Attachment 1: CalEEMod Construction Output, Construction Schedule

Construction Criteria Air Pollutants **Main Maple**

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unenclosed Parking with Elevator	557.00	Space	0.00	222,800.00	0
Apartments Low Rise	235.00	Dwelling Unit	3.00	235,000.00	672
Strip Mall	2.18	1000sqft	0.00	2,183.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Use PG&E 2013 Certified Rate

Land Use - Not including Medical Office Building - estimated at 1 acre is size

Architectural Coating -

Construction Phase - Based on default with trenching phase added

Off-road Equipment -

Off-road Equipment - Added trenching equipment

Off-road Equipment - Based on hours provided

Off-road Equipment -

Off-road Equipment - Added equipment for interior work

Grading - Information provided on list/schedule

Demolition - Estimate of area provided in 9/23/2015 email

Trips and VMT - Added demolition and cement truck trips. No asphalt expected besides patching.

Construction Off-road Equipment Mitigation - Tier 2 equipment and BMPs for fugitive dust control

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
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tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstructionPhase	PhaseEndDate	12/13/2016	12/14/2016
tblConstructionPhase	PhaseEndDate	2/17/2016	2/9/2016
tblConstructionPhase	PhaseStartDate	2/10/2016	2/11/2016
tblConstructionPhase	PhaseStartDate	2/11/2016	2/3/2016
tblGrading	MaterialImported	0.00	3,000.00
tblLandUse	LandUseSquareFeet	2,180.00	2,183.00
tblLandUse	LotAcreage	5.01	0.00
tblLandUse	LotAcreage	14.69	3.00
tblLandUse	LotAcreage	0.05	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	8.00	1.40
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	8.00	2.90
tblProjectCharacteristics	CO2IntensityFactor	641.35	429
tblProjectCharacteristics	OperationalYear	2014	2018
tblTripsAndVMT	HaulingTripNumber	177.00	337.00
tblTripsAndVMT	HaulingTripNumber	0.00	200.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.9823	2.8399	4.0259	7.0300e-003	0.3840	0.1297	0.5137	0.1135	0.1230	0.2365	0.0000	589.7446	589.7446	0.0510	0.0000	590.8146
2017	2.2646	0.0159	0.0246	5.0000e-005	1.9200e-003	1.0500e-003	2.9800e-003	5.1000e-004	1.0400e-003	1.5500e-003	0.0000	3.6549	3.6549	4.2000e-004	0.0000	3.6637

Total	**3.2469**	**2.8558**	**4.0504**	**7.0800e-003**	**0.3859**	**0.1307**	**0.5167**	**0.1140**	**0.1241**	**0.2381**	**0.0000**	**593.3994**	**593.3994**	**0.0514**	**0.0000**	**594.4783**

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					
2016	0.8394	2.5534	3.8896	7.0300e-003	0.3476	0.0708	0.4184	0.0919	0.0696	0.1615	0.0000	589.7444	589.7444	0.0510	0.0000	590.8144
2017	2.2636	0.0200	0.0251	5.0000e-005	1.9200e-003	7.8000e-004	2.7100e-003	5.1000e-004	7.8000e-004	1.2900e-003	0.0000	3.6549	3.6549	4.2000e-004	0.0000	3.6637
Total	**3.1030**	**2.5734**	**3.9146**	**7.0800e-003**	**0.3496**	**0.0715**	**0.4211**	**0.0924**	**0.0704**	**0.1627**	**0.0000**	**593.3992**	**593.3992**	**0.0514**	**0.0000**	**594.4781**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**4.43**	**9.89**	**3.35**	**0.00**	**9.42**	**45.28**	**18.50**	**18.98**	**43.28**	**31.65**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/28/2016	5	20	
2	Site Preparation	Site Preparation	1/29/2016	2/2/2016	5	3	
3	Grading	Grading	2/3/2016	2/10/2016	5	6	
4	Trenching	Trenching	2/3/2016	2/9/2016	5	5	
5	Building Construction	Building Construction	2/11/2016	12/14/2016	5	220	
6	Paving	Paving	12/15/2016	12/28/2016	5	10	
7	Architectural Coating	Architectural Coating	12/29/2016	1/11/2017	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 475,875; Residential Outdoor: 158,625; Non-Residential Indoor: 337,475; Non-Residential Outdoor: 112,492

OffRoad Equipment

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	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	1.60	226	0.29
Building Construction	Forklifts	3	1.40	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	1.30	97	0.37
Building Construction	Welders	1	2.90	46	0.45

Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	6.00	130	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	8.00	78	0.48
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Excavators	1	8.00	162	0.38
Architectural Coating	Aerial Lifts	1	8.00	62	0.31

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	337.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	375.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	263.00	62.00	200.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	53.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2016

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					0.0192	0.0000	0.0192	2.9100e-003	0.0000	2.9100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0429	0.4566	0.3503	4.0000e-004		0.0229	0.0229		0.0214	0.0214	0.0000	37.0974	37.0974	0.0101	0.0000	37.3092
Total	**0.0429**	**0.4566**	**0.3503**	**4.0000e-004**	**0.0192**	**0.0229**	**0.0421**	**2.9100e-003**	**0.0214**	**0.0243**	**0.0000**	**37.0974**	**37.0974**	**0.0101**	**0.0000**	**37.3092**

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	3.7600e-003	0.0506	0.0413	1.3000e-004	2.8400e-003	6.6000e-004	3.5000e-003	7.8000e-004	6.1000e-004	1.3900e-003	0.0000	11.6276	11.6276	9.0000e-005	0.0000	11.6294
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	5.7000e-004	8.5000e-004	8.1900e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2385	1.2385	7.0000e-005	0.0000	1.2399
Total	**4.3300e-003**	**0.0514**	**0.0495**	**1.5000e-004**	**4.2000e-003**	**6.7000e-004**	**4.8700e-003**	**1.1400e-003**	**6.2000e-004**	**1.7600e-003**	**0.0000**	**12.8660**	**12.8660**	**1.6000e-004**	**0.0000**	**12.8693**

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					8.6400e-003	0.0000	8.6400e-003	6.5000e-004	0.0000	6.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0129	0.3347	0.2527	4.0000e-004		9.3400e-003	9.3400e-003		9.3400e-003	9.3400e-003	0.0000	37.0973	37.0973	0.0101	0.0000	37.3092
Total	**0.0129**	**0.3347**	**0.2527**	**4.0000e-004**	**8.6400e-003**	**9.3400e-003**	**0.0180**	**6.5000e-004**	**9.3400e-003**	**9.9900e-003**	**0.0000**	**37.0973**	**37.0973**	**0.0101**	**0.0000**	**37.3092**

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	3.7600e-003	0.0506	0.0413	1.3000e-004	2.8400e-003	6.6000e-004	3.5000e-003	7.8000e-004	6.1000e-004	1.3900e-003	0.0000	11.6276	11.6276	9.0000e-005	0.0000	11.6294
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	5.7000e-004	8.5000e-004	8.1900e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2385	1.2385	7.0000e-005	0.0000	1.2399
Total	**4.3300e-003**	**0.0514**	**0.0495**	**1.5000e-004**	**4.2000e-003**	**6.7000e-004**	**4.8700e-003**	**1.1400e-003**	**6.2000e-004**	**1.7600e-003**	**0.0000**	**12.8660**	**12.8660**	**1.6000e-004**	**0.0000**	**12.8693**

3.3 Site Preparation - 2016

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	7.6200e-003	0.0820	0.0617	6.0000e-005		4.4100e-003	4.4100e-003		4.0600e-003	4.0600e-003	0.0000	5.5316	5.5316	1.6700e-003	0.0000	5.5666
Total	**7.6200e-003**	**0.0820**	**0.0617**	**6.0000e-005**	**0.0271**	**4.4100e-003**	**0.0315**	**0.0149**	**4.0600e-003**	**0.0190**	**0.0000**	**5.5316**	**5.5316**	**1.6700e-003**	**0.0000**	**5.5666**

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-004	1.5000e-004	1.4700e-003	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2229	0.2229	1.0000e-005	0.0000	0.2232
Total	**1.0000e-004**	**1.5000e-004**	**1.4700e-003**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2229**	**0.2229**	**1.0000e-005**	**0.0000**	**0.2232**

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					0.0122	0.0000	0.0122	3.3500e-003	0.0000	3.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0516	0.0351	6.0000e-005		1.4400e-003	1.4400e-003		1.4400e-003	1.4400e-003	0.0000	5.5316	5.5316	1.6700e-003	0.0000	5.5666
Total	**1.8400e-003**	**0.0516**	**0.0351**	**6.0000e-005**	**0.0122**	**1.4400e-003**	**0.0136**	**3.3500e-003**	**1.4400e-003**	**4.7900e-003**	**0.0000**	**5.5316**	**5.5316**	**1.6700e-003**	**0.0000**	**5.5666**

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-004	1.5000e-004	1.4700e-003	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2229	0.2229	1.0000e-005	0.0000	0.2232
Total	**1.0000e-004**	**1.5000e-004**	**1.4700e-003**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2229**	**0.2229**	**1.0000e-005**	**0.0000**	**0.2232**

3.4 Grading - 2016

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					0.0198	0.0000	0.0198	0.0101	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0110	0.1153	0.0782	9.0000e-005		6.6000e-003	6.6000e-003		6.0700e-003	6.0700e-003	0.0000	8.4199	8.4199	2.5400e-003	0.0000	8.4733
Total	**0.0110**	**0.1153**	**0.0782**	**9.0000e-005**	**0.0198**	**6.6000e-003**	**0.0264**	**0.0101**	**6.0700e-003**	**0.0162**	**0.0000**	**8.4199**	**8.4199**	**2.5400e-003**	**0.0000**	**8.4733**

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	4.1900e-003	0.0563	0.0460	1.4000e-004	3.1600e-003	7.4000e-004	3.9000e-003	8.7000e-004	6.8000e-004	1.5500e-003	0.0000	12.9387	12.9387	1.0000e-004	0.0000	12.9407
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	1.7000e-004	2.5000e-004	2.4600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3715	0.3715	2.0000e-005	0.0000	0.3720
Total	**4.3600e-003**	**0.0565**	**0.0484**	**1.4000e-004**	**3.5700e-003**	**7.4000e-004**	**4.3100e-003**	**9.8000e-004**	**6.8000e-004**	**1.6600e-003**	**0.0000**	**13.3102**	**13.3102**	**1.2000e-004**	**0.0000**	**13.3127**

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					8.9200e-003	0.0000	8.9200e-003	2.2800e-003	0.0000	2.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2900e-003	0.0788	0.0611	9.0000e-005		2.4700e-003	2.4700e-003		2.4700e-003	2.4700e-003	0.0000	8.4199	8.4199	2.5400e-003	0.0000	8.4732
Total	**3.2900e-003**	**0.0788**	**0.0611**	**9.0000e-005**	**8.9200e-003**	**2.4700e-003**	**0.0114**	**2.2800e-003**	**2.4700e-003**	**4.7500e-003**	**0.0000**	**8.4199**	**8.4199**	**2.5400e-003**	**0.0000**	**8.4732**

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	4.1900e-003	0.0563	0.0460	1.4000e-004	3.1600e-003	7.4000e-004	3.9000e-003	8.7000e-004	6.8000e-004	1.5500e-003	0.0000	12.9387	12.9387	1.0000e-004	0.0000	12.9407
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	1.7000e-004	2.5000e-004	2.4600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3715	0.3715	2.0000e-005	0.0000	0.3720
Total	**4.3600e-003**	**0.0565**	**0.0484**	**1.4000e-004**	**3.5700e-003**	**7.4000e-004**	**4.3100e-003**	**9.8000e-004**	**6.8000e-004**	**1.6600e-003**	**0.0000**	**13.3102**	**13.3102**	**1.2000e-004**	**0.0000**	**13.3127**

3.5 Trenching - 2016

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	1.8200e-003	0.0192	0.0146	2.0000e-005		1.1700e-003	1.1700e-003		1.0800e-003	1.0800e-003	0.0000	1.9845	1.9845	6.0000e-004	0.0000	1.9971
Total	**1.8200e-003**	**0.0192**	**0.0146**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**1.9845**	**1.9845**	**6.0000e-004**	**0.0000**	**1.9971**

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	5.0000e-005	7.0000e-005	6.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1032	0.1032	1.0000e-005	0.0000	0.1033
Total	**5.0000e-005**	**7.0000e-005**	**6.8000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1032**	**0.1032**	**1.0000e-005**	**0.0000**	**0.1033**

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	8.8000e-004	0.0189	0.0159	2.0000e-005		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004	0.0000	1.9845	1.9845	6.0000e-004	0.0000	1.9971
Total	**8.8000e-004**	**0.0189**	**0.0159**	**2.0000e-005**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**1.9845**	**1.9845**	**6.0000e-004**	**0.0000**	**1.9971**

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	5.0000e-005	7.0000e-005	6.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1032	0.1032	1.0000e-005	0.0000	0.1033
Total	**5.0000e-005**	**7.0000e-005**	**6.8000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1032**	**0.1032**	**1.0000e-005**	**0.0000**	**0.1033**

