

Appendix A

Air Quality, GHG, and Energy Emissions Inputs and Outputs

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Shell CNG Truck Station - South Coast AQMD Air District, Winter

Shell CNG Truck Station
South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00	Acre	1.36	59,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Start date: March 1st 2021

Land Use - A

Construction Phase - a

Off-road Equipment - a

Off-road Equipment - A

Off-road Equipment - a

Trips and VMT - A

Grading -

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - a

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	3,558.00	2,614.00
tblAreaCoating	Area_Parking	3558	2614
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	200.00	79.00
tblConstructionPhase	NumDays	4.00	79.00
tblConstructionPhase	NumDays	10.00	79.00
tblLandUse	LandUseSquareFeet	43,560.00	59,300.00
tblLandUse	LotAcreage	1.00	1.36
tblOffRoadEquipment	HorsePower	89.00	0.00
tblOffRoadEquipment	HorsePower	84.00	0.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	130.00	0.00
tblOffRoadEquipment	HorsePower	132.00	0.00
tblOffRoadEquipment	HorsePower	80.00	0.00
tblOffRoadEquipment	HorsePower	247.00	0.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	LoadFactor	0.20	0.00
tblOffRoadEquipment	LoadFactor	0.74	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.42	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.00
tblOffRoadEquipment	LoadFactor	0.40	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	78.00	250.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	10.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	25.00	26.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2021	6.7409	33.6643	31.5153	0.0671	1.1889	1.4077	2.5966	0.3220	1.3418	1.6638	0.0000	6,351.0607	6,351.0607	1.1302	0.0000	6,379.3156
Maximum	6.7409	33.6643	31.5153	0.0671	1.1889	1.4077	2.5966	0.3220	1.3418	1.6638	0.0000	6,351.0607	6,351.0607	1.1302	0.0000	6,379.3156

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	lb/day										lb/day					
2021	6.7409	33.6643	31.5153	0.0671	1.1889	1.4077	2.5966	0.3220	1.3418	1.6638	0.0000	6,351.0607	6,351.0607	1.1302	0.0000	6,379.3156
Maximum	6.7409	33.6643	31.5153	0.0671	1.1889	1.4077	2.5966	0.3220	1.3418	1.6638	0.0000	6,351.0607	6,351.0607	1.1302	0.0000	6,379.3156

	ROG	NOx	CO	SO2	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

2.2 Overall Operational

Unmitigated Operational

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Grading	5/13/2021	8/31/2021	5	79	
2	CNG Compound Installation	Building Construction	5/13/2021	8/31/2021	5	79	
3	Paving	Paving	5/13/2021	8/31/2021	5	79	
4	Architectural Coating	Architectural Coating	7/19/2021	7/23/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 2,614

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Cranes	1	8.00	231	0.29
Trenching	Graders	0	0.00	0	0.00
Trenching	Rubber Tired Dozers	0	0.00	0	0.00
Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Trenching	Welders	4	8.00	46	0.45
CNG Compound Installation	Cranes	1	6.00	231	0.29
CNG Compound Installation	Excavators	1	8.00	158	0.38
CNG Compound Installation	Forklifts	0	0.00	0	0.00
CNG Compound Installation	Generator Sets	0	0.00	0	0.00
CNG Compound Installation	Skid Steer Loaders	1	8.00	65	0.37
CNG Compound Installation	Tractors/Loaders/Backhoes	0	0.00	0	0.00
CNG Compound Installation	Welders	2	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	0	0.00	0	0.00

Paving	Paving Equipment	0	0.00	0	0.36
Paving	Plate Compactors	2	8.00	8	0.43
Paving	Rollers	0	0.00	0	0.00
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching	6	26.00	20.00	80.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
CNG Compound Installation	5	26.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	26.00	12.00	80.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676		1,651.9372	1,651.9372	0.3739		1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676		1,651.9372	1,651.9372	0.3739		1,661.2854

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	lb/day										lb/day						
Hauling	7.5600e-003	0.2592	0.0582	7.6000e-004	0.0177	8.1000e-004	0.0185	4.8500e-003	7.7000e-004	5.6200e-003		82.4502	82.4502	5.8400e-003			82.5962
Vendor	0.0586	1.9015	0.5065	4.9600e-003	0.1280	3.9600e-003	0.1320	0.0369	3.7900e-003	0.0406		529.1004	529.1004	0.0354			529.9854
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003			269.4541
Total	0.1861	2.2386	1.4450	8.4200e-003	0.4363	6.9100e-003	0.4432	0.1188	6.5300e-003	0.1253		880.8242	880.8242	0.0485			882.0357

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	lb/day										lb/day						
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000	
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739			1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739			1,661.2854

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
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Category	lb/day										lb/day					
Hauling	7.5600e-003	0.2592	0.0582	7.6000e-004	0.0177	8.1000e-004	0.0185	4.8500e-003	7.7000e-004	5.6200e-003		82.4502	82.4502	5.8400e-003		82.5962
Vendor	0.0586	1.9015	0.5065	4.9600e-003	0.1280	3.9600e-003	0.1320	0.0369	3.7900e-003	0.0406		529.1004	529.1004	0.0354		529.9854
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003		269.4541
Total	0.1861	2.2386	1.4450	8.4200e-003	0.4363	6.9100e-003	0.4432	0.1188	6.5300e-003	0.1253		880.8242	880.8242	0.0485		882.0357

3.3 CNG Compound Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020
Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020

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	lb/day										lb/day					
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
Vendor	0.0352	1.1409	0.3039	2.9700e-003	0.0768	2.3800e-003	0.0792	0.0221	2.2700e-003	0.0244		317.4602	317.4602	0.0212		317.9912
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003		269.4541

Total	0.1551	1.2188	1.1841	5.6700e-003	0.3674	4.5200e-003	0.3719	0.0992	4.2400e-003	0.1034		586.7339	586.7339	0.0285		587.4453
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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	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020
Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020

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	lb/day										lb/day					
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
Vendor	0.0352	1.1409	0.3039	2.9700e-003	0.0768	2.3800e-003	0.0792	0.0221	2.2700e-003	0.0244		317.4602	317.4602	0.0212		317.9912
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003		269.4541
Total	0.1551	1.2188	1.1841	5.6700e-003	0.3674	4.5200e-003	0.3719	0.0992	4.2400e-003	0.1034		586.7339	586.7339	0.0285		587.4453

3.4 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					
Hauling	7.5600e-003	0.2592	0.0582	7.6000e-004	0.0177	8.1000e-004	0.0185	4.8500e-003	7.7000e-004	5.6200e-003		82.4502	82.4502	5.8400e-003		82.5962
Vendor	0.0352	1.1409	0.3039	2.9700e-003	0.0768	2.3800e-003	0.0792	0.0221	2.2700e-003	0.0244		317.4602	317.4602	0.0212		317.9912
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003		269.4541
Total	0.1626	1.4780	1.2424	6.4300e-003	0.3851	5.3300e-003	0.3904	0.1040	5.0100e-003	0.1091		669.1840	669.1840	0.0343		670.0415

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	lb/day										lb/day					

Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					
Hauling	7.5600e-003	0.2592	0.0582	7.6000e-004	0.0177	8.1000e-004	0.0185	4.8500e-003	7.7000e-004	5.6200e-003		82.4502	82.4502	5.8400e-003		82.5962
Vendor	0.0352	1.1409	0.3039	2.9700e-003	0.0768	2.3800e-003	0.0792	0.0221	2.2700e-003	0.0244		317.4602	317.4602	0.0212		317.9912
Worker	0.1199	0.0779	0.8802	2.7000e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		269.2737	269.2737	7.2200e-003		269.4541
Total	0.1626	1.4780	1.2424	6.4300e-003	0.3851	5.3300e-003	0.3904	0.1040	5.0100e-003	0.1091		669.1840	669.1840	0.0343		670.0415

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

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	lb/day										lb/day					
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
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
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
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000							

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	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309

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
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Category	lb/day										lb/day					
	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
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	
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	
Total	0.0000		0.0000	0.0000	0.0000	0.0000										

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	lb/day										lb/day					
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
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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	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
Other Asphalt Surfaces	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	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
	kBTU/yr	lb/day										lb/day					

Other Asphalt Surfaces	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	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000

Mitigated

	Natural Gas 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	lb/day										lb/day					
Other Asphalt Surfaces	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Mitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Air Compressors	2	8.00	365	250	0.48	CNG

UnMitigated/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
Equipment Type	lb/day										lb/day					
Air Compressors	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770

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

Shell CNG Truck Station - South Coast AQMD Air District, Summer

Shell CNG Truck Station
South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00	Acre	1.36	59,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Start date: March 1st 2021

Land Use - A

Construction Phase - a

Off-road Equipment - a

Off-road Equipment - A

Off-road Equipment - a

Trips and VMT - A

Grading -

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - a

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	3,558.00	2,614.00
tblAreaCoating	Area_Parking	3558	2614
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	200.00	79.00
tblConstructionPhase	NumDays	4.00	79.00
tblConstructionPhase	NumDays	10.00	79.00
tblLandUse	LandUseSquareFeet	43,560.00	59,300.00
tblLandUse	LotAcreage	1.00	1.36
tblOffRoadEquipment	HorsePower	89.00	0.00
tblOffRoadEquipment	HorsePower	84.00	0.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	130.00	0.00
tblOffRoadEquipment	HorsePower	132.00	0.00
tblOffRoadEquipment	HorsePower	80.00	0.00
tblOffRoadEquipment	HorsePower	247.00	0.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	LoadFactor	0.20	0.00
tblOffRoadEquipment	LoadFactor	0.74	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.42	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.00
tblOffRoadEquipment	LoadFactor	0.40	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	78.00	250.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	10.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	25.00	26.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2021	6.7035	33.6513	31.6866	0.0681	1.1889	1.4074	2.5963	0.3220	1.3416	1.6635	0.0000	6,444.8304	6,444.8304	1.1259	0.0000	6,472.9787
Maximum	6.7035	33.6513	31.6866	0.0681	1.1889	1.4074	2.5963	0.3220	1.3416	1.6635	0.0000	6,444.8304	6,444.8304	1.1259	0.0000	6,472.9787

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	lb/day										lb/day					
2021	6.7035	33.6513	31.6866	0.0681	1.1889	1.4074	2.5963	0.3220	1.3416	1.6635	0.0000	6,444.8304	6,444.8304	1.1259	0.0000	6,472.9787
Maximum	6.7035	33.6513	31.6866	0.0681	1.1889	1.4074	2.5963	0.3220	1.3416	1.6635	0.0000	6,444.8304	6,444.8304	1.1259	0.0000	6,472.9787

	ROG	NOx	CO	SO2	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

2.2 Overall Operational

Unmitigated Operational

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Grading	5/13/2021	8/31/2021	5	79	
2	CNG Compound Installation	Building Construction	5/13/2021	8/31/2021	5	79	
3	Paving	Paving	5/13/2021	8/31/2021	5	79	
4	Architectural Coating	Architectural Coating	7/19/2021	7/23/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 2,614

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Cranes	1	8.00	231	0.29
Trenching	Graders	0	0.00	0	0.00
Trenching	Rubber Tired Dozers	0	0.00	0	0.00
Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Trenching	Welders	4	8.00	46	0.45
CNG Compound Installation	Cranes	1	6.00	231	0.29
CNG Compound Installation	Excavators	1	8.00	158	0.38
CNG Compound Installation	Forklifts	0	0.00	0	0.00
CNG Compound Installation	Generator Sets	0	0.00	0	0.00
CNG Compound Installation	Skid Steer Loaders	1	8.00	65	0.37
CNG Compound Installation	Tractors/Loaders/Backhoes	0	0.00	0	0.00
CNG Compound Installation	Welders	2	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	0	0.00	0	0.00

Paving	Paving Equipment	0	0.00	0	0.36
Paving	Plate Compactors	2	8.00	8	0.43
Paving	Rollers	0	0.00	0	0.00
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching	6	26.00	20.00	80.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
CNG Compound Installation	5	26.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	26.00	12.00	80.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676		1,651.9372	1,651.9372	0.3739		1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676		1,651.9372	1,651.9372	0.3739		1,661.2854

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	lb/day										lb/day					
Hauling	7.3500e-003	0.2562	0.0542	7.8000e-004	0.0177	7.9000e-004	0.0185	4.8500e-003	7.6000e-004	5.6100e-003		84.0040	84.0040	5.6000e-003		84.1441
Vendor	0.0557	1.9075	0.4527	5.1000e-003	0.1280	3.8400e-003	0.1318	0.0369	3.6700e-003	0.0405		544.8769	544.8769	0.0330		545.7009
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003		288.1184
Total	0.1728	2.2349	1.4864	8.7700e-003	0.4363	6.7700e-003	0.4431	0.1188	6.4000e-003	0.1252		916.8058	916.8058	0.0463		917.9635

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	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739		1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739		1,661.2854

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
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Category	lb/day										lb/day				
Hauling	7.3500e-003	0.2562	0.0542	7.8000e-004	0.0177	7.9000e-004	0.0185	4.8500e-003	7.6000e-004	5.6100e-003		84.0040	84.0040	5.6000e-003	84.1441
Vendor	0.0557	1.9075	0.4527	5.1000e-003	0.1280	3.8400e-003	0.1318	0.0369	3.6700e-003	0.0405		544.8769	544.8769	0.0330	545.7009
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003	288.1184
Total	0.1728	2.2349	1.4864	8.7700e-003	0.4363	6.7700e-003	0.4431	0.1188	6.4000e-003	0.1252		916.8058	916.8058	0.0463	917.9635

3.3 CNG Compound Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020
Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020

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	lb/day										lb/day					
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
Vendor	0.0334	1.1445	0.2716	3.0600e-003	0.0768	2.3000e-003	0.0791	0.0221	2.2000e-003	0.0243		326.9262	326.9262	0.0198		327.4206
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003		288.1184

Total	0.1431	1.2157	1.2511	5.9500e-003	0.3674	4.4400e-003	0.3719	0.0992	4.1700e-003	0.1034		614.8510	614.8510	0.0275		615.5390
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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	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020
Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020

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	lb/day										lb/day					
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
Vendor	0.0334	1.1445	0.2716	3.0600e-003	0.0768	2.3000e-003	0.0791	0.0221	2.2000e-003	0.0243		326.9262	326.9262	0.0198		327.4206
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003		288.1184
Total	0.1431	1.2157	1.2511	5.9500e-003	0.3674	4.4400e-003	0.3719	0.0992	4.1700e-003	0.1034		614.8510	614.8510	0.0275		615.5390

3.4 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					
Hauling	7.3500e-003	0.2562	0.0542	7.8000e-004	0.0177	7.9000e-004	0.0185	4.8500e-003	7.6000e-004	5.6100e-003		84.0040	84.0040	5.6000e-003		84.1441
Vendor	0.0334	1.1445	0.2716	3.0600e-003	0.0768	2.3000e-003	0.0791	0.0221	2.2000e-003	0.0243		326.9262	326.9262	0.0198		327.4206
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003		288.1184
Total	0.1505	1.4719	1.3053	6.7300e-003	0.3851	5.2300e-003	0.3904	0.1040	4.9300e-003	0.1090		698.8550	698.8550	0.0331		699.6831

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	lb/day										lb/day					

Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					
Hauling	7.3500e-003	0.2562	0.0542	7.8000e-004	0.0177	7.9000e-004	0.0185	4.8500e-003	7.6000e-004	5.6100e-003		84.0040	84.0040	5.6000e-003		84.1441
Vendor	0.0334	1.1445	0.2716	3.0600e-003	0.0768	2.3000e-003	0.0791	0.0221	2.2000e-003	0.0243		326.9262	326.9262	0.0198		327.4206
Worker	0.1098	0.0712	0.9795	2.8900e-003	0.2906	2.1400e-003	0.2928	0.0771	1.9700e-003	0.0790		287.9249	287.9249	7.7400e-003		288.1184
Total	0.1505	1.4719	1.3053	6.7300e-003	0.3851	5.2300e-003	0.3904	0.1040	4.9300e-003	0.1090		698.8550	698.8550	0.0331		699.6831

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

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	lb/day										lb/day					
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
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
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
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000							

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	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309

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
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Category	lb/day										lb/day					
	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
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	
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	
Total	0.0000		0.0000	0.0000	0.0000	0.0000										

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	lb/day										lb/day					
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
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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	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
Other Asphalt Surfaces	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	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
	kBTU/yr	lb/day										lb/day					

Other Asphalt Surfaces	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	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	Natural Gas 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	lb/day										lb/day					
Other Asphalt Surfaces	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Mitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Air Compressors	2	8.00	365	250	0.48	CNG

UnMitigated/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
Equipment Type	lb/day										lb/day					
Air Compressors	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770

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

Shell CNG Truck Station - South Coast AQMD Air District, Annual

Shell CNG Truck Station
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00	Acre	1.36	59,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Start date: March 1st 2021

Land Use - A

Construction Phase - a

Off-road Equipment - a

Off-road Equipment - A

Off-road Equipment - a

Trips and VMT - A

Grading -

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - a

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	3,558.00	2,614.00
tblAreaCoating	Area_Parking	3558	2614
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	200.00	79.00
tblConstructionPhase	NumDays	4.00	79.00
tblConstructionPhase	NumDays	10.00	79.00
tblLandUse	LandUseSquareFeet	43,560.00	59,300.00
tblLandUse	LotAcreage	1.00	1.36
tblOffRoadEquipment	HorsePower	89.00	0.00
tblOffRoadEquipment	HorsePower	84.00	0.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	130.00	0.00
tblOffRoadEquipment	HorsePower	132.00	0.00
tblOffRoadEquipment	HorsePower	80.00	0.00
tblOffRoadEquipment	HorsePower	247.00	0.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	LoadFactor	0.20	0.00
tblOffRoadEquipment	LoadFactor	0.74	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.42	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.00
tblOffRoadEquipment	LoadFactor	0.40	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	78.00	250.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	10.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	25.00	26.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1670	1.2768	1.1782	2.5600e-003	0.0461	0.0521	0.0983	0.0125	0.0495	0.0620	0.0000	219.4181	219.4181	0.0398	0.0000	220.4118
Maximum	0.1670	1.2768	1.1782	2.5600e-003	0.0461	0.0521	0.0983	0.0125	0.0495	0.0620	0.0000	219.4181	219.4181	0.0398	0.0000	220.4118

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					
2021	0.1670	1.2768	1.1782	2.5600e-003	0.0461	0.0521	0.0983	0.0125	0.0495	0.0620	0.0000	219.4180	219.4180	0.0398	0.0000	220.4117
Maximum	0.1670	1.2768	1.1782	2.5600e-003	0.0461	0.0521	0.0983	0.0125	0.0495	0.0620	0.0000	219.4180	219.4180	0.0398	0.0000	220.4117

	ROG	NOx	CO	SO2	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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2021	5-31-2021	0.2455	0.2455

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
Offroad	0.1970	1.2491	0.8513	4.6300e-003	0.0402	0.0402	0.0402	0.0402	0.0000	398.2646	398.2646	0.0161	0.0000	398.6676		
Waste					0.0000	0.0000	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	0.0000	0.0000
Total	0.2014	1.2491	0.8513	4.6300e-003	0.0000	0.0402	0.0402	0.0000	0.0402	0.0402	0.0000	398.2647	398.2647	0.0161	0.0000	398.6676

