

APPENDIX 4.2

Air Quality, Health Risk, and Greenhouse Gas Technical Assessments

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

Davidon (28-Lot) Residential Project Component
San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	28.00	Dwelling Unit	15.00	83,649.00	80

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	2			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - residential square footage calculated assuming 7 two-story homes = 3,523 sf each; 10 single-story = 2,678 sf each; and 11 single-story = 2,928 sf each

Construction Phase - construction schedule per the Project Applicant

Off-road Equipment - equipment per defaults and project description

Off-road Equipment - trenching equipment per previous eir

Grading - reflect size of the project

Construction Off-road Equipment Mitigation - Tier 3 engines per Project Applicant

Vehicle Trips - 322 trips per day per EIR

Woodstoves - Fireplaces use natural gas per the EIR

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	28.00
tblConstructionPhase	NumDays	300.00	397.00
tblConstructionPhase	NumDays	30.00	98.00
tblConstructionPhase	NumDays	20.00	29.00
tblConstructionPhase	NumDays	10.00	33.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	7.00	25.76
tblFireplaces	NumberWood	12.04	0.00
tblGrading	AcresOfGrading	245.00	15.00
tblLandUse	LandUseSquareFeet	50,400.00	83,649.00
tblLandUse	LotAcreage	9.09	15.00
tblVehicleTrips	ST_TR	9.91	11.50
tblVehicleTrips	SU_TR	8.62	11.50
tblVehicleTrips	WD_TR	9.52	11.50

2.0 Emissions Summary

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

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					
2020	0.4299	4.4245	3.0734	5.6300e-003	0.6211	0.2154	0.8366	0.3323	0.1996	0.5319	0.0000	492.5216	492.5216	0.1416	0.0000	496.0604
2021	0.2545	2.3327	2.2118	3.7700e-003	0.0158	0.1253	0.1411	4.2800e-003	0.1178	0.1221	0.0000	326.2851	326.2851	0.0738	0.0000	328.1308
2022	1.3917	0.7481	0.8320	1.4100e-003	6.5200e-003	0.0380	0.0445	1.7600e-003	0.0356	0.0374	0.0000	122.5405	122.5405	0.0294	0.0000	123.2752
Maximum	1.3917	4.4245	3.0734	5.6300e-003	0.6211	0.2154	0.8366	0.3323	0.1996	0.5319	0.0000	492.5216	492.5216	0.1416	0.0000	496.0604

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					
2020	0.1554	2.7157	3.4156	5.6300e-003	0.2905	0.1370	0.4275	0.1525	0.1370	0.2894	0.0000	492.5210	492.5210	0.1416	0.0000	496.0598
2021	0.1201	1.8907	2.4102	3.7700e-003	0.0158	0.1144	0.1302	4.2800e-003	0.1144	0.1187	0.0000	326.2848	326.2848	0.0738	0.0000	328.1305
2022	1.3508	0.6879	0.9270	1.4100e-003	6.5200e-003	0.0405	0.0470	1.7600e-003	0.0405	0.0423	0.0000	122.5404	122.5404	0.0294	0.0000	123.2751
Maximum	1.3508	2.7157	3.4156	5.6300e-003	0.2905	0.1370	0.4275	0.1525	0.1370	0.2894	0.0000	492.5210	492.5210	0.1416	0.0000	496.0598

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	21.67	29.46	-10.39	0.00	51.38	22.92	40.84	53.15	17.33	34.86	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	1-1-2020	3-31-2020	1.6460	0.8387
2	4-1-2020	6-30-2020	1.7797	1.0274
3	7-1-2020	9-30-2020	0.7006	0.4880
4	10-1-2020	12-31-2020	0.7182	0.5116
5	1-1-2021	3-31-2021	0.6375	0.4955
6	4-1-2021	6-30-2021	0.6441	0.5006
7	7-1-2021	9-30-2021	0.6512	0.5061
8	10-1-2021	12-31-2021	0.6516	0.5065
9	1-1-2022	3-31-2022	0.5719	0.4922
10	4-1-2022	6-30-2022	1.6006	1.5778
		Highest	1.7797	1.5778

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

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	0.4715	6.2500e-003	0.2750	2.4000e-004		0.0121	0.0121		0.0121	0.0121	1.4349	3.5555	4.9904	7.1000e-003	6.0000e-005	5.1854
Energy	3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	107.3808	107.3808	3.8500e-003	1.3500e-003	107.8797
Mobile	0.0799	0.3932	0.8967	3.2000e-003	0.2768	2.9000e-003	0.2797	0.0743	2.7200e-003	0.0770	0.0000	293.9573	293.9573	0.0109	0.0000	294.2286
Waste						0.0000	0.0000		0.0000	0.0000	6.8205	0.0000	6.8205	0.4031	0.0000	16.8975
Water						0.0000	0.0000		0.0000	0.0000	0.5788	4.0427	4.6215	0.0596	1.4400e-003	6.5418
Total	0.5553	0.4328	1.1859	3.6500e-003	0.2768	0.0177	0.2945	0.0743	0.0175	0.0918	8.8342	408.9363	417.7705	0.4845	2.8500e-003	430.7329

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2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4715	6.2500e-003	0.2750	2.4000e-004		0.0121	0.0121		0.0121	0.0121	1.4349	3.5555	4.9904	7.1000e-003	6.0000e-005	5.1854
Energy	3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	107.3808	107.3808	3.8500e-003	1.3500e-003	107.8797
Mobile	0.0799	0.3932	0.8967	3.2000e-003	0.2768	2.9000e-003	0.2797	0.0743	2.7200e-003	0.0770	0.0000	293.9573	293.9573	0.0109	0.0000	294.2286
Waste						0.0000	0.0000		0.0000	0.0000	6.8205	0.0000	6.8205	0.4031	0.0000	16.8975
Water						0.0000	0.0000		0.0000	0.0000	0.5788	4.0427	4.6215	0.0596	1.4400e-003	6.5418
Total	0.5553	0.4328	1.1859	3.6500e-003	0.2768	0.0177	0.2945	0.0743	0.0175	0.0918	8.8342	408.9363	417.7705	0.4845	2.8500e-003	430.7329

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

3.0 Construction Detail

Construction Phase

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2020	2/15/2020	5	33	
2	Grading	Grading	2/16/2020	7/1/2020	5	98	
3	Utility/Trenching	Trenching	7/2/2020	9/30/2020	5	65	
4	Building Construction	Building Construction	10/1/2020	4/10/2022	5	397	
5	Paving	Paving	4/11/2022	5/19/2022	5	29	
6	Architectural Coating	Architectural Coating	5/20/2022	6/28/2022	5	28	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 15

Acres of Paving: 0

Residential Indoor: 169,389; Residential Outdoor: 56,463; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 216 (Architectural Coating – sqft)

OffRoad Equipment

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Utility/Trenching	Cranes	1	7.00	231	0.29
Utility/Trenching	Forklifts	3	8.00	89	0.20
Utility/Trenching	Generator Sets	1	8.00	84	0.74
Utility/Trenching	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Utility/Trenching	Welders	1	6.00	46	0.45
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Utility/Trenching	9	23.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	12.00	4.00	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	2.00	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
- Replace Ground Cover
- Water Exposed Area
- Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 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					
Fugitive Dust					0.2981	0.0000	0.2981	0.1639	0.0000	0.1639	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0673	0.6999	0.3550	6.3000e-004		0.0363	0.0363		0.0334	0.0334	0.0000	55.1606	55.1606	0.0178	0.0000	55.6066
Total	0.0673	0.6999	0.3550	6.3000e-004	0.2981	0.0363	0.3344	0.1639	0.0334	0.1972	0.0000	55.1606	55.1606	0.0178	0.0000	55.6066

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3.2 Site Preparation - 2020

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	9.8000e-004	7.0000e-004	7.2900e-003	2.0000e-005	2.3500e-003	2.0000e-005	2.3600e-003	6.2000e-004	1.0000e-005	6.4000e-004	0.0000	2.0561	2.0561	5.0000e-005	0.0000	2.0573
Total	9.8000e-004	7.0000e-004	7.2900e-003	2.0000e-005	2.3500e-003	2.0000e-005	2.3600e-003	6.2000e-004	1.0000e-005	6.4000e-004	0.0000	2.0561	2.0561	5.0000e-005	0.0000	2.0573

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					0.1341	0.0000	0.1341	0.0737	0.0000	0.0737	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0154	0.3146	0.3788	6.3000e-004		0.0156	0.0156		0.0156	0.0156	0.0000	55.1606	55.1606	0.0178	0.0000	55.6066
Total	0.0154	0.3146	0.3788	6.3000e-004	0.1341	0.0156	0.1498	0.0737	0.0156	0.0894	0.0000	55.1606	55.1606	0.0178	0.0000	55.6066

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

3.2 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	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	9.8000e-004	7.0000e-004	7.2900e-003	2.0000e-005	2.3500e-003	2.0000e-005	2.3600e-003	6.2000e-004	1.0000e-005	6.4000e-004	0.0000	2.0561	2.0561	5.0000e-005	0.0000	2.0573
Total	9.8000e-004	7.0000e-004	7.2900e-003	2.0000e-005	2.3500e-003	2.0000e-005	2.3600e-003	6.2000e-004	1.0000e-005	6.4000e-004	0.0000	2.0561	2.0561	5.0000e-005	0.0000	2.0573

3.3 Grading - 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					
Fugitive Dust					0.3030	0.0000	0.3030	0.1631	0.0000	0.1631	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2181	2.4597	1.5660	3.0400e-003		0.1065	0.1065		0.0980	0.0980	0.0000	266.9730	266.9730	0.0863	0.0000	269.1317
Total	0.2181	2.4597	1.5660	3.0400e-003	0.3030	0.1065	0.4096	0.1631	0.0980	0.2611	0.0000	266.9730	266.9730	0.0863	0.0000	269.1317

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3.3 Grading - 2020

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	3.2500e-003	2.3200e-003	0.0241	8.0000e-005	7.7400e-003	5.0000e-005	7.8000e-003	2.0600e-003	5.0000e-005	2.1100e-003	0.0000	6.7844	6.7844	1.6000e-004	0.0000	6.7885
Total	3.2500e-003	2.3200e-003	0.0241	8.0000e-005	7.7400e-003	5.0000e-005	7.8000e-003	2.0600e-003	5.0000e-005	2.1100e-003	0.0000	6.7844	6.7844	1.6000e-004	0.0000	6.7885