3.6 Building Construction - 2016

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	0.1399	1.0787	0.7649	1.2000e-003		0.0743	0.0743		0.0718	0.0718	0.0000	105.4398	105.4398	0.0183	0.0000	105.8241
Total	**0.1399**	**1.0787**	**0.7649**	**1.2000e-003**		**0.0743**	**0.0743**		**0.0718**	**0.0718**	**0.0000**	**105.4398**	**105.4398**	**0.0183**	**0.0000**	**105.8241**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2300e-003	0.0300	0.0245	8.0000e-005	1.6900e-003	3.9000e-004	2.0800e-003	4.6000e-004	3.6000e-004	8.2000e-004	0.0000	6.9006	6.9006	5.0000e-005	0.0000	6.9017
Vendor	0.0817	0.6896	0.9766	1.6400e-003	0.0441	0.0104	0.0545	0.0127	9.5400e-003	0.0222	0.0000	148.6251	148.6251	1.2000e-003	0.0000	148.6504

Worker	0.1107	0.1637	1.5802	3.1400e-003	0.2626	2.2400e-003	0.2648	0.0699	2.0600e-003	0.0719	0.0000	238.8565	238.8565	0.0135	0.0000	239.1405
Total	**0.1946**	**0.8833**	**2.5813**	**4.8600e-003**	**0.3084**	**0.0130**	**0.3214**	**0.0830**	**0.0120**	**0.0949**	**0.0000**	**394.3822**	**394.3822**	**0.0148**	**0.0000**	**394.6925**

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	0.0470	0.9931	0.7647	1.2000e-003		0.0395	0.0395		0.0395	0.0395	0.0000	105.4397	105.4397	0.0183	0.0000	105.8240
Total	**0.0470**	**0.9931**	**0.7647**	**1.2000e-003**		**0.0395**	**0.0395**		**0.0395**	**0.0395**	**0.0000**	**105.4397**	**105.4397**	**0.0183**	**0.0000**	**105.8240**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2300e-003	0.0300	0.0245	8.0000e-005	1.6900e-003	3.9000e-004	2.0800e-003	4.6000e-004	3.6000e-004	8.2000e-004	0.0000	6.9006	6.9006	5.0000e-005	0.0000	6.9017
Vendor	0.0817	0.6896	0.9766	1.6400e-003	0.0441	0.0104	0.0545	0.0127	9.5400e-003	0.0222	0.0000	148.6251	148.6251	1.2000e-003	0.0000	148.6504
Worker	0.1107	0.1637	1.5802	3.1400e-003	0.2626	2.2400e-003	0.2648	0.0699	2.0600e-003	0.0719	0.0000	238.8565	238.8565	0.0135	0.0000	239.1405
Total	**0.1946**	**0.8833**	**2.5813**	**4.8600e-003**	**0.3084**	**0.0130**	**0.3214**	**0.0830**	**0.0120**	**0.0949**	**0.0000**	**394.3822**	**394.3822**	**0.0148**	**0.0000**	**394.6925**

3.7 Paving - 2016

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	8.9800e-003	0.0917	0.0628	9.0000e-005		5.5300e-003	5.5300e-003		5.1000e-003	5.1000e-003	0.0000	8.6283	8.6283	2.5300e-003	0.0000	8.6816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.9800e-003**	**0.0917**	**0.0628**	**9.0000e-005**		**5.5300e-003**	**5.5300e-003**		**5.1000e-003**	**5.1000e-003**	**0.0000**	**8.6283**	**8.6283**	**2.5300e-003**	**0.0000**	**8.6816**

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	3.8000e-004	5.7000e-004	5.4600e-003	1.0000e-005	9.1000e-004	1.0000e-005	9.2000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	0.8256	0.8256	5.0000e-005	0.0000	0.8266
Total	**3.8000e-004**	**5.7000e-004**	**5.4600e-003**	**1.0000e-005**	**9.1000e-004**	**1.0000e-005**	**9.2000e-004**	**2.4000e-004**	**1.0000e-005**	**2.5000e-004**	**0.0000**	**0.8256**	**0.8256**	**5.0000e-005**	**0.0000**	**0.8266**

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	3.7100e-003	0.0793	0.0666	9.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003	0.0000	8.6283	8.6283	2.5300e-003	0.0000	8.6816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.7100e-003**	**0.0793**	**0.0666**	**9.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**	**0.0000**	**8.6283**	**8.6283**	**2.5300e-003**	**0.0000**	**8.6816**

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	3.8000e-004	5.7000e-004	5.4600e-003	1.0000e-005	9.1000e-004	1.0000e-005	9.2000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	0.8256	0.8256	5.0000e-005	0.0000	0.8266
Total	**3.8000e-004**	**5.7000e-004**	**5.4600e-003**	**1.0000e-005**	**9.1000e-004**	**1.0000e-005**	**9.2000e-004**	**2.4000e-004**	**1.0000e-005**	**2.5000e-004**	**0.0000**	**0.8256**	**0.8256**	**5.0000e-005**	**0.0000**	**0.8266**

3.8 Architectural Coating - 2016

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	0.5655					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5000e-004	4.0800e-003	3.5900e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	0.4952	0.4952	9.0000e-005	0.0000	0.4970
Total	**0.5660**	**4.0800e-003**	**3.5900e-003**	**1.0000e-005**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.4952**	**0.4952**	**9.0000e-005**	**0.0000**	**0.4970**

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	2.0000e-004	3.0000e-004	2.8900e-003	1.0000e-005	4.8000e-004	0.0000	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4376	0.4376	2.0000e-005	0.0000	0.4381
Total	**2.0000e-004**	**3.0000e-004**	**2.8900e-003**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**4.9000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4376**	**0.4376**	**2.0000e-005**	**0.0000**	**0.4381**

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	0.5655					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3000e-004	4.7400e-003	3.6900e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	0.4952	0.4952	9.0000e-005	0.0000	0.4970
Total	**0.5657**	**4.7400e-003**	**3.6900e-003**	**1.0000e-005**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**	**0.0000**	**0.4952**	**0.4952**	**9.0000e-005**	**0.0000**	**0.4970**

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	2.0000e-004	3.0000e-004	2.8900e-003	1.0000e-005	4.8000e-004	0.0000	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4376	0.4376	2.0000e-005	0.0000	0.4381
Total	**2.0000e-004**	**3.0000e-004**	**2.8900e-003**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**4.9000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4376**	**0.4376**	**2.0000e-005**	**0.0000**	**0.4381**

3.8 Architectural Coating - 2017

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	2.2619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9600e-003	0.0148	0.0143	2.0000e-005		1.0400e-003	1.0400e-003		1.0300e-003	1.0300e-003	0.0000	1.9712	1.9712	3.3000e-004	0.0000	1.9781
Total	**2.2639**	**0.0148**	**0.0143**	**2.0000e-005**		**1.0400e-003**	**1.0400e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**1.9712**	**1.9712**	**3.3000e-004**	**0.0000**	**1.9781**

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	7.2000e-004	1.0700e-003	0.0103	2.0000e-005	1.9200e-003	2.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.3000e-004	0.0000	1.6837	1.6837	9.0000e-005	0.0000	1.6856
Total	**7.2000e-004**	**1.0700e-003**	**0.0103**	**2.0000e-005**	**1.9200e-003**	**2.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.3000e-004**	**0.0000**	**1.6837**	**1.6837**	**9.0000e-005**	**0.0000**	**1.6856**

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	2.2619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	0.0190	0.0148	2.0000e-005		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	1.9712	1.9712	3.3000e-004	0.0000	1.9781
Total	**2.2629**	**0.0190**	**0.0148**	**2.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.7000e-004**	**7.7000e-004**	**0.0000**	**1.9712**	**1.9712**	**3.3000e-004**	**0.0000**	**1.9781**

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	7.2000e-004	1.0700e-003	0.0103	2.0000e-005	1.9200e-003	2.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.3000e-004	0.0000	1.6837	1.6837	9.0000e-005	0.0000	1.6856
Total	**7.2000e-004**	**1.0700e-003**	**0.0103**	**2.0000e-005**	**1.9200e-003**	**2.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.3000e-004**	**0.0000**	**1.6837**	**1.6837**	**9.0000e-005**	**0.0000**	**1.6856**

Maple & Main Commercial Construction

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	60.00	1000sqft	3.00	60,000.00	0
Enclosed Parking with Elevator	162.00	Space	0.00	64,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2018
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construciton only

Land Use - Based on project description and project size

Construction Phase - Based on provided list/schedule

Off-road Equipment - Based on provided list

Off-road Equipment - Based on provided list - avereage hours rounded up

Off-road Equipment - Based on provided list, rounded up

Off-road Equipment - Based on provided list

Grading -

Demolition - Based on provided list

Architectural Coating -

Construction Off-road Equipment Mitigation - Tier 2

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2

tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstructionPhase	NumDays	220.00	100.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	2.00
tblLandUse	LotAcreage	1.38	3.00
tblLandUse	LotAcreage	1.46	0.00
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	1.50
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	1.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblProjectCharacteristics	OperationalYear	2014	2018

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.7220	0.5511	0.5774	9.9000e-004	0.0484	0.0289	0.0774	0.0109	0.0276	0.0385	0.0000	85.3738	85.3738	8.8400e-003	0.0000	85.5594
Total	**0.7220**	**0.5511**	**0.5774**	**9.9000e-004**	**0.0484**	**0.0289**	**0.0774**	**0.0109**	**0.0276**	**0.0385**	**0.0000**	**85.3738**	**85.3738**	**8.8400e-003**	**0.0000**	**85.5594**

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					
2016	0.6899	0.4960	0.5656	9.9000e-004	0.0484	0.0152	0.0636	0.0109	0.0151	0.0259	0.0000	85.3737	85.3737	8.8400e-003	0.0000	85.5593
Total	**0.6899**	**0.4960**	**0.5656**	**9.9000e-004**	**0.0484**	**0.0152**	**0.0636**	**0.0109**	**0.0151**	**0.0259**	**0.0000**	**85.3737**	**85.3737**	**8.8400e-003**	**0.0000**	**85.5593**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.44**	**9.99**	**2.04**	**0.00**	**0.00**	**47.41**	**17.75**	**0.00**	**45.51**	**32.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/14/2016	5	10	
2	Building Construction	Building Construction	1/15/2016	6/2/2016	5	100	
3	Architectural Coating	Architectural Coating	6/3/2016	6/16/2016	5	10	
4	Paving	Paving	6/17/2016	6/20/2016	5	2	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 187,200; Non-Residential Outdoor: 62,400 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	4.00	162	0.38
Building Construction	Cranes	1	1.50	226	0.29
Building Construction	Forklifts	3	1.00	89	0.20
Architectural Coating	Aerial Lifts	1	2.00	62	0.31
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	4.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	1.00	97	0.37
Building Construction	Generator Sets	1	4.00	84	0.74
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Paving Equipment	1	8.00	130	0.36
Building Construction	Welders	1	1.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	173.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	46.00	20.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Paving	5	13.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	9.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Demolition - 2016

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					0.0187	0.0000	0.0187	2.8400e-003	0.0000	2.8400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3000e-003	0.0689	0.0537	7.0000e-005		3.8900e-003	3.8900e-003		3.7200e-003	3.7200e-003	0.0000	6.0298	6.0298	1.2700e-003	0.0000	6.0564
Total	**7.3000e-003**	**0.0689**	**0.0537**	**7.0000e-005**	**0.0187**	**3.8900e-003**	**0.0226**	**2.8400e-003**	**3.7200e-003**	**6.5600e-003**	**0.0000**	**6.0298**	**6.0298**	**1.2700e-003**	**0.0000**	**6.0564**

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	1.9300e-003	0.0260	0.0212	7.0000e-005	1.4600e-003	3.4000e-004	1.8000e-003	4.0000e-004	3.1000e-004	7.1000e-004	0.0000	5.9691	5.9691	4.0000e-005	0.0000	5.9700
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	2.3000e-004	2.1800e-003	0.0000	3.6000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3303	0.3303	2.0000e-005	0.0000	0.3307
Total	**2.0800e-003**	**0.0262**	**0.0234**	**7.0000e-005**	**1.8200e-003**	**3.4000e-004**	**2.1700e-003**	**5.0000e-004**	**3.1000e-004**	**8.1000e-004**	**0.0000**	**6.2993**	**6.2993**	**6.0000e-005**	**0.0000**	**6.3006**

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					0.0187	0.0000	0.0187	2.8400e-003	0.0000	2.8400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2500e-003	0.0548	0.0410	7.0000e-005		1.7400e-003	1.7400e-003		1.7400e-003	1.7400e-003	0.0000	6.0298	6.0298	1.2700e-003	0.0000	6.0564
Total	**2.2500e-003**	**0.0548**	**0.0410**	**7.0000e-005**	**0.0187**	**1.7400e-003**	**0.0205**	**2.8400e-003**	**1.7400e-003**	**4.5800e-003**	**0.0000**	**6.0298**	**6.0298**	**1.2700e-003**	**0.0000**	**6.0564**

