appendix B**.

3.2.2.1. Meteorological Data

The SJVAPCD provided meteorological data for Merced County, California to be used for projects within Merced County. SJVAPCD-approved, AERMET Ustar-processed meteorological datasets for calendar years 2010 through 2014² was input into AERMOD. This was the most recent available dataset available at the time the modeling runs were conducted.

3.2.2.2. Receptors

Existing land uses in the area where the proposed dairy will be located are predominantly agriculture. There are scattered rural residences in the general area of the project; most of which are associated with local agricultural operations. A total of 65 off-site receptors of residences and 71 potential agricultural workers were assessed during the preparation of this HRA. There is currently one on-site residence, however, this residence is occupied by the dairy owner. Therefore, the owner's residence is exempt from being modeled.³ Coordinates for the point of maximum impact (PMI) receptors are provided in **Table 2-3**.

3.2.3. HARP Post-Processing

Plot files generated by AERMOD were imported to HARP CONVERSION software (Villalvazo 2015). HARP CONVERSION was used to adjust the AERMOD-predicted air concentrations calculated with unit emission rates to pollutant-specific emission rates and to generate source, X/Q and emission import files for HARP.

The files generated in HARP CONVERSION were then uploaded into the HARP to HARP 2 Converter (Villalvazo 2015), then to the Air Dispersion Modeling and Risk Assessment Tool (ADMRT) program in the Hotspots Analysis and Reporting Program Version 2 (HARP 2) (CARB 2015). ADMRT post-processing was used to assess the potential for excess cancer risk and chronic non-cancer effects using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA). ADMRT site parameters were set for mandatory minimum exposure pathways for carcinogenic risk. The deposition rate was set to 0.02 m/s. Risk reports were generated for carcinogenic risk, non-carcinogenic chronic risk and non-carcinogenic acute risk. Site parameters are included in the HARP output files.

3.3. RISK CHARACTERIZATION

For permitting and CEQA purposes, SJVAPCD has set the level of significance for carcinogenic risk at 20 in one million, which is understood as the possibility of causing twenty additional cancer cases in a population of one million people (SJVAPCD 2015b). The level of significance for chronic and acute non-cancer risk is a hazard index of one (SJVAPCD 2015c).

² Provided via website, San Joaquin Valley Air Pollution Control District (SJVAPCD), http://12.219.204.27/public/Modeling/Meteorological_Data/AERMET_v14134_UStar/Merced%2023257/

³ Personal communication with Leland Villalvazo, SJVAPCD, November 1, 2012.

HARP 2 post-processing was used to assess the potential for the following: excess cancer risk, acute non-cancer effects, and chronic non-cancer effects. Total cancer risk was predicted for inhalation and non-inhalation pathways at each receptor. The hazard index is computed by endpoint as the sum of the hazard indices for all relevant pollutants, the highest of which is designated as the total hazard index.

The carcinogenic risk predicted at the potentially impacted receptors does not exceed the significance level of twenty in one million (20×10^{-6}). The health hazard index (HI) for chronic non-cancer risk is below the significance level of 1.0 at all modeled residences. The excess cancer risk, acute non-cancer HIs, and chronic non-cancer HIs for the maximum modeled receptor are provided in **Table 3-3**. The HARP2 output files for cancer, acute, and chronic risks are provided in electronic format on a CD in **Appendix B**.

As shown below in **Table 3-3**, the maximum predicted cancer risk is 16.4E-06. Cancer risks are primarily attributable to emissions of diesel particulate matter (DPM) through the inhalation pathway. Carcinogenic risks are tabulated by pollutant in **Table 3-4**.

The maximum predicted acute non-cancer hazard index is 0.369. Acute risks are primarily attributable to emissions of ammonia, which affects the respiratory system and eyes. Acute risks are tabulated by pollutant in **Table 3-5**.

The maximum predicted chronic non-cancer hazard index is 0.156. Chronic risks, tabulated by pollutant in **Table 3-6**, are primarily attributable to emissions of ammonia and affect the respiratory system.

Table 3-3. Risk Predicted By HARP

	Maximum Lifetime Excess Cancer Risk	Maximum Non-Cancer Chronic Hazard Index	Maximum Non-Cancer Acute Hazard Index
Value	16.4E-06	1.56E-01	3.69E-01
Receptor #, Name	72, Off-Site Residence	14, Off-Site Ag Worker	32, Off-Site Ag Worker
UTM Easting (m)	716182.63	716100.43	716172.13
UTM Northing (m)	41128152.23	4128259.46	4128888.47

Table 3-4. Risk by Pollutant – Maximum Cancer Risk at Receptor #72

CHEM	INHAL	SOIL	DERM	MOTHER	WATER	FISH	CROP	BEEF	DAIRY	PIG	CHICK	EGG	TOTAL
DieselExhPM	1.00E-05	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.00E-05
Formaldehyde	2.00E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.00E-08
CCl4	1.02E-06	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.02E-06
Chloroform	6.90E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.90E-08
Benzene	4.08E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.08E-07
Acetaldehyde	5.77E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.77E-08
1,1,2TriClEthane	3.09E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.09E-08
TetraClEthane	4.18E-09	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.18E-09
Naphthalene	3.34E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.34E-07
DBCP	8.27E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.27E-07
Ethyl Benzene	7.23E-09	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.23E-09
Benzyl Chloride	1.17E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.17E-07
p-DiClBenzene	3.82E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.82E-07
EDB	1.83E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.83E-07
EDC	1.02E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.02E-08
Acrylonitrile	5.81E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.81E-07
1,4-Dioxane	9.13E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.13E-08
Perc	3.16E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.16E-08
Lead	2.31E-10	2.02E-09	4.30E-11	2.21E-11	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.32E-09
Nickel	1.00E-09	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.00E-09
Arsenic	3.01E-08	1.63E-07	6.93E-09	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.00E-07
Cr(VI)	5.62E-08	2.38E-09	3.38E-11	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.86E-08
TCE	2.32E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.32E-08
1,3-Butadiene	1.99E-06	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.99E-06
SUM	1.63E-05	1.67E-07	7.01E-09	2.21E-11	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.64E-05