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					0.1364	0.0000	0.1364	0.0734	0.0000	0.0734	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0746	1.4689	1.7994	3.0400e-003		0.0637	0.0637		0.0637	0.0637	0.0000	266.9727	266.9727	0.0863	0.0000	269.1313
Total	0.0746	1.4689	1.7994	3.0400e-003	0.1364	0.0637	0.2000	0.0734	0.0637	0.1371	0.0000	266.9727	266.9727	0.0863	0.0000	269.1313

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

3.3 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	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	3.2500e-003	2.3200e-003	0.0241	8.0000e-005	7.7400e-003	5.0000e-005	7.8000e-003	2.0600e-003	5.0000e-005	2.1100e-003	0.0000	6.7844	6.7844	1.6000e-004	0.0000	6.7885
Total	3.2500e-003	2.3200e-003	0.0241	8.0000e-005	7.7400e-003	5.0000e-005	7.8000e-003	2.0600e-003	5.0000e-005	2.1100e-003	0.0000	6.7844	6.7844	1.6000e-004	0.0000	6.7885

3.4 Utility/Trenching - 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	0.0661	0.6108	0.5332	8.5000e-004		0.0356	0.0356		0.0334	0.0334	0.0000	73.7440	73.7440	0.0181	0.0000	74.1974
Total	0.0661	0.6108	0.5332	8.5000e-004		0.0356	0.0356		0.0334	0.0334	0.0000	73.7440	73.7440	0.0181	0.0000	74.1974

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3.4 Utility/Trenching - 2020

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	2.4800e-003	1.7700e-003	0.0184	6.0000e-005	5.9100e-003	4.0000e-005	5.9500e-003	1.5700e-003	4.0000e-005	1.6100e-003	0.0000	5.1748	5.1748	1.3000e-004	0.0000	5.1779
Total	2.4800e-003	1.7700e-003	0.0184	6.0000e-005	5.9100e-003	4.0000e-005	5.9500e-003	1.5700e-003	4.0000e-005	1.6100e-003	0.0000	5.1748	5.1748	1.3000e-004	0.0000	5.1779

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	0.0268	0.4457	0.5753	8.5000e-004		0.0282	0.0282		0.0282	0.0282	0.0000	73.7439	73.7439	0.0181	0.0000	74.1973
Total	0.0268	0.4457	0.5753	8.5000e-004		0.0282	0.0282		0.0282	0.0282	0.0000	73.7439	73.7439	0.0181	0.0000	74.1973

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3.4 Utility/Trenching - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	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	2.4800e-003	1.7700e-003	0.0184	6.0000e-005	5.9100e-003	4.0000e-005	5.9500e-003	1.5700e-003	4.0000e-005	1.6100e-003	0.0000	5.1748	5.1748	1.3000e-004	0.0000	5.1779
Total	2.4800e-003	1.7700e-003	0.0184	6.0000e-005	5.9100e-003	4.0000e-005	5.9500e-003	1.5700e-003	4.0000e-005	1.6100e-003	0.0000	5.1748	5.1748	1.3000e-004	0.0000	5.1779

3.5 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	0.0700	0.6331	0.5560	8.9000e-004		0.0369	0.0369		0.0347	0.0347	0.0000	76.4313	76.4313	0.0187	0.0000	76.8975
Total	0.0700	0.6331	0.5560	8.9000e-004		0.0369	0.0369		0.0347	0.0347	0.0000	76.4313	76.4313	0.0187	0.0000	76.8975

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

3.5 Building Construction - 2020

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	5.1000e-004	0.0152	3.8300e-003	4.0000e-005	8.7000e-004	7.0000e-005	9.4000e-004	2.5000e-004	7.0000e-005	3.2000e-004	0.0000	3.4560	3.4560	1.8000e-004	0.0000	3.4605
Worker	1.3100e-003	9.4000e-004	9.7300e-003	3.0000e-005	3.1300e-003	2.0000e-005	3.1500e-003	8.3000e-004	2.0000e-005	8.5000e-004	0.0000	2.7414	2.7414	7.0000e-005	0.0000	2.7431
Total	1.8200e-003	0.0162	0.0136	7.0000e-005	4.0000e-003	9.0000e-005	4.0900e-003	1.0800e-003	9.0000e-005	1.1700e-003	0.0000	6.1975	6.1975	2.5000e-004	0.0000	6.2036

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	0.0300	0.4655	0.5988	8.9000e-004		0.0293	0.0293		0.0293	0.0293	0.0000	76.4312	76.4312	0.0187	0.0000	76.8974
Total	0.0300	0.4655	0.5988	8.9000e-004		0.0293	0.0293		0.0293	0.0293	0.0000	76.4312	76.4312	0.0187	0.0000	76.8974

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	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	5.1000e-004	0.0152	3.8300e-003	4.0000e-005	8.7000e-004	7.0000e-005	9.4000e-004	2.5000e-004	7.0000e-005	3.2000e-004	0.0000	3.4560	3.4560	1.8000e-004	0.0000	3.4605
Worker	1.3100e-003	9.4000e-004	9.7300e-003	3.0000e-005	3.1300e-003	2.0000e-005	3.1500e-003	8.3000e-004	2.0000e-005	8.5000e-004	0.0000	2.7414	2.7414	7.0000e-005	0.0000	2.7431
Total	1.8200e-003	0.0162	0.0136	7.0000e-005	4.0000e-003	9.0000e-005	4.0900e-003	1.0800e-003	9.0000e-005	1.1700e-003	0.0000	6.1975	6.1975	2.5000e-004	0.0000	6.2036

3.5 Building Construction - 2021

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	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099

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3.5 Building Construction - 2021

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	1.6600e-003	0.0545	0.0136	1.4000e-004	3.4200e-003	1.2000e-004	3.5400e-003	9.9000e-004	1.1000e-004	1.1000e-003	0.0000	13.5378	13.5378	6.7000e-004	0.0000	13.5544
Worker	4.8100e-003	3.3200e-003	0.0351	1.2000e-004	0.0124	8.0000e-005	0.0125	3.2900e-003	7.0000e-005	3.3700e-003	0.0000	10.4607	10.4607	2.3000e-004	0.0000	10.4666
Total	6.4700e-003	0.0578	0.0487	2.6000e-004	0.0158	2.0000e-004	0.0160	4.2800e-003	1.8000e-004	4.4700e-003	0.0000	23.9985	23.9985	9.0000e-004	0.0000	24.0210

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	0.1136	1.8328	2.3615	3.5100e-003		0.1142	0.1142		0.1142	0.1142	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095
Total	0.1136	1.8328	2.3615	3.5100e-003		0.1142	0.1142		0.1142	0.1142	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

3.5 Building Construction - 2021

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	1.6600e-003	0.0545	0.0136	1.4000e-004	3.4200e-003	1.2000e-004	3.5400e-003	9.9000e-004	1.1000e-004	1.1000e-003	0.0000	13.5378	13.5378	6.7000e-004	0.0000	13.5544
Worker	4.8100e-003	3.3200e-003	0.0351	1.2000e-004	0.0124	8.0000e-005	0.0125	3.2900e-003	7.0000e-005	3.3700e-003	0.0000	10.4607	10.4607	2.3000e-004	0.0000	10.4666
Total	6.4700e-003	0.0578	0.0487	2.6000e-004	0.0158	2.0000e-004	0.0160	4.2800e-003	1.8000e-004	4.4700e-003	0.0000	23.9985	23.9985	9.0000e-004	0.0000	24.0210

3.5 Building Construction - 2022

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	0.0597	0.5466	0.5727	9.4000e-004		0.0283	0.0283		0.0266	0.0266	0.0000	81.1038	81.1038	0.0194	0.0000	81.5896
Total	0.0597	0.5466	0.5727	9.4000e-004		0.0283	0.0283		0.0266	0.0266	0.0000	81.1038	81.1038	0.0194	0.0000	81.5896

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

3.5 Building Construction - 2022

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	4.1000e-004	0.0139	3.4300e-003	4.0000e-005	9.2000e-004	3.0000e-005	9.5000e-004	2.7000e-004	3.0000e-005	2.9000e-004	0.0000	3.5952	3.5952	1.7000e-004	0.0000	3.5995
Worker	1.2000e-003	8.0000e-004	8.6600e-003	3.0000e-005	3.3200e-003	2.0000e-005	3.3400e-003	8.8000e-004	2.0000e-005	9.0000e-004	0.0000	2.7027	2.7027	6.0000e-005	0.0000	2.7041
Total	1.6100e-003	0.0147	0.0121	7.0000e-005	4.2400e-003	5.0000e-005	4.2900e-003	1.1500e-003	5.0000e-005	1.1900e-003	0.0000	6.2979	6.2979	2.3000e-004	0.0000	6.3036

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	0.0296	0.4900	0.6326	9.4000e-004		0.0303	0.0303		0.0303	0.0303	0.0000	81.1037	81.1037	0.0194	0.0000	81.5895
Total	0.0296	0.4900	0.6326	9.4000e-004		0.0303	0.0303		0.0303	0.0303	0.0000	81.1037	81.1037	0.0194	0.0000	81.5895

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3.5 Building Construction - 2022

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	4.1000e-004	0.0139	3.4300e-003	4.0000e-005	9.2000e-004	3.0000e-005	9.5000e-004	2.7000e-004	3.0000e-005	2.9000e-004	0.0000	3.5952	3.5952	1.7000e-004	0.0000	3.5995
Worker	1.2000e-003	8.0000e-004	8.6600e-003	3.0000e-005	3.3200e-003	2.0000e-005	3.3400e-003	8.8000e-004	2.0000e-005	9.0000e-004	0.0000	2.7027	2.7027	6.0000e-005	0.0000	2.7041
Total	1.6100e-003	0.0147	0.0121	7.0000e-005	4.2400e-003	5.0000e-005	4.2900e-003	1.1500e-003	5.0000e-005	1.1900e-003	0.0000	6.2979	6.2979	2.3000e-004	0.0000	6.3036

3.6 Paving - 2022

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	0.0168	0.1667	0.2159	3.4000e-004		8.4400e-003	8.4400e-003		7.7800e-003	7.7800e-003	0.0000	29.7045	29.7045	9.4600e-003	0.0000	29.9410
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0168	0.1667	0.2159	3.4000e-004		8.4400e-003	8.4400e-003		7.7800e-003	7.7800e-003	0.0000	29.7045	29.7045	9.4600e-003	0.0000	29.9410

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3.6 Paving - 2022

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	7.5000e-004	5.0000e-004	5.3800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6795	1.6795	4.0000e-005	0.0000	1.6804
Total	7.5000e-004	5.0000e-004	5.3800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6795	1.6795	4.0000e-005	0.0000	1.6804