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	1.9300e-003	0.0260	0.0212	7.0000e-005	1.4600e-003	3.4000e-004	1.8000e-003	4.0000e-004	3.1000e-004	7.1000e-004	0.0000	5.9691	5.9691	4.0000e-005	0.0000	5.9700
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	2.3000e-004	2.1800e-003	0.0000	3.6000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3303	0.3303	2.0000e-005	0.0000	0.3307
Total	**2.0800e-003**	**0.0262**	**0.0234**	**7.0000e-005**	**1.8200e-003**	**3.4000e-004**	**2.1700e-003**	**5.0000e-004**	**3.1000e-004**	**8.1000e-004**	**0.0000**	**6.2993**	**6.2993**	**6.0000e-005**	**0.0000**	**6.3006**

3.3 Building Construction - 2016

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	0.0369	0.3098	0.2043	3.2000e-004		0.0208	0.0208		0.0198	0.0198	0.0000	28.4979	28.4979	5.5600e-003	0.0000	28.6146
Total	**0.0369**	**0.3098**	**0.2043**	**3.2000e-004**		**0.0208**	**0.0208**		**0.0198**	**0.0198**	**0.0000**	**28.4979**	**28.4979**	**5.5600e-003**	**0.0000**	**28.6146**

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	0.0120	0.1011	0.1432	2.4000e-004	6.4700e-003	1.5200e-003	7.9900e-003	1.8600e-003	1.4000e-003	3.2600e-003	0.0000	21.7925	21.7925	1.8000e-004	0.0000	21.7962
Worker	8.8000e-003	0.0130	0.1256	2.5000e-004	0.0209	1.8000e-004	0.0211	5.5500e-003	1.6000e-004	5.7200e-003	0.0000	18.9896	18.9896	1.0800e-003	0.0000	19.0122
Total	**0.0208**	**0.1141**	**0.2688**	**4.9000e-004**	**0.0274**	**1.7000e-003**	**0.0290**	**7.4100e-003**	**1.5600e-003**	**8.9800e-003**	**0.0000**	**40.7822**	**40.7822**	**1.2600e-003**	**0.0000**	**40.8084**

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	0.0124	0.2701	0.2046	3.2000e-004		0.0103	0.0103		0.0103	0.0103	0.0000	28.4979	28.4979	5.5600e-003	0.0000	28.6146
Total	**0.0124**	**0.2701**	**0.2046**	**3.2000e-004**		**0.0103**	**0.0103**		**0.0103**	**0.0103**	**0.0000**	**28.4979**	**28.4979**	**5.5600e-003**	**0.0000**	**28.6146**

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	0.0120	0.1011	0.1432	2.4000e-004	6.4700e-003	1.5200e-003	7.9900e-003	1.8600e-003	1.4000e-003	3.2600e-003	0.0000	21.7925	21.7925	1.8000e-004	0.0000	21.7962
Worker	8.8000e-003	0.0130	0.1256	2.5000e-004	0.0209	1.8000e-004	0.0211	5.5500e-003	1.6000e-004	5.7200e-003	0.0000	18.9896	18.9896	1.0800e-003	0.0000	19.0122
Total	**0.0208**	**0.1141**	**0.2688**	**4.9000e-004**	**0.0274**	**1.7000e-003**	**0.0290**	**7.4100e-003**	**1.5600e-003**	**8.9800e-003**	**0.0000**	**40.7822**	**40.7822**	**1.2600e-003**	**0.0000**	**40.8084**

3.4 Architectural Coating - 2016

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	0.6508					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5300e-003	0.0170	0.0139	2.0000e-005		1.3600e-003	1.3600e-003		1.3500e-003	1.3500e-003	0.0000	1.8956	1.8956	2.6000e-004	0.0000	1.9011
Total	**0.6533**	**0.0170**	**0.0139**	**2.0000e-005**		**1.3600e-003**	**1.3600e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**1.8956**	**1.8956**	**2.6000e-004**	**0.0000**	**1.9011**

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	1.7000e-004	2.5000e-004	2.4600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3715	0.3715	2.0000e-005	0.0000	0.3720
Total	**1.7000e-004**	**2.5000e-004**	**2.4600e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3715**	**0.3715**	**2.0000e-005**	**0.0000**	**0.3720**

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	0.6508					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6000e-004	0.0177	0.0138	2.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	1.8956	1.8956	2.6000e-004	0.0000	1.9011
Total	**0.6516**	**0.0177**	**0.0138**	**2.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**1.8956**	**1.8956**	**2.6000e-004**	**0.0000**	**1.9011**

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	1.7000e-004	2.5000e-004	2.4600e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3715	0.3715	2.0000e-005	0.0000	0.3720
Total	**1.7000e-004**	**2.5000e-004**	**2.4600e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3715**	**0.3715**	**2.0000e-005**	**0.0000**	**0.3720**

3.5 Paving - 2016

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	1.4400e-003	0.0148	0.0101	1.0000e-005		9.0000e-004	9.0000e-004		8.3000e-004	8.3000e-004	0.0000	1.3902	1.3902	4.1000e-004	0.0000	1.3988
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.4400e-003**	**0.0148**	**0.0101**	**1.0000e-005**		**9.0000e-004**	**9.0000e-004**		**8.3000e-004**	**8.3000e-004**	**0.0000**	**1.3902**	**1.3902**	**4.1000e-004**	**0.0000**	**1.3988**

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	5.0000e-005	7.0000e-005	7.1000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1073	0.1073	1.0000e-005	0.0000	0.1075
Total	**5.0000e-005**	**7.0000e-005**	**7.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1073**	**0.1073**	**1.0000e-005**	**0.0000**	**0.1075**

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	6.0000e-004	0.0129	0.0108	1.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	1.3902	1.3902	4.1000e-004	0.0000	1.3988
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.0000e-004**	**0.0129**	**0.0108**	**1.0000e-005**		**4.5000e-004**	**4.5000e-004**		**4.5000e-004**	**4.5000e-004**	**0.0000**	**1.3902**	**1.3902**	**4.1000e-004**	**0.0000**	**1.3988**

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	5.0000e-005	7.0000e-005	7.1000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1073	0.1073	1.0000e-005	0.0000	0.1075
Total	**5.0000e-005**	**7.0000e-005**	**7.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1073**	**0.1073**	**1.0000e-005**	**0.0000**	**0.1075**

Project Name: **Maple Main - Commercial**

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size		**residential units**	3	**total project acres disturbed**	
		s.f. retail			
	60,000	**s.f. office/commerical**			
		s.f. other, specify:			
	182	**parking garage space**			
Construction Hours		**am to**		**pm**	

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	***e.g., 9/1/2015***	**Total work days:**	5			**Overall Import/Export Volumes**
		End Date:						
1	Concrete/Industrial Saws	81	0.73	8	10	16	80	**Demolition Volume**
1	Excavators	162	0.3819	8	5	8	40	Square footage of buildings to be demolished
1	Rubber-Tired Dozers	255	0.3953	8	5	8	40	(*or* total tons to be hauled)
	Other Equipment?							**38,060** square feet *or*
								_?_ Hauling volume (tons)
	Building - Exterior	**Start Date:**		**Total work days:**	100			**Cement Trucks? _?_ Total Round-Trips**
		End Date:						or _____cy
1	Cranes	226	0.2881	7	20	7	140	Electric? (Y/N) ___ Otherwise assumed diesel
1	Forklifts	89	0.201	5	20	5	100	Liquid Propane (LPG)? (Y/N) ___ Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	50	20	400	Or temporary line power? (Y/N) ___
1	Tractors/Loaders/Backhoes	97	0.3685	7	5	1.75	35	
1	Welders	46	0.45	8	10	4	80	
	Other Equipment?							
	Building - Interior/Architectural Coating	**Start Date:**		**Total work days:**	10			
		End Date:						
1	Air Compressors	78	0.48	8	10	8	80	
1	Aerial Lift	62	0.3	8	2	1.6	16	
	Other Equipment?							
	Paving	**Start Date:**		**Total work days:**	2			
		Start Date:						
1	Cement and Mortar Mixers	9	0.56	6	2	6	12	
1	Pavers	125	0.4154	8	2	8	16	**Asphalt? 5 cubic yards or ____ round trips?**
1	Paving Equipment	130	0.3551	6	2	6	12	
1	Rollers	80	0.3752	6	2	6	12	
1	Tractors/Loaders/Backhoes	97	0.3685	8	2	8	16	
	Other Equipment?							

Project Name: **Maple Main - Residential**

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size	235	residential units	3 total project acres disturbed
	2,187	s.f. retail	
		s.f. office/commerical	
		s.f. other, specify:	
	362	parking garage space	
Construction Hours	7:30 am	to	3:30 pm

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	*e.g., 9/1/2015*	**Total work days:**	20			**Overall Import/Export Volumes**
		End Date:						
1	Concrete/Industrial Saws	81	0.73	8	20	8	160	**Demolition Volume**
3	Excavators	162	0.3819	8	20	8	480	Square footage of buildings to be demolished
2	Rubber-Tired Dozers	255	0.3953	8	20	8	320	(*or* total tons to be hauled)
	Other Equipment?							**_?_** square feet *or*
								_?_ Hauling volume (tons)
	Site Preperation	**Start Date:**		**Total work days:**	3			Any pavement demolished and hauled? **Computed**
		End Date:						**1,600 cy or 160 round trips**
3	Rubber Tired Dozers	255	0.3953	8	3	8	72	
4	Tractors/Loaders/Backhoes	97	0.3685	8	3	8	96	
	Other Equipment?							
	Grading / Excavation	**Start Date:**		**Total work days:**	6			
		End Date:						**Soil Hauling Volume**
1	Excavators	162	0.3819	8	6	8	48	Export volume = **_?_** cubic yards?
1	Graders	174	0.4087	8	6	8	48	Import volume =**3,000**cubic yards?
1	Rubber Tired Dozers	255	0.3953	8	6	8	48	
3	Tractors/Loaders/Backhoes	97	0.3685	8	6	8	144	
	Other Equipment?							
	Trenching	**Start Date:**		**Total work days:**	5			
		End Date:						
1	Tractor/Loader/Backhoe	97	0.3685	8	5	8	40	
1	Excavators	162	0.3819	8	5	8		
	Other Equipment?							
	Building - Exterior	**Start Date:**		**Total work days:**	220			**Cement Trucks? 100 Total Round-Trips**
		End Date:						or 900cy
1	Cranes	226	0.2881	7	50	1.6	350	Electric? (Y/N) ___ Otherwise assumed diesel
3	Forklifts	89	0.201	3	100	1.4	900	Liquid Propane (LPG)? (Y/N) ___ Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	220	8.0	1760	Or temporary line power? (Y/N) ___
3	Tractors/Loaders/Backhoes	97	0.3685	7	40	1.3	840	
1	Welders	46	0.45	8	80	2.9	640	
	Other Equipment?							
Building -	**Interior/Architectural Coating**	**Start Date:**		**Total work days:**	10			
		End Date:						
1	Air Compressors	78	0.48	8	10	8	80	
1	Aerial Lift	62	0.3	8	10	8	80	
	Other Equipment?							
	Paving	**Start Date:**		**Total work days:**	10			
		Start Date:						
2	Cement and Mortar Mixers	9	0.56	6	10	6	120	
1	Pavers	125	0.4154	8	10	8	80	**Asphalt? ___ cubic yards or ____ round trips?**
2	Paving Equipment	130	0.3551	6	10	6	120	
2	Rollers	80	0.3752	6	10	6	120	
1	Tractors/Loaders/Backhoes	97	0.3685	8	10	8	80	
	Other Equipment?							

