Appendices

NILES GATEWAY MIXED-USE PROJECT

Initial Study

Prepared for
City of Fremont

January 2018

ESA

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Appendices

A. Air Quality and Greenhouse Gas Modeling Outputs

B. Special-Status Plant and Animal Species

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Appendix A

Air Quality and Greenhouse Gas Modeling Outputs

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Appendix A-1

Summary Tables

Tables for EIR

Updated: 12/8/2017

Green = use in IS sections

Criteria Pollutant Tables

CONSTRUCTION

Source	Unmitigated Average Daily Emissions (lbs/day)				Mitigated Average Daily Emissions (lbs/day)				percent reduction due to mitigation			
	ROG	NO_x	Exhaust PM10	Exhaust PM2.5	ROG	NO_x	Exhaust PM10	Exhaust PM2.5				
Off-Road Equipment	1.6	15.5	0.9	0.8	0.3	1.7	<0.1	<0.1	-83%	-89%	-96%	-96%
On-Road Trucks	<0.1	2.4	<0.1	<0.1	<0.1	2.4	<0.1	<0.1	0%	0%	0%	0%
Arch. Coatings	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0%	#DIV/0!	#DIV/0!	#DIV/0!
Worker Trips	0.3	0.2	<0.1	<0.1	0.3	0.2	<0.1	<0.1	0%	0%	0%	0%
Total Average Daily Emissions	**2.4**	**18.0**	**0.9**	**0.8**	**1.1**	**4.3**	**<0.1**	**<0.1**	-54%	-76%	-95%	-94%
BAAQMD Construction Threshold	**54**	**54**	**82**	**54**	**54**	**54**	**82**	**54**				
Exceeds Threshold?	No	No	No	No	No	No	No	No				

Table 4- 1

Year	Unmitigated Average Daily Emissions (lbs/day)			
	ROG	NO_x	Exhaust PM10	Exhaust PM2.5
2019	1.6	15.0	0.8	0.7
2020	2.9	20.3	1.0	1.0
2021	2.7	18.4	0.9	0.8
Maximum	**2.9**	**20.3**	**1.0**	**1.0**
BAAQMD Construction Threshold	**54**	**54**	**82**	**54**
Exceeds Threshold?	No	No	No	No

Table 4- 2

Mitigated Average Daily Emissions (lbs/day)			
ROG	NO_x	Exhaust PM10	Exhaust PM2.5
0.5	3.4	<0.1	<0.1
1.4	4.9	<0.1	<0.1
1.4	4.6	<0.1	<0.1
1.4	**4.9**	**<0.1**	**<0.1**
54	**54**	**82**	**54**
No	No	No	No

Blue = renewable diesel reductions

Actual Data: Average lbs/day	ROG	NOX	PM10 Exh	PM2.5 Ex	ROG	NOX	PM10 Exh	PM2.5 Ex	*Year*	*Workdays*
2019										
Fugitive Dust	0	0	0	0	0	0	0	0	*2019*	*218*
Off-Road	1.323845872	13.12187156	0.770781651	0.719038532	0.2144954	1.4547706	0.026697248	0.026697248	*2019*	*218*
Paving	0.020458716	0	0	0	0.0204587	0	0	0	*2019*	*218*
Archit. Coating	0	0	0	0	0	0	0	0	*2019*	*218*
Hauling	0.010183486	0.344678899	0.001284404	0.001192661	0.0101835	0.3446789	0.001284404	0.001192661	*2019*	*218*
Vendor	0.04706422	1.335779817	0.00853211	0.008165138	0.0470642	1.3357798	0.00853211	0.008165138	*2019*	*218*
Worker	0.19813945	0.151299083	0.002946789	0.002763303	0.1981394	0.1512991	0.002946789	0.002763303	*2019*	*218*
Onsite trucks	0.002670329	0.066116929	0.000117948	0.000112846	0.0026703	0.0661169	0.000117948	0.000112846	*2019*	*218*
2020										
Fugitive Dust	0	0	0	0	0	0	0	0	*2020*	*262*
Off-Road	1.758198473	17.27560305	0.999270229	0.937438168	0.2886107	1.8262595	0.036335878	0.036335878	*2020*	*262*
Paving	0	0	0	0	0	0	0	0	*2020*	*262*
Archit. Coating	0.647633588	0	0	0	0.6476336	0	0	0	*2020*	*262*
Hauling	0	0	0	0	0	0	0	0	*2020*	*262*
Vendor	0.086259542	2.703816794	0.012519084	0.011984733	0.0862595	2.7038168	0.012519084	0.011984733	*2020*	*262*
Worker	0.36600916	0.270137405	0.005789313	0.005392366	0.3660092	0.2701374	0.005789313	0.005392366	*2020*	*262*
Onsite trucks	0.002538337	0.07142897	0.000100008	9.56819E-05	0.0025383	0.071429	0.000100008	9.56819E-05	*2020*	*262*
2021										
Fugitive Dust	0	0	0	0	0	0	0	0	*2021*	*161*
Off-Road	1.583448447	15.64511801	0.857863354	0.804447205	0.289913	1.830559	0.03647205	0.03647205	*2021*	*161*
Paving	0	0	0	0	0	0	0	0	*2021*	*161*
Archit. Coating	0.740869565	0	0	0	0.7408696	0	0	0	*2021*	*161*
Hauling	0	0	0	0	0	0	0	0	*2021*	*161*
Vendor	0.071180124	2.459627329	0.005093168	0.00484472	0.0711801	2.4596273	0.005093168	0.00484472	*2021*	*161*
Worker	0.339383851	0.24221118	0.005704348	0.005182609	0.3393839	0.2422112	0.005704348	0.005182609	*2021*	*161*
Onsite trucks	0.002430141	0.07482741	8.99676E-05	8.60757E-05	0.0024301	0.0748274	8.99676E-05	8.60757E-05	*2021*	*161*
All Construction										
Fugitive Dust	0	0	0	0	0	0	0	0		*641*
Off-Road	1.566585959	15.45341654	0.886045554	0.829758502	0.2637317	1.7009984	0.033092044	0.033092044		*641*
Paving	0.006957878	0	0	0	0.0069579	0	0	0		*641*
Archit. Coating	0.450795632	0	0	0	0.4507956	0	0	0		*641*
Hauling	0.003463339	0.117223089	0.000436817	0.000405616	0.0034633	0.1172231	0.000436817	0.000405616		*641*
Vendor	0.069141966	2.177223089	0.009297972	0.008892356	0.069142	2.1772231	0.009297972	0.008892356		*641*
Worker	0.302230265	0.22270702	0.004801248	0.004445554	0.3022303	0.222707	0.004801248	0.004445554		*641*
Onsite trucks	0.002556051	0.070475965	0.000103588	9.91065E-05	0.0025561	0.070476	0.000103588	9.91065E-05		*641*
Total	*2.40173109*	*18.0410457*	*0.900685179*	*0.843601135*	*1.098877*	*4.288628*	*0.047731669*	*0.046934676*		
2019	*1.602362073*	*15.01974629*	*0.783662903*	*0.731272479*	*0.493012*	*3.352645*	*0.039578499*	*0.038931195*		
2020	*2.860639101*	*20.32098622*	*1.017678634*	*0.954910949*	*1.391051*	*4.871643*	*0.054744283*	*0.053808659*		
2021	*2.737312129*	*18.42178393*	*0.868750837*	*0.81456061*	*1.443777*	*4.607225*	*0.047359533*	*0.046585455*		
Max	*2.860639101*	*20.32098622*	*1.017678634*	*0.954910949*	*1.443777*	*4.871643*	*0.054744283*	*0.053808659*		
	unmitigated	*unmitigated*	*unmitigated*	*unmitigated*	*mitigated*	*mitigated*	*mitigated*	*mitigated*		

OPERATION

Table 4- 4

Source	Unmitigated Average Daily Emissions (lbs/day)			
	ROG	NO_x	PM10	PM2.5
Area	4.9	<0.1	<0.1	<0.1
Energy	<0.1	0.7	<0.1	<0.1
Mobile	1.4	9.1	2.0	0.6
Total Average Daily Emissions	**6.4**	**9.8**	**2.0**	**0.7**
BAAQMD Operation Threshold	**54**	**54**	**82**	**54**
Exceeds Threshold?	No	No	No	No

Table 4- 6

Mitigated Average Daily Emissions (lbs/day)							
ROG	NO_x	PM10	PM2.5				
4.9	<0.1	<0.1	<0.1	0%	0%	0%	0%
<0.1	0.5	<0.1	<0.1	-19%	-19%	-20%	-20%
1.4	9.1	2.0	0.6	0%	0%	0%	0%
6.4	**9.7**	**2.0**	**0.7**	0%	-1%	-1%	-2%
54	**54**	**82**	**54**				
No	No	No	No				

Table 4- 5

Source	Unmitigated Annual Emissions (tons/year)			
	ROG	NO_x	PM10	PM2.5
Area	0.9	<0.1	<0.1	<0.1
Energy	<0.1	0.1	<0.1	<0.1
Mobile	0.3	1.7	0.4	0.1
Total Average Daily Emissions	**1.2**	**1.8**	**0.4**	**0.1**
BAAQMD Operation Threshold	**10**	**10**	**15**	**8**
Exceeds Threshold?	No	No	No	No

Table 4- 7

Mitigated Annual Emissions (tons/year)			
ROG	NO_x	PM10	PM2.5
0.9	<0.1	<0.1	<0.1
<0.1	<0.1	<0.1	<0.1
0.3	1.7	0.4	0.1
1.2	**1.8**	**0.4**	**0.1**
10	**10**	**15**	**8**
No	No	No	No

Actual Data: Average lbs/day	ROG	NOX	PM10 T	PM2.5 T	ROG	NOX	PM10 T	PM2.5 T
Area	4.887123288	0.044712329	0.021369863	0.021369863	4.8871233	0.0447123	0.021369863	0.021369863
Energy	0.076164384	0.659178082	0.052712329	0.052712329	0.0613699	0.5315068	0.042410959	0.042410959
Mobile	1.409863014	9.084931507	1.964931507	0.607123288	1.409863	9.0849315	1.964931507	0.607123288
Waste	0	0	0	0	0	0	0	0
Water	0	0	0	0	0	0	0	0
Total	*6.373150685*	*9.788821918*	*2.039013699*	*0.681205479*	*6.358356*	*9.661151*	*2.028712329*	*0.67090411*

Actual Data: Total tons/yr	ROG	NOX	PM10 T	PM2.5 T	ROG	NOX	PM10 T	PM2.5 T
Area	0.8919	0.00816	0.0039	0.0039	0.8919	0.00816	0.0039	0.0039
Energy	0.0139	0.1203	0.00962	0.00962	0.0112	0.097	0.00774	0.00774
Mobile	0.2573	1.658	0.3586	0.1108	0.2573	1.658	0.3586	0.1108
Waste	0	0	0	0	0	0	0	0
Water	0	0	0	0	0	0	0	0
Total	*1.1631*	*1.78646*	*0.37212*	*0.12432*	*1.1604*	*1.76316*	*0.37024*	*0.12244*
	unmitigated	*unmitigated*	*unmitigated*	*unmitigated*	*mitigated*	*mitigated*	*mitigated*	*mitigated*

GHG Tables

CONSTRUCTION

Source	Total Annual Emissions (MTCO2e)				Mitigated Average Daily Emissions (lbs/day)				percent reduction due to mitigation			
	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e				
2019												
Off-Road Equipment	165.5	0.3	1.1	166.9	165.5	0.3	1.1	166.9	0%	0%	0%	0%
On-Road Trucks	42.4	<0.1	0.3	42.8	42.4	<0.1	0.3	42.8	0%	0%	0%	0%
Arch. Coatings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Worker Trips	41.4	<0.1	0.4	41.8	41.4	<0.1	0.4	41.8	0%	0%	0%	0%
Total 2019	*249.3*	*0.3*	*1.9*	*251.5*	*249.3*	*0.3*	*1.9*	*251.5*				
2020												
Off-Road Equipment	270.3	0.4	1.8	272.5	270.3	0.4	1.8	272.5	0%	0%	0%	0%
On-Road Trucks	82.3	<0.1	0.7	83.1	82.3	<0.1	0.7	83.1	#REF!	#REF!	#REF!	#REF!
Arch. Coatings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%	0%	0%
Worker Trips	97.5	<0.1	0.9	98.4	97.5	<0.1	0.9	98.4	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Total 2020	*450.1*	*0.6*	*3.4*	*454.1*	*450.1*	*0.6*	*3.4*	*454.1*				
2021												
Off-Road Equipment	166.8	0.3	1.1	168.2	166.8	0.3	1.1	168.2	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
On-Road Trucks	51.1	<0.1	0.4	51.6	51.1	<0.1	0.4	51.6	#REF!	#REF!	#REF!	#REF!
Arch. Coatings	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#REF!	#REF!	#REF!	#REF!
Worker Trips	58.1	<0.1	0.5	58.7	58.1	<0.1	0.5	58.7	#REF!	#REF!	#REF!	#REF!
Total 2021	*276.0*	*0.3*	*2.1*	*278.4*	*276.0*	*0.3*	*2.1*	*278.4*				
Total Construction Emissions	**975.3**	**1.2**	**7.4**	**984.0**	**975.3**	**1.2**	**7.4**	**984.0**	0%	0%	0%	0%
Total Construction Emissions Amortized over 30 Years	**32.5**	**0.0**	**0.2**	**32.8**	**32.5**	**0.0**	**0.2**	**32.8**				

Year	Unmitigated Average Daily Emissions (lbs/day)				Mitigated Average Daily Emissions (lbs/day)			
	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
2019	249.3	0.3	1.9	251	249.3	0.3	1.9	251
2020	450.1	0.6	3.4	454	450.1	0.6	3.4	454
2021	276.0	0.3	2.1	278	276.0	0.3	2.1	278
Total	975.3	1.2	7.4	984	975.3	1.2	7.4	984
Amortized	32.5	0.0	0.2	33	32.5	0.0	0.2	33

Orange = Scaling

Blue = renewable diesel reductions

Actual Data: Total Metric Tons/year	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	*Year*
2019									
Fugitive Dust	0			0	0			0	*2019*
Off-Road	165.53342	0.263297036	1.11706686	166.9137839	165.53322	0.2632967	1.11706551	166.9135822	*2019*
Paving	0			0	0			0	*2019*
Archit. Coating	0			0	0			0	*2019*
Hauling	9.3633	0.006761277	0.081735698	9.451796976	9.3633	0.0067613	0.081735698	9.451796976	*2019*
Vendor	30.3268	0.021899107	0.264733819	30.61343293	30.3268	0.0218991	0.264733819	30.61343293	*2019*
Worker	41.387552	0.022772614	0.390792708	41.80111732	41.387552	0.0227726	0.390792708	41.80111732	*2019*
Onsite trucks	2.688185858	0.01727062	0.001740611	2.707197089	2.6881859	0.0172706	0.001740611	2.707197089	*2019*
2020									
Fugitive Dust	0			0	0			0	*2020*
Off-Road	270.265448	0.429883533	1.823828537	272.5191601	270.26513	0.429883	1.823826378	272.5188374	*2020*
Paving	0			0	0			0	*2020*
Archit. Coating	0			0	0			0	*2020*
Hauling	0	0	0	0	0	0	0	0	*2020*
Vendor	79.697	0.057549531	0.695704499	80.45025403	79.697	0.0575495	0.695704499	80.45025403	*2020*
Worker	97.466044	0.053628603	0.920301333	98.43997394	97.466044	0.0536286	0.920301333	98.43997394	*2020*
Onsite trucks	2.643999899	0.017376864	0.00165346	2.663030223	2.6439999	0.0173769	0.00165346	2.663030223	*2020*
2021									
Fugitive Dust	0			0	0			0	*2021*
Off-Road	166.784972	0.265287752	1.125512691	168.1757724	166.78477	0.2652874	1.125511341	168.1755708	*2021*
Paving	0			0	0			0	*2021*
Archit. Coating	0			0	0			0	*2021*
Hauling	0	0	0	0	0	0	0	0	*2021*
Vendor	48.5039	0.035024865	0.423408428	48.96233329	48.5039	0.0350249	0.423408428	48.96233329	*2021*
Worker	58.0907	0.031963163	0.548508449	58.67117161	58.0907	0.0319632	0.548508449	58.67117161	*2021*
Onsite trucks	2.596298938	0.017309152	0.001545906	2.615153996	2.5962989	0.0173092	0.001545906	2.615153996	*2021*

All Construction								
Fugitive Dust	0	0	0	0	0	0	0	0
Off-Road	602.58384	0.958468321	4.066408088	607.6087164	602.58312	0.9584672	4.066403229	607.6079904
Paving	0	0	0	0	0	0	0	0
Archit. Coating	0	0	0	0	0	0	0	0
Hauling	9.3633	0.006761277	0.081735698	9.451796976	9.3633	0.0067613	0.081735698	9.451796976
Vendor	158.5277	0.114473503	1.383846747	160.0260202	158.5277	0.1144735	1.383846747	160.0260202
Worker	196.944296	0.108364381	1.85960249	198.9122629	196.9443	0.1083644	1.85960249	198.9122629
Onsite trucks	7.928484696	0.051956636	0.004939977	7.985381309	7.9284847	0.0519566	0.004939977	7.985381309
Total	*975.3476207*	*1.240024118*	*7.396533*	*983.9841778*	*975.3469*	*1.240023*	*7.396528141*	*983.9834518*
2019	*249.2992579*	*0.332000655*	*1.856069696*	*251.4873282*	*249.2991*	*0.332*	*1.856068346*	*251.4871265*
2020	*450.0724919*	*0.558438531*	*3.44148783*	*454.0724183*	*450.0722*	*0.558438*	*3.441485671*	*454.0720956*
2021	*275.9758709*	*0.349584932*	*2.098975474*	*278.4244313*	*275.9757*	*0.349585*	*2.098974124*	*278.4242297*
Max	*450.0724919*	*0.558438531*	*3.44148783*	*454.0724183*	*450.0722*	*0.558438*	*3.441485671*	*454.0720956*
	unmitigated	*unmitigated*	*unmitigated*	*unmitigated*	*mitigated*	*mitigated*	*mitigated*	*mitigated*

OPERATION

Table 4- 6 — Unmitigated Annual Emissions (tons/year)

Source	CO2	CH4	N2O	CO2e
Area	1.2	<0.1	0.0	1
Energy	207.8	0.2	0.9	209
Mobile	863.6	1.1	0.0	865
Waste	0.0	19.4	0.0	19
Water	10.6	6.7	1.5	19
Total Annual Operational Emissions	1,083.2	27.5	2.4	1,113
Amortized Construction Emissions	32.5	0.0	0.2	33
Total Annual Emissions	**1,115.7**	**27.5**	**2.6**	**1,146**
BAAQMD Operation Threshold - Bright Line	**n/a**	**n/a**	**n/a**	**1,100**
Exceeds Threshold?	n/a	n/a	n/a	Yes
Total Per Service Population Emissions	3.6	0.1	0.0	**3.7**
BAAQMD Operation Threshold - Efficiency	**n/a**	**n/a**	**n/a**	**4.6**
Exceeds Threshold?	n/a	n/a	n/a	No

Table 4- 7 — Mitigated Annual Emissions (tons/year)

CO2	CH4	N2O	CO2e	
1.2	<0.1	0.0	1	0%
179.2	0.2	0.7	180	-14%
863.6	1.1	0.0	865	0%
0.0	19.4	0.0	19	0%
9.1	5.3	1.2	16	-17%
1,053.0	26.1	2.0	1,081	-3%
32.5	0.0	0.2	33	0%
1,085.5	**26.2**	**2.2**	**1,114**	-3%
n/a	**n/a**	**n/a**	**1,100**	
n/a	n/a	n/a	Yes	
3.5	0.1	0.0	**3.6**	
n/a	**n/a**	**n/a**	**4.6**	
n/a	n/a	n/a	No	

Population	296	*\\Sfo-file01\projects\SFO\17xxxx\D170627.00 - Fremont Niles Gateway\03 Working Documents\2_IS-NOP\1_Admin Draft*
Jobs	17	estimate from Karl (12/7/17)
Service Population	**313**	

Actual Data: Total tons/yr	**CO2**	**CH4**	**N2O**	**CO2e**	**CO2**	**CH4**	**N2O**	**CO2e**
Area	1.1524	0.03136	0	1.18376	1.1524	0.03136	0	1.18376
Energy	207.8169	0.2408	0.88245	208.94015	179.1802	0.22204	0.7473	180.14954
Mobile	863.6022	1.1312	0	864.7334	863.6022	1.1312	0	864.7334
Waste	0	19.418	0	19.418	0	19.418	0	19.418
Water	10.6253	6.65	1.51315	18.78845	9.0747	5.3228	1.21105	15.60855
Total	*1083.1968*	*27.47136*	*2.3956*	*1113.06376*	*1053.01*	*26.1254*	*1.95835*	*1081.09325*
	unmitigated	*unmitigated*	*unmitigated*	*unmitigated*	*mitigated*	*mitigated*	*mitigated*	*mitigated*

HRA Tables

Table 4- 3

Receptor Type	Cancer Risk	Chronic Hazard Index	Maximum Annual PM2.5 Concentration
Unmitigated			
Residential - offsite	140.8	0.081	0.45
Residential - onsite	103.2	0.087	0.45
School	14.1	0.077	0.43
Maximum	140.8	0.087	0.45
BAAQMD Cancer Threshold	**10**	**1**	**0.3**
Exceeds Threshold?	Yes	No	Yes
Mitigated			
Residential - offsite	5.4	0.003	0.03
Residential - onsite	4.1	0.003	0.03
School	0.5	0.003	0.03
Maximum	5.4	0.003	0.03
BAAQMD Cancer Threshold	**10**	**1**	**0.3**
Exceeds Threshold?	No	No	No

Actual Data

Cancer Risk	Chronic HI	PM2.5
140.83	0.081	0.448
103.22	0.087	0.448
14.13	0.077	0.428
140.83	0.087	0.448
5.41	0.003	0.034
4.08	0.003	0.034
0.54	0.003	0.033
5.41	0.003	0.034

Appendix A-2

Construction Schedule

Construction Schedule

Updated: 12/4/2017

For CalEEMod Entry

provided by Doug Rich on 10/31/17

New Schedule							Work Days by Year				Schedule Overlap	2019											2020												2021							
Phase	**Start Date**	**End Date**	**Work Days**	**Days/week**	**Worker Tri**	**Workers**	**2019**	**2020**	**2021**	**Total**		**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**
Demolition	3/1/2019	3/31/2019	21	5	10	5.0	21	0	0	**21**		1																													
Site Preparation	4/1/2019	4/15/2019	11	5	5	2.5	11	0	0	**11**			1-																												
Grading/Excavation	4/15/2019	5/15/2019	23	5	10	5.0	23	0	0	**23**			-1	1-																												
Drainage/Utilities/Sub-Grade	5/15/2019	7/15/2019	44	5	8	4.0	44	0	0	**44**				-1	1	1-																										
Foundations/Concrete Pour	8/15/2019	8/15/2021	63	0.6	3	1.5	12	31	19	**63**	<- estimated based on days/week						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Building Construction	8/15/2019	8/15/2021	522	5	102	51.0	99	262	161	**522**							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Architectural Coatings	2/15/2020	8/15/2021	112	*1.4*	20	10.0	0	66	46	**112**	<- estimated based on days/week												1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Paving	7/15/2019	8/15/2019	24	5	18	9.0	24	0	0	**24**						-1	1																								
ALL CONSTRUCTION	**3/1/2019**	**8/15/2021**	**641**				**218**	**262**	**161**	**641**																																
											workers:	5	0	0	4	0	61.5	52.5	52.5	52.5	52.5	52.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5

New Equipment Fleet

PhaseName	OffRoadEquipmentType	OffRoadEqui	UsageHour	HorsePow	LoadFactor	workdays	HP*HR	HP*HR*LF
Demolition	Concrete/Industrial Saws	1	4	81	0.73	21	4,967	3,626
	Crushing/Proc. Equipment	1	6	85	0.78	21	8,354	6,516
	Excavators	0	8	158	0.38	21	0	0
	Rubber Tired Dozers	0	8	247	0.4	21	0	0
	Sweepers/Scrubbers	1	4	64	0.46	21	2,473	1,138
	Tractors/Loaders/Backhoes	1	4	97	0.37	21	3,015	1,115
Site Preparation	Rubber Tired Dozers	0	8	247	0.4	11	0	0
	Sweepers/Scrubbers	1	4	64	0.46	11	1,295	596
	Tractors/Loaders/Backhoes	1	4	97	0.37	11	1,579	584
Grading/Excavation	Excavators	2	8	158	0.38	23	22,095	8,396
	Graders	1	8	187	0.41	23	14,107	5,784
	Rubber Tired Dozers	0	8	247	0.4	23	0	0
	Sweepers/Scrubbers	1	4	64	0.46	23	2,708	1,246
	Tractors/Loaders/Backhoes	0	8	97	0.37	23	0	0
Drainage/Utilities/Sub-Grade	Sweepers/Scrubbers	1	4	64	0.46	44	5,181	2,383
	Tractors/Loaders/Backhoes	1	4	97	0.37	44	6,317	2,337
	Trenchers	1	4	78	0.5	44	6,864	3,432
Paving	Pavers	2	8	130	0.42	63	55,037	23,115
	Paving Equipment	2	8	132	0.36	63	47,900	17,244
	Rollers	2	4	80	0.38	63	15,322	5,822
	Surfacing Equipment	1	4	263	0.3	63	19,883	5,965
Foundations/Concrete Pour	Cement and Mortar Mixers	1	8	9	0.56	522	21,047	11,786
Building Construction	Cranes	1	8	231	0.29	112	60,023	17,407
	Forklifts	2	8	89	0.2	112	31,898	6,380
	Generator Sets	1	8	84	0.74	112	55,695	41,215
	Sweepers/Scrubbers	1	4	64	0.46	112	13,189	6,067
	Tractors/Loaders/Backhoes	2	8	97	0.37	112	64,315	23,797
	Welders	0	8	46	0.45	112	0	0
Architectural Coating	Air Compressors	1	8	78	0.48	24	7,188	3,450
							470,452	**199,401**
						Change:	**-30%**	**-27%**

Appendix A-3

Construction Trucks

Onsite Trucks and Idling

Updated: 12/8/2017

Includes water trucks and truck idling

Assumptions

Water Trucks

Water trucks will be used onsite. Per BAAQMD Basic Mitigation Measures: All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day

Water truck average speed (mph)	5	assumption
VMT for water trucks estimated using CalEEMod methods (Appendix A) for grading passes as follows:		
Site Area (acres)	6.07	PD
Water truck spray width (ft)	24	assume width of 2-lane road (12 feet each lane)
Daily VMT (2x per day)	4.17	
travel time (hrs/day)	0.83	50.0775
Water Trucks = HHDT		

Idling

Haul truck idling time per trip (min)	15	standard assumption
average daily water truck idling time (min)	15	

The grading dust emissions are calculated by multiplying the emission factors with the total vehicle miles traveled (VMT) for the grading equipment (i.e., grader). The VMT are estimated based on the dimensions of the grading area and the blade width of the grading equipment.

$$E = EF \times VMT, \text{ and}$$
$$VMT = As / Wb \times 43{,}560(sqft/acre) / 5{,}280(ft/mile)$$