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Grading	5/13/2021	8/31/2021	5	79	
2	CNG Compound Installation	Building Construction	5/13/2021	8/31/2021	5	79	
3	Paving	Paving	5/13/2021	8/31/2021	5	79	
4	Architectural Coating	Architectural Coating	7/19/2021	7/23/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 2,614

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Trenching	Cranes	1	8.00	231	0.29
Trenching	Graders	0	0.00	0	0.00
Trenching	Rubber Tired Dozers	0	0.00	0	0.00

Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Trenching	Welders	4	8.00	46	0.45
CNG Compound Installation	Cranes	1	6.00	231	0.29
CNG Compound Installation	Excavators	1	8.00	158	0.38
CNG Compound Installation	Forklifts	0	0.00	0	0.00
CNG Compound Installation	Generator Sets	0	0.00	0	0.00
CNG Compound Installation	Skid Steer Loaders	1	8.00	65	0.37
CNG Compound Installation	Tractors/Loaders/Backhoes	0	0.00	0	0.00
CNG Compound Installation	Welders	2	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	0	0.00	0	0.00
Paving	Paving Equipment	0	0.00	0	0.36
Paving	Plate Compactors	2	8.00	8	0.43
Paving	Rollers	0	0.00	0	0.00
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching	6	26.00	20.00	80.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
CNG Compound Installation	5	26.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	26.00	12.00	80.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0706	0.4955	0.4280	7.4000e-004		0.0234	0.0234		0.0224	0.0224	0.0000	59.1952	59.1952	0.0134	0.0000	59.5302
Total	0.0706	0.4955	0.4280	7.4000e-004	0.0000	0.0234	0.0234	0.0000	0.0224	0.0224	0.0000	59.1952	59.1952	0.0134	0.0000	59.5302

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	2.9000e-004	0.0104	2.2100e-003	3.0000e-005	6.9000e-004	3.0000e-005	7.2000e-004	1.9000e-004	3.0000e-005	2.2000e-004	0.0000	2.9868	2.9868	2.0000e-004	0.0000	2.9919
Vendor	2.2500e-003	0.0764	0.0190	2.0000e-004	4.9800e-003	1.5000e-004	5.1300e-003	1.4400e-003	1.5000e-004	1.5800e-003	0.0000	19.2876	19.2876	1.2200e-003	0.0000	19.3181
Worker	4.2800e-003	3.1600e-003	0.0358	1.1000e-004	0.0113	8.0000e-005	0.0114	2.9900e-003	8.0000e-005	3.0700e-003	0.0000	9.8146	9.8146	2.6000e-004	0.0000	9.8212
Total	6.8200e-003	0.0900	0.0570	3.4000e-004	0.0169	2.6000e-004	0.0172	4.6200e-003	2.6000e-004	4.8700e-003	0.0000	32.0890	32.0890	1.6800e-003	0.0000	32.1312

Mitigated Construction On-Site

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

Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0706	0.4955	0.4280	7.4000e-004		0.0234	0.0234		0.0224	0.0224	0.0000	59.1951	59.1951	0.0134	0.0000	59.5301
Total	0.0706	0.4955	0.4280	7.4000e-004	0.0000	0.0234	0.0234	0.0000	0.0224	0.0224	0.0000	59.1951	59.1951	0.0134	0.0000	59.5301

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	2.9000e-004	0.0104	2.2100e-003	3.0000e-005	6.9000e-004	3.0000e-005	7.2000e-004	1.9000e-004	3.0000e-005	2.2000e-004	0.0000	2.9868	2.9868	2.0000e-004	0.0000	2.9919
Vendor	2.2500e-003	0.0764	0.0190	2.0000e-004	4.9800e-003	1.5000e-004	5.1300e-003	1.4400e-003	1.5000e-004	1.5800e-003	0.0000	19.2876	19.2876	1.2200e-003	0.0000	19.3181
Worker	4.2800e-003	3.1600e-003	0.0358	1.1000e-004	0.0113	8.0000e-005	0.0114	2.9900e-003	8.0000e-005	3.0700e-003	0.0000	9.8146	9.8146	2.6000e-004	0.0000	9.8212
Total	6.8200e-003	0.0900	0.0570	3.4000e-004	0.0169	2.6000e-004	0.0172	4.6200e-003	2.6000e-004	4.8700e-003	0.0000	32.0890	32.0890	1.6800e-003	0.0000	32.1312

3.3 CNG Compound Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0482	0.3876	0.3787	6.6000e-004		0.0174	0.0174		0.0165	0.0165	0.0000	54.9834	54.9834	0.0149	0.0000	55.3561
Total	0.0482	0.3876	0.3787	6.6000e-004		0.0174	0.0174		0.0165	0.0165	0.0000	54.9834	54.9834	0.0149	0.0000	55.3561

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3500e-003	0.0459	0.0114	1.2000e-004	2.9900e-003	9.0000e-005	3.0800e-003	8.6000e-004	9.0000e-005	9.5000e-004	0.0000	11.5725	11.5725	7.3000e-004	0.0000	11.5908
Worker	4.2800e-003	3.1600e-003	0.0358	1.1000e-004	0.0113	8.0000e-005	0.0114	2.9900e-003	8.0000e-005	3.0700e-003	0.0000	9.8146	9.8146	2.6000e-004	0.0000	9.8212
Total	5.6300e-003	0.0490	0.0472	2.3000e-004	0.0143	1.7000e-004	0.0144	3.8500e-003	1.7000e-004	4.0200e-003	0.0000	21.3872	21.3872	9.9000e-004	0.0000	21.4121

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	0.0482	0.3876	0.3787	6.6000e-004		0.0174	0.0174		0.0165	0.0165	0.0000	54.9833	54.9833	0.0149	0.0000	55.3561
Total	0.0482	0.3876	0.3787	6.6000e-004		0.0174	0.0174		0.0165	0.0165	0.0000	54.9833	54.9833	0.0149	0.0000	55.3561

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
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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
Vendor	1.3500e-003	0.0459	0.0114	1.2000e-004	2.9900e-003	9.0000e-005	3.0800e-003	8.6000e-004	9.0000e-005	9.5000e-004	0.0000	11.5725	11.5725	7.3000e-004	0.0000	11.5908
Worker	4.2800e-003	3.1600e-003	0.0358	1.1000e-004	0.0113	8.0000e-005	0.0114	2.9900e-003	8.0000e-005	3.0700e-003	0.0000	9.8146	9.8146	2.6000e-004	0.0000	9.8212
Total	5.6300e-003	0.0490	0.0472	2.3000e-004	0.0143	1.7000e-004	0.0144	3.8500e-003	1.7000e-004	4.0200e-003	0.0000	21.3872	21.3872	9.9000e-004	0.0000	21.4121

3.4 Paving - 2021

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	0.0214	0.1914	0.2135	3.3000e-004		0.0105	0.0105		9.7400e-003	9.7400e-003	0.0000	26.7511	26.7511	7.5100e-003	0.0000	26.9390
Paving	1.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0232	0.1914	0.2135	3.3000e-004		0.0105	0.0105		9.7400e-003	9.7400e-003	0.0000	26.7511	26.7511	7.5100e-003	0.0000	26.9390

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	2.9000e-004	0.0104	2.2100e-003	3.0000e-005	6.9000e-004	3.0000e-005	7.2000e-004	1.9000e-004	3.0000e-005	2.2000e-004	0.0000	2.9868	2.9868	2.0000e-004	0.0000	2.9919
Vendor	1.3500e-003	0.0459	0.0114	1.2000e-004	2.9900e-003	9.0000e-005	3.0800e-003	8.6000e-004	9.0000e-005	9.5000e-004	0.0000	11.5725	11.5725	7.3000e-004	0.0000	11.5908
Worker	4.2800e-003	3.1600e-003	0.0358	1.1000e-004	0.0113	8.0000e-005	0.0114	2.9900e-003	8.0000e-005	3.0700e-003	0.0000	9.8146	9.8146	2.6000e-004	0.0000	9.8212

Total	5.9200e-003	0.0594	0.0494	2.6000e-004	0.0150	2.0000e-004	0.0152	4.0400e-003	2.0000e-004	4.2400e-003	0.0000	24.3740	24.3740	1.1900e-003	0.0000	24.4040
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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	0.0214	0.1914	0.2135	3.3000e-004		0.0105	0.0105		9.7400e-003	9.7400e-003	0.0000	26.7511	26.7511	7.5100e-003	0.0000	26.9389
Paving	1.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0232	0.1914	0.2135	3.3000e-004		0.0105	0.0105		9.7400e-003	9.7400e-003	0.0000	26.7511	26.7511	7.5100e-003	0.0000	26.9389

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	2.9000e-004	0.0104	2.2100e-003	3.0000e-005	6.9000e-004	3.0000e-005	7.2000e-004	1.9000e-004	3.0000e-005	2.2000e-004	0.0000	2.9868	2.9868	2.0000e-004	0.0000	2.9919
Vendor	1.3500e-003	0.0459	0.0114	1.2000e-004	2.9900e-003	9.0000e-005	3.0800e-003	8.6000e-004	9.0000e-005	9.5000e-004	0.0000	11.5725	11.5725	7.3000e-004	0.0000	11.5908
Worker	4.2800e-003	3.1600e-003	0.0358	1.1000e-004	0.0113	8.0000e-005	0.0114	2.9900e-003	8.0000e-005	3.0700e-003	0.0000	9.8146	9.8146	2.6000e-004	0.0000	9.8212
Total	5.9200e-003	0.0594	0.0494	2.6000e-004	0.0150	2.0000e-004	0.0152	4.0400e-003	2.0000e-004	4.2400e-003	0.0000	24.3740	24.3740	1.1900e-003	0.0000	24.4040

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.0600e-003					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	3.8200e-003	4.5400e-003	1.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394
Total	6.6100e-003	3.8200e-003	4.5400e-003	1.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394

Unmitigated Construction Off-Site

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

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					

Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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					
Other Asphalt Surfaces	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		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000							

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					
Other Asphalt Surfaces	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		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000							

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	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			
Other Asphalt Surfaces	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

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	3.0000e-005
Total	4.4400e-003	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	3.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

	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			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
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
Air Compressors	2	8.00	365	250	0.48	CNG

UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Air Compressors	0.1970	1.2491	0.8513	4.6300e-003		0.0402	0.0402		0.0402	0.0402	0.0000	398.2646	398.2646	0.0161	0.0000	398.6676
Total	0.1970	1.2491	0.8513	4.6300e-003		0.0402	0.0402		0.0402	0.0402	0.0000	398.2646	398.2646	0.0161	0.0000	398.6676

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

Shell CNG Truck Station - South Coast AQMD Air District, Summer

Shell CNG Truck Station
South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00	Acre	1.36	59,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Start date: March 1st 2021

Land Use - A

Construction Phase - a

Off-road Equipment - a

Off-road Equipment - A

Off-road Equipment - a

Trips and VMT - A

Grading -

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - a

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	3,558.00	2,614.00
tblAreaCoating	Area_Parking	3558	2614
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	200.00	79.00
tblConstructionPhase	NumDays	4.00	79.00
tblConstructionPhase	NumDays	10.00	79.00
tblLandUse	LandUseSquareFeet	43,560.00	59,300.00
tblLandUse	LotAcreage	1.00	1.36
tblOffRoadEquipment	HorsePower	89.00	0.00
tblOffRoadEquipment	HorsePower	84.00	0.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	130.00	0.00
tblOffRoadEquipment	HorsePower	132.00	0.00
tblOffRoadEquipment	HorsePower	80.00	0.00
tblOffRoadEquipment	HorsePower	247.00	0.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	LoadFactor	0.20	0.00
tblOffRoadEquipment	LoadFactor	0.74	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.42	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.00
tblOffRoadEquipment	LoadFactor	0.40	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	78.00	250.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00

tblTripsAndVMT	VendorTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	10.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	25.00	26.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2021	6.3809	31.5637	28.4862	0.0496	1.9900e-003	1.3924	1.3943	7.7000e-004	1.3274	1.3282	0.0000	4,534.0611	4,534.0611	1.0664	0.0000	4,560.7203
Maximum	6.3809	31.5637	28.4862	0.0496	1.9900e-003	1.3924	1.3943	7.7000e-004	1.3274	1.3282	0.0000	4,534.0611	4,534.0611	1.0664	0.0000	4,560.7203

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	lb/day										lb/day					
2021	6.3809	31.5637	28.4862	0.0496	1.9900e-003	1.3924	1.3943	7.7000e-004	1.3274	1.3282	0.0000	4,534.0611	4,534.0611	1.0664	0.0000	4,560.7203
Maximum	6.3809	31.5637	28.4862	0.0496	1.9900e-003	1.3924	1.3943	7.7000e-004	1.3274	1.3282	0.0000	4,534.0611	4,534.0611	1.0664	0.0000	4,560.7203

	ROG	NOx	CO	SO2	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

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	lb/day										lb/day					
Area	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
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
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
Offroad	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.1037	6.8446	4.6647	0.0254	0.0000	0.2201	0.2201	0.0000	0.2201	0.2201		2,405.5433	2,405.5433	0.0974	0.0000	2,407.9772

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	lb/day										lb/day					
Area	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
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
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
Offroad	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.1037	6.8446	4.6647	0.0254	0.0000	0.2201	0.2201	0.0000	0.2201	0.2201		2,405.5433	2,405.5433	0.0974	0.0000	2,407.9772

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Grading	5/13/2021	8/31/2021	5	79	
2	CNG Compound Installation	Building Construction	5/13/2021	8/31/2021	5	79	
3	Paving	Paving	5/13/2021	8/31/2021	5	79	
4	Architectural Coating	Architectural Coating	7/19/2021	7/23/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 2,614

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
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Trenching	Cranes	1	8.00	231	0.29
Trenching	Graders	0	0.00	0	0.00
Trenching	Rubber Tired Dozers	0	0.00	0	0.00
Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Trenching	Welders	4	8.00	46	0.45
CNG Compound Installation	Cranes	1	6.00	231	0.29
CNG Compound Installation	Excavators	1	8.00	158	0.38
CNG Compound Installation	Forklifts	0	0.00	0	0.00
CNG Compound Installation	Generator Sets	0	0.00	0	0.00
CNG Compound Installation	Skid Steer Loaders	1	8.00	65	0.37
CNG Compound Installation	Tractors/Loaders/Backhoes	0	0.00	0	0.00
CNG Compound Installation	Welders	2	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	0	0.00	0	0.00
Paving	Paving Equipment	0	0.00	0	0.36
Paving	Plate Compactors	2	8.00	8	0.43
Paving	Rollers	0	0.00	0	0.00
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching	6	26.00	20.00	80.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
CNG Compound Installation	5	26.00	12.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Paving	6	26.00	12.00	80.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000				0.0000
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676		1,651.9372	1,651.9372	0.3739			1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676		1,651.9372	1,651.9372	0.3739			1,661.2854

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	lb/day										lb/day						
Hauling	1.6300e-003	0.0960	0.0107	1.1000e-004	2.0000e-005	4.0000e-005	6.0000e-005	1.0000e-005	3.0000e-005	4.0000e-005		12.0842	12.0842	1.8000e-003			12.1292
Vendor	0.0263	1.1924	0.2477	1.1800e-003	5.3000e-004	3.9000e-004	9.1000e-004	2.1000e-004	3.7000e-004	5.8000e-004		126.4478	126.4478	0.0192			126.9287
Worker	0.0276	6.5400e-003	0.0920	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.7963	5.7963	4.9000e-004			5.8085
Total	0.0555	1.2949	0.3504	1.3500e-003	8.1000e-004	5.9000e-004	1.3900e-003	3.2000e-004	5.5000e-004	8.7000e-004		144.3283	144.3283	0.0215			144.8664

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	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739		1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739		1,661.2854

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	lb/day										lb/day					
Hauling	1.6300e-003	0.0960	0.0107	1.1000e-004	2.0000e-005	4.0000e-005	6.0000e-005	1.0000e-005	3.0000e-005	4.0000e-005		12.0842	12.0842	1.8000e-003		12.1292
Vendor	0.0263	1.1924	0.2477	1.1800e-003	5.3000e-004	3.9000e-004	9.1000e-004	2.1000e-004	3.7000e-004	5.8000e-004		126.4478	126.4478	0.0192		126.9287
Worker	0.0276	6.5400e-003	0.0920	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.7963	5.7963	4.9000e-004		5.8085
Total	0.0555	1.2949	0.3504	1.3500e-003	8.1000e-004	5.9000e-004	1.3900e-003	3.2000e-004	5.5000e-004	8.7000e-004		144.3283	144.3283	0.0215		144.8664

3.3 CNG Compound Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020

Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020
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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	lb/day										lb/day					
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
Vendor	0.0158	0.7154	0.1486	7.1000e-004	3.2000e-004	2.3000e-004	5.5000e-004	1.2000e-004	2.2000e-004	3.5000e-004		75.8687	75.8687	0.0115		76.1573
Worker	0.0276	6.5400e-003	0.0920	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.7963	5.7963	4.9000e-004		5.8085
Total	0.0433	0.7220	0.2406	7.7000e-004	5.8000e-004	3.9000e-004	9.7000e-004	2.2000e-004	3.7000e-004	6.0000e-004		81.6650	81.6650	0.0120		81.9658

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	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020
Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020

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	lb/day										lb/day					
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
Vendor	0.0158	0.7154	0.1486	7.1000e-004	3.2000e-004	2.3000e-004	5.5000e-004	1.2000e-004	2.2000e-004	3.5000e-004		75.8687	75.8687	0.0115		76.1573
Worker	0.0276	6.5400e-003	0.0920	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.7963	5.7963	4.9000e-004		5.8085
Total	0.0433	0.7220	0.2406	7.7000e-004	5.8000e-004	3.9000e-004	9.7000e-004	2.2000e-004	3.7000e-004	6.0000e-004		81.6650	81.6650	0.0120		81.9658

3.4 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					

Hauling	1.6300e-003	0.0960	0.0107	1.1000e-004	2.0000e-005	4.0000e-005	6.0000e-005	1.0000e-005	3.0000e-005	4.0000e-005		12.0842	12.0842	1.8000e-003		12.1292
Vendor	0.0158	0.7154	0.1486	7.1000e-004	3.2000e-004	2.3000e-004	5.5000e-004	1.2000e-004	2.2000e-004	3.5000e-004		75.8687	75.8687	0.0115		76.1573
Worker	0.0276	6.5400e-003	0.0920	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.7963	5.7963	4.9000e-004		5.8085
Total	0.0450	0.8180	0.2513	8.8000e-004	6.0000e-004	4.3000e-004	1.0300e-003	2.3000e-004	4.0000e-004	6.4000e-004		93.7492	93.7492	0.0138		94.0950

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	lb/day										lb/day					
Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					
Hauling	1.6300e-003	0.0960	0.0107	1.1000e-004	2.0000e-005	4.0000e-005	6.0000e-005	1.0000e-005	3.0000e-005	4.0000e-005		12.0842	12.0842	1.8000e-003		12.1292
Vendor	0.0158	0.7154	0.1486	7.1000e-004	3.2000e-004	2.3000e-004	5.5000e-004	1.2000e-004	2.2000e-004	3.5000e-004		75.8687	75.8687	0.0115		76.1573
Worker	0.0276	6.5400e-003	0.0920	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.7963	5.7963	4.9000e-004		5.8085
Total	0.0450	0.8180	0.2513	8.8000e-004	6.0000e-004	4.3000e-004	1.0300e-003	2.3000e-004	4.0000e-004	6.4000e-004		93.7492	93.7492	0.0138		94.0950