Attachment 2: CalEEMod Operational Output

Main & Maple Operational

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	235.00	Dwelling Unit	3.00	235,000.00	672
Strip Mall	2.30	1000sqft	0.05	2,300.00	0
General Office Building	1.65	1000sqft	0.04	1,650.00	0
Unenclosed Parking with Elevator	557.00	Space	0.00	222,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2017
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 - Based on 2013 PG&E certified rate

Land Use - Based on traffic trip generation table

Construction Phase - Operational analysis - non construction

Off-road Equipment - Operational analysis - non construction

Grading -

Demolition -

Trips and VMT -

Vehicle Trips - Used traffic trip generation and adjusted weekend proportionally

Woodstoves - No woodburing stoves or fireplaces

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	0.00
tblFireplaces	FireplaceWoodMass	92.40	0.00
tblFireplaces	NumberGas	129.25	162.00
tblFireplaces	NumberWood	32.90	0.00
tblLandUse	LotAcreage	6.18	3.00
tblLandUse	LotAcreage	5.01	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	7.16	4.30
tblVehicleTrips	ST_TR	2.37	2.50
tblVehicleTrips	SU_TR	6.07	3.64
tblVehicleTrips	SU_TR	0.98	1.10
tblVehicleTrips	WD_TR	6.59	3.91
tblVehicleTrips	WD_TR	11.01	11.65
tblVehicleTrips	WD_TR	44.32	42.70
tblWoodstoves	WoodstoveWoodMass	954.80	0.00

2.0 Emissions Summary

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	2.1432	0.0206	1.7678	9.0000e-005		0.0101	0.0101		0.0101	0.0101	0.0000	10.6485	10.6485	3.0400e-003	1.4000e-004	10.7566
Energy	0.0115	0.0981	0.0426	6.3000e-004		7.9200e-003	7.9200e-003		7.9200e-003	7.9200e-003	0.0000	557.7748	557.7748	0.0223	6.2400e-003	560.1756
Mobile	0.6616	1.8485	6.9486	0.0128	0.8358	0.0235	0.8593	0.2246	0.0216	0.2462	0.0000	1,002.2072	1,002.2072	0.0391	0.0000	1,003.0288
Waste						0.0000	0.0000		0.0000	0.0000	22.7451	0.0000	22.7451	1.3442	0.0000	50.9733
Water						0.0000	0.0000		0.0000	0.0000	5.0046	34.9491	39.9537	0.5156	0.0125	54.6453
Total	**2.8162**	**1.9671**	**8.7590**	**0.0136**	**0.8358**	**0.0416**	**0.8774**	**0.2246**	**0.0397**	**0.2643**	**27.7498**	**1,605.5796**	**1,633.3293**	**1.9242**	**0.0188**	**1,679.5796**

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	2.1432	0.0206	1.7678	9.0000e-005		0.0101	0.0101		0.0101	0.0101	0.0000	10.6485	10.6485	3.0400e-003	1.4000e-004	10.7566
Energy	0.0115	0.0981	0.0426	6.3000e-004		7.9200e-003	7.9200e-003		7.9200e-003	7.9200e-003	0.0000	557.7748	557.7748	0.0223	6.2400e-003	560.1756
Mobile	0.6616	1.8485	6.9486	0.0128	0.8358	0.0235	0.8593	0.2246	0.0216	0.2462	0.0000	1,002.2072	1,002.2072	0.0391	0.0000	1,003.0288
Waste						0.0000	0.0000		0.0000	0.0000	22.7451	0.0000	22.7451	1.3442	0.0000	50.9733
Water						0.0000	0.0000		0.0000	0.0000	5.0046	34.9491	39.9537	0.5155	0.0124	54.6373
Total	**2.8162**	**1.9671**	**8.7590**	**0.0136**	**0.8358**	**0.0416**	**0.8774**	**0.2246**	**0.0397**	**0.2643**	**27.7498**	**1,605.5796**	**1,633.3293**	**1.9241**	**0.0188**	**1,679.5716**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.11**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

Category	tons/yr										MT/yr					
Mitigated	0.6616	1.8485	6.9486	0.0128	0.8358	0.0235	0.8593	0.2246	0.0216	0.2462	0.0000	1,002.2072	1,002.2072	0.0391	0.0000	1,003.0288
Unmitigated	0.6616	1.8485	6.9486	0.0128	0.8358	0.0235	0.8593	0.2246	0.0216	0.2462	0.0000	1,002.2072	1,002.2072	0.0391	0.0000	1,003.0288

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	918.85	1,010.50	855.40	2,060,203	2,060,203
General Office Building	19.22	4.13	1.82	34,840	34,840
Strip Mall	98.21	96.69	46.99	139,644	139,644
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	1,036.28	1,111.32	904.20	2,234,687	2,234,687

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15
Unenclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.541334	0.061893	0.168156	0.111955	0.031019	0.004607	0.019268	0.049011	0.001782	0.003693	0.005649	0.000207	0.001427

5.0 Energy Detail

4.4 Fleet Mix

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					
NaturalGas Mitigated	0.0115	0.0981	0.0426	6.3000e-004		7.9200e-003	7.9200e-003		7.9200e-003	7.9200e-003	0.0000	113.4051	113.4051	2.1700e-003	2.0800e-003	114.0952
NaturalGas Unmitigated	0.0115	0.0981	0.0426	6.3000e-004		7.9200e-003	7.9200e-003		7.9200e-003	7.9200e-003	0.0000	113.4051	113.4051	2.1700e-003	2.0800e-003	114.0952
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	444.3697	444.3697	0.0201	4.1600e-003	446.0804
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	444.3697	444.3697	0.0201	4.1600e-003	446.0804

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.08061e+006	0.0112	0.0959	0.0408	6.1000e-004		7.7500e-003	7.7500e-003		7.7500e-003	7.7500e-003	0.0000	111.0294	111.0294	2.1300e-003	2.0400e-003	111.7051

General Office Building	33478.5	1.8000e-004	1.6400e-003	1.3800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.7865	1.7865	3.0000e-005	3.0000e-005	1.7974
Strip Mall	11040	6.0000e-005	5.4000e-004	4.5000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.5891	0.5891	1.0000e-005	1.0000e-005	0.5927
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0115**	**0.0981**	**0.0426**	**6.2000e-004**		**7.9100e-003**	**7.9100e-003**		**7.9100e-003**	**7.9100e-003**	**0.0000**	**113.4051**	**113.4051**	**2.1700e-003**	**2.0800e-003**	**114.0952**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.08061e+006	0.0112	0.0959	0.0408	6.1000e-004		7.7500e-003	7.7500e-003		7.7500e-003	7.7500e-003	0.0000	111.0294	111.0294	2.1300e-003	2.0400e-003	111.7051
General Office Building	33478.5	1.8000e-004	1.6400e-003	1.3800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.7865	1.7865	3.0000e-005	3.0000e-005	1.7974
Strip Mall	11040	6.0000e-005	5.4000e-004	4.5000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.5891	0.5891	1.0000e-005	1.0000e-005	0.5927
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0115**	**0.0981**	**0.0426**	**6.2000e-004**		**7.9100e-003**	**7.9100e-003**		**7.9100e-003**	**7.9100e-003**	**0.0000**	**113.4051**	**113.4051**	**2.1700e-003**	**2.0800e-003**	**114.0952**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	849607	247.1605	0.0112	2.3100e-003	248.1120
General Office Building	22902	6.6625	3.0000e-004	6.0000e-005	6.6881
Strip Mall	26703	7.7682	3.5000e-004	7.0000e-005	7.7981
Unenclosed Parking with Elevator	628296	182.7785	8.2600e-003	1.7100e-003	183.4822
Total		**444.3697**	**0.0201**	**4.1500e-003**	**446.0803**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	849607	247.1605	0.0112	2.3100e-003	248.1120
General Office Building	22902	6.6625	3.0000e-004	6.0000e-005	6.6881
Strip Mall	26703	7.7682	3.5000e-004	7.0000e-005	7.7981
Unenclosed Parking with Elevator	628296	182.7785	8.2600e-003	1.7100e-003	183.4822
Total		**444.3697**	**0.0201**	**4.1500e-003**	**446.0803**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.1432	0.0206	1.7678	9.0000e-005		0.0101	0.0101		0.0101	0.0101	0.0000	10.6485	10.6485	3.0400e-003	1.4000e-004	10.7566
Unmitigated	2.1432	0.0206	1.7678	9.0000e-005		0.0101	0.0101		0.0101	0.0101	0.0000	10.6485	10.6485	3.0400e-003	1.4000e-004	10.7566

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	0.2837					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8034					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.9000e-004	0.0000	4.0000e-005	0.0000		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7882	7.7882	1.5000e-004	1.4000e-004	7.8356
Landscaping	0.0554	0.0206	1.7677	9.0000e-005		9.5900e-003	9.5900e-003		9.5900e-003	9.5900e-003	0.0000	2.8603	2.8603	2.8900e-003	0.0000	2.9210
Total	**2.1432**	**0.0206**	**1.7678**	**9.0000e-005**		**0.0101**	**0.0101**		**0.0101**	**0.0101**	**0.0000**	**10.6485**	**10.6485**	**3.0400e-003**	**1.4000e-004**	**10.7566**

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	0.2837					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8034					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.9000e-004	0.0000	4.0000e-005	0.0000		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7882	7.7882	1.5000e-004	1.4000e-004	7.8356
Landscaping	0.0554	0.0206	1.7677	9.0000e-005		9.5900e-003	9.5900e-003		9.5900e-003	9.5900e-003	0.0000	2.8603	2.8603	2.8900e-003	0.0000	2.9210
Total	**2.1432**	**0.0206**	**1.7678**	**9.0000e-005**		**0.0101**	**0.0101**		**0.0101**	**0.0101**	**0.0000**	**10.6485**	**10.6485**	**3.0400e-003**	**1.4000e-004**	**10.7566**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	39.9537	0.5156	0.0125	54.6453

Mitigated	39.9537	0.5155	0.0124	54.6373

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	15.3112 / 9.65271	38.7875	0.5005	0.0121	53.0473
General Office Building	0.293261 / 0.17974	0.7377	9.5900e-003	2.3000e-004	1.0108
Strip Mall	0.170367 / 0.104418	0.4286	5.5700e-003	1.3000e-004	0.5872
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**39.9538**	**0.5156**	**0.0125**	**54.6453**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	15.3112 / 9.65271	38.7875	0.5004	0.0121	53.0396
General Office Building	0.293261 / 0.17974	0.7377	9.5800e-003	2.3000e-004	1.0106
Strip Mall	0.170367 / 0.104418	0.4286	5.5700e-003	1.3000e-004	0.5871
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**39.9538**	**0.5155**	**0.0124**	**54.6373**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	22.7451	1.3442	0.0000	50.9733
Unmitigated	22.7451	1.3442	0.0000	50.9733

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	108.1	21.9433	1.2968	0.0000	49.1764
General Office Building	1.53	0.3106	0.0184	0.0000	0.6960
Strip Mall	2.42	0.4912	0.0290	0.0000	1.1009
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**22.7451**	**1.3442**	**0.0000**	**50.9733**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	108.1	21.9433	1.2968	0.0000	49.1764
General Office Building	1.53	0.3106	0.0184	0.0000	0.6960
Strip Mall	2.42	0.4912	0.0290	0.0000	1.1009
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**22.7451**	**1.3442**	**0.0000**	**50.9733**

9.0 Operational Offroad

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

10.0 Vegetation

Attachment 3 Construction emission modeling and summary of dispersion model inputs and outputs

Maple & Main Apartments, Hayward, CA

DPM Construction Emissions and Modeling Emission Rates

Year	Construction Area	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2016	Commercial	0.0276	CON1_DPM	55.2	0.01680	2.12E-03	3,681	5.75E-07
2016	Residential	0.1130	CON2_DPM	226.0	0.06880	8.67E-03	11,943	7.26E-07
Total		***0.141***		***281***	***0.0856***	***0.0108***		

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

PM2.5 Fugitive Dust Construction Emissions for Modeling

Year	Construction Area	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2016	Commercial	CON1_FUG	0.0109	21.8	0.00664	8.36E-04	3,681	2.27E-07
2016	Residential	CON2_FUG	0.0357	71.4	0.02174	2.74E-03	11,943	2.29E-07
Total			***0.0466***	***93.2***	***0.0284***	***0.0036***		

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

Maple & Main Apartments, Hayward, CA - Project Construction Health Impact Summary

Maximum Impacts at Off-Site Residences

Construction Year	UNMITIGATED					
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index	Maximum Annual PM2.5 Concentration
	Exhaust PM2.5/DPM ($\mu g/m^3$)	Fugitive PM2.5 ($\mu g/m^3$)	Child	Adult	(-)	($\mu g/m^3$)
2016	0.1850	0.1193	30.38	0.53	0.037	0.304
Total	-	-	**30.4**	**0.5**	-	-
Maximum Annual	0.1850	0.1193	-	-	**0.04**	**0.30**

Maple & Main Apartments, Hayward, CA - 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 $(mg/kg\text{-}day)^{-1}$
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 ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**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 =	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

			Infant/Child - Exposure Information				Adult - Exposure Information					
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled DPM Conc (ug/m3)		Age	Adult		
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2016	0.1850	10	30.38	2016	0.1850	1	0.53	0.1193	0.304
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00		
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
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			0.0000	-	-		0.0000	1	0.00		
.•	.•		.•	.•	.•	.•	.•	.•	.•	.•		
.•	.•		.•	.•	.•	.•	.•	.•	.•	.•		
.•	.•		.•	.•	.•	.•	.•	.•	.•	.•		
65	1			0.0000	-	-		0.0000	1	0.00		
66	1			0.0000	-	-		0.0000	1	0.00		
67	1			0.0000	-	-		0.0000	1	0.00		
68	1			0.0000	-	-		0.0000	1	0.00		
69	1			0.0000	-	-		0.0000	1	0.00		
70	1			0.0000	-	-		0.0000	1	0.00		
Total Increased Cancer Risk						**30.4**				**0.5**		

* Third trimester of pregnancy

Mitigated TAC Output Residential Portion

Main Maple

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unenclosed Parking with Elevator	557.00	Space	0.00	222,800.00	0
Apartments Low Rise	235.00	Dwelling Unit	3.00	235,000.00	672
Strip Mall	2.18	1000sqft	0.00	2,183.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Use PG&E 2013 Certified Rate

Land Use - Not including Medical Office Building - estimated at 1 acre is size

Construction Phase - Based on default with trenching phase added

Off-road Equipment - Added equipment for interior work

Off-road Equipment - Based on hours provided

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Added trenching equipment

Trips and VMT - Added demolition and cement truck trips. No asphalt expected besides patching.