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	8.1300e-003	0.1638	0.2508	3.4000e-004		8.8400e-003	8.8400e-003		8.8400e-003	8.8400e-003	0.0000	29.7044	29.7044	9.4600e-003	0.0000	29.9410
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	8.1300e-003	0.1638	0.2508	3.4000e-004		8.8400e-003	8.8400e-003		8.8400e-003	8.8400e-003	0.0000	29.7044	29.7044	9.4600e-003	0.0000	29.9410

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3.6 Paving - 2022

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	7.5000e-004	5.0000e-004	5.3800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6795	1.6795	4.0000e-005	0.0000	1.6804
Total	7.5000e-004	5.0000e-004	5.3800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6795	1.6795	4.0000e-005	0.0000	1.6804

3.7 Architectural Coating - 2022

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	1.3098					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8600e-003	0.0197	0.0254	4.0000e-005		1.1400e-003	1.1400e-003		1.1400e-003	1.1400e-003	0.0000	3.5746	3.5746	2.3000e-004	0.0000	3.5804
Total	1.3126	0.0197	0.0254	4.0000e-005		1.1400e-003	1.1400e-003		1.1400e-003	1.1400e-003	0.0000	3.5746	3.5746	2.3000e-004	0.0000	3.5804

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3.7 Architectural Coating - 2022

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	8.0000e-005	5.0000e-005	5.8000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1802	0.1802	0.0000	0.0000	0.1803
Total	8.0000e-005	5.0000e-005	5.8000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1802	0.1802	0.0000	0.0000	0.1803

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	1.3098					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.3000e-004	0.0190	0.0257	4.0000e-005		1.3300e-003	1.3300e-003		1.3300e-003	1.3300e-003	0.0000	3.5746	3.5746	2.3000e-004	0.0000	3.5804
Total	1.3106	0.0190	0.0257	4.0000e-005		1.3300e-003	1.3300e-003		1.3300e-003	1.3300e-003	0.0000	3.5746	3.5746	2.3000e-004	0.0000	3.5804

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

3.7 Architectural Coating - 2022

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	8.0000e-005	5.0000e-005	5.8000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1802	0.1802	0.0000	0.0000	0.1803
Total	8.0000e-005	5.0000e-005	5.8000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1802	0.1802	0.0000	0.0000	0.1803

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

	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	0.0799	0.3932	0.8967	3.2000e-003	0.2768	2.9000e-003	0.2797	0.0743	2.7200e-003	0.0770	0.0000	293.9573	293.9573	0.0109	0.0000	294.2286
Unmitigated	0.0799	0.3932	0.8967	3.2000e-003	0.2768	2.9000e-003	0.2797	0.0743	2.7200e-003	0.0770	0.0000	293.9573	293.9573	0.0109	0.0000	294.2286

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	322.00	322.00	322.00	743,694	743,694
Total	322.00	322.00	322.00	743,694	743,694

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768
Single Family Housing	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	68.7790	68.7790	3.1100e-003	6.4000e-004	69.0485
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	68.7790	68.7790	3.1100e-003	6.4000e-004	69.0485
NaturalGas Mitigated	3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	38.6019	38.6019	7.4000e-004	7.1000e-004	38.8312
NaturalGas Unmitigated	3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	38.6019	38.6019	7.4000e-004	7.1000e-004	38.8312

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

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					
Single Family Housing	723371	3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	38.6019	38.6019	7.4000e-004	7.1000e-004	38.8312
Total		3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	38.6019	38.6019	7.4000e-004	7.1000e-004	38.8312

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					
Single Family Housing	723371	3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	38.6019	38.6019	7.4000e-004	7.1000e-004	38.8312
Total		3.9000e-003	0.0333	0.0142	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	38.6019	38.6019	7.4000e-004	7.1000e-004	38.8312

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

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

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	236426	68.7790	3.1100e-003	6.4000e-004	69.0485
Total		68.7790	3.1100e-003	6.4000e-004	69.0485

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	236426	68.7790	3.1100e-003	6.4000e-004	69.0485
Total		68.7790	3.1100e-003	6.4000e-004	69.0485

6.0 Area Detail**6.1 Mitigation Measures Area**

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

	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	0.4715	6.2500e-003	0.2750	2.4000e-004		0.0121	0.0121		0.0121	0.0121	1.4349	3.5555	4.9904	7.1000e-003	6.0000e-005	5.1854
Unmitigated	0.4715	6.2500e-003	0.2750	2.4000e-004		0.0121	0.0121		0.0121	0.0121	1.4349	3.5555	4.9904	7.1000e-003	6.0000e-005	5.1854

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	0.1310					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3267					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.5600e-003	3.8500e-003	0.0669	2.3000e-004		0.0109	0.0109		0.0109	0.0109	1.4349	3.2159	4.6508	6.7700e-003	6.0000e-005	4.8376
Landscaping	6.2900e-003	2.4000e-003	0.2081	1.0000e-005		1.1500e-003	1.1500e-003		1.1500e-003	1.1500e-003	0.0000	0.3396	0.3396	3.3000e-004	0.0000	0.3478
Total	0.4715	6.2500e-003	0.2750	2.4000e-004		0.0121	0.0121		0.0121	0.0121	1.4349	3.5555	4.9904	7.1000e-003	6.0000e-005	5.1854

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

6.2 Area by SubCategory**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	0.1310					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3267					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.5600e-003	3.8500e-003	0.0669	2.3000e-004		0.0109	0.0109		0.0109	0.0109	1.4349	3.2159	4.6508	6.7700e-003	6.0000e-005	4.8376
Landscaping	6.2900e-003	2.4000e-003	0.2081	1.0000e-005		1.1500e-003	1.1500e-003		1.1500e-003	1.1500e-003	0.0000	0.3396	0.3396	3.3000e-004	0.0000	0.3478
Total	0.4715	6.2500e-003	0.2750	2.4000e-004		0.0121	0.0121		0.0121	0.0121	1.4349	3.5555	4.9904	7.1000e-003	6.0000e-005	5.1854

7.0 Water Detail**7.1 Mitigation Measures Water**

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.6215	0.0596	1.4400e-003	6.5418
Unmitigated	4.6215	0.0596	1.4400e-003	6.5418

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.82431 / 1.15011	4.6215	0.0596	1.4400e-003	6.5418
Total		4.6215	0.0596	1.4400e-003	6.5418

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.82431 / 1.15011	4.6215	0.0596	1.4400e-003	6.5418
Total		4.6215	0.0596	1.4400e-003	6.5418

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.8205	0.4031	0.0000	16.8975
Unmitigated	6.8205	0.4031	0.0000	16.8975

Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	33.6	6.8205	0.4031	0.0000	16.8975
Total		6.8205	0.4031	0.0000	16.8975

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	33.6	6.8205	0.4031	0.0000	16.8975
Total		6.8205	0.4031	0.0000	16.8975

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Davidon (28-Lot) Residential Project Component - San Francisco Bay Area Air Basin, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

Putnam Park Extension, Phase 1a
San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.00	Space	0.09	6,500.00	0
City Park	14.67	Acre	14.67	2,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	2			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

Project Characteristics -

Land Use - square footage of city park represents the building footprint that will be constructed including the barn center and the restroom. Total square footage is a conservative estimate.

Construction Phase - three month construction duration

Trips and VMT -

Demolition - demolition of the farm house and mobile home

Grading -

Architectural Coating -

Vehicle Trips - weekend trip rates per TIA, assume park weekend total 62 trips between all 3 phases

Area Coating -

Water And Wastewater -

Solid Waste -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	30.00	2.00
tblConstructionPhase	NumDays	300.00	52.00
tblConstructionPhase	NumDays	20.00	3.00
tblConstructionPhase	NumDays	20.00	3.00
tblLandUse	LandUseSquareFeet	4,000.00	6,500.00
tblLandUse	LandUseSquareFeet	639,025.20	2,000.00
tblVehicleTrips	ST_TR	22.75	1.40
tblVehicleTrips	SU_TR	16.74	1.40

2.0 Emissions Summary

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-1-2022	6-30-2022	0.6371	0.6371
		Highest	0.6371	0.6371

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	0.0108	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.6618	0.6618	3.0000e-005	1.0000e-005	0.6644
Mobile	6.2000e-003	0.0301	0.0676	2.4000e-004	0.0204	2.2000e-004	0.0206	5.4700e-003	2.0000e-004	5.6800e-003	0.0000	21.7956	21.7956	8.2000e-004	0.0000	21.8161
Waste						0.0000	0.0000		0.0000	0.0000	0.2558	0.0000	0.2558	0.0151	0.0000	0.6337
Water						0.0000	0.0000		0.0000	0.0000	0.0000	17.7970	17.7970	8.0000e-004	1.7000e-004	17.8667
Total	0.0170	0.0301	0.0678	2.4000e-004	0.0204	2.2000e-004	0.0206	5.4700e-003	2.0000e-004	5.6800e-003	0.2558	40.2549	40.5106	0.0168	1.8000e-004	40.9814

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0108	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.6618	0.6618	3.0000e-005	1.0000e-005	0.6644
Mobile	6.2000e-003	0.0301	0.0676	2.4000e-004	0.0204	2.2000e-004	0.0206	5.4700e-003	2.0000e-004	5.6800e-003	0.0000	21.7956	21.7956	8.2000e-004	0.0000	21.8161
Waste						0.0000	0.0000		0.0000	0.0000	0.2558	0.0000	0.2558	0.0151	0.0000	0.6337
Water						0.0000	0.0000		0.0000	0.0000	0.0000	17.7970	17.7970	8.0000e-004	1.7000e-004	17.8667
Total	0.0170	0.0301	0.0678	2.4000e-004	0.0204	2.2000e-004	0.0206	5.4700e-003	2.0000e-004	5.6800e-003	0.2558	40.2549	40.5106	0.0168	1.8000e-004	40.9814

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

3.0 Construction Detail

Construction Phase

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2022	4/7/2022	5	5	
2	Site Preparation	Site Preparation	4/8/2022	4/8/2022	5	1	
3	Grading	Grading	4/9/2022	4/12/2022	5	2	
4	Building Construction	Building Construction	4/12/2022	6/22/2022	5	52	
5	Paving	Paving	6/23/2022	6/27/2022	5	3	
6	Architectural Coating	Architectural Coating	6/28/2022	6/30/2022	5	3	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 5

Acres of Paving: 0.09

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 390 (Architectural Coating – sqft)

OffRoad Equipment

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

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	6	15.00	0.00	14.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	4.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