Table 3-5. Risk by Pollutant – Maximum Acute Noncancer Risk at Receptor #32

CHEM	CV	CNS	IMMUN	KIDNEY	GILV	REPRO /DEVEL	RESP	SKIN	EYE	BONE /TEETH	ENDO	BLOOD	ODOR	GENERAL	MAX
SULFATES	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-03	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.01E-03
Formaldehyde	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+0	0.00E+0	1.83E-03	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.83E-03
CCl4	0.00E+0	2.99E-04	0.00E+00	0.00E+00	2.99E-04	2.99E-04	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.99E-04
Isopropyl Alcoh	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E-04	0.00E+0	1.28E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.28E-04
Chloroform	0.00E+0	2.06E-03	0.00E+00	0.00E+00	0.00E+00	2.06E-03	2.06E-03	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.06E-03
Benzene	0.00E+0	0.00E+00	1.32E-02	0.00E+00	0.00E+00	1.32E-02	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	1.32E-02	0.00E+00	0.00E+00	1.32E-02
Acetaldehyde	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E-03	0.00E+0	1.29E-03	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.29E-03
CS2	0.00E+0	1.01E-04	0.00E+00	0.00E+00	0.00E+00	1.01E-04	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.01E-04
MEK	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.03E-04	0.00E+0	8.03E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	8.03E-04
Styrene	2.28E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-05	2.28E-05	0.00E+0	2.28E-05	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.28E-05
Benzyl Chloride	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.04E-04	0.00E+0	3.04E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.04E-04
Toluene	0.00E+0	9.70E-05	0.00E+00	0.00E+00	0.00E+00	9.70E-05	9.70E-05	0.00E+0	9.70E-05	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	9.70E-05
1,4-Dioxane	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-04	0.00E+0	1.19E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.19E-04
Perc	0.00E+0	7.63E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.63E-06	0.00E+0	7.63E-06	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	7.63E-06
Xylenes	0.00E+0	3.44E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.44E-05	0.00E+0	3.44E-05	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.44E-05
Mercury	0.00E+0	1.11E-04	0.00E+00	0.00E+00	0.00E+00	1.11E-04	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.11E-04
Nickel	0.00E+0	0.00E+00	5.84E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.84E-04
Arsenic	1.33E-03	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Copper	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.19E-05
Vanadium	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.66E-05	0.00E+0	1.66E-05	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.66E-05
NH3	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.63E-01	0.00E+0	3.63E-01	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.63E-01
1,1,1-TCA	0.00E+0	1.62E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.62E-05
1,3-Butadiene	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.19E-04	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.19E-04
SUM	1.35E-03	4.06E-03	1.38E-02	0.00E+00	2.99E-04	1.77E-02	3.69E-01	0.00E+0	3.68E-01	0.00E+00	0.00E+0	1.32E-02	0.00E+00	0.00E+00	3.69E-01

Table 3-6. Risk by Pollutant – Maximum Chronic Noncancer Risk at Receptor #14

CHEM	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/ DEVEL	RESP	SKIN	EYE	BONE/ TEETH	ENDO	BLOOD	ODOR	GENERAL	MAX
DieselExhPM	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	4.11E-03	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.11E-03
Formaldehyde	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	2.29E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.29E-04
CCl4	0.00E+00	4.61E-04	0.00E+0	0.00E+0	4.61E-04	4.61E-04	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.61E-04
Isopropyl Alcoh	0.00E+00	0.00E+0	0.00E+0	1.20E-06	0.00E+00	1.20E-06	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.20E-06
Chloroform	0.00E+00	0.00E+0	0.00E+0	3.25E-05	3.25E-05	3.25E-05	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.25E-05
Benzene	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	3.57E-03	0.00E+00	0.00E+00	3.57E-03
Ethyl Chloride	0.00E+00	0.00E+0	0.00E+0	0.00E+0	4.14E-08	4.14E-08	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.14E-08
Acetaldehyde	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	8.94E-05	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	8.94E-05
CS2	0.00E+00	1.61E-05	0.00E+0	0.00E+0	0.00E+00	1.61E-05	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.61E-05
Naphthalene	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	6.71E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	6.71E-04
Ethyl Benzene	0.00E+00	0.00E+0	0.00E+0	9.00E-07	9.00E-07	9.00E-07	0.00E+0	0.00E+00	0.00E+0	0.00E+0	9.00E-07	0.00E+00	0.00E+00	0.00E+00	9.00E-07
Styrene	0.00E+00	1.62E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.62E-05
p-DiClBenzene	0.00E+00	3.17E-05	0.00E+0	3.17E-05	3.17E-05	0.00E+0	3.17E-05	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.17E-05
EDB	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	1.99E-03	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.99E-03
EDC	0.00E+00	0.00E+0	0.00E+0	0.00E+0	7.65E-07	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	7.65E-07
Acrylonitrile	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	2.52E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.52E-04
Vinyl Acetate	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	5.04E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.04E-04
Toluene	0.00E+00	3.80E-04	0.00E+0	0.00E+0	0.00E+00	3.80E-04	3.80E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.80E-04
Chlorobenzn	0.00E+00	0.00E+0	0.00E+0	1.41E-06	1.41E-06	1.41E-06	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.41E-06
Hexane	0.00E+00	6.03E-07	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	6.03E-07
1,4-Dioxane	2.44E-06	0.00E+0	0.00E+0	2.44E-06	2.44E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.44E-06
Perc	0.00E+00	0.00E+0	0.00E+0	9.37E-05	9.37E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	9.37E-05
Xylenes	0.00E+00	2.76E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	2.76E-05	0.00E+00	2.76E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.76E-05
Manganese	0.00E+00	3.14E-03	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.14E-03
Mercury	0.00E+00	1.05E-04	0.00E+0	1.05E-04	0.00E+00	1.05E-04	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.05E-04
Nickel	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	1.29E-06	1.86E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	1.86E-04	0.00E+00	0.00E+00	1.86E-04
Arsenic	1.12E-02	1.12E-02	0.00E+0	0.00E+0	0.00E+00	1.12E-02	1.12E-02	1.12E-02	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.12E-02
NH3	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	1.39E-01	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.39E-01
Selenium	4.41E-07	4.41E-07	0.00E+0	0.00E+0	4.41E-07	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.41E-07
Cr(VI)	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	1.30E-06	0.00E+00	0.00E+0	0.00E+0	0.00E+0	7.10E-08	0.00E+00	0.00E+00	1.30E-06
1,1,1-TCA	0.00E+00	3.63E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.63E-05
TCE	0.00E+00	1.51E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	1.51E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.51E-05
1,3-Butadiene	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	4.53E-03	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.53E-03
Propylene	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	3.94E-05	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.94E-05
SUM	1.12E-02	1.55E-02	0.00E+0	2.68E-04	6.25E-04	1.88E-02	1.56E-01	1.12E-02	4.27E-05	0.00E+0	9.00E-07	3.76E-03	0.00E+00	0.00E+00	1.56E-01

4. CONCLUSIONS

In accordance with the *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a) and San Joaquin Valley Air Pollution Control District policies (SJVAPCD 2015b; SJVAPCD 2016c), the unmitigated potential health risk attributable to the Oliveira Dairy expansion for chronic and acute carcinogenic and non- carcinogenic risk is determined to be less than significant based on the following conclusion:

- Potential chronic carcinogenic risk from the proposed facility is *below* the significance level of twenty in one million at each of the modeled receptors;
- The hazard index for the potential chronic non-cancer risk from the proposed facility is *below* the significance level of 1.0 at each of the modeled receptors.
- The hazard index for the potential acute non-cancer risk from the proposed facility is *below* the significance level of 1.0 at each of the modeled receptors.

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APPENDIX A: EMISSION ESTIMATION WORKSHEETS

Pre-Project Facility Information

- Does this facility house Holstein or Jersey cows?
Most facilities house Holstein cows unless explicitly stated on the PTO or application.
- Does the facility have an anaerobic treatment lagoon?
- Does the facility land apply liquid manure?
Answering "yes" assumes worst case.
- Does the facility land apply solid manure?
Answering "yes" assumes worst case.
- Is any scraped manure sent to a lagoon?
Answering "yes" assumes worst case.

