

Construction Emissions Summary

Criteria Pollutants	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year	tons per year									
	Middlefield Road Utility Joint Trench									
2018	0.02	0.20	0.13	0.00	0.01	0.01	0.02	0.00	0.01	0.01
2019	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year	Middlefield Road Roadway Renovation									
2018	0.07	0.81	0.42	0.00	0.27	0.04	0.31	0.13	0.03	0.16
2019	0.21	2.43	1.68	0.00	0.31	0.09	0.41	0.14	0.09	0.23
Total (tons)	0.30	3.44	2.24	0.01	0.60	0.14	0.74	0.27	0.13	0.40
Average lbs/day	2.29	26.06	16.96	0.04	4.51	1.07	5.58	2.05	1.00	3.05

GHG Emissions	
Year	MT CO ₂ e
Middlefield Road Utility Joint Trench	
2018	29.15
2019	1.38
Middlefield Road Roadway Renovation	
2018	90.64
2019	401.43
Total Emissions	
2018	119.79
2019	402.80
Total Construction-Related GHG Emissions	522.59
Amortized Emissions	17.42

22 working days per month
 12 month period
 264 working days
 2000 lbs /ton

Middlefield Road Utility Joint Trench - San Mateo County, Annual

**Middlefield Road Utility Joint Trench
San Mateo County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.23	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	70
Climate Zone	5			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Middlefield Road Utility Joint Trench - San Mateo County, Annual

Project Characteristics - Construction emissions for utility trenching activities.

Land Use - Acreage based on Road Utility Joint Trench: 3,300 linear ft x 3 ft wide.

Construction Phase - Schedule based on total 33 days using SMAQMD Road Emissions Model Data Entry Worksheet (2016)

Off-road Equipment - Based on typical work crew in Air Quality Calcs spreadsheet

Off-road Equipment - Other construction equipment to account for jackhammer

Trips and VMT - Worker trips included in Roadway Renovation run. Haul truck trips assumes 10 cy capacity trucks. Vendor truck trips to account for concrete truck trips.

Grading - Default acres graded.

Energy Use -

Off-road Equipment - Project specific info.

Off-road Equipment - Project specific info.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	13.00
tblConstructionPhase	NumDays	1.00	4.00
tblGrading	MaterialExported	0.00	968.00
tblGrading	MaterialImported	0.00	733.00
tblLandUse	LotAcreage	0.00	0.23
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching

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tbloffRoadEquipment	UsageHours	8.00	6.00
tbloffRoadEquipment	UsageHours	8.00	6.00
tbloffRoadEquipment	UsageHours	7.00	6.00
tbloffRoadEquipment	UsageHours	7.00	6.00
tbloffRoadEquipment	UsageHours	7.00	6.00
tbloffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripNumber	212.00	324.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00

2.0 Emissions Summary

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-1-2018	1-31-2019	0.2286	0.2286
		Highest	0.2286	0.2286

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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

3.0 Construction Detail

Construction Phase

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	11/1/2018	11/6/2018	5	4	
2	Grading	Grading	11/8/2018	11/26/2018	5	13	
3	Trenching	Trenching	12/5/2018	12/19/2018	5	11	
4	Paving	Paving	12/27/2018	1/2/2019	5	5	

Acres of Grading (Site Preparation Phase): 2

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	6.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Concrete/Industrial Saws	1	6.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Dumpers/Tenders	1	6.00	16	0.38
Trenching	Other Construction Equipment	1	6.00	172	0.42
Trenching	Pumps	1	6.00	84	0.74
Trenching	Skid Steer Loaders	1	6.00	65	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Generator Sets	1	6.00	84	0.74
Paving	Pavers	1	6.00	130	0.42
Paving	Rollers	1	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	0.00	0.00	324.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	4	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	0.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Middlefield Road Utility Joint Trench - San Mateo County, Annual