Demolition - Estimate of area provided in 9/23/2015 email

Grading - Information provided on list/schedule

Architectural Coating -

Construction Off-road Equipment Mitigation - Tier 2 equipment and BMPs for fugitive dust control

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	PhaseEndDate	12/13/2016	12/14/2016
tblConstructionPhase	PhaseEndDate	2/17/2016	2/9/2016
tblConstructionPhase	PhaseStartDate	2/10/2016	2/11/2016
tblConstructionPhase	PhaseStartDate	2/11/2016	2/3/2016
tblGrading	MaterialImported	0.00	3,000.00
tblLandUse	LandUseSquareFeet	2,180.00	2,183.00
tblLandUse	LotAcreage	5.01	0.00
tblLandUse	LotAcreage	14.69	3.00
tblLandUse	LotAcreage	0.05	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	8.00	1.40
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	8.00	2.90
tblProjectCharacteristics	CO2IntensityFactor	641.35	429
tblProjectCharacteristics	OperationalYear	2014	2018
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripNumber	177.00	337.00
tblTripsAndVMT	HaulingTripNumber	0.00	200.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00

tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.9211	2.1142	2.6527	2.5700e-003	0.0944	0.1176	0.2120	0.0357	0.1119	0.1476	0.0000	224.5680	224.5680	0.0383	0.0000	225.3719
2017	2.2644	0.0151	0.0167	2.0000e-005	1.6000e-004	1.0400e-003	1.2000e-003	4.0000e-005	1.0300e-003	1.0700e-003	0.0000	2.1495	2.1495	3.5000e-004	0.0000	2.1568
Total	**3.1855**	**2.1292**	**2.6693**	**2.5900e-003**	**0.0946**	**0.1186**	**0.2132**	**0.0357**	**0.1130**	**0.1487**	**0.0000**	**226.7175**	**226.7175**	**0.0386**	**0.0000**	**227.5286**

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					
2016	0.7299	0.3934	2.4864	2.5700e-003	0.0581	5.1200e-003	0.0632	0.0140	4.9200e-003	0.0189	0.0000	224.5678	224.5678	0.0383	0.0000	225.3717
2017	2.2628	4.5900e-003	0.0172	2.0000e-005	1.6000e-004	3.0000e-005	1.9000e-004	4.0000e-005	3.0000e-005	8.0000e-005	0.0000	2.1495	2.1495	3.5000e-004	0.0000	2.1568
Total	**2.9927**	**0.3980**	**2.5036**	**2.5900e-003**	**0.0582**	**5.1500e-003**	**0.0634**	**0.0140**	**4.9500e-003**	**0.0190**	**0.0000**	**226.7173**	**226.7173**	**0.0386**	**0.0000**	**227.5284**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**6.05**	**81.31**	**6.21**	**0.00**	**38.45**	**95.66**	**70.28**	**60.66**	**95.62**	**87.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/28/2016	5	20	
2	Site Preparation	Site Preparation	1/29/2016	2/2/2016	5	3	
3	Grading	Grading	2/3/2016	2/10/2016	5	6	
4	Trenching	Trenching	2/3/2016	2/9/2016	5	5	
5	Building Construction	Building Construction	2/11/2016	12/14/2016	5	220	
6	Paving	Paving	12/15/2016	12/28/2016	5	10	
7	Architectural Coating	Architectural Coating	12/29/2016	1/11/2017	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 475,875; Residential Outdoor: 158,625; Non-Residential Indoor: 337,475; Non-Residential Outdoor: 112,492

OffRoad Equipment

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	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Trenching	Excavators	1	8.00	162	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	1.60	226	0.29
Building Construction	Forklifts	3	1.40	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	1.30	97	0.37
Building Construction	Welders	1	2.90	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	6.00	130	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Aerial Lifts	1	8.00	62	0.31
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	337.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	375.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	263.00	62.00	200.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	53.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2016

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					0.0192	0.0000	0.0192	2.9100e-003	0.0000	2.9100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0429	0.4566	0.3503	4.0000e-004		0.0229	0.0229		0.0214	0.0214	0.0000	37.0974	37.0974	0.0101	0.0000	37.3092
Total	**0.0429**	**0.4566**	**0.3503**	**4.0000e-004**	**0.0192**	**0.0229**	**0.0421**	**2.9100e-003**	**0.0214**	**0.0243**	**0.0000**	**37.0974**	**37.0974**	**0.0101**	**0.0000**	**37.3092**

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	1.9600e-003	6.2500e-003	0.0324	1.0000e-005	1.5000e-004	4.0000e-005	1.9000e-004	4.0000e-005	4.0000e-005	8.0000e-005	0.0000	0.8363	0.8363	1.0000e-005	0.0000	0.8366
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	4.0000e-004	1.5000e-004	1.8700e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1285	0.1285	1.0000e-005	0.0000	0.1288
Total	**2.3600e-003**	**6.4000e-003**	**0.0343**	**1.0000e-005**	**2.6000e-004**	**4.0000e-005**	**3.0000e-004**	**7.0000e-005**	**4.0000e-005**	**1.1000e-004**	**0.0000**	**0.9648**	**0.9648**	**2.0000e-005**	**0.0000**	**0.9653**

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					8.6400e-003	0.0000	8.6400e-003	6.5000e-004	0.0000	6.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7400e-003	0.0205	0.2383	4.0000e-004		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	37.0973	37.0973	0.0101	0.0000	37.3092
Total	**4.7400e-003**	**0.0205**	**0.2383**	**4.0000e-004**	**8.6400e-003**	**6.3000e-004**	**9.2700e-003**	**6.5000e-004**	**6.3000e-004**	**1.2800e-003**	**0.0000**	**37.0973**	**37.0973**	**0.0101**	**0.0000**	**37.3092**

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	1.9600e-003	6.2500e-003	0.0324	1.0000e-005	1.5000e-004	4.0000e-005	1.9000e-004	4.0000e-005	4.0000e-005	8.0000e-005	0.0000	0.8363	0.8363	1.0000e-005	0.0000	0.8366
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	4.0000e-004	1.5000e-004	1.8700e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1285	0.1285	1.0000e-005	0.0000	0.1288
Total	**2.3600e-003**	**6.4000e-003**	**0.0343**	**1.0000e-005**	**2.6000e-004**	**4.0000e-005**	**3.0000e-004**	**7.0000e-005**	**4.0000e-005**	**1.1000e-004**	**0.0000**	**0.9648**	**0.9648**	**2.0000e-005**	**0.0000**	**0.9653**

3.3 Site Preparation - 2016

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	7.6200e-003	0.0820	0.0617	6.0000e-005		4.4100e-003	4.4100e-003		4.0600e-003	4.0600e-003	0.0000	5.5316	5.5316	1.6700e-003	0.0000	5.5666
Total	**7.6200e-003**	**0.0820**	**0.0617**	**6.0000e-005**	**0.0271**	**4.4100e-003**	**0.0315**	**0.0149**	**4.0600e-003**	**0.0190**	**0.0000**	**5.5316**	**5.5316**	**1.6700e-003**	**0.0000**	**5.5666**

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	7.0000e-005	3.0000e-005	3.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0231	0.0231	0.0000	0.0000	0.0232
Total	**7.0000e-005**	**3.0000e-005**	**3.4000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0231**	**0.0231**	**0.0000**	**0.0000**	**0.0232**

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					0.0122	0.0000	0.0122	3.3500e-003	0.0000	3.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	3.0900e-003	0.0319	6.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	5.5316	5.5316	1.6700e-003	0.0000	5.5666
Total	**7.1000e-004**	**3.0900e-003**	**0.0319**	**6.0000e-005**	**0.0122**	**1.0000e-004**	**0.0123**	**3.3500e-003**	**1.0000e-004**	**3.4500e-003**	**0.0000**	**5.5316**	**5.5316**	**1.6700e-003**	**0.0000**	**5.5666**

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	7.0000e-005	3.0000e-005	3.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0231	0.0231	0.0000	0.0000	0.0232
Total	**7.0000e-005**	**3.0000e-005**	**3.4000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0231**	**0.0231**	**0.0000**	**0.0000**	**0.0232**

3.4 Grading - 2016

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					0.0198	0.0000	0.0198	0.0101	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0110	0.1153	0.0782	9.0000e-005		6.6000e-003	6.6000e-003		6.0700e-003	6.0700e-003	0.0000	8.4199	8.4199	2.5400e-003	0.0000	8.4733
Total	**0.0110**	**0.1153**	**0.0782**	**9.0000e-005**	**0.0198**	**6.6000e-003**	**0.0264**	**0.0101**	**6.0700e-003**	**0.0162**	**0.0000**	**8.4199**	**8.4199**	**2.5400e-003**	**0.0000**	**8.4733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1900e-003	6.9600e-003	0.0360	1.0000e-005	1.6000e-004	5.0000e-005	2.1000e-004	4.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.9306	0.9306	1.0000e-005	0.0000	0.9309
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	1.2000e-004	4.0000e-005	5.6000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0386	0.0386	0.0000	0.0000	0.0386
Total	**2.3100e-003**	**7.0000e-003**	**0.0366**	**1.0000e-005**	**1.9000e-004**	**5.0000e-005**	**2.4000e-004**	**5.0000e-005**	**4.0000e-005**	**1.0000e-004**	**0.0000**	**0.9692**	**0.9692**	**1.0000e-005**	**0.0000**	**0.9695**

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					8.9200e-003	0.0000	8.9200e-003	2.2800e-003	0.0000	2.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	4.7100e-003	0.0590	9.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	8.4199	8.4199	2.5400e-003	0.0000	8.4732
Total	**1.0900e-003**	**4.7100e-003**	**0.0590**	**9.0000e-005**	**8.9200e-003**	**1.5000e-004**	**9.0700e-003**	**2.2800e-003**	**1.5000e-004**	**2.4300e-003**	**0.0000**	**8.4199**	**8.4199**	**2.5400e-003**	**0.0000**	**8.4732**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1900e-003	6.9600e-003	0.0360	1.0000e-005	1.6000e-004	5.0000e-005	2.1000e-004	4.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.9306	0.9306	1.0000e-005	0.0000	0.9309
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	1.2000e-004	4.0000e-005	5.6000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0386	0.0386	0.0000	0.0000	0.0386
Total	**2.3100e-003**	**7.0000e-003**	**0.0366**	**1.0000e-005**	**1.9000e-004**	**5.0000e-005**	**2.4000e-004**	**5.0000e-005**	**4.0000e-005**	**1.0000e-004**	**0.0000**	**0.9692**	**0.9692**	**1.0000e-005**	**0.0000**	**0.9695**

3.5 Trenching - 2016

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	1.8200e-003	0.0192	0.0146	2.0000e-005		1.1700e-003	1.1700e-003		1.0800e-003	1.0800e-003	0.0000	1.9813	1.9813	6.0000e-004	0.0000	1.9938
Total	**1.8200e-003**	**0.0192**	**0.0146**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**1.9813**	**1.9813**	**6.0000e-004**	**0.0000**	**1.9938**

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	1.0000e-005	1.6000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0107	0.0107	0.0000	0.0000	0.0107
Total	**3.0000e-005**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0107**	**0.0107**	**0.0000**	**0.0000**	**0.0107**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.6000e-004	1.1200e-003	0.0159	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.9813	1.9813	6.0000e-004	0.0000	1.9938
Total	**2.6000e-004**	**1.1200e-003**	**0.0159**	**2.0000e-005**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**1.9813**	**1.9813**	**6.0000e-004**	**0.0000**	**1.9938**

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	1.0000e-005	1.6000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0107	0.0107	0.0000	0.0000	0.0107
Total	**3.0000e-005**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0107**	**0.0107**	**0.0000**	**0.0000**	**0.0107**

3.6 Building Construction - 2016

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	0.1399	1.0787	0.7649	1.2000e-003		0.0743	0.0743		0.0718	0.0718	0.0000	105.4398	105.4398	0.0183	0.0000	105.8241
Total	**0.1399**	**1.0787**	**0.7649**	**1.2000e-003**		**0.0743**	**0.0743**		**0.0718**	**0.0718**	**0.0000**	**105.4398**	**105.4398**	**0.0183**	**0.0000**	**105.8241**

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	1.1700e-003	3.7100e-003	0.0192	1.0000e-005	9.0000e-005	3.0000e-005	1.1000e-004	2.0000e-005	2.0000e-005	5.0000e-005	0.0000	0.4963	0.4963	1.0000e-005	0.0000	0.4965
Vendor	0.0601	0.2207	0.8637	3.4000e-004	6.1900e-003	1.8300e-003	8.0200e-003	1.7900e-003	1.6800e-003	3.4800e-003	0.0000	29.5886	29.5886	3.6000e-004	0.0000	29.5961
Worker	0.0764	0.0286	0.3605	3.3000e-004	0.0214	4.0000e-004	0.0218	5.7400e-003	3.7000e-004	6.1100e-003	0.0000	24.7897	24.7897	2.0500e-003	0.0000	24.8327
Total	**0.1377**	**0.2530**	**1.2434**	**6.8000e-004**	**0.0277**	**2.2600e-003**	**0.0300**	**7.5500e-003**	**2.0700e-003**	**9.6400e-003**	**0.0000**	**54.8746**	**54.8746**	**2.4200e-003**	**0.0000**	**54.9253**