Pre-Project Herd Size							
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals		
Milk Cows	1,063				1,063		
Dry Cows	158				158		
Support Stock (Heifers, Calves, and Bulls)					0		
Large Heifers				467	467		
Medium Heifers				344	344		
Small Heifers					0		
Bulls					0		
	Calf Hutches				Calf Corrals		Total # of Calves
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	
Calves				186			186

Total Herd Summary	
Total Milk Cows	1,063
Total Mature Cows	1,221
Support Stock (Heifers, Calves, and Bulls)	811
Total Calves	186
Total Dairy Head	2,218

Pre-Project Silage Information			
Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn			
Alfalfa			
Wheat			

Post-Project Facility Information

- Does this facility house Holstein or Jersey cows?
Most facilities house Holstein cows unless explicitly stated on the PTO or application.
- Does the facility have an anaerobic treatment lagoon?
- Does the facility land apply liquid manure?
Answering "yes" assumes worst case.
- Does the facility land apply solid manure?
Answering "yes" assumes worst case.
- Is any scraped manure sent to a lagoon?
- Does this project result in any new lagoon/storage pond(s) or an increase in surface area for any existing lagoon/storage pond(s)?

Post-Project Herd Size							
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals		
Milk Cows	2,500				2,500		
Dry Cows	400				400		
Support Stock (Heifers, Calves, and Bulls)					0		
Large Heifers				375	375		
Medium Heifers				375	375		
Small Heifers				375	375		
Bulls					0		
	Calf Hutches				Calf Corrals		Total # of Calves
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	
Calves				375			375

Total Herd Summary	
Total Milk Cows	2,500
Total Mature Cows	2,900
Support Stock (Heifers, Calves, and Bulls)	1,125
Total Calves	375
Total Dairy Head	4,400

Post-Project Silage Information			
Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn			
Alfalfa			
Wheat			

Control Measure	PM10 Control Efficiency
Shaded corrals (milk and dry cows)	16.7%
Shaded corrals (heifers and bulls)	8.3%
Downwind shelterbelts	12.5%
Upwind shelterbelts	10%
Freestall with no exercise pens and non-manure based bedding	90%
Freestall with no exercise pens and manure based bedding	80%
Fibrous layer in dusty areas (i.e. hay, etc.)	10%
Bi-weekly corral/exercise pen scraping and/or manure removal using a pull type manure harvesting equipment in morning hours when moisture in air except during periods of rainy weather	15%
Sprinkling of open corrals/exercise pens	15%
Feeding young stock (heifers and calves) near dusk	10%

Pre-Project PM10 Mitigation Measures

[illegible][illegible]

Post-Project PM10 Mitigation Measures

Post-Project PM10 Mitigation Measures															
	Housing Name(s) #(s)	Type of Housing	Type of cow	Total # of cows in All Housing Structure(s)	Maximum Design Capacity of Each Structure	# of Combined Housing Structures in row	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk
1	Free Stalls 1	freestall	milk cows	1,063			☐	☒	☒	☐	☐	☐	☐	☒	☐
2	Free Stalls 1	freestall	dry cows	158			☐	☒	☒	☐	☐	☐	☐	☒	☐
3	Corrals 1	open corral	large heifers	375			☒	☒	☒	☐	☐	☐	☐	☒	☐
4	Corrals 1	open corral	medium heifers	375			☒	☒	☒	☐	☐	☐	☐	☒	☐
5	Corrals 1	open corral	calves	375			☒	☒	☒	☐	☐	☐	☐	☒	☒
6	Corrals 1	open corral	small heifers	375			☒	☒	☒	☐	☐	☐	☐	☒	☐
Post-Project PM10 Mitigation Measures for New Housing Units at an Expanding Dairy															
	Housing Name(s) #(s)	Type of Housing	Type of cow	Total # of cows in All Housing Structure(s)	Maximum Design Capacity of Each Structure	# of Combined Housing Structures in row	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk
1	Free Stalls 2	freestall	milk cows	1,437			☐	☒	☒	☐	☐	☐	☐	☒	☐
2	Free Stalls 2	freestall	dry cows	242			☐	☒	☒	☐	☐	☐	☐	☒	☐
Post-Project Total # of Cows				4,400		(The post-project total includes 2,721 dairy cows already on-site and 1679 new cows from the expansion.)									

Post-Project PM10 Control Efficiencies and Emission Factors																
	Housing Name(s) #(s)	Type of Housing	Type of cow	Total # of cows in All Housing Structure(s)	Maximum Design Capacity of Each Structure	Uncontrolled EF (lb/hd-yr)	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk	Controlled EF (lb/hd-yr)
1	Free Stalls 1	freestall	milk cows	1,063		1.370		12.5%	10%					15%		0.92
2	Free Stalls 1	freestall	dry cows	158		1.370		12.5%	10%					15%		0.92
3	Corrals 1	open corral	large heifers	375		10.550	8.3%	12.5%	10%					15%		6.48
4	Corrals 1	open corral	medium heifers	375		10.550	8.3%	12.5%	10%					15%		6.48
5	Corrals 1	open corral	calves	375		1.370	8.3%	12.5%	10%					15%	10%	0.76
6	Corrals 1	open corral	small heifers	375		10.550	8.3%	12.5%	10%					15%		6.48
Post-Project PM10 Control Efficiencies and Emission Factors for New Housing Emissions Units																
	Housing Name(s) #(s)	Type of Housing	Type of cow	Total # of cows in All Housing Structure(s)	Maximum Design Capacity of Each Structure	Uncontrolled EF (lb/hd-yr)	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk	Controlled EF (lb/hd-yr)
1	Free Stalls 2	freestall	milk cows	1437		1.370		12.5%	10%					15%		0.92
2	Free Stalls 2	freestall	dry cows	242		1.370		12.5%	10%					15%		0.92

Pre-Project Potential to Emit - Cow Housing

Pre-Project Potential to Emit - Cow Housing												
	Housing Name(s) or #s)	Type of Cow	# of Cows	Controlled VOC EF (lb/hd-yr)	Controlled NH3 EF (lb/hd-yr)	Controlled PM10 EF (lb/hd-yr)	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)
1	Free Stalls 1	milk cows	1,063	10.88	23.29	1.37	31.7	11,565	67.8	24,759	4.0	1,456
2	Free Stalls 1	dry cows	158	6.12	11.81	1.37	2.6	967	5.1	1,866	0.6	216
3	Corrals 1	large heifers	467	4.7	6.12	10.55	6.0	2,195	7.8	2,858	13.5	4,927
4	Corrals 1	medium heifers	344	3.2	4.43	10.55	3.0	1,101	4.2	1,523	9.9	3,629
5	Corrals 1	calves	186	0.85	1.01	1.37	0.4	158	0.5	187	0.7	255
Pre-Project Total # of Cows			2,218				43.7	15,986	85.4	31,193	28.7	10,483

Pre-Project Totals						
Total # of Cows	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)
2,218	43.7	15,986	85.4	31,193	28.7	10,483