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

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	lb/day										lb/day					
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
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
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
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000							

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	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309

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	lb/day										lb/day					
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
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
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
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000							

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
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Category	lb/day										lb/day					
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
Other Asphalt Surfaces	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
Other Asphalt Surfaces	16.60	8.40	6.90	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
Other Asphalt Surfaces	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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Category	lb/day										lb/day					
	NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Other Asphalt Surfaces	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Other Asphalt Surfaces	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Mitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Air Compressors	2	8.00	365	250	0.48	CNG

UnMitigated/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
Equipment Type	lb/day										lb/day					

Air Compressors	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770

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

Shell CNG Truck Station - South Coast AQMD Air District, Winter

Shell CNG Truck Station
South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00	Acre	1.36	59,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	8			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Start date: March 1st 2021

Land Use - A

Construction Phase - a

Off-road Equipment - a

Off-road Equipment - A

Off-road Equipment - a

Trips and VMT - A

Grading -

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - a

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	3,558.00	2,614.00
tblAreaCoating	Area_Parking	3558	2614
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	200.00	79.00
tblConstructionPhase	NumDays	4.00	79.00
tblConstructionPhase	NumDays	10.00	79.00
tblLandUse	LandUseSquareFeet	43,560.00	59,300.00
tblLandUse	LotAcreage	1.00	1.36
tblOffRoadEquipment	HorsePower	89.00	0.00
tblOffRoadEquipment	HorsePower	84.00	0.00
tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	130.00	0.00
tblOffRoadEquipment	HorsePower	132.00	0.00
tblOffRoadEquipment	HorsePower	80.00	0.00
tblOffRoadEquipment	HorsePower	247.00	0.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	LoadFactor	0.20	0.00
tblOffRoadEquipment	LoadFactor	0.74	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.42	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.00
tblOffRoadEquipment	LoadFactor	0.40	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	78.00	250.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00

tblTripsAndVMT	VendorTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	10.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	25.00	26.00
tblTripsAndVMT	WorkerTripNumber	15.00	26.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2021	6.3774	31.4780	28.6668	0.0493	1.9900e-003	1.3927	1.3946	7.7000e-004	1.3277	1.3284	0.0000	4,495.8669	4,495.8669	1.0725	0.0000	4,522.6783
Maximum	6.3774	31.4780	28.6668	0.0493	1.9900e-003	1.3927	1.3946	7.7000e-004	1.3277	1.3284	0.0000	4,495.8669	4,495.8669	1.0725	0.0000	4,522.6783

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	lb/day										lb/day					
2021	6.3774	31.4780	28.6668	0.0493	1.9900e-003	1.3927	1.3946	7.7000e-004	1.3277	1.3284	0.0000	4,495.8669	4,495.8669	1.0725	0.0000	4,522.6783
Maximum	6.3774	31.4780	28.6668	0.0493	1.9900e-003	1.3927	1.3946	7.7000e-004	1.3277	1.3284	0.0000	4,495.8669	4,495.8669	1.0725	0.0000	4,522.6783

	ROG	NOx	CO	SO2	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

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	lb/day										lb/day					
Area	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
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
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
Offroad	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.1037	6.8446	4.6647	0.0254	0.0000	0.2201	0.2201	0.0000	0.2201	0.2201		2,405.5433	2,405.5433	0.0974	0.0000	2,407.9772

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	lb/day										lb/day					
Area	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
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
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
Offroad	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.1037	6.8446	4.6647	0.0254	0.0000	0.2201	0.2201	0.0000	0.2201	0.2201		2,405.5433	2,405.5433	0.0974	0.0000	2,407.9772

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Grading	5/13/2021	8/31/2021	5	79	
2	CNG Compound Installation	Building Construction	5/13/2021	8/31/2021	5	79	
3	Paving	Paving	5/13/2021	8/31/2021	5	79	
4	Architectural Coating	Architectural Coating	7/19/2021	7/23/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 2,614

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
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Trenching	Cranes	1	8.00	231	0.29
Trenching	Graders	0	0.00	0	0.00
Trenching	Rubber Tired Dozers	0	0.00	0	0.00
Trenching	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Trenching	Welders	4	8.00	46	0.45
CNG Compound Installation	Cranes	1	6.00	231	0.29
CNG Compound Installation	Excavators	1	8.00	158	0.38
CNG Compound Installation	Forklifts	0	0.00	0	0.00
CNG Compound Installation	Generator Sets	0	0.00	0	0.00
CNG Compound Installation	Skid Steer Loaders	1	8.00	65	0.37
CNG Compound Installation	Tractors/Loaders/Backhoes	0	0.00	0	0.00
CNG Compound Installation	Welders	2	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	0	0.00	0	0.00
Paving	Paving Equipment	0	0.00	0	0.36
Paving	Plate Compactors	2	8.00	8	0.43
Paving	Rollers	0	0.00	0	0.00
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching	6	26.00	20.00	80.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
CNG Compound Installation	5	26.00	12.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Paving	6	26.00	12.00	80.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676		1,651.9372	1,651.9372	0.3739		1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676		1,651.9372	1,651.9372	0.3739		1,661.2854

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	lb/day										lb/day					
Hauling	1.8400e-003	0.0923	0.0150	1.0000e-004	2.0000e-005	5.0000e-005	7.0000e-005	1.0000e-005	5.0000e-005	5.0000e-005		10.5304	10.5304	2.0400e-003		10.5813
Vendor	0.0289	1.1560	0.3034	1.0300e-003	5.3000e-004	5.1000e-004	1.0300e-003	2.1000e-004	4.9000e-004	6.9000e-004		110.6713	110.6713	0.0217		111.2137
Worker	0.0244	7.1100e-003	0.1085	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.6703	5.6703	5.6000e-004		5.6842
Total	0.0551	1.2554	0.4269	1.1900e-003	8.1000e-004	7.2000e-004	1.5200e-003	3.2000e-004	6.9000e-004	9.9000e-004		126.8719	126.8719	0.0243		127.4791

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	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.7874	12.5438	10.8358	0.0187		0.5911	0.5911		0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739		1,661.2854
Total	1.7874	12.5438	10.8358	0.0187	0.0000	0.5911	0.5911	0.0000	0.5676	0.5676	0.0000	1,651.9372	1,651.9372	0.3739		1,661.2854

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	lb/day										lb/day					
Hauling	1.8400e-003	0.0923	0.0150	1.0000e-004	2.0000e-005	5.0000e-005	7.0000e-005	1.0000e-005	5.0000e-005	5.0000e-005		10.5304	10.5304	2.0400e-003		10.5813
Vendor	0.0289	1.1560	0.3034	1.0300e-003	5.3000e-004	5.1000e-004	1.0300e-003	2.1000e-004	4.9000e-004	6.9000e-004		110.6713	110.6713	0.0217		111.2137
Worker	0.0244	7.1100e-003	0.1085	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.6703	5.6703	5.6000e-004		5.6842
Total	0.0551	1.2554	0.4269	1.1900e-003	8.1000e-004	7.2000e-004	1.5200e-003	3.2000e-004	6.9000e-004	9.9000e-004		126.8719	126.8719	0.0243		127.4791

3.3 CNG Compound Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020

Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177		1,534.3999	1,534.3999	0.4161		1,544.8020
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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	lb/day										lb/day					
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
Vendor	0.0173	0.6936	0.1821	6.2000e-004	3.2000e-004	3.1000e-004	6.2000e-004	1.2000e-004	2.9000e-004	4.2000e-004		66.4028	66.4028	0.0130		66.7282
Worker	0.0244	7.1100e-003	0.1085	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.6703	5.6703	5.6000e-004		5.6842
Total	0.0417	0.7007	0.2905	6.8000e-004	5.8000e-004	4.7000e-004	1.0400e-003	2.2000e-004	4.4000e-004	6.7000e-004		72.0730	72.0730	0.0136		72.4124

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	lb/day										lb/day					
Off-Road	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020
Total	1.2197	9.8117	9.5865	0.0167		0.4412	0.4412		0.4177	0.4177	0.0000	1,534.3999	1,534.3999	0.4161		1,544.8020

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	lb/day										lb/day					
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
Vendor	0.0173	0.6936	0.1821	6.2000e-004	3.2000e-004	3.1000e-004	6.2000e-004	1.2000e-004	2.9000e-004	4.2000e-004		66.4028	66.4028	0.0130		66.7282
Worker	0.0244	7.1100e-003	0.1085	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.6703	5.6703	5.6000e-004		5.6842
Total	0.0417	0.7007	0.2905	6.8000e-004	5.8000e-004	4.7000e-004	1.0400e-003	2.2000e-004	4.4000e-004	6.7000e-004		72.0730	72.0730	0.0136		72.4124

3.4 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467		746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					

Hauling	1.8400e-003	0.0923	0.0150	1.0000e-004	2.0000e-005	5.0000e-005	7.0000e-005	1.0000e-005	5.0000e-005	5.0000e-005		10.5304	10.5304	2.0400e-003		10.5813
Vendor	0.0173	0.6936	0.1821	6.2000e-004	3.2000e-004	3.1000e-004	6.2000e-004	1.2000e-004	2.9000e-004	4.2000e-004		66.4028	66.4028	0.0130		66.7282
Worker	0.0244	7.1100e-003	0.1085	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.6703	5.6703	5.6000e-004		5.6842
Total	0.0435	0.7930	0.3055	7.8000e-004	6.0000e-004	5.2000e-004	1.1100e-003	2.3000e-004	4.9000e-004	7.2000e-004		82.6034	82.6034	0.0156		82.9936

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	lb/day										lb/day					
Off-Road	0.5429	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749
Paving	0.0451					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5880	4.8465	5.4040	8.2500e-003		0.2646	0.2646		0.2467	0.2467	0.0000	746.5334	746.5334	0.2097		751.7749

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	lb/day										lb/day					
Hauling	1.8400e-003	0.0923	0.0150	1.0000e-004	2.0000e-005	5.0000e-005	7.0000e-005	1.0000e-005	5.0000e-005	5.0000e-005		10.5304	10.5304	2.0400e-003		10.5813
Vendor	0.0173	0.6936	0.1821	6.2000e-004	3.2000e-004	3.1000e-004	6.2000e-004	1.2000e-004	2.9000e-004	4.2000e-004		66.4028	66.4028	0.0130		66.7282
Worker	0.0244	7.1100e-003	0.1085	6.0000e-005	2.6000e-004	1.6000e-004	4.2000e-004	1.0000e-004	1.5000e-004	2.5000e-004		5.6703	5.6703	5.6000e-004		5.6842
Total	0.0435	0.7930	0.3055	7.8000e-004	6.0000e-004	5.2000e-004	1.1100e-003	2.3000e-004	4.9000e-004	7.2000e-004		82.6034	82.6034	0.0156		82.9936

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

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	lb/day										lb/day					
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
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
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
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000							

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	lb/day										lb/day					
Archit. Coating	2.4232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	2.6421	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309

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	lb/day										lb/day					
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
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
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
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000							

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	lb/day										lb/day					
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
Other Asphalt Surfaces	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
Other Asphalt Surfaces	16.60	8.40	6.90	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
Other Asphalt Surfaces	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

Category	lb/day										lb/day					
	NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Other Asphalt Surfaces	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Other Asphalt Surfaces	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
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	lb/day										lb/day					
Mitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	3.3200e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0210					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0243	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Air Compressors	2	8.00	365	250	0.48	CNG

UnMitigated/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
Equipment Type	lb/day										lb/day					

Air Compressors	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770
Total	1.0794	6.8446	4.6646	0.0254		0.2201	0.2201		0.2201	0.2201		2,405.5431	2,405.5431	0.0974		2,407.9770

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Appendix B

Biological Resources Assessment

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Memorandum

To	Omar Sharief, Shell	Pages 13
Subject	Carson Renewable Compressed Natural Gas Dispensing Project Biological Resource Assessment	
From	Angelique Herman, AECOM	
cc	Natalie Thompson, AECOM	
Date	November 18, 2020, revised February 24, 2021	

AECOM conducted a desktop review for the proposed Carson Renewable Compressed Natural Gas (CNG) Dispensing Project (Project) site that involves upgrades and improvements to the existing Shell Carson Distribution Complex (Appendix A). This memorandum summarizes AECOM's understanding of the Project, methods, findings, conclusions, and recommendations regarding biological resources.

1.0 Project Description

The proposed project includes improvements to the existing Shell Carson Distribution Complex. The Project would install a 4-inch natural gas pipeline and facilities to dispense CNG at the Shell Carson Distribution Terminal located at 20945 South Wilmington Avenue in the City of Carson, California (project site). The new natural gas pipeline would run east-west for approximately 3,200 feet on an aboveground existing pipe rack, except where it crosses two on-site driveways where it would be placed in a precast trench with a grate cover. The western terminus of the natural gas pipeline would be a CNG system compound near the southeastern corner of the ethanol loading area. This compound would include two compressors, one dryer, and three CNG storage tanks. A CNG pipeline would extend north from this compound to three CNG dispensers located on the eastern side of the ethanol loading. There would be a canopy installed over the three new dispensers as well as approximately 16,220 square feet of new concrete and asphalt laid to support the dispensers and CNG system compound. Construction staging, laydown areas, and contractor parking would be located on-site within the Shell-owned property (Appendix A).

2.0 Project Location

The project site is within the City of Carson, California, and bounded by East Del Amo Boulevard to the north, South Wilmington Avenue to the east, East Dominguez Street to the south, and Annalee Avenue and Chico Street to the west (Appendix A). The facility is bordered by residential, light manufacturing, and commercial uses, with United States Interstate 405 (I-405) located approximately 850 feet west at the closest point. The project site is zoned Heavy Industrial.

3.0 Methodology

A desktop review was conducted to determine potential for sensitive biological resources to occur within the biological survey area (BSA). The BSA included the footprint of the Project plus a 500-foot buffer surrounding the footprint, all falling within the Shell-owned parcel. The methods employed for the desk top reviews are described below. For the purposes of this memorandum,

sensitive and special-status species are defined as species that are included on one or more of the following lists:

- Plant and wildlife species that are listed as threatened or endangered, or are candidates for listing as threatened or endangered, under the Federal Endangered Species Act¹;
- Plant and wildlife species that are listed as threatened or endangered, or are candidates for listing as threatened or endangered, under the California Endangered Species Act²;
- California Department of Fish and Wildlife (CDFW)-designated Species of Special Concern (SSC), rare plant species, and designated Fully Protected Species³; and
- Plants designated by the California Native Plant Society (CNPS) with a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4.⁴

AECOM reviewed and identified biological resources that may occur in the project area, including special-status plants and wildlife, United States (U.S.) Fish and Wildlife Service's (USFWS's) Critical Habitat, and previously delineated waters of the U.S. and state of California. The database searches were conducted of the Long Beach 7.5-minute United States Geological Survey (USGS) topographic quadrangle, along with the eight surrounding quadrangles which included: Whittier, South Gate, Inglewood, Los Alamitos, Long Beach OES, Torrance, San Pedro, and Seal Beach. Aerial imagery of the BSA was reviewed to help characterize site conditions. This information was evaluated by consulting the following available databases:

- The CDFW CNDDDB⁵;
- USFWS online Information for Planning and Consultation (IPaC)⁶;
- The CNPS Inventory of Rare and Endangered Plants⁷;
- The USFWS Critical Habitat Mapper⁸; and
- The USGS National Hydrography Dataset (NHD)⁹.

¹ Species listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (Title 50 Code of Federal Regulations [CFR] 17.12 [listed plants], Title 50 CFR 17.11 [listed animals] and includes notices in the Federal Register for proposed species).

² Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (Title 14 California Code of Regulations 670.5).

³ California Natural Diversity Database (CNDDDB). September 2020. Special Animals List. California Department of Fish and Wildlife. Sacramento, CA.

⁴ Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 *et seq.*).

⁵ CDFW CNDDDB RareFind 5.0. Available at <https://wildlife.ca.gov/Data/CNDDDB/Maps-and-Data#43018407-rarefind-5>. Accessed September 11, 2020.

⁶ IPaC. 2020. USFWS. Available at: <https://ecos.fws.gov/ipac/>.

⁷ CNPS, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.45). Website <http://www.rareplants.cnps.org> [accessed 11 September 2020].

⁸ USFWS Critical Habitat Mapper. 2020. Available at: <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>. Accessed September 28, 2020.

⁹ USGS National Hydrography Products. 2020. Available at: <https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products>. Accessed September 11, 2020.

Additional sources of information on special-status species in California were reviewed, given that CNDDDB is not inclusive of all current known occurrence information. The probability of occurrence evaluation provided in this memorandum for special-status species identified during the database reviews was supplemented by AECOM's professional knowledge of the area and included reviews of other published sources of information regarding special-status species in California. These latter sources include the following:

- eBird website¹⁰;
- Inaturalist website¹¹;
- Calflora website¹²; and
- Western Bat Working Group website¹³.

4.0 Findings

4.1 General Site Conditions

The BSA is located within an existing industrial facility. Historically, the site has been used as a petroleum refinery, a chemical plant, petroleum and chemical storage tanks, facility offices, and maintenance facilities. From reviewing aerial imagery, the main cover types within the BSA appear to be bare ground and paved surfaces with existing oil infrastructure. Ornamental woody vegetation including gum tree species (*Eucalyptus* spp.) and palms (*Washingtonia robusta* and *Phoenix canariensis*), and hedgerows are also present.

4.2 Special-status Species

The desktop review yielded records for 44 special-status plant species and 82 special-status wildlife species that have been documented within the Long Beach and surrounding eight quadrangles (Appendix B). The desktop review indicates that no special-status species have previously been recorded within the BSA. A complete list of regional special-status species with some potential to occur or known to occur, sensitivity status, general habitat descriptions, and potential or detection within the BSA is summarized in Appendix B.

Due to the high levels of disturbance and lack of native habitats, the BSA does not provide high quality habitat for special-status plant species. The BSA provides marginal habitat for one special-status plant species identified during the review of the CNDDDB (Table 1).

¹⁰ The Cornell Lab of Ornithology: eBird Website. 2020. Available at <http://www.ebird.org>. Accessed September 11, 2020.

¹¹ Inaturalist Open Source Software. iNaturalist website. 2020. Available at <http://inaturalist.org>. Accessed September 11, 2020.

¹² Calflora website. 2020. Available at <http://calflora.org>. Accessed September 11, 2020.

¹³ Western Bat Working Group website. 2020. Available at <http://wbwg.org/western-bat-species/>. Accessed September 28, 2020.

Table 1. Special-status Plant Species with Potential to Occur in the BSA

Plants		
Common Name (Scientific Name)	Status Federal/State/CRPR	Potential to Occur
southern tarplant <i>(Centromadia parryi ssp. australis)</i>	- / - / 1B.1	Moderate

There are five CNDDDB occurrences of southern tarplant within 5 miles of the BSA. Two of them are located in former oil fields with high levels of disturbance. Both occurrences are similar in habitat type and quality to the BSA.

Due to the high levels of disturbance and prevalence of degraded habitat, the BSA largely does not provide suitable habitat for special-status wildlife species; however, marginal habitat for eight special-status wildlife species identified during the review of the CNDDDB (Table 2) exists in the BSA. These special-status species have a low potential to occur.