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	0.0136	0.0915	0.7545	1.2000e-003		1.7000e-003	1.7000e-003		1.7000e-003	1.7000e-003	0.0000	105.4397	105.4397	0.0183	0.0000	105.8240
Total	**0.0136**	**0.0915**	**0.7545**	**1.2000e-003**		**1.7000e-003**	**1.7000e-003**		**1.7000e-003**	**1.7000e-003**	**0.0000**	**105.4397**	**105.4397**	**0.0183**	**0.0000**	**105.8240**

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	1.1700e-003	3.7100e-003	0.0192	1.0000e-005	9.0000e-005	3.0000e-005	1.1000e-004	2.0000e-005	2.0000e-005	5.0000e-005	0.0000	0.4963	0.4963	1.0000e-005	0.0000	0.4965
Vendor	0.0601	0.2207	0.8637	3.4000e-004	6.1900e-003	1.8300e-003	8.0200e-003	1.7900e-003	1.6800e-003	3.4800e-003	0.0000	29.5886	29.5886	3.6000e-004	0.0000	29.5961
Worker	0.0764	0.0286	0.3605	3.3000e-004	0.0214	4.0000e-004	0.0218	5.7400e-003	3.7000e-004	6.1100e-003	0.0000	24.7897	24.7897	2.0500e-003	0.0000	24.8327
Total	**0.1377**	**0.2530**	**1.2434**	**6.8000e-004**	**0.0277**	**2.2600e-003**	**0.0300**	**7.5500e-003**	**2.0700e-003**	**9.6400e-003**	**0.0000**	**54.8746**	**54.8746**	**2.4200e-003**	**0.0000**	**54.9253**

3.7 Paving - 2016

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	8.9800e-003	0.0917	0.0628	9.0000e-005		5.5300e-003	5.5300e-003		5.1000e-003	5.1000e-003	0.0000	8.6283	8.6283	2.5300e-003	0.0000	8.6816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.9800e-003**	**0.0917**	**0.0628**	**9.0000e-005**		**5.5300e-003**	**5.5300e-003**		**5.1000e-003**	**5.1000e-003**	**0.0000**	**8.6283**	**8.6283**	**2.5300e-003**	**0.0000**	**8.6816**

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	2.6000e-004	1.0000e-004	1.2500e-003	0.0000	7.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0857	0.0857	1.0000e-005	0.0000	0.0858
Total	**2.6000e-004**	**1.0000e-004**	**1.2500e-003**	**0.0000**	**7.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0857**	**0.0857**	**1.0000e-005**	**0.0000**	**0.0858**

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	1.0800e-003	4.6800e-003	0.0666	9.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	8.6283	8.6283	2.5300e-003	0.0000	8.6816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0800e-003**	**4.6800e-003**	**0.0666**	**9.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**8.6283**	**8.6283**	**2.5300e-003**	**0.0000**	**8.6816**

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	2.6000e-004	1.0000e-004	1.2500e-003	0.0000	7.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0857	0.0857	1.0000e-005	0.0000	0.0858
Total	**2.6000e-004**	**1.0000e-004**	**1.2500e-003**	**0.0000**	**7.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0857**	**0.0857**	**1.0000e-005**	**0.0000**	**0.0858**

3.8 Architectural Coating - 2016

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	0.5655					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5000e-004	4.0900e-003	3.6000e-003	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	0.4961	0.4961	9.0000e-005	0.0000	0.4979
Total	**0.5660**	**4.0900e-003**	**3.6000e-003**	**1.0000e-005**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**0.4961**	**0.4961**	**9.0000e-005**	**0.0000**	**0.4979**

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	1.4000e-004	5.0000e-005	6.6000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0454	0.0454	0.0000	0.0000	0.0455
Total	**1.4000e-004**	**5.0000e-005**	**6.6000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**0.0000**	**0.0455**

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	0.5655					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-005	1.1000e-003	3.7000e-003	1.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.4961	0.4961	9.0000e-005	0.0000	0.4979
Total	**0.5656**	**1.1000e-003**	**3.7000e-003**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.4961**	**0.4961**	**9.0000e-005**	**0.0000**	**0.4979**

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	1.4000e-004	5.0000e-005	6.6000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0454	0.0454	0.0000	0.0000	0.0455
Total	**1.4000e-004**	**5.0000e-005**	**6.6000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**0.0000**	**0.0455**

3.8 Architectural Coating - 2017

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	2.2619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9700e-003	0.0149	0.0143	2.0000e-005		1.0400e-003	1.0400e-003		1.0300e-003	1.0300e-003	0.0000	1.9747	1.9747	3.3000e-004	0.0000	1.9817
Total	**2.2639**	**0.0149**	**0.0143**	**2.0000e-005**		**1.0400e-003**	**1.0400e-003**		**1.0300e-003**	**1.0300e-003**	**0.0000**	**1.9747**	**1.9747**	**3.3000e-004**	**0.0000**	**1.9817**

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	5.1000e-004	1.9000e-004	2.3700e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1748	0.1748	1.0000e-005	0.0000	0.1751
Total	**5.1000e-004**	**1.9000e-004**	**2.3700e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1748**	**0.1748**	**1.0000e-005**	**0.0000**	**0.1751**

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	2.2619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-004	4.4000e-003	0.0148	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.9747	1.9747	3.3000e-004	0.0000	1.9817
Total	**2.2623**	**4.4000e-003**	**0.0148**	**2.0000e-005**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**1.9747**	**1.9747**	**3.3000e-004**	**0.0000**	**1.9817**

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	5.1000e-004	1.9000e-004	2.3700e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1748	0.1748	1.0000e-005	0.0000	0.1751
Total	**5.1000e-004**	**1.9000e-004**	**2.3700e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1748**	**0.1748**	**1.0000e-005**	**0.0000**	**0.1751**

Attachment 4: SR-238 Traffic Emissions and Risk Calculations

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
NB238-4L	Northbound SR-238	N	4	274	68	20.6	3.4	430	25

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB238-4L

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0287	9	6.73%	29	0.0258	17	6.11%	26	0.0255
2	1.61%	7	0.0284	10	5.14%	22	0.0288	18	4.50%	19	0.0241
3	1.94%	8	0.0283	11	6.91%	30	0.0259	19	4.18%	18	0.0238
4	2.83%	12	0.0290	12	7.24%	31	0.0260	20	3.19%	14	0.0224
5	1.70%	7	0.0288	13	6.84%	29	0.0258	21	2.21%	10	0.0287
6	2.66%	11	0.0290	14	6.85%	29	0.0258	22	2.80%	12	0.0288
7	4.45%	19	0.0289	15	6.14%	26	0.0255	23	1.64%	7	0.0286
8	5.86%	25	0.0253	16	4.95%	21	0.0247	24	0.80%	3	0.0284
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB238-4L	Northbound SR-238	N	4	274	68	20.6	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB238-4L

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0233	9	7.07%	1142	0.0214	17	7.37%	1191	0.0211
2	0.37%	60	0.0245	10	4.28%	693	0.0222	18	8.25%	1334	0.0208
3	0.31%	50	0.0263	11	4.61%	745	0.0217	19	5.78%	934	0.0208
4	0.22%	35	0.0371	12	5.85%	946	0.0216	20	4.35%	703	0.0207
5	0.47%	75	0.0247	13	6.17%	998	0.0214	21	3.29%	531	0.0212
6	0.85%	137	0.0251	14	6.04%	976	0.0214	22	3.31%	535	0.0215
7	3.79%	612	0.0220	15	7.07%	1143	0.0212	23	2.47%	399	0.0212
8	7.89%	1276	0.0210	16	7.20%	1164	0.0209	24	1.89%	306	0.0209
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB238-4L	Northbound SR-238	N	4	274	68	20.6	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB238-4L

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street Traffic Data and PM2.5 & TOG Emission Factors - 25 mph

Analysis Year = ***2020***

Vehicle Type	2014 Caltrans Number Vehicles (veh/day)	2020 Number Vehicles (veh/day)	2020 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	20,637	21,875	1.11%	243	25	0.0203	0.0203	0.0026	0.0293	0.046
LDT	8,795	9,323	0.16%	15	25	0.0222	0.0203	0.0025	0.0394	0.091
MDT	521	552	10.18%	56	25	0.0272	0.0281	0.0071	0.0835	0.179
HDT	547	579	94.31%	546	25	0.0290	0.0721	0.0269	0.2223	0.104
Total	30,500	32,330	-	861	25	-	-		-	-
Mix Avg Emission Factor						**0.02634**	**0.02138**	**0.00308**	**0.03338**	**0.06134**
Increase From 2014		1.06								
Vehicles/Direction		16,165		430						
Avg Vehicles/Hour/Direction		**674**		**18**						

Traffic Data Year = ***2014***

Caltrans 2013 Truck % & 2014 Highway AADTs		Total*	Truck by Axle			
	Total	Truck	2	3	4	5
SR 238 B Jct Rte 580	30,500	1,068	521	188	44	315
			48.80%	17.60%	4.10%	29.50%
	Percent of Total Vehicles	3.50%	1.71%	0.62%	0.14%	1.03%

Traffic Increase per Year (%) = ***1.00%***

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Traffic Data and Entrained PM2.5 Road Dust Emission Factors

$E_{2.5} = [k(sL)^{0.91} \times (W)^{1.02} \times (1-P/4N) \times 453.59$

where:

$E_{2.5}$ = $PM_{2.5}$ emission factor (g/VMT)

k = particle size multiplier (g/VMT) [$k_{PM2.5} = k_{PM10} \times (0.0686/0.4572) = 1.0 \times 0.15 = 0.15$ g/VMT][a]

sL = roadway specific silt loading (g/m^2)

W = average weight of vehicles on road (Bay Area default = 2.4 tons)[a]

P = number of days with at least 0.01 inch of precipitation in the annual averaging period

N = number of days in the annual averaging period (default = 365)

Notes: [a] CARB 2014, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust (Revised and updated, April 2014)

Road Type	Silt Loading (g/m^2)	Average Weight (tons)	County	No. Days ppt > 0.01"	$PM_{2.5}$ Emission Factor (g/VMT)
Major	0.032	2.4	Alameda	61	0.01531

SFBAAB[a]

Road Type	Silt Loading (g/m^2)
Collector	0.032
Freeway	0.02
Local	0.32
Major	0.032

SFBAAB[a]

County	>0.01 inch precipitation
Alameda	61
Contra Costa	60
Marin	66
Napa	68
San Francisco	67
San Mateo	60
Santa Clara	64
Solano	54
Sonoma	69

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd)
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
NB-SR238	Northbound SR-238	N	3	454	56	17.0	3.4	430	25
SB-SR238	Southbound SR-238	S	3	295	56	17.0	3.4	430	25

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB & SB SR-238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0287	9	6.73%	29	0.0258	17	6.11%	26	0.0255
2	1.61%	7	0.0284	10	5.14%	22	0.0288	18	4.50%	19	0.0241
3	1.94%	8	0.0283	11	6.91%	30	0.0259	19	4.18%	18	0.0238
4	2.83%	12	0.0290	12	7.24%	31	0.0260	20	3.19%	14	0.0224
5	1.70%	7	0.0288	13	6.84%	29	0.0258	21	2.21%	10	0.0287
6	2.66%	11	0.0290	14	6.85%	29	0.0258	22	2.80%	12	0.0288
7	4.45%	19	0.0289	15	6.14%	26	0.0255	23	1.64%	7	0.0286
8	5.86%	25	0.0253	16	4.95%	21	0.0247	24	0.80%	3	0.0284
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd)
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-SR238	Northbound SR-238	N	3	454	56	17.0	1.3	16,165	25
SB-SR238	Southbound SR-238	S	3	295	56	17.0	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB & SB SR-238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0233	9	7.07%	1142	0.0214	17	7.37%	1191	0.0211
2	0.37%	60	0.0245	10	4.28%	693	0.0222	18	8.25%	1334	0.0208
3	0.31%	50	0.0263	11	4.61%	745	0.0217	19	5.78%	934	0.0208
4	0.22%	35	0.0371	12	5.85%	946	0.0216	20	4.35%	703	0.0207
5	0.47%	75	0.0247	13	6.17%	998	0.0214	21	3.29%	531	0.0212
6	0.85%	137	0.0251	14	6.04%	976	0.0214	22	3.31%	535	0.0215
7	3.79%	612	0.0220	15	7.07%	1143	0.0212	23	2.47%	399	0.0212
8	7.89%	1276	0.0210	16	7.20%	1164	0.0209	24	1.89%	306	0.0209
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd)
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-SR238	Northbound SR-238	N	3	454	56	17.0	1.3	16,165	variable
SB-SR238	Southbound SR-238	S	3	295	56	17.0	1.3	16,165	variable