Calculations:

Annual PE 1 for each pollutant (lb/yr) = Controlled EF (lb/hd-yr) x # of cows (hd)

Daily PE1 for each pollutant (lb/day) = [Controlled EF (lb/hd-yr) x # of cows (hd)] ÷ 365 (day/yr)

Post-Project Potential to Emit - Cow Housing

Post-Project Potential to Emit - Cow Housing												
	Housing Name(s) or #s)	Type of Cow	# of Cows	Controlled VOC EF (lb/hd-yr)	Controlled NH3 EF (lb/hd-yr)	Controlled PM10 EF (lb/hd-yr)	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)
1	Free Stalls 1	milk cows	1,063	10.88	23.29	0.92	31.7	11,565	67.8	24,759	2.7	975
2	Free Stalls 1	dry cows	158	6.12	11.81	0.92	2.6	967	5.1	1,866	0.4	145
3	Corrals 1	large heifers	375	4.7	6.12	6.48	4.8	1,763	6.3	2,295	6.7	2,429
4	Corrals 1	medium heifers	375	3.2	4.43	6.48	3.3	1,200	4.6	1,661	6.7	2,429
5	Corrals 1	calves	375	0.85	1.01	0.76	0.9	319	1.0	378	0.8	284
6	Corrals 1	small heifers	375	1.78	3.31	6.48	1.8	668	3.4	1,242	6.7	2,429
Post-Project # of Cows (non-expansion)			2,721				45.1	16,482	88.2	32,201	24.0	8,691

Post-Project Potential to Emit - Cow Housing: New Freestalls at Existing Dairy												
	Housing Name(s) or #s	Type of Cow	# of Cows	Controlled VOC EF (lb/hd-yr)	Controlled NH3 EF (lb/hd-yr)	Controlled PM10 EF (lb/hd-yr)	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)
1	Free Stalls 2	milk cows	1437	10.88	23.29	0.92	42.8	15,635	91.7	33,471	3.6	1,318
2	Free Stalls 2	dry cows	242	6.12	11.81	0.92	4.1	1,481	7.8	2,858	0.6	222
Total # of Cows From Expansion			1,679				46.9	17,116	99.5	36,329	4.2	1,540

Post-Project Totals						
Total # of Cows	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)
4,400	92.0	33,598	187.7	68,530	28.2	10,231

Calculations:

Annual PE 2 for each pollutant (lb/yr) = Controlled EF (lb/hd-yr) x # of cows (hd)

Daily PE2 for each pollutant (lb/day) = [Controlled EF (lb/hd-yr) x # of cows (hd)] ÷ 365 (day/yr)

Increase in Emissions

SSiPE (lb/yr)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	575	197	0
Cow Housing	0	0	-252	0	17,612	37,337	0
Liquid Manure	0	0	0	0	3,918	19,751	0
Solid Manure	0	0	0	0	791	4,533	0
Feed Handling	0	0	0	0	19,798	0	0
Total	0	0	-252	0	42,693	61,817	0

Total Daily Change in Emissions (lb/day)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0.0	0.0	0.0	0.0	1.5	0.5	0.0
Cow Housing	0.0	0.0	-0.5	0.0	48.3	102.3	0.0
Liquid Manure	0.0	0.0	0.0	0.0	10.6	54.0	0.0
Solid Manure	0.0	0.0	0.0	0.0	2.2	12.4	0.0
Feed Handling	0.0	0.0	0.0	0.0	54.2	0.0	0.0
Total	0.0	0.0	-0.5	0.0	116.8	169.2	0.0

Total Annual Change in Non-Fugitive Emissions (Major Source Emissions) (lb/yr)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	0	0	0
Cow Housing	0	0	0	0	0	0	0
Liquid Manure	0	0	0	0	1,888	0	0
Solid Manure	0	0	0	0	0	0	0
Feed Handling	0	0	0	0	0	0	0
Total	0	0	0	0	1,888	0	0

Name		Guidance, Area Inputs for Dairy Operations						
Applicability	Provide Guidance for determining emissions from Dairy Operations and facilitate input of emissions into HEARTS (Cut and Paste). Entries required in yellow areas, output in grey areas.							
Author or updater				Last Update	November 27, 2012			
Facility:	Oliveira							
ID#:								
Project #:								
Inputs	Area m ²		Formula					
Milk Parlor	2,739.00		Typically there is only one Milk Parlor, 2 Cow Housing areas, and 2 lagoons. There is an extra entry for each if needed. Leave blank if not used.					
Milk Parlor 2								
Cow Housing	29,113.00							
Cow Housing 2	18,964.20							
Cow Housing 3								
Cow Housing 4								
Cow Housing 5								
Cow Housing 6								
Cow Housing 7								
Cow Housing 8								
Cow Housing 9								
Cow Housing 10								
Cow Housing 11								
Lagoon	10,484.00							
Lagoon 2	6,841.80							
Lagoon 3								
The process ammonia is determined by the Dairy ammonia calculator (tab) and assigned to the cow housing, milk parlor, lagoons, and land application.								
Particulate emissions are only emitted in the cow housing. In the milk parlor the cows are considered stationary and therefore particulates are not released.								
The miscellaneous emissions (spreadsheet tab) are emitted in both the cow housing and milk parlor.								
Dairy Areas	Ammonia Area	Ammonia Fraction	Particulate Area	Particulate Fraction	Misc Area	Misc Fraction	Lagoon Area	Lagoon Fraction
Milk Parlor	2,739.00	1.00			2,739.00	0.05		
Milk Parlor 2	0.00	0.00			0.00	0.00		
Cow Housing	29,113.00	0.61	29,113.00	0.61	29,113.00	0.57		
Cow Housing 2	18,964.20	0.39	18,964.20	0.39	18,964.20	0.37		
Cow Housing 3	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 4*	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 5*	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 6*	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 7*	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 8	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 9**	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 10**	0.00	0.00	0.00	0.00	0.00	0.00		
Cow Housing 11	0.00	0.00	0.00	0.00	0.00	0.00		
Lagoon	10,484.00	0.61					10,484.00	0.61
Lagoon 2	6,841.80	0.39					6,841.80	0.39
Lagoon 3	0.00	0.00					0.00	0.00
Totals			48,077.20	1.00	50,816.20	1.00	17,325.80	1.00