Table 2. Special-status Wildlife Species with Potential to Occur in the BSA

Wildlife		
Common Name (Scientific Name)	Status Federal/State/Other	Potential to Occur
Invertebrates		
Crotch bumble bee <i>(Bombus crotchii)</i>	- / CE ¹⁴ / -	Low
Birds		
Cooper's hawk <i>(Accipiter cooperii)</i>	- / - / WL	Low
burrowing owl <i>(Athene cunicularia)</i>	- / - / SSC, BCC	Moderate
California horned lark <i>(Eremophila alpestris actia)</i>	- / - / WL	Low
loggerhead shrike <i>(Lanius ludovicianus)</i>	- / - / SSC, BCC	Low
Mammals		
western red bat <i>(Lasiurus blossevillii)</i>	- / - / SSC	Low

¹⁴ During a November 19, 2020 court ruling, the California Superior Court in Sacramento ruled the California Endangered Species Act (CESA) does not cover insects and therefore the state-listed candidate status of Crotch bumble bee and other insects would be in question. As of February 24, 2021 the most recent CDFW listing of state species is dated February, 2021, and Crotch bumble bee remains CE. Candidate species have the same protections as listed species, so the Crotch bumble bee should be considered until its status is officially changed.

cave myotis bat (<i>Myotis velifer</i>)	- / - / SSC	Low
big free-tailed bat (<i>Nyctinomops macrotis</i>)	- / - / SSC	Low

Crotch bumble bee is state candidate for listing as endangered. The nearest CNDDDB occurrence of Crotch bumble bee is approximately 4 miles south near the City of Long Beach. Although the potential is low due to the high-level of disturbance within the BSA, there is potential for this species to occur due to its tolerance of hot and dry habitats with low vegetation cover. The potential for occurrence is limited to transient individuals during foraging activities because the site lacks the vegetation communities typically associated with its maternity burrows (i.e., coastal sage scrub and chaparral).

Cooper’s hawk is CDFW Watch List species, indicating it has not yet met SSC criteria, but there is concern and a need for additional information to clarify status. In addition to forested natural habitats, Cooper’s Hawks are also adapted to occupying urban settings and are common in such settings in southern California. Mature trees within the BSA could provide nesting habitat for Cooper’s hawks and could also support smaller passerine birds, providing a food source for breeding Cooper’s hawks.

Burrowing owl is a CDFW SSC. Burrowing owls typically occupy flat open areas with small mammal burrows in which they take cover and breed. They are known to have a tolerance of anthropogenic disturbances and can occupy human-altered environments such as airports and golf courses as well as natural environments. The open, ruderal fields within the BSA are likely to have California ground squirrel (*Otospermophilus beecheyi*) occupation, which would provide burrows and a food source for burrowing owls. Although the level of habitat degradation and anthropogenic disturbances makes the potential of burrow owl occupation moderate, there is still a potential for burrowing owl to occur.

California horned lark is a CDFW Watch List species, indicating it has not yet met SSC criteria, but there is concern and a need for additional information to clarify status. California horned larks occupy open grasslands, fallow agricultural fields, or other areas with low-growing or sparse vegetation. Although the potential for this species to occur is low due to habitat degradation, the open areas within the BSA could provide habitat for California horned lark.

Loggerhead shrike is a CDFW SSC. Loggerhead shrikes occupy open areas with sparse vegetation interspersed with perching structures such as fence posts or snags. Loggerhead shrike breeding activity is uncommon in coastal Los Angeles; however, overwintering and migrating birds may stop over in the region and can be fairly common. Although the level of habitat degradation and anthropogenic disturbances makes the potential occurrence of this species low, there is still a potential for loggerhead shrike to occur in the open areas with sparse vegetation within the BSA; breeding is not expected.

Western red bat is a CDFW SSC. Western red bats can be found in a variety of habitats throughout much of the state. It roosts in trees and prefers roosts adjacent to open space with low growing vegetation. Although the potential for occurrence by western red bat is low, due to the low habitat quality, trees within the BSA could provide stopover roosting habitat, and sparsely vegetated areas could provide feeding grounds for western red bat.

Cave myotis bat is a CDFW SSC. As its common name suggests, cave myotis bat typically form colonial groups which utilize caves as hibernacula. A recent CNDDDB record occurs to the east in the

South Gate quad. Although it typically is thought to use caves, it can also roost in buildings and trees. Although the potential is low, trees and buildings in the BSA could provide habitat for cave myotis bat.

Big free-tailed bat is a CDFW SSC. Big free-tailed bat uses caves, tree cavities, and buildings for roosts. The nearest CNDDDB record is approximately 4 miles south of the BSA, near the City of Long Beach. Although the potential is low, trees and buildings in the BSA could provide roosting habitat for big free-tailed bat.

Many birds protected under the Migratory Bird Treaty Act (MBTA) are likely to use the BSA for breeding, migratory stopovers, and local dispersal. Mourning dove (*Zenaida macroura*) and killdeer (*Charadrius vociferous*) are species likely to nest within the BSA on or near to the ground. House finch (*Haemorhous mexicanus*) and Northern mockingbird (*Mimus polyglottos*) are most likely to nest in palm trees or parkway trees within the BSA.

4.3 Sensitive Natural Communities

Sensitive natural communities are those designated as rare in the region by the CNDDDB, support special-status plant or wildlife species, or receive regulatory protection (i.e., Section 404 of the Clean Water Act and/or Sections 1600 et seq. of the California Fish and Game Code). Rare communities are given the highest inventory priority. Four regional habitats of concern including Southern Coastal Bluff Scrub, Southern Coastal Salt Marsh, Southern Dune Scrub, and Southern Foredunes are recorded in the CNDDDB from the USGS Long Beach and surrounding eight quadrangles; however, no sensitive vegetation communities identified in the CNDDDB coincide with the BSA. Additionally, CDFW maintains and periodically updates a list of Sensitive Natural Communities¹⁵. Based on review of aerial imagery, the BSA is largely unvegetated. Where vegetation does occur, it is composed of non-native landscape trees and hedgerows (Appendix A). Sensitive natural vegetation communities listed by CDFW are not present in the BSA.

4.4 Critical Habitat

Critical habitat is specific geographic areas designated by USFWS that contain features essential to the conservation of a federally endangered or threatened species and that may require special management and protection. The BSA does not coincide with lands designated by USFWS as critical habitat for a listed species.

4.5 Jurisdictional Waters

Jurisdictional waters include waters of the state and of the U.S that fall under federal regulatory jurisdiction of the U.S. Army Corp of Engineers and/or under state jurisdiction of CDFW and the Regional Water Quality Control Board. An online database search of the USGS NHD indicates no previously mapped jurisdictional waters occur within the BSA.

4.6 Wildlife Corridors

In an urban context, a wildlife corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat

¹⁵ CDFW, VegCamp, Natural Communities List. 2020. Accessed at: <https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities>. Accessed on October 5, 2020.

fragments, or between a habitat fragment and some vital resource that encourages population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban tracts or highways.

The BSA occurs within an industrial center of the Los Angeles Basin and does not occur within or intersect a recognized/established regional wildlife corridor. Ornamental trees, largely gum tree species (*Eucalyptus* spp.) and palms (*Washingtonia robusta* and *Phoenix canariensis*), within and adjacent to the project provide some opportunities for cover, foraging, and nesting to localized bird populations; however, they do not function as a significant wildlife corridor.

5.0 Regulatory Requirements

5.1 Federal Regulations and Standards

Federal Endangered Species Act (ESA)

Enacted in 1973, the federal ESA provides for the conservation of threatened and endangered species and their ecosystems (U.S. Code [U.S.C.] Title 16, Chapter 35, Sections 1531–1544). The ESA prohibits the “take” of threatened and endangered species except under certain circumstances and only with authorization from USFWS through a permit under Section 4(d), 7 or 10(a) of the ESA. “Take” under the ESA is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

Formal consultation under the ESA would be required if the project had the potential to affect a federally listed species that has been detected within or adjacent to the BSA. No federally listed species were detected during the field survey, and suitable habitats for such species do not occur in the BSA, or the species’ known distribution does not coincide with the BSA. Therefore, formal consultation is not anticipated.

Migratory Bird Treaty Act (MBTA)

Congress passed the MBTA in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA (U.S.C. Title 16, Chapter 7, Subchapter II, Sections 703–712). The prohibition applies to birds included in the respective international conventions between the U.S. and Great Britain, the U.S. and Mexico, the U.S. and Japan, and the U.S. and Russia.

No permit is issued under the MBTA; however, the project would remain in compliance with the MBTA by conducting pre-construction nesting bird surveys, and, if needed, providing a qualified biologist to monitor active nests occurring in the BSA to ensure construction does not affect species protected under the MBTA.

Bald and Golden Eagle Protection Act (the Eagle Act)

The Eagle Act, amended in 1962, was originally implemented for the protection of bald eagles. In 1962, Congress amended the Eagle Act to also cover golden eagles, a move that was partially an attempt to strengthen protection of bald eagles, because the latter were often killed by people mistaking them for golden eagles. This act makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof.

Bald and golden eagles are not known from the project area, and habitat in the BSA is not suitable for these species. As a result, the project would not be expected to take bald or golden eagle.

Clean Water Act (CWA)

Under Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 CFR 328.3 (Definitions) (U.S.C. Title 33, Chapter 26, Sections 101–607). Section 401 of the CWA requires a water quality certification from the state for all permits issued by the USACE under Section 404 of the CWA. Regional Water Quality Control Board (RWQCB) is the state agency in charge of issuing a CWA Section 401 water quality certification or waiver.

No aquatic features under regulatory jurisdiction of the USACE or RWQCB occur within the BSA. As a result, permits from these agencies are not anticipated.

Coastal Zone Management Act

The U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act in 1972 (Public Law 109-58; 16 U.S.C. 1451 et seq.). This act, administered by the National Oceanic and Atmospheric Administration, provides for the management of the nation's coastal resources, including the Great Lakes. The goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

An online review of the coastal zone boundary¹⁶ within Los Angeles County was conducted, and the BSA is not located in the California Coastal Zone.

5.2 State Regulations and Standards

California Fish and Game Code

The CFGC regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as impacts to natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act (CESA) (Sections 2050–2115) and Lake and Streambed Alteration Agreement (LSAA) regulations (Section 1600 et seq.).

Wildlife "take" is defined by the CDFW as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Protection extends to the animals, dead or alive, and all their body parts. Section 2081 of the CESA allows the CDFW to issue an incidental take permit for state-listed threatened or endangered species, should the proposed project have the potential to "take" a state-listed species that has been detected within or adjacent to the project. Certain criteria are required under the CESA prior to the issuance of such a permit, including the requirement that impacts of the take are minimized and fully mitigated.

No state-listed species are expected to occur in the BSA, and suitable habitats for such species do not occur in the BSA. As a result, a permit under Section 2081 is not anticipated for the project.

No aquatic features under the CDFW jurisdiction occur within the BSA. As a result, coordination with the CDFW and the issuance of an LSAA is not anticipated for this project.

¹⁶ California Coastal Zone. 2020. Accessed online at <https://www.coastal.ca.gov/maps/czb/>. Accessed September 27, 2020.

Porter-Cologne Water Quality Control Act

Under Section 13000 et seq., of the Porter-Cologne Quality Control Act, RWQCB is the agency that regulates discharges of waste and fill material within any region that could affect a water of the state (California Water Code [CWC] 13260[a]), (including wetlands and isolated waters) as defined by CWC Section 13050(e).

No aquatic features under RWQCB jurisdiction occur within the BSA. As a result, coordination with RWQCB and the issuance of a permit under the Porter-Cologne Quality Control Act is not anticipated for the project.

California Environmental Quality Act¹⁷

CEQA requires that biological resources be considered when assessing the environmental impacts resulting from proposed actions. CEQA does not specifically define what constitutes an “adverse effect” on a biological resource. Instead, lead agencies are charged with determining what specifically should be considered an impact.

5.3 Local Regulations and Standards

Significant Ecological Area Program

Los Angeles County first began to inventory biotic resources and identify important areas of biological diversity in the 1970s. Today, the primary mechanism used by the County to conserve biological diversity is a planning overlay called Significant Ecological Areas (SEAs)¹⁸ designated in the County’s General Plan Conservation/Open Space Element. SEAs are ecologically important land and water systems that support valuable habitat for plants and animals, often integral to the preservation of rare, threatened, or endangered species and the conservation of biological diversity in Los Angeles County. While SEAs are not preserves, they are areas where Los Angeles County deems it important to facilitate a balance between development and resource conservation.

Together, the General Plan overlays and a SEA conditional-use permit process are referred to as the SEA Program. The SEA Program, through goals and policies of the General Plan and the SEA ordinance (Title 22 Zoning Regulations, Section 22.56.215), help guide development within the SEAs. The SEA ordinance establishes the permitting, design standards, and review process for development within the SEAs, and permits are reviewed by the SEA Technical Advisory Committee. Development activities in the SEAs are reviewed closely in order to conserve water and biological resources such as streams, oak woodlands, and threatened or endangered species and their habitat.

The BSA does not coincide with a SEA. The nearest SEA is Harbor Lake Regional Park, which is approximately 4 miles southwest of the BSA. The project is not anticipated to affect resources within any SEA, and as a result the SEA program would not be applicable to the proposed project.

¹⁷ PRC Section 21000 et seq. and the State CEQA Guidelines, California Code of Regulations, Section 15000 et seq.

¹⁸ Significant Ecological Areas Program. Los Angeles County. 2020. Accessed online at: <http://planning.lacounty.gov/site/sea/>. Accessed on September 30, 2020.

City of Carson Tree Preservation and Protection Ordinance

City of Carson Municipal Code Chapter 9¹⁹ contains the City's Tree Preservation and Protection Ordinance. The purpose of this ordinance is to preserve and protect parkway trees in the City of Carson for aesthetic value for residence and visitors to the City and maintain the community's natural environment. This ordinance protects trees within the City of Carson's right-of-way or City-owned or -maintained property. Protective measures for construction occurring near parkway trees are outlined in Section 3928 of the ordinance and are based on the proximity of the construction activity to parkway trees and is determined by the City during the project review.

There is potential to trigger the City of Carson Tree Preservation and Protection Ordinance during project activities related to the eastern terminus of the new natural gas pipeline where the line approaches South Wilmington Avenue. If trenching, staging of materials, or trimming of branches is necessary within the dripline of any parkway tree, consultation with City of Carson would be required.

6.0 Impacts on Biological Resources

Biological resources may be either directly or indirectly impacted by a project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct:** Any alteration, physical disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include clearing vegetation, encroaching into wetlands or a stream, and the loss of individual species and/or their habitats.
- **Indirect:** As a result of project-related activities, biological resources may also be affected in a manner that is ancillary to physical impacts. Examples include elevated noise and dust levels, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants.
- **Permanent:** All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.
- **Temporary:** Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during construction; or removing vegetation for the preparation of stream bank stabilization activities, and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems.

¹⁹ City of Carson Municipal Code. 2020. Accessed online at <https://www.codepublishing.com/CA/Carson/html/Carson03/Carson030900.html#3929>. Accessed on September 27, 2020.

6.1. Vegetation

Implementation of the proposed project would not result in any vegetation removal; therefore, no direct or indirect effects to vegetation would occur.

6.2 Special-Status Species

Special-Status Plants

Based on the desktop review, one special-status plant, southern tarplant, has a moderate potential to occur (Table 1); however, the majority of the new pipeline will be installed aboveground and, as such, ground disturbance will be limited to less than 1 acre. Direct effects to southern tarplant by trampling are possible; however, due to the moderate likelihood of occurrence and small footprint of ground disturbance, significant direct effects on special-status plants will likely be avoided.

Permanent impacts to southern tarplant would be limited to the footprint of the proposed new CNG system compound and 3,200 feet of new natural gas pipeline. As described in Section 1, the new natural gas pipeline would run on an existing elevated pipe track, so it is possible to have southern tarplant re-growth under the elevated pipeline. Temporary impacts could occur in the existing laydown and staging area and the access routes between the laydown yards and the pipeline alignment. Implementing and adhering to the minimization and avoidance measures described in Section 7.0 of this memorandum would reduce the direct impacts to less than significant.

Indirect impacts to special-status plant species occurring outside of the project site could result from construction-related habitat loss and modification of sensitive natural communities related to dust, noise, stormwater runoff, and through the potential spread of noxious and invasive plant species into these communities. Such impacts would be considered significant; however, suitable habitat for special-status plants is not present in the urbanized environment surrounding the project, and by implementing standard construction practices related to fugitive dust and erosion control, the potential for indirect impacts to special-status plants would be further reduced. As a result, indirect impacts to special-status plants are not anticipated.

Special-status Wildlife

Based on the desktop review, eight special-status wildlife species have a low or moderate potential to occur, including one invertebrate: Crotch bumble bee; four avian species: Cooper's hawk, western burrowing owl, California horned lark, loggerhead shrike; and three special status bat species: western red bat, cave myotis bat, and big free tailed bat (Table 2).

If present, direct impacts to Crotch bumble bee could occur to underground nests during ground-disturbance activities.

If present, direct impacts to western burrowing owl could occur by destruction of burrows or burrow entrances, or harassment of occupied burrows; use of pesticides and rodenticides; and degradation of foraging habitat adjacent to burrows.

Direct impacts to ground nesting special status birds (i.e. California horned lark) and MBTA-protected bird nests (i.e. mourning dove) could be caused by pedestrian trampling of eggs or parental nest abandonment as a result of increased noise and vibration if active nests occur in the vicinity near construction. Direct impacts to Cooper's hawk nests or other MBTA-protected tree nesting birds could occur as a result of nest abandonment.

Direct impacts to listed bat species are not anticipated because no removal of potential roosts (trees or buildings) is required for the project.

Direct impacts to listed wildlife species are possible; however, due to the low likelihood of occurrence, small footprint of ground disturbance, and existing high anthropogenic disturbances, direct impacts on special-status wildlife are not anticipated. Implementation and adherence to the minimization and avoidance measures described in Section 7.0 of this memorandum would reduce the potential for direct impacts to less than significant.

Potential indirect impacts in the form of construction-generated noise, fugitive dust, and sediment into adjacent habitats supporting special-status wildlife species or MBTA-protected nesting birds may occur if it is determined that special-status species occur directly adjacent to construction. These indirect impacts may be considered significant. However, implementation and adherence to the minimization and avoidance measures described in Section 7.0 of this memorandum would reduce the direct impacts to less than significant.

6.3 Sensitive Natural Communities

Implementation of the proposed project would not result in direct or indirect impacts to any sensitive natural communities, as none occur within the BSA or surrounding area. The nearest natural communities occur approximately 4 miles southwest of the BSA in Harbor Lake Regional Park. As a result, significant impacts to sensitive natural communities are not anticipated due to the distance between the project and natural communities.

6.4 Critical Habitat

Implementation of the proposed project would not result in direct or indirect impacts to USFWS-designated critical habitat, as none occur within the BSA or surrounding area.

6.4 Jurisdictional Waters

Implementation of the proposed project would not result in direct or indirect impacts to jurisdictional waters, as none occur within the BSA.

6.5 Wildlife Corridor

The BSA does not serve as a regional wildlife corridor; as a result, direct impacts to a regional wildlife movement corridor would not occur. Project construction activities (i.e., increased noise, human presence, vibration) would likely result in wildlife avoidance of the area during the construction time frame. Such indirect effects would be temporary in nature, restricted to the project construction time period.