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB & SB SR-238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (A Street) Southbound on A Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	4	350	68	20.6	3.4	430	25

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0287	9	6.73%	29	0.0258	17	6.11%	26	0.0255
2	1.61%	7	0.0284	10	5.14%	22	0.0288	18	4.50%	19	0.0241
3	1.94%	8	0.0283	11	6.91%	30	0.0259	19	4.18%	18	0.0238
4	2.83%	12	0.0290	12	7.24%	31	0.0260	20	3.19%	14	0.0224
5	1.70%	7	0.0288	13	6.84%	29	0.0258	21	2.21%	10	0.0287
6	2.66%	11	0.0290	14	6.85%	29	0.0258	22	2.80%	12	0.0288
7	4.45%	19	0.0289	15	6.14%	26	0.0255	23	1.64%	7	0.0286
8	5.86%	25	0.0253	16	4.95%	21	0.0247	24	0.80%	3	0.0284
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (A Street) Southbound on A Street
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	4	350	68	20.6	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0233	9	7.07%	1142	0.0214	17	7.37%	1191	0.0211
2	0.37%	60	0.0245	10	4.28%	693	0.0222	18	8.25%	1334	0.0208
3	0.31%	50	0.0263	11	4.61%	745	0.0217	19	5.78%	934	0.0208
4	0.22%	35	0.0371	12	5.85%	946	0.0216	20	4.35%	703	0.0207
5	0.47%	75	0.0247	13	6.17%	998	0.0214	21	3.29%	531	0.0212
6	0.85%	137	0.0251	14	6.04%	976	0.0214	22	3.31%	535	0.0215
7	3.79%	612	0.0220	15	7.07%	1143	0.0212	23	2.47%	399	0.0212
8	7.89%	1276	0.0210	16	7.20%	1164	0.0209	24	1.89%	306	0.0209
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (A Street) Southbound on A Street
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)	Average Vehicles per Hour
SB-SR238	Northbound SR-238	S	4	350	68	20.6	1.3	16,165	25	674

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Southbound North of A Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	2	171	44	13.3	3.4	430	15

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0404	9	6.73%	29	0.0373	17	6.11%	26	0.0369
2	1.61%	7	0.0413	10	5.14%	22	0.0400	18	4.50%	19	0.0361
3	1.94%	8	0.0415	11	6.91%	30	0.0374	19	4.18%	18	0.0357
4	2.83%	12	0.0399	12	7.24%	31	0.0374	20	3.19%	14	0.0342
5	1.70%	7	0.0403	13	6.84%	29	0.0373	21	2.21%	10	0.0401
6	2.66%	11	0.0397	14	6.85%	29	0.0373	22	2.80%	12	0.0399
7	4.45%	19	0.0396	15	6.14%	26	0.0370	23	1.64%	7	0.0403
8	5.86%	25	0.0367	16	4.95%	21	0.0363	24	0.80%	3	0.0402
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Southbound North of A Street
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)	Average Vehicles per Hour
SB-SR238	Northbound SR-238	S	2	171	44	13.3	1.3	16,165	15	674

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0262	9	7.07%	1142	0.0240	17	7.37%	1191	0.0237
2	0.37%	60	0.0277	10	4.28%	693	0.0249	18	8.25%	1334	0.0233
3	0.31%	50	0.0302	11	4.61%	745	0.0244	19	5.78%	934	0.0233
4	0.22%	35	0.0419	12	5.85%	946	0.0242	20	4.35%	703	0.0232
5	0.47%	75	0.0279	13	6.17%	998	0.0239	21	3.29%	531	0.0238
6	0.85%	137	0.0282	14	6.04%	976	0.0240	22	3.31%	535	0.0241
7	3.79%	612	0.0246	15	7.07%	1143	0.0237	23	2.47%	399	0.0237
8	7.89%	1276	0.0235	16	7.20%	1164	0.0234	24	1.89%	306	0.0234
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Southbound North of A Street
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	2	171	44	13.3	1.3	16,165	15

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA

SR-238 (Foothill Blvd) Southbound North of A Street Traffic Data and PM2.5 & TOG Emission Factors - 15 mph

Analysis Year = ***2020***

Vehicle Type	2014 Caltrans Number Vehicles (veh/day)	2020 Number Vehicles (veh/day)	2020 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	20,637	21,875	1.11%	243	15	0.0323	0.0226	0.0049	0.0554	0.046
LDT	8,795	9,323	0.16%	15	15	0.0353	0.0226	0.0048	0.0737	0.091
MDT	521	552	10.18%	56	15	0.0444	0.0396	0.0187	0.1710	0.179
HDT	547	579	94.31%	546	15	0.0397	0.0817	0.0365	0.3838	0.104
Total	30,500	32,330	-	861	15	-	-		-	-
Mix Avg Emission Factor						**0.03784**	**0.02396**	**0.00566**	**0.06300**	**0.06134**
Increase From 2014		1.06								
Vehicles/Direction		16,165		430						
Avg Vehicles/Hour/Direction		**674**		**18**						

Traffic Data Year = ***2014***

Caltrans 2013 Truck % & 2014 Highway AADTs		Total*	Truck by Axle			
	Total	Truck	2	3	4	5
SR 238 B Jct Rte 580	30,500	1,068	521	188	44	315
			48.80%	17.60%	4.10%	29.50%
Percent of Total Vehicles		3.50%	1.71%	0.62%	0.14%	1.03%

Traffic Increase per Year (%) = ***1.00%***

CAL3QHCR Risk Modeling Parameters and Maximum Cancer Risks
Maple & Main Hayward, CA - DPM, PM2.5 & TOG TACs
SR-238 Traffic Impacts - 1.5 meter Receptor Heights

Receptor Information

Number of Receptors	126
Receptor Height =	1.5 meters (first residential floor level)
Receptor distances =	at proposed residential locations

Meteorological Conditions

BAAQMD Fremontt Hourly Met Data	1990 - 1994
Land Use Classification	suburban
Wind speed =	variable
Wind direction =	variable

Cancer Risk Calculation Method

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air (µg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Inhalation Dose Factors

Exposure Type	Value[1] DBR (L/kg BW-day)	A (-)	Exposure (hr/day)	Exposure (days/week)	Exposure (week/year)	EF (days/yr)	ED (Years)	AT (days)
Residential (70-Year)	302	1	24	7	50	350	70	25,550

[1] Default values recommended by OEHHA& Bay Area Air Quality Management District

Cancer Risk (per million) = Inhalation Dose x CRAF x CPF x 10^6
= URF x Cair

Where: CPF = Cancer potency factor (mg/kg-day)$^{-1}$
CRAF = Cancer Risk Adjustment Factor
URF =Unit risk factor (cancer risk per µg/m^3)

Unit Risk Factors (risk per million per µg/m^3) for DPM and Organic TACs from Vehicle TOG Exhaust & Evaporative Emissions

Exposure Type	CPF (mg/kg-day)$^{-1}$	CRAF (-)	Unit Risk *DPM*	Exhaust TOG TACs	Evaporative TOG TACs
Residential (70-Yr Exposure)	1.10E+00	1.7	541.5	3.1	0.182

MEI Cancer Risk Calculations - Receptor Height = 1.5 m

Meteorological Data Year	Maximum DPM Concentration (µg/m^3)	Maximum Gas Veh Exhaust TOG Concentration (µg/m^3)	Maximum Gas Veh Evaporative TOG Concentration (µg/m^3)
	2020	2020	2020
1990	0.0013	0.0827	0.0903
1991	0.0013	0.0849	0.0927
1992	0.0014	0.0939	0.1025
1993	0.0016	0.1038	0.1133
1994	0.0015	0.0985	0.1075
Average	0.0014	0.0928	0.1013
Cancer Risk[a]	0.77	0.29	0.02
	Total Risk From All TACs =		**1.1 per million**

PM2.5 Concentrations

Meteorological Data Year	Maximum Total PM2.5 Concentration (µg/m^3)	Maximum Road Dust PM2.5 Concentration (µg/m^3)	Maximum Vehicle PM2.5 Concentration (µg/m^3)
	2020	2020	2020
1990	0.0533	0.0218	0.0315
1991	0.0547	0.0224	0.0323
1992	0.0606	0.0249	0.0357
1993	0.0670	0.0275	0.0395
1994	0.0635	0.0261	0.0375
Average	0.0598	0.0245	0.0353
Cancer Risk[a]	**Max = 0.07**	**Max = 0.03**	**Max = 0.04**

Notes:
Receptor Heights = 1.5 m
Maximum DPM & PM2.5 concentrations occur at a residential receptor in the eastern corner of the site closest to SR-238
a Cancer risk (per million) calculated assuming constant 70-year exposure to concentration for year of analysis.

Attachment 4: SR-238 Traffic Emissions and Risk Calculations

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
NB238-4L	Northbound SR-238	N	4	274	68	20.6	3.4	430	25

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB238-4L

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0287	9	6.73%	29	0.0258	17	6.11%	26	0.0255
2	1.61%	7	0.0284	10	5.14%	22	0.0288	18	4.50%	19	0.0241
3	1.94%	8	0.0283	11	6.91%	30	0.0259	19	4.18%	18	0.0238
4	2.83%	12	0.0290	12	7.24%	31	0.0260	20	3.19%	14	0.0224
5	1.70%	7	0.0288	13	6.84%	29	0.0258	21	2.21%	10	0.0287
6	2.66%	11	0.0290	14	6.85%	29	0.0258	22	2.80%	12	0.0288
7	4.45%	19	0.0289	15	6.14%	26	0.0255	23	1.64%	7	0.0286
8	5.86%	25	0.0253	16	4.95%	21	0.0247	24	0.80%	3	0.0284
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB238-4L	Northbound SR-238	N	4	274	68	20.6	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB238-4L

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0233	9	7.07%	1142	0.0214	17	7.37%	1191	0.0211
2	0.37%	60	0.0245	10	4.28%	693	0.0222	18	8.25%	1334	0.0208
3	0.31%	50	0.0263	11	4.61%	745	0.0217	19	5.78%	934	0.0208
4	0.22%	35	0.0371	12	5.85%	946	0.0216	20	4.35%	703	0.0207
5	0.47%	75	0.0247	13	6.17%	998	0.0214	21	3.29%	531	0.0212
6	0.85%	137	0.0251	14	6.04%	976	0.0214	22	3.31%	535	0.0215
7	3.79%	612	0.0220	15	7.07%	1143	0.0212	23	2.47%	399	0.0212
8	7.89%	1276	0.0210	16	7.20%	1164	0.0209	24	1.89%	306	0.0209
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB238-4L	Northbound SR-238	N	4	274	68	20.6	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB238-4L

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Northbound South of A Street Traffic Data and PM2.5 & TOG Emission Factors - 25 mph

Analysis Year = ***2020***

Vehicle Type	2014 Caltrans Number Vehicles (veh/day)	2020 Number Vehicles (veh/day)	2020 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	20,637	21,875	1.11%	243	25	0.0203	0.0203	0.0026	0.0293	0.046
LDT	8,795	9,323	0.16%	15	25	0.0222	0.0203	0.0025	0.0394	0.091
MDT	521	552	10.18%	56	25	0.0272	0.0281	0.0071	0.0835	0.179
HDT	547	579	94.31%	546	25	0.0290	0.0721	0.0269	0.2223	0.104
Total	30,500	32,330	-	861	25	-	-		-	-
Mix Avg Emission Factor						**0.02634**	**0.02138**	**0.00308**	**0.03338**	**0.06134**
Increase From 2014		1.06								
Vehicles/Direction		16,165		430						
Avg Vehicles/Hour/Direction		**674**		**18**						

Traffic Data Year = ***2014***

Caltrans 2013 Truck % & 2014 Highway AADTs		Total*	Truck by Axle			
	Total	Truck	2	3	4	5
SR 238 B Jct Rte 580	30,500	1,068	521	188	44	315
			48.80%	17.60%	4.10%	29.50%
	Percent of Total Vehicles	3.50%	1.71%	0.62%	0.14%	1.03%

Traffic Increase per Year (%) = ***1.00%***

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Traffic Data and Entrained PM2.5 Road Dust Emission Factors

$E_{2.5} = [k(sL)^{0.91} \times (W)^{1.02} \times (1-P/4N) \times 453.59$

where:

$E_{2.5}$ = $PM_{2.5}$ emission factor (g/VMT)

k = particle size multiplier (g/VMT) [$k_{PM2.5} = k_{PM10} \times (0.0686/0.4572) = 1.0 \times 0.15 = 0.15$ g/VMT][a]

sL = roadway specific silt loading (g/m^2)

W = average weight of vehicles on road (Bay Area default = 2.4 tons)[a]

P = number of days with at least 0.01 inch of precipitation in the annual averaging period

N = number of days in the annual averaging period (default = 365)

Notes: [a] CARB 2014, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust (Revised and updated, April 2014)

Road Type	Silt Loading (g/m^2)	Average Weight (tons)	County	No. Days ppt > 0.01"	$PM_{2.5}$ Emission Factor (g/VMT)
Major	0.032	2.4	Alameda	61	0.01531