Name	Agricultural Ammonia Emissions from Dairy Operations					
Applicability	Use this spreadsheet when the emissions are from a Dairy and the number of head of each cow type are known (e.g. Dairy operations). Entries required in yellow areas, output in grey areas.					
<i>Author or updater</i>		<i>Last</i>	November 27, 2012			
Facility:	Oliveira					
ID#:						
Project #:						
Formula						
Enter the number of head for each cow type under the # of Head column. The emissions determined are a result of the # of Head multiplied by the appropriate emission factor from the Am EF table.						
Cow Type	# of Head	Emissions (lb NH3/Yr)				
		Milking Parlor		Liquid Manure Handling	Solid Manure Handling	Land Application
Milk Cows	1437	273.03		11,783.40	1,911.21	15,792.63
Dry Cows	242	N/A		1,016.40	162.14	1,345.52
Large Heifers (15-24 mo)	-92	N/A		-202.40	-32.20	-262.20
Medium Heifers (7-14 mo)	31	N/A		46.50	7.75	64.79
Small Heifers (3-6 mo)	375	N/A		450.00	67.50	600.00
Calves (0-3 mo)	189	N/A		66.15	11.34	86.94
Total for each source Yearly		273.03		13,160.05	2,127.74	17,627.68
Total for each source hourly		3.117E-02		1.502E+00	2.429E-01	2.012E+00
Cow Type	# of Head	Emissions (lb NH3/Yr)				
		Cow Housing 1				
Milk Cows	1437	76,592.10				
Dry Cows	242	6,534.00				
Large Heifers (15-24 mo)		0.00				
Medium Heifers (7-14 mo)		0.00				
Small Heifers (3-6 mo)		0.00				
Calves (0-3 mo)		0.00				
Total for each source Yearly		83,126.10				
Total for each source hourly		9.489E+00				
		Cow Housing 2				
Milk Cows		0.00				
Dry Cows		0.00				
Large Heifers (15-24 mo)	-92	-1,288.00				
Medium Heifers (7-14 mo)	31	310.00				
Small Heifers (3-6 mo)	375	2,850.00				
Calves (0-3 mo)	189	415.80				
Total for each source Yearly		2,287.80				
Total for each source hourly		2.612E-01				

Name	PM₁₀ based Agricultural Emissions from Operations generating Dust from Livestock Soil					
Applicability	Use this spreadsheet when the emissions are from the Livestock Soil sources and the PM ₁₀ rates are known (e.g. Dairy operations). Entries required in yellow areas, output in grey areas.					
<i>Author or updater</i>		<i>Last Update</i>	November 27, 2012			
Facility:	Oliveira					
ID#:						
Project #:						
			Formula			
			Multiplications of each corresponding PM ₁₀ Rate and wt fraction. Cow Housing is total * area Fraction.			
		Inputs	PM ₁₀ Rate lb/hr	PM ₁₀ Rate lb/yr	PM ₁₀ Rate lb/hr	PM ₁₀ Rate lb/yr
	PM ₁₀ Emissions		0.18	1540.00	-0.13	-1240.00
Substances	CAS#	Weight Fraction Livestock PM₁₀ Dust*	Cow Housing 1 LB/HR	Cow Housing 1 LB/YR	Cow Housing 2 LB/HR	Cow Housing 2 LB/YR
Aluminum	7429905	4.66E-02	8.16E-03	7.18E+01	-6.22E-03	-5.78E+01
Antimony	7440360	1.90E-05	3.33E-06	2.93E-02	-2.53E-06	-2.36E-02
Arsenic	7440382	1.60E-05	2.80E-06	2.46E-02	-2.13E-06	-1.98E-02
Barium	7440393	4.69E-04	8.21E-05	7.22E-01	-6.25E-05	-5.82E-01
Bromine	7726956	4.40E-05	7.70E-06	6.78E-02	-5.87E-06	-5.46E-02
Chromium	7440473	1.40E-05	2.45E-06	2.16E-02	-1.87E-06	-1.74E-02
Copper	7440508	1.32E-04	2.31E-05	2.03E-01	-1.76E-05	-1.64E-01
Hex Chrome**	18540299	7.00E-07	1.23E-07	1.08E-03	-9.33E-08	-8.68E-04
Lead	7439921	3.50E-05	6.13E-06	5.39E-02	-4.67E-06	-4.34E-02
Manganese	7439965	7.59E-04	1.33E-04	1.17E+00	-1.01E-04	-9.41E-01
Mercury	7439976	4.00E-06	7.00E-07	6.16E-03	-5.33E-07	-4.96E-03
Nickel	7440020	7.00E-06	1.23E-06	1.08E-02	-9.33E-07	-8.68E-03
Phosphorus	7723140	4.01E-02	7.02E-03	6.18E+01	-5.35E-03	-4.98E+01
Selenium	7782492	1.00E-06	1.75E-07	1.54E-03	-1.33E-07	-1.24E-03
Sulfates	9960	7.28E-03	1.27E-03	1.12E+01	-9.71E-04	-9.03E+00
Vanadium	7440622	3.00E-05	5.25E-06	4.62E-02	-4.00E-06	-3.72E-02
Zinc	7440666	3.42E-04	5.99E-05	5.27E-01	-4.56E-05	-4.24E-01
Process Ammonia	7664417		9.4893	83126.1000	0.2612	2287.8000
Formula	Process Ammonia is calculated by multiplying the Cow Housing ammonia rate from th					
References:						
* Based on a composite of recent EPA speciations of Kern County feedlot soil samples - http://cfpub.epa.gov/si/speciate/ehpa_speciate_browse_details.cfm?ptype=P&pnumber=4177						
**Hexavalent chromium is assumed to be 5% of chromium.						