7.0 Avoidance, Minimization, and Mitigation Measures and Recommendations

Based on the results of the desktop review, the BSA does have the potential to support certain special-status resources that, if present, may require permits/authorizations for impacts, mitigation, and/or seasonal avoidance. The following avoidance and minimization measures and field surveys are recommended in order to avoid impacts to natural resources:

MM-BIO-1 Prior to construction, a qualified biologist shall conduct a pre-construction survey within 30 days of the project start date to identify special-status species, including Crotch bumble bee, southern tarplant, burrowing owl, and roosting bats, within the BSA of the immediate project site. The qualified biologist shall remain alert for the presence of any other special-status species.

If a special-status species is detected during pre-construction surveys, avoidance buffers shall be established. Project construction may occur outside the avoidance buffer, and a biological monitor will not be required. If work is required within the buffer area, a qualified biologist will be present to

facilitate resource avoidance. The biologist and any other site visitors must adhere to all site HSSE (Health, Safety, Security, Environmental) rules including COVID precaution measures.

MM-BIO-2 If construction activities are scheduled to occur between February 15 and September 1 (i.e., nesting bird season), a nesting bird survey shall be conducted within 7 days prior to the start of construction to detect active nests for birds protected by the Migratory Bird Treaty Act and special-status avian species with potential to occur, including, but not limited to, Cooper's hawk, California horned lark, and loggerhead shrike.

If special-status species or nesting birds protected by the Migratory Bird Treaty Act and California Fish and Game Code are detected within the BSA during pre-construction surveys, avoidance buffers shall be established. Project construction may occur outside the avoidance buffer without a biological monitor present. If construction activities within the avoidance buffer are required, then a biological monitor will be required for the duration of those activities to avoid impacts to those resources. The biologist and any other site visitors must adhere to all site HSSE (Health, Safety, Security, Environmental) rules including COVID precaution measures.

8.0 Conclusion

Based on the analysis presented above regarding anticipated effects of the proposed project, significant impacts to special-status species and nesting birds protected under the MBTA could occur. However, by conducting pre-construction surveys and subsequent biological monitoring efforts as described above in Section 7.0, and by implementing standard construction measures related to fugitive dust, erosion control, and noise, significant impacts to biological resources would be further reduced to a level below significant.

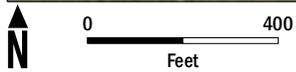
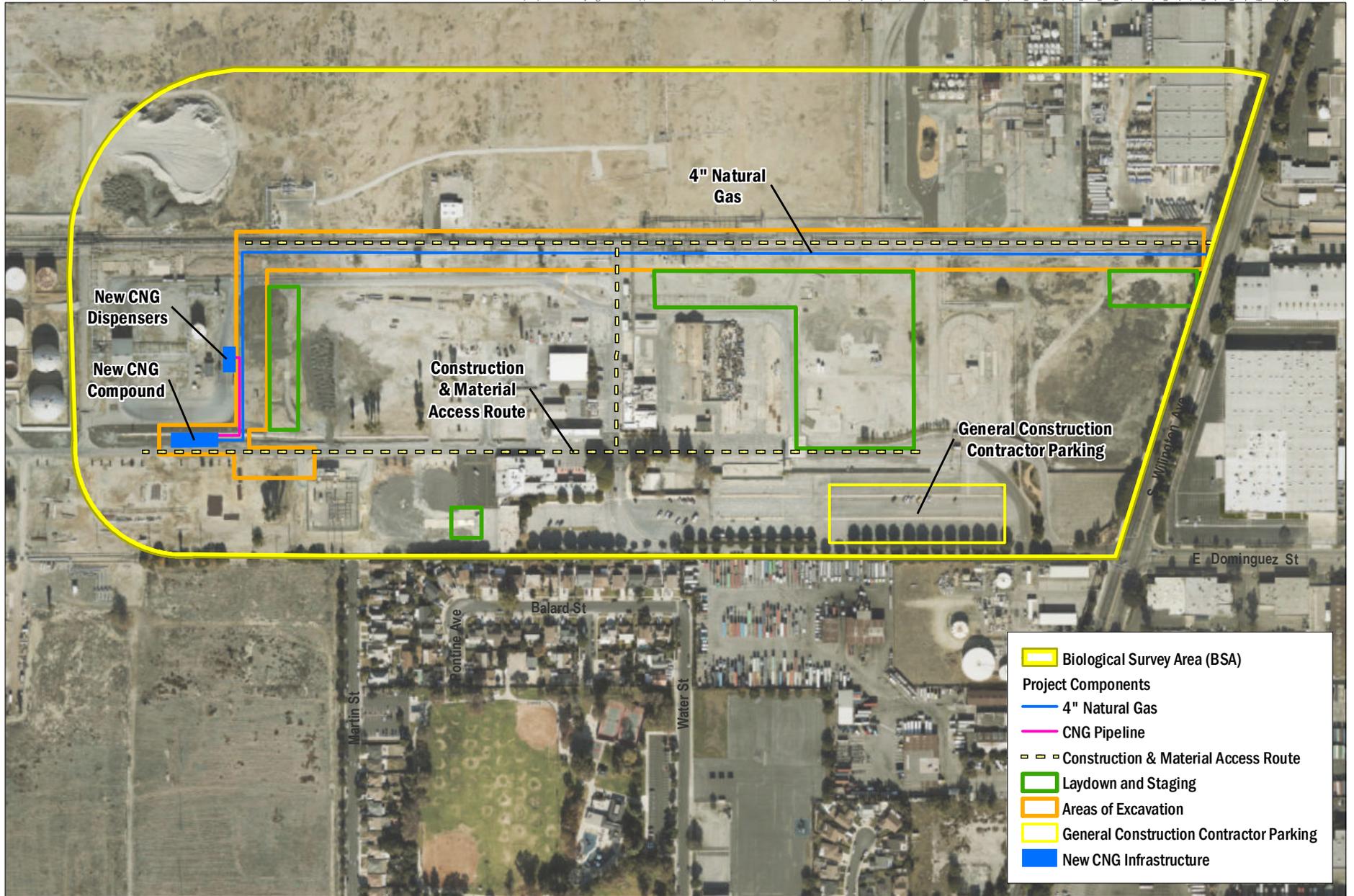
Consultation with the City of Carson regarding compliance with the Tree Preservation and Protection Ordinance is recommend if trenching, staging of materials, or trimming of branches is necessary within the dripline of any parkway tree.

Appendices

- Appendix A – Figure
- Appendix B – Special-Status Species Known to Occur in Vicinity of the BSA

Memorandum

Appendix A - Figure



Sources: AECOM, 2020; ESRI, 2020 (imagery)

AECOM

Shell

Carson Renewable Compressed Natural Gas (CNG) Dispensing Project (Project) Biological Resource Assessment
20945 SOUTH WILMINGTON AVENUE, CARSON, LOS ANGELES COUNTY, CA

FIGURE 1

Biological Survey Area (BSA)