3.3 Grading - 2018

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					4.9900e-003	0.0000	4.9900e-003	2.7000e-003	0.0000	2.7000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0700e-003	0.0549	0.0445	7.0000e-005		3.6100e-003	3.6100e-003		3.4300e-003	3.4300e-003	0.0000	6.0216	6.0216	1.2600e-003	0.0000	6.0532
Total	6.0700e-003	0.0549	0.0445	7.0000e-005	4.9900e-003	3.6100e-003	8.6000e-003	2.7000e-003	3.4300e-003	6.1300e-003	0.0000	6.0216	6.0216	1.2600e-003	0.0000	6.0532

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	1.7200e-003	0.0598	0.0216	1.4000e-004	2.7100e-003	2.5000e-004	2.9600e-003	7.4000e-004	2.4000e-004	9.8000e-004	0.0000	13.9246	13.9246	1.6600e-003	0.0000	13.9660
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	1.7200e-003	0.0598	0.0216	1.4000e-004	2.7100e-003	2.5000e-004	2.9600e-003	7.4000e-004	2.4000e-004	9.8000e-004	0.0000	13.9246	13.9246	1.6600e-003	0.0000	13.9660

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3.3 Grading - 2018

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					4.9900e-003	0.0000	4.9900e-003	2.7000e-003	0.0000	2.7000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0700e-003	0.0549	0.0445	7.0000e-005		3.6100e-003	3.6100e-003		3.4300e-003	3.4300e-003	0.0000	6.0216	6.0216	1.2600e-003	0.0000	6.0532
Total	6.0700e-003	0.0549	0.0445	7.0000e-005	4.9900e-003	3.6100e-003	8.6000e-003	2.7000e-003	3.4300e-003	6.1300e-003	0.0000	6.0216	6.0216	1.2600e-003	0.0000	6.0532

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	1.7200e-003	0.0598	0.0216	1.4000e-004	2.7100e-003	2.5000e-004	2.9600e-003	7.4000e-004	2.4000e-004	9.8000e-004	0.0000	13.9246	13.9246	1.6600e-003	0.0000	13.9660
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	1.7200e-003	0.0598	0.0216	1.4000e-004	2.7100e-003	2.5000e-004	2.9600e-003	7.4000e-004	2.4000e-004	9.8000e-004	0.0000	13.9246	13.9246	1.6600e-003	0.0000	13.9660

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3.5 Paving - 2018

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	1.7900e-003	0.0161	0.0137	2.0000e-005		9.6000e-004	9.6000e-004		9.1000e-004	9.1000e-004	0.0000	1.9135	1.9135	4.0000e-004	0.0000	1.9235
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.7900e-003	0.0161	0.0137	2.0000e-005		9.6000e-004	9.6000e-004		9.1000e-004	9.1000e-004	0.0000	1.9135	1.9135	4.0000e-004	0.0000	1.9235

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	8.2000e-004	3.1000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1622	0.1622	1.0000e-005	0.0000	0.1626
Worker	0.0000	0.0000	0.0000	0.0000	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	3.0000e-005	8.2000e-004	3.1000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1622	0.1622	1.0000e-005	0.0000	0.1626

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3.5 Paving - 2018

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	1.7900e-003	0.0161	0.0137	2.0000e-005		9.6000e-004	9.6000e-004		9.1000e-004	9.1000e-004	0.0000	1.9135	1.9135	4.0000e-004	0.0000	1.9235
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.7900e-003	0.0161	0.0137	2.0000e-005		9.6000e-004	9.6000e-004		9.1000e-004	9.1000e-004	0.0000	1.9135	1.9135	4.0000e-004	0.0000	1.9235

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	8.2000e-004	3.1000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1622	0.1622	1.0000e-005	0.0000	0.1626
Worker	0.0000	0.0000	0.0000	0.0000	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	3.0000e-005	8.2000e-004	3.1000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1622	0.1622	1.0000e-005	0.0000	0.1626

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3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0700e-003	9.7200e-003	9.0500e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.3000e-004	5.3000e-004	0.0000	1.2640	1.2640	2.6000e-004	0.0000	1.2706
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0700e-003	9.7200e-003	9.0500e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.3000e-004	5.3000e-004	0.0000	1.2640	1.2640	2.6000e-004	0.0000	1.2706