Where:

E: emissions (lb)

EF: emission factor (lb/VMT)

VMT: vehicle miles traveled (mile)

A_S: the acreage of the grading site (acre)

W_b: Blade width of the grading equipment. The program uses a default blade width of 12 ft based on Caterpillar's 140 Motor Grader.[7]

Summary of Emissions

	Average Daily Emissions (lbs/day)				Total Emissions (MT)		
	ROG	NOX	PM10 Exh	PM2.5 Exh	CO2	CH4	N2O
2019							
Water Truck Travel	0.00251302	0.0612441	0.0001133	0.00010837	2.3997068	0.000614683	5.863E-06
Idling	0.000157309	0.0048728	4.678E-06	4.47603E-06	0.2884791	2.12442E-06	7.049E-07
Total	*0.002670329*	*0.066117*	*0.0001179*	*0.000112846*	*2.688186*	*0.000616808*	*6.57E-06*
2020							
Water Truck Travel	0.002395592	0.0668941	9.673E-05	9.25411E-05	2.3588706	0.000618675	5.543E-06
Idling	0.000142745	0.0045348	3.283E-06	3.14087E-06	0.2851293	1.92774E-06	6.967E-07
Total	*0.002538337*	*0.071429*	*0.0001*	*9.56819E-05*	*2.644*	*0.000620602*	*6.24E-06*
2021							
Water Truck Travel	0.002294662	0.0705589	8.699E-05	8.32272E-05	2.3146564	0.000616354	5.145E-06
Idling	0.000135479	0.0042685	2.977E-06	2.84851E-06	0.2816425	1.82961E-06	6.882E-07
Total	*0.002430141*	*0.074827*	*8.997E-05*	*8.60757E-05*	*2.596299*	*0.000618184*	*5.83E-06*
Total	**0.007638808**	**0.2123733**	**0.0003079**	**0.000294604**	**7.9284847**	**0.001855594**	**1.864E-05**

For HRA (tons)

	PM10 Exh		PM2.5 Ex	
	Unmit	Mit	Unmit	Mit
2019	3.78E-05	3.78E-05	3.62E-05	3.62E-05
2020	3.21E-05	3.21E-05	3.07E-05	3.07E-05
2021	2.88E-05	2.88E-05	2.76E-05	2.76E-05

EMFAC2014 Emission Factors - Running

Efs by Speed Bin

Located here: \\Sfo-file01\projects\SFO\17xxxx\D170627.00 - Fremont Niles Gateway\03 Working Documents\AQ-GHG\EMFAC

Emissions = tons/day; Fuel = 1000 gallons/day

calendar_year	season_month	sub_area	vehicle_clas	fuel	speed	process	pollutant	emission
2018	Annual	Alameda (SI	HHDT	Dsl		STREX	NOx	0.3344137
2018	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CH4	0.0121774
2018	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CO2	48.725753
2018	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	Fuel	4.3853178
2018	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	NOx	0.2611731
2018	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM10	0.0007097
2018	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM2_5	0.000679
2018	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	ROG	0.0149745
2019	Annual	Alameda (SI	HHDT	Dsl		STREX	NOx	0.3666705
2019	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CH4	0.0126572
2019	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CO2	49.41352
2019	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	Fuel	4.4472168
2019	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	NOx	0.2713759
2019	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM10	0.0006782
2019	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM2_5	0.0006488
2019	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	ROG	0.0150455
2020	Annual	Alameda (SI	HHDT	Dsl		STREX	NOx	0.4119199
2020	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CH4	0.0131028
2020	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CO2	49.957996
2020	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	Fuel	4.4962197
2020	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	NOx	0.2800347
2020	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM10	0.0005956
2020	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM2_5	0.0005698
2020	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	ROG	0.0147515
2021	Annual	Alameda (SI	HHDT	Dsl		STREX	NOx	0.4509512
2021	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CH4	0.0135483
2021	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	CO2	50.87919
2021	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	Fuel	4.5791271
2021	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	NOx	0.289737
2021	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM10	0.000556
2021	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	PM2_5	0.0005319
2021	Annual	Alameda (SI	HHDT	Dsl	5	RUNEX	ROG	0.0146655

calendar_year	sub_area	vehicle_class	fuel	speed	vmt
2018	Alameda (S	HHDT	Dsl	5	11682.2
2019	Alameda (S	HHDT	Dsl	5	12044.07
2020	Alameda (S	HHDT	Dsl	5	12387.58
2021	Alameda (S	HHDT	Dsl	5	12856.99

Default_Alameda_2018_2019_2020_Annual_emission

Calculated EFs (g/mi)

N2O separate calc

Year	Vehicle Type	Fuel	Speed	VMT	ROG	NOX	PM10	PM2_5	CO2	CH4	N2O
2018	HHDT	Dsl	5	11682.19722	1.1628487	25.96900586	0.0551113	0.0527272	3783.815	0.945636469	0.009666
2019	HHDT	Dsl	5	12044.07226	1.133261	27.61839887	0.0510798	0.0488701	3721.931	0.953370348	0.009094
2020	HHDT	Dsl	5	12387.58468	1.0803061	30.16629759	0.0436189	0.0417319	3658.594	0.959560522	0.008597
2021	HHDT	Dsl	5	12856.99259	1.0347912	31.81895925	0.0392288	0.0375318	3590.018	0.955961944	0.007981

Fuel (gal)
340.54334
330.31141
321.15175
309.42652

Water Truck Travel

Phase	% of site exposed (watered) - estimate			Workdays			Days Watered			Total VMT		
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Demolition	100%	0%	0%	21	0	0	21	0	0	87.6	0.0	0.0
Site Preparation	100%	0%	0%	11	0	0	11	0	0	45.9	0.0	0.0
Grading/Excavation	100%	0%	0%	23	0	0	23	0	0	96.0	0.0	0.0
Drainage/Utilities/Sub-Grade	100%	0%	0%	44	0	0	44	0	0	183.6	0.0	0.0
Foundations/Concrete Pour	0%	0%	0%	12	31	19	0	0	0	0.0	0.0	0.0
Building Construction	50%	50%	50%	99	262	161	49.5	131	80.5	206.6	546.7	335.9
Architectural Coatings	0%	0%	0%	0	66	46	0	0	0	0.0	0.0	0.0
Paving	25%	0%	0%	24	0	0	6	0	0	25.0	0.0	0.0
Total VMT							***154.5***	***131.0***	***80.5***	***644.7***	***546.7***	***335.9***

Year	Total Emissions (tons)				Average Daily Emissions (lbs/day)				Total Emissions (MT)		
	ROG	NOX	PM10 Exh	PM2.5 Exh	ROG	NOX	PM10 Exh	PM2.5 Exh	CO2	CH4	N2O
2019	0.000805423	0.0196287	3.63E-05	3.47326E-05	0.002513	0.061244132	0.0001133	0.0001084	2.399707	0.000614683	5.86E-06
2020	0.000767787	0.0214396	3.1E-05	2.96594E-05	0.0023956	0.066894128	9.673E-05	9.254E-05	2.358871	0.000618675	5.54E-06
2021	0.000735439	0.0226141	2.788E-05	2.66743E-05	0.0022947	0.070558925	8.699E-05	8.323E-05	2.314656	0.000616354	5.15E-06
Total	**0.002308649**	**0.0636824**	**9.518E-05**	**9.10663E-05**	**0.0072033**	**0.198697184**	**0.000297**	**0.0002841**	**7.073234**	**0.001849712**	**1.66E-05**

Idling

Haul Trucks - all 2019

Total trips (one-way)	50	Construction Data Needs - AQ-GHG (BAAQMD)	750	CY
Total trips (roundtrip)	25		16	CY/truck
min idling	375		47	rtp
hrs idling	6		94	one-way trips
			10	rtp/day

Water Trucks

	2019	2020	2021
Average Daily idling time	15	15	15
Total idling time (hrs)	38.6	32.8	20.1

EMFAC2014 Idling Emission Rates (g/hr-veh)

calendar_year	season_month	sub_area	vehicle_clas	fuel	process	pollutant	emission_rate
2018	Annual	Alameda (SI	HHDT	Dsl	IDLEX	NOx	33.540539
2018	Annual	Alameda (SI	HHDT	Dsl	IDLEX	ROG	1.0819652
2018	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CO2	6503.2658
2018	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CH4	0.0502545
2018	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM10	0.0342383
2018	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM2_5	0.0327572
2019	Annual	Alameda (SI	HHDT	Dsl	IDLEX	NOx	31.571686
2019	Annual	Alameda (SI	HHDT	Dsl	IDLEX	ROG	1.0192347
2019	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CO2	6428.5036
2019	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CH4	0.0473408
2019	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM10	0.0303123
2019	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM2_5	0.029001
2020	Annual	Alameda (SI	HHDT	Dsl	IDLEX	NOx	29.382021
2020	Annual	Alameda (SI	HHDT	Dsl	IDLEX	ROG	0.9248718
2020	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CO2	6353.8569
2020	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CH4	0.0429579
2020	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM10	0.0212704
2020	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM2_5	0.0203502
2021	Annual	Alameda (SI	HHDT	Dsl	IDLEX	NOx	27.656244
2021	Annual	Alameda (SI	HHDT	Dsl	IDLEX	ROG	0.8777944
2021	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CO2	6276.1562
2021	Annual	Alameda (SI	HHDT	Dsl	IDLEX	CH4	0.0407713
2021	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM10	0.0192905
2021	Annual	Alameda (SI	HHDT	Dsl	IDLEX	PM2_5	0.018456

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PL_Alameda_2018_2019_2020_2021_Annual_idling

Emissions

	Total Emissions (tons)				Average Daily Emissions (lbs/day)				Total Emissions (MT)		
Year	**ROG**	**NOX**	**PM10 Exh**	**PM2.5 Exh**	**ROG**	**NOX**	**PM10 Exh**	**PM2.5 Exh**	**CO2**	**CH4**	**N2O**
2019	5.04177E-05	0.0015617	1.499E-06	1.43457E-06	0.0001573	0.004872797	4.678E-06	4.476E-06	0.288479	2.12442E-06	7.05E-07
2020	4.57499E-05	0.0014534	1.052E-06	1.00665E-06	0.0001427	0.004534843	3.283E-06	3.141E-06	0.285129	1.92774E-06	6.97E-07
2021	4.34212E-05	0.001368	9.542E-07	9.12947E-07	0.0001355	0.004268485	2.977E-06	2.849E-06	0.281643	1.82961E-06	6.88E-07
Total	**0.000139589**	**0.0043832**	**3.506E-06**	**3.35416E-06**	**0.0004355**	**0.013676125**	**1.094E-05**	**1.047E-05**	**0.855251**	**5.88177E-06**	**2.09E-06**
	ROG	*NOx*	*PM10*	*PM2_5*					*CO2*	*CH4*	

Appendix A-4

Land Use

Land Use

Updated: 12/8/2017

For CalEEMod Entry

Type	Subtype	Quantity	Unit	Acreage	Square Feet		
Parking	Parking Lot	1.7	acres	1.70	74,052	271 spaces	
Recreational	Health Club	1,450	square feet	0.00	1,450		Community Center
Recreational	Quality Restaurant	2,400	square feet	0.00	2,400		Restaurant
Residential	Apartments Low Rise	13	dwelling units	4.37	17,838		
Residential	Condo/Townhouse	82	dwelling units	0.00	162,602		
Retail	Regional Shopping Center	3,483	square feet	0.00	3,483		Retail
Sources:				***6.07***	***261,825***		

Initial Study: \\Sfo-file01\projects\SFO\17xxxx\D170627.00 - Fremont Niles Gateway\03 Working Documents\2_IS-NOP\3_Screencheck Draft\Niles Gateway Initial Study_120517.docx
Project Plans: \\Sfo-file01\projects\SFO\17xxxx\D170627.00 - Fremont Niles Gateway\06 Project Library\2017-11_Updated Plans Package
Construction Data Needs: \\Sfo-file01\projects\SFO\17xxxx\D170627.00 - Fremont Niles Gateway\03 Working Documents\AQ-GHG\Construction Equipment

Fireplaces	NumberWood	NumberGas	NumberPropane	NumberNc	FireplaceHourDay	FireplaceD	FireplaceWoodMass
Defaults							
Apartments Low Rise	2.21	1.95	0	0.52	3.5	11.14	228.8
Condo/Townhouse	13.94	12.3	0	3.28	3.5	11.14	228.8
Revised							
Apartments Low Rise	0	0					
Condo/Townhouse	0	0					

Table 2-1

Niles Gateway Mixed-Use Project Summary

Use	Concept Plan Type	Quantity	Square Feet
CRAFT Units	A1	1	775
	A2	1	709
	B1	2	2,098
	B1-1	2	2,372
	B2	1	1,318
	B3	2	2,338
	2B	4	8,228
	Subtotal	*13*	*17,838*
Townhomes	1	28	53,536
	2B	22	45,254
	3	15	31,530
	3X	11	22,616
	4	6	9,666
	Subtotal	*82*	*162,602*
Non-Residential	Retail/Restaurant	-	5,883
	Community Center	-	1,450
	Subtotal		*7,333*
	TOTAL	***95 units***	***187,773***
Parking	-	271 spaces	

SOURCE: Valley Oak Partners, LLC, 2017

From Initial Study

"CRAFT" BUILDING

2.5-Story Building: Units (2 BR, 2-1/2 Baths) and 2-Car Garages, with ground floor Retail

UNITS	Quan.	Living Space	Parking	Total livable area	Total sqft
Unit A1 (1BR)	1	775		775	775
Unit A2 (1BR)	1	709		709	709
Unit B1	2	1,049	458	1,049	2,098
Unit B1-1	2	1,186	472	1,186	2,372
Unit B2	1	1,318	524	1,318	1,318
Unit B3	2	1,169	524	1,169	2,338
TH Unit 2B	4	2,057	454	2,057	8,228
Total units	13				
Total unit area		1372			1738
Restaurant corner					2,400
Retail					3,483
Community space					1,450
Total additional s					7,333
Total CRAFT building					25,171

5,248 craft parking
36,940 townhome parking
38,590 guest/retail parking (estimate)
80,778 total

TOWNHOMES

2- and 3-Story Units with 2-Car Garage

UNITS	Quan.	Space	Parking		Total sqft
Unit 1 (2BR+Den/3.5B)	28	1,912	454		53,536
Unit 2B (3BR+Den/3.5B)	22	2,057	454		45,254
Unit 3 (end) (3BR+Den/3.5	15	2,102	445		31,530
Unit 3X (end) (3BR+Den/3	11	2,056	445		22,616
Unit 4 (2-story end) (3BR+	6	1,611	445		9,666
Total units	82				
Total unit area		1983			162602
Total CRAFT building plus Townhomes: living area					180,440
Total CRAFT building plus Townhomes: living area + community space + restaur					187,773

PARKING

ASSIGNED PARKING	Car/Unit	Space	Parking		Total
Townhomes	2				170
CRAFT Building: 2BR Units	2				14
CRAFT Building: 1BR Units	1				2
Total Assigned Parking					186
Guest / Retail Parking					Total
Guest/Retail Parkign on Niles Blvd.					28
Guest/Retail Parkign on Site					57
Total Assigned Parking					85

Appendix A-5

Trip Generation

Trip Generation

Updated: 12/13/2017

For CalEEMod Entry

Type	Subtype	Quantity	Unit	Calculated trips and VMT: Weekday Trips	Weekday VMT	Annual Trips	Annual VMT	CalEEMod Calcs: Daily Trips	Daily VMT	Annual Trips	Annual VMT	
Parking	Parking Lot	1.7	acres	0	0	0	0					
Recreational	Health Club	1450	square feet	0	0	0	0					
Recreational	Quality Restaurant	2400	square feet	197	642	71,140	231,824			231,193		0.3%
Residential	Apartments Low Rise	13	dwelling units	93	591	29,984	190,250			189,672		0.3%
Residential	Condo/Townhouse	82	dwelling units	588	3,731	189,129	1,200,039			1,196,390		0.3%
Retail	Regional Shopping Center	3483	square feet	129	620	50,719	244,302			243,485		0.3%
				1,007	**5,585**	**340,972**	**1,866,415**			**1,860,739**		0.3%

Email from Mark Spencer 12/13/17

Note: reduced total daily trips by 21 (2%) to account for internal trip capture (email from Karl on 12/13/17)

Table 1 – Trip Generation Summary

Land Use	Units	Daily Rate	Daily Trips	AM Peak Hour Rate	AM Peak Hour Trips	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Rate	PM Peak Hour Trips	PM Peak Hour In	PM Peak Hour Out	W-Trans Daily Trips: Daily Rate	Daily Trips
Existing													
Multifamily Housing (Low-Rise)	95 du	7.17	681	0.56	53	15	38	0.67	64	38	26	7.32	695
Quality Restaurant	2.40 ksf	82.13	197	4.47	11	9	2	8.28	20	12	8	83.84	201
Shopping Center	3.48 ksf	36.98	128	3	10	6	4	4.21	15	7	8	37.75	131
Internal Trip Capture				8%	-6	-2	-4	15%	-15	-9	6		
Total			1006		**68**	**28**	**40**		**84**	**48**	**36**		**1027**

Note: du = dwelling unit; ksf = 1,000 square feet; 21

2% reduction in total trips due to internal trip capture

Notes from Mark / Allison:

NOT USED: Also, to be conservative and based on the location, **no pass-by trips were applied and no internal trip capture between land uses was assumed**

Weekdays would have approximately **1.5 times the number of trips as a Saturday, and approximately twice the number of trips as a Sunday for residential**

Restaurant is about **15 more trips on Saturday** than during the week, and **30 less trips on Sunday** compared to the weekdays.

Shopping center has **30 more trips on Saturday** than during a weekday, while **Sunday is 50 trips less** than Weekdays.

CalEEMod Trip Type	Land Use	Calculated Trip rates by weekday: Weekday	Saturday	Sunday
Apartments Low Rise	Multifamily Housing (Low-Rise)	7.170321	4.78	3.59
Condo/Townhouse	Multifamily Housing (Low-Rise)	7.170321	4.78	3.59
Quality Restaurant	Quality Restaurant	82.12565	88.29	69.54
Regional Shopping Center	Shopping Center	36.97809	65.97	28.47

CalEEMod Inputs

VehicleTripsLandUseSubType	VehicleTripsLandUseSizeMetric	WD_TR	ST_TR	SU_TR	*defaults* HW_TL	HS_TL	HO_TL	CC_TL	CW_TL	CNW_TL	PR_TP	DV_TP	PB_TP	*defaults* HW_TTP	HS_TTP	HO_TTP	CC_TTP	CW_TTP	CNW_TTP	Weighted Trip Lenghts: Average Pr	Average Overall Trip Length
Apartments Low Rise	Dwelling Unit	7.17	4.78	3.59	10.8	4.8	5.7	0	0	0	86	11	3	31	15	54	0	0	0	7.146	6.35
Condo/Townhouse	Dwelling Unit	7.17	4.78	3.59	10.8	4.8	5.7	0	0	0	86	11	3	31	15	54	0	0	0	7.146	6.35
Health Club	1000sqft	0.00	0.00	0.00	0	0	0	7.3	9.5	7.3	52	39	9	0	0	0	64.1	16.9	19	7.6718	4.75
Parking Lot	Acre	0.00	0.00	0.00	0	0	0	7.3	9.5	7.3	0	0	0	0	0	0	0	0	0	0	0.00
Quality Restaurant	1000sqft	82.13	88.29	69.54	0	0	0	7.3	9.5	7.3	38	18	44	0	0	0	69	12	19	7.564	3.26
Regional Shopping Center	1000sqft	36.98	65.97	28.47	0	0	0	7.3	9.5	7.3	54	35	11	0	0	0	64.7	16.3	19	7.6586	4.82

CalEEMod Defaults (for reference)

VehicleTripsLandUseSubType	VehicleTripsLandUseSizeMetric	WD_TR	ST_TR	SU_TR	HW_TL	HS_TL	HO_TL	CC_TL	CW_TL	CNW_TL	PR_TP	DV_TP	PB_TP	HW_TTP	HS_TTP	HO_TTP	CC_TTP	CW_TTP	CNW_TTP
Apartments Low Rise	Dwelling Unit	6.59	7.16	6.07	10.8	4.8	5.7	0	0	0	86	11	3	31	15	54	0	0	0
Condo/Townhouse	Dwelling Unit	5.81	5.67	4.84	10.8	4.8	5.7	0	0	0	86	11	3	31	15	54	0	0	0
Health Club	1000sqft	32.93	20.87	26.73	0	0	0	7.3	9.5	7.3	52	39	9	0	0	0	64.1	16.9	19
Parking Lot	Acre	0	0	0	0	0	0	7.3	9.5	7.3	0	0	0	0	0	0	0	0	0
Quality Restaurant	1000sqft	89.95	94.36	72.16	0	0	0	7.3	9.5	7.3	38	18	44	0	0	0	69	12	19
Regional Shopping Center	1000sqft	42.7	49.97	25.24	0	0	0	7.3	9.5	7.3	54	35	11	0	0	0	64.7	16.3	19

Day of week ratios

0.9	1.1
1.0	1.2
1.6	1.2
#DIV/0!	#DIV/0!
1.0	1.2
0.9	1.7

Appendix A-6

Energy Use

Energy Use

Updated: 12/13/2017

For CalEEMod Entry

Sheet to calculate the kWh of energy generated by on-site rooftop solar based on the City's Solar Ordinance

Solar Ordinance: http://www.codepublishing.com/CA/Fremont/html/Fremont15/Fremont1544.html#15.44.050

Newly constructed buildings of residential occupancy in the City of Fremont shall:

1. Be designed to include the green building measures specified as mandatory under the California Green Building Standards Code (CalGreen) Chapter 4;
2. Have a solar photovoltaic system installed. The minimum system requirement shall be satisfied using either of two methods, prescriptive or performance:

A. Prescriptive Method. The method shall be applicable to those buildings **less than 4,500 square foot of conditioned floor space**. The nameplate system size shall be calculated as the sum of each solar module's nameplate output. The minimum capacity shall be:

Table 110.12-A: Minimum Nameplate System Size (kW_{DC}) Required [CZ3]

Conditioned Space (ft^2)	Minimum kW (DC) Required
Less than 1000	1.5
1000 - 1499	1.7
1500 - 1999	2.1
2000 - 2499	2.4
2500 - 2999	2.7
3000 - 3499	3
3500 - 3999	3.2
4000 - 4499	3.5

B. Performance Method. Install a solar photovoltaic system sized to meet the minimum percentage of the building's total TDV energy on an annual basis, as defined in Table 110.12-B. The system sizing requirement shall be based upon total building TDV energy use, including both conditioned and unconditioned space and calculated using modeling

Table 110.12-B: Minimum Percent Reduction of Total Annual TDV Energy Use by Climate Zone

Climate Zone	PV % Total TDV
CZ3	55%

Residential kWh - unmitigated

Unmitigated	464,862	*CalEEMod output below*
CRAFT	*54,810*	
TOWNHOMES	*410,052*	
Mitigated	459,912	*CalEEMod output below*
CRAFT	*54,053*	*estimated based on DU portion*
TOWNHOMES	*405,859*	*estimated based on DU portion*

CalEEMod Output

From file: *FNG_mitigated_OUTPUT_v4_NoSolar*

	UNMITIGATED	MITIGATED	UNMITIGATED	MITIGATED
	NaturalGas Use	NaturalGas Use	Electricity Use	Electricity Use
Land Use	kBTU/yr	kBTU/yr	kWh/yr	kWh/yr
Apartments Low Rise	264544	206906	54810.3	54052.9
Condo/Townhouse	1.86E+06	1.45E+06	410052	405859
Health Club	35887.5	29416.9	10962	10523.4
Parking Lot	0	0	25918.2	25918.2
Quality Restaurant	403008	379068	69552	67950
Regional Shopping Center	16008	12615	36470.4	34521.6
Total				

Option A: kW requirement - NOT USED

PV Watts kWh calcultions by system size

Inputs: Hayward weather data, fixed roof mount, and defaults: 20° tilt, 180° azimuth, 14% system loss, 96% inverter efficiency, and 1.1 DC to AC size

\\Sfo-file01\projects\SFO\17xxxx\D170627.00 - Fremont Niles Gateway\03 Working Documents\AQ-GHG\Solar PV

System size (kW)	Annual kWh
1.5	2,309
1.7	2,617
2.1	3,232
2.4	3,694

Unit Type	sqft/unit	kW per unit min	# units	kW total	Annual kWh/system	Annual kWh total		
CRAFT								
Unit A1 (1BR)	775	1.5	1	1.5	2,309	2,309		
Unit A2 (1BR)	709	1.5	1	1.5	2,309	2,309		
Unit B1	1,049	1.7	2	3.4	2,617	5,234		
Unit B1-1	1,186	1.7	2	3.4	2,617	5,234		
Unit B2	1,318	1.7	1	1.7	2,617	2,617		
Unit B3	1,169	1.7	2	3.4	2,617	5,234		
TH Unit 2B	2,057	2.4	4	9.6	3,694	14,776		
Total			**13**	**24.5**	**18,780**	**37,713**	70%	Percent of total electricity demand
TOWNHOMES								
Unit 1 (2BR+Den/3.!	1,912	2.1	28	58.8	3,232	90,496		
Unit 2B (3BR+Den/3	2,057	2.4	22	52.8	3,694	81,268		
Unit 3 (end) (3BR+D	2,102	2.4	15	36.0	3,694	55,410		
Unit 3X (end) (3BR+	2,056	2.4	11	26.4	3,694	40,634		
Unit 4 (2-story end)	1,611	2.1	6	12.6	3,232	19,392		
Total			**82**	**186.6**	**17,546**	**287,200**	71%	Percent of total electricity demand
TOTAL ALL UNITS			**95**	**211.1**	**36,326**	**324,913**		

Option B: kWh requirement

Percent energy	55%
Unmitigated	255,674
CRAFT	*30,146*
TOWNHOMES	*225,529*
Mitigated	252,952
CRAFT	***29,729***
TOWNHOMES	***223,222***

TOTAL = Option B

252,952

598,825 Total electricity demand

42% Percent of total electricity demand

Appendix A-7

Silt Loading

Silt Loading

updated: 10/13/2017

Silt Loading Factor

For entry into CalEEMod - Construction onroad and Operation mobile

Source: ARB 2016: Miscellaneous Process Methodology 7.9 — Entrained Road Travel, Paved Road Dust. https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf

Table 6 2008 Roadway Travel Fractions and VMT (1) Estimates for California Entrained Paved Road Dust

	2008 HPMS Travel Fractions			
County	Freeway	Major	Collector	Local
Alameda	0.566	0.317	0.064	0.053

1

TABLE 7: 2008 Silt Loadings and PM10 Emission Factors for California Entrained Paved Road Dust Estimates

	Silt Loadings (g/m2)			
County	Freeway	Major	Collector	Local
Alameda	0.015	0.032	0.032	0.32

Composite SL **0.037642** *enter into CalEEMod* NOTE: for operational mobile sources run, must do this as a last step immediately before running the model or else it will default to zero

Re-entrained PAVED Road Dust Emission Factors

Methodology

Calculation Methodology: USEPA AP-42, Paved Roads, Section 13.2.1, Revised January 2011:
http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf

Avg vehicle weight and silt loading on Local Roads within Los Angeles County
http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2014.pdf