SFBAAB[a]

Road Type	Silt Loading (g/m^2)
Collector	0.032
Freeway	0.02
Local	0.32
Major	0.032

SFBAAB[a]

County	>0.01 inch precipitation
Alameda	61
Contra Costa	60
Marin	66
Napa	68
San Francisco	67
San Mateo	60
Santa Clara	64
Solano	54
Sonoma	69

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd)
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
NB-SR238	Northbound SR-238	N	3	454	56	17.0	3.4	430	25
SB-SR238	Southbound SR-238	S	3	295	56	17.0	3.4	430	25

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB & SB SR-238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0287	9	6.73%	29	0.0258	17	6.11%	26	0.0255
2	1.61%	7	0.0284	10	5.14%	22	0.0288	18	4.50%	19	0.0241
3	1.94%	8	0.0283	11	6.91%	30	0.0259	19	4.18%	18	0.0238
4	2.83%	12	0.0290	12	7.24%	31	0.0260	20	3.19%	14	0.0224
5	1.70%	7	0.0288	13	6.84%	29	0.0258	21	2.21%	10	0.0287
6	2.66%	11	0.0290	14	6.85%	29	0.0258	22	2.80%	12	0.0288
7	4.45%	19	0.0289	15	6.14%	26	0.0255	23	1.64%	7	0.0286
8	5.86%	25	0.0253	16	4.95%	21	0.0247	24	0.80%	3	0.0284
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd)
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-SR238	Northbound SR-238	N	3	454	56	17.0	1.3	16,165	25
SB-SR238	Southbound SR-238	S	3	295	56	17.0	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB & SB SR-238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0233	9	7.07%	1142	0.0214	17	7.37%	1191	0.0211
2	0.37%	60	0.0245	10	4.28%	693	0.0222	18	8.25%	1334	0.0208
3	0.31%	50	0.0263	11	4.61%	745	0.0217	19	5.78%	934	0.0208
4	0.22%	35	0.0371	12	5.85%	946	0.0216	20	4.35%	703	0.0207
5	0.47%	75	0.0247	13	6.17%	998	0.0214	21	3.29%	531	0.0212
6	0.85%	137	0.0251	14	6.04%	976	0.0214	22	3.31%	535	0.0215
7	3.79%	612	0.0220	15	7.07%	1143	0.0212	23	2.47%	399	0.0212
8	7.89%	1276	0.0210	16	7.20%	1164	0.0209	24	1.89%	306	0.0209
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd)
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-SR238	Northbound SR-238	N	3	454	56	17.0	1.3	16,165	variable
SB-SR238	Southbound SR-238	S	3	295	56	17.0	1.3	16,165	variable

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB & SB SR-238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (A Street) Southbound on A Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	4	350	68	20.6	3.4	430	25

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0287	9	6.73%	29	0.0258	17	6.11%	26	0.0255
2	1.61%	7	0.0284	10	5.14%	22	0.0288	18	4.50%	19	0.0241
3	1.94%	8	0.0283	11	6.91%	30	0.0259	19	4.18%	18	0.0238
4	2.83%	12	0.0290	12	7.24%	31	0.0260	20	3.19%	14	0.0224
5	1.70%	7	0.0288	13	6.84%	29	0.0258	21	2.21%	10	0.0287
6	2.66%	11	0.0290	14	6.85%	29	0.0258	22	2.80%	12	0.0288
7	4.45%	19	0.0289	15	6.14%	26	0.0255	23	1.64%	7	0.0286
8	5.86%	25	0.0253	16	4.95%	21	0.0247	24	0.80%	3	0.0284
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (A Street) Southbound on A Street
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	4	350	68	20.6	1.3	16,165	25

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0233	9	7.07%	1142	0.0214	17	7.37%	1191	0.0211
2	0.37%	60	0.0245	10	4.28%	693	0.0222	18	8.25%	1334	0.0208
3	0.31%	50	0.0263	11	4.61%	745	0.0217	19	5.78%	934	0.0208
4	0.22%	35	0.0371	12	5.85%	946	0.0216	20	4.35%	703	0.0207
5	0.47%	75	0.0247	13	6.17%	998	0.0214	21	3.29%	531	0.0212
6	0.85%	137	0.0251	14	6.04%	976	0.0214	22	3.31%	535	0.0215
7	3.79%	612	0.0220	15	7.07%	1143	0.0212	23	2.47%	399	0.0212
8	7.89%	1276	0.0210	16	7.20%	1164	0.0209	24	1.89%	306	0.0209
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (A Street) Southbound on A Street
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)	Average Vehicles per Hour
SB-SR238	Northbound SR-238	S	4	350	68	20.6	1.3	16,165	25	674

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Southbound North of A Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	2	171	44	13.3	3.4	430	15

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.70%	12	0.0404	9	6.73%	29	0.0373	17	6.11%	26	0.0369
2	1.61%	7	0.0413	10	5.14%	22	0.0400	18	4.50%	19	0.0361
3	1.94%	8	0.0415	11	6.91%	30	0.0374	19	4.18%	18	0.0357
4	2.83%	12	0.0399	12	7.24%	31	0.0374	20	3.19%	14	0.0342
5	1.70%	7	0.0403	13	6.84%	29	0.0373	21	2.21%	10	0.0401
6	2.66%	11	0.0397	14	6.85%	29	0.0373	22	2.80%	12	0.0399
7	4.45%	19	0.0396	15	6.14%	26	0.0370	23	1.64%	7	0.0403
8	5.86%	25	0.0367	16	4.95%	21	0.0363	24	0.80%	3	0.0402
								Total		430	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Southbound North of A Street
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)	Average Vehicles per Hour
SB-SR238	Northbound SR-238	S	2	171	44	13.3	1.3	16,165	15	674

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0262	9	7.07%	1142	0.0240	17	7.37%	1191	0.0237
2	0.37%	60	0.0277	10	4.28%	693	0.0249	18	8.25%	1334	0.0233
3	0.31%	50	0.0302	11	4.61%	745	0.0244	19	5.78%	934	0.0233
4	0.22%	35	0.0419	12	5.85%	946	0.0242	20	4.35%	703	0.0232
5	0.47%	75	0.0279	13	6.17%	998	0.0239	21	3.29%	531	0.0238
6	0.85%	137	0.0282	14	6.04%	976	0.0240	22	3.31%	535	0.0241
7	3.79%	612	0.0246	15	7.07%	1143	0.0237	23	2.47%	399	0.0237
8	7.89%	1276	0.0235	16	7.20%	1164	0.0234	24	1.89%	306	0.0234
								Total		16,165	

Maple & Main Apartments, Hayward, CA
SR-238 (Foothill Blvd) Southbound North of A Street
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
SB-SR238	Northbound SR-238	S	2	171	44	13.3	1.3	16,165	15

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB-SR238

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.10%	179	0.0153	9	7.07%	1142	0.0153	17	7.37%	1191	0.0153
2	0.37%	60	0.0153	10	4.28%	693	0.0153	18	8.25%	1334	0.0153
3	0.31%	50	0.0153	11	4.61%	745	0.0153	19	5.78%	934	0.0153
4	0.22%	35	0.0153	12	5.85%	946	0.0153	20	4.35%	703	0.0153
5	0.47%	75	0.0153	13	6.17%	998	0.0153	21	3.29%	531	0.0153
6	0.85%	137	0.0153	14	6.04%	976	0.0153	22	3.31%	535	0.0153
7	3.79%	612	0.0153	15	7.07%	1143	0.0153	23	2.47%	399	0.0153
8	7.89%	1276	0.0153	16	7.20%	1164	0.0153	24	1.89%	306	0.0153
								Total		16,165	

Maple & Main Apartments, Hayward, CA

SR-238 (Foothill Blvd) Southbound North of A Street Traffic Data and PM2.5 & TOG Emission Factors - 15 mph

Analysis Year = ***2020***

Vehicle Type	2014 Caltrans Number Vehicles (veh/day)	2020 Number Vehicles (veh/day)	2020 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	20,637	21,875	1.11%	243	15	0.0323	0.0226	0.0049	0.0554	0.046
LDT	8,795	9,323	0.16%	15	15	0.0353	0.0226	0.0048	0.0737	0.091
MDT	521	552	10.18%	56	15	0.0444	0.0396	0.0187	0.1710	0.179
HDT	547	579	94.31%	546	15	0.0397	0.0817	0.0365	0.3838	0.104
Total	30,500	32,330	-	861	15	-	-		-	-
Mix Avg Emission Factor						**0.03784**	**0.02396**	**0.00566**	**0.06300**	**0.06134**
Increase From 2014		1.06								
Vehicles/Direction		16,165		430						
Avg Vehicles/Hour/Direction		**674**		**18**						

Traffic Data Year = ***2014***

Caltrans 2013 Truck % & 2014 Highway AADTs		Total*	Truck by Axle			
	Total	Truck	2	3	4	5
SR 238 B Jct Rte 580	30,500	1,068	521	188	44	315
			48.80%	17.60%	4.10%	29.50%
Percent of Total Vehicles		3.50%	1.71%	0.62%	0.14%	1.03%

Traffic Increase per Year (%) = ***1.00%***

Maple & Main, Hayward, CA - SR-238 DPM, PM2.5 & TOG TACs
CAL3QHCR Risk Modeling Parameters and Maximum Concentrations
On-Site Residential Receptors - 1.5 meter Receptor Heights

Receptor Information

Number of Receptors	126
Receptor Height =	1.5 meters (first residential floor level)
Receptor distances =	at proposed residential locations

Meteorological Conditions

BAAQMD Union City Hourly Met Data	1990 - 1994
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations - Receptor Height = 1.5 m

Meteorological Data Year	DPM Concentration ($\mu g/m^3$) 2020	Gas Veh Exhaust TOG Concentration ($\mu g/m^3$) 2020	Gas Veh Evaporative TOG Concentration ($\mu g/m^3$) 2020
1990	0.0013	0.0827	0.0903
1991	0.0013	0.0849	0.0927
1992	0.0014	0.0939	0.1025
1993	0.0016	0.1038	0.1133
1994	0.0015	0.0985	0.1075
Average	**0.0014**	**0.0928**	**0.1013**
Maximum	**0.0016**	**0.1038**	**0.1133**

PM2.5 Concentrations

Meteorological Data Year	Maximum Total PM2.5 Concentration (µg/m3) 2020	Maximum Road Dust PM2.5 Concentration (µg/m3) 2020	Maximum Vehicle PM2.5 Concentration (µg/m3) 2020
1990	0.0533	0.0218	0.0315
1991	0.0547	0.0224	0.0323
1992	0.0606	0.0249	0.0357
1993	0.0670	0.0275	0.0395
1994	0.0635	0.0261	0.0375
Average	**0.0598**	**0.0245**	**0.0353**
Maximum	**0.07**	**0.03**	**0.04**

Notes:

Maximum DPM & PM2.5 concentrations occur at a residential receptor in the eastern corner of the site closest to SR-238

Maple & Main, Hayward, CA - SR-238 Cancer Risks
On-Site Residential Receptors - 1.5 meter Receptor Heights
30-Year Residential Exposure

Cancer Risk Calculation Method

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

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

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 ($\mu g/m^3$)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10^{-6} = Conversion factor

Values

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

	Infant/Child			Adult
Age -->	3rd Trimester	0 - <2	2 - <16	16 - 30
Parameter				
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
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

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information				Cancer Risk (per million)			
				Age	Annual Conc (ug/m3)						
Exposure Year	Year	Exposure Duration (years)	Age	Sensitivity Factor	DPM	TOG Exhaust	TOG Evaporative	DPM	TOG Exhaust	TOG Evaporative	Total
0	2017	0.25	-0.25 - 0*	10	0.0014	0.0928	0.1013	0.02	0.007	0.000	0.03
1	2017	1	1	10	0.0014	0.0928	0.1013	0.23	0.087	0.006	0.33
2	2018	1	2	10	0.0014	0.0928	0.1013	0.23	0.087	0.006	0.33
3	2019	1	3	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.05
4	2020	1	4	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.05
5	2021	1	5	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.05
6	2022	1	6	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.05
7	2023	1	7	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
8	2024	1	8	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
9	2025	1	9	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
10	2026	1	10	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
11	2027	1	11	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
12	2028	1	12	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
13	2029	1	13	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
14	2030	1	14	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
15	2031	1	15	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
16	2032	1	16	3	0.0014	0.0928	0.1013	0.04	0.014	0.001	0.051
17	2033	1	17	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
18	2034	1	18	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
19	2035	1	19	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
20	2036	1	20	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
21	2037	1	21	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
22	2038	1	22	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
23	2039	1	23	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
24	2040	1	24	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
25	2041	1	25	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
26	2042	1	26	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
27	2043	1	27	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
28	2044	1	28	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
29	2045	1	29	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
30	2046	1	30	1	0.0014	0.0928	0.1013	0.00	0.002	0.000	0.006
Total Increased Cancer Risk								1.1	0.4	0.0	**1.5**

* Third trimester of pregnancy