**Appendix B - Special-Status Species Known to Occur in
Vicinity of the BSA**

Appendix B

Special-Status Species Known to Occur in Vicinity of the BSA

Common Name (<i>Scientific Name</i>)	Status Federal/State/CRPR ¹	General Habitat Description ²	Habitat Suitability	Potential to Occur ³
Plants				
aphanisma (<i>Aphanisma blitoides</i>)	- / - / 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub/sandy less than (<) 1,000 feet amsl above mean sea level (amsl). Annual herb; blooms during March through June.	No suitable habitat is present within the project site.	NE
Horn's milk-vetch (<i>Astragalus hornii</i> var. <i>hornii</i>)	- / - / 1B.1	Alkaline soils or lake margins within meadows, seeps, and playas. Occurs between 196 and 2,788 feet amsl. Perennial herb; blooms during May through October.	No suitable habitat is present within the project site.	NE
Ventura marsh milk-vetch (<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>)	FE / SE / 1B.1	Coastal dunes, coastal scrub, marshes, and swamps (edges, coastal salt, or brackdish) <115 feet amsl. Perennial herb; blooms during June through October.	No suitable habitat is present within the project site.	NE
coastal dunes milk-vetch (<i>Astragalus tener</i> var. <i>titi</i>)	FE / SE / 1B.1	Coastal bluff scrub (sandy), coastal dunes, coastal prairie (mesic)/often vernal mesic areas <1,500 feet amsl. Annual herb; blooms during March through May.	No suitable habitat is present within the project site.	NE
Coulter's saltbush (<i>Atriplex coulteri</i>)	- / - / 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, Valley and foothill grassland/alkaline or clay <460 feet amsl. Perennial herb; blooms during March through October.	No suitable habitat is present within the project site.	NE
south coast saltscale (<i>Atriplex pacifica</i>)	- / - / 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, playas <6,200 feet amsl. Annual herb; blooms during March through October.	No suitable habitat is present within the project site.	NE
Parish's brittlescale (<i>Atriplex parishii</i>)	- / - / 1B.1	Chenopod scrub, playas, vernal pools/alkaline <650 feet amsl. Annual herb; blooms during June through October.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
Davidson's saltscale (<i>Atriplex serenana</i> var. <i>dauidsonii</i>)	- / - / 1B.2	Coastal bluff scrub, coastal scrub/alkaline <65 feet amsl. Annual herb; blooms during April through October.	No suitable habitat is present within the project site.	NE
Catalina mariposa-lily (<i>Calochortus catalinae</i>)	- / - / 4.2	Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. Occurs between 50 and 2,300 feet amsl. Perennial herb; blooms during February through June.	No suitable habitat is present within the project site.	NE
Plummer's mariposa-lily (<i>Calochortus plummerae</i>)	- / - /4.2	Granitic or rocky habitats. Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Occurs between 330 and 5,580 feet amsl. Perennial herb; blooms during May through July.	No suitable habitat is present within the project site.	NE
intermediate mariposa-lily (<i>Calochortus weedii</i> var. <i>intermedius</i>)	- / - /1B.2	Clay soils in chaparral, coastal sage scrub, and valley and foothill grasslands. Occurs between 360 and 2,265 feet amsl. Perennial herb; blooms during May to July.	No suitable habitat is present within the project site.	NE
lucky morning-glory (<i>Calystegia felix</i>)	- / - /1B.2	Wetland and marsh habitats, occasionally in drier habitats; on silty loam and alkaline soils. Occurs between 98 and 700 feet amsl. Annual herb; blooms during March through September.	No suitable habitat is present within the project site.	NE
Peirson's morning-glory (<i>Calystegia peirsonii</i>)	- / - /4.2	Chaparral, cismontane woodland, coastal scrub, and lower montane coniferous forest. Often in disturbed areas or along roadsides or in grassy open areas, at 100 and 4,920 feet amsl. Perennial herb; blooms during April through June.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
Lewis' evening-primrose (<i>Camissonia lewisii</i>)	- / - / 3	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland/sandy or clay <1,400 feet amsl. Annual herb; blooms during March through May.	No suitable habitat is present within the project site.	NE
southern tarplant (<i>Centromadia parryi</i> ssp. <i>australis</i>)	- / - / 1B.1	Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools <100 feet amsl. Annual herb; blooms during May through November.	Marginally suitable habitat is present within the project site; the nearest occurrence is 5 miles to the west.	M
smooth tarplant (<i>Centromadia pungens</i> ssp. <i>laevis</i>)	- / - / 1B.1	Alkaline soils within chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland. Occurs between 0 and 2,100 feet amsl. Annual herb; blooms during April through September.	No suitable habitat is present within the project site.	NE
salt marsh bird's-beak (<i>Chloropyron maritimum</i> ssp. <i>maritimum</i>)	FE / SE / 1B.2	Coastal scrub (sandy), valley and foothill grasslands. Occurs between 500 and 4,000 feet amsl. Perennial herb; blooms during April through July.	No suitable habitat is present within the project site.	NE
seaside cistanthe (<i>Cistanthe maritima</i>)	- / - / 4.2	Sandy soils in coastal bluff scrub, coastal scrub, and valley and foothill grasslands. Occurs between 16 and 960 feet amsl. Annual herb; blooms during February through August.	No suitable habitat is present within the project site.	NE
small-flowered morning-glory (<i>Convolvulus simulans</i>)	- / - / 4.2	Clay and serpentinite seeps within chaparral (openings), coastal scrub, and valley and foothill grasslands. Occurs between 96 and 2368 feet amsl. Annual herb; blooms during March through July.	No suitable habitat is present within the project site.	NE
Catalina crossosoma (<i>Crossosoma californicum</i>)	- / - / 1B.2	Chaparral, coastal scrub/rocky <980 feet amsl. Perennial deciduous shrub; blooms during February through May.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
many-stemmed dudleya (<i>Dudleya multicaulis</i>)	- / - / 1B.2	Chaparral, coastal scrub, and valley and foothill grassland habitats. Often in clay soils. Occurs between 50 and 2,520 feet amsl. Perennial herb; blooms during April through July.	No suitable habitat is present within the project site.	NE
island green dudleya (<i>Dudleya virens</i> ssp. <i>insularis</i>)	- / - / 1B.2	Coastal bluff scrub, coastal scrub/rocky <4,000 feet amsl. Perennial herb; blooms during April through June.	No suitable habitat is present within the project site.	NE
San Diego button-celery (<i>Eryngium aristulatum</i> var. <i>parishii</i>)	FE / SE / 1B.1	Vernal pools in grassland, coastal sage scrub, and freshwater wetland communities. Occurs between 115 and 2495 feet amsl. Annual herb blooms during April through June.	No suitable habitat is present within the project site.	NE
suffrutescent wallflower (<i>Erysimum suffrutescens</i>)	- / - / 4.2	Coastal dunes in the coastal strand or coastal sage scrub. Occurs between 0 and 295 feet amsl. Annual herb; blooms during January through July.	No suitable habitat is present within the project site.	NE
Los Angeles sunflower (<i>Helianthus nuttallii</i> ssp. <i>parishii</i>)	- / - / 1A	Coastal salt and freshwater marshes and swamps. Occurs between 30 and 5,005 feet amsl.. Annual herb blooms during August through October.	This taxon is presumed extinct. No suitable habitat is present within the project site.	NE
vernal barley (<i>Hordeum intercedens</i>)	- / - / 3.2	Coastal dunes, coastal scrub, vernal pools, and in saline flats and depressions in valley and foothill grassland habitats. Occurs between 15 and 3,280 feet amsl. Annual grass; blooms during March through June.	No suitable habitat is present within the project site.	NE
decumbent goldenbush (<i>Isocoma menziesii</i> var. <i>decumbens</i>)	- / - / 1B.2	Coastal sage scrub or wet-land riparian. Occurs between 65 and 1640 feet amsl. Perennial herb or subshrub; blooms during April to November.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
southern California black walnut (<i>Juglans californica</i>)	- / - / 4.2	Alluvial sites in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Occurs between 160 and 2,955 feet amsl. Deciduous tree; blooms during March through August.	No suitable habitat is present within the project site.	NE
southwestern spiny rush (<i>Juncus acutus</i> ssp. <i>leopoldii</i>)	- / - / 4.2	Wetlands including seeps, meadows, salt or freshwater marshes, coastal dunes. Occurs between 0 and 1,310 feet amsl. Perennial herb; blooms during between May and June.	No suitable habitat is present within the project site.	NE
Coulter's goldfields (<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>)	- / - / 1B.1	Marshes and swamps (coastal salt), playas, vernal pools <980 feet amsl. Annual herb; blooms during February through June.	No suitable habitat is present within the project site.	NE
Santa Catalina Island desert-thorn (<i>Lycium brevipes</i> var. <i>hassei</i>)	- / - / 3.1	Coastal bluff scrub, coastal scrub <1,600 feet amsl. Perennial deciduous shrub; blooms in June.	No suitable habitat is present within the project site.	NE
California box-thorn (<i>Lycium californicum</i>)	- / - / 4.2	Coastal bluff scrub and coastal scrub. Occurs between 16 and 480 feet amsl. Shrub; blooms during June through August, and occasionally December.	No suitable habitat is present within the project site.	NE
mud nama (<i>Nama stenocarpum</i>)	- / - / 2B.2	Marshes and swamps (lake margins, riverbanks) <1,000 feet amsl. Annual/perennial herb; blooms during January through July.	No suitable habitat is present within the project site.	NE
Gambel's water cress (<i>Nasturtium gambelii</i>)	FE / ST / 1B.1	Marshes and swamps (freshwater or brackish) <4,200 feet amsl. Perennial rhizomatous herb; blooms during April through October.	No suitable habitat is present within the project site.	NE
spreading navarretia (<i>Navarretia fossalis</i>)	FT / - / 1B.1	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools <2,300 feet amsl. Annual herb; blooms during April through June.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
prostrate vernal pool navarretia (<i>Navarretia prostrata</i>)	- / - / 1B.2	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools/mesic. Annual herb; blooms during April through July.	No suitable habitat is present within the project site.	NE
coast woolly-heads (<i>Nemacaulis denudata</i> var. <i>denudata</i>)	- / - / 1B.2	Coastal dunes <320 feet amsl. Annual herb; blooms during April through September.	No suitable habitat is present within the project site.	NE
California Orcutt grass (<i>Orcuttia californica</i>)	FE / SE / 1B.1	Vernal pools <2,100 feet amsl. Annual herb; blooms during April through August.	No suitable habitat is present within the project site.	NE
Lyon's pentachaeta (<i>Pentachaeta lyonii</i>)	FE / SE / 1B.1	Chaparral (openings), coastal scrub, valley and foothill grassland/rocky, clay <2,000 feet amsl. Annual herb; blooms during March through August.	No suitable habitat is present within the project site.	NE
Brand's star phacelia (<i>Phacelia stellaris</i>)	- / - / 1B.1	Coastal dunes, coastal scrub <1,300 feet amsl. Annual herb; blooms during March through June.	No suitable habitat is present within the project site.	NE
salt spring checkerbloom (<i>Sidalcea</i> <i>neomexicana</i>)	- / - / 2B.2	Chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas/alkaline, mesic <5,000 feet amsl. Perennial herb; blooms during March through June.	No suitable habitat is present within the project site.	NE
estuary seablite (<i>Suaeda esteroa</i>)	- / - / 1B.2	Marshes and swamps (coastal salt) <16 feet amsl. Perennial herb; blooms during May through October.	No suitable habitat is present within the project site.	NE
woolly seablite (<i>Suaeda</i> <i>taxifolia</i>)	- / - / 4.2	Coastal bluff scrub, coastal dunes, marshes and swamps (margins of coastal salt). Occurs between 0 and 165 feet amsl. Shrub or subshrub; blooms during January through December.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description ²	Habitat Suitability	Potential to Occur ³
San Bernardino aster (<i>Symphotrichum defoliatum</i>)	- / - / 1B.2	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic)/near ditches, streams, springs <6,600 feet amsl. Perennial rhizomatous herb; blooms during July through November.	No suitable habitat is present within the project site.	NE
Invertebrates				
Crotch bumble bee (<i>Bombus crotchii</i>)	- / CE / -	Warm and dry sites, including the inner Coast Range of California and the margins of the Mojave Desert.	Marginally suitable habitat is present within the project site. The closest CNDDB occurrence is approximately 4 miles south near the City of Long Beach	L
Palos Verdes blue butterfly (<i>Glaucopsyche lygdamus palosverdesensis</i>)	FE / - / -	Cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County.	No suitable habitat is present within the project site.	NE
Riverside fairy shrimp (<i>Streptocephalus woottoni</i>)	FE / - / -	Vernal pools from January through March. Found in Riverside and San Diego counties. Also found in northern Baja California.	No suitable habitat is present within the project site.	NE
Fish				
Santa Ana sucker (<i>Catostomus santaanae</i>)	FT / - / -	Permanent streams and rivers, with shallow water. Water must be cool with variable flows. Substrates of gravel, rubble and boulders are preferred for foraging and required for breeding.	No suitable habitat is present within the project site.	NE
tidewater goby (<i>Eucyclogobius newberryi</i>)	FE / - / SSC	Brackish shallow water lagoons and lower order stream reaches.	No suitable habitat is present within the project site.	NE
arroyo chub (<i>Gila orcuttii</i>)	- / - / SSC	Headwaters, creeks, and small to medium rivers, often intermittent streams; permanent, small to moderate-sized, moderate to high gradient streams.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
Steelhead - southern California DPS (<i>Oncorhynchus mykiss irideus</i> pop. 10)	FE / - / -	Pacific Ocean tributaries from Aleutian Islands in Alaska south to Southern California. Anadromous forms are known as steelhead, freshwater forms as rainbow trout.	No suitable habitat is present within the project site.	NE
Santa Ana speckled dace (<i>Rhinichthys osculus</i> ssp. 3)	- / - / SSC	Freshwater streams with flowing water and rocky riffles.	No suitable habitat is present within the project site.	NE
Mohave tui chub (<i>Gila bicolor mohavensis</i>)	FE / SE / FP	Endemic to the Mojave River basin; adapted to alkaline, mineralized waters.	No suitable habitat is present within the project site.	NE
Reptiles				
southern California legless lizard (<i>Anniella stebbinsi</i>)	- / - / SSC	Coastal sage scrub, chaparral, riparian areas, woodlands, and rocky areas.	No suitable habitat is present within the project site.	NE
coastal whiptail (<i>Aspidoscelis tigris stejnegeri</i>)	- / - / SSC	Coastal sage scrub, chaparral, riparian areas, woodlands, and rocky areas.	No suitable habitat is present within the project site.	NE
green turtle (<i>Chelonia mydas</i>)	FT / - / -	Pacific Ocean, nests on sandy beaches.	No suitable habitat is present within the project site.	NE
red-diamond rattlesnake (<i>Crotalus ruber</i>)	- / - / SSC	Arid scrub in southern California largely Los Angeles County south.	No suitable habitat is present within the project site.	NE
western pond turtle (<i>Emys marmorata</i>)	FT / ST / -	Aquatic water bodies including flowing rivers and streams, permanent lakes, ponds, reservoirs, settling ponds, marshes and other wetlands. Semi-permanent water bodies such as stock ponds, vernal pools and seasonal wetlands can also be utilized on a temporary basis.	No suitable habitat is present within the project site.	NE
coast horned lizard (<i>Phrynosoma blainvillii</i>)	- / - / SSC	Wide variety of habitats; most common in lowlands along sandy washes with scattered low bushes.	No suitable habitat is present within the project site.	NE
two-striped gartersnake (<i>Thamnophis hammondi</i>)	- / - / SSC	Perennial and intermittent streams, often with rocky streambeds bordered by willow thickets or dense vegetation. Occurs in a variety of habitats.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description ²	Habitat Suitability	Potential to Occur ³
south coast gartersnake (<i>Thamnophis sirtalis</i> pop. 1)	- / - / SSC	Variety of habitats including forests, mixed woodlands, grassland, chaparral, or farmlands often near open water.	No suitable habitat is present within the project site.	NE
Amphibians				
western spadefoot (<i>Spea hammondi</i>)	- / - / SSC	Primarily in grassland habitats but can be found in valley-foothill hardwood woodlands.	No suitable habitat is present within the project site.	NE
Birds				
Cooper's hawk (<i>Accipiter cooperii</i>)	- / - / WL	Woodlands, chiefly of open, interrupted or marginal type. Nest sites are mainly in riparian growths of deciduous trees, as in canyon bottoms on river floodplains. Also known to nest in man-made structures and is well adapted to sub-urban environments.	Marginally suitable habitat is present within the project site.	L
sharp-shinned hawk (<i>Accipiter striatus</i>)	- / - / WL	Forested areas adjacent to more open areas. Nests in conifers that are cool, shaded and near water source.	No suitable habitat is present within the project site.	NE
tricolored blackbird (<i>Agelaius tricolor</i>)	- / ST / SSC	Highly colonial species, most numerous in central valley and vicinity. Largely endemic to California.	No suitable habitat is present within the project site.	NE
southern California rufous-crowned sparrow (<i>Aimophila ruficeps canescens</i>)	- / - / WL	Discontinuous sage scrub and scrub-grassland habitats.	No suitable habitat is present within the project site.	NE
grasshopper sparrow (<i>Ammodramus savannarum</i>)	- / - / SSC	Moderately open grasslands with scattered shrubs such as California buckwheat and California Sagebrush.	No suitable habitat is present within the project site.	NE
lesser sandhill crane (<i>Antigone canadensis canadensis</i>)	- / - / SSC	In California, nesting territories are established in wet meadows interspersed within marsh land habitat.	No suitable habitat is present within the project site.	NE
golden eagle (<i>Aquila chrysaetos</i>)	- / - / FP, WL	Foothills, mountain areas, sage-juniper flats, and desert habitats throughout California. Occurs <11,500 feet amsl in elevation.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
burrowing owl (<i>Athene cunicularia</i>)	- / - / SSC; BCC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	Marginally suitable habitat is present within the project site.	M
redhead (<i>Aythya Americana</i>)	- / - / SSC	Freshwater emergent wetlands with deep open water.	No suitable habitat is present within the project site.	NE
ferruginous hawk (<i>Buteo regalis</i>)	- / - / WL	Arid grasslands and adjacent farmlands to overwinter in California.	No suitable habitat is present within the project site.	NE
Swainson's hawk (<i>Buteo swainsoni</i>)	- / ST / BCC	Stands with few trees in juniper-sage flats and riparian areas. Utilizes adjacent grasslands, grain or alfalfa fields, or livestock pastures for foraging.	No suitable habitat is present within the project site.	NE
coastal cactus wren (<i>Campylorhynchus brunneicapillus sandiegensis</i>)	- / - / SSC, BCC	Cactus scrub complexes of cholla or prickly pear cactus for nesting.	No suitable habitat is present within the project site.	NE
rhinoceros auklet (<i>Cerorhinca monocerata</i>)	- / - / WL	A pelagic bird that nests in burrows on islands or in sea cliffs on the California mainland.	No suitable habitat is present within the project site.	NE
Vaux's swift (<i>Chaetura vauxi</i>)	- / - / SSC	Common migrant throughout most of California. Requires large hollow trees or snags, preferably in redwood and Douglas-fir habitats, for breeding.	No suitable habitat is present within the project site.	NE
western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	FT / - / SSC	Sandy beaches, salt pond levees, and shores of large alkali lakes.	No suitable habitat is present within the project site.	NE
mountain plover (<i>Charadrius alexandrinus nivosus</i>)	- / - / SSC, BCC	Short grasslands, plowed fields, and foothill valleys from the Central Valley southward.	No suitable habitat is present within the project site.	NE
black tern (<i>Chlidonias niger</i>)	- / - / SSC	Nests semi-colonially in protected areas close to marches.	No suitable habitat is present within the project site.	NE
northern harrier (<i>Circus hudsonius</i>)	- / - / SSC	Variety of tree-less open habitats with abundant prey. Typically uses marshes, wet meadows, weedy borders of lake and streams, pastures, agricultural fields, and desert sinks.	No suitable habitat is present within the project site.	NE
Clark's marsh wren (<i>Cistothorus palustris clarkae</i>)	- / - / SSC	Freshwater and brackish marshes with tall emergent vegetation.	No suitable habitat is present within the project site.	NE
western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	FT / SE / BCC	Riparian forest nester along the broad, lower flood bottoms of larger river systems.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
olive-sided flycatcher (<i>Contopus cooperi</i>)	- / - / SSC	Late- successional coniferous forests with open canopies.	No suitable habitat is present within the project site.	NE
fulvous whistling-duck (<i>Dendrocygna bicolor</i>)	- / - / SSC	Freshwater marshes, coastal marshes and rice field.	No suitable habitat is present within the project site.	NE
southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	FE / SE / -	Riparian woodlands in Southern California.	No suitable habitat is present within the project site.	NE
California horned lark (<i>Eremophila alpestris actia</i>)	- / - / WL	Open areas, with barren or sparsely vegetated ground, such as beaches, plowed fields and occasionally parking lots or runways.	Marginally suitable habitat is present within the project site.	L
merlin (<i>Falco columbarius</i>)	- / - / WL	Coastlines, open grasslands, savannahs, woodlands, lakes, wetlands, edges, and early successional stage habitats below 3900 feet amsl.	No suitable habitat is present within the project site.	NE
prairie falcon (<i>Falco mexicanus</i>)	- / - / WL, BCC	Perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub habitats.	No suitable habitat is present within the project site.	NE
American peregrine falcon (<i>Falco peregrinus anatum</i>)	- / - / FP, BCC	Coast and western Sierra Nevada in spring and fall. Utilizes woodland, forest, and coastal habitats for breeding.	No suitable habitat is present within the project site.	NE
common loon (<i>Gavia immer</i>)	- / - / SSC	Estuarine and subtidal marine habitats along entire California coast. Also occurs in deep lakes in valleys and foothills.	No suitable habitat is present within the project site.	NE
bald eagle (<i>Haliaeetus leucocephalus</i>)	- / SE / FP, BCC	Coast; large lakes and river systems; open forests with large trees and snags. Nesting usually occurs within 2 miles of a large body of water.	No suitable habitat is present within the project site.	NE
yellow-breasted chat (<i>Icteria virens</i>)	- / - / SSC	Dense tangled brushy patches, hedgerows and wood edges, in open sunny areas and along riparian woodland ecotones.	No suitable habitat is present within the project site.	NE
least bittern (<i>Ixobrychus exilis</i>)	- / - / SSC	Fresh and brackish water marshes with tall dense emergent vegetation and a canopy of woody plants shading a pool of deep water.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description ²	Habitat Suitability	Potential to Occur ³
loggerhead shrike (<i>Lanius ludovicianus</i>)	- / - / SSC, BCC	Open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. Prefers open areas with scattered shrubs, trees, posts, or other perches.	Marginally suitable habitat is present within the project site.	L
California gull (<i>Larus californicus</i>)	- / - / WL	Prairie habitats in Nevada and the Rocky Mountain states. Overwinters between Mono Lake, California, and the Canadian Northwest territories in tidal flats or landfills.	No suitable habitat is present within the project site.	NE
long-billed curlew (<i>Numenius americanus</i>)	- / - / WL, BCC	Wet meadow habitat in northern California and is a winter resident along the coast of central and southern California as well as the Central and Imperial Valleys.	No suitable habitat is present within the project site.	NE
fork-tailed storm-petrel (<i>Oceanodroma furcata</i>)	- / - / SSC	Off-shore rocks and islands that are free of mammalian predators.	No suitable habitat is present within the project site.	NE
ashy storm-petrel (<i>Oceanodroma homochroa</i>)	- / - / SSC, BCC	Coast of California and breeds in crevices of talus slopes, rock walls, sea caves, cliffs, and driftwood.	No suitable habitat is present within the project site.	NE
black storm-petrel (<i>Oceanodroma melania</i>)	- / - / SSC	A pelagic bird that frequents off-shore ocean waters of the shelf, shelf break, and continental slope.	No suitable habitat is present within the project site.	NE
Belding's savannah sparrow (<i>Passerculus sandwichensis beldingi</i>)	- / SE / -	Coastal salt marshes from Santa Barbara south through San Diego County.	No suitable habitat is present within the project site.	NE
large-billed savannah sparrow (<i>Passerculus sandwichensis rostratus</i>)	- / - / SSC	Low salt marsh vegetation along the coast.	No suitable habitat is present within the project site.	NE
American white pelican (<i>Pelecanus erythrorhynchos</i>)	- / - / SSC	Colonial nester on coastal islands just outside the surf line.	No suitable habitat is present within the project site.	NE
California brown pelican (<i>Pelecanus occidentalis californicus</i>)	- / - / FP	Salt bays, beaches and oceans. Mostly over shallower waters, especially sheltered bays. May occasionally be found on inland freshwater lakes.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
double-crested cormorant (<i>Phalacrocorax auritus</i>)	- / - / WL	Coast of California and on inland lakes and estuarine waters.	No suitable habitat is present within the project site.	NE
coastal California gnatcatcher (<i>Polioptila californica californica</i>)	FT / - / SSC	Obligate, permanent resident of coastal sage scrub below 2,500 feet amsl in Southern California.	No suitable habitat is present within the project site.	NE
purple martin (<i>Progne subis</i>)	- / - / SSC	Wooded, low-elevation habitats, including valley foothill and montane hardwood, riparian, closed-cone pine cypress, ponderosa pine, and Douglas fir habitats.	No suitable habitat is present within the project site.	NE
vermilion flycatcher (<i>Pyrocephalus rubinus</i>)	- / - / SSC	Open scrub, farmlands, savanna, agricultural areas, riparian woodland—often associated with surface water.	No suitable habitat is present within the project site.	NE
light-footed Ridgway's rail (<i>Rallus obsoletus levipes</i>)	FE / SE / FP	Tidal salt marshes in coastal California.	No suitable habitat is present within the project site.	NE
bank swallow (<i>Riparia riparia</i>)	- / ST / -	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	No suitable habitat is present within the project site.	NE
black skimmer (<i>Rynchops niger</i>)	- / - / SSC, BCC	Nests on gravel bars, low islets, and sandy beaches in unvegetated sites. Nesting colonies usually less than 200 pairs.	No suitable habitat is present within the project site.	NE
yellow warbler (<i>Setophaga petechia</i>)	- / - / SSC, BCC	Riparian vegetation in close proximity to water along streams and in wet meadows. Associated with willow and cottonwoods.	No suitable habitat is present within the project site.	NE
California least tern (<i>Sternula antillarum browni</i>)	FE / SE / FP	Nests along the coast from San Francisco Bay south to northern Baja California.	No suitable habitat is present within the project site.	NE
elegant tern (<i>Thalasseus elegans</i>)	- / - / WL	Inshore coastal waters, estuaries, and harbors.	No suitable habitat is present within the project site.	NE
least Bell's vireo (<i>Vireo bellii pusillus</i>)	FE / SE / -	Riparian woodlands and mulefat scrub in Southern California.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
yellow-headed blackbird (<i>Xanthocephalus xanthocephalus</i>)	- / - / SSC	Marshes with tall emergent vegetation. Current breeding ranges include disjunct patches across many counties in Southern California, including Orange County and north Los Angeles County, among others.	No suitable habitat is present within the project site.	NE
Mammals				
western mastiff bat (<i>Eumops perotis californicus</i>)	- / - / SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Present only significant rock features offering suitable roosting habitat.	No suitable habitat is present within the project site.	NE
western red bat (<i>Lasiurus blossevillii</i>)	- / - / SSC	West of the deserts between Shasta County south to the Mexican border in grasslands, shrublands, open woodlands, forests, and croplands. Roosts in trees.	Marginally suitable habitat is present within the project site.	L
western yellow bat (<i>Lasiurus xanthinus</i>)	- / - / SSC	Valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees in riparian habitat.	No suitable habitat is present within the project site.	NE
south coast marsh vole (<i>Microtus californicus stephensi</i>)	- / - / SSC	Tidal marshes in Los Angeles, Orange, and southern Ventura Counties.	No suitable habitat is present within the project site.	NE
cave myotis bat (<i>Myotis velifer</i>)	- / - / SSC	Main populations occur in San Bernardino, Riverside, and Imperial Counties, though a recent CNDDDB record was made in South Gate quad. A colonial, cave-dwelling bat that may also use mines and buildings for roosting.	Marginally suitable habitat is present within the project site.	L
San Diego desert woodrat (<i>Neotoma lepida intermedia</i>)	- / - / SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County.	No suitable habitat is present within the project site.	NE
pocketed free-tailed bat (<i>Nyctinomops femorosaccus</i>)	- / - / SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian. Roosts in rock crevices.	No suitable habitat is present within the project site.	NE

Common Name (Scientific Name)	Status Federal/State/CRPR ¹	General Habitat Description²	Habitat Suitability	Potential to Occur³
big free-tailed bat (<i>Nyctinomops macrotis</i>)	- / - / SSC	Low-lying arid areas in Southern California. Roosts in buildings, caves, or tree cavities.	Marginally suitable habitat is present within the project site.	L
Pacific pocket mouse (<i>Perognathus longimembris pacificus</i>)	FE / - / SSC	Narrow coastal plains from the Mexican border north to El Segundo, Los Angeles County.	No suitable habitat is present within the project site.	NE
southern California saltmarsh shrew (<i>Sorex ornatus salicornicus</i>)	- / - / SSC	Coastal marshes in Los Angeles, Orange, and Ventura Counties.	No suitable habitat is present within the project site.	NE
American badger (<i>Taxidea taxus</i>)	- / - / SSC	Drier, open stages of most shrub, forest, and herbaceous habitats with friable soils.	No suitable habitat is present within the project site.	NE

Common Name (<i>Scientific Name</i>)	Status Federal/State/CRPR ¹	General Habitat Description ²	Habitat Suitability	Potential to Occur ³
<p>¹<u>Sensitivity Code Definitions:</u></p> <p><u>USFWS designations:</u> FE Endangered: Any species in danger of extinction throughout all or a significant portion of its range. FT Threatened: Any species likely to become endangered within the foreseeable future. DL Delisted: Any species that was listed but no longer is. CE: Candidate endangered species. BCC: Bird of Conservation Concern.</p> <p><u>CDFW designations:</u> SE Endangered: Any species in danger of extinction throughout all or a significant portion of its range. ST Threatened: Any species likely to become endangered within the foreseeable future. SR Rare: Any species not currently threatened with extinction, but in such small numbers throughout its range that it may become endangered if its present environment worsens. FP: Fully Protected: A species where take is not permitted. WL: Taxa that were previously designated as SSC but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status. SSC: Species of Special Concern.</p> <p><u>CRPR designations:</u> 1B: Plants rare, threatened or endangered in California and elsewhere. 2: Plants rare, threatened or endangered in California, but more common elsewhere. 3: Plants for which more information is needed – a review list. 4: Plants of limited distribution – a watch list.</p> <p><u>CRPR threat categories:</u> .1: Seriously endangered in California. .2: Fairly endangered in California. .3: Not very endangered in California.</p> <p>² Occurrence Potential Definitions: NE (not expected) – Suitable habitat for species does not occur. L (low potential) – Suitable habitat present, but of marginal quality. M (moderate potential) – Suitable habitat present. H (high potential) – Species or sign not observed on the site, but reasonably certain to occur on the site. P (present) – CNDDDB records exist within the BSA.</p> <p>³CDFW 2020. Accessed online at: https://wildlife.ca.gov/data/cwhr/life-history-and-range. Accessed September 25, 2020.</p>				

Appendix C

Cultural Resources Survey Memorandum

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Memorandum

To	Natalie Thompson (AECOM) Omar Sharief (Shell)	Page 1 of 31
Subject	Carson Renewable Compressed Natural Gas Dispensing Project 20945 South Wilmington Avenue, Carson, California Cultural Resources Survey Memorandum – REVISED DRAFT	
From	Jennifer Redmond, MA, RPA, and Trina Meiser, MA	
Date	February 25, 2021	

This report contains confidential cultural resources location information; report distribution should be restricted to those with a need to know. Cultural resources are non-renewable, and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources should be kept confidential. The legal authority to restrict cultural resources information is in Section 6254 of the California Government Code, California Code of Regulations § 15120(d), and the National Historic Preservation Act of 1966, as amended, Section 304.