Precipitation Days greater than 0.254mm (0.01 in)
http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2014.pdf

Pollutant	Variables					E_{ext} (g/mi)
	k	sL	W	P	N	
PM10	1.00	0.037642	2.4	24	365	**2.45198**
PM2.5	0.25	0.037642	2.4	24	365	**2.41468**

Where:	**Source**
E = particulate emission factor (grams of particulate matter/VMT)	*calculation*
k = particle size multiplier (g/VMT)	*default from AP-42*
sL = local roadway silt loading (g/m2)	*ARB Section 7.9, Table 3. Local, Local Urban - SEE ABOVE*
W = average weight of vehicles on the road (tons)	*ARB Section 7.9, Table 3. 2.4 for Los Angeles*
P = number of wet days with at least 0.254mm of precipitation	*ARB Section 7.9, Table 10. 67 for Los Angeles*
N = number of days in the averaging period	annual days (365)

Appendix A-8

CalEEMod Summary

CalEEMod Outputs

updated: 12/13/2017

Paste from CalEEMod: see *OutputSummary_v2*

Construction updated: 12/1/2017

Year	Category 1	Category 2	Mit / Unmit	Annual Emissions (tons or MT per year for GHG) ROG	NOX	CO	SOX	PM10 Exh	PM10 Dst	PM10 T	PM2.5 Ex	PM2.5 Dst	PM2.5 T	CO2	CH4	N2O
2019	Fugitive Dust	Offroad Equipment	Unmitigated	-	-	-	-	-	0.024	0.024	-	0.004	0.004	-	-	-
2019	Off-Road	Offroad Equipment	Unmitigated	0.144	1.430	1.131	0.002	**0.084**	-	0.084	**0.078**	-	0.078	165.533	-	-
2019	Paving	Offroad Equipment	Unmitigated	0.002	-	-	-	-	-	-	-	-	-	-	-	-
2019	Archit. Coating	Offroad Equipment	Unmitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2019	Hauling	Onroad Truck Travel	Unmitigated	0.001	0.038	0.006	0.000	**0.000**	0.001	0.001	**0.000**	0.000	0.000	9.363	-	-
2019	Vendor	Onroad Truck Travel	Unmitigated	0.005	0.146	0.032	0.000	**0.001**	0.002	0.003	**0.001**	0.001	0.002	30.327	-	-
2019	Worker	Worker Commute	Unmitigated	0.022	0.016	0.166	0.000	**0.000**	0.006	0.006	**0.000**	0.007	0.007	41.388	-	-
2020	Fugitive Dust	Offroad Equipment	Unmitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2020	Off-Road	Offroad Equipment	Unmitigated	0.230	2.263	1.860	0.003	**0.131**	-	0.131	**0.123**	-	0.123	270.265	-	-
2020	Paving	Offroad Equipment	Unmitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2020	Archit. Coating	Offroad Equipment	Unmitigated	0.085	-	-	-	-	-	-	-	-	-	-	-	-
2020	Hauling	Onroad Truck Travel	Unmitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2020	Vendor	Onroad Truck Travel	Unmitigated	0.011	0.354	0.076	0.001	**0.002**	0.006	0.008	**0.002**	0.004	0.005	79.697	-	-
2020	Worker	Worker Commute	Unmitigated	0.048	0.035	0.363	0.001	**0.001**	0.015	0.016	**0.001**	0.016	0.017	97.466	-	-
2021	Fugitive Dust	Offroad Equipment	Unmitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	Off-Road	Offroad Equipment	Unmitigated	0.127	1.259	1.129	0.002	**0.069**	-	0.069	**0.065**	-	0.065	166.785	-	-
2021	Paving	Offroad Equipment	Unmitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	Archit. Coating	Offroad Equipment	Unmitigated	0.060	-	-	-	-	-	-	-	-	-	-	-	-
2021	Hauling	Onroad Truck Travel	Unmitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	Vendor	Onroad Truck Travel	Unmitigated	0.006	0.198	0.042	0.001	**0.000**	0.004	0.004	**0.000**	0.002	0.003	48.504	-	-
2021	Worker	Worker Commute	Unmitigated	0.027	0.019	0.204	0.001	**0.000**	0.009	0.010	**0.000**	0.010	0.010	58.091	-	-
2019	Fugitive Dust	Offroad Equipment	Mitigated	-	-	-	-	-	0.024	0.024	-	0.004	0.004	-	-	-
2019	Off-Road	Offroad Equipment	Mitigated	0.023	0.159	1.225	0.002	**0.003**	-	0.003	**0.003**	-	0.003	165.533	-	-
2019	Paving	Offroad Equipment	Mitigated	0.002	-	-	-	-	-	-	-	-	-	-	-	-
2019	Archit. Coating	Offroad Equipment	Mitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2019	Hauling	Onroad Truck Travel	Mitigated	0.001	0.038	0.006	0.000	**0.000**	0.001	0.001	**0.000**	0.000	0.000	9.363	-	-
2019	Vendor	Onroad Truck Travel	Mitigated	0.005	0.146	0.032	0.000	**0.001**	0.005	0.005	**0.001**	0.001	0.002	30.327	-	-
2019	Worker	Worker Commute	Mitigated	0.022	0.016	0.166	0.000	**0.000**	0.023	0.023	**0.000**	0.007	0.007	41.388	-	-
2020	Fugitive Dust	Offroad Equipment	Mitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2020	Off-Road	Offroad Equipment	Mitigated	0.038	0.239	1.972	0.003	**0.005**	-	0.005	**0.005**	-	0.005	270.265	-	-
2020	Paving	Offroad Equipment	Mitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2020	Archit. Coating	Offroad Equipment	Mitigated	0.085	-	-	-	-	-	-	-	-	-	-	-	-
2020	Hauling	Onroad Truck Travel	Mitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2020	Vendor	Onroad Truck Travel	Mitigated	0.011	0.354	0.076	0.001	**0.002**	0.012	0.014	**0.002**	0.004	0.005	79.697	-	-
2020	Worker	Worker Commute	Mitigated	0.048	0.035	0.363	0.001	**0.001**	0.056	0.057	**0.001**	0.016	0.017	97.466	-	-
2021	Fugitive Dust	Offroad Equipment	Mitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	Off-Road	Offroad Equipment	Mitigated	0.023	0.147	1.217	0.002	**0.003**	-	0.003	**0.003**	-	0.003	166.785	-	-
2021	Paving	Offroad Equipment	Mitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	Archit. Coating	Offroad Equipment	Mitigated	0.060	-	-	-	-	-	-	-	-	-	-	-	-
2021	Hauling	Onroad Truck Travel	Mitigated	-	-	-	-	-	-	-	-	-	-	-	-	-
2021	Vendor	Onroad Truck Travel	Mitigated	0.006	0.198	0.042	0.001	**0.000**	0.007	0.008	**0.000**	0.002	0.003	48.504	-	-
2021	Worker	Worker Commute	Mitigated	0.027	0.019	0.204	0.001	**0.000**	0.035	0.035	**0.000**	0.010	0.010	58.091	-	-

For HRA

	PM10 Exh Unmit	PM10 Exh Mit	PM2.5 Ex Unmit	PM2.5 Ex Mit
Off-Road				
2019	0.084	0.003	0.078	0.003
2020	0.131	0.005	0.123	0.005
2021	0.069	0.003	0.065	0.003
On-Road				
2019	0.001	0.001	0.001	0.001
2020	0.002	0.002	0.002	0.002
2021	0.001	0.001	0.001	0.001

Operation updated: 1/22/2018

Year	Source		Mit / Unmit	Annual Emissions (tons or MT per year for GHG) ROG	NOX	CO	SOX	PM10 Exh	PM10 Dst	PM10 T	PM2.5 Exh	PM2.5 Dst	PM2.5 T	CO2	CH4	N2O	
2024	Area		Unmitigated	0.892	0.008	0.707	0.000	0.004	-	0.004	0.004	-	0.004	1.152	0.001	-	ONLY INCLUDES SOLAR ORDINANCE (no T24 or waste)
2024	Energy		Unmitigated	0.014	0.120	0.061	0.001	0.010	-	0.010	0.010	-	0.010	207.817	0.009	0.003	File: *OutputSummary_v3_unmit_SOLARONLY*
2024	Mobile		Unmitigated	0.257	1.658	2.674	0.009	0.009	0.349	0.359	0.009	0.102	0.111	863.602	0.040	-	
2024	Waste		Unmitigated	-	-	-	-	-	-	-	-	-	-	-	0.694	-	
2024	Water		Unmitigated	-	-	-	-	-	-	-	-	-	-	10.625	0.238	0.006	
2024	Area		Mitigated	0.892	0.008	0.707	0.000	0.004	-	0.004	0.004	-	0.004	1.152	0.001	-	File: *OutputSummary_v2_mit*
2024	Energy		Mitigated	0.011	0.097	0.050	0.001	0.008	-	0.008	0.008	-	0.008	179.180	0.008	0.003	Mitigated INCLUDES above + transportation measures
2024	Mobile		Mitigated	0.257	1.658	2.674	0.009	0.009	0.349	0.359	0.009	0.102	0.111	863.602	0.040	-	
2024	Waste		Mitigated	-	-	-	-	-	-	-	-	-	-	-	0.694	-	29.0727 19.418 11.7349
2024	Water		Mitigated	-	-	-	-	-	-	-	-	-	-	9.075	0.190	0.005	17.0325 6.53385 2.3038
		percent reduced by mit															
			Area	0%	0%	0%	0%	0%	#DIV/0!	0%	0%	#DIV/0!	0%	0%	0%	0%	#DIV/0!
			Energy	-19%	-19%	-18%	-20%	-20%	#DIV/0!	-20%	-20%	#DIV/0!	-20%	-14%	-8%	-15%	
			Mobile	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#DIV/0!	
			Waste	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0%	#DIV/0!	
			Water	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	-15%	-20%	-20%	

Appendix A-9

Health Risk Assessment – AERSCREEN Outputs

AERSCREEN Inputs and Outputs

Updated: 12/6/2017

Notes
Concentrations modeled using AERSCREEN worst-case 1-hr, scaled to annual

Input

	Construction Off-Road Equip	Construction On-Road Trucks	Notes
Title	Offroad	Onroad	
Units	M	M	
Source Type	A	A	
DPM emission rate (g/s)	1	1	Unit emission rate for scaling
Release Height above ground (meters)	3.89	2.55	Release height for off -road construction equipment and on-road operational mobile sources from the CRRP-HRA (BAAQMD, SF DPH & SF Planning, 2012). Fo
Maximum horizontal dimension of area source (meters)	285	483	Off-road: rounded max down (from 365m) to represent the majority of the construction area. On-road: 0.3 mile = XX meters
Minimum horizontal dimension of area source (meters)	95	9	Off-road: rounded min down (from 130m) to represent the majority of the construction area. On-road: VW + 6m for single lane / Road Width + 6m for two-la
Initial Vertical Dimension (meters)	1.4	2.37	Initial vertical dimension for off-road construction equipment from the CRRP-HRA (BAAQMD, SF DPH & SF Planning, 2012). Initial vertical dimension for on-r
rural/urban	urban	urban	Although CRRP uses rural (page 31), AERSCREEN is already exceedingly conservative, so per the AQTR SOW used urban instead.
population of urban area	*233,136*	*233,136*	https://www.census.gov/quickfacts/fact/table/fremontcitycalifornia/PST045216
min distance to ambient air (meters)	default	default	
NO2 chemistry	1	1	
max distance to probe	default	default	
include discrete receptors	no	no	
use flagpole receptors	yes	yes	
flagpole receptor height (meters)	1.5	1.5	BAAQMD 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards
source elevation	default	default	
min ambient temperature (F)	*45*	*45*	http://www.intellicast.com/local/history.aspx?location=USCA0008
max ambient temperature (F)	*75*	*75*	http://www.intellicast.com/local/history.aspx?location=USCA0008
min ambient temperature (K)	280	280	
max ambient temperature (K)	297	297	
min wind speed (m/s)	default	default	
anemometer height (m)	default	default	
surface characteristics	2	2	
Dominant surface profile	7	7	
dominant climate profile	1	1	
adjust	no	no	
debug	no	no	
Output file name	Offroad.out	Onroad.out	

Outputs

	Construction Off-Road Equip	Construction On-Road Trucks	Distance (m)	Receptor Location
Closest Receptors				
Concentrations - Maximum 1-hr (ug/m3)				
Residential	1217.1	2707	n/a	Residential surrounding site
Hospital				
Daycare				
School	1161.6	2648	100	Schools
Concentrations - Average Annual (ug/m3)				
Residential	121.71	270.7		
Hospital				
Daycare				
School	116.16	264.8		

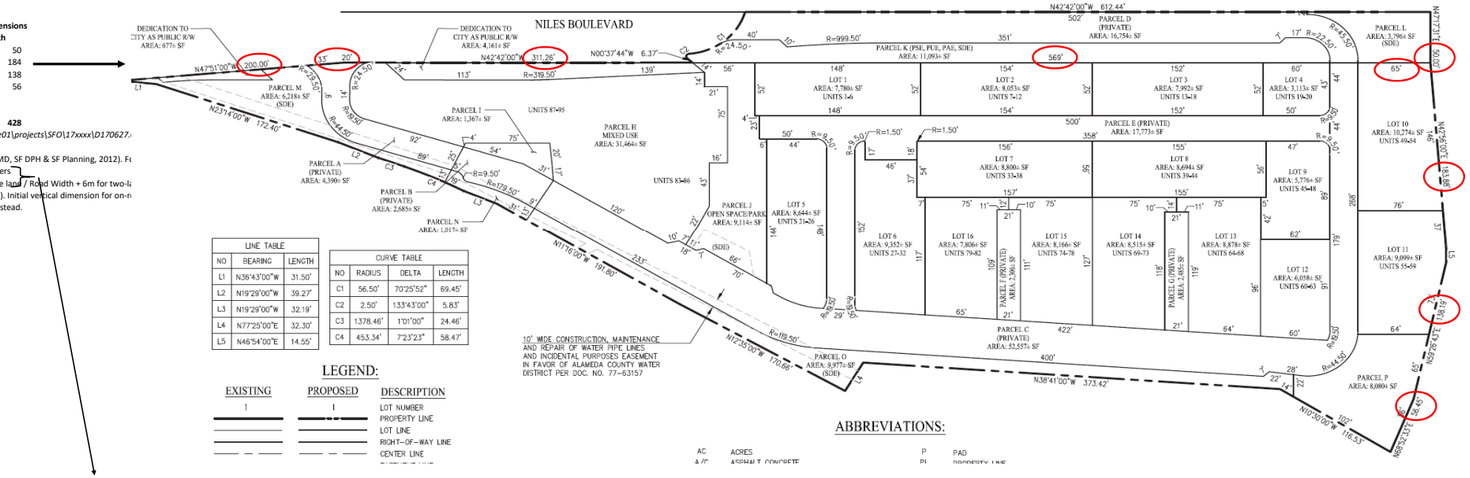
All Receptors	Paste from AERSCREEN Output		
Distance (m)	**Concentrations - Maximum 1-hr (ug/m3)**		
1	962.87	2554.10	1
25	1028.9	2607.10	25
50	1080	2623.10	50
75	1123.7	2635.80	75
100	1161.6	2648.00	100
125	1195.2	2660.30	125
143	**1217.1**	2680.30	150
150	1142.7	2688.30	175
175	832.54	2695.30	200
200	636.68	2702.40	225
225	528.06	**2707.00**	242
250	448.98	1996.70	250
275	388.81	928.67	275
300	341.52	665.09	300
325	303.69	519.90	325
350	272.42	401.24	350

5.41
4.08

Actual Site Dimensions

Length	Width
65	50
569	184
311	138
20	56
33	
200	
1198	**428**

source: \\SFO-FILE01\projects\SFO\17xxxx\D170627.



LINE TABLE		
NO	BEARING	LENGTH
L1	N36°43'00"W	31.50'
L2	N19°29'00"W	39.27'
L3	N19°29'00"W	32.19'
L4	N77°25'00"E	32.30'
L5	N46°54'00"E	14.55'

CURVE TABLE			
NO	RADIUS	DELTA	LENGTH
C1	56.50'	70°25'52"	69.45'
C2	2.50'	133°43'00"	5.83'
C3	1378.46'	1°01'00"	24.46'
C4	453.34'	7°23'23"	58.47'

LEGEND:

EXISTING	PROPOSED	DESCRIPTION
		LOT NUMBER
		PROPERTY LINE
		LOT LINE
		RIGHT-OF-WAY LINE
		CENTER LINE

ABBREVIATIONS:

AC	ACRES	P	PAD
A/C	ASPHALT CONCRETE	PL	PROPERTY LINE

Appendix A-10

Health Risk Assessment - Calculations

HRA - Screening

Updated: 12/6/2017

HRA Notes:

Emission Rates / Scaling Factors

	Construction Off-Road Equip	Construction On-Road Trucks	NOTES
DPM g/s			
Unmitigated			
All Construction	3.32E-03	1.12E-06	for offsite
2020-2021	3.55E-03	1.19E-06	for onsite
Mitigated			
All Construction	1.25E-04	1.12E-06	for offsite
2020-2021	1.38E-04	1.19E-06	for onsite
PM2.5 g/s			
Unmitigated			
2019	2.70E-03	4.55E-05	
2020	3.53E-03	6.55E-05	
2021	3.01E-03	3.75E-05	
Mitigated			
2019	1.01E-04	4.55E-05	
2020	1.38E-04	6.55E-05	
2021	1.38E-04	3.75E-05	

Cancer Risk Calculations

	Construction Off-Road Equip	Construction On-Road Trucks	NOTES
Average Annual Scaler Concentrations (ug/m3)			
Residential - offsite	121.71	270.70	
Residential - onsite	121.71	270.70	same as offsite, receptors could be any distance
School	116.16	264.80	
Average Annual SCALED Concentrations (ug/m3)			
Unmitigated			
Residential - offsite	0.404265381	0.000302995	
Residential - onsite	0.432514808	0.000322909	
School	0.3858308	0.000296392	
Mitigated			
Residential - offsite	0.015233709	0.000302995	
Residential - onsite	0.01677289	0.000322909	
School	0.014539049	0.000296392	
Risk Factors			
Construction			
Residential - offsite	348.09	348.09	Sum of all age groups; same for all scenarios
Residential - onsite	238.48	238.48	
School	36.61	36.61	""

	Construction Off-Road Equip	Construction On-Road Trucks	Construction TOTAL
Cancer Risk - Unmitigated			
Construction			
Residential - offsite	140.72	0.11	140.83
Residential - onsite	103.15	0.08	103.22
School	14.12	0.01	14.13
Cancer Risk - Mitigated			
Construction			
Residential - offsite	5.30	0.11	5.41
Residential - onsite	4.00	0.08	4.08
School	0.53	0.01	0.54

Chronic Hazard Index

Chronic REL (µg/m3) 5.0

California Air Resources Board, "Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values" and "OEHHA/ARB Approved Chronic Reference Exposure Levels and Target Organs," http://www.ar
Table last updated: February 23, 2017. Downloaded 10/9/17

Chronic Hazard Index	Construction Off-Road Equip	Construction On-Road Trucks		NOTES
Unmitigated				
Residential - offsite	0.1	0.0	0.08	
Residential - onsite	0.1	0.0	0.09	
School	0.1	0.0	0.08	
Mitigated				
Residential - offsite	0.0	0.0	0.00	
Residential - onsite	0.0	0.0	0.00	
School	0.0	0.0	0.00	

ESTIMATED PM2.5 Concentrations - Average Annual (ug/m3)

	Construction Off-Road Equip	Construction On-Road Trucks		NOTES
Average Annual Scaler Concentration (ug/m3)				
Residential - offsite	121.71	270.7		
Residential - onsite	121.71	270.7		
School	116.16	264.8		
Average Annual SCALED Concentrations (ug/m3)				
Unmitigated				
Residential - offsite	4.30E-01	1.77E-02	0.45	
Residential - onsite	4.30E-01	1.77E-02	0.45	
School	4.10E-01	1.73E-02	0.43	
Mitigated				
Residential - offsite	1.68E-02	1.77E-02	0.03	
Residential - onsite	1.68E-02	1.77E-02	0.03	
School	1.60E-02	1.73E-02	0.03	

NOT USED - by year

Average Annual Scaler Concentration (ug/m3)			
All Receptor Locations	121.71	270.7	
Average Annual SCALED Concentrations (ug/m3)			
Unmitigated			
2019	0.328539119	0.012312284	0.34
2020	0.430068269	0.017726607	0.45
2021	0.366334535	0.01015179	0.38
Mitigated			
2019	0.012344271	0.012312284	0.02
2020	0.016773007	0.017726607	0.03
2021	0.016757807	0.01015179	0.03

4.12.2.1 Non-Continuous Sources

When modeling a non-continuously emitting source (e.g., operating for eight hours per day and five days per week), the modeled long-term average concentrations are based on 24 hours a day and seven days per week for the period of the meteorological data set. Even though the emitting source is modeled using a non-continuous emissions schedule, the long-term concentration is still based on 24 hours a day and seven days per week. Thus, this concentration includes the zero hours when the source was not operating. For the offsite worker inhalation risk, we want to determine the long-term concentration the worker is breathing during their work shift. Therefore, the long-term concentration needs to be adjusted so it is based only on the hours when the worker is present. For example, assuming the emitting source and worker's schedules are the same, the adjustment factor is 4.2 = (24 hours per day/8 hours per shift)x(7 days in a week/5 days in a work week). In this example, the long term residential exposure is adjusted upward to represent the exposure to a worker. Additional concentration adjustments may be appropriate depending on the work shift overlap. These adjustments are discussed below.

4.12.2.2 Continuous Sources

If the source is continuously emitting, then the worker is assumed to breathe the long-term annual average concentration during their work shift. Equation 4.1 becomes one and no concentration adjustments are necessary in this situation when estimating the inhalation cancer risk. Note however, if an assessor does not wish to apply the assumption the worker breathes the long-term annual average concentration during the work shift, then a refined concentration can be post-processed as described in Appendix M. All alternative assumptions should be approved by the reviewing authority and supported in the presentation of results.

2.1.3.2 Short Term Projects

In the 2015 HRA Guidelines, OEHHA recommends using actual project duration for short term projects, but cautions that the risk manager should consider a lower cancer risk threshold for very short term projects, because a higher exposure over a short period of time may pose a greater risk than the same total exposure spread over a much longer period of time. To ensure that short-term projects do not result in unanticipated higher cancer impacts due to short-duration high-exposure rates, the Air District recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for projects lasting three years or less. For residential exposures, the cancer risk calculations should include the most sensitive age groups (beginning with the third trimester of pregnancy) and should use the 95th percentile breathing rates. The Air District recommends following OEHHA guidelines for other aspects of short term projects. In summary, the Air District recommends:

- use of actual emission rates over a minimum 3-year duration for cancer risk assessments involving projects lasting 3 years or less, and
- use of actual project duration for cancer risk assessments on projects lasting longer than 3 years.

8.3.1 *Calculation of Noncancer Inhalation Hazard Quotient and Hazard Index*

To calculate the acute HQ, the maximum 1-hour ground level concentration (in $\mu g/m^3$) of a substance at a receptor is divided by the acute 1-hour REL (in $\mu g/m^3$) for the substance:

$$\text{Acute Hazard Quotient} = \frac{\text{1-Hour Max Concentration } (\mu g/m^3)}{\text{Acute REL } (\mu g/m^3)}$$

To calculate the chronic HQ, the annual average ground level concentration of a substance is divided by the chronic REL for the substance:

$$\text{Chronic Hazard Quotient} = \frac{\text{Annual Average Concentration } (\mu g/m^3)}{\text{Chronic REL } (\mu g/m^3)}$$

To calculate the 8-hour HQ, the adjusted annual average ground level concentration of a substance (represented as "Adjusted C_{air}" in EQ 5.4.1.4 A) is divided by the 8-hour REL for the substance:

Appendix A-11

Health Risk Assessment – Risk Factors

Risk Factors

Updated: 12/4/2017

Notes

Normally, we use a worker adjustment factor to estimate risk for school and daycare receptors, but this is used if AERMOD models sources using a non-continuous emissions schedule (e.g. work hours). However, because we use AERSCREEN, which assumes a continuous emission rate based on th schedule of 5 days per week and 8 hrs/day (and estimates maximum 1-hr concentrations), concentrations are based on continuous emissions, and we don't need the adjustment factor.

Dose Calculation

NOT USED = grey

Dose Factors	**3rd Trimester**	**Age 0<2 Years**	**Age 2<9 Years**	**Age 2<16 Years**	**Age 16<30 Years**	**Age 16<70 Years**	**Notes / Source**
Daily Breathing Rate (DBR) [L/kg-day or L/kg-8hrs]							
Residential	361	1090	631	572	261		95th percentile 24-hour breathing rates (OEHHA Table 5.6) for 3rd trimester and age 0<2 years and 80th percentile 24-ho
Hospital	361	1090	631	572	261		Same as residential
Daycare		1200	640	520	240		95th percentile 8-hour moderate intensity breathing rates (OEHHA Table 5.8) for 3rd trimester, age 0<2 years, and age 2<
School			640	520		230	95th percentile 8-hour moderate intensity breathing rates (OEHHA Table 5.8) for age 2<16 years.
Inhalation Absorption Factor (A)	1	1	1	1	1		
Exposure Frequency (EF) [days/365 days]							
Residential	0.96	0.96	0.96	0.96	0.96	0.96	
Hospital	1.00	1.00	1.00	1.00	1.00	1.00	assume 100% in hospital
Daycare	0.68	0.68	0.68	0.68	0.68	0.68	250 days/yr
School	0.49	0.49	0.49	0.49	0.49	0.49	180 days/yr
Conversion	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	

Dose Factor (no concentration)	**3rd Trimester**	**Age 0<2 Years**	**Age 2<9 Years**	**Age 2<16 Years**	**Age 16<30 Years**	**Age 16<70 Years**
Residential - offsite	0.000346164	0.001045205	0.000605068	0.000548493	0.000250274	0
Residential - onsite	0.000346164	0.001045205	0.000605068	0.000548493	0.000250274	0
Hospital	0.000361	0.00109	0.000631	0.000572	0.000261	0
Daycare	0	0.000821918	0.000438356	0.000356164	0.000164384	0
School	0	0	0.000315616	0.000256438	0	0

Risk Calculation

Risk Factors	**3rd Trimester**	**Age 0<2 Years**	**Age 2<9 Years**	**Age 2<16 Years**	**Age 16<30 Years**	**Age 16<70 Years**	
Inhalation Cancer Potency Factor (CPF)	1.1	1.1	1.1	1.1	1.1	1.1	
Age Sensitivity Factor (ASF) [unitless]	10	10	3	3	1	1	
Exposure Duration (ED) [years]							*Total yrs exposure*
Construction							
Residential - offsite	0.25	2.00	0.21				*2.46*
Residential - onsite	0.25	1.37					exposed to construction from 2020-2021 *1.62*
Hospital	0.25	2.00	0.21				*2.46*
Daycare		2.00	0.46				*2.46*
School			2.46				Accepts kids grade 1-12 (ages 6-18), but assumed age 2 start to be conservative. http://www.corpuschr *2.46*
Averaging Time (AT) [years]	70	70	70	70	70	70	
Fraction of Time at Home (FAH) [unitless]	1	1	1	1	0.73	0.73	
							Fraction of time at home are set to 1.0 for all age groups less than 16 years, since there are potentially schools within cancer risk isopleths of one in a million or greater, per BAAQMD guidance (2016). For age groups greater than 16 years, values from OEHHA (2015) Table 8.4 were used
Chances per Million	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	

Model Adjustment Factor (MAF) [unitless] - NOT USED - see note at top of page

The Model Adjustment Factor is applied to adjust the annual average concentration from AERMOD associated with

Risk Factor (no concentration)	**3rd Trimester**	**Age 0<2 Years**	**Age 2<9 Years**	**Age 2<16 Years**	**Age 16<30 Years**	**Age 16<70 Years**
Construction						
Residential - offsite	13.60	328.49	6.00	0.00	0.00	0.00
Residential - onsite	13.60	224.88	0.00	0.00	0.00	0.00
School	0.00	0.00	36.61	0.00	0.00	0.00

Multiply risk factors by concentration to determine risk

test calc, construction res

1g/s conc						
Off-Road Equip	121.71					
On-Road Trucks	270.7					
Emission rate mit g/s						
Off-Road Equip	1.25E-04					
On-Road Trucks	1.12E-06					
Scaled conc						
Off-Road Equip	0.015233709					
On-Road Trucks	0.000302995					
Dose by Age Group						
Off-Road Equip	5.27337E-06	1.59224E-05	9.21744E-06	8.35558E-06	3.8126E-06	0
On-Road Trucks	1.04886E-07	3.16692E-07	1.83333E-07	1.66191E-07	7.58319E-08	0
Cancer risk by Age Group						
Off-Road Equip	0.207168006	5.004168998	0.09137168	0	0	0
On-Road Trucks	0.00412053	0.099531911	0.001817364	0	0	0
Cancer risk total						
Off-Road Equip	5.302708683					
On-Road Trucks	0.105469805					
total	**5.408178488**					
	5.408178488 <-table					

Table 5.6 Point Estimates of Residential Daily Breathing Rates for 3rd trimester, 0<2, 2<9, 2<16, 16<30 and 16-70 years (L/kg BW-day)

	3rd Trimester[a]	0<2 years	2<9 years	2<16 years	16<30 years	16<70 years
	L/kg-day					
Mean	225	658	535	452	210	185
95th Percentile	361	1090	861	745	335	290

[a] 3rd trimester **breathing rates** based on breathing rates of pregnant women using the assumption that the dose to the fetus during the 3rd trimester is the same as that to the mother.