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	2.0000e-005	5.1000e-004	2.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1070	0.1070	1.0000e-005	0.0000	0.1072
Worker	0.0000	0.0000	0.0000	0.0000	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	2.0000e-005	5.1000e-004	2.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1070	0.1070	1.0000e-005	0.0000	0.1072

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3.5 Paving - 2019

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	1.0700e-003	9.7200e-003	9.0500e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.3000e-004	5.3000e-004	0.0000	1.2640	1.2640	2.6000e-004	0.0000	1.2706
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0700e-003	9.7200e-003	9.0500e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.3000e-004	5.3000e-004	0.0000	1.2640	1.2640	2.6000e-004	0.0000	1.2706

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	2.0000e-005	5.1000e-004	2.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1070	0.1070	1.0000e-005	0.0000	0.1072
Worker	0.0000	0.0000	0.0000	0.0000	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	2.0000e-005	5.1000e-004	2.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1070	0.1070	1.0000e-005	0.0000	0.1072

4.0 Operational Detail - Mobile

Middlefield Road Utility Joint Trench - San Mateo County, Annual

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.490452	0.049742	0.253638	0.136789	0.017926	0.006526	0.021436	0.006323	0.003943	0.003278	0.008771	0.000435	0.000741

Middlefield Road Utility Joint Trench - San Mateo County, Annual

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Middlefield Road Utility Joint Trench - San Mateo County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

Middlefield Road Utility Joint Trench - San Mateo County, Annual

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

Middlefield Road Utility Joint Trench - San Mateo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Middlefield Road Utility Joint Trench - San Mateo County, Annual

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Middlefield Road Utility Joint Trench - San Mateo County, Annual

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Middlefield Road Utility Joint Trench - San Mateo County, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Middlefield Road Roadway Renovation - San Mateo County, Annual

**Middlefield Road Roadway Renovation
San Mateo County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	4.74	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	70
Climate Zone	5			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Middlefield Road Roadway Renovation - San Mateo County, Annual

Project Characteristics - Construction emissions for roadway renovation activities.

Land Use - Acreage based on roadway: 2,400 linear ft x 86 ft wide.

Construction Phase - Schedule based on total 12 months using SMAQMD Road Emissions Model Data Entry Worksheet (2016).

Off-road Equipment - Project specific info.

Off-road Equipment - Project specific info.

Off-road Equipment - Project specific info.

Off-road Equipment - Based on typical work crew in Air Quality Calcs spreadsheet. Other construction equipment to account for jackhammer

Trips and VMT - Based on crew of 31 workers. Haul truck trips assumed 10 cy capacity trucks. Daily vendor trips during paving to account for concrete truck trips.

Grading - Default acres graded. Import quantity based on 119 cy imported daily for 96 days. 7,568 cy exported total

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	8.00	106.00
tblConstructionPhase	NumDays	18.00	40.00
tblConstructionPhase	NumDays	5.00	26.00
tblGrading	MaterialExported	0.00	7,568.00
tblGrading	MaterialImported	0.00	11,424.00
tblLandUse	LotAcreage	0.00	4.74
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching

Middlefield Road Roadway Renovation - San Mateo County, Annual

tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripNumber	2,374.00	3,807.00
tblTripsAndVMT	VendorTripNumber	0.00	48.00
tblTripsAndVMT	WorkerTripNumber	18.00	62.00
tblTripsAndVMT	WorkerTripNumber	18.00	62.00
tblTripsAndVMT	WorkerTripNumber	10.00	62.00
tblTripsAndVMT	WorkerTripNumber	20.00	62.00

2.0 Emissions Summary

Middlefield Road Roadway Renovation - San Mateo County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-1-2018	1-31-2019	1.3315	1.3315
2	2-1-2019	4-30-2019	1.2530	1.2530
3	5-1-2019	7-31-2019	0.3429	0.3429
4	8-1-2019	9-30-2019	0.2976	0.2774
		Highest	1.3315	1.3315

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

Middlefield Road Roadway Renovation - San Mateo County, Annual

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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

3.0 Construction Detail

Construction Phase

Middlefield Road Roadway Renovation - San Mateo County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	11/1/2018	12/6/2018	5	26	
2	Grading	Grading	12/7/2018	5/3/2019	5	106	
3	Trenching	Trenching	5/4/2019	9/10/2019	5	92	
4	Paving	Paving	9/11/2019	11/5/2019	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 39.75