Name	Agricultural Lagoon Emissions from Dairy Operations									
Applicability	Use this spreadsheet when the emissions are from the Dairy Lagoon sources and the # of cows are known. Enter the fraction amount of total ammonia determined by the ratio of area sources. Entries required in yellow areas, output in grey areas									
<i>Author or updater</i>			<i>Last Update</i>	November 27, 2012						
Facility:	Oliveira									
ID#:										
Project #:										
Inputs			Formula							
Total # of Cows	2182		Multiplications of the # of Cows and emission factors. Hourly = yearly / 8760 hrs Totals below.							
			Lagoon Area Fraction		0.61	0.39		0.00		
Substances	CAS#	Emissions Factors (lb/Head/yr)*	LB/HR	LB/YR	Lagoon LB/HR	Lagoon LB/YR	Lagoon 2 LB/HR	Lagoon 2 LB/YR	Lagoon 3 LB/HR	Lagoon 3 LB/YR
1,1,1-trichloroethane	71556	4.00E-02	9.96E-03	8.73E+01	6.03E-03	5.28E+01	3.93E-03	3.45E+01	0.00E+00	0.00E+00
1,1,2-trichloro-1,2,2-trifluoroethane	76131	2.00E-02	4.98E-03	4.36E+01	3.01E-03	2.64E+01	1.97E-03	1.72E+01	0.00E+00	0.00E+00
1,2,4-trichlorobenzene	95636	1.00E-02	2.49E-03	2.18E+01	1.51E-03	1.32E+01	9.84E-04	8.62E+00	0.00E+00	0.00E+00
1,2-dichlorobenzene	95501	1.41E+00	3.52E-01	3.08E+03	2.13E-01	1.87E+03	1.39E-01	1.22E+03	0.00E+00	0.00E+00
1,3-Butadiene	106990	1.00E-02	2.49E-03	2.18E+01	1.51E-03	1.32E+01	9.84E-04	8.62E+00	0.00E+00	0.00E+00
1,3-dichlorobenzene	541731	2.50E-02	6.23E-03	5.46E+01	3.77E-03	3.30E+01	2.46E-03	2.15E+01	0.00E+00	0.00E+00
1,4-Dichlorobenzene	106467	2.50E-02	6.23E-03	5.46E+01	3.77E-03	3.30E+01	2.46E-03	2.15E+01	0.00E+00	0.00E+00
Benzene	71432	1.00E-02	2.49E-03	2.18E+01	1.51E-03	1.32E+01	9.84E-04	8.62E+00	0.00E+00	0.00E+00
carbon tetrachloride	56235	2.00E-02	4.98E-03	4.36E+01	3.01E-03	2.64E+01	1.97E-03	1.72E+01	0.00E+00	0.00E+00
Chloroform	67663	1.00E-02	2.49E-03	2.18E+01	1.51E-03	1.32E+01	9.84E-04	8.62E+00	0.00E+00	0.00E+00
Cyclohexane	110827	1.00E-02	2.49E-03	2.18E+01	1.51E-03	1.32E+01	9.84E-04	8.62E+00	0.00E+00	0.00E+00
Methyl Ethyl Ketone (2-butanone)	78933	2.44E-01	6.08E-02	5.32E+02	3.68E-02	3.22E+02	2.40E-02	2.10E+02	0.00E+00	0.00E+00
Methyl Isobutyl Ketone	108101	5.70E-02	1.42E-02	1.24E+02	8.59E-03	7.53E+01	5.61E-03	4.91E+01	0.00E+00	0.00E+00
propylene	115071	1.30E-01	3.24E-02	2.84E+02	1.96E-02	1.72E+02	1.28E-02	1.12E+02	0.00E+00	0.00E+00
Styrene	100425	1.40E-02	3.49E-03	3.05E+01	2.11E-03	1.85E+01	1.38E-03	1.21E+01	0.00E+00	0.00E+00
Toluene	108883	1.20E-01	2.99E-02	2.62E+02	1.81E-02	1.58E+02	1.18E-02	1.03E+02	0.00E+00	0.00E+00
tribromomethane	75252	4.44E-01	1.11E-01	9.69E+02	6.69E-02	5.86E+02	4.37E-02	3.83E+02	0.00E+00	0.00E+00
Trichloroethylene	79016	1.00E-02	2.49E-03	2.18E+01	1.51E-03	1.32E+01	9.84E-04	8.62E+00	0.00E+00	0.00E+00
Trichloromonofluoromethane	75694	2.20E-02	5.48E-03	4.80E+01	3.32E-03	2.90E+01	2.16E-03	1.90E+01	0.00E+00	0.00E+00
vinyl acetate	108054	1.00E-01	2.49E-02	2.18E+02	1.51E-02	1.32E+02	9.84E-03	8.62E+01	0.00E+00	0.00E+00
Xylenes	1330207	1.10E-02	2.74E-03	2.40E+01	1.66E-03	1.45E+01	1.08E-03	9.48E+00	0.00E+00	0.00E+00
Process Ammonia	7664417				1.056E+00	9.3E+03	6.892E-01	6,037.0	0.000E+00	0.0
Formula	Process Ammonia is calculated by multiplying the sum of Solid and Liquid manure handling ammonia rates from the Dairy Ammonia Calculator* Ammonia area fraction from first worksheet.									
References:										
*Based on data used to establish the District's volatile organic compound (VOC) emission factor for dairies										
Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPS Current as of update date										
(Does not include emissions from Miscellaneous Processes or enteric emissions from cows)										