Table 5.7 Daily Breathing Rate Distributions by Age Group for Residential Stochastic Analysis (L/kg BW-day)

	3rd Trimester	0<2 years	2<9 years	2<16 years	16<30 years	16-70 years
Distribution	Max extreme	Max extreme	Max extreme	Log-normal	Logistic	Logistic
Minimum	78	196	156	57	40	13
Maximum	491	2,584	1,713	1,692	635	860
Scale	59.31	568.09	125.59		40.92	36.19
Likeliest	191.50	152.12	462.61			
Location				-144.06		
Mean	225	658	535	452	210	185
Std Dev	72	217	168	172	75	67
Skewness	0.83	2.01	1.64	1.11	0.83	1.32
Kurtosis	3.68	10.61	7.88	6.02	5.17	10.83
Percentiles						
5%	127	416	328	216	96	86
10%	142	454	367	259	118	104
25%	179	525	427	331	161	141
50%	212	618	504	432	207	181
75%	260	723	602	546	252	222
80%	273	758	631	572	261	233
90%	333	934	732	659	307	262
95%	361	1090	861	745	335	290
99%	412	1430	1140	996	432	361

Table 5.8. Eight-Hour Breathing Rate (L/kg per 8 Hrs) Point Estimates for Males and Females Combined[a,b]

	0<2 years	2<9 years	2<16 years	16<30 years	16-70 years
	Sedentary & Passive Activities (METS < 1.5)				
Mean	200	100	80	30	30
95th Percentile	250	140	120	40	40
	Light Intensity Activities (1.5 < METs < 3.0)				
Mean	490	250	200	80	80
95th Percentile	600	340	270	100	100
	Moderate Intensity Activities (3.0 < METs < 6.0)				
Mean	890	470	380	170	170
95th Percentile	1200	640	520	240	230

[a] For pregnant women, OEHHA recommends using the mean and 95th percentile 8-hour breathing rates based on moderate intensity activity of 16<30 year-olds for 3rd trimester.
[b] Breathing rates in the table may be used for worker, school, or residential exposures

Table 8.4 Recommendations for Fraction of Time at Home (FAH) for Evaluating Residential Cancer Risk

Age Range	Fraction of Time at Residence
3rd Trimester, and 0<2 years	0.85[1]
2<16 years[2]	0.72[1]
16-70 years[3]	0.73

[1] Use FAH = 1 if a school is within the 1×10^{-6} (or greater) cancer risk isopleth

pathway in order to avoid underestimating cancer risk to the public, including children. A possible exception for using high-end breathing rates are when there is exposure to multipathway substances and two of the non-inhalation pathways drive the risk, rather than the inhalation pathway (see Chapter 8).

A. Equation 5.4.1.1: $Dose\text{-}air = C_{air} \times (BR/BW) \times A \times EF \times 10^{-6}$

1. Dose-air = Dose through inhalation (mg/kg/d)
2. C_{air} = Concentration in air ($\mu g/m^3$)

Table 8.3 Age Sensitivity Factors by Age Group for Cancer Risk Assessment

Age Group	Age Sensitivity Factor (unitless)
3rd Trimester	10

B. Equation 8.2.4 B: $RISK_{inh\text{-}work} = DOSE_{air} \times CPF \times ASF \times ED/AT$

1. $RISK_{inh\text{-}work}$ = Worker inhalation cancer risk

a: Recommended default values for EQ 8.2.4 B:

1. $DOSE_{air}$ = Calculated for workers in Eq. 5.4.1.2
2. CPF = Substance specific (see Table 7.1)
3. ASF = 1 for working age 16-70 yrs (See Section 8.2.1)
4. ED = 25 years
5. AT = 70 yrs for lifetime cancer risk

tions for ential ile 5.6.

b: Assumption for EQ 5.4.1.1:

1. The fraction of chemical absorbed (A) is the same fraction absorbed in the study on which the cancer potency or Reference Exposure Level is based.

8.2.4 *Calculating Residential and Offsite Worker Inhalation Cancer Risk*

Residential Receptors

For residential inhalation exposure, cancer risk must be separately calculated for specified age groups (Eq. 8.2.4A, see Section 8.2.1), because of age differences in sensitivity to carcinogens and age differences in intake rates (per kg body weight). Separate risk estimates for these age groups provide a health-protective estimate of cancer risk by accounting for greater susceptibility in early life, including both age-related sensitivity and amount of exposure. The following equation illustrates the formula for calculating residential inhalation cancer risk. See Appendix I for a detailed example calculation.

A. Equation 8.2.4 A: $RISK_{inh\text{-}res} = DOSE_{air} \times CPF \times ASF \times ED/AT \times FAH$

7. $RISK_{inh\text{-}res}$ = Residential inhalation cancer risk
8. $DOSE_{air}$ = Daily inhalation dose (mg/kg-day)
9. CPF = Inhalation cancer potency factor ($mg/kg\text{-}day^{-1}$)
10. ASF = Age sensitivity factor for a specified age group (unitless)
11. ED = Exposure duration (in years) for a specified age group
12. AT = Averaging time for lifetime cancer risk (years)
13. FAH = Fraction of time spent at home (unitless)

a: Recommended default values for EQ 8.2.4 A:

5. $DOSE_{air}$ = Calculated for each age group from Eq. 5.4.1
6. CPF = Substance-specific (see Table 7.1)
7. ASF = See Section 8.2.1
8. ED = 0.25 years for 3rd trimester, 2 years for 0<2, 7 years for 2<9, 14 years for 2<16, 14 years for 16<30, 54 years for 16-70
9. AT = 70 years*
10. FAH = See Table 8.4

*Although AT actually sums to 70.25 years when the 3rd trimester (0.25 years) is included, OEHHA recommends rounding AT = 70 years (and rounding residential exposure durations at 9- and 30-years rather than 9.25- and 30.25-years) to simplify the calculation without causing a significant adjustment. Note that the dose for the 3rd trimester is based on the breathing rate of pregnant women using the assumption that the dose to the fetus during the 3rd trimester is the same as that to the mother.

Appendix A-12

Health Risk Assessment – Emission Rates

DPM and PM2.5 Emission Rates

Updated: 12/4/2017

HRA Notes:

BAAQMD recommends short-term projects "use of actual emission rates over a minimum 3-year duration for cancer risk assessments involving projects lasting 3 years or less." This was Since AERSCREEN calculates maximum 1-hr concentration based on continuous emissions (which is then converted to annual), the 1-hr emission rate should be based on the emission rate during the entire construction period (24 hrs/day, 7 days per week).

To estimate annual average PM2.5 concentrations, divided PM2.5 exhaust emissions by the full 24hrs/day and 7 days/week when construction is occurring. This is still conservative because emissions would not occur for 2-4 months of the year (depending on the year). Could divide by the full 365 days/year for the entire year to be less conservative, but did not do this.

DPM Emission Rates

	Construction Off-Road Equip	Construction On-Road Trucks		NOTES
DPM Emissions (lbs)				
Unmitigated				
2019	168.1060049	2.7824		off-road includes equip + onsite trucks (travel + id
2020	261.8729053	4.7968		""
2021	138.1736692	1.7384		""
All Construction	568.1525795	9.3176		
2020-2021	400.0465745	6.5352		for onsite receptors
Mitigated				
2019	5.89560494	2.7824		off-road includes equip + onsite trucks
2020	9.584105281	4.7968		""
2021	5.929669245	1.7384		""
All Construction	21.40937947	9.3176		
2020-2021	15.51377453	6.5352		for onsite receptors
Scaling Factors for onroad sources				
Hauling		0.008		haul trip = 40 miles rtp (20 miles each way, default); assume 0.3 mile onsite segment
Vendor		0.021		vendor trip = 14.6 miles rtp (7.3 miles each way, default); assume 0.3 mile onsite segment
Worker		0.014		worker trip = 21.6 miles rtp (10.8 miles each way, default); assume 0.3 mile onsite segment
Time Values for Emission Rates				
Total Calendar Days - 2019	305	305		
Total Calendar Days - 2020	365	365		
Total Calendar Days - 2021	226	226		
Total Calendar Days - all construction	898	898		Total calendar days (7 days/week); see note above
Total Calendar Days - 2020-2021 construction	591	591		Total calendar days for 2020-2021 construction (7 days/week); see note above
Hours per day	24	24		24 hrs/day; see note above
Emission Rates - Scaling Factors (g/s)				
Unmitigated				
2019	2.89E-03	9.84E-07		
2020	3.77E-03	1.42E-06		
2021	3.21E-03	8.30E-07		
All Construction	3.32E-03	1.12E-06		Scaled on-road emissions by the highest of the 3 scaling factors to be conservative
2020-2021	3.55E-03	1.19E-06		
Mitigated				
2019	1.01E-04	9.84E-07	1%	<- percent on-road vs. offroad
2020	1.38E-04	1.42E-06	1%	
2021	1.38E-04	8.30E-07	1%	
All Construction	1.25E-04	1.12E-06	1%	
2020-2021	1.38E-04	1.19E-06	1%	

PM2.5 Exhaust Emission Rates

	Construction Off-Road Equip	Construction On-Road Trucks	NOTES
PM2.5 Exhaust Emissions (lbs)			
Unmitigated			
2019	156.8227343	2.6424	off-road includes equip + onsite trucks
2020	245.6701321	4.5528	off-road includes equip + onsite trucks
2021	129.5711745	1.6144	off-road includes equip + onsite trucks
All Construction	532.0640409	8.8096	for offsite receptors
2020-2021	375.2413066	6.1672	for onsite receptors
Mitigated			
2019	5.892334303	2.6424	off-road includes equip + onsite trucks
2020	9.581332115	4.5528	off-road includes equip + onsite trucks
2021	5.927174499	1.6144	off-road includes equip + onsite trucks
All Construction	21.40084092	8.8096	for offsite receptors
2020-2021	15.50850661	6.1672	for onsite receptors
Emission Rates - Scaling Factors (g/s)			
Unmitigated			
2019	2.70E-03	4.55E-05	
2020	3.53E-03	6.55E-05	
2021	3.01E-03	3.75E-05	
All Construction	3.11E-03	5.15E-05	
2020-2021	3.33E-03	5.48E-05	
Mitigated			
2019	1.01E-04	4.55E-05	
2020	1.38E-04	6.55E-05	
2021	1.38E-04	3.75E-05	
All Construction	1.25E-04	5.15E-05	
2020-2021	1.38E-04	5.48E-05	

4.12.2.1 Non-Continuous Sources

When modeling a non-continuously emitting source (e.g., operating for eight hours per day and five days per week), the modeled long-term average concentrations are based on 24 hours a day and seven days per week for the period of the meteorological data set. Even though the emitting source is modeled using a non-continuous emissions schedule, the long-term concentration is still based on 24 hours a day and seven days per week. Thus, this concentration includes the zero hours when the source was not operating. For the offsite worker inhalation risk, we want to determine the long-term concentration the worker is breathing during their work shift. Therefore, the long-term concentration needs to be adjusted so it is based only on the hours when the worker is present. For example, assuming the emitting source and worker's schedules are the same, the adjustment factor is 4.2 = (24 hours per day/8 hours per shift)x(7 days in a week/5 days in a work week). In this example, the long term residential exposure is adjusted upward to represent the exposure to a worker. Additional concentration adjustments may be appropriate depending on the work shift overlap. These adjustments are discussed below.

4.12.2.2 Continuous Sources

If the source is continuously emitting, then the worker is assumed to breathe the long-term annual average concentration during their work shift. Equation 4.1 becomes one and no concentration adjustments are necessary in this situation when estimating the inhalation cancer risk. Note however, if an assessor does not wish to apply the assumption the worker breathes the long-term annual average concentration during the work shift, then a refined concentration can be post-processed as described in Appendix M. All alternative assumptions should be approved by the reviewing authority and supported in the presentation of results.

2.1.3.2 Short Term Projects

In the 2015 HRA Guidelines, OEHHA recommends using actual project duration for short term projects, but cautions that the risk manager should consider a lower cancer risk threshold for very short term projects, because a higher exposure over a short period of time may pose a greater risk than the same total exposure spread over a much longer period of time. To ensure that short-term projects do not result in unanticipated higher cancer impacts due to short-duration high-exposure rates, the Air District recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for projects lasting three years or less. For residential exposures, the cancer risk calculations should include the most sensitive age groups (beginning with the third trimester of pregnancy) and should use the 95th percentile breathing rates. The Air District recommends following OEHHA guidelines for other aspects of short term projects. In summary, the Air District recommends:

- use of actual emission rates over a minimum 3-year duration for cancer risk assessments involving projects lasting 3 years or less, and
- use of actual project duration for cancer risk assessments on projects lasting longer than 3 years.

Appendix A-13

Constants

Constants

Updated: 12/7/2017

grams per ton	907,185	
grams per MT	1,000,000	
grams per kg	1,000	
lbs per ton	2,000	
hrs/day	24	
work hrs/day	10	12 hour construciton window per day, but max of 8 hrs of equipment operation: Construction Data Needs - AQ-GHG (BAAQMD)
seconds/hr	3,600	
grams per lb	453.592	
1hr to annual concentration	0.1	https://www3.epa.gov/ttn/scram/models/screen/aerscreen_userguide.pdf
square feet per acre	43,560	
feet per mile	5,280	
feet per meter	3.28084	
therms per BTU	1.00E-05	

GWPs

CH4	28	IPCC AR4:
N2O	265	IPCC AR4:

GHG EFs from Climate Registry for Off-road equipment

CH4 (g/gal)	0.58	Table 13.7 , Construction/Mining Equipment - https://www.theclimateregistry.org/wp-content/uploads/2017/05/2017-Climate-Registry-Default-Emission-Factors.pdf
N2O (g/gal)	0.26	Table 13.7 , Construction/Mining Equipment - https://www.theclimateregistry.org/wp-content/uploads/2017/05/2017-Climate-Registry-Default-Emission-Factors.pdf
Ratio: CH4:CO2	0.00006	
Ratio: N2O:CO2	0.00003	
CO2 (kg/gal) - Diesel	10.21	Table 13.1 - https://www.theclimateregistry.org/wp-content/uploads/2017/05/2017-Climate-Registry-Default-Emission-Factors.pdf
CO2 (kg/gal) - Biodiesel (B100)	9.45	Table 13.1 - https://www.theclimateregistry.org/wp-content/uploads/2017/05/2017-Climate-Registry-Default-Emission-Factors.pdf
percent reduction biodiesel	7.4%	

CH4 and N2O from EMFAC

Gasoline - N2O per Nox	4.16%	https://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07
Diesel - gN2O per gallon	0.3316	https://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07

Appendix A-14

CalEEMod Output: w/o Energy Efficiency

Fremont Niles Gateway - Unmitigated - Alameda County, Annual

Fremont Niles Gateway - Unmitigated

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.70	Acre	1.70	74,052.00	0
Health Club	1.45	1000sqft	0.00	1,450.00	0
Quality Restaurant	2.40	1000sqft	0.00	2,400.00	0
Apartments Low Rise	13.00	Dwelling Unit	0.00	17,838.00	37
Condo/Townhouse	82.00	Dwelling Unit	4.40	162,602.00	235
Regional Shopping Center	3.48	1000sqft	0.00	3,480.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	435	**CH4 Intensity (lb/MWhr)**	0.037	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assume start in 2019, operational in 2021. EFs from PG&E (CO2) and EPA eGRID (CH4 and N2O)

Land Use - From PD. Total area = 6.07 acres; 1.7 asphalt area paved (271 spaces), remainder into residential

Construction Phase - Schedule from Doug Rich on 10/31/17. The Foundations/Concrete Pour phase = 63 days; Arch coatings = 112 days (adjusted post-model).

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Defaults

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Trips and VMT - new default worker/vendor values from CalEEMod 2016.

On-road Fugitive Dust - Updated silt loading value for construction and ops based on ARB method: Silt content based on ARB MISCELLANEOUS PROCESS METHODOLOGY 7.9 Entrained Road Travel, Paved Road Dust for SF-Alameda County weighted by travel fractions (Table 8 and 9).

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip rates from Allison Jaromin on 11/8/17. Included default pass-by/diverted. Used default trip lenths and Res/Nonres trip %s.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - Silt content based on ARB MISCELLANEOUS PROCESS METHODOLOGY 7.9 Entrained Road Travel, Paved Road Dust for SF-Alameda County weighted by travel fractions (Table 8 and 9). Value = 0.037642

Woodstoves - No woodstoves or fireplaces per BAAQMD and email from Doug

Energy Use - All defaults

Water And Wastewater - All defaults

Solid Waste - All defaults

Construction Off-road Equipment Mitigation - all Tier 4 final

Mobile Land Use Mitigation - No MM (trip rates capture)

Energy Mitigation - Solar PV based on City's ordinance Option B (see AQ-GHGcalcs spreadsheet)

Water Mitigation -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Residential_Exterior	121,797.00	64,125.00

tblArchitecturalCoating	ConstArea_Residential_Interior	365,391.00	192,375.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	1.95	0.00
tblFireplaces	NumberGas	12.30	0.00
tblFireplaces	NumberNoFireplace	0.52	0.00
tblFireplaces	NumberNoFireplace	3.28	0.00
tblFireplaces	NumberWood	2.21	0.00
tblFireplaces	NumberWood	13.94	0.00
tblGrading	AcresOfGrading	10.00	6.00
tblGrading	MaterialExported	0.00	6,500.00
tblLandUse	LandUseSquareFeet	13,000.00	17,838.00
tblLandUse	LandUseSquareFeet	82,000.00	162,602.00
tblLandUse	LotAcreage	0.03	0.00
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.81	0.00
tblLandUse	LotAcreage	5.13	4.40
tblLandUse	LotAcreage	0.08	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	4.00
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tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.037
tblProjectCharacteristics	CO2IntensityFactor	641.35	435
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblRoadDust	RoadSiltLoading	0.1	0.037642
tblTripsAndVMT	HaulingTripNumber	813.00	50.00
tblVehicleTrips	ST_TR	7.16	4.78
tblVehicleTrips	ST_TR	5.67	4.78
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	94.36	88.29
tblVehicleTrips	ST_TR	49.97	65.97
tblVehicleTrips	SU_TR	6.07	3.59
tblVehicleTrips	SU_TR	4.84	3.59
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	72.16	69.54
tblVehicleTrips	SU_TR	25.24	28.47
tblVehicleTrips	WD_TR	6.59	7.17
tblVehicleTrips	WD_TR	5.81	7.17

tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	89.95	82.13
tblVehicleTrips	WD_TR	42.70	36.98
tblWoodstoves	NumberCatalytic	0.26	0.00
tblWoodstoves	NumberCatalytic	1.64	0.00
tblWoodstoves	NumberNoncatalytic	0.26	0.00
tblWoodstoves	NumberNoncatalytic	1.64	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated 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	0.2530	2.3601	1.8947	4.0300e-003	0.0400	0.1223	0.1622	0.0182	0.1146	0.1328	0.0000	364.0776	364.0776	0.0615	0.0000	365.6140
2020	0.7833	0.5422	0.5017	1.0300e-003	3.4200e-003	0.0275	0.0309	3.3000e-003	0.0257	0.0290	0.0000	91.5812	91.5812	0.0177	0.0000	92.0244
Maximum	**0.7833**	**2.3601**	**1.8947**	**4.0300e-003**	**0.0400**	**0.1223**	**0.1622**	**0.0182**	**0.1146**	**0.1328**	**0.0000**	**364.0776**	**364.0776**	**0.0615**	**0.0000**	**365.6140**

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	0.0802	0.5551	1.9758	4.0300e-003	0.0748	6.4000e-003	0.0812	0.0182	6.2700e-003	0.0245	0.0000	364.0774	364.0774	0.0615	0.0000	365.6137

2020	0.7433	0.1081	0.5514	1.0300e-003	0.0114	1.5100e-003	0.0129	3.3000e-003	1.4800e-003	4.7900e-003	0.0000	91.5812	91.5812	0.0177	0.0000	92.0244
Maximum	**0.7433**	**0.5551**	**1.9758**	**4.0300e-003**	**0.0748**	**6.4000e-003**	**0.0812**	**0.0182**	**6.2700e-003**	**0.0245**	**0.0000**	**364.0774**	**364.0774**	**0.0615**	**0.0000**	**365.6137**

	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	N20	CO2e
Percent Reduction	**20.54**	**77.15**	**-5.46**	**0.00**	**-98.50**	**94.72**	**51.31**	**0.00**	**94.47**	**81.89**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	0.2630	0.0736
2	**4-1-2019**	**6-30-2019**	0.7579	0.1782
3	**7-1-2019**	**9-30-2019**	0.7920	0.1890
4	**10-1-2019**	**12-31-2019**	0.7960	0.1929
5	**1-1-2020**	**3-31-2020**	0.7947	0.3351
6	**4-1-2020**	**6-30-2020**	0.5352	0.5184
		Highest	0.7960	0.5184

2.2 Overall Operational

Unmitigated 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	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Energy	0.0139	0.1203	0.0605	7.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	257.7275	257.7275	0.0128	3.9000e-003	259.2122
Mobile	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111
Waste						0.0000	0.0000		0.0000	0.0000	11.7349	0.0000	11.7349	0.6935	0.0000	29.0727
Water						0.0000	0.0000		0.0000	0.0000	2.3038	10.6253	12.9291	0.2375	5.7100e-003	20.5685
Total	**1.1631**	**1.7865**	**3.4418**	**0.0102**	**0.3493**	**0.0228**	**0.3722**	**0.1020**	**0.0223**	**0.1243**	**14.0387**	**1,133.1074**	**1,147.1461**	**0.9854**	**9.6100e-003**	**1,174.6449**

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	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Energy	0.0139	0.1203	0.0605	7.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	207.8169	207.8169	8.6000e-003	3.3300e-003	209.0245
Mobile	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111
Waste						0.0000	0.0000		0.0000	0.0000	11.7349	0.0000	11.7349	0.6935	0.0000	29.0727
Water						0.0000	0.0000		0.0000	0.0000	2.3038	10.6253	12.9291	0.2375	5.7100e-003	20.5685
Total	**1.1631**	**1.7865**	**3.4418**	**0.0102**	**0.3493**	**0.0228**	**0.3722**	**0.1020**	**0.0223**	**0.1243**	**14.0387**	**1,083.1968**	**1,097.2355**	**0.9811**	**9.0400e-003**	**1,124.4572**

	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	N20	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**	**4.40**	**4.35**	**0.43**	**5.93**	**4.27**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Drainage/Utilities/Sub-Grade	Site Preparation	2/12/2019	2/25/2019	5	10	
4	Foundations/Concrete Pour	Site Preparation	2/26/2019	3/11/2019	5	10	
5	Grading/Excavation	Grading	3/12/2019	4/8/2019	5	20	
6	Building Construction	Building Construction	4/9/2019	2/24/2020	5	230	

7	Paving	Paving	2/25/2020	3/23/2020	5	20	
8	Architectural Coating	Architectural Coating	3/24/2020	4/20/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.7

Residential Indoor: 192,375; Residential Outdoor: 64,125; Non-Residential Indoor: 10,995; Non-Residential Outdoor: 3,665; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	4.00	81	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	85	0.78
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Sweepers/Scrubbers	1	4.00	64	0.46
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Sweepers/Scrubbers	1	4.00	64	0.46
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Drainage/Utilities/Sub-Grade	Sweepers/Scrubbers	1	4.00	64	0.46
Drainage/Utilities/Sub-Grade	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Drainage/Utilities/Sub-Grade	Trenchers	1	4.00	78	0.50
Foundations/Concrete Pour	Cement and Mortar Mixers	1	8.00	9	0.56
Grading/Excavation	Excavators	2	8.00	158	0.38
Grading/Excavation	Graders	1	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Grading/Excavation	Sweepers/Scrubbers	1	4.00	64	0.46
Grading/Excavation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20

Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Sweepers/Scrubbers	1	4.00	64	0.46
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Paving	Surfacing Equipment	1	4.00	263	0.30
Architectural Coating	Air Compressors	1	8.00	78	0.48

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
Demolition	4	10.00	0.00	192.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Drainage/Utilities/Sub-Grade	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Foundations/Concrete Pour	1	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	4	10.00	0.00	50.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	102.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0208	0.0000	0.0208	3.1500e-003	0.0000	3.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.4500e-003	0.0731	0.0728	1.1000e-004		5.0500e-003	5.0500e-003		4.9000e-003	4.9000e-003	0.0000	9.7461	9.7461	1.3600e-003	0.0000	9.7801
Total	**9.4500e-003**	**0.0731**	**0.0728**	**1.1000e-004**	**0.0208**	**5.0500e-003**	**0.0259**	**3.1500e-003**	**4.9000e-003**	**8.0500e-003**	**0.0000**	**9.7461**	**9.7461**	**1.3600e-003**	**0.0000**	**9.7801**