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					1.4800e-003	0.0000	1.4800e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6000e-003	0.0643	0.0515	1.0000e-004		3.1100e-003	3.1100e-003		2.8900e-003	2.8900e-003	0.0000	8.4976	8.4976	2.3900e-003	0.0000	8.5572
Total	6.6000e-003	0.0643	0.0515	1.0000e-004	1.4800e-003	3.1100e-003	4.5900e-003	2.2000e-004	2.8900e-003	3.1100e-003	0.0000	8.4976	8.4976	2.3900e-003	0.0000	8.5572

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3.2 Demolition - 2022

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	5.0000e-005	1.7400e-003	4.0000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.5224	0.5224	3.0000e-005	0.0000	0.5230
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	1.1000e-004	7.0000e-005	7.7000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2413	0.2413	1.0000e-005	0.0000	0.2414
Total	1.6000e-004	1.8100e-003	1.1700e-003	1.0000e-005	4.2000e-004	1.0000e-005	4.2000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.7637	0.7637	4.0000e-005	0.0000	0.7645

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					1.4800e-003	0.0000	1.4800e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6000e-003	0.0643	0.0515	1.0000e-004		3.1100e-003	3.1100e-003		2.8900e-003	2.8900e-003	0.0000	8.4976	8.4976	2.3900e-003	0.0000	8.5572
Total	6.6000e-003	0.0643	0.0515	1.0000e-004	1.4800e-003	3.1100e-003	4.5900e-003	2.2000e-004	2.8900e-003	3.1100e-003	0.0000	8.4976	8.4976	2.3900e-003	0.0000	8.5572

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3.2 Demolition - 2022

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	5.0000e-005	1.7400e-003	4.0000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.5224	0.5224	3.0000e-005	0.0000	0.5230
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	1.1000e-004	7.0000e-005	7.7000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2413	0.2413	1.0000e-005	0.0000	0.2414
Total	1.6000e-004	1.8100e-003	1.1700e-003	1.0000e-005	4.2000e-004	1.0000e-005	4.2000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.7637	0.7637	4.0000e-005	0.0000	0.7645

3.3 Site Preparation - 2022

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					9.0300e-003	0.0000	9.0300e-003	4.9700e-003	0.0000	4.9700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5900e-003	0.0165	9.8500e-003	2.0000e-005		8.1000e-004	8.1000e-004		7.4000e-004	7.4000e-004	0.0000	1.6720	1.6720	5.4000e-004	0.0000	1.6855
Total	1.5900e-003	0.0165	9.8500e-003	2.0000e-005	9.0300e-003	8.1000e-004	9.8400e-003	4.9700e-003	7.4000e-004	5.7100e-003	0.0000	1.6720	1.6720	5.4000e-004	0.0000	1.6855

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3.3 Site Preparation - 2022

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	3.0000e-005	2.0000e-005	1.9000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0579	0.0579	0.0000	0.0000	0.0580
Total	3.0000e-005	2.0000e-005	1.9000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0579	0.0579	0.0000	0.0000	0.0580

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					9.0300e-003	0.0000	9.0300e-003	4.9700e-003	0.0000	4.9700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5900e-003	0.0165	9.8500e-003	2.0000e-005		8.1000e-004	8.1000e-004		7.4000e-004	7.4000e-004	0.0000	1.6720	1.6720	5.4000e-004	0.0000	1.6855
Total	1.5900e-003	0.0165	9.8500e-003	2.0000e-005	9.0300e-003	8.1000e-004	9.8400e-003	4.9700e-003	7.4000e-004	5.7100e-003	0.0000	1.6720	1.6720	5.4000e-004	0.0000	1.6855

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3.3 Site Preparation - 2022

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	3.0000e-005	2.0000e-005	1.9000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0579	0.0579	0.0000	0.0000	0.0580
Total	3.0000e-005	2.0000e-005	1.9000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0579	0.0579	0.0000	0.0000	0.0580

3.4 Grading - 2022

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					8.6700e-003	0.0000	8.6700e-003	3.6000e-003	0.0000	3.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6200e-003	0.0388	0.0290	6.0000e-005		1.6300e-003	1.6300e-003		1.5000e-003	1.5000e-003	0.0000	5.4535	5.4535	1.7600e-003	0.0000	5.4976
Total	3.6200e-003	0.0388	0.0290	6.0000e-005	8.6700e-003	1.6300e-003	0.0103	3.6000e-003	1.5000e-003	5.1000e-003	0.0000	5.4535	5.4535	1.7600e-003	0.0000	5.4976

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3.4 Grading - 2022

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	4.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1287	0.1287	0.0000	0.0000	0.1288
Total	6.0000e-005	4.0000e-005	4.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1287	0.1287	0.0000	0.0000	0.1288

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					8.6700e-003	0.0000	8.6700e-003	3.6000e-003	0.0000	3.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6200e-003	0.0388	0.0290	6.0000e-005		1.6300e-003	1.6300e-003		1.5000e-003	1.5000e-003	0.0000	5.4535	5.4535	1.7600e-003	0.0000	5.4976
Total	3.6200e-003	0.0388	0.0290	6.0000e-005	8.6700e-003	1.6300e-003	0.0103	3.6000e-003	1.5000e-003	5.1000e-003	0.0000	5.4535	5.4535	1.7600e-003	0.0000	5.4976

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3.4 Grading - 2022

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	4.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1287	0.1287	0.0000	0.0000	0.1288
Total	6.0000e-005	4.0000e-005	4.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1287	0.1287	0.0000	0.0000	0.1288

3.5 Building Construction - 2022

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	0.0444	0.4060	0.4255	7.0000e-004		0.0210	0.0210		0.0198	0.0198	0.0000	60.2486	60.2486	0.0144	0.0000	60.6094
Total	0.0444	0.4060	0.4255	7.0000e-004		0.0210	0.0210		0.0198	0.0198	0.0000	60.2486	60.2486	0.0144	0.0000	60.6094

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3.5 Building Construction - 2022

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	8.0000e-005	2.5700e-003	6.4000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.6677	0.6677	3.0000e-005	0.0000	0.6685
Worker	3.0000e-004	2.0000e-004	2.1400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6692	0.6692	1.0000e-005	0.0000	0.6696
Total	3.8000e-004	2.7700e-003	2.7800e-003	2.0000e-005	9.9000e-004	2.0000e-005	1.0100e-003	2.7000e-004	0.0000	2.7000e-004	0.0000	1.3369	1.3369	4.0000e-005	0.0000	1.3381

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	0.0444	0.4060	0.4255	7.0000e-004		0.0210	0.0210		0.0198	0.0198	0.0000	60.2485	60.2485	0.0144	0.0000	60.6093
Total	0.0444	0.4060	0.4255	7.0000e-004		0.0210	0.0210		0.0198	0.0198	0.0000	60.2485	60.2485	0.0144	0.0000	60.6093

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3.5 Building Construction - 2022

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	8.0000e-005	2.5700e-003	6.4000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.6677	0.6677	3.0000e-005	0.0000	0.6685
Worker	3.0000e-004	2.0000e-004	2.1400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6692	0.6692	1.0000e-005	0.0000	0.6696
Total	3.8000e-004	2.7700e-003	2.7800e-003	2.0000e-005	9.9000e-004	2.0000e-005	1.0100e-003	2.7000e-004	0.0000	2.7000e-004	0.0000	1.3369	1.3369	4.0000e-005	0.0000	1.3381

3.6 Paving - 2022

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	1.6500e-003	0.0167	0.0219	3.0000e-005		8.5000e-004	8.5000e-004		7.8000e-004	7.8000e-004	0.0000	3.0041	3.0041	9.7000e-004	0.0000	3.0284
Paving	1.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.7700e-003	0.0167	0.0219	3.0000e-005		8.5000e-004	8.5000e-004		7.8000e-004	7.8000e-004	0.0000	3.0041	3.0041	9.7000e-004	0.0000	3.0284

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3.6 Paving - 2022

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	4.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1448	0.1448	0.0000	0.0000	0.1449
Total	6.0000e-005	4.0000e-005	4.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1448	0.1448	0.0000	0.0000	0.1449

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	1.6500e-003	0.0167	0.0219	3.0000e-005		8.5000e-004	8.5000e-004		7.8000e-004	7.8000e-004	0.0000	3.0041	3.0041	9.7000e-004	0.0000	3.0284
Paving	1.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.7700e-003	0.0167	0.0219	3.0000e-005		8.5000e-004	8.5000e-004		7.8000e-004	7.8000e-004	0.0000	3.0041	3.0041	9.7000e-004	0.0000	3.0284

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3.6 Paving - 2022

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	4.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1448	0.1448	0.0000	0.0000	0.1449
Total	6.0000e-005	4.0000e-005	4.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1448	0.1448	0.0000	0.0000	0.1449

3.7 Architectural Coating - 2022

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	0.0254					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1000e-004	2.1100e-003	2.7200e-003	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.3830	0.3830	2.0000e-005	0.0000	0.3836
Total	0.0257	2.1100e-003	2.7200e-003	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.3830	0.3830	2.0000e-005	0.0000	0.3836

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3.7 Architectural Coating - 2022

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	0.0000	0.0000	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.6500e-003	9.6500e-003	0.0000	0.0000	9.6600e-003
Total	0.0000	0.0000	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.6500e-003	9.6500e-003	0.0000	0.0000	9.6600e-003

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	0.0254					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1000e-004	2.1100e-003	2.7200e-003	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.3830	0.3830	2.0000e-005	0.0000	0.3836
Total	0.0257	2.1100e-003	2.7200e-003	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	0.3830	0.3830	2.0000e-005	0.0000	0.3836

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3.7 Architectural Coating - 2022

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	0.0000	0.0000	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.6500e-003	9.6500e-003	0.0000	0.0000	9.6600e-003
Total	0.0000	0.0000	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.6500e-003	9.6500e-003	0.0000	0.0000	9.6600e-003

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	6.2000e-003	0.0301	0.0676	2.4000e-004	0.0204	2.2000e-004	0.0206	5.4700e-003	2.0000e-004	5.6800e-003	0.0000	21.7956	21.7956	8.2000e-004	0.0000	21.8161
Unmitigated	6.2000e-003	0.0301	0.0676	2.4000e-004	0.0204	2.2000e-004	0.0206	5.4700e-003	2.0000e-004	5.6800e-003	0.0000	21.7956	21.7956	8.2000e-004	0.0000	21.8161

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	27.73	20.54	20.54	54,807	54,807
Parking Lot	0.00	0.00	0.00		
Total	27.73	20.54	20.54	54,807	54,807