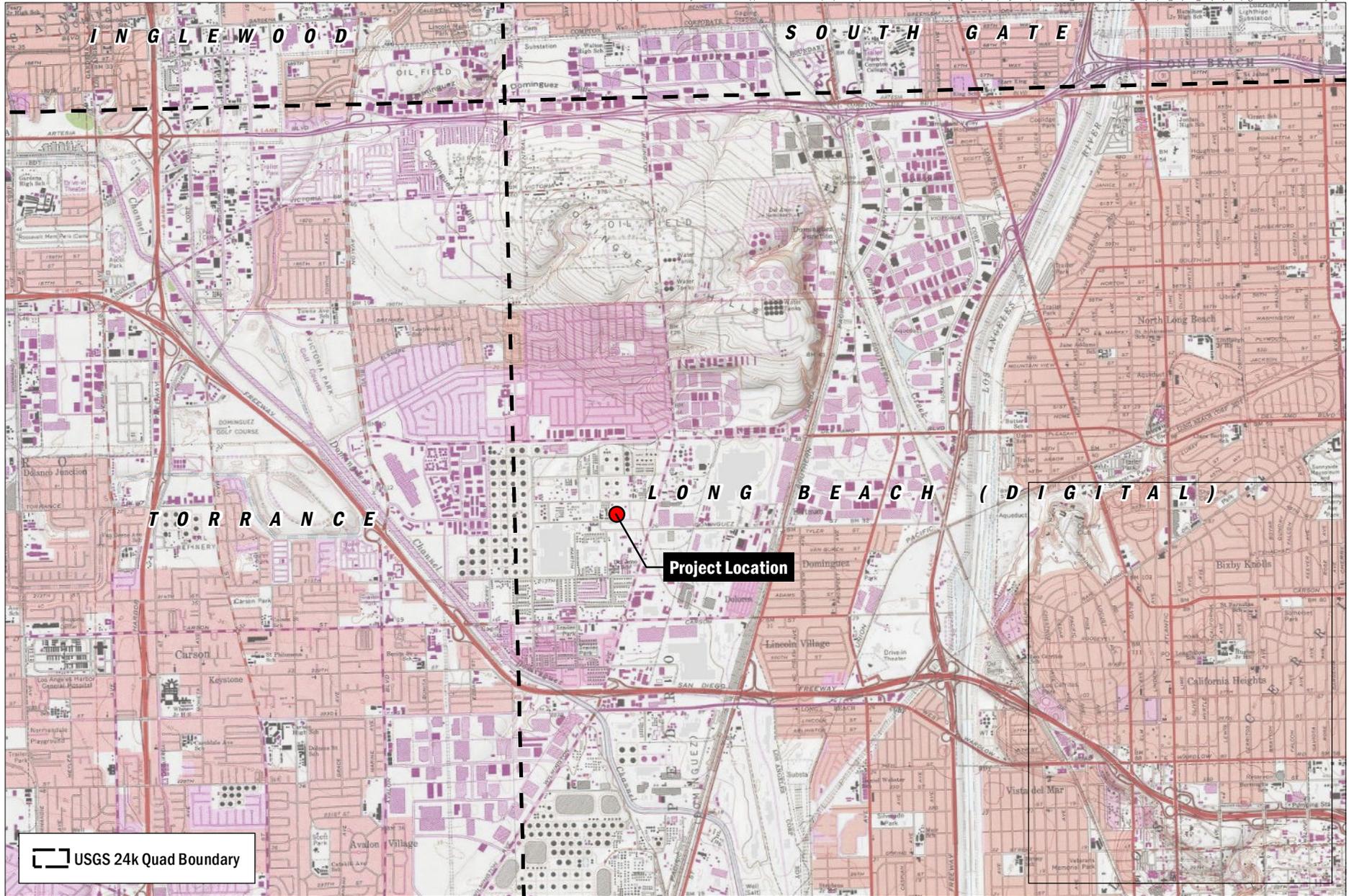
INTRODUCTION

Equilon Enterprises, LLC d/b/a Shell Oil Products US (Shell) is proposing to implement the Carson Renewable Compressed Natural Gas (CNG) Dispensing Project (project), which includes the installation of a natural gas pipeline, three CNG dispensers, a canopy over the dispensers, and a CNG system compound within the existing Shell Carson Distribution Terminal in Carson, Los Angeles County. The project is considered an action under the California Environmental Quality Act (CEQA), and the City of Carson is the CEQA lead agency. This memorandum reports on the findings of the cultural resources study conducted for the project.

PROPOSED PROJECT

The project site is in the Shell Carson Distribution Center at 20945 South Wilmington Avenue in the City of Carson (Figure 1). The site is between East Del Amo Boulevard on the north, South Wilmington Avenue on the east, East Dominguez Street on the south, and Annalee Avenue and Chico Street on the west. The project site is in an unsectioned portion of Rancho San Pedro in Township 4 South, Ranch 13 West on the *Long Beach, Calif.* 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle.

The proposed project would include the installation of a 4-inch CNG aboveground pipeline, three CNG dispensers, and a CNG system compound to allow for the conversion from diesel fuel to CNG fuel for trucks re-fueling at the Distribution Center (Figure 2). The pipeline would extend approximately 3,200 feet on an existing aboveground pipe rack, except where it crosses two on-site driveways, where it would be placed approximately 4 feet underground in a precast trench with a grate cover.



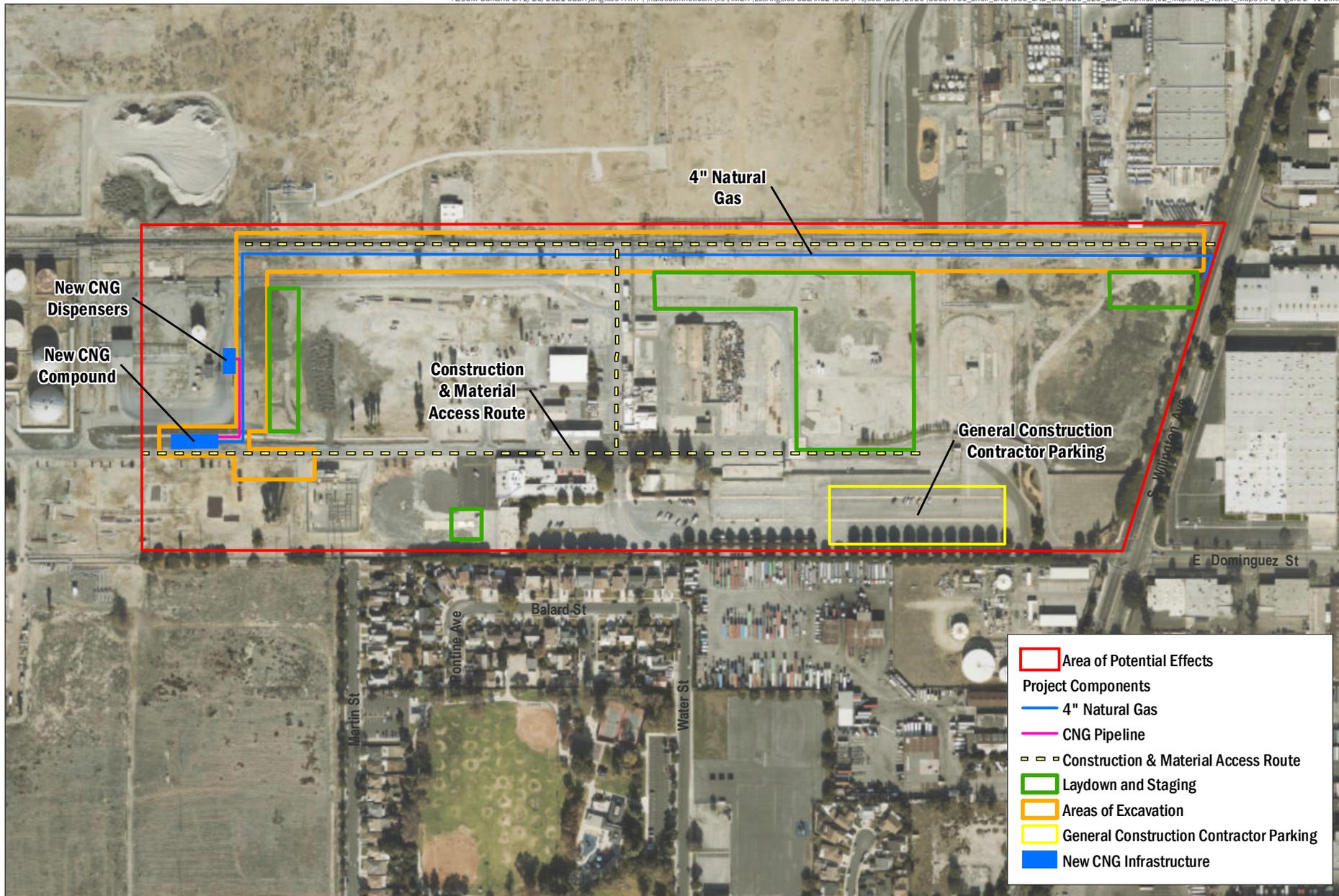
Sources: AECOM, 2020; USGS, 2020

AECOM

Shell

Carson Renewable Compressed Natural Gas Dispensing Project
20945 SOUTH WILMINGTON AVENUE, CARSON, LOS ANGELES COUNTY, CA

FIGURE 1
Project Vicinity



Sources: AECOM, 2020; ESRI, 2020 (imagery)

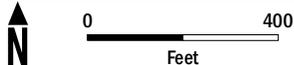


FIGURE 2
Area of Potential Effects

The western terminus of the natural gas line would be a CNG system compound near the southeastern corner of the ethanol loading area. The compound would include two compressors, one dryer, and three CNG storage tanks. A CNG pipeline would extend north from this compound to three CNG dispensers on the eastern side of the ethanol loading area. The maximum depth of excavation for construction would be 6 to 8 feet for canopy footings that would be installed over the CNG dispensers and 7.5 feet for light pole relocations. A guard post would require approximately 4 feet of excavation and the CNG compound would generally require approximately 1 to 2 feet of excavation. Approximately 16,220 square feet of new concrete and asphalt would also be laid to support the CNG compound and new dispensers. Laydown and staging areas would be in four locations across the project site. Ground disturbance would be minimal and would be associated with the vehicles crossing the areas.

REGULATORY CONTEXT

The project is subject to the requirements under CEQA, and historical and cultural resources are required to be considered as part of the CEQA process. A cultural resource is considered “historically significant” under CEQA if the resource meets the criteria for listing in the California Register of Historical Resources (CRHR). The criteria for determination include the following (Public Resources Code [PRC] Section 5024.1, Title 14 California Code of Regulations [CCR], Section 4852).

To be eligible for listing in the CRHR, a property must be at least 45 years of age and possess significance at the local, state, or national level, under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
3. It embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values.
4. It has yielded, or has the potential to yield, information important in the prehistory or history of the local area, California, or the nation.

Historical resources eligible for listing in the CRHR may include buildings, sites, structures, objects, and historic districts. A resource less than 45 years of age may be eligible if it can be demonstrated that sufficient time has passed to understand its historic importance. Although the enabling legislation for the CRHR is less rigorous with regard to the issue of integrity, there is the expectation that properties reflect their appearance during their period of significance (PRC Section 4852).

The CEQA Guidelines (Section 15064.5) contain the following additional guidelines for defining a historical resource:

- California properties formally determined eligible for, or listed in, the National Register of Historic Places (NRHP).
- Those resources included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, or identified as significant in a historical resources survey meeting the requirements of Section 5024.1 (g) of the Public Resources Code.

- Those resources that a lead agency determines to be historically significant, provided the determination is based on substantial evidence.

ENVIRONMENTAL CONTEXT

The project site is situated in the Torrance Plain, and is just south of the Dominguez Hills, which is part of a long ridge formed by the Newport-Inglewood fault zone (Gumprecht 1999:17). The project site is underlain by recent Quaternary alluvium, and soils are composed of Urban Land-Metz-Pico Complex (Jennings 1962). "Urban Land" consists of land that has been significantly modified by humans, including the addition of fill or pavement (Galbraith and Shaw 2017). Metz and Pico series soils are deep and poorly developed soils that formed in alluvium from sedimentary sources (National Cooperative Soil Survey 1999, 2003).

Prior to development, the project site would have been marshy, with thick groves of sycamores along the watercourses. The Los Angeles River originally flowed in a shifting channel near the project site, where it was hemmed in by the Dominguez Hills to the west and Signal Hill and other hills in Long Beach to the east (Gumprecht 1999:18). Sloughs and "a half-dozen small lakes curved around the base of the hills east of the river" (Gumprecht 1999:18). The Los Angeles River has since been channelized and runs 1.75 miles east of the project site.

CULTURAL CONTEXT

AECOM prepared a comprehensive cultural context and background for the *Carson Revitalization Project Specific Plan* in 2011 (AECOM 2011). This report included the results of a pedestrian survey of the Shell Distribution Center, and historical background for the project site. The following excerpts summarize the cultural context for the project.

Precontact Context

The most influential syntheses of the precontact history of Southern California are those proposed by Wallace (1955) and Warren (1968). Wallace's sequence, perhaps the most widely used by archaeologists, identifies four cultural traditions, or horizons/periods, for Southern California: Early Man, from initial occupation to about 7,500 years before present (B.P.); the Millingstone, from about 7500 to 3500 B.P.; the Intermediate, from about 3500 to 1000 B.P.; and the Late Prehistoric, from 1000 to 150 B.P. (AECOM 2011).

Initial Occupation

The initial occupation of the Southern California coast appears to have occurred as early as 10,000 years ago (Jones 1992). Although early occupants were initially described as highly mobile foragers focused on the hunting of terrestrial game (Wallace 1955; Warren 1968), evidence of the intensive and systematic use of shellfish and other marine resources suggests that maritime-adapted groups living in close proximity to the sea were among the earliest inhabitants of the area (Dixon 1999; Erlandson 1994; Vellanoweth and Altschul 2002). Although little is known of this period, a pre-Millingstone component has been identified at CA-ORA-64, located at the head of Newport Bay (Drover et al. 1983; Macko 1998). Dating to approximately 9,500 B.P., this component provides

significant evidence for shellfish collecting, and some evidence for fishing and bird procurement, suggesting these inhabitants engaged in a diverse subsistence strategy (AECOM 2011).

The Millingstone Period

Southern California coastal archaeological sites increase in number dramatically after about 8,000 years ago, associated with the Millingstone Period (Wallace 1955). In general, the Millingstone period is characterized by regional differentiation and an adaptation to local conditions. Engaging in more permanent habitation, Millingstone populations in Southern California at this time established settlements primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes, where a variety of resources, including seeds, fish, shellfish, small mammals, and birds were exploited (Drover et al. 1983). Early Millingstone occupations in Southern California typically contain high frequencies of handstones (manos) and millingstones (metates), while those dating later than 5,000 years ago typically contain a mortar and pestle component as well, perhaps signifying the exploitation of acorns in the region (Vellanoweth and Altschul 2002).

The Intermediate Period

Although many aspects of Millingstone culture persisted, by 3,500 years ago a number of socioeconomic changes occurred (Erlandson 1994; Wallace 1955; Warren 1968). Evidence from Orange and Los Angeles Counties appears to reflect a marked decline in the number of sites by the fourth millennium B.P., with a near-complete abandonment of Newport Bay and its surrounding region (Koerper et al. 2002; Mason and Peterson 1994). In San Diego County, Batiquitos Lagoon was also abandoned around this time, a change attributed to degrading shellfish habitats in the area (Gallegos 1987). Closer to the present project site, however, several dozen radiocarbon dates from numerous sites demonstrate significant use of the Bolsa Chica and Huntington Beach mesas (Koerper et al. 2002). It is speculated that the apparent decrease in number of sites may reflect a settlement shift toward sedentism and territoriality in and around areas where freshwater remained plentiful (Koerper et al. 2002).

Beginning during the third millennium B.P. and continuing to the Late Prehistoric period, there is a nearly continuous increase in the number of dated components throughout Orange and Los Angeles Counties, including areas of previous abandonment, such as Newport Bay. Growing populations during this time necessitated the intensified use of existing terrestrial and marine resources (Erlandson 1994). This was accomplished in part through the use of increasingly labor-intensive technologies, such as the circular shell fishhook (Raab et al. 1995), more abundant and diverse hunting equipment (Erlandson 1994), and the increased use of the mortar and pestle in the processing of acorns (Koerper 1979; Koerper et al. 2002).

The Late Prehistoric Period

The Late Prehistoric period, spanning from approximately 1,500 years ago to the Mission era, is the period associated with the florescence of the contemporary Native American group known as the Gabrielino (Wallace 1955). The Takic-speaking Gabrielino occupied what is currently Los Angeles County, northern Orange County, and the southern Channel Islands, including Santa Catalina, San Nicholas, and San Clemente (Kroeber 1925). The Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size and regional influence (Bean and Smith

1978). Economic systems continued to diversify and intensify during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of increasingly labor-intensive technological innovations. Economic focus on the development of marine fisheries (Erlandson 1994) is evident not only in the increasing amounts of fish remains in late archaeological components (e.g., Raab et al. 1995), but in the continued investment of labor in the development of fishing technologies, including the plank canoe (Glassow 1980).

Late Prehistoric occupations are found at Bixby Hill in Long Beach, and a large late component has been excavated at CA-LAN-270 in Los Altos (Bates 1972). Settlement at this time is believed to have consisted of dispersed collector family groups that revolved around a relatively limited number of permanent settlements that were located centrally with respect to a variety of resources (Koerper et al. 2002).

Ethnographic Context

The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925), and maps produced by early explorers indicate that at least 26 Gabrielino villages were within proximity to known Los Angeles River courses, while an additional 18 villages were located within the river's broader watershed (Gumprecht 1999). Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game was hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith 1978; Reid 1939 [1852]). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or hollyleaf cherry (Reid 1939 [1852]).

The ethnographic village of *Puvungna* was most likely located at Bixby Hill, now occupied by Rancho Los Alamitos and California State University at Long Beach. Several Gabrielino communities and place names have been reported to exist around the Palos Verdes peninsula, approximately 3 miles to the southwest of the southern terminus of the project study area (McCawley 1996:66). Nine placenames were reported on the peninsula: *Toveemonga*, *Chaawvenga*, *Swaanga*, *Aataveanga*, *Xuuxonga*, *Kiinkenga*, *Haraasnga*, *Moniikanga*, and *Masaawnga*. The ethnographic village of *Swaanga* (or *Suangna*) was in present-day Carson in the vicinity of the project site.

Historical Context

Spanish explorers made brief visits to Gabrielino territory in both 1542 and 1602, and on both occasions, the two groups exchanged trade items. Sustained contact with Europeans did not commence until after 1769, when Gaspar de Portolá and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. In August 1769, the Portolá party camped just northeast of the project site, at a spring that fed Ballona Creek (Gumprecht 1999:38).

A string of 21 missions was established in the years that followed the Portolá expedition, including Mission San Gabriel Arcángel in 1771 and Mission San Fernando Rey de España in 1797. While the Spanish missions and pueblos developed in the 1780s, the Spanish crown also rewarded land grants

to veterans of the California occupation army. The first was *Rancho San Pedro*, provisionally granted to Juan José Dominguez in 1784. Dominguez was a retired Spanish soldier who first came to California with the Portolá expedition. In 1782, Dominguez requested property from his former lieutenant, Governor Pedro Fages. Fages assigned the 75,000-acre Rancho San Pedro to Dominguez.