Acres of Paving: 0

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

OffRoad Equipment

Middlefield Road Roadway Renovation - San Mateo County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	6.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	6.00	97	0.37
Grading	Concrete/Industrial Saws	1	6.00	81	0.73
Grading	Excavators	1	6.00	158	0.38
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Trenching	Dumpers/Tenders	1	6.00	16	0.38
Trenching	Other Construction Equipment	1	6.00	172	0.42
Trenching	Pumps	1	6.00	84	0.74
Trenching	Skid Steer Loaders	1	6.00	65	0.37
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Generator Sets	1	6.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	62.00	0.00	3,807.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	4	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	62.00	48.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Middlefield Road Roadway Renovation - San Mateo County, Annual

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2018

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					0.1762	0.0000	0.1762	0.0968	0.0000	0.0968	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0445	0.4699	0.2191	3.7000e-004		0.0251	0.0251		0.0231	0.0231	0.0000	33.8909	33.8909	0.0106	0.0000	34.1547
Total	0.0445	0.4699	0.2191	3.7000e-004	0.1762	0.0251	0.2013	0.0968	0.0231	0.1199	0.0000	33.8909	33.8909	0.0106	0.0000	34.1547

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	2.6300e-003	1.9100e-003	0.0194	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7300e-003	0.0000	5.6322	5.6322	1.3000e-004	0.0000	5.6355
Total	2.6300e-003	1.9100e-003	0.0194	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7300e-003	0.0000	5.6322	5.6322	1.3000e-004	0.0000	5.6355

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3.2 Site Preparation - 2018

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					0.1762	0.0000	0.1762	0.0968	0.0000	0.0968	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0445	0.4699	0.2191	3.7000e-004		0.0251	0.0251		0.0231	0.0231	0.0000	33.8909	33.8909	0.0106	0.0000	34.1546
Total	0.0445	0.4699	0.2191	3.7000e-004	0.1762	0.0251	0.2013	0.0968	0.0231	0.1199	0.0000	33.8909	33.8909	0.0106	0.0000	34.1546

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	2.6300e-003	1.9100e-003	0.0194	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7300e-003	0.0000	5.6322	5.6322	1.3000e-004	0.0000	5.6355
Total	2.6300e-003	1.9100e-003	0.0194	6.0000e-005	6.3500e-003	4.0000e-005	6.3900e-003	1.6900e-003	4.0000e-005	1.7300e-003	0.0000	5.6322	5.6322	1.3000e-004	0.0000	5.6355

Middlefield Road Roadway Renovation - San Mateo County, Annual

3.3 Grading - 2018

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					0.0605	0.0000	0.0605	0.0235	0.0000	0.0235	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0210	0.2205	0.1294	2.3000e-004		0.0116	0.0116		0.0108	0.0108	0.0000	20.7082	20.7082	5.6500e-003	0.0000	20.8493
Total	0.0210	0.2205	0.1294	2.3000e-004	0.0605	0.0116	0.0721	0.0235	0.0108	0.0343	0.0000	20.7082	20.7082	5.6500e-003	0.0000	20.8493

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	3.2500e-003	0.1127	0.0408	2.6000e-004	0.0252	4.6000e-004	0.0257	6.3400e-003	4.4000e-004	6.7800e-003	0.0000	26.2399	26.2399	3.1200e-003	0.0000	26.3179
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	1.7200e-003	1.2500e-003	0.0127	4.0000e-005	4.1500e-003	3.0000e-005	4.1800e-003	1.1000e-003	2.0000e-005	1.1300e-003	0.0000	3.6826	3.6826	9.0000e-005	0.0000	3.6848
Total	4.9700e-003	0.1139	0.0534	3.0000e-004	0.0294	4.9000e-004	0.0299	7.4400e-003	4.6000e-004	7.9100e-003	0.0000	29.9225	29.9225	3.2100e-003	0.0000	30.0027