Unmitigated 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	8.8000e-004	0.0298	5.0900e-003	8.0000e-005	4.1000e-004	1.1000e-004	5.2000e-004	2.8000e-004	1.0000e-004	3.8000e-004	0.0000	7.4287	7.4287	3.9000e-004	0.0000	7.4383
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	1.1000e-004	1.0000e-005	1.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**1.2600e-003**	**0.0301**	**8.0100e-003**	**9.0000e-005**	**5.2000e-004**	**1.2000e-004**	**6.3000e-004**	**4.0000e-004**	**1.1000e-004**	**5.0000e-004**	**0.0000**	**8.1539**	**8.1539**	**4.1000e-004**	**0.0000**	**8.1641**

Mitigated Construction On-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					
Fugitive Dust					0.0208	0.0000	0.0208	3.1500e-003	0.0000	3.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3400e-003	0.0116	0.0731	1.1000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	9.7461	9.7461	1.3600e-003	0.0000	9.7800

Total	**1.3400e-003**	**0.0116**	**0.0731**	**1.1000e-004**	**0.0208**	**1.6000e-004**	**0.0210**	**3.1500e-003**	**1.6000e-004**	**3.3100e-003**	**0.0000**	**9.7461**	**9.7461**	**1.3600e-003**	**0.0000**	**9.7800**

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	8.8000e-004	0.0298	5.0900e-003	8.0000e-005	9.4000e-004	1.1000e-004	1.0500e-003	2.8000e-004	1.0000e-004	3.8000e-004	0.0000	7.4287	7.4287	3.9000e-004	0.0000	7.4383
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	4.0000e-004	1.0000e-005	4.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**1.2600e-003**	**0.0301**	**8.0100e-003**	**9.0000e-005**	**1.3400e-003**	**1.2000e-004**	**1.4600e-003**	**4.0000e-004**	**1.1000e-004**	**5.0000e-004**	**0.0000**	**8.1539**	**8.1539**	**4.1000e-004**	**0.0000**	**8.1641**

3.3 Site Preparation - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3000e-003	0.0120	0.0108	1.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	1.2682	1.2682	4.0000e-004	0.0000	1.2783
Total	**1.3000e-003**	**0.0120**	**0.0108**	**1.0000e-005**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**8.2000e-004**	**8.2000e-004**	**0.0000**	**1.2682**	**1.2682**	**4.0000e-004**	**0.0000**	**1.2783**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.3000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1813	0.1813	1.0000e-005	0.0000	0.1815
Total	**9.0000e-005**	**7.0000e-005**	**7.3000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1813**	**0.1813**	**1.0000e-005**	**0.0000**	**0.1815**

Mitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5000e-004	3.9700e-003	0.0107	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2682	1.2682	4.0000e-004	0.0000	1.2783
Total	**2.5000e-004**	**3.9700e-003**	**0.0107**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**1.2682**	**1.2682**	**4.0000e-004**	**0.0000**	**1.2783**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1813	0.1813	1.0000e-005	0.0000	0.1815
Total	**9.0000e-005**	**7.0000e-005**	**7.3000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1813**	**0.1813**	**1.0000e-005**	**0.0000**	**0.1815**

3.4 Drainage/Utilities/Sub-Grade - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3800e-003	0.0218	0.0174	2.0000e-005		1.6300e-003	1.6300e-003		1.5000e-003	1.5000e-003	0.0000	2.0254	2.0254	6.4000e-004	0.0000	2.0414
Total	**2.3800e-003**	**0.0218**	**0.0174**	**2.0000e-005**	**0.0000**	**1.6300e-003**	**1.6300e-003**	**0.0000**	**1.5000e-003**	**1.5000e-003**	**0.0000**	**2.0254**	**2.0254**	**6.4000e-004**	**0.0000**	**2.0414**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.2000e-004	1.1700e-003	0.0000	4.0000e-005	0.0000	5.0000e-005	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2901	0.2901	1.0000e-005	0.0000	0.2903
Total	**1.5000e-004**	**1.2000e-004**	**1.1700e-003**	**0.0000**	**4.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2901**	**0.2901**	**1.0000e-005**	**0.0000**	**0.2903**

Mitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5000e-004	4.4200e-003	0.0170	2.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.0254	2.0254	6.4000e-004	0.0000	2.0414
Total	**3.5000e-004**	**4.4200e-003**	**0.0170**	**2.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.0254**	**2.0254**	**6.4000e-004**	**0.0000**	**2.0414**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.2000e-004	1.1700e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2901	0.2901	1.0000e-005	0.0000	0.2903
Total	**1.5000e-004**	**1.2000e-004**	**1.1700e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2901**	**0.2901**	**1.0000e-005**	**0.0000**	**0.2903**

3.5 Foundations/Concrete Pour - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9000e-004	1.8400e-003	1.5400e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2291	0.2291	2.0000e-005	0.0000	0.2297
Total	**2.9000e-004**	**1.8400e-003**	**1.5400e-003**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2291**	**0.2291**	**2.0000e-005**	**0.0000**	**0.2297**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1088	0.1088	0.0000	0.0000	0.1089
Total	**6.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.0000**	**0.1089**

Mitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.2291	0.2291	2.0000e-005	0.0000	0.2297

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.2291**	**0.2291**	**2.0000e-005**	**0.0000**	**0.2297**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.4000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1088	0.1088	0.0000	0.0000	0.1089
Total	**6.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.0000**	**0.1089**

3.6 Grading/Excavation - 2019

Unmitigated Construction On-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					
Fugitive Dust					3.5500e-003	0.0000	3.5500e-003	4.0000e-004	0.0000	4.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.1318	0.0936	1.8000e-004		5.7000e-003	5.7000e-003		5.2500e-003	5.2500e-003	0.0000	16.3811	16.3811	5.1800e-003	0.0000	16.5106
Total	**0.0115**	**0.1318**	**0.0936**	**1.8000e-004**	**3.5500e-003**	**5.7000e-003**	**9.2500e-003**	**4.0000e-004**	**5.2500e-003**	**5.6500e-003**	**0.0000**	**16.3811**	**16.3811**	**5.1800e-003**	**0.0000**	**16.5106**

Unmitigated 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	2.3000e-004	7.7700e-003	1.3300e-003	2.0000e-005	1.1000e-004	3.0000e-005	1.4000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	1.9346	1.9346	1.0000e-004	0.0000	1.9371
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	1.1000e-004	1.0000e-005	1.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**6.1000e-004**	**8.0600e-003**	**4.2500e-003**	**3.0000e-005**	**2.2000e-004**	**4.0000e-005**	**2.5000e-004**	**1.9000e-004**	**4.0000e-005**	**2.2000e-004**	**0.0000**	**2.6598**	**2.6598**	**1.2000e-004**	**0.0000**	**2.6629**

Mitigated Construction On-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					
Fugitive Dust					3.5500e-003	0.0000	3.5500e-003	4.0000e-004	0.0000	4.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3900e-003	0.0161	0.1177	1.8000e-004		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	16.3810	16.3810	5.1800e-003	0.0000	16.5106
Total	**2.3900e-003**	**0.0161**	**0.1177**	**1.8000e-004**	**3.5500e-003**	**3.0000e-004**	**3.8500e-003**	**4.0000e-004**	**3.0000e-004**	**7.0000e-004**	**0.0000**	**16.3810**	**16.3810**	**5.1800e-003**	**0.0000**	**16.5106**

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	2.3000e-004	7.7700e-003	1.3300e-003	2.0000e-005	2.4000e-004	3.0000e-005	2.7000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	1.9346	1.9346	1.0000e-004	0.0000	1.9371
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	4.0000e-004	1.0000e-005	4.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**6.1000e-004**	**8.0600e-003**	**4.2500e-003**	**3.0000e-005**	**6.4000e-004**	**4.0000e-005**	**6.8000e-004**	**1.9000e-004**	**4.0000e-005**	**2.2000e-004**	**0.0000**	**2.6598**	**2.6598**	**1.2000e-004**	**0.0000**	**2.6629**

3.7 Building Construction - 2019

Unmitigated Construction On-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					
Off-Road	0.1792	1.7720	1.3378	2.1800e-003		0.1064	0.1064		0.0996	0.0996	0.0000	193.8738	193.8738	0.0477	0.0000	195.0658
Total	**0.1792**	**1.7720**	**1.3378**	**2.1800e-003**		**0.1064**	**0.1064**		**0.0996**	**0.0996**	**0.0000**	**193.8738**	**193.8738**	**0.0477**	**0.0000**	**195.0658**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9000e-003	0.2809	0.0621	6.1000e-004	4.2800e-003	1.8000e-003	6.0800e-003	2.7600e-003	1.7200e-003	4.4800e-003	0.0000	58.5093	58.5093	3.6100e-003	0.0000	58.5994
Worker	0.0369	0.0281	0.2841	7.8000e-004	0.0105	5.5000e-004	0.0110	0.0113	5.1000e-004	0.0118	0.0000	70.6507	70.6507	2.0100e-003	0.0000	70.7011
Total	**0.0468**	**0.3090**	**0.3462**	**1.3900e-003**	**0.0148**	**2.3500e-003**	**0.0171**	**0.0140**	**2.2300e-003**	**0.0162**	**0.0000**	**129.1599**	**129.1599**	**5.6200e-003**	**0.0000**	**129.3004**

Mitigated Construction On-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					
Off-Road	0.0269	0.1715	1.3966	2.1800e-003		3.3900e-003	3.3900e-003		3.3900e-003	3.3900e-003	0.0000	193.8735	193.8735	0.0477	0.0000	195.0656
Total	**0.0269**	**0.1715**	**1.3966**	**2.1800e-003**		**3.3900e-003**	**3.3900e-003**		**3.3900e-003**	**3.3900e-003**	**0.0000**	**193.8735**	**193.8735**	**0.0477**	**0.0000**	**195.0656**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9000e-003	0.2809	0.0621	6.1000e-004	8.6900e-003	1.8000e-003	0.0105	2.7600e-003	1.7200e-003	4.4800e-003	0.0000	58.5093	58.5093	3.6100e-003	0.0000	58.5994
Worker	0.0369	0.0281	0.2841	7.8000e-004	0.0394	5.5000e-004	0.0399	0.0113	5.1000e-004	0.0118	0.0000	70.6507	70.6507	2.0100e-003	0.0000	70.7011
Total	**0.0468**	**0.3090**	**0.3462**	**1.3900e-003**	**0.0481**	**2.3500e-003**	**0.0504**	**0.0140**	**2.2300e-003**	**0.0162**	**0.0000**	**129.1599**	**129.1599**	**5.6200e-003**	**0.0000**	**129.3004**

3.7 Building Construction - 2020

Unmitigated Construction On-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					
Off-Road	0.0330	0.3284	0.2678	4.5000e-004		0.0190	0.0190		0.0177	0.0177	0.0000	38.9627	38.9627	9.6600e-003	0.0000	39.2041
Total	**0.0330**	**0.3284**	**0.2678**	**4.5000e-004**		**0.0190**	**0.0190**		**0.0177**	**0.0177**	**0.0000**	**38.9627**	**38.9627**	**9.6600e-003**	**0.0000**	**39.2041**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6800e-003	0.0527	0.0114	1.2000e-004	8.7000e-004	2.4000e-004	1.1200e-003	5.6000e-004	2.3000e-004	8.0000e-004	0.0000	11.8633	11.8633	6.8000e-004	0.0000	11.8803
Worker	6.8800e-003	5.0800e-003	0.0520	1.5000e-004	2.1400e-003	1.1000e-004	2.2500e-003	2.3000e-003	1.0000e-004	2.4000e-003	0.0000	13.9798	13.9798	3.6000e-004	0.0000	13.9888
Total	**8.5600e-003**	**0.0578**	**0.0634**	**2.7000e-004**	**3.0100e-003**	**3.5000e-004**	**3.3700e-003**	**2.8600e-003**	**3.3000e-004**	**3.2000e-003**	**0.0000**	**25.8431**	**25.8431**	**1.0400e-003**	**0.0000**	**25.8692**

Mitigated Construction On-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					
Off-Road	5.4900e-003	0.0350	0.2852	4.5000e-004		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004	0.0000	38.9626	38.9626	9.6600e-003	0.0000	39.2040

Total	**5.4900e-003**	**0.0350**	**0.2852**	**4.5000e-004**		**6.9000e-004**	**6.9000e-004**		**6.9000e-004**	**6.9000e-004**	**0.0000**	**38.9626**	**38.9626**	**9.6600e-003**	**0.0000**	**39.2040**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6800e-003	0.0527	0.0114	1.2000e-004	1.7700e-003	2.4000e-004	2.0200e-003	5.6000e-004	2.3000e-004	8.0000e-004	0.0000	11.8633	11.8633	6.8000e-004	0.0000	11.8803
Worker	6.8800e-003	5.0800e-003	0.0520	1.5000e-004	8.0400e-003	1.1000e-004	8.1500e-003	2.3000e-003	1.0000e-004	2.4000e-003	0.0000	13.9798	13.9798	3.6000e-004	0.0000	13.9888
Total	**8.5600e-003**	**0.0578**	**0.0634**	**2.7000e-004**	**9.8100e-003**	**3.5000e-004**	**0.0102**	**2.8600e-003**	**3.3000e-004**	**3.2000e-003**	**0.0000**	**25.8431**	**25.8431**	**1.0400e-003**	**0.0000**	**25.8692**

3.8 Paving - 2020

Unmitigated Construction On-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					
Off-Road	0.0125	0.1326	0.1361	2.4000e-004		6.6700e-003	6.6700e-003		6.1300e-003	6.1300e-003	0.0000	20.7003	20.7003	6.6900e-003	0.0000	20.8677
Paving	2.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0147**	**0.1326**	**0.1361**	**2.4000e-004**		**6.6700e-003**	**6.6700e-003**		**6.1300e-003**	**6.1300e-003**	**0.0000**	**20.7003**	**20.7003**	**6.6900e-003**	**0.0000**	**20.8677**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.6000e-004	4.7100e-003	1.0000e-005	1.9000e-004	1.0000e-005	2.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	1.2651	1.2651	3.0000e-005	0.0000	1.2660
Total	**6.2000e-004**	**4.6000e-004**	**4.7100e-003**	**1.0000e-005**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**1.2651**	**1.2651**	**3.0000e-005**	**0.0000**	**1.2660**

Mitigated Construction On-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					
Off-Road	2.9000e-003	0.0126	0.1684	2.4000e-004		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	20.7003	20.7003	6.6900e-003	0.0000	20.8677
Paving	2.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.1300e-003**	**0.0126**	**0.1684**	**2.4000e-004**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**20.7003**	**20.7003**	**6.6900e-003**	**0.0000**	**20.8677**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.6000e-004	4.7100e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.4000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	1.2651	1.2651	3.0000e-005	0.0000	1.2660
Total	**6.2000e-004**	**4.6000e-004**	**4.7100e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.4000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**1.2651**	**1.2651**	**3.0000e-005**	**0.0000**	**1.2660**

3.9 Architectural Coating - 2020

Unmitigated Construction On-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					
Archit. Coating	0.7224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2300e-003	0.0225	0.0244	4.0000e-005		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003	0.0000	3.4043	3.4043	2.6000e-004	0.0000	3.4109
Total	**0.7256**	**0.0225**	**0.0244**	**4.0000e-005**		**1.4800e-003**	**1.4800e-003**		**1.4800e-003**	**1.4800e-003**	**0.0000**	**3.4043**	**3.4043**	**2.6000e-004**	**0.0000**	**3.4109**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.1000e-004	5.2300e-003	2.0000e-005	2.2000e-004	1.0000e-005	2.3000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	1.4057	1.4057	4.0000e-005	0.0000	1.4066
Total	**6.9000e-004**	**5.1000e-004**	**5.2300e-003**	**2.0000e-005**	**2.2000e-004**	**1.0000e-005**	**2.3000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**1.4057**	**1.4057**	**4.0000e-005**	**0.0000**	**1.4066**

Mitigated Construction On-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					
Archit. Coating	0.7224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0000e-004	1.7200e-003	0.0244	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.4043	3.4043	2.6000e-004	0.0000	3.4109
Total	**0.7228**	**1.7200e-003**	**0.0244**	**4.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**3.4043**	**3.4043**	**2.6000e-004**	**0.0000**	**3.4109**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.1000e-004	5.2300e-003	2.0000e-005	8.1000e-004	1.0000e-005	8.2000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	1.4057	1.4057	4.0000e-005	0.0000	1.4066
Total	**6.9000e-004**	**5.1000e-004**	**5.2300e-003**	**2.0000e-005**	**8.1000e-004**	**1.0000e-005**	**8.2000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**1.4057**	**1.4057**	**4.0000e-005**	**0.0000**	**1.4066**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111
Unmitigated	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	93.21	62.14	46.67	189,672	189,672
Condo/Townhouse	587.94	391.96	294.38	1,196,390	1,196,390
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Quality Restaurant	197.11	211.90	166.90	231,193	231,193
Regional Shopping Center	128.69	229.58	99.08	243,485	243,485
Total	1,006.95	895.57	607.02	1,860,739	1,860,739

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
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Health Club	9.50	7.30	7.30	16.90	64.10	19.00	52	39	9
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Quality Restaurant	9.50	7.30	7.30	12.00	69.00	19.00	38	18	44
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Condo/Townhouse	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Health Club	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Parking Lot	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Quality Restaurant	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Regional Shopping Center	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	70.0090	70.0090	5.9500e-003	8.0000e-004	70.3977
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	119.9197	119.9197	0.0102	1.3800e-003	120.5854
NaturalGas Mitigated	0.0139	0.1203	0.0605	7.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	137.8078	137.8078	2.6400e-003	2.5300e-003	138.6268
NaturalGas Unmitigated	0.0139	0.1203	0.0605	7.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	137.8078	137.8078	2.6400e-003	2.5300e-003	138.6268

5.2 Energy by Land Use - NaturalGas

Unmitigated

	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					
Apartments Low Rise	264544	1.4300e-003	0.0122	5.1900e-003	8.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	14.1171	14.1171	2.7000e-004	2.6000e-004	14.2009
Condo/Townhouse	1.86297e+006	0.0101	0.0858	0.0365	5.5000e-004		6.9400e-003	6.9400e-003		6.9400e-003	6.9400e-003	0.0000	99.4154	99.4154	1.9100e-003	1.8200e-003	100.0062
Health Club	35887.5	1.9000e-004	1.7600e-003	1.4800e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.9151	1.9151	4.0000e-005	4.0000e-005	1.9265
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	403008	2.1700e-003	0.0198	0.0166	1.2000e-004		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003	0.0000	21.5060	21.5060	4.1000e-004	3.9000e-004	21.6338
Regional Shopping Center	16008	9.0000e-005	7.8000e-004	6.6000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.8543	0.8543	2.0000e-005	2.0000e-005	0.8593
Total		**0.0139**	**0.1203**	**0.0605**	**7.6000e-004**		**9.6200e-003**	**9.6200e-003**		**9.6200e-003**	**9.6200e-003**	**0.0000**	**137.8078**	**137.8078**	**2.6500e-003**	**2.5300e-003**	**138.6268**

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					
Apartments Low Rise	264544	1.4300e-003	0.0122	5.1900e-003	8.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	14.1171	14.1171	2.7000e-004	2.6000e-004	14.2009
Condo/Townhouse	1.86297e+006	0.0101	0.0858	0.0365	5.5000e-004		6.9400e-003	6.9400e-003		6.9400e-003	6.9400e-003	0.0000	99.4154	99.4154	1.9100e-003	1.8200e-003	100.0062
Health Club	35887.5	1.9000e-004	1.7600e-003	1.4800e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.9151	1.9151	4.0000e-005	4.0000e-005	1.9265
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	403008	2.1700e-003	0.0198	0.0166	1.2000e-004		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003	0.0000	21.5060	21.5060	4.1000e-004	3.9000e-004	21.6338
Regional Shopping Center	16008	9.0000e-005	7.8000e-004	6.6000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.8543	0.8543	2.0000e-005	2.0000e-005	0.8593
Total		**0.0139**	**0.1203**	**0.0605**	**7.6000e-004**		**9.6200e-003**	**9.6200e-003**		**9.6200e-003**	**9.6200e-003**	**0.0000**	**137.8078**	**137.8078**	**2.6500e-003**	**2.5300e-003**	**138.6268**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	54810.3	10.8148	9.2000e-004	1.2000e-004	10.8748
Condo/Townhouse	410052	80.9084	6.8800e-003	9.3000e-004	81.3576
Health Club	10962	2.1629	1.8000e-004	2.0000e-005	2.1750
Parking Lot	25918.2	5.1140	4.3000e-004	6.0000e-005	5.1424
Quality Restaurant	69552	13.7235	1.1700e-003	1.6000e-004	13.7997
Regional Shopping Center	36470.4	7.1961	6.1000e-004	8.0000e-005	7.2360
Total		**119.9197**	**0.0102**	**1.3700e-003**	**120.5854**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	12651.7	2.4963	2.1000e-004	3.0000e-005	2.5102
Condo/Townhouse	367893	72.5900	6.1700e-003	8.3000e-004	72.9930
Health Club	-31196.7	-6.1555	-0.0005	-0.0001	-6.1897
Parking Lot	-16240.5	-3.2045	-0.0003	0.0000	-3.2222
Quality Restaurant	27393.3	5.4051	4.6000e-004	6.0000e-005	5.4351

Regional Shopping Center	-5688.27	-1.1224	-0.0001	0.0000	-1.1286
Total		**70.0090**	**5.9500e-003**	**8.0000e-004**	**70.3977**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Unmitigated	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803

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	0.1324					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0214	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803

Total	**0.8919**	**8.1600e-003**	**0.7070**	**4.0000e-005**		**3.9000e-003**	**3.9000e-003**		**3.9000e-003**	**3.9000e-003**	**0.0000**	**1.1524**	**1.1524**	**1.1200e-003**	**0.0000**	**1.1803**

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	0.1324					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0214	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Total	**0.8919**	**8.1600e-003**	**0.7070**	**4.0000e-005**		**3.9000e-003**	**3.9000e-003**		**3.9000e-003**	**3.9000e-003**	**0.0000**	**1.1524**	**1.1524**	**1.1200e-003**	**0.0000**	**1.1803**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	12.9291	0.2375	5.7100e-003	20.5685
Unmitigated	12.9291	0.2375	5.7100e-003	20.5685

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.847002 / 0.53398	1.5418	0.0277	6.7000e-004	2.4331
Condo/Townhouse	5.34263 / 3.36818	9.7251	0.1748	4.2000e-003	15.3469
Health Club	0.0857576 / 0.0525611	0.1551	2.8100e-003	7.0000e-005	0.2453
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0.728481 / 0.0464988	1.0410	0.0238	5.7000e-004	1.8060
Regional Shopping Center	0.257772 / 0.15799	0.4661	8.4300e-003	2.0000e-004	0.7373
Total		**12.9291**	**0.2375**	**5.7100e-003**	**20.5686**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.847002 / 0.53398	1.5418	0.0277	6.7000e-004	2.4331
Condo/Townhouse	5.34263 / 3.36818	9.7251	0.1748	4.2000e-003	15.3469
Health Club	0.0857576 / 0.0525611	0.1551	2.8100e-003	7.0000e-005	0.2453
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000

Quality Restaurant	0.728481 / 0.0464988	1.0410	0.0238	5.7000e-004	1.8060
Regional Shopping Center	0.257772 / 0.15799	0.4661	8.4300e-003	2.0000e-004	0.7373
Total		**12.9291**	**0.2375**	**5.7100e-003**	**20.5686**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.7349	0.6935	0.0000	29.0727
Unmitigated	11.7349	0.6935	0.0000	29.0727

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.98	1.2139	0.0717	0.0000	3.0074
Condo/Townhouse	37.72	7.6568	0.4525	0.0000	18.9695
Health Club	8.27	1.6787	0.0992	0.0000	4.1590

Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.19	0.4446	0.0263	0.0000	1.1014
Regional Shopping Center	3.65	0.7409	0.0438	0.0000	1.8356
Total		**11.7349**	**0.6935**	**0.0000**	**29.0727**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.98	1.2139	0.0717	0.0000	3.0074
Condo/Townhouse	37.72	7.6568	0.4525	0.0000	18.9695
Health Club	8.27	1.6787	0.0992	0.0000	4.1590
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.19	0.4446	0.0263	0.0000	1.1014
Regional Shopping Center	3.65	0.7409	0.0438	0.0000	1.8356
Total		**11.7349**	**0.6935**	**0.0000**	**29.0727**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix A-15

CalEEMod Output: w/ Energy Efficiency

Fremont Niles Gateway - Unmitigated

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.70	Acre	1.70	74,052.00	0
Health Club	1.45	1000sqft	0.00	1,450.00	0
Quality Restaurant	2.40	1000sqft	0.00	2,400.00	0
Apartments Low Rise	13.00	Dwelling Unit	0.00	17,838.00	37
Condo/Townhouse	82.00	Dwelling Unit	4.40	162,602.00	235
Regional Shopping Center	3.48	1000sqft	0.00	3,480.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	435	**CH4 Intensity (lb/MWhr)**	0.037	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assume start in 2019, operational in 2021. EFs from PG&E (CO2) and EPA eGRID (CH4 and N2O)

Land Use - From PD. Total area = 6.07 acres; 1.7 asphalt area paved (271 spaces), remainder into residential

Construction Phase - Schedule from Doug Rich on 10/31/17. The Foundations/Concrete Pour phase = 63 days; Arch coatings = 112 days (adjusted post-model).

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Defaults

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Off-road Equipment - Equipment from Doug Rich on 10/31/17

Trips and VMT - default worker/vendor values from CalEEMod 2016.

On-road Fugitive Dust - Updated silt loading value for construction and ops based on ARB method: Silt content based on ARB MISCELLANEOUS PROCESS METHODOLOGY 7.9 Entrained Road Travel, Paved Road Dust for SF-Alameda County weighted by travel fractions (Table 8 and 9).