The United States took control of California at the end of the Mexican-American War with the Treaty of Guadalupe Hidalgo in 1848. The influx of American settlers in the 1850s and 1860s rapidly displaced the old rancho families. The Dominguez Family, through Juan José's nephew Cristobal and his son Manuel, held the title to Rancho San Pedro through the transition of California to statehood. Manuel Dominguez was an influential politician in the Mexican government and at one point served as the mayor of Los Angeles.

Rancho San Pedro lands, located between Los Angeles and San Pedro Bay, were essential in the development of commerce and industry in the region. In 1854, Manuel Dominguez sold 2,400 acres to a group of investors led by Phineas Banning, who planned to develop a commercial port of entry at the mouth of the Los Angeles River and constructed new docks at San Pedro in 1857. Banning platted and founded the city of Wilmington near the port. In 1869, the 21-mile-long Los Angeles & San Pedro (LA&SP) Railroad, the first in Southern California, was constructed to transport goods from the port to the city through portions of Rancho San Pedro. In 1871, the U.S. Army Corps of Engineers (USACE) constructed two jetties, the port was dredged, and shipping activities continued to expand at San Pedro (Kielbasa 1997; Port of Los Angeles [POLA] 2010). By 1885, the Port of San Pedro handled 500,000 tons of cargo annually, dramatically raising the value of the adjacent Dominguez lands and creating markets for their many agricultural products (Kielbasa 1997; POLA 2010). The San Pedro Harbor site was authorized by Congress as the official commercial harbor of Los Angeles in March 1897. USACE began construction on the breakwater in 1900. POLA was created in 1907, and the harbor was continuously improved.

The Dominguez Hill Oil Field (which includes the project site) was discovered in 1923 on Rancho San Pedro lands inherited by Reyes Dominguez Francis, daughter of Manuel Dominguez and widow of John F. Francis. The initial well at Dominguez Hill indicated a huge oil deposit, and Union Oil contracted to develop Dominguez Field. Because the land was entirely owned by the Dominguez heirs, Union Oil easily consolidated the lease and efficiently and successfully began production. At an elevation of 4,068 feet, the wells produced 1,193 barrels of oil per day. By 1941, there were 270 active and 44 abandoned wells in Dominguez Field that produced 121,800,000 barrels of oil that year (Franks and Lambert 1985). Reyes became the wealthiest of the Dominguez heirs after the discovery of oil at Dominguez Hill, with an estate worth \$15 million at the time of her death in 1933 (Kielbasa 1997).

The Shell Oil Company Dominguez Refinery

Due to the proximity of the oil wells to the transportation networks related to POLA and the Port of Long Beach, the oil industry expanded its production facilities in the immediate area. Refineries and distribution centers were established between the oil fields, railroads, and ports. Real estate sales skyrocketed, and the area was soon crowded with oil derricks, refineries, and tank farms. Shell Oil first developed a large refinery near Wilmington that its operation quickly outgrew. In 1927, Shell

expanded with a second refinery to supplement the Wilmington Refinery on 446 acres southwest of Dominguez Hill, acquired from the Carson family, who had married into the Dominguez family (Trejos 1987).

By 1930, the Shell Oil Company Dominguez Refinery (Dominguez Refinery) included refining structures, a series of 120-foot-diameter, 40-foot-high steel tanks and reservoirs, and a chemical refinery (USGS 1930). Shell operated its older Wilmington Refinery and newer Dominguez Refinery operations in tandem, according to veteran employees at the Dominguez operation (SWCA 2007). The refineries were connected by pipelines that pumped oil products from the Wilmington Refinery to the Dominguez Refinery for further processing. The Wilmington facility treated the crude oil and refined thick lubricants and asphalts, and then the Dominguez facility refined the remaining products into light lubricants and gasoline, and later jet fuel. The chemical refinery, built around 1930, known familiarly to employees as “Chemical,” produced, packaged, and distributed products including propane, butane, and isopropyl alcohol (SWCA 2007).

By the 1950s, the facility was updated with new equipment and buildings. The primary functions of the Dominguez Refinery remained refining oil products, producing chemicals, and distributing products. Some facilities were modernized again in the 1980s and 1990s, although the main refinery and several original buildings were demolished in 1991 and 1992, due to corporate restructuring and cutbacks (SWCA 2007). After 1992, the primary function of the facility shifted to storing and distributing products, prompting the name change from the Dominguez Refinery to the Carson Terminal. The tank farm, including many original riveted steel tanks, continued to store products for distribution. An ethanol truck loading facility was built on the site of the original refinery, and other areas were cleared of outdated structures. The chemical refinery remained in service and was frequently updated (SWCA 2007).

City of Carson

By the 1960s, the former Rancho San Pedro lands were fully developed with residential suburbs and industrial uses but remained part of unincorporated Los Angeles County. In 1962, the City of Long Beach moved to annex unincorporated portions, but local residents rejected the annexation and initiated a study to determine the feasibility of a new municipality. Local development, both industrial and residential, relied primarily on the major oil companies that were in the vicinity, including Shell, Texaco, Richfield, Union, Tidewater, and Mobil (SWCA 2007). By 1967, the oil companies, after determining tax implications, agreed to support incorporation of an independent municipal government (SWCA 2007). The new community was to be named either Dominguez or Carson in honor of the families and the famous oil wells; the name “Carson” was chosen by popular vote. In 1968, Carson was incorporated and acknowledged by the County and the state (SWCA 2007).

RECORDS SEARCH AND LITERATURE REVIEW

Records Search

On August 13, 2020, AECOM requested a records search at the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System, housed at California State University, Fullerton (21614.7709). The records search request focused on the identification of

previously completed studies and previously recorded cultural resources within a 0.25-mile radius of the proposed project footprint.

Studies

The records search revealed that six studies were previously conducted in the project site; four additional studies were conducted within a 0.25-mile radius (Table 1). Six of the studies were positive for cultural resources, although only one (Knell and Steely 2007) was positive for cultural resources within the project site. The cultural resource is detailed below. Also noted by the reports was that a major ethnographic village (CA-LAN-98, ethnographic village of *Suangna*) and CA-LAN-2682, a site with significant human remains, are approximately 2.5 miles to the south of the project site (Eggers 1977; Maxon 2012).

Table 1. Studies conducted in or within 0.25-mile of the project site

Report # (LA-)	Author	Title	Date	In / Within 0.25 Mile	Results
02258	Breece, William H.	<i>Archaeological Survey Results: Proposed Oil Shell Soil company Inter-refinery Pipelines Project, Carson CA.</i>	1991	In	Negative
02749	Charroin, Andrea	<i>Archaeological Monitoring for Shell Pipeline</i>	1992	In	Positive, negative within APE
04512	Eggers, A.V.	<i>Cultural Resources Inventory of the City of Carson, California</i>	1977	In	Positive, negative within APE
10158	Knell, Edward J., and James Steely	<i>Cultural Resources Survey for the Carson Terminal Redevelopment Project, Los Angeles County, CA</i>	2007	In	Positive, P-19-188395
10567	Hogan, Michael, et al.	<i>Identification and Evaluation of Historic Properties – West Basin Municipal Water District Harbor – South Bay Water Recycling Project Proposed Project Laterals</i>	2005	In	Positive, negative within APE
11063	Losee, Carolyn	<i>Cultural Resources Analysis for Global Tower “Carson, CA” Site, 21136 Wilmington Avenue, Carson, Los Angeles County, CA 90040</i>	2009	0.25 Mile	Negative

Report # (LA-)	Author	Title	Date	In / Within 0.25 Mile	Results
11094	Johnson, Brent	<i>Cultural Resources Records Search for T-Mobile USA Inc., LA33771A/Schafer, 1981 E. 213th St, Carson, Los Angeles County, California 90749</i>	2020	0.25 Mile	Negative
11150	Maxwell, Pamela	<i>West Basin Municipal Water District Harbor/ South Bay Water Recycling Project</i>	2003	0.25 Mile	Positive
11551	Maxon, Patrick	<i>Phase I Cultural Resources Assessment, Juanita Millender-McDonald Carson Regional Water Recycling Facility Phase II B Expansion Project, West Basin Municipal Water District, City of Carson, Los Angeles County, California</i>	2012	In	Positive, negative within APE
13211	Roland, Jennifer	<i>Phase I Investigation for the Crown Castle LA33771A Antenna Installation Project, Carson, Los Angeles County, California</i>	2016	0.25 Mile	Negative

Sites

The project site is located within the boundary of a previously recorded cultural resource, P-19-188395, which is the Shell Oil Company Dominguez Refinery. The Dominguez Refinery was recorded in 2007 as a historic-age building complex divided into six areas: Area I (Tank Farm), Area II (Refinery), Area III (Chemical Plant), Area IV (Ethanol Loading and Distribution Center), Area V (Agricultural Field), and the Office Complex Area. It was recommended as not eligible for the CRHR (SWCA 2007). AECOM completed an updated evaluation of the site in 2011 and recommended that the site was not eligible for listing on the CRHR (AECOM 2011). The historic refinery had largely been removed prior to 2011 and no extant buildings or structures associated with the historic refinery are in the project site. Although the Dominguez Refinery is associated with the oil boom in Los Angeles, it was determined to not be eligible for listing on the CRHR and was not considered a historical resource for the purposes of CEQA.

Native American Contact Program

AECOM submitted a Sacred Lands File Search at the California Native American Heritage Commission (NAHC) in West Sacramento on August 5, 2020. The NAHC responded on August 13, 2020, indicating that no tribal cultural resources are located in the project area. The NAHC also provided a list of tribal contacts who may have additional information regarding cultural resources in the project area. AECOM submitted a written request for more information from each of the tribal contacts in December 2020. To date, one response has been received and consultation is ongoing.

Additional Inventories

No resources listed on the NRHP or the CRHR, or any California Historical Landmarks, or California Points of Historical Interest are documented in the project area. Although outside of the record search area, the ethnographic village of Suangna has been documented as being located in the vicinity of the project site. This village site is listed on the California State Office of Historical Resources Historic Property Data File for Los Angeles County Point of Interest (Los Angeles Historical Marker 13).

Historical Maps and Aerial Photographs

The Dominguez Refinery is well-documented on historical maps and aerial photographs. The tank farm and other refinery buildings are visible on the 1930 USGS topographic quadrangle, bordered by Wilmington Avenue, Del Amo Street, and the railroad spur on the northern end of the complex (USGS 1930). An aerial photograph from 1952 shows a massive complex of tanks and associated facility structures in the project area (USDA 1952).

A comparison of aerial photographs from 2010, 2016, and 2020 indicate that the built environment in and adjacent to the project site has remained substantially unaltered over the previous 10 years.

SURVEY***Field Methods***

On November 3, 2020, AECOM archaeologist Frank Humphries conducted a reconnaissance survey of the proposed project site. The survey focused on the identification of any surface evidence of archaeological materials in undeveloped portions of the project site. All unpaved and undeveloped portions of the site were walked in transects of 10 meters or less. The project site and vicinity were photographed. An updated survey was conducted on February 23, 2021 by AECOM archaeologist Jennifer Redmond. This survey targeted new areas added to the project, including ground disturbance near the CNG compound and staging and laydown areas.

The surveys encompassed the entirety of the area of proposed project disturbances that included paved streets, exposed soil areas, and areas covered with gravel ground cover. All exposed ground surfaces were diligently investigated. Exposed surfaces in drainage cut banks, dirt road cuts, and rodent burrows were examined for evidence of buried deposits.

To aid in navigation and plotting, a map of the project area was preloaded in ArcGIS Collector on a handheld mobile device.

Survey Results

The entire project area has been previously mechanically graded. Ground visibility overall was less than 50 percent, with intermittent sections of exposed soils, gravel ground cover, and paved streets. Ground-obscuring vegetation was not present. The area in the proposed general construction parking at the eastern edge of the project site was paved. The linear area along Boiler Street where the 4-inch natural gas line and new CNG compound would be constructed is paved (Photograph 1). The parking and staging area immediately south of Boiler Street had 50 percent visibility. The construction access routes are paved. The driveway locations where the pipeline would be placed in a trench were also improved, with no ground visibility. The proposed laydown and staging areas had approximately 25 percent visibility; the majority of these areas were covered with gravel fill.

Soils observed on the surface within the project site consist of light- to medium-brown, fine-grained silty sand with inclusions of small- to medium-sized rocks. The entirety of the project area appears to have been disturbed from prior superficial grading activities.



Photograph 1. Boiler Street, area of CNG and proposed 4-inch line, view west

A series of features associated with the historical operations of the Dominguez Refinery (P-19-188395) were identified and documented to include in a site record update (Figure 3 - redacted). Features that are connected to or appear associated with functioning components of the refinery were not recorded.

- Feature 1: This feature consists of a group of four concrete foundations with 1,500 to 2,000 scattered brick fragments and *in situ* brick floors (Photograph 2). Several bricks were observed that contain partial or full maker's marks. The following full maker's marks were observed: "TROJAN" and "CARNEGIE." The following partial maker's marks were observed: "SIM..." and several partial Carnegie bricks. The buildings associated with these features appear to have been built in the 1950s and demolished between 1980 and 1994 (HistoricAerials 2020).
 - o Foundation #1 is at the western end of the series of foundations, measures 25 feet north to south by 15 feet east to west, and is composed of a solid reinforced-concrete slab with scatter bricks in the area.
 - o Foundation #2 measures 40 feet north to south by 7 feet east to west and consists of a brick floor center with a 1-foot-thick concrete edge.
 - o Foundation #3 consists of a pair of hexagonal-shaped concrete slabs that measure 13 feet by 13 feet.
 - o Foundation #4 is constructed in a similar fashion to Foundation #2. It measures 40 feet north to south by 7 feet east to west, and consists of a brick floor center with a 1-foot-thick concrete edge.



Photograph 2. Overview of Feature 1 at proposed parking and staging area, view east.

Figure 3 - redacted

- Feature 2: Feature 2 is composed of a brick floor connected to a concrete slab (Photograph 3). The concrete portion measures 9 feet east to west by 20 feet north to south, and the brick floor measures 9 feet east to west and 45 feet north to south. In total, the feature measures 9 feet east to west by 65 feet north to south. There are two bricks with partial maker's marks in the vicinity of Feature 2: "...E VER / ...HIFIRE / ...E CLAY CO" and "/ ARGON / LOS ANGELES," with additional characters that are not legible (Plates 12 and 13). The two bricks with the maker's marks observed in the vicinity of Feature 2 appear to be of a different type than the bricks that compose the brick floor of the feature. The building associated with this foundation was demolished in the 1990s (HistoricAerials 2020).



Photograph 3. Feature 2, brick floor and concrete slab, view south.

- Feature 3: Feature 3 consists of a circular concrete structure that measures 4 feet high and 20 feet in diameter, and a raised concrete foundation that is positioned 10 feet to the west of

the circular structure. The raised foundation measures 12 feet north to south and 48 feet from east to west and contains 2-foot-wide walls and is composed of three cells. These features were constructed between 1963 and 1972 and demolished between 1980 and 1994 (HistoricAerials 2020).

- Feature 4: This feature consists of a concrete foundation that measures 43 feet east to west by 36 feet north to south. The building associated with this feature appears to have been demolished in the 1990s (HistoricAerials 2020).
- Feature 5: This feature consists of a solid concrete slab foundation that measures 25 feet east to west by 10 feet north to south. The building associated with this feature appears to have been demolished between 1980 and 1994 (HistoricAerials 2020).
- Feature 6: This feature consists of a 60-foot-diameter asphalt circle that formerly supported a tank (Photograph 4). A sump is on the southwest portion of the circle, which measures 9 feet by 4 feet and is approximately 4 feet deep. This sump is constructed of board-formed concrete. These features were constructed between 1942 and 1951 and were demolished between 2010 and 2011 (HistoricAerials 2021).



Photograph 4. Feature 6, asphalt pad, view northwest.

- Feature 7: This feature consists of a poured concrete foundation with reinforced concrete piers at each corner of the foundation and on the north and south sides of the foundation (Photograph 5). The foundation measures 113 feet east to west and 69 feet north to south. Two concrete machine mounts are on the exterior of the foundation and three pipes remain on the northern side of the foundation. A concrete apron surrounding the west side of the foundation has an incised date of 1980. This feature was originally constructed between 1955 and 1966, modified in 1980 with the construction of the apron, and demolished between 1994 and 2002 (HistoricAerials 2021).



Photograph 5. Feature 7, concrete foundation, view southwest.

- Feature 8: This feature consists of a series of six connected concrete foundations and aprons that appear to represent two historic period buildings and surrounding aprons. The northernmost portion of the feature is comprised of a poured concrete slab with a reinforced concrete wall footing that likely supported corrugated metal walls. This foundation measures 60.5 feet north to south, 31 feet east to west, and is 10 inches high. The easternmost foundation is also poured concrete; the concrete wall footing has largely been demolished. This foundation measures 49.5 feet north to south and 90 feet east to west. One section of the corrugated metal wall remains on the eastern elevation; the 18-inch-tall wall footing is board-formed concrete. Connecting these two foundations are poured concrete aprons, including one with remnant linoleum flooring. The southwesternmost apron has a date of

1982 incised in the concrete. This feature was constructed between 1942 and 1952, modified in 1982, and demolished between 1994 and 2002 (HistoricAerials 2021).

- Feature 9: This feature consists of a series of seven small concrete footings that likely supported pipes that have been removed. Four of these footings are 18 inches by 18 inches square with metal bolts; the remaining three are 18 inches in diameter. Several appear to be missing and the feature extends south outside the project area. This feature was constructed between 1972 and 1980 and demolished between 1994 and 2002 (HistoricAerials 2021).
- Feature 10: This feature consists of a poured concrete foundation with a beveled concrete wall footing around the perimeter (Photograph 6). The interior floor is painted army green and peach and there are two door openings on the north side. This feature measures 21 feet north to south and 49.5 feet east to west; the wall footing is 4 inches high. Reinforced concrete footings are at each corner of the foundation; two additional footings are on the north and south walls. This feature is attached to a large poured concrete area to the west that is outside the project area. This feature was constructed prior to 1952 and was demolished between 1994 and 2002 (HistoricAerials 2021).



Photograph 6. Feature 10, concrete foundation, view northeast.

- Feature 11: This feature consists of a remnant of a rough concrete foundation that is mostly covered by gravel fill. It measures 31.5 feet north to south by about 20 feet east to west. It is 3 inches in height and is reinforced with large gauged mesh. There is a square hole in the center of the foundation for a grate. This feature was constructed prior to 1952 and appears to be associated with a former tank. It was demolished between 1972 and 1980 (HistoricAerials 2021).
- Feature 12: This feature is a small poured concrete foundation without a concrete wall footing. It is flush to the ground and measures 24 feet north to south and 28 feet east to west. It is west and south of existing pipe racks. This feature was constructed between 1980 and 1994 and was demolished by 2002 (HistoricAerials 2021).
- Feature 13: This feature is an open U-shaped materials storage bin constructed with three board-formed reinforced concrete walls and a plywood backing. The concrete walls are 2 feet high; the plywood back wall is 5.5 feet high. It is 33 feet north to south and 35 feet east to west. This feature appears to have been constructed by 1952 and may still be in use (HistoricAerials