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3.3 Grading - 2018

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					0.0605	0.0000	0.0605	0.0235	0.0000	0.0235	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0210	0.2205	0.1294	2.3000e-004		0.0116	0.0116		0.0108	0.0108	0.0000	20.7082	20.7082	5.6500e-003	0.0000	20.8493
Total	0.0210	0.2205	0.1294	2.3000e-004	0.0605	0.0116	0.0721	0.0235	0.0108	0.0343	0.0000	20.7082	20.7082	5.6500e-003	0.0000	20.8493

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	3.2500e-003	0.1127	0.0408	2.6000e-004	0.0252	4.6000e-004	0.0257	6.3400e-003	4.4000e-004	6.7800e-003	0.0000	26.2399	26.2399	3.1200e-003	0.0000	26.3179
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	1.7200e-003	1.2500e-003	0.0127	4.0000e-005	4.1500e-003	3.0000e-005	4.1800e-003	1.1000e-003	2.0000e-005	1.1300e-003	0.0000	3.6826	3.6826	9.0000e-005	0.0000	3.6848
Total	4.9700e-003	0.1139	0.0534	3.0000e-004	0.0294	4.9000e-004	0.0299	7.4400e-003	4.6000e-004	7.9100e-003	0.0000	29.9225	29.9225	3.2100e-003	0.0000	30.0027

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3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2231	0.0000	0.2231	0.1129	0.0000	0.1129	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1015	1.0659	0.6674	1.2000e-003		0.0543	0.0543		0.0506	0.0506	0.0000	106.8629	106.8629	0.0294	0.0000	107.5978
Total	0.1015	1.0659	0.6674	1.2000e-003	0.2231	0.0543	0.2774	0.1129	0.0506	0.1635	0.0000	106.8629	106.8629	0.0294	0.0000	107.5978

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	0.0160	0.5582	0.2146	1.3200e-003	0.0306	2.2200e-003	0.0328	8.2900e-003	2.1300e-003	0.0104	0.0000	135.4013	135.4013	0.0165	0.0000	135.8145
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1600e-003	5.7500e-003	0.0592	2.1000e-004	0.0217	1.4000e-004	0.0219	5.7800e-003	1.3000e-004	5.9100e-003	0.0000	18.6793	18.6793	4.0000e-004	0.0000	18.6893
Total	0.0242	0.5639	0.2738	1.5300e-003	0.0523	2.3600e-003	0.0547	0.0141	2.2600e-003	0.0163	0.0000	154.0807	154.0807	0.0169	0.0000	154.5038

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3.3 Grading - 2019

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					0.2231	0.0000	0.2231	0.1129	0.0000	0.1129	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1015	1.0659	0.6674	1.2000e-003		0.0543	0.0543		0.0506	0.0506	0.0000	106.8627	106.8627	0.0294	0.0000	107.5976
Total	0.1015	1.0659	0.6674	1.2000e-003	0.2231	0.0543	0.2774	0.1129	0.0506	0.1635	0.0000	106.8627	106.8627	0.0294	0.0000	107.5976

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	0.0160	0.5582	0.2146	1.3200e-003	0.0306	2.2200e-003	0.0328	8.2900e-003	2.1300e-003	0.0104	0.0000	135.4013	135.4013	0.0165	0.0000	135.8145
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1600e-003	5.7500e-003	0.0592	2.1000e-004	0.0217	1.4000e-004	0.0219	5.7800e-003	1.3000e-004	5.9100e-003	0.0000	18.6793	18.6793	4.0000e-004	0.0000	18.6893
Total	0.0242	0.5639	0.2738	1.5300e-003	0.0523	2.3600e-003	0.0547	0.0141	2.2600e-003	0.0163	0.0000	154.0807	154.0807	0.0169	0.0000	154.5038

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3.4 Trenching - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0398	0.3821	0.3302	5.4000e-004		0.0209	0.0209		0.0199	0.0199	0.0000	46.9696	46.9696	9.6000e-003	0.0000	47.2095
Total	0.0398	0.3821	0.3302	5.4000e-004		0.0209	0.0209		0.0199	0.0199	0.0000	46.9696	46.9696	9.6000e-003	0.0000	47.2095