Architectural Coating -

Vehicle Trips - Trip rates from Allison Jaromin on 11/8/17. Included default pass-by/diverted. Used default trip lenths and Res/Nonres trip %s.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - Silt content based on ARB MISCELLANEOUS PROCESS METHODOLOGY 7.9 Entrained Road Travel, Paved Road Dust for SF-Alameda County weighted by travel fractions (Table 8 and 9). Value = 0.037642

Woodstoves - No woodstoves or fireplaces per BAAQMD and email from Doug

Energy Use - All defaults

Water And Wastewater - All defaults

Solid Waste - All defaults

Construction Off-road Equipment Mitigation - all Tier 4 final

Mobile Land Use Mitigation - No MM (trip rates capture)

Energy Mitigation - 25% reduction below T24 per email from Doug. Solar PV based on City's ordinance Option B (see AQ-GHGcalcs spreadsheet)

Water Mitigation - all buildings would install water saving features including low flow bathroom faucets, low flow kitchen faucets, low flow toilets, and low flow showers

Fleet Mix -

Table Name	Column Name	Default Value	New Value

tblArchitecturalCoating	ConstArea_Residential_Exterior	121,797.00	64,125.00
tblArchitecturalCoating	ConstArea_Residential_Interior	365,391.00	192,375.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	1.95	0.00
tblFireplaces	NumberGas	12.30	0.00
tblFireplaces	NumberNoFireplace	0.52	0.00
tblFireplaces	NumberNoFireplace	3.28	0.00
tblFireplaces	NumberWood	2.21	0.00
tblFireplaces	NumberWood	13.94	0.00
tblGrading	AcresOfGrading	10.00	6.00
tblGrading	MaterialExported	0.00	6,500.00
tblLandUse	LandUseSquareFeet	13,000.00	17,838.00
tblLandUse	LandUseSquareFeet	82,000.00	162,602.00
tblLandUse	LotAcreage	0.03	0.00
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.81	0.00
tblLandUse	LotAcreage	5.13	4.40
tblLandUse	LotAcreage	0.08	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblOnRoadDust	RoadSiltLoading	0.10	0.04
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.037
tblProjectCharacteristics	CO2IntensityFactor	641.35	435
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblRoadDust	RoadSiltLoading	0.1	0.037642
tblTripsAndVMT	HaulingTripNumber	813.00	50.00
tblVehicleTrips	ST_TR	7.16	4.78
tblVehicleTrips	ST_TR	5.67	4.78
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	94.36	88.29
tblVehicleTrips	ST_TR	49.97	65.97
tblVehicleTrips	SU_TR	6.07	3.59
tblVehicleTrips	SU_TR	4.84	3.59
tblVehicleTrips	SU_TR	26.73	0.00

tblVehicleTrips	SU_TR	72.16	69.54
tblVehicleTrips	SU_TR	25.24	28.47
tblVehicleTrips	WD_TR	6.59	7.17
tblVehicleTrips	WD_TR	5.81	7.17
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	89.95	82.13
tblVehicleTrips	WD_TR	42.70	36.98
tblWoodstoves	NumberCatalytic	0.26	0.00
tblWoodstoves	NumberCatalytic	1.64	0.00
tblWoodstoves	NumberNoncatalytic	0.26	0.00
tblWoodstoves	NumberNoncatalytic	1.64	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated 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	0.2530	2.3601	1.8947	4.0300e-003	0.0400	0.1223	0.1622	0.0182	0.1146	0.1328	0.0000	364.0776	364.0776	0.0615	0.0000	365.6140
2020	0.7833	0.5422	0.5017	1.0300e-003	3.4200e-003	0.0275	0.0309	3.3000e-003	0.0257	0.0290	0.0000	91.5812	91.5812	0.0177	0.0000	92.0244
Maximum	**0.7833**	**2.3601**	**1.8947**	**4.0300e-003**	**0.0400**	**0.1223**	**0.1622**	**0.0182**	**0.1146**	**0.1328**	**0.0000**	**364.0776**	**364.0776**	**0.0615**	**0.0000**	**365.6140**

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	0.0802	0.5551	1.9758	4.0300e-003	0.0748	6.4000e-003	0.0812	0.0182	6.2700e-003	0.0245	0.0000	364.0774	364.0774	0.0615	0.0000	365.6137
2020	0.7433	0.1081	0.5514	1.0300e-003	0.0114	1.5100e-003	0.0129	3.3000e-003	1.4800e-003	4.7900e-003	0.0000	91.5812	91.5812	0.0177	0.0000	92.0244
Maximum	**0.7433**	**0.5551**	**1.9758**	**4.0300e-003**	**0.0748**	**6.4000e-003**	**0.0812**	**0.0182**	**6.2700e-003**	**0.0245**	**0.0000**	**364.0774**	**364.0774**	**0.0615**	**0.0000**	**365.6137**

	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	N20	CO2e
Percent Reduction	**20.54**	**77.15**	**-5.46**	**0.00**	**-98.50**	**94.72**	**51.31**	**0.00**	**94.47**	**81.89**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	0.2630	0.0736
2	**4-1-2019**	**6-30-2019**	0.7579	0.1782
3	**7-1-2019**	**9-30-2019**	0.7920	0.1890
4	**10-1-2019**	**12-31-2019**	0.7960	0.1929
5	**1-1-2020**	**3-31-2020**	0.7947	0.3351
6	**4-1-2020**	**6-30-2020**	0.5352	0.5184
		Highest	0.7960	0.5184

2.2 Overall Operational

Unmitigated 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	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Energy	0.0139	0.1203	0.0605	7.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	257.7275	257.7275	0.0128	3.9000e-003	259.2122

Mobile	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111
Waste						0.0000	0.0000		0.0000	0.0000	11.7349	0.0000	11.7349	0.6935	0.0000	29.0727
Water						0.0000	0.0000		0.0000	0.0000	2.3038	10.6253	12.9291	0.2375	5.7100e-003	20.5685
Total	**1.1631**	**1.7865**	**3.4418**	**0.0102**	**0.3493**	**0.0228**	**0.3722**	**0.1020**	**0.0223**	**0.1243**	**14.0387**	**1,133.1074**	**1,147.1461**	**0.9854**	**9.6100e-003**	**1,174.6449**

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	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Energy	0.0112	0.0970	0.0498	6.1000e-004		7.7400e-003	7.7400e-003		7.7400e-003	7.7400e-003	0.0000	179.1802	179.1802	7.9300e-003	2.8200e-003	180.2183
Mobile	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111
Waste						0.0000	0.0000		0.0000	0.0000	11.7349	0.0000	11.7349	0.6935	0.0000	29.0727
Water						0.0000	0.0000		0.0000	0.0000	1.8430	9.0747	10.9177	0.1901	4.5700e-003	17.0325
Total	**1.1604**	**1.7632**	**3.4312**	**0.0100**	**0.3493**	**0.0209**	**0.3703**	**0.1020**	**0.0204**	**0.1224**	**13.5779**	**1,053.0095**	**1,066.5874**	**0.9330**	**7.3900e-003**	**1,092.1150**

	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	N20	CO2e
Percent Reduction	**0.23**	**1.30**	**0.31**	**1.47**	**0.00**	**8.24**	**0.51**	**0.00**	**8.44**	**1.51**	**3.28**	**7.07**	**7.02**	**5.31**	**23.10**	**7.03**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Drainage/Utilities/Sub-Grade	Site Preparation	2/12/2019	2/25/2019	5	10	
4	Foundations/Concrete Pour	Site Preparation	2/26/2019	3/11/2019	5	10	
5	Grading/Excavation	Grading	3/12/2019	4/8/2019	5	20	
6	Building Construction	Building Construction	4/9/2019	2/24/2020	5	230	
7	Paving	Paving	2/25/2020	3/23/2020	5	20	
8	Architectural Coating	Architectural Coating	3/24/2020	4/20/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.7

Residential Indoor: 192,375; Residential Outdoor: 64,125; Non-Residential Indoor: 10,995; Non-Residential Outdoor: 3,665; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	4.00	81	0.73
Demolition	Crushing/Proc. Equipment	1	6.00	85	0.78
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Sweepers/Scrubbers	1	4.00	64	0.46
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Sweepers/Scrubbers	1	4.00	64	0.46
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Drainage/Utilities/Sub-Grade	Sweepers/Scrubbers	1	4.00	64	0.46
Drainage/Utilities/Sub-Grade	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Drainage/Utilities/Sub-Grade	Trenchers	1	4.00	78	0.50
Foundations/Concrete Pour	Cement and Mortar Mixers	1	8.00	9	0.56
Grading/Excavation	Excavators	2	8.00	158	0.38

Grading/Excavation	Graders	1	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Grading/Excavation	Sweepers/Scrubbers	1	4.00	64	0.46
Grading/Excavation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Sweepers/Scrubbers	1	4.00	64	0.46
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Paving	Surfacing Equipment	1	4.00	263	0.30
Architectural Coating	Air Compressors	1	8.00	78	0.48

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
Demolition	4	10.00	0.00	192.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Drainage/Utilities/Sub-Grade	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Foundations/Concrete Pour	1	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	4	10.00	0.00	50.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	102.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0208	0.0000	0.0208	3.1500e-003	0.0000	3.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.4500e-003	0.0731	0.0728	1.1000e-004		5.0500e-003	5.0500e-003		4.9000e-003	4.9000e-003	0.0000	9.7461	9.7461	1.3600e-003	0.0000	9.7801
Total	**9.4500e-003**	**0.0731**	**0.0728**	**1.1000e-004**	**0.0208**	**5.0500e-003**	**0.0259**	**3.1500e-003**	**4.9000e-003**	**8.0500e-003**	**0.0000**	**9.7461**	**9.7461**	**1.3600e-003**	**0.0000**	**9.7801**

Unmitigated 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	8.8000e-004	0.0298	5.0900e-003	8.0000e-005	4.1000e-004	1.1000e-004	5.2000e-004	2.8000e-004	1.0000e-004	3.8000e-004	0.0000	7.4287	7.4287	3.9000e-004	0.0000	7.4383
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	1.1000e-004	1.0000e-005	1.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**1.2600e-003**	**0.0301**	**8.0100e-003**	**9.0000e-005**	**5.2000e-004**	**1.2000e-004**	**6.3000e-004**	**4.0000e-004**	**1.1000e-004**	**5.0000e-004**	**0.0000**	**8.1539**	**8.1539**	**4.1000e-004**	**0.0000**	**8.1641**

Mitigated Construction On-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					
Fugitive Dust					0.0208	0.0000	0.0208	3.1500e-003	0.0000	3.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3400e-003	0.0116	0.0731	1.1000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	9.7461	9.7461	1.3600e-003	0.0000	9.7800
Total	**1.3400e-003**	**0.0116**	**0.0731**	**1.1000e-004**	**0.0208**	**1.6000e-004**	**0.0210**	**3.1500e-003**	**1.6000e-004**	**3.3100e-003**	**0.0000**	**9.7461**	**9.7461**	**1.3600e-003**	**0.0000**	**9.7800**

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	8.8000e-004	0.0298	5.0900e-003	8.0000e-005	9.4000e-004	1.1000e-004	1.0500e-003	2.8000e-004	1.0000e-004	3.8000e-004	0.0000	7.4287	7.4287	3.9000e-004	0.0000	7.4383
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	4.0000e-004	1.0000e-005	4.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**1.2600e-003**	**0.0301**	**8.0100e-003**	**9.0000e-005**	**1.3400e-003**	**1.2000e-004**	**1.4600e-003**	**4.0000e-004**	**1.1000e-004**	**5.0000e-004**	**0.0000**	**8.1539**	**8.1539**	**4.1000e-004**	**0.0000**	**8.1641**

3.3 Site Preparation - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	1.3000e-003	0.0120	0.0108	1.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	1.2682	1.2682	4.0000e-004	0.0000	1.2783
Total	**1.3000e-003**	**0.0120**	**0.0108**	**1.0000e-005**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**8.2000e-004**	**8.2000e-004**	**0.0000**	**1.2682**	**1.2682**	**4.0000e-004**	**0.0000**	**1.2783**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.3000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1813	0.1813	1.0000e-005	0.0000	0.1815
Total	**9.0000e-005**	**7.0000e-005**	**7.3000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1813**	**0.1813**	**1.0000e-005**	**0.0000**	**0.1815**

Mitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5000e-004	3.9700e-003	0.0107	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2682	1.2682	4.0000e-004	0.0000	1.2783
Total	**2.5000e-004**	**3.9700e-003**	**0.0107**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**1.2682**	**1.2682**	**4.0000e-004**	**0.0000**	**1.2783**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	7.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1813	0.1813	1.0000e-005	0.0000	0.1815
Total	**9.0000e-005**	**7.0000e-005**	**7.3000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1813**	**0.1813**	**1.0000e-005**	**0.0000**	**0.1815**

3.4 Drainage/Utilities/Sub-Grade - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3800e-003	0.0218	0.0174	2.0000e-005		1.6300e-003	1.6300e-003		1.5000e-003	1.5000e-003	0.0000	2.0254	2.0254	6.4000e-004	0.0000	2.0414
Total	**2.3800e-003**	**0.0218**	**0.0174**	**2.0000e-005**	**0.0000**	**1.6300e-003**	**1.6300e-003**	**0.0000**	**1.5000e-003**	**1.5000e-003**	**0.0000**	**2.0254**	**2.0254**	**6.4000e-004**	**0.0000**	**2.0414**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.2000e-004	1.1700e-003	0.0000	4.0000e-005	0.0000	5.0000e-005	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2901	0.2901	1.0000e-005	0.0000	0.2903
Total	**1.5000e-004**	**1.2000e-004**	**1.1700e-003**	**0.0000**	**4.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2901**	**0.2901**	**1.0000e-005**	**0.0000**	**0.2903**

Mitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5000e-004	4.4200e-003	0.0170	2.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.0254	2.0254	6.4000e-004	0.0000	2.0414
Total	**3.5000e-004**	**4.4200e-003**	**0.0170**	**2.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.0254**	**2.0254**	**6.4000e-004**	**0.0000**	**2.0414**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	1.5000e-004	1.2000e-004	1.1700e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2901	0.2901	1.0000e-005	0.0000	0.2903
Total	**1.5000e-004**	**1.2000e-004**	**1.1700e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2901**	**0.2901**	**1.0000e-005**	**0.0000**	**0.2903**

3.5 Foundations/Concrete Pour - 2019

Unmitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9000e-004	1.8400e-003	1.5400e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2291	0.2291	2.0000e-005	0.0000	0.2297
Total	**2.9000e-004**	**1.8400e-003**	**1.5400e-003**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2291**	**0.2291**	**2.0000e-005**	**0.0000**	**0.2297**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1088	0.1088	0.0000	0.0000	0.1089
Total	**6.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.0000**	**0.1089**

Mitigated Construction On-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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.2291	0.2291	2.0000e-005	0.0000	0.2297
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.2291**	**0.2291**	**2.0000e-005**	**0.0000**	**0.2297**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.4000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1088	0.1088	0.0000	0.0000	0.1089
Total	**6.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.0000**	**0.1089**

3.6 Grading/Excavation - 2019

Unmitigated Construction On-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					
Fugitive Dust					3.5500e-003	0.0000	3.5500e-003	4.0000e-004	0.0000	4.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.1318	0.0936	1.8000e-004		5.7000e-003	5.7000e-003		5.2500e-003	5.2500e-003	0.0000	16.3811	16.3811	5.1800e-003	0.0000	16.5106
Total	**0.0115**	**0.1318**	**0.0936**	**1.8000e-004**	**3.5500e-003**	**5.7000e-003**	**9.2500e-003**	**4.0000e-004**	**5.2500e-003**	**5.6500e-003**	**0.0000**	**16.3811**	**16.3811**	**5.1800e-003**	**0.0000**	**16.5106**

Unmitigated 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	2.3000e-004	7.7700e-003	1.3300e-003	2.0000e-005	1.1000e-004	3.0000e-005	1.4000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	1.9346	1.9346	1.0000e-004	0.0000	1.9371
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	1.1000e-004	1.0000e-005	1.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**6.1000e-004**	**8.0600e-003**	**4.2500e-003**	**3.0000e-005**	**2.2000e-004**	**4.0000e-005**	**2.5000e-004**	**1.9000e-004**	**4.0000e-005**	**2.2000e-004**	**0.0000**	**2.6598**	**2.6598**	**1.2000e-004**	**0.0000**	**2.6629**

Mitigated Construction On-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					
Fugitive Dust					3.5500e-003	0.0000	3.5500e-003	4.0000e-004	0.0000	4.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3900e-003	0.0161	0.1177	1.8000e-004		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	16.3810	16.3810	5.1800e-003	0.0000	16.5106

Total	**2.3900e-003**	**0.0161**	**0.1177**	**1.8000e-004**	**3.5500e-003**	**3.0000e-004**	**3.8500e-003**	**4.0000e-004**	**3.0000e-004**	**7.0000e-004**	**0.0000**	**16.3810**	**16.3810**	**5.1800e-003**	**0.0000**	**16.5106**

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	2.3000e-004	7.7700e-003	1.3300e-003	2.0000e-005	2.4000e-004	3.0000e-005	2.7000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	1.9346	1.9346	1.0000e-004	0.0000	1.9371
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.9000e-004	2.9200e-003	1.0000e-005	4.0000e-004	1.0000e-005	4.1000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.7253	0.7253	2.0000e-005	0.0000	0.7258
Total	**6.1000e-004**	**8.0600e-003**	**4.2500e-003**	**3.0000e-005**	**6.4000e-004**	**4.0000e-005**	**6.8000e-004**	**1.9000e-004**	**4.0000e-005**	**2.2000e-004**	**0.0000**	**2.6598**	**2.6598**	**1.2000e-004**	**0.0000**	**2.6629**

3.7 Building Construction - 2019

Unmitigated Construction On-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					
Off-Road	0.1792	1.7720	1.3378	2.1800e-003		0.1064	0.1064		0.0996	0.0996	0.0000	193.8738	193.8738	0.0477	0.0000	195.0658
Total	**0.1792**	**1.7720**	**1.3378**	**2.1800e-003**		**0.1064**	**0.1064**		**0.0996**	**0.0996**	**0.0000**	**193.8738**	**193.8738**	**0.0477**	**0.0000**	**195.0658**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9000e-003	0.2809	0.0621	6.1000e-004	4.2800e-003	1.8000e-003	6.0800e-003	2.7600e-003	1.7200e-003	4.4800e-003	0.0000	58.5093	58.5093	3.6100e-003	0.0000	58.5994
Worker	0.0369	0.0281	0.2841	7.8000e-004	0.0105	5.5000e-004	0.0110	0.0113	5.1000e-004	0.0118	0.0000	70.6507	70.6507	2.0100e-003	0.0000	70.7011
Total	**0.0468**	**0.3090**	**0.3462**	**1.3900e-003**	**0.0148**	**2.3500e-003**	**0.0171**	**0.0140**	**2.2300e-003**	**0.0162**	**0.0000**	**129.1599**	**129.1599**	**5.6200e-003**	**0.0000**	**129.3004**

Mitigated Construction On-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					
Off-Road	0.0269	0.1715	1.3966	2.1800e-003		3.3900e-003	3.3900e-003		3.3900e-003	3.3900e-003	0.0000	193.8735	193.8735	0.0477	0.0000	195.0656
Total	**0.0269**	**0.1715**	**1.3966**	**2.1800e-003**		**3.3900e-003**	**3.3900e-003**		**3.3900e-003**	**3.3900e-003**	**0.0000**	**193.8735**	**193.8735**	**0.0477**	**0.0000**	**195.0656**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9000e-003	0.2809	0.0621	6.1000e-004	8.6900e-003	1.8000e-003	0.0105	2.7600e-003	1.7200e-003	4.4800e-003	0.0000	58.5093	58.5093	3.6100e-003	0.0000	58.5994
Worker	0.0369	0.0281	0.2841	7.8000e-004	0.0394	5.5000e-004	0.0399	0.0113	5.1000e-004	0.0118	0.0000	70.6507	70.6507	2.0100e-003	0.0000	70.7011
Total	**0.0468**	**0.3090**	**0.3462**	**1.3900e-003**	**0.0481**	**2.3500e-003**	**0.0504**	**0.0140**	**2.2300e-003**	**0.0162**	**0.0000**	**129.1599**	**129.1599**	**5.6200e-003**	**0.0000**	**129.3004**

3.7 Building Construction - 2020

Unmitigated Construction On-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					
Off-Road	0.0330	0.3284	0.2678	4.5000e-004		0.0190	0.0190		0.0177	0.0177	0.0000	38.9627	38.9627	9.6600e-003	0.0000	39.2041
Total	**0.0330**	**0.3284**	**0.2678**	**4.5000e-004**		**0.0190**	**0.0190**		**0.0177**	**0.0177**	**0.0000**	**38.9627**	**38.9627**	**9.6600e-003**	**0.0000**	**39.2041**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6800e-003	0.0527	0.0114	1.2000e-004	8.7000e-004	2.4000e-004	1.1200e-003	5.6000e-004	2.3000e-004	8.0000e-004	0.0000	11.8633	11.8633	6.8000e-004	0.0000	11.8803
Worker	6.8800e-003	5.0800e-003	0.0520	1.5000e-004	2.1400e-003	1.1000e-004	2.2500e-003	2.3000e-003	1.0000e-004	2.4000e-003	0.0000	13.9798	13.9798	3.6000e-004	0.0000	13.9888

Total	**8.5600e-003**	**0.0578**	**0.0634**	**2.7000e-004**	**3.0100e-003**	**3.5000e-004**	**3.3700e-003**	**2.8600e-003**	**3.3000e-004**	**3.2000e-003**	**0.0000**	**25.8431**	**25.8431**	**1.0400e-003**	**0.0000**	**25.8692**

Mitigated Construction On-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					
Off-Road	5.4900e-003	0.0350	0.2852	4.5000e-004		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004	0.0000	38.9626	38.9626	9.6600e-003	0.0000	39.2040
Total	**5.4900e-003**	**0.0350**	**0.2852**	**4.5000e-004**		**6.9000e-004**	**6.9000e-004**		**6.9000e-004**	**6.9000e-004**	**0.0000**	**38.9626**	**38.9626**	**9.6600e-003**	**0.0000**	**39.2040**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6800e-003	0.0527	0.0114	1.2000e-004	1.7700e-003	2.4000e-004	2.0200e-003	5.6000e-004	2.3000e-004	8.0000e-004	0.0000	11.8633	11.8633	6.8000e-004	0.0000	11.8803
Worker	6.8800e-003	5.0800e-003	0.0520	1.5000e-004	8.0400e-003	1.1000e-004	8.1500e-003	2.3000e-003	1.0000e-004	2.4000e-003	0.0000	13.9798	13.9798	3.6000e-004	0.0000	13.9888
Total	**8.5600e-003**	**0.0578**	**0.0634**	**2.7000e-004**	**9.8100e-003**	**3.5000e-004**	**0.0102**	**2.8600e-003**	**3.3000e-004**	**3.2000e-003**	**0.0000**	**25.8431**	**25.8431**	**1.0400e-003**	**0.0000**	**25.8692**

3.8 Paving - 2020

Unmitigated Construction On-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					
Off-Road	0.0125	0.1326	0.1361	2.4000e-004		6.6700e-003	6.6700e-003		6.1300e-003	6.1300e-003	0.0000	20.7003	20.7003	6.6900e-003	0.0000	20.8677
Paving	2.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0147**	**0.1326**	**0.1361**	**2.4000e-004**		**6.6700e-003**	**6.6700e-003**		**6.1300e-003**	**6.1300e-003**	**0.0000**	**20.7003**	**20.7003**	**6.6900e-003**	**0.0000**	**20.8677**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.6000e-004	4.7100e-003	1.0000e-005	1.9000e-004	1.0000e-005	2.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	1.2651	1.2651	3.0000e-005	0.0000	1.2660
Total	**6.2000e-004**	**4.6000e-004**	**4.7100e-003**	**1.0000e-005**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**1.2651**	**1.2651**	**3.0000e-005**	**0.0000**	**1.2660**

Mitigated Construction On-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					

Off-Road	2.9000e-003	0.0126	0.1684	2.4000e-004		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	20.7003	20.7003	6.6900e-003	0.0000	20.8677
Paving	2.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.1300e-003**	**0.0126**	**0.1684**	**2.4000e-004**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**20.7003**	**20.7003**	**6.6900e-003**	**0.0000**	**20.8677**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.6000e-004	4.7100e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.4000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	1.2651	1.2651	3.0000e-005	0.0000	1.2660
Total	**6.2000e-004**	**4.6000e-004**	**4.7100e-003**	**1.0000e-005**	**7.3000e-004**	**1.0000e-005**	**7.4000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**1.2651**	**1.2651**	**3.0000e-005**	**0.0000**	**1.2660**

3.9 Architectural Coating - 2020

Unmitigated Construction On-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					
Archit. Coating	0.7224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2300e-003	0.0225	0.0244	4.0000e-005		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003	0.0000	3.4043	3.4043	2.6000e-004	0.0000	3.4109
Total	**0.7256**	**0.0225**	**0.0244**	**4.0000e-005**		**1.4800e-003**	**1.4800e-003**		**1.4800e-003**	**1.4800e-003**	**0.0000**	**3.4043**	**3.4043**	**2.6000e-004**	**0.0000**	**3.4109**

Unmitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.1000e-004	5.2300e-003	2.0000e-005	2.2000e-004	1.0000e-005	2.3000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	1.4057	1.4057	4.0000e-005	0.0000	1.4066
Total	**6.9000e-004**	**5.1000e-004**	**5.2300e-003**	**2.0000e-005**	**2.2000e-004**	**1.0000e-005**	**2.3000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**1.4057**	**1.4057**	**4.0000e-005**	**0.0000**	**1.4066**

Mitigated Construction On-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					
Archit. Coating	0.7224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0000e-004	1.7200e-003	0.0244	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.4043	3.4043	2.6000e-004	0.0000	3.4109
Total	**0.7228**	**1.7200e-003**	**0.0244**	**4.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**3.4043**	**3.4043**	**2.6000e-004**	**0.0000**	**3.4109**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.1000e-004	5.2300e-003	2.0000e-005	8.1000e-004	1.0000e-005	8.2000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	1.4057	1.4057	4.0000e-005	0.0000	1.4066
Total	**6.9000e-004**	**5.1000e-004**	**5.2300e-003**	**2.0000e-005**	**8.1000e-004**	**1.0000e-005**	**8.2000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**1.4057**	**1.4057**	**4.0000e-005**	**0.0000**	**1.4066**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111
Unmitigated	0.2573	1.6580	2.6744	9.3700e-003	0.3493	9.3000e-003	0.3586	0.1020	8.7500e-003	0.1108	0.0000	863.6022	863.6022	0.0404	0.0000	864.6111

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	93.21	62.14	46.67	189,672	189,672
Condo/Townhouse	587.94	391.96	294.38	1,196,390	1,196,390
Health Club	0.00	0.00	0.00		

Parking Lot	0.00	0.00	0.00		
Quality Restaurant	197.11	211.90	166.90	231,193	231,193
Regional Shopping Center	128.69	229.58	99.08	243,485	243,485
Total	1,006.95	895.57	607.02	1,860,739	1,860,739

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
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Health Club	9.50	7.30	7.30	16.90	64.10	19.00	52	39	9
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Quality Restaurant	9.50	7.30	7.30	12.00	69.00	19.00	38	18	44
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Condo/Townhouse	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Health Club	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Parking Lot	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Quality Restaurant	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Regional Shopping Center	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	68.2451	68.2451	5.8000e-003	7.8000e-004	68.6240
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	119.9197	119.9197	0.0102	1.3800e-003	120.5854
NaturalGas Mitigated	0.0112	0.0970	0.0498	6.1000e-004		7.7400e-003	7.7400e-003		7.7400e-003	7.7400e-003	0.0000	110.9351	110.9351	2.1300e-003	2.0300e-003	111.5943
NaturalGas Unmitigated	0.0139	0.1203	0.0605	7.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	137.8078	137.8078	2.6400e-003	2.5300e-003	138.6268

5.2 Energy by Land Use - NaturalGas

Unmitigated

	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					
Apartments Low Rise	264544	1.4300e-003	0.0122	5.1900e-003	8.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	14.1171	14.1171	2.7000e-004	2.6000e-004	14.2009
Condo/Townhouse	1.86297e+006	0.0101	0.0858	0.0365	5.5000e-004		6.9400e-003	6.9400e-003		6.9400e-003	6.9400e-003	0.0000	99.4154	99.4154	1.9100e-003	1.8200e-003	100.0062
Health Club	35887.5	1.9000e-004	1.7600e-003	1.4800e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.9151	1.9151	4.0000e-005	4.0000e-005	1.9265
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	403008	2.1700e-003	0.0198	0.0166	1.2000e-004		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003	0.0000	21.5060	21.5060	4.1000e-004	3.9000e-004	21.6338
Regional Shopping Center	16008	9.0000e-005	7.8000e-004	6.6000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.8543	0.8543	2.0000e-005	2.0000e-005	0.8593
Total		**0.0139**	**0.1203**	**0.0605**	**7.6000e-004**		**9.6200e-003**	**9.6200e-003**		**9.6200e-003**	**9.6200e-003**	**0.0000**	**137.8078**	**137.8078**	**2.6500e-003**	**2.5300e-003**	**138.6268**