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768
Parking Lot	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	0.6618	0.6618	3.0000e-005	1.0000e-005	0.6644
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.6618	0.6618	3.0000e-005	1.0000e-005	0.6644
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	2275	0.6618	3.0000e-005	1.0000e-005	0.6644
Total		0.6618	3.0000e-005	1.0000e-005	0.6644

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	2275	0.6618	3.0000e-005	1.0000e-005	0.6644
Total		0.6618	3.0000e-005	1.0000e-005	0.6644

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0108	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004
Unmitigated	0.0108	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004

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	2.5400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004
Total	0.0108	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004

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6.2 Area by SubCategory

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	2.5400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004
Total	0.0108	0.0000	2.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.4000e-004	4.4000e-004	0.0000	0.0000	4.7000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	17.7970	8.0000e-004	1.7000e-004	17.8667
Unmitigated	17.7970	8.0000e-004	1.7000e-004	17.8667

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 17.479	17.7970	8.0000e-004	1.7000e-004	17.8667
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		17.7970	8.0000e-004	1.7000e-004	17.8667

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 17.479	17.7970	8.0000e-004	1.7000e-004	17.8667
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		17.7970	8.0000e-004	1.7000e-004	17.8667

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

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2558	0.0151	0.0000	0.6337
Unmitigated	0.2558	0.0151	0.0000	0.6337

Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.26	0.2558	0.0151	0.0000	0.6337
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.2558	0.0151	0.0000	0.6337

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.26	0.2558	0.0151	0.0000	0.6337
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.2558	0.0151	0.0000	0.6337

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Putnam Park Extension, Phase 1a - San Francisco Bay Area Air Basin, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Petnum Park Extension, Phase 1b and Phase 2 - San Francisco Bay Area Air Basin, Annual

Petnum Park Extension, Phase 1b and Phase 2
San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	27.00	Space	0.24	10,800.00	0
City Park	29.30	Acre	29.30	4,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	2			Operational Year	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Vehicle Trips - assume 62 trips for all phases of the park

Trips and VMT -

Land Use - Approximately square footage of actual buildings constructed on park

Solid Waste -

Construction Phase - Duration per Project description

Grading -

Petnum Park Extension, Phase 1b and Phase 2 - San Francisco Bay Area Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	7.00
tblConstructionPhase	NumDays	440.00	102.00
tblConstructionPhase	NumDays	45.00	10.00
tblConstructionPhase	NumDays	35.00	7.00
tblConstructionPhase	NumDays	20.00	3.00
tblConstructionPhase	PhaseEndDate	9/12/2024	12/28/2022
tblConstructionPhase	PhaseEndDate	6/6/2024	12/8/2022
tblConstructionPhase	PhaseEndDate	9/29/2022	7/19/2022
tblConstructionPhase	PhaseEndDate	7/25/2024	12/19/2022
tblConstructionPhase	PhaseEndDate	7/28/2022	7/5/2022
tblConstructionPhase	PhaseStartDate	7/26/2024	12/20/2022
tblConstructionPhase	PhaseStartDate	9/30/2022	7/20/2022
tblConstructionPhase	PhaseStartDate	7/29/2022	7/6/2022
tblConstructionPhase	PhaseStartDate	6/7/2024	12/9/2022
tblLandUse	LandUseSquareFeet	1,276,308.00	4,200.00
tblVehicleTrips	ST_TR	22.75	1.40
tblVehicleTrips	SU_TR	16.74	1.40

2.0 Emissions Summary

Petnum Park Extension, Phase 1b and Phase 2 - San Francisco Bay Area Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	7-1-2022	9-30-2022	0.7353	0.7353
		Highest	0.7353	0.7353

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	0.0224	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0997	1.0997	5.0000e-005	1.0000e-005	1.1040
Mobile	0.0114	0.0497	0.1251	4.6000e-004	0.0407	3.8000e-004	0.0411	0.0109	3.5000e-004	0.0113	0.0000	42.1017	42.1017	1.4900e-003	0.0000	42.1389
Waste						0.0000	0.0000		0.0000	0.0000	0.5115	0.0000	0.5115	0.0302	0.0000	1.2673
Water						0.0000	0.0000		0.0000	0.0000	0.0000	35.5454	35.5454	1.6100e-003	3.3000e-004	35.6847
Total	0.0337	0.0497	0.1257	4.6000e-004	0.0407	3.8000e-004	0.0411	0.0109	3.5000e-004	0.0113	0.5115	78.7478	79.2593	0.0334	3.4000e-004	80.1959

Petnum Park Extension, Phase 1b and Phase 2 - San Francisco Bay Area Air Basin, Annual

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0224	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0997	1.0997	5.0000e-005	1.0000e-005	1.1040
Mobile	0.0114	0.0497	0.1251	4.6000e-004	0.0407	3.8000e-004	0.0411	0.0109	3.5000e-004	0.0113	0.0000	42.1017	42.1017	1.4900e-003	0.0000	42.1389
Waste						0.0000	0.0000		0.0000	0.0000	0.5115	0.0000	0.5115	0.0302	0.0000	1.2673
Water						0.0000	0.0000		0.0000	0.0000	0.0000	35.5454	35.5454	1.6100e-003	3.3000e-004	35.6847
Total	0.0337	0.0497	0.1257	4.6000e-004	0.0407	3.8000e-004	0.0411	0.0109	3.5000e-004	0.0113	0.5115	78.7478	79.2593	0.0334	3.4000e-004	80.1959

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

3.0 Construction Detail

Construction Phase

Petnum Park Extension, Phase 1b and Phase 2 - San Francisco Bay Area Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2022	7/5/2022	5	3	
2	Grading	Grading	7/6/2022	7/19/2022	5	10	
3	Building Construction	Building Construction	7/20/2022	12/8/2022	5	102	
4	Paving	Paving	12/9/2022	12/19/2022	5	7	
5	Architectural Coating	Architectural Coating	12/20/2022	12/28/2022	5	7	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 25

Acres of Paving: 0.24

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 6,300; Non-Residential Outdoor: 2,100; Striped Parking Area: 648 (Architectural Coating – sqft)

OffRoad Equipment

Petnum Park Extension, Phase 1b and Phase 2 - San Francisco Bay Area Air Basin, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	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
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

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3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

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					0.0271	0.0000	0.0271	0.0149	0.0000	0.0149	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7600e-003	0.0496	0.0296	6.0000e-005		2.4200e-003	2.4200e-003		2.2300e-003	2.2300e-003	0.0000	5.0159	5.0159	1.6200e-003	0.0000	5.0565
Total	4.7600e-003	0.0496	0.0296	6.0000e-005	0.0271	2.4200e-003	0.0295	0.0149	2.2300e-003	0.0171	0.0000	5.0159	5.0159	1.6200e-003	0.0000	5.0565

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	8.0000e-005	5.0000e-005	5.6000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1738	0.1738	0.0000	0.0000	0.1738
Total	8.0000e-005	5.0000e-005	5.6000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1738	0.1738	0.0000	0.0000	0.1738

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3.2 Site Preparation - 2022

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					0.0271	0.0000	0.0271	0.0149	0.0000	0.0149	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7600e-003	0.0496	0.0296	6.0000e-005		2.4200e-003	2.4200e-003		2.2300e-003	2.2300e-003	0.0000	5.0159	5.0159	1.6200e-003	0.0000	5.0565
Total	4.7600e-003	0.0496	0.0296	6.0000e-005	0.0271	2.4200e-003	0.0295	0.0149	2.2300e-003	0.0171	0.0000	5.0159	5.0159	1.6200e-003	0.0000	5.0565

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	8.0000e-005	5.0000e-005	5.6000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1738	0.1738	0.0000	0.0000	0.1738
Total	8.0000e-005	5.0000e-005	5.6000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1738	0.1738	0.0000	0.0000	0.1738

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3.3 Grading - 2022

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					0.0434	0.0000	0.0434	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0181	0.1942	0.1452	3.1000e-004		8.1700e-003	8.1700e-003		7.5200e-003	7.5200e-003	0.0000	27.2673	27.2673	8.8200e-003	0.0000	27.4878
Total	0.0181	0.1942	0.1452	3.1000e-004	0.0434	8.1700e-003	0.0515	0.0180	7.5200e-003	0.0255	0.0000	27.2673	27.2673	8.8200e-003	0.0000	27.4878

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	2.9000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.9000e-004	1.0000e-005	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6435	0.6435	1.0000e-005	0.0000	0.6438
Total	2.9000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.9000e-004	1.0000e-005	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6435	0.6435	1.0000e-005	0.0000	0.6438

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3.3 Grading - 2022

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					0.0434	0.0000	0.0434	0.0180	0.0000	0.0180	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0181	0.1942	0.1452	3.1000e-004		8.1700e-003	8.1700e-003		7.5200e-003	7.5200e-003	0.0000	27.2673	27.2673	8.8200e-003	0.0000	27.4877
Total	0.0181	0.1942	0.1452	3.1000e-004	0.0434	8.1700e-003	0.0515	0.0180	7.5200e-003	0.0255	0.0000	27.2673	27.2673	8.8200e-003	0.0000	27.4877

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	2.9000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.9000e-004	1.0000e-005	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6435	0.6435	1.0000e-005	0.0000	0.6438
Total	2.9000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.9000e-004	1.0000e-005	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6435	0.6435	1.0000e-005	0.0000	0.6438

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3.4 Building Construction - 2022

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	0.0870	0.7964	0.8345	1.3700e-003		0.0413	0.0413		0.0388	0.0388	0.0000	118.1799	118.1799	0.0283	0.0000	118.8877
Total	0.0870	0.7964	0.8345	1.3700e-003		0.0413	0.0413		0.0388	0.0388	0.0000	118.1799	118.1799	0.0283	0.0000	118.8877

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	3.0000e-004	0.0101	2.5000e-003	3.0000e-005	6.7000e-004	2.0000e-005	6.9000e-004	1.9000e-004	2.0000e-005	2.1000e-004	0.0000	2.6194	2.6194	1.2000e-004	0.0000	2.6225
Worker	8.8000e-004	5.8000e-004	6.3100e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	1.9691	1.9691	4.0000e-005	0.0000	1.9701
Total	1.1800e-003	0.0107	8.8100e-003	5.0000e-005	3.0900e-003	4.0000e-005	3.1200e-003	8.3000e-004	3.0000e-005	8.7000e-004	0.0000	4.5885	4.5885	1.6000e-004	0.0000	4.5926

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3.4 Building Construction - 2022