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4400e-003	5.9400e-003	0.0612	2.1000e-004	0.0225	1.4000e-004	0.0226	5.9700e-003	1.3000e-004	6.1100e-003	0.0000	19.3090	19.3090	4.1000e-004	0.0000	19.3193
Total	8.4400e-003	5.9400e-003	0.0612	2.1000e-004	0.0225	1.4000e-004	0.0226	5.9700e-003	1.3000e-004	6.1100e-003	0.0000	19.3090	19.3090	4.1000e-004	0.0000	19.3193

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3.4 Trenching - 2019

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	0.0398	0.3821	0.3302	5.4000e-004		0.0209	0.0209		0.0199	0.0199	0.0000	46.9696	46.9696	9.6000e-003	0.0000	47.2095
Total	0.0398	0.3821	0.3302	5.4000e-004		0.0209	0.0209		0.0199	0.0199	0.0000	46.9696	46.9696	9.6000e-003	0.0000	47.2095

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4400e-003	5.9400e-003	0.0612	2.1000e-004	0.0225	1.4000e-004	0.0226	5.9700e-003	1.3000e-004	6.1100e-003	0.0000	19.3090	19.3090	4.1000e-004	0.0000	19.3193
Total	8.4400e-003	5.9400e-003	0.0612	2.1000e-004	0.0225	1.4000e-004	0.0226	5.9700e-003	1.3000e-004	6.1100e-003	0.0000	19.3090	19.3090	4.1000e-004	0.0000	19.3193

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3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0294	0.2846	0.2761	4.4000e-004		0.0162	0.0162		0.0152	0.0152	0.0000	38.4163	38.4163	9.7200e-003	0.0000	38.6592
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0294	0.2846	0.2761	4.4000e-004		0.0162	0.0162		0.0152	0.0152	0.0000	38.4163	38.4163	9.7200e-003	0.0000	38.6592

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5600e-003	0.1226	0.0471	2.6000e-004	6.2600e-003	8.5000e-004	7.1000e-003	1.8100e-003	8.1000e-004	2.6200e-003	0.0000	25.6805	25.6805	2.2700e-003	0.0000	25.7372
Worker	3.6700e-003	2.5800e-003	0.0266	9.0000e-005	9.7600e-003	6.0000e-005	9.8200e-003	2.6000e-003	6.0000e-005	2.6600e-003	0.0000	8.3952	8.3952	1.8000e-004	0.0000	8.3997
Total	8.2300e-003	0.1252	0.0737	3.5000e-004	0.0160	9.1000e-004	0.0169	4.4100e-003	8.7000e-004	5.2800e-003	0.0000	34.0757	34.0757	2.4500e-003	0.0000	34.1369

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3.5 Paving - 2019

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	0.0294	0.2279	0.2761	4.4000e-004		0.0162	0.0162		0.0152	0.0152	0.0000	38.4162	38.4162	9.7200e-003	0.0000	38.6592
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0294	0.2279	0.2761	4.4000e-004		0.0162	0.0162		0.0152	0.0152	0.0000	38.4162	38.4162	9.7200e-003	0.0000	38.6592

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5600e-003	0.1226	0.0471	2.6000e-004	6.2600e-003	8.5000e-004	7.1000e-003	1.8100e-003	8.1000e-004	2.6200e-003	0.0000	25.6805	25.6805	2.2700e-003	0.0000	25.7372
Worker	3.6700e-003	2.5800e-003	0.0266	9.0000e-005	9.7600e-003	6.0000e-005	9.8200e-003	2.6000e-003	6.0000e-005	2.6600e-003	0.0000	8.3952	8.3952	1.8000e-004	0.0000	8.3997
Total	8.2300e-003	0.1252	0.0737	3.5000e-004	0.0160	9.1000e-004	0.0169	4.4100e-003	8.7000e-004	5.2800e-003	0.0000	34.0757	34.0757	2.4500e-003	0.0000	34.1369

4.0 Operational Detail - Mobile

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4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.490452	0.049742	0.253638	0.136789	0.017926	0.006526	0.021436	0.006323	0.003943	0.003278	0.008771	0.000435	0.000741

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

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8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Middlefield Road Roadway Renovation - San Mateo County, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation