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					
Apartments Low Rise	206906	1.1200e-003	9.5300e-003	4.0600e-003	6.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	11.0413	11.0413	2.1000e-004	2.0000e-004	11.1069
Condo/Townhouse	1.45084e+006	7.8200e-003	0.0669	0.0285	4.3000e-004		5.4100e-003	5.4100e-003		5.4100e-003	5.4100e-003	0.0000	77.4223	77.4223	1.4800e-003	1.4200e-003	77.8823
Health Club	29416.9	1.6000e-004	1.4400e-003	1.2100e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	1.5698	1.5698	3.0000e-005	3.0000e-005	1.5791
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	379068	2.0400e-003	0.0186	0.0156	1.1000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	20.2285	20.2285	3.9000e-004	3.7000e-004	20.3487
Regional Shopping Center	12615	7.0000e-005	6.2000e-004	5.2000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.6732	0.6732	1.0000e-005	1.0000e-005	0.6772
Total		**0.0112**	**0.0970**	**0.0499**	**6.1000e-004**		**7.7500e-003**	**7.7500e-003**		**7.7500e-003**	**7.7500e-003**	**0.0000**	**110.9351**	**110.9351**	**2.1200e-003**	**2.0300e-003**	**111.5943**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	54810.3	10.8148	9.2000e-004	1.2000e-004	10.8748
Condo/Townhouse	410052	80.9084	6.8800e-003	9.3000e-004	81.3576
Health Club	10962	2.1629	1.8000e-004	2.0000e-005	2.1750
Parking Lot	25918.2	5.1140	4.3000e-004	6.0000e-005	5.1424
Quality Restaurant	69552	13.7235	1.1700e-003	1.6000e-004	13.7997
Regional Shopping Center	36470.4	7.1961	6.1000e-004	8.0000e-005	7.2360

Total		**119.9197**	**0.0102**	**1.3700e-003**	**120.5854**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	11894.2	2.3469	2.0000e-004	3.0000e-005	2.3599
Condo/Townhouse	363700	71.7627	6.1000e-003	8.2000e-004	72.1611
Health Club	-31635.3	-6.2420	-0.0005	-0.0001	-6.2767
Parking Lot	-16240.5	-3.2045	-0.0003	0.0000	-3.2222
Quality Restaurant	25791.3	5.0890	4.3000e-004	6.0000e-005	5.1172
Regional Shopping Center	-7637.07	-1.5069	-0.0001	0.0000	-1.5153
Total		**68.2452**	**5.8000e-003**	**7.8000e-004**	**68.6240**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Unmitigated	0.8919	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803

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	0.1324					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0214	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Total	**0.8919**	**8.1600e-003**	**0.7070**	**4.0000e-005**		**3.9000e-003**	**3.9000e-003**		**3.9000e-003**	**3.9000e-003**	**0.0000**	**1.1524**	**1.1524**	**1.1200e-003**	**0.0000**	**1.1803**

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	0.1324					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Landscaping	0.0214	8.1600e-003	0.7070	4.0000e-005		3.9000e-003	3.9000e-003		3.9000e-003	3.9000e-003	0.0000	1.1524	1.1524	1.1200e-003	0.0000	1.1803
Total	**0.8919**	**8.1600e-003**	**0.7070**	**4.0000e-005**		**3.9000e-003**	**3.9000e-003**		**3.9000e-003**	**3.9000e-003**	**0.0000**	**1.1524**	**1.1524**	**1.1200e-003**	**0.0000**	**1.1803**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.9177	0.1901	4.5700e-003	17.0325
Unmitigated	12.9291	0.2375	5.7100e-003	20.5685

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.847002 / 0.53398	1.5418	0.0277	6.7000e-004	2.4331

Condo/Townhouse	5.34263 / 3.36818	9.7251	0.1748	4.2000e-003	15.3469
Health Club	0.0857576 / 0.0525611	0.1551	2.8100e-003	7.0000e-005	0.2453
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0.728481 / 0.0464088	1.0410	0.0238	5.7000e-004	1.8060
Regional Shopping Center	0.257772 / 0.15799	0.4661	8.4300e-003	2.0000e-004	0.7373
Total		**12.9291**	**0.2375**	**5.7100e-003**	**20.5686**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.677602 / 0.53398	1.3072	0.0222	5.3000e-004	2.0206
Condo/Townhouse	4.2741 / 3.36818	8.2453	0.1399	3.3700e-003	12.7453
Health Club	0.068606 / 0.0525611	0.1313	2.2400e-003	5.0000e-005	0.2035
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	0.582785 / 0.0464088	0.8392	0.0191	4.6000e-004	1.4512
Regional Shopping Center	0.206218 / 0.15799	0.3947	6.7500e-003	1.6000e-004	0.6118
Total		**10.9177**	**0.1901**	**4.5700e-003**	**17.0325**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.7349	0.6935	0.0000	29.0727
Unmitigated	11.7349	0.6935	0.0000	29.0727

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.98	1.2139	0.0717	0.0000	3.0074
Condo/Townhouse	37.72	7.6568	0.4525	0.0000	18.9695
Health Club	8.27	1.6787	0.0992	0.0000	4.1590
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.19	0.4446	0.0263	0.0000	1.1014
Regional Shopping Center	3.65	0.7409	0.0438	0.0000	1.8356
Total		**11.7349**	**0.6935**	**0.0000**	**29.0727**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.98	1.2139	0.0717	0.0000	3.0074
Condo/Townhouse	37.72	7.6568	0.4525	0.0000	18.9695
Health Club	8.27	1.6787	0.0992	0.0000	4.1590
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Quality Restaurant	2.19	0.4446	0.0263	0.0000	1.1014
Regional Shopping Center	3.65	0.7409	0.0438	0.0000	1.8356
Total		**11.7349**	**0.6935**	**0.0000**	**29.0727**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix A-15

Health Risk Assessment – AERSCREEN Inputs – Offroad

Start date and time 12/04/17 14:57:11

AERSCREEN 16216

Offroad

Offroad

---------- DATA ENTRY VALIDATION ----------

	METRIC	ENGLISH
** AREADATA **	---	---
Emission Rate:	1.0000 g/s	7.937 lb/hr
Area Height:	3.89 meters	12.76 feet
Area Source Length:	365.00 meters	1197.51 feet
Area Source Width:	130.00 meters	426.51 feet
Vertical Dimension:	1.40 meters	4.59 feet
Model Mode:	URBAN	
Population:	233136	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

Flagpole Receptor Height: 1.5 meters 5. feet

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 280.0 / 297.0 K 44.3 / 74.9 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u*): not adjusted

DEBUG OPTION OFF

AERSCREEN output file:

Offroad.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

****

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 12/04/17 15:04:54

****

Running AERMOD

 Processing Winter

Processing surface roughness sector 1

****

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0

    ********   WARNING MESSAGES   ********

               *** NONE ***

****

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

    ********   WARNING MESSAGES   ********

               *** NONE ***

****

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector 10

```
    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15


    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20


    ********   WARNING MESSAGES    ********

               ***  NONE  ***

 ****************************************


  Running AERMOD

 Processing Spring
```

Processing surface roughness sector 1

****

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0

    ********   WARNING MESSAGES   ********

               *** NONE ***

****

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5

    ********   WARNING MESSAGES   ********

               *** NONE ***

****

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 10

    ********   WARNING MESSAGES   ********

*** NONE ***

****

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 15

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector 20

******** WARNING MESSAGES ********

*** NONE ***

****

Running AERMOD

Processing Summer

Processing surface roughness sector 1

****

Processing wind flow sector   1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES   ********

               *** NONE ***

****

Processing wind flow sector   2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES   ********

               *** NONE ***

****

Processing wind flow sector   3

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 10

    ********   WARNING MESSAGES   ********

               *** NONE ***

****

Processing wind flow sector   4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 15

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector   5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 20

******** WARNING MESSAGES ********

*** NONE ***

****

Running AERMOD

Processing Autumn

Processing surface roughness sector 1

****

Processing wind flow sector   1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 0

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 5

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 3

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 10

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 4

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 15

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 5

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 20

******** WARNING MESSAGES ********

*** NONE ***

FLOWSECTOR ended 12/04/17 15:05:17

REFINE started 12/04/17 15:05:17

AERMOD Finishes Successfully for REFINE stage 3 Winter sector 0

******** WARNING MESSAGES ********

*** NONE ***

REFINE ended 12/04/17 15:05:21

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 12/04/17 15:05:21

Appendix A-16

Health Risk Assessment – AERSCREEN Inputs – Onroad

Start date and time 12/06/17 09:11:11

AERSCREEN 16216

Onroad

Onroad

---------- DATA ENTRY VALIDATION ----------

	METRIC	ENGLISH
** AREADATA **	---	---
Emission Rate:	1.0000 g/s	7.937 lb/hr
Area Height:	2.55 meters	8.37 feet
Area Source Length:	483.00 meters	1584.65 feet
Area Source Width:	9.00 meters	29.53 feet
Vertical Dimension:	2.37 meters	7.78 feet
Model Mode:	URBAN	
Population:	233136	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

Flagpole Receptor Height: 1.5 meters 5. feet

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 280.0 / 297.0 K 44.3 / 74.9 Deg F

Minimum Wind Speed: 0.5 m/s

Anemometer Height: 10.000 meters

Dominant Surface Profile: Urban

Dominant Climate Type: Average Moisture

Surface friction velocity (u*): not adjusted

DEBUG OPTION OFF

AERSCREEN output file:

Onroad.out

*** AERSCREEN Run is Ready to Begin

No terrain used, AERMAP will not be run

****

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 12/06/17 09:15:01

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

****

Processing wind flow sector   1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector   2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

******** WARNING MESSAGES ********

*** NONE ***

****

Running AERMOD

Processing Spring

Processing surface roughness sector 1

****

Processing wind flow sector   1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector   2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5

******** WARNING MESSAGES ********

*** NONE ***

****

Running AERMOD

Processing Summer

Processing surface roughness sector 1

****

Processing wind flow sector 1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 0

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector 5

******** WARNING MESSAGES ********

*** NONE ***

****

Running AERMOD

Processing Autumn

Processing surface roughness sector 1

****

Processing wind flow sector 1

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 0

******** WARNING MESSAGES ********

*** NONE ***

****

Processing wind flow sector 2

AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector 5

******** WARNING MESSAGES ********

*** NONE ***

FLOWSECTOR ended 12/06/17 09:15:14

REFINE started 12/06/17 09:15:14

AERMOD Finishes Successfully for REFINE stage 3 Winter sector 0

******** WARNING MESSAGES ********

*** NONE ***

REFINE ended 12/06/17 09:15:24

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

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Ending date and time 12/06/17 09:15:24

Appendix A-17

Health Risk Assessment – AERSCREEN Outputs – Offroad

	Concentrat	Distance	Elevation	Diag	Season/Mc	Zo	sector	Date	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS	HT	REF	TA	HT
	9.63E+02	1	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.03E+03	25	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.08E+03	50	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.12E+03	75	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.16E+03	100	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.20E+03	125	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
*	1.22E+03	143	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.14E+03	150	0	10	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	8.33E+02	175	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.37E+02	200	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.28E+02	225	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.49E+02	250	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.89E+02	275	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.42E+02	300	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.04E+02	325	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.72E+02	350	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.47E+02	375	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.25E+02	400	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.06E+02	425	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.90E+02	450	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.76E+02	475	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.64E+02	500	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.53E+02	525	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.43E+02	550	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.35E+02	575	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.27E+02	600	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.20E+02	625	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.14E+02	650	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.08E+02	675	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.03E+02	700	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	9.77E+01	725	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	9.32E+01	750	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	8.91E+01	775	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	8.52E+01	800	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	8.17E+01	825	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	7.84E+01	850	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	7.53E+01	875	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	7.25E+01	900	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.98E+01	925	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.73E+01	950	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.49E+01	975	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.27E+01	1000	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.06E+01	1025	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.86E+01	1050	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.68E+01	1075	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.50E+01	1100	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.33E+01	1125	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.17E+01	1150	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.02E+01	1175	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.88E+01	1200	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.74E+01	1225	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.61E+01	1250	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.49E+01	1275	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.37E+01	1300	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.26E+01	1325	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.15E+01	1350	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.05E+01	1375	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.95E+01	1400	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.86E+01	1425	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.77E+01	1450	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.68E+01	1475	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.60E+01	1500	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.52E+01	1525	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.44E+01	1550	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.36E+01	1575	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.29E+01	1600	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.22E+01	1625	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.16E+01	1650	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.09E+01	1675	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.03E+01	1700	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.97E+01	1725	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.91E+01	1750	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.86E+01	1775	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.80E+01	1800	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.75E+01	1825	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.70E+01	1850	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.65E+01	1875	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.60E+01	1900	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.57E+01	1925	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.52E+01	1950	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.48E+01	1975	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.43E+01	2000	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.39E+01	2025	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.35E+01	2050	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.31E+01	2075	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.28E+01	2100	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.24E+01	2125	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.20E+01	2150	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.17E+01	2175	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.14E+01	2200	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.10E+01	2225	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.07E+01	2250	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.04E+01	2275	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.01E+01	2300	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.98E+01	2325	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.95E+01	2350	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.92E+01	2375	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.90E+01	2400	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.87E+01	2425	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.84E+01	2450	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.82E+01	2475	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.79E+01	2500	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.77E+01	2525	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.75E+01	2550	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.72E+01	2575	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.70E+01	2600	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.68E+01	2625	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.66E+01	2650	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.63E+01	2675	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.61E+01	2700	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.59E+01	2725	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.57E+01	2750	0	10	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.55E+01	2775	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.54E+01	2800	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.52E+01	2825	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.50E+01	2850	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.48E+01	2875	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.46E+01	2900	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.45E+01	2925	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.43E+01	2950	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.41E+01	2975	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.40E+01	3000	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				

1.38E+01	3025	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.37E+01	3050	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.35E+01	3075	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.34E+01	3100	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.32E+01	3125	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.31E+01	3150	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.29E+01	3174.99	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.28E+01	3200	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.27E+01	3225	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.25E+01	3250	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.24E+01	3275	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.23E+01	3300	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.21E+01	3325	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.20E+01	3350	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.19E+01	3375	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.18E+01	3400	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.17E+01	3425	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.15E+01	3450	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.14E+01	3475	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.13E+01	3500	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.12E+01	3525	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.11E+01	3550	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.10E+01	3575	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.09E+01	3600	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.08E+01	3625	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.07E+01	3650	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.06E+01	3675	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.05E+01	3700	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.04E+01	3725	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.03E+01	3750	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.02E+01	3775	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.01E+01	3800	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.00E+01	3825	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.93E+00	3849.99	0	15 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.84E+00	3875	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.76E+00	3900	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.67E+00	3925	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.59E+00	3950	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.51E+00	3975	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.43E+00	4000	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.35E+00	4025	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.27E+00	4050	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.19E+00	4075	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.11E+00	4100	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.04E+00	4125	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.96E+00	4150	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.89E+00	4175	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.82E+00	4200	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.75E+00	4225	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.68E+00	4250	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.61E+00	4275	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.54E+00	4300	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.47E+00	4325	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.40E+00	4350	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.34E+00	4375	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.27E+00	4400	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.21E+00	4425	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.15E+00	4449.99	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.09E+00	4475	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.02E+00	4500	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.96E+00	4525	0	10 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.90E+00	4550	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.84E+00	4575	0	20 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.79E+00	4600	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.73E+00	4625	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.67E+00	4650	0	20 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.62E+00	4675	0	20 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.56E+00	4700	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.51E+00	4725	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.45E+00	4750	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.40E+00	4775	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.35E+00	4800	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.29E+00	4825	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.24E+00	4850	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.19E+00	4875	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.14E+00	4900	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.09E+00	4924.99	0	15 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.04E+00	4950	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
6.99E+00	4975	0	15 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
6.95E+00	5000	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2

Appendix A-18

Health Risk Assessment – AERSCREEN Outputs – Onroad

	Concentrat	Distance	Elevation	Diag	Season/Mc	Zo	sector	Date	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS	HT	REF	TA	HT
	2.55E+03	1	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.61E+03	25	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.62E+03	50	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.64E+03	75	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.65E+03	100	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.66E+03	125	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.68E+03	150	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.69E+03	175	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.70E+03	200	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.70E+03	225	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
*	2.71E+03	242	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.00E+03	250	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	9.29E+02	275	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.65E+02	300	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.20E+02	325	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.01E+02	350	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.51E+02	375	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.11E+02	400	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.78E+02	425	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.52E+02	450	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.30E+02	475	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.11E+02	500	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.94E+02	525	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.80E+02	550	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.68E+02	575	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.57E+02	600	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.47E+02	625	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.39E+02	650	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.31E+02	675	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.24E+02	700	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.18E+02	725	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.12E+02	750	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.06E+02	775	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.02E+02	800	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	9.71E+01	825	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	9.29E+01	850	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	8.87E+01	875	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	8.52E+01	900	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	8.19E+01	925	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	7.88E+01	950.01	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	7.59E+01	975	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	7.32E+01	1000	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	7.07E+01	1025	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.83E+01	1050	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.60E+01	1075	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.39E+01	1100	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.19E+01	1125	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	6.00E+01	1150	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.82E+01	1175	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.65E+01	1200	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.49E+01	1225	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.34E+01	1250	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.19E+01	1275	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	5.05E+01	1300	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.92E+01	1325	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.79E+01	1350	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.67E+01	1375	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.55E+01	1400	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.44E+01	1425	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.33E+01	1450	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.23E+01	1475	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	4.13E+01	1500	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.99E+01	1525	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.90E+01	1550	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.82E+01	1575	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.74E+01	1600	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.66E+01	1625	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.58E+01	1650	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.51E+01	1675	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.44E+01	1700	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.37E+01	1725	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.31E+01	1750	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.24E+01	1775	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.18E+01	1800	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.12E+01	1825	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.06E+01	1850	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	3.01E+01	1875	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.95E+01	1900	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.90E+01	1924.99	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.85E+01	1950	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.80E+01	1975	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.75E+01	2000	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.71E+01	2025	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.66E+01	2050	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.62E+01	2075	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.58E+01	2100	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.53E+01	2125	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.49E+01	2150	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.45E+01	2175	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.42E+01	2200	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.38E+01	2225	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.34E+01	2250	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.31E+01	2275	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.27E+01	2300	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.24E+01	2325	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.21E+01	2350	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.18E+01	2375	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.14E+01	2400	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.11E+01	2425	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.09E+01	2450	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.06E+01	2475	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.03E+01	2500	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	2.00E+01	2525	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.97E+01	2550	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.95E+01	2575	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.92E+01	2600	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.90E+01	2625	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.87E+01	2650	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.85E+01	2675	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.83E+01	2700	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.80E+01	2725	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.78E+01	2750	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.76E+01	2775	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.74E+01	2800	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.72E+01	2825	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.70E+01	2850	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.67E+01	2875	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.66E+01	2900	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.64E+01	2925	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.62E+01	2950	0	5	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.60E+01	2975	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				
	1.58E+01	3000	0	0	Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2				

1.56E+01	3025	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.54E+01	3050	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.53E+01	3075	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.51E+01	3100	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.49E+01	3125	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.48E+01	3150	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.46E+01	3175	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.45E+01	3200	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.43E+01	3225	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.42E+01	3250	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.40E+01	3275	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.39E+01	3300	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.37E+01	3325	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.36E+01	3350	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.34E+01	3375	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.33E+01	3400	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.32E+01	3425	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.31E+01	3450	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.29E+01	3475	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.28E+01	3500	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.27E+01	3525	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.25E+01	3550	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.24E+01	3575	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.23E+01	3600	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.22E+01	3625	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.21E+01	3650	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.20E+01	3675	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.19E+01	3700	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.18E+01	3725	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.16E+01	3750	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.15E+01	3775	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.14E+01	3800	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.13E+01	3825	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.12E+01	3850	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.11E+01	3875	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.10E+01	3900	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.09E+01	3925	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.08E+01	3950	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.08E+01	3975	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.07E+01	4000	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.06E+01	4025	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.05E+01	4050	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.04E+01	4075	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.03E+01	4100	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.02E+01	4125	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.01E+01	4150	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
1.01E+01	4175	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.97E+00	4200	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.89E+00	4225	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.81E+00	4250	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.73E+00	4275	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.65E+00	4300	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.58E+00	4325	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.50E+00	4350	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.43E+00	4375	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.36E+00	4400	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.28E+00	4425	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.21E+00	4450	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.14E+00	4475	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.07E+00	4500	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
9.00E+00	4525	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.94E+00	4550	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.87E+00	4575	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.80E+00	4600	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.74E+00	4625	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.67E+00	4650	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.61E+00	4675	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.55E+00	4700	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.49E+00	4725	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.43E+00	4750	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.37E+00	4775	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.31E+00	4800	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.25E+00	4825	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.19E+00	4850	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.13E+00	4875	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.07E+00	4900	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
8.02E+00	4925	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.96E+00	4950	0	5 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.91E+00	4975	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2
7.85E+00	5000	0	0 Winter	0-360	10011001	-1.27	0.043	-9	0.02	-999	21	5.9	1	1.5	0.35	0.5	10	297	2

Appendix A-19

Health Risk Assessment – Cumulative

Cumulative HRA

Updated: 1/16/2018

To respond to City comment on the draft IS to include assessment of background risk on operational receptors.

blue = used for totals

TAC Source	Est. Cancer Risk	PM2.5 Concentration	Chronic HI	Notes	Source
Union Pacific Railway	32.003	0.055	0.011	Link 332 (6ft elevation): 75 feet west	Phil Martien, BAAQMD, in email to Tim Rimpo on 6/25/14. File used: *Rail-6ft.kmz* . See: \\Sfo-file01\projects\SFO\17xxxx\D170627.00 - Fremont Niles Gateway\03 Working Documents\AQ-GHG\Corrsepondence
Mission Blvd	4.764	0.03	0.004	Link 478 (20ft elevation): 750 feet south	BAAQMD, 2012. File: *Alameda 20ft.kmz* . See: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools
Mission Blvd	3.257	0.021	0.003	Link 478 (20ft elevation): 750 feet south	BAAQMD, 2012. File: *Alameda 20ft.kmz* . See: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools
Genarator 19504	0			No data, XXX feet west of site	BAAQMD, 2012. File: *Alameda_May_2012.kmz* . See: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools
Genarator G9168	0.207	0	0	1,400 feet south	BAAQMD, 2012. File: *Alameda_May_2012.kmz* . See: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools
Genarator 15973	14.31	0.025	0.005	2,000 feet south	BAAQMD, 2012. File: *Alameda_May_2012.kmz* . See: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools
Total Risk	**51.077**	**0.11**	**0.02**		
BAAQMD Cumulative Thresholds	**100**	**0.8**	**10**		BAAQMD 2017: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en
Exceeds threshold?	**No**	**No**	**No**		

Appendix B

Special-Status Plant and Animal Species

ESA

TABLE B-1
SPECIAL-STATUS SPECIES CONSIDERED FOR THE NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
FEDERAL OR STATE LISTED SPECIES				
Plants				
Palmate-bracted salty bird's-beak *Chloropyron palmatum*	FE/CE/1B.1	Chenopod scrub, valley and foothill grassland. Usually found on Pescadero silty clay which is alkaline, with *Distichlis, Frankenia,* etc. 5-155m.	**Absent.** Suitable habitat is not found in the project study area. No documented occurrences within 5 miles of the project site.	May – October
Robust spineflower *Chorizanthe robusta v*ar. *robusta*	FE/--/1B.1	Cismontane woodland, coastal dunes, coastal scrub, sandy or gravelly terraces and bluffs or in loose sand. 3-120 m.	**Absent.** Suitable habitat is not found in the project study area.	April – September
Santa Cruz tarplant *Holocarpha macradenia*	FT/CE/1B.1	Coastal prairie, valley and foothill grassland. Found on light, sandy soil or sandy clay; often with non-natives. 10-260 m.	**Absent.** Suitable habitat is not found in the project study area. No documented occurrences within 5 miles of the project site.	June – October
Contra Costa goldfields *Lasthenia conjugens*	FE/--/1B.1	Valley and foothill grassland, vernal pools, cismontane woodland, swales, low depressions, in open grassy areas. 1-445 m.	**Absent.** Suitable habitat is not found in the project study area. Nearest occurrence is documented 5 miles southwest of the project site.	March – July
California seablite *Suaeda californica*	FE/--/1B.1	High margins of coastal salt marshes and swamps in sandy soil. 0 – 5m.	**Absent.** Suitable habitat is not found in the project study area.	July – October
Invertebrates				
Conservancy fairy shrimp *Branchinecta conservation*	FE/--	Conservancy fairy shrimp are endemic to vernal pools in California and this species is restricted to the Central Valley except for one population in the Central Coast in Ventura County.	**Absent.** Suitable habitat not found onsite.	November – April
vernal pool fairy shrimp *Branchinecta lynchi*	FT/--	Ephemeral freshwater vernal pools.	**Absent.** Suitable habitat is not present in the project study area.	December – May
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE/--/--	Coastal scrub and bunchgrass grassland habitats, with larval foodplant, broadleaf stonecrop (*Sedum spathulifolium*). Adults nectar on bladder parsnip (*Lomatium utriculatum*), common yarrow (*Achillea millefolium*), coast rock cress (*Arabis blepharophylla*), San Francisco wallflower (*Erysimum franciscanum*), California buttercup (*Ranunculus californicus*), and wood strawberry (*Fragaria vesca*).	**Absent.** Suitable habitat for this species is not found in the project study area and supportive host plant and nectar plants not observed during reconnaissance survey.	March – April

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Invertebrates (cont.)				
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT/*/--	Native grasslands on serpentine soils in San Francisco Bay area. Host plants: foothill plantain (*Plantago erecta)* (primary); denseflower Indian paintbrush (*Castilleja densiflora*) and owl's clover (*C. exserta*).	**Absent.** Suitable habitat for this species is not found in the project study area and supportive host plants not observed during reconnaissance survey.	March – May
vernal pool tadpole shrimp *Lepidurus packardi*	FE/--/--	This species inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	**Absent.** Suitable habitat not found onsite.	December – early spring (until vernal pools dry up)
Fish				
delta smelt *Hypomesus transpacificus*	FT/CE/--	Endemic to the Sacramento-San Joaquin Delta distributed from Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, and Solano Counties. Spawning occurs in brackish-water river channels and sloughs of the Delta.	**Absent.** Project study area located outside of specie's range.	--
Steelhead – Central CA Coast DPS *Oncorhynchus mykiss*	FT/--/--	Spawns and rears in coastal streams between the Russian River and Aptos Creek, as well as drainages tributary to San Francisco Bay, where gravelly substrate and shaded riparian habitat occurs.[c]	**Present.** Known seasonal occupant of Alameda Creek below the Sunol Dam to the mouth at San Francisco Bay. Suitable habitat for this species is not found within the project site.	Year-round
longfin smelt *Spirinchus thaleichthys*	FC/ CT, CSC /--	Found throughout the nearshore coastal waters and open waters of San Francisco Bay-Delta including the river channels and sloughs of the Delta. Spawns in the Delta.	**Absent.** Project study area located outside of specie's range.	late summer
Reptiles				
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/CT	Restricted to valley-foothill hardwood habitat of the coast ranges between Monterey and north San Francisco Bay. Inhabits south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses.	**Low.** Suitable foraging, dispersal, and refugia habitat is not present within the project study area. Occurrences documented within 5 miles of the project site are associated with foothill open space east of the project study area.	Year-round