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	0.0870	0.7964	0.8345	1.3700e-003		0.0413	0.0413		0.0388	0.0388	0.0000	118.1797	118.1797	0.0283	0.0000	118.8876
Total	0.0870	0.7964	0.8345	1.3700e-003		0.0413	0.0413		0.0388	0.0388	0.0000	118.1797	118.1797	0.0283	0.0000	118.8876

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	3.0000e-004	0.0101	2.5000e-003	3.0000e-005	6.7000e-004	2.0000e-005	6.9000e-004	1.9000e-004	2.0000e-005	2.1000e-004	0.0000	2.6194	2.6194	1.2000e-004	0.0000	2.6225
Worker	8.8000e-004	5.8000e-004	6.3100e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	1.9691	1.9691	4.0000e-005	0.0000	1.9701
Total	1.1800e-003	0.0107	8.8100e-003	5.0000e-005	3.0900e-003	4.0000e-005	3.1200e-003	8.3000e-004	3.0000e-005	8.7000e-004	0.0000	4.5885	4.5885	1.6000e-004	0.0000	4.5926

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3.5 Paving - 2022

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	3.8600e-003	0.0389	0.0510	8.0000e-005		1.9900e-003	1.9900e-003		1.8300e-003	1.8300e-003	0.0000	7.0097	7.0097	2.2700e-003	0.0000	7.0663
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.1700e-003	0.0389	0.0510	8.0000e-005		1.9900e-003	1.9900e-003		1.8300e-003	1.8300e-003	0.0000	7.0097	7.0097	2.2700e-003	0.0000	7.0663

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	1.0000e-004	1.0800e-003	0.0000	4.1000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3378	0.3378	1.0000e-005	0.0000	0.3380
Total	1.5000e-004	1.0000e-004	1.0800e-003	0.0000	4.1000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3378	0.3378	1.0000e-005	0.0000	0.3380

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3.5 Paving - 2022

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	3.8600e-003	0.0389	0.0510	8.0000e-005		1.9900e-003	1.9900e-003		1.8300e-003	1.8300e-003	0.0000	7.0096	7.0096	2.2700e-003	0.0000	7.0663
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.1700e-003	0.0389	0.0510	8.0000e-005		1.9900e-003	1.9900e-003		1.8300e-003	1.8300e-003	0.0000	7.0096	7.0096	2.2700e-003	0.0000	7.0663

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	1.0000e-004	1.0800e-003	0.0000	4.1000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3378	0.3378	1.0000e-005	0.0000	0.3380
Total	1.5000e-004	1.0000e-004	1.0800e-003	0.0000	4.1000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3378	0.3378	1.0000e-005	0.0000	0.3380

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3.6 Architectural Coating - 2022

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	0.0524					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2000e-004	4.9300e-003	6.3500e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951
Total	0.0531	4.9300e-003	6.3500e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951

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	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0225	0.0225	0.0000	0.0000	0.0225
Total	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0225	0.0225	0.0000	0.0000	0.0225

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3.6 Architectural Coating - 2022

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	0.0524					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2000e-004	4.9300e-003	6.3500e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951
Total	0.0531	4.9300e-003	6.3500e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951

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	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0225	0.0225	0.0000	0.0000	0.0225
Total	1.0000e-005	1.0000e-005	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0225	0.0225	0.0000	0.0000	0.0225

4.0 Operational Detail - Mobile

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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	0.0114	0.0497	0.1251	4.6000e-004	0.0407	3.8000e-004	0.0411	0.0109	3.5000e-004	0.0113	0.0000	42.1017	42.1017	1.4900e-003	0.0000	42.1389
Unmitigated	0.0114	0.0497	0.1251	4.6000e-004	0.0407	3.8000e-004	0.0411	0.0109	3.5000e-004	0.0113	0.0000	42.1017	42.1017	1.4900e-003	0.0000	42.1389

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	55.38	41.02	41.02	109,465	109,465
Parking Lot	0.00	0.00	0.00		
Total	55.38	41.02	41.02	109,465	109,465

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	3780	1.0997	5.0000e-005	1.0000e-005	1.1040
Total		1.0997	5.0000e-005	1.0000e-005	1.1040

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	3780	1.0997	5.0000e-005	1.0000e-005	1.1040
Total		1.0997	5.0000e-005	1.0000e-005	1.1040

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0224	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003
Unmitigated	0.0224	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003

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	5.2400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0171					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003
Total	0.0224	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003

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6.2 Area by SubCategory

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	5.2400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0171					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003
Total	0.0224	0.0000	5.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0100e-003	1.0100e-003	0.0000	0.0000	1.0700e-003

7.0 Water Detail

7.1 Mitigation Measures Water

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	35.5454	1.6100e-003	3.3000e-004	35.6847
Unmitigated	35.5454	1.6100e-003	3.3000e-004	35.6847

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 34.9104	35.5454	1.6100e-003	3.3000e-004	35.6847
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		35.5454	1.6100e-003	3.3000e-004	35.6847

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 34.9104	35.5454	1.6100e-003	3.3000e-004	35.6847
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		35.5454	1.6100e-003	3.3000e-004	35.6847

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.5115	0.0302	0.0000	1.2673
Unmitigated	0.5115	0.0302	0.0000	1.2673

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8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	2.52	0.5115	0.0302	0.0000	1.2673
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.5115	0.0302	0.0000	1.2673

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	2.52	0.5115	0.0302	0.0000	1.2673
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.5115	0.0302	0.0000	1.2673

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

66 Single-Family Residences Health Risk Assessment

INTRODUCTION

In June 2016, a health risk assessment (HRA) was prepared by Atmospheric Dynamics, Inc. in order to evaluate the health risk impacts posed to nearby sensitive receptors as a result of a project proposed at the northwest and southwest corners of Windsor Drive and D Street in the City of Petaluma (City) in Sonoma County. The evaluated project comprised 66 single-homes on 23.46-acres. Construction of the 66 single-family residences project was assumed to take place over a four-year period, from 2017 to 2020. The discussion below presents a summary of the health risk methodology and results associated with the construction of the 66 single-homes project.

Construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors that include residences, schools, and day cares. The 66 single-homes project would not include any stationary sources of TACs, such as generators. Therefore, operation of the project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels.

HEALTH IMPACT EVALUATION METHODOLOGY

An HRA for exposure to TACs requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and the California Air Resources Board (CARB) develop recommended methods for conducting HRAs. The most recent OEHHA risk assessment guidelines were published in February 2015. These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines.¹ CARB has provided additional guidance on implementing OEHHA's recommended methods.² The HRA evaluating the 66-single family home proposed project used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. Exposure parameters from the OEHHA guidelines and the BAAQMD HRA Guidelines were used in the evaluation and compared to BAAQMD health risk thresholds.^{3, 4}

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency of exposure, and the exposure duration. These

¹ OEHHA. 2015. *Guidance Manual for Preparation of Health Risk Assessments*. Available: <https://oehha.ca.gov/media/downloads/crnrr/2015guidancemanual.pdf>.

² CARB. 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. Available: https://ww3.arb.ca.gov/toxics/rma/rma_guidancedraft052715.pdf

³ BAAQMD. 2016. *Health Risk Assessment (HRA) Guidelines*. Available: https://ww3.arb.ca.gov/toxics/rma/rma_guidancedraft052715.pdf.

⁴ BAAQMD. 2017. *CEQA Air Quality Guidelines*. Available: https://www.baaqmd.gov/-/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor locations.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) are applied based on the age category. An ASF of 10 is used for the third trimester and infant exposures, an ASF of 3 is used for child exposure, and an ASF of 1 is used for an adult exposure. Breathing rates are also applied based on the age category and expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions. According to OEHHA’s 2015 Guidance, adjustments to account for the exposure duration for the fraction of time at home (FAH) should be used for residential receptors. FAH values are also age-specific and are: 0.85 for third trimester of pregnancy and infant receptors, 0.72 for child receptors, and 0.73 for adult receptors. The health risk parameters used in the analysis are summarized in **Table 1, Health Risk Parameters Used for Cancer Risk Calculations.**

Table 1
Health Risk Parameters Used for Cancer Risk Calculations

Parameter	Exposure Type	Infant		Child	Adult
	Age Range	3rd Trimester	0 < 2	2 < 16	16 - 30
DPM Cancer Potency Factor (mg/kg-day) ¹		1.1	1.1	1.1	1.1
Daily Breathing Rate (L/kg-day)*		361	1,090	572	261
Inhalation Adsorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14
Exposure Frequency (days/years)		350	350	350	350
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home		0.85	0.85	0.72	0.73

* 95th percentile breathing rates for 3rd trimester and infants and 80th percentile for children and adults.

SOURCE:

OEHHA. 2015. Guidance Manual for Preparation of Health Risk Assessments. Available:

<https://oehha.ca.gov/media/downloads/crn/2015guidancemanual.pdf>.

BAAQMD. 2016. Health Risk Assessment (HRA) Guidelines. Available:

https://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/workshops/2016/reg-2-5/hra-guidelines_clean_jan_2016-pdf.pdf?la=en.

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is DPM. For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Annual PM2.5 Concentration

While not a TAC, PM2.5 has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under CEQA. The thresholds of significance for PM2.5 (project level and cumulative) are in terms of an increase in the annual average concentration. When considering PM2.5 impacts, the contribution from all sources of PM2.5 emissions should be included. For projects with potential impacts from nearby local roadways, the PM2.5 impacts should include those from vehicle exhaust emissions, PM2.5 generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

CONSTRUCTION IMPACTS

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM10 and PM2.5. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Construction equipment and associated heavy-duty traffic generate diesel exhaust, which is a known toxic air contaminant (TAC). Diesel exhaust poses both potential health and nuisance impacts to nearby receptors. A community risk assessment of the project construction activities was conducted that evaluated potential health effects to sensitive receptors at nearby residences from construction emissions of DPM and PM2.5. A dispersion model was used to predict the off-site DPM and PM2.5 concentration resulting from project construction so that lifetime cancer risks could be predicted.

Construction activity is anticipated to include demolition, grading and site preparation, trenching, building construction, and paving. Construction period emissions were modeled for this health risk using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2 (CalEEMod) with model defaults for a 66-unit single family residential project. Construction of the project is expected to occur over an approximately four-year period with much of the activity involving the use of heavy equipment occurring during the initial phases of the proposed project. This activity was modeled to occur mostly in 2017. Truck hauling trips were based on the CalEEMod model defaults, assuming demolition of 2,500 square feet of buildings, cut and fill handling of soil material, and the need for materials delivery such as cement, rock, and building materials for building construction.

The CalEEMod model provided total PM2.5 exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions of 0.673 tons over the entire 2017-2020 construction period. Fugitive PM2.5 dust emissions were calculated by CalEEMod as 0.1432 tons for the entire 2017-2020 construction period.

Dispersion Modeling

The US EPA ISCST3 dispersion model was used to calculate the concentrations of DPM and PM2.5 at existing sensitive receptors in the vicinity of the project construction site. Emission sources for the construction site were grouped into two categories, exhaust emissions of DPM and fugitive PM2.5 dust emissions.

For modeling fugitive PM_{2.5} emissions, a near-ground level release height of 2.0 meters (6.6 feet) was used for the two area sources. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. to 4 p.m., when the majority of construction activity would occur.

To represent the construction equipment exhaust emissions, 46 equally spaced point sources were placed within the area of construction activity. Each point source had an emission release height of 6 feet. The exit temperature and stack velocity were based on an average sized construction engine source. Emissions were also modeled as occurring daily between 7 a.m. to 4 p.m. The modeling used a five-year data set (1990-1994) of hourly meteorological data from the Petaluma Airport that was prepared for use with the ISCST3 model by the BAAQMD. Annual DPM and PM_{2.5} concentrations from construction activities during the 2017-2020 construction period were calculated at nearby sensitive receptors using receptor heights of 1.5 meters (4.9 feet) to represent the breathing heights of residents.

Calculated Cancer Risk and Hazards

The BAAQMD recommends evaluating sensitive receptors within a 1,000-foot screening radius around the project site.⁵ The maximum modeled DPM and PM_{2.5} concentrations occurred at residences on Pinnacle Drive, just east of D Street and the project area. Increased cancer risks were calculated using the maximum modeled DPM concentrations and OEHHA and BAAQMD recommended risk assessment methods previously described. Infant, child, and adult exposures were conservatively assumed to occur at all residences through the entire construction period.

Cancer Risk

Results of this assessment indicate that the maximum increased residential cancer risks would be 33.1 in one million for infant exposure and 0.9 in one million for an adult exposure. Maximum residential excess cancer risk would be greater than the BAAQMD significance threshold of 10 in one million. Therefore, the following mitigation measure was applied:

All diesel-powered off-road equipment larger than 50 horsepower and operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 3 engines or equivalent.

With the implementation of this measure and with the BAAQMD's standard best management practices to reduce fugitive dust, the computed maximum increased residential child cancer risk for construction would decrease to 9.1 in one million. This mitigated cancer risk would be below the BAAQMD threshold of greater than 10 per million for cancer risk.

Predicted Annual PM_{2.5} Concentration

The maximum modeled annual PM_{2.5} concentration, which is based on combined exhaust and fugitive dust emissions, was 0.244 µg/m³, occurring adjacent to the residence where the maximum increased cancer risk from construction would occur. The maximum annual PM_{2.5} concentration from construction activities would not exceed the BAAQMD significance threshold of 0.3 µg/m³. Therefore, no additional mitigation is required.

⁵ BAAQMD. 2017. *CEQA Air Quality Guidelines*. Available: [https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en](https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en).

Non-Cancer Hazards

The maximum modeled annual residential DPM concentration was $0.0930 \mu\text{g}/\text{m}^3$. Dividing this number by the REL of $5 \mu\text{g}/\text{m}^3$, the maximum computed HI is 0.019. Therefore, the HI is significantly lower than the BAAQMD's significance threshold of 1.0.

Attachment 1: Output Worksheets and Risk Calculations

66 Single-Homes Project at Windsor Drive and D Street

DPM Construction Emissions and Modeling Emission Rates - Unmitigated

							Modeled	DPM
							Points	Emission
Construction		DPM	Area	DPM Emissions				Rate
Year	Activity	(ton/year)	Source	(lb/yr)	(lb/hr)	(g/s)	#	(g/s/src)
2017	Construction	0.2107	COMB1-46	421.4	0.17736	2.23E-02	46	4.86E-04
2018	Construction	0.1845	COMB1-46	369.0	0.15530	1.96E-02	46	4.25E-04
2019	Construction	0.1588	COMB1-46	317.6	0.13367	1.68E-02	46	3.66E-04
2020	Construction	0.1187	COMB1-46	237.4	0.09992	1.26E-02	46	2.74E-04
Total		0.6727		1345				

Construction Hours

hr/day = 9 (7am - 4pm)

days/yr = 264

hours/year = 2376

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

							Modeled	DPM
							Points	Emission
Construction		DPM	Area	DPM Emissions				Rate
Year	Activity	(ton/year)	Source	(lb/yr)	(lb/hr)	(g/s)	#	(g/s/src)
2017	Construction	0.0665	COMB1-46	133.0	0.05598	7.05E-03	46	1.53E-04
2018	Construction	0.0886	COMB1-46	177.2	0.07458	9.40E-03	46	2.04E-04
2019	Construction	0.0820	COMB1-46	164.0	0.06902	8.70E-03	46	1.89E-04
2020	Construction	0.0680	COMB1-46	136.0	0.05724	7.21E-03	46	1.57E-04
Total		0.3051		610				

Construction Hours

hr/day = 9 (7am - 4pm)

days/yr = 264

hours/year = 2376

66 Single-Homes Project at [Windsor Drive and D Street]

PM2.5 Fugitive Dust Construction Emissions for Mode ling - Unmitigated

							Modeled	PM2.5
							Area	Emission
Construction	Area		PM2.5 Emissions				Area	Rate
Year	Activity	Source	(ton/year)	(lb/yr)	(lb/hr)	(g/s)	(m ²)	g/s/m ²
2017	Construction	FUG1-FUG2	0.1166	233.2	0.09815	1.24E-02	46	2.69E-04
2018	Construction	FUG1-FUG2	0.0092	18.5	0.00778	9.80E-04	46	2.13E-05
2019	Construction	FUG1-FUG2	0.0092	18.5	0.00778	9.80E-04	46	2.13E-05
2020	Construction	FUG1-FUG2	0.0082	16.3	0.00688	8.67E-04	46	1.88E-05
Total			0.1433	286.5				

Construction Hours

hr/day = 9 (7am - 4pm)

days/yr = 264

hours/year = 2376

PM2.5 Fugitive Dust Construction Emissions for Mode ling - With Mitigation

							Modeled	PM2.5
							Area	Emission
Construction	Area		PM2.5 Emissions				Area	Rate
Year	Activity	Source	(ton/year)	(lb/yr)	(lb/hr)	(g/s)	(m ²)	g/s/m ²
2017	Construction	FUG1-FUG2	0.0492	98.4	0.04141	5.22E-03	46	1.13E-04
2018	Construction	FUG1-FUG2	0.0092	18.5	0.00778	9.80E-04	46	2.13E-05
2019	Construction	FUG1-FUG2	0.0092	18.5	0.00778	9.80E-04	46	2.13E-05
2020	Construction	FUG1-FUG2	0.0082	16.3	0.00688	8.67E-04	46	1.88E-05
Total			0.0759	151.7				

Construction Hours

hr/day = 9 (7am - 4pm)

days/yr = 264

hours/year = 2376

66 Single-Homes Project at [Windsor Drive and D Street]- Construction Impacts - Unmitigated Emissions

Maximum DPM Cancer Risk Calculations From Construction

Off-Site Residential Receptor Locations - 1.5 meters

Cancer Risk (per million)= CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹
 ASF = Age sensitivity factor for specified age group
 ED = Exposure duration (years)
 AT = Averaging time for lifetime cancer risk (years)
 FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)
 DBR = daily breathing rate (L/kg body weight-day)
 A = Inhalation absorption factor
 EF = Exposure frequency (days/year)
 10⁻⁶ = Conversion factor

Values

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - 2	2 - 16	16 - 30
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)
		Age	DPM Conc (ug/m3)			Age	Modeled		
			Year	Annual	Sensitivity Factor	Year	Annual	Sensitivity Factor	
0	0.25	-0.25 - 0*	2017	0.0930	10	2017	0.0930	-	-
1	1	0 - 1	2017	0.0930	10	2017	0.0930	1	0.27
2	1	1 - 2	2018	0.0814	10	2018	0.0814	1	0.23
3	1	2 - 3	2019	0.0701	3	2019	0.0701	1	0.20
4	1	3 - 4	2020	0.0524	3	2020	0.0524	1	0.15
5	1	4 - 5		0.0000	3		0.0000	1	0.00
6	1	5 - 6		0.0000	3		0.0000	1	0.00
7	1	6 - 7		0.0000	3		0.0000	1	0.00
8	1	7 - 8		0.0000	3		0.0000	1	0.00
9	1	8 - 9		0.0000	3		0.0000	1	0.00
10	1	9 - 10		0.0000	3		0.0000	1	0.00
11	1	10 - 11		0.0000	3		0.0000	1	0.00
12	1	11 - 12		0.0000	3		0.0000	1	0.00
13	1	12 - 13		0.0000	3		0.0000	1	0.00
14	1	13 - 14		0.0000	3		0.0000	1	0.00
15	1	14 - 15		0.0000	3		0.0000	1	0.00
16	1	15 - 16		0.0000	3		0.0000	1	0.00
17	1	16-17		0.0000	1		0.0000	1	0.00
18	1	17-18		0.0000	1		0.0000	1	0.00
19	1	18-19		0.0000	1		0.0000	1	0.00
20	1	19-20		0.0000	1		0.0000	1	0.00
21	1	20-21		0.0000	1		0.0000	1	0.00
22	1	21-22		0.0000	1		0.0000	1	0.00
23	1	22-23		0.0000	1		0.0000	1	0.00
24	1	23-24		0.0000	1		0.0000	1	0.00
25	1	24-25		0.0000	1		0.0000	1	0.00
26	1	25-26		0.0000	1		0.0000	1	0.00
27	1	26-27		0.0000	1		0.0000	1	0.00
28	1	27-28		0.0000	1		0.0000	1	0.00
29	1	28-29		0.0000	1		0.0000	1	0.00
30	1	29-30		0.0000	1		0.0000	1	0.00
Total Increased Cancer Risk						33.1			0.9

* Third trimester of pregnancy

66 Single-Homes Project at Windsor Drive and D Street- Construction Impacts - Mitigated Emissions

Maximum DPM Cancer Risk Calculations From Construction

Off-Site Residential Receptor Locations - 1.5 meters

Cancer Risk (per million) = $CPF \times \text{Inhalation Dose} \times ASF \times ED/AT \times FAH \times 1.0E6$