Name		Agricultural Miscellaneous Emissions from Dairy Operations											
Applicability		Use this spreadsheet to characterize the miscellaneous emissions from Dairy sources and the # of cows are known. Entries required in yellow areas, output in grey areas.											
Author or updater				Last Update	November 27, 2012								
Facility:		Oliveira											
ID#:													
Project #:													
Inputs		Formula											
Total # of Cows		2182		Multiplications of the # of Cows and emission factors. Hourly = yearly / 8760 hrs Totals below.									
				Misc Cow Fraction		0.05		0.00		0.57		0.37	
Substances	CAS#	Toxic Emissions Factors (lb/Head/yr)*	LB/HR	LB/YR	Milk Parlor LB/HR	Milk Parlor LB/YR	Milk Parlor 2 LB/HR	Milk Parlor 2 LB/YR	Cow Housing LB/HR	Cow Housing LB/YR	Cow Housing 2 LB/HR	Cow Housing 2 LB/YR	
1,1,2,2-Tetrachloroethane	79345	9.71E-05	2.42E-05	2.12E-01	1.30E-06	1.14E-02	0.00E+00	0.00E+00	1.39E-05	1.21E-01	9.03E-06	7.91E-02	
1,1,2-Trichloroethane	79005	2.52E-03	6.27E-04	5.49E+00	3.38E-05	2.96E-01	0.00E+00	0.00E+00	3.59E-04	3.15E+00	2.34E-04	2.05E+00	
1,2,3-Trichloropropane	96184	3.07E-03	7.65E-04	6.70E+00	4.13E-05	3.61E-01	0.00E+00	0.00E+00	4.38E-04	3.84E+00	2.86E-04	2.50E+00	
1,2,4-Trichlorobenzene	120821	8.66E-03	2.16E-03	1.89E+01	1.16E-04	1.02E+00	0.00E+00	0.00E+00	1.24E-03	1.08E+01	8.05E-04	7.05E+00	
1,2-Dibromo-3-chloropropane	96128	5.49E-04	1.37E-04	1.20E+00	7.37E-06	6.46E-02	0.00E+00	0.00E+00	7.83E-05	6.86E-01	5.10E-05	4.47E-01	
1,2-Dichlorobenzene	95501	6.10E-03	1.52E-03	1.33E+01	8.18E-05	7.17E-01	0.00E+00	0.00E+00	8.70E-04	7.62E+00	5.67E-04	4.96E+00	
1,3-Dichlorobenzene	541731	5.45E-03	1.36E-03	1.19E+01	7.32E-05	6.41E-01	0.00E+00	0.00E+00	7.78E-04	6.81E+00	5.07E-04	4.44E+00	
1,4 Dioxane	123911	1.57E-02	3.90E-03	3.42E+01	2.10E-04	1.84E+00	0.00E+00	0.00E+00	2.24E-03	1.96E+01	1.46E-03	1.28E+01	
1,4-Dichlorobenzene	106467	5.77E-03	1.44E-03	1.26E+01	7.75E-05	6.78E-01	0.00E+00	0.00E+00	8.23E-04	7.21E+00	5.36E-04	4.70E+00	
Acetaldehyde	75070	2.68E-02	6.68E-03	5.85E+01	3.60E-04	3.15E+00	0.00E+00	0.00E+00	3.82E-03	3.35E+01	2.49E-03	2.18E+01	
Acrylonitrile	107131	2.70E-03	6.72E-04	5.89E+00	3.62E-05	3.17E-01	0.00E+00	0.00E+00	3.85E-04	3.37E+00	2.51E-04	2.20E+00	
Benzene	71432	3.54E-03	8.83E-04	7.73E+00	4.76E-05	4.17E-01	0.00E+00	0.00E+00	5.06E-04	4.43E+00	3.29E-04	2.89E+00	
Benzyl chloride	100447	3.21E-03	8.00E-04	7.00E+00	4.31E-05	3.78E-01	0.00E+00	0.00E+00	4.58E-04	4.01E+00	2.98E-04	2.61E+00	
Butyraldehyde	123728	1.27E-03	3.15E-04	2.76E+00	1.70E-05	1.49E-01	0.00E+00	0.00E+00	1.81E-04	1.58E+00	1.18E-04	1.03E+00	
Carbon Disulfide	75150	2.77E-02	6.90E-03	6.04E+01	3.72E-04	3.26E+00	0.00E+00	0.00E+00	3.95E-03	3.46E+01	2.57E-03	2.25E+01	
carbon tetrachloride	56235	6.52E-04	1.62E-04	1.42E+00	8.76E-06	7.67E-02	0.00E+00	0.00E+00	9.31E-05	8.15E-01	6.06E-05	5.31E-01	
Chlorobenzene	108907	3.02E-03	7.53E-04	6.60E+00	4.06E-05	3.56E-01	0.00E+00	0.00E+00	4.32E-04	3.78E+00	2.81E-04	2.46E+00	
Chloroform	67663	1.45E-03	3.62E-04	3.17E+00	1.95E-05	1.71E-01	0.00E+00	0.00E+00	2.07E-04	1.82E+00	1.35E-04	1.18E+00	
Chloromethane	74873	8.82E-03	2.20E-03	1.92E+01	1.18E-04	1.04E+00	0.00E+00	0.00E+00	1.26E-03	1.10E+01	8.19E-04	7.18E+00	
Crotonaldehyde	4170303	1.57E-03	3.92E-04	3.43E+00	2.11E-05	1.85E-01	0.00E+00	0.00E+00	2.24E-04	1.97E+00	1.46E-04	1.28E+00	
Cyclohexane	110827	7.59E-02	1.89E-02	1.66E+02	1.02E-03	8.93E+00	0.00E+00	0.00E+00	1.08E-02	9.49E+01	7.06E-03	6.18E+01	
Ethyl Chloride	75003	2.66E-03	6.62E-04	5.80E+00	3.57E-05	3.13E-01	0.00E+00	0.00E+00	3.79E-04	3.32E+00	2.47E-04	2.17E+00	
Ethylbenzene	100414	3.86E-03	9.61E-04	8.42E+00	5.18E-05	4.54E-01	0.00E+00	0.00E+00	5.51E-04	4.82E+00	3.59E-04	3.14E+00	
Ethylene Dibromide (EDB)	106934	3.40E-03	8.48E-04	7.43E+00	4.57E-05	4.00E-01	0.00E+00	0.00E+00	4.86E-04	4.25E+00	3.16E-04	2.77E+00	
Ethylene Dichloride (EDC)	107062	6.55E-04	1.63E-04	1.43E+00	8.80E-06	7.71E-02	0.00E+00	0.00E+00	9.35E-05	8.19E-01	6.09E-05	5.34E-01	
Formaldehyde	50000	4.42E-03	1.10E-03	9.65E+00	5.94E-05	5.20E-01	0.00E+00	0.00E+00	6.31E-04	5.53E+00	4.11E-04	3.60E+00	
Hexane	110543	9.03E-03	2.25E-03	1.97E+01	1.21E-04	1.06E+00	0.00E+00	0.00E+00	1.29E-03	1.13E+01	8.39E-04	7.35E+00	
Isopropyl Alcohol	67630	1.80E-02	4.48E-03	3.92E+01	2.41E-04	2.12E+00	0.00E+00	0.00E+00	2.57E-03	2.25E+01	1.67E-03	1.46E+01	
Isopropylbenzene (Cumene)	98828	6.24E-04	1.55E-04	1.36E+00	8.38E-06	7.34E-02	0.00E+00	0.00E+00	8.91E-05	7.80E-01	5.80E-05	5.08E-01	
Methyl Ethyl Ketone (2-butanone)	78933	1.62E-01	4.04E-02	3.54E+02	2.18E-03	1.91E+01	0.00E+00	0.00E+00	2.32E-02	2.03E+02	1.51E-02	1.32E+02	
Methyl Isobutyl Ketone	108101	7.88E-03	1.96E-03	1.72E+01	1.06E-04	9.27E-01	0.00E+00	0.00E+00	1.12E-03	9.85E+00	7.33E-04	6.42E+00	
Naphthalene	91203	1.29E-02	3.22E-03	2.82E+01	3.67E-04	1.52E+00	0.00E+00	0.00E+00	1.85E-03	1.62E+01	1.20E-03	1.05E+01	
Perchloroethylene	127184	7.24E-03	1.80E-03	1.58E+01	0.00E+00	8.51E-01	0.00E+00	0.00E+00	1.03E-03	9.05E+00	6.73E-04	5.89E+00	
Styrene	100425	3.99E-03	9.94E-04	8.71E+00	5.36E-05	4.69E-01	0.00E+00	0.00E+00	5.70E-04	4.99E+00	3.71E-04	3.25E+00	
t-1,4-Dichloro-2-butene	764410	9.92E-03	2.47E-03	2.16E+01	1.33E-04	1.17E+00	0.00E+00	0.00E+00	1.42E-03	1.24E+01	9.22E-04	8.08E+00	
Toluene	108883	1.19E-02	2.97E-03	2.60E+01	1.60E-04	1.40E+00	0.00E+00	0.00E+00	1.70E-03	1.49E+01	1.11E-03	9.72E+00	
Trichlorofluoromethane*	75694	1.20E-06	2.98E-07	2.61E-03	1.61E-08	1.41E-04	0.00E+00	0.00E+00	1.71E-07	1.50E-03	1.11E-07	9.74E-04	
vinyl acetate	108054	2.19E-02	5.45E-03	4.78E+01	2.94E-04	2.57E+00	0.00E+00	0.00E+00	3.12E-03	2.74E+01	2.03E-03	1.78E+01	
Xylenes	1330207	2.00E-02	4.98E-03	4.36E+01	2.68E-04	2.35E+00	0.00E+00	0.00E+00	2.85E-03	2.50E+01	1.86E-03	1.63E+01	
Process Ammonia	7664417				3.117E-02	2.7E+02	0.000E+00	0.0					
Formula	Process Ammonia is calculated by multiplying the Milk Parlor ammonia rate from the Dairy Ammonia Calculator * Ammonia area fraction from first worksheet.												
References:													

*Based on data used to establish the District's volatile organic compound (VOC) emission factor for dairies
Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPS Current as of update date
(Does not include emissions from Lagoons or enteric emissions from cows)

Oliveira Phase I Construction DPM - Merced County, Annual

Oliveira Phase I Construction DPM
Merced County, Annual**1.0 Project Characteristics**

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	30.50	1000sqft	7.00	30,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	49
Climate Zone	3			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Oliveira Phase I Construction DPM - Merced County, Annual

Project Characteristics -

Land Use - Project site acreage

Construction Phase - Estimated Construction Schedule of 12 months

Trips and VMT - Run is for on-site DPM estimates. Therefore, worker trips have been set to zero.