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Amphibians				
California tiger salamander *Ambystoma californiense*	FT/CT, WL/--	Breed in vernal pools or temporary ponds in annual grasslands, or open woodlands. Adults typically use mammal burrows as refugia.	**Low.** Suitable grassland habitat with mammal burrows and seasonal ponds are not present within the project study area. Occurrences documented within 5 miles of the project site are located in foothill open space east of the project study area.	Year-round
Amphibians (cont.)				
California red-legged frog *Rana draytonii*	FT/CSC/--	Streams, freshwater pools, and ponds with overhanging vegetation. Also found in woods adjacent to streams. Requires permanent or ephemeral water sources such as reservoirs and slow moving streams and needs pools of >0.5 m depth for breeding.	**Low.** Suitable aquatic and upland dispersal habitat is not found in the project study area. Occurrences documented within 5 miles of the project site are associated with foothill open space east of the project study area and an urban ditch Union City.	Year-round
Birds				
tricolored blackbird *Agelaius tricolor*	--/CE,SSC	Nests in cattail, tule, blackberry thickets, or thistle patches adjacent to freshwater sources.	**Low (unlikely to nest).** May occur over the project site or in the adjacent Alameda Creek channel on a transient basis. Typical nesting vegetation not observed during reconnaissance survey. No previously documented to occur within Alameda Creek within the project study area.	Year-round
western snowy plover *Charadrius alexandrinus nivosus*	FT/CSC/--	Sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees, and gravel bars. Nests in sandy substrate and forages in sandy marine and estuarine bodies.	**Absent (no potential to nest).** Snowy plovers nest abundantly in dry south bay salt ponds and on levees associated with them, but are not typically found outside these habitats. No suitable nesting habitat exists in the project study area. Nearest occurrence is located 5 miles southwest of the project site.	Year-round
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/CE/--	Woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes.	**Low (no potential to nest).** Uncommon to the region but may occur on a transient basis during migration. Regional occurrences are historical or located more than 5 miles from the project site.	Year-round
American peregrine falcon *Falco peregrinus anatum*	FD/CD, CFP /--	Nests near wetlands, lakes, rivers, or other water on cliffs, banks, human structures. Feeds on birds taken in flight.	**Low (unlikely to nest).** May occur in the project study area on a transient basis. More to common wetland and marsh habitats of the region.	Year-round

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Birds (cont.)				
California black rail *Laterallus jamaicensis coturniculus*	--/CT/--	Salt marshes along large bays, also freshwater marshes.	**Low (unlikely to nest).** Only occurs in densely-vegetated tidal marsh habitat or freshwater marsh. Historical occurrence documented in Alameda Creek between Niles and Centerville (CDFW, 2017). Suitable nesting habitat for this species not found in the project site.	Year-round
Ridgway's rail *Rallus obsoletus obsoletus*	FE/CE/--	Salt-water and brackish marshes with tidal sloughs.	**Absent (no potential to nest).** Only occurs in densely-vegetated tidal marsh habitat. Suitable nesting habitat for this species is not found in the project study area.	Year-round
Bank swallow (nesting) *Riparia riparia*	--/CT/--	Vertical banks and cliffs with sandy soil, near water. Nests in holes dug in cliffs and river banks.	**Low (unlikely to nest).** Suitable nesting habitat for this species is not found in the project study area. Nearest documented occurrence is 5 miles southeast of the project site in Coyote Hills Regional Park.	March – October (migration)
California least tern *Sterna antillarum*	FE/CE/--	Feeds in relatively shallow, near-shore waters, coastal freshwater ponds, channels, and lakes occupied by small fish. Colonial nesters on sand, gravel, or shell beaches where visibility is good.	**Absent (no potential to nest).** No nesting colonies are known to occur in the project study area. No occurrences are documented within 5 miles of the project site. Individuals may occur in the study area on a transient basis.	April – August
Mammals				
Saltmarsh harvest mouse *Reithrodontomys raviventris*	FE/CE/--	Salt marsh habitat dominated by pickleweed.	**Absent.** Suitable habitat for this species is not found in the project study area.	Year-round
San Joaquin kit fox *Vulpes macrotis mutica*	FE/CT/--	Annual grasslands or grassy open stages with scattered shrubby vegetation and requires loose-textured sandy soils for burrowing, and for a suitable prey base.	**Absent.** The project area is located outside of the known range for this species. No occurrences documented within 5 miles of the project site.	Year-round
		OTHER SPECIAL STATUS SPECIES		
Plants				
Santa Clara thorn-mint *Acanthomintha lanceolata*	--/--/4.2	Chaparral, cismontane woodland and coastal scrub, generally on serpentinite. 80 – 1200m.	**Absent.** Suitable habitat is not found in the project study area. Serpentine soils are not present. Nearest occurrences located more than 5 miles south and east of the project site in the open space foothills.	March – June
bent-flowered fiddleneck *Amsinckia lunaris*	--/--/1B.2	Coastal bluff scrub, cismontane woodland, and valley and foothill grassland. 30 – 680m.	**Absent.** Suitable habitat is not found in the project study area.	March – June

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Plants (cont.)				
California androsace *Androsace elongata* ssp. *acuta*	--/--.4.2	Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland; meadows and seeps. Highly localized and often overlooked. 150 – 1200m.	**Absent.** Suitable habitat is not found in the project study area. Not documented within 5 miles of the project site.	March – June
Alkali milk-vetch *Astragalus tener* var. *tener*	--/--/1B.2	Playas, valley foothill grasslands, vernal pools/alkaline habitats. 1 – 170m.	**Absent.** Suitable habitat is not found in the project study area. Nearest occurrence is documented 5 miles southwest of the project site.	March – June
crownscale *Atriplex coronata* var. *coronate*	--/--/4.2	Chenopod scrub, valley and foothill grassland, vernal pools; alkaline, often clay soils. 1 – 590m.	**Absent.** Suitable habitat is not found in the project study area.	March – October
Brittlescale *Atriplex depressa*	--/--/1B.2	Chenopod scrub, meadows, playas, valley and foothill grassland, vernal pools. Usually in alkali scalds or alkali clay in meadows or annual grassland; rarely associated with riparian, marshes, or vernal pools. 1-320 m.	**Absent.** Suitable habitat is not found in the project study area.	April – October
Lesser saltscale *Atriplex minuscula*	--/--/1B.1	Chenopod scrub, playas, valley and foothill grassland. In alkali sink and grassland in sandy, alkaline soils. 15-200m.	**Absent.** Suitable habitat is not found in the project study area.	May – October
Big-scale balsamroot *Balsamorhiza macrolepis*	--/--/1B.2	Chaparral, valley and foothill grassland, cismontane woodland. Sometimes on serpentine. 90-1555m.	**Absent.** Suitable habitat is not found in the project study area. Serpentine soils are not present.	March – June
Oakland star-tulip *Calochortus umbellatus*	--/--/4.2	Chaparral, lower montane coniferous forest, broadleafed upland forest, valley and foothill grassland. Often found on serpentine. 100-700m.	**Absent.** Suitable habitat is not found in the project study area. Serpentine soils are not present.	March – May
Chaparral harebell *Campanula exigua*	--/--/1B.2	Chaparral and rocky sites; usually found on serpentine soils in chaparral. 275-1250m.	**Low.** Suitable habitat is not found within the project study area. Serpentine soils are not present. Nearest occurrence is located 2 miles southeast of the project site in the open space foothills.	May – June
Cogdon's tarplant *Centromadia parryi* ssp. *cogdonii*	--/--/1B.2	Valley and foothill grasslands/alkaline habitats, low water tolerance. 0 – 260m.	**Low.** Suitable habitat is not found within the project study area. Nearest occurrence is located 2 miles southeast of the project site in the open space foothills.	May – October, uncommon in November
Point Reyes bird's-beak *Chloropyron maritimum* ssp. *Palustre*	--/--/1B.2	Coastal salt marshes and swamps. 0 – 220m.	**Absent.** Suitable habitat is not found in the project study area.	June – October

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Plants (cont.)				
Santa Clara red ribbons *Clarkia concinna* ssp. *automixa*	--/--/4.3	Cismontane woodland, chaparral. Found on slopes and near drainages. 90-1500m.	**Low.** Suitable habitat is not found in the project study area. Nearest occurrence is historical and located within 1 mile of the project site in Niles Canyon. Other records are documented upstream in the same canyon where habitat conditions suitable for this species are present.	May – June
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	--/--/1B.2	Chaparral, cismontane woodland; wet, boggy meadows, openings in soft chaparral habitat, woodland in canyons; shaded gullies, sometimes in thick undergrowth. 230 – 1095m.	**Absent.** Suitable habitat is not found in the project study area.	April – June
western leatherwood *Dirca occidentalis*	--/--/1B.2	Chaparral, foothill woodland, mixed evergreen forest, broadleaved upland forest, closed-cone pine forest, north coastal coniferous forest, and wetland-riparian areas. Equally likely to occur in wetlands and non-wetlands. 12 – 560m.	**Absent.** Suitable habitat is not found in the project study area.	January – March
Jepson's wooly sunflower *Eriophyllum jepsonii*	--/--/4.3	Coastal scrub, chaparral, cismontane woodland. Sometimes found on serpentine. 200-1025m.	**Absent.** Suitable habitat is not found in the project study area.	April – June
Hoover's button-celery *Eryngium aristulatum* var. *hooveri*	--/--/1B.1	Found in alkaline depressions, vernal pools, roadside ditches and other freshwater wet places near the coast. 3 – 45m.	**Absent.** Suitable habitat is not found in the project study area.	July
Jepson's coyote thistle *Eryngium jepsonii*	--/--/1B.2	Valley and foothill grasslands, vernal pools, and wetlands. 6 – 110m.	**Absent.** No suitable habitat is present in the project study area.	April – August
San Joaquin spearscale *Extriplex joaquinana*	--/--/1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland; seasonal wetlands or alkali sink scrub. 1 – 835m.	**Absent.** Suitable habitat is not found within the project study area. No occurrences documented within 5 miles of the project site.	April – October
Stinkbells *Fritillaria agrestis*	--/--/4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland. Clay substrate, sometimes on serpentinite. Most populations small. 10 – 1555m.	**Low.** Suitable habitat is not found within the project study area. Serpentine soils are not present.	May – June

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Plants (cont.)				
fragrant fritillary *Fritillaria liliacea*	--/--/1B.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland; clayey soils, often serpentinite. 6 – 370m	**Low.** Suitable habitat is not found within the project study area. Serpentine soils are not present. No documented occurrences within 5 miles of the project site.	February – April
Diablo helianthella *Helianthella castanea*	--/--/1B.2	On rocky soils in broadleaf upland forest, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. 20 – 960m.	**Low.** Suitable habitat is not found within the project study area. Single occurrence within 5 miles is located in Dry Creek Regional Park, 4.5 miles north of the project site.	March – June
Loma Prieta psoralea *Hotia strobilina*	--/--/1B.1	Mixed evergreen forest and chaparral. Affinity to serpentine soil. 90 – 1170m.	**Absent.** Suitable habitat is present within the project area. Serpentine soils are not present. Not documented within 5 miles of the project area.	May – July
Bristly leptosiphon *Leptosiphon acicularis*	--/--/4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Grassy areas, woodland, chaparral. 55-1500m.	**Low.** Suitable habitat is present within the project area. Single occurrence within 5 miles is located in the open space foothills south and east of the project site.	April – July
serpentine leptosiphon *Leptosiphon ambiguus*	--/--/4.2	Cismontane woodland, coastal scrub, valley and foothill grassland, usually on sparse serpentinite substrate. 120 – 1130m.	**Low.** Suitable habitat is present within the project area. Serpentine soils are not present.	March – June
woolly-headed lessingia *Lessingia hololeuca*	--/--/3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland; clay, serpentinite soils. 15 – 305m.	**Low.** Suitable habitat is present within the project area. Serpentine soils are not present.	June – October
arcuate bush-mallow *Malacothamnus arcuatus*	--/--/1B.2	Gravelly alluvium in chaparral and cismontane woodland. 15 – 355m.	**Absent.** No suitable habitat is present in the project study area.	April – September
Hall's bush-mallow *Malacothamnus hallii*	--/--/1B.2	Chaparral. Some populations found on serpentine soils. 10-550m.	**Absent.** Suitable habitat is not found in the project study area.	May – September
elongate copper moss *Mielichhoferia elongata*	--/--/4.3	Metamorphic rock, usually acidic, usually vernally mesic, often roadsides, sometimes carbonate. Broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, subalpine coniferous forest. 0 – 1960m.	**Low.** Suitable habitat is not found in the project study area.	Year-round
San Antonio Hills mondarella *Monderalla antonina* ssp. *Antonina*	--/--/3	Cismontane woodland, chaparral. Rocky slopes and ephemeral drainages. 320-1000m.	**Absent.** Suitable habitat is not found in the project study area.	June – August

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Plants (cont.)				
woodland woollythreads *Monolopia gracilens*	--/--/1B.2	Chaparral, cismontane woodland. 500 – 1000m.	**Absent.** Suitable habitat is not found in the project study area.	June – August
Patterson's navarretia *Navarretia paradoxiclara*	--/--/1B.3	Open, seasonally wet areas, meadows, serpentine soils. 150 – 450m.	**Absent.** Suitable habitat is not found in the project study area.	May – July
Prostrate vernal pool navarretia *Navarretia prostrata*	--/--/1B.1	Coastal scrub, valley and foothill grassland, vernal pools. Found in alkaline soils in grassland, or in vernal pools. Mesic, alkaline sites. 15-1210m.	**Absent.** Suitable habitat is not found in the project study area.	April – July
Michael's rein orchid *Piperia michaelii*	--/--/4.2	Foothill woodland, yellow pine forest, northern coastal scrub, coastal sage scrub, and closed-cone pine forest. 15 – 590m.	**Absent.** Suitable habitat is not found in the project study area.	April – August
hairless popcorn-flower *Plagiobothrys glaber*	--/--/1A	Meadows and seeps, marshes and swamps. Coastal salt marshes and alkaline meadows. 15-180m.	**Absent.** Suitable habitat is not found in the project study area.	March – May
Oregon polemonium *Polemonium carneum*	--/--/2B.2	Northern coastal scrub, coastal prairie and yellow pine forest. 50 – 2000m.	**Absent.** Suitable habitat is not found in the project study area.	April – September
California alkali grass *Puccinellia simplex*	--/--/1B.2	Valley grassland and wetland riparian areas. 14 – 890m.	**Low.** Suitable habitat may occur in Alameda Creek within the study area though not within the project site. Nearest documented occurrence is upstream of the study area in Stoneybrook Canyon.	March – May
Lobb's aquatic buttercup *Ranunculus lobbii*	--/--/4.2	Valley grassland, foothill woodland, redwood forest, freshwater wetlands, wetland-riparian areas, and vernal pools. 12 – 810m.	**Absent.** Suitable habitat is not found in the project study area.	February – May
chaparral ragwort *Senecio aphanactis*	--/--/2B.2	Foothill woodland, northern coastal scrub, coastal sage scrub. 15 – 1190m.	**Absent.** Suitable habitat is not found in the project study area.	January – April
maple-leaved checkerbloom *Sidalcea malachroides*	--/--/4.2	Broadleafed upland forest, coastal prairie, coastal scrub, North Coast coniferous forest. Woodlands and clearings near coast; often found in disturbed areas. 0-730m.	**Low.** Grassland within the project study area is unlikely to support this species. No wintering sites documented within 5 miles of the project site.	April – August
long-styled sand-spurrey *Spergularia macrotheca* var. *Longistyla*	--/--/1B.2	Alkaline meadows, seeps, marshes and swamps. 6 – 170m.	**Low.** Suitable habitat may occur in Alameda Creek within the study area though not within the project site.	February – May

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Plants (cont.)				
Most beautiful jewel-flower *Streptanthus albidus* ssp. *peramoenus*	--/--/1B.2	Chaparral, valley and foothill grassland, cismontane woodland, serpentine outcrops, and on ridges and slopes. 120-730 m.	**Low.** Historical occurrence documented in the project vicinity stating "habitat may still exist north of Niles (CDFW, 2017). No serpentine soils present in the project area. Suitable habitat not found in the project study area.	April - September
slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	--/--/2B.2	Marshes and swamps, in shallow, clear water of lakes and drainage channels. 15 – 2310m.	**Low.** Historical occurrence documented in the vicinity of the Quarry Lakes Area of Alameda Creek Regional Trail (CDFW, 2017). No suitable freshwater habitat is present in the project site.	May – July
Saline clover *Trifolium depauperatum*	--/--/1B.2	Marshes and swamps, valley and foothill grasslands, vernal pools. 0 – 300m.	**Low.** Grassland within the project study area is unlikely to support this species. No wintering sites documented within 5 miles of the project site.	April – June
caper-fruited tropidocarpum *Tropidocarpum capparideum*	--/--/1B.1	Valley and foothill grassland. Alkaline clay. 1-455m.	**Low.** Grassland within the project study area is unlikely to support this species. No wintering sites documented within 5 miles of the project site.	March – April
Invertebrates				
Monarch butterfly *Danaus plexippus* (wintering sites)	--/*/--	Eucalyptus groves (winter sites).	**Low.** Several eucalyptus trees occur in the project study area. No wintering sites documented within 5 miles of the project site.	Winter
California brackishwater snail *Tryonia imitator*	--/*/--	Found in permanently submerged areas in coastal lagoons, estuaries, and salt marshes.	**Absent.** Suitable habitat is not found in the project study area.	Year-round
Amphibians				
Foothill yellow-legged frog *Rana boylii*	--/CCT, CSC /--	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**Low.** Known occupant of Alameda Creek upstream of the project study area. Suitable habitat is not found within the project site.	Year-round
Reptiles				
western pond turtle *Emys marmorata*	--/CSC/--	Aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	**Low.** Suitable habitat is present in Alameda Creek within the project study area. Suitable habitat is not found within the project site.	Year-round

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Birds				
Cooper's hawk *Accipiter cooperi*	--/ WL/--	Woodland, chiefly of open, interrupted or marginal type. Nest sites are mainly in riparian growths of deciduous trees but also relatively common in urban areas.	**Moderate (potential to nest).** Suitable nesting and foraging habitat is present within the project study area.	Year-round
Sharp-shinned hawk *Accipiter striatus*	--/WL/--	Woodland, hunt on forest edges. Breeds in deep forests and favors conifer trees to build nests in.	**Moderate (potential to nest).** Suitable nesting and foraging habitat is present within the project study area.	Year-round
Golden eagle *Aquila chrysaetos*	-/CFP/--	Rolling foothills with open grasslands, scattered trees, and cliff-walled canyons.	**Low (unlikely to nest).** Suitable nesting and foraging habitat is not present in the project vicinity. May occur over the project study on a transient basis. Species prefer less developed environment.	Year-round
Great egret *Ardea alba*	--/*/-- Rookeries only	Nest colonially in groves of trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	**Low (potential to nest).** Likely to forage in Alameda Creek within the study area. Could nest in mature eucalyptus trees on the banks of Alameda Creek though established rookery site not observed during reconnaissance survey.	Year-round
Great blue heron *Ardea herodias*	--/*/-- Rookeries only	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	**Moderate (potential to nest).** Likely to forage in Alameda Creek within the study area. Could nest in mature eucalyptus trees on the banks of Alameda Creek. Rookery documented at Quarry Lakes 1.5 miles southwest of the project site. Established rookery site not observed during reconnaissance survey.	Year-round
Burrowing owl *Athene cunicularia*	--/CSC/--	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**Low (unlikely to nest).** Suitable low grassland habitat with mammal burrows is not present in the project study area. May occur on a transient basis when migrating to wintering grounds. Rubble onsite among grass may be attractive to owls.	Winter
Ferruginous hawk *Buteo regalis*	--/WL/--	Uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges. Does not breed in California.	**Low (no potential to nest).** May occur over the project area on a transient basis in winter.	Winter

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Birds (cont.)				
Northern harrier *Circus cyaneus*	--/CSC/--	Mostly nests in emergent vegetation, wet meadows or near rivers and lakes, but may nest in grasslands away from water.	**Low (no potential to nest).** Suitable tidal marsh habitat is not present in the project study area. May flyover study area on a transient basis. Dense development in the project study area would discourage regular presence in the area.	Year-round
White-tailed kite *Elanus leucurus*	--/FP/--	Dense-topped trees for nesting and perching; open grasslands, meadows, or marshes for foraging.	**Moderate (potential to nest).** Suitable nesting and foraging habitat is present in the study area. Dense development in the project study area may discourage regular presence in the area.	Year-round
Snowy egret *Egretta thula*	--/*/-- Rookeries only	Nest on the ground in dense marsh areas or in large trees 1.5-3 meters from the ground.	**Low (potential to nest).** Likely to forage in Alameda Creek within the study area. Could nest in mature eucalyptus trees on the banks of Alameda Creek though established rookery site not observed during reconnaissance survey.	Year-round
California horned lark *Eremophila alpestris actia*	--/WL/--	Short-grass prairie, annual grasslands, coastal plains, and open fields.	**Low (unlikely to nest).** Grassland within the project site is overgrown and not suitable for this species foraging or nesting. May occur in the study area on a transient basis.	Year-round
prairie falcon *Falco mexicanus*	--/WL/--	Uncommon permanent resident that ranges from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. Distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas.	**Low (unlikely to nest).** May occur over the project area on a transient basis but grassland within the project study area is not likely to attract this species.	Winter
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	--/CSC/--	Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting. Resident of San Francisco Bay region salt and fresh water marshes.	**Low (unlikely to nest).** Suitable habitat may occur in Alameda Creek. May occur in the study area on a transient basis. Suitable habitat is not found within the project site.	Year-round
Alameda song sparrow *Melospiza melodia pusillula*	--/CSC/--	Salt marshes of central San Francisco Bay. Nests occur in salt marsh areas hidden by dense vegetation.	**Absent (no potential to nest).** Suitable habitat is not found within the project study area.	Year-round

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Birds (cont.)				
black skimmer *Rynchops niger*	--/CSC/--	Open sandy beaches, gravel or shell bars with sparse vegetation, saltmarsh, or beach wrack.	**Absent (no potential to nest).** Suitable habitat is not found within the project study area. Regional occurrences are documented near the eastern shoreline of San Francisco Bay.	April – September
Mammals				
Pallid bat *Antrozous pallidus*	--/CSC/ WBWG-H	Day roots in caves, crevices, mines, and hollow trees and buildings. Night roosts can occur in more open areas, like porches and open buildings.	**Low.** Suitable roost habitat is not found within the project study area. May forage within the Alameda Creek corridor within the study area. No documented occurrences within 5 miles of the project site.	Year-round
Berkeley kangaroo rat *Dipodomys heermanni berkeleyensis*	---/--/*	Open grassy hilltops and open spaces in chaparral and blue oak/digger pine woodlands. Needs fine, deep, well-drained soil for burrowing.	**Absent.** Suitable habitat not found within the project study area. No documented occurrences within 5 miles of the project site.	Year-round
western mastiff bat *Eumops perotis californicus*	--/CSC /WBWG-H	Primarily a cliff dwelling species with maternity roosts under exfoliating rock slabs, and crevices in large boulders and buildings. Foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland and agricultural areas.	**Low.** Suitable roost habitat is not found within the project study area. May forage within the Alameda Creek corridor within the study area. No documented occurrences within 5 miles of the project site.	Year-round
Hoary bat *Lasiurus cinereus*	--/*/ WBWG-M	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees, hidden from above with ground cover below. Also known to roost in buildings. Feeds primarily on moths.	**Low.** Potential roosting habitat exists in mature trees with dense understory remaining in the project study area. No documented occurrences within 5 miles of the project site.	Year-round
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	--/CSC/--	Forests with moderate canopy cover and brushy understory.	**Low.** Suitable habitat is not found in the project study area. No middens observed during the reconnaissance survey.	Year-round
yuma myotis *Myotis yumanensis*	--/*/ WBWG-L	Optimal habitats are open forests and woodlands with water sources to feed over. Roosts in buildings, trees, mines, caves, bridges, and rock crevices.	**Low.** Suitable roost habitat is not found within the project study area. May forage within the Alameda Creek corridor within the study area. Single documented occurrences within 5 miles of the project site is located in open space 4 miles east of the project study area..	Year-round

TABLE B-1 (Continued)
SPECIAL-STATUS SPECIES CONSIDERED FOR THE
NILES GATEWAY MIXED-USE PROJECT STUDY AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/Other[b]	Habitat Requirements	Potential to Occur in Project Study Area	Period of Identification / Flowering Period
Mammals (cont.)				
Salt marsh wandering shrew *Sorex vagrans halicoetes*	--/CSC	Salt marshes of the south arm of San Francisco Bay. Found at medium to high marsh 6-8 ft above sea level. Often in band of marsh daily inundated by tides, or at slightly higher elevations with driftwood or other debris for cover among pickleweed.	**Absent.** Suitable habitat is not found in the project study area.	Year-round
American badger *Taxidea taxus*	--/CSC/--	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents.	**Low.** Suitable habitat is not found in the project study area.	Year-round

NOTES:

[a] Abbreviations are as follows: ssp. = subspecies; var. = variety.

[b] Listing status codes are as follows:

FEDERAL: (U.S. Fish and Wildlife Service)
FE = Listed as Endangered (in danger of extinction) by the Federal Government
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.
FC = Candidate for listing as Threatened or Endangered by the Federal Government
FD = Delisted by the Federal Government
FSC = Former Federal Species of Concern. The USFWS no longer lists Species of Concern but recommends that species considered to be at potential risk by a number of organizations and agencies be addressed during project environmental review. NMFS, however, still lists Species of Concern.

STATE: (California Department of Fish and Game)
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
CR = Listed as Rare by the State of California (plants only)
CD = Delisted by the State of California
CFP = Fully Protected by the State of California
CCE = Candidate for listing as Endangered by the State of California
CCT = Candidate for listing as Threatened by the State of California
CSC = California Species of Special Concern
* = CDFG Special animal—identified on CDFW's Special Animals List.

California Native Plant Society
List 1A=Plants presumed extinct in California
List 1B=Plants rare, Threatened, or Endangered in California and elsewhere
List 2= Plants rare, Threatened, or Endangered in California but more common elsewhere
List 3= Plants about which more information is needed
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

WBWG = Western Bat Working Group:
Low = Stable population
Medium = Need more information about the species, possible threats, and protective actions to implement.
High= Imperiled or at high risk of imperilment.

[c] Although the southern limits of the federal listing for central California coast coho are at the San Lorenzo River, the State listing covers this species 'south of San Francisco Bay' as well.

SOURCE: USFWS, 2017; CDFW, 2017; CNPS, 2017