- Where: CPF = Cancer potency factor (mg/kg-day)⁻¹
 ASF = Age sensitivity factor for specified age group
 ED = Exposure duration (years)
 AT = Averaging time for lifetime cancer risk (years)
 FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR \times A \times (EF/365) \times 10^{-6}$

- Where: C_{air} = concentration in air (µg/m³)
 DBR = daily breathing rate (L/kg body weight-day)
 A = Inhalation absorption factor
 EF = Exposure frequency (days/year)
 10⁻⁶ = Conversion factor

Values

Age -->	Infant/Child			Adult
	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	0.85	0.72	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child-Exposure Information			Infant/Child	Adult - Exposure Information			Adult
			DPM Conc (ug/m3)		Age	Cancer	Modeled		Age	Cancer
			Year	Annual	Sensitivity Factor	Risk (per million)	Year	Annual	Sensitivity Factor	Risk (per million)
0	0.25	-0.25 - 0*	2017	0.0293	10	0.34	2017	0.0293	-	-
1	1	0 - 1	2017	0.0293	10	3.47	2017	0.0293	1	0.08
2	1	1 - 2	2018	0.0391	10	4.62	2018	0.0391	1	0.11
3	1	2 - 3	2019	0.0362	3	0.67	2019	0.0362	1	0.10
4	1	3 - 4	2020	0.0300	3	0.00	2020	0.0300	1	0.09
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00
Total Increased Cancer Risk						9.1				0.39

66 Single-Homes Project at Windsor Drive and D Street- Project Construction Health Impact Summary

Maximum Impacts at Off-Site Residences

UNMITIGATED						
	Maximum Concentrations		Cancer Risk		Hazard	Maximum
Construction	Exhaust	Fugitive	(per million)		Index	Annual PM2.5
Year	PM2.5/DPM	PM2.5	Child	Adult	(-)	Concentration
	(µg/m³)	(µg/m³)				(µg/m³)
2017	0.0930	0.1510	16.53	0.27	0.019	0.244
2018	0.0814	0.0120	13.37	0.23	0.016	0.093
2019	0.0701	0.0120	1.81	0.20	0.014	0.082
2020	0.0524	0.0106	1.35	0.15	0.010	0.063
Total	-	-	33.1	0.9	-	-
Maximum Annual	0.0930	0.1510	-	-	0.019	0.244

MITIGATED						
	Maximum Concentrations		Cancer Risk		Hazard	Maximum
Construction	Exhaust	Fugitive	(per million)		Index	Annual PM2.5
Year	PM2.5/DPM	PM2.5	Child	Adult	(-)	Concentration
	(µg/m³)	(µg/m³)				(µg/m³)
2017	0.0293	0.0639	3.8	0.08	0.006	0.093
2018	0.0391	0.0120	4.6	0.11	0.008	0.051
2019	0.0362	0.0120	0.7	0.10	0.007	0.048
2020	0.0300	0.0106	0.0	0.09	0.006	0.041
Total	-	-	9.1	0.4	-	-
Maximum Annual	0.0391	0.0639	-	-	0.008	0.093



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MEMORANDUM

To: Olivia Ervin, Environmental Planner, City of Petaluma
From: Jared Jerome, Technical Specialist, Impact Sciences
Subject: Scott Ranch Greenhouse Gas Threshold Methodology
Date: September 30, 2019

Job No. 1222.001

This memorandum summarizes Impact Sciences' proposed approach to developing a greenhouse gas (GHG) emissions threshold associated with the Scott Ranch project (proposed project) that comprises the Davidon (28-Lot) Residential Project proposed by Davidon Homes and the Putnam Park Extension Project proposed by the Kelly Creek Protection Project (KCPP).

Greenhouse Gas Emissions Threshold Methodology

The BAAQMD thresholds were developed considering the Bay Area GHG inventory and the effects of AB 32 scoping plan measures that would reduce regional emissions. By using these thresholds, the BAAQMD intended to achieve GHG reductions from new land use developments to close the gap between projected regional emissions and the AB 32 targets. However, the thresholds were designed for compliance with AB 32 which has a target date of 2020. BAAQMD has suggested that for projects that would become operational after 2020, lead agencies should consider developing additional thresholds to evaluate a project's GHG impact.

CEQA gives lead agencies the discretion to establish significance thresholds for their respective jurisdictions. In establishing those thresholds, a lead agency may appropriately look to thresholds developed by other public agencies, or suggested by other experts, as long as any threshold chosen is supported by substantial evidence (See CEQA Guidelines Section 15064.7(c)).¹ In this case, the Bay Area's AB 32 target has been adopted as a threshold for the proposed project. In addition, development of the 2030 GHG threshold for the proposed project have taken into account GHG emissions target at 40 percent below 1990 levels, as defined in Executive Order (EO) B-30-15.

Geographically-specific 2030 GHG threshold. The first step in calculating a geographically specific 2030 emissions threshold is by determining the existing percentage of GHG emissions for this specific location

¹ See CEQA Guidelines Section 15384 "Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."

(i.e., City of Petaluma) with respect to that of the state of California.² Assuming this specific location would contribute to the same percentage of GHG emission in 2030, the estimated percentage of annual 2030 GHG emissions at this geographic location is calculated from the 2030 statewide GHG target emissions (See attached spreadsheet Cell H:23).

The second step is to determine the 2030 service population of this specific geographic location (i.e., City of Petaluma). In this proposed methodology, the Plan Bay Area 2040 projections are used to determine the 2030 service population (See attached spreadsheet Cell H:26).³

The estimated annual 2030 GHG emission is divided by the 2030 service population to calculate the 2030 GHG threshold in MT CO_{2e}/year/service population for the specific location (see spreadsheet Cell H:27)

Geographically-specific GHG threshold for the year 2022. Based on the current schedule, the proposed project is anticipated to be fully constructed and occupied by 2022. Estimated GHG threshold emissions for 2022 can be determined using the calculated 2020 and 2030 GHG threshold for the proposed project.

To analyze the project impacts related GHG emissions, Impact Sciences recommended approach is to compare GHG emissions to the existing BAAQMD threshold, the threshold presented in the 2017 Climate Change Scoping Plan, the geographically specific threshold described above for the year 2030, and the geographically specific threshold for the year 2022.

² Jones, Christopher; Kammen, Daniel. 2015. A Consumption-Based Greenhouse Gas Inventory of San Francisco Bay Area Neighborhoods, Cities and Counties: Prioritizing Climate Action for Different Locations

³ Association of Bay Area Governments; Metropolitan Transportation Commission. 2016. Plan Bay Area 2040, Projects 2040: Forecasts for Population, Household, and Employment for the Nine County San Francisco Bay Area Region.

California 2030 GHG Emissions, Population Projections, and GHG Service Population Target
Scott Ranch
Petaluma, California

Current BAAQMD Threshold (2020)	Year 2020
Land Use Sectors Greenhouse Gas Emissions Target (MT CO ₂ e/year)	295,530,000
Population	44,135,923
Employment	20,194,661
California Service Population	64,330,584
SB 32 Goal (MT CO ₂ e/SP/yr)	4.59
Estimated 2030 Statewide Data	Year 2030
Land Use Sectors Greenhouse Gas Emissions Target (MT CO ₂ e/year - Emissions adjusted by AR4 GWP and reduction target for 2030)	178,979,059
Population	43,939,250
Employment	23,205,813
California Service Population	67,145,063
SB 32 Goal (MT CO ₂ e/SP/yr)	2.67
Estimated 2030 Bay Area Data	Year 2030
Land Use Sectors Greenhouse Gas Emissions Target (MT CO ₂ e/year) (CA x 19.68%)	35,214,227
Population	8,689,440
Employment	4,405,125
Bay Area Service Population	13,094,565
SB 32 Goal (MT CO ₂ e/SP/yr)	2.69
Estimated 2030 Petaluma Data	Year 2030
Land Use Sectors Greenhouse Gas Emissions Target (MT CO ₂ e/year) (CA x 0.20%)	361,380
Population	64,795
Employment	35,460
Petaluma Service Population	100,255
SB 32 Goal (MT CO ₂ e/SP/yr)	3.60

Supporting Data

	Year	Household Tons Per Year ¹	Tons CO ₂ ¹	Population ²	Employment ²	Service Population	Households ²	Persons Per Household ²	Emissions Compared to State
City of Petaluma	1990		1,137,677.03	43,184	22,257	65,441	16,062	2.69	0.20%
	2013	44.1	1,182,262.81	71,521		71,521	26,787	2.67	0.20%
	2018			61,917		61,917	23,103	2.68	
	2030			64,795	35,460	100,255	24,080	2.68	
California Average	1990		563,451,523.04	29,760,021	12,900,000	42,660,021	9,920,007	3	100.00%
	2013	45.7	585,533,297.07	37,152,141		37,152,141	12,811,083	3	100.00%
	2018			39,557,045		39,557,045	13,185,682	3	
	2030			43,939,250	23,205,813	67,145,063			
Bay Area Average	1990		110,859,392.50	6,023,577	3,085,634	9,109,211	2,239,248	2.69	19.68%
	2013	44.3	115,203,993.50	7,115,092		7,115,092	2,598,944	2.69	19.68%
	2018			7,753,023		7,753,023	2,882,165	2.69	
	2030			8,689,440	4,405,125	13,094,565	3,142,015	2.8	

CARB IPCC Data³

Year	Net Emission	Percent 1990
1990	430.72	
2000	471.7	91%
2001	486.8	88%
2002	485.8	89%
2003	485.7	89%
2004	493.7	87%
2005	486.1	89%
2006	482.7	89%
2007	490.3	88%
2008	487.3	88%
2009	457.3	94%
2010	448.1	96%
2011	443.9	97%
2012	450.4	96%
2013	447.6	96%
2014	444.1	97%
2015	441.4	98%
2016	429.4	100%

Note 1 Jones, Christopher; Kammen, Daniel. 2015. A Consumption-Based Greenhouse Gas Inventory of San Francisco Bay Area Neighborhoods, Cities and Counties: Prioritizing Climate Action for Different Locations

Located at <https://coolclimate.org/inventory>

Note 2 2030 City and Regional Data from <http://projections.planbayarea.org/>

1990 Data from <http://www.bayareacensus.ca.gov/bayarea.htm>

2013 Data from <http://www.baaqmd.gov/about-air-quality/research-and-data/emission-inventory/consumption-based-ghg-emissions-inventory>

2018 Data from <https://www.census.gov/quickfacts/>

Note 3 <https://ww3.arb.ca.gov/cc/inventory/data/data.htm>

<https://ww3.arb.ca.gov/cc/inventory/1990level/1990level.htm>