Grading - Run is for on-site DPM estimates. Therefore, gradinging acres for fugitive dust have been set to zero.

Vehicle Trips - Construction Run Only

Consumer Products - Construction Run Only

Area Coating - Construction Run Only

Landscape Equipment - Construction Run Only

Energy Use - Construction Run Only

Water And Wastewater - Construction Run Only

Solid Waste - Construction Run Only

Construction Off-road Equipment Mitigation -

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Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	16250	89000
tblAreaCoating	Area_Nonresidential_Interior	48750	267000
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConsumerProducts	ROG_EF	2.14E-05	0
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblGrading	AcresOfGrading	10.00	0.00
tblLandUse	LotAcreage	0.70	7.00
tblSolidWaste	SolidWasteGenerationRate	40.30	0.00
tblTripsAndVMT	VendorTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	14.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	7,515,625.00	0.00

2.0 Emissions Summary

Oliveira Phase I Construction DPM - Merced County, Annual

2.1 Overall Construction

Unmitigated Construction

[illegible]

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	:	:	:	:	:	0.1743	0.3248	:	:	:	:	:	:	:	:	:
Maximum						0.1743	0.3248									

[illegible]

Oliveira Phase I Construction DPM - Merced County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

[illegible]

Oliveira Phase I Construction DPM - Merced County, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area						0.0000	0.0000									
Energy						0.0000	0.0000									
Mobile						0.0000	0.0000									
Waste						0.0000	0.0000									
Water						0.0000	0.0000									
Total						0.0000	0.0000									

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	1/14/2019	5	10	
2	Grading	Grading	1/15/2019	2/11/2019	5	20	
3	Building Construction	Building Construction	2/12/2019	12/30/2019	5	230	

Oliveira Phase I Construction DPM - Merced County, Annual

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Oliveira Phase I Construction DPM - Merced County, Annual

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

[illegible]

Oliveira Phase I Construction DPM - Merced County, Annual

3.2 Site Preparation - 2019

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Oliveira Phase I Construction DPM - Merced County, Annual

3.2 Site Preparation - 2019

Mitigated Construction Off-Site

[illegible]

3.3 Grading - 2019

Unmitigated Construction On-Site

[illegible]

Oliveira Phase I Construction DPM - Merced County, Annual

3.3 Grading - 2019

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Oliveira Phase I Construction DPM - Merced County, Annual

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Oliveira Phase I Construction DPM - Merced County, Annual

3.4 Building Construction - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling						0.0000	0.0000									
Vendor						0.0000	0.0000									
Worker						0.0000	0.0000									
Total						0.0000	0.0000									

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated						0.0000	0.0000									
Unmitigated						0.0000	0.0000									

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.484945	0.031816	0.154973	0.120992	0.021332	0.005119	0.015709	0.151573	0.002377	0.002347	0.006486	0.001616	0.000714

5.0 Energy Detail

Historical Energy Use: N

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5.1 Mitigation Measures Energy

[illegible]

5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

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5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0						0.0000	0.0000									
Total							0.0000	0.0000									

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0				
Total					

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5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0				
Total					

6.0 Area Detail

6.1 Mitigation Measures Area

[illegible]

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6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating						0.0000	0.0000									
Consumer Products						0.0000	0.0000									
Landscaping						0.0000	0.0000									
Total						0.0000	0.0000									

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating						0.0000	0.0000									
Consumer Products						0.0000	0.0000									
Landscaping						0.0000	0.0000									
Total						0.0000	0.0000									

7.0 Water Detail

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7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				
Unmitigated				

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0				
Total					

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0				
Total					

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				
Unmitigated				

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8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0				
Total					

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0				
Total					

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

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Oliveira Phase II Construction DPM

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	185.00	1000sqft	7.00	185,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	49
Climate Zone	3			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

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Project Characteristics -

Land Use - Project site acreage

Construction Phase - Estimated Construction Schedule of 6 months

Trips and VMT - Run is for on-site DPM estimates. Therefore, worker trips have been set to zero.

Grading - Run is for on-site DPM estimates. Therefore, gradinging acres for fugitive dust have been set to zero.

Vehicle Trips - Construction Run Only

Consumer Products - Construction Run Only

Area Coating - Construction Run Only

Landscape Equipment - Construction Run Only

Energy Use - Construction Run Only

Water And Wastewater - Construction Run Only

Solid Waste - Construction Run Only

Construction Off-road Equipment Mitigation -

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Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	117.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	12/29/2020	7/2/2020
tblConstructionPhase	PhaseEndDate	2/11/2020	1/21/2020
tblConstructionPhase	PhaseEndDate	1/14/2020	1/7/2020
tblConstructionPhase	PhaseStartDate	2/12/2020	1/22/2020
tblConstructionPhase	PhaseStartDate	1/15/2020	1/8/2020
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblGrading	AcresOfGrading	5.00	0.00
tblLandUse	LotAcreage	4.25	7.00
tblSolidWaste	SolidWasteGenerationRate	229.40	0.00
tblTripsAndVMT	VendorTripNumber	30.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	78.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	42,781,250.00	0.00

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2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area						0.0000	0.0000									
Energy						0.0000	0.0000									
Mobile						0.0000	0.0000									
Waste						0.0000	0.0000									
Water						0.0000	0.0000									
Total						0.0000	0.0000									

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2020	1/7/2020	5	5	
2	Grading	Grading	1/8/2020	1/21/2020	5	10	
3	Building Construction	Building Construction	1/22/2020	7/2/2020	5	117	

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Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

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3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

[illegible]

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3.2 Site Preparation - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

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3.2 Site Preparation - 2020

Mitigated Construction Off-Site

[illegible]

3.3 Grading - 2020

Unmitigated Construction On-Site

[illegible]

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3.3 Grading - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

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3.3 Grading - 2020

Mitigated Construction Off-Site

[illegible]

3.4 Building Construction - 2020

Unmitigated Construction On-Site

[illegible]

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3.4 Building Construction - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

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3.4 Building Construction - 2020**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling						0.0000	0.0000									
Vendor						0.0000	0.0000									
Worker						0.0000	0.0000									
Total						0.0000	0.0000									

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated						0.0000	0.0000									
Unmitigated						0.0000	0.0000									

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.484945	0.031816	0.154973	0.120992	0.021332	0.005119	0.015709	0.151573	0.002377	0.002347	0.006486	0.001616	0.000714

5.0 Energy Detail

 Historical Energy Use: N

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5.1 Mitigation Measures Energy

[illegible]

5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

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5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0						0.0000	0.0000									
Total							0.0000	0.0000									

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0				
Total					

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6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating						0.0000	0.0000									
Total						0.0000	0.0000									

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating						0.0000	0.0000									
Total						0.0000	0.0000									

7.0 Water Detail**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				
Unmitigated				

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0				
Total					

Oliveira Phase II Construction DPM - Merced County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0				
Total					

8.0 Waste Detail

8.1 Mitigation Measures Waste**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				
Unmitigated				

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8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0				
Total					

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0				
Total					

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

APPENDIX B: AERMOD ELECTRONIC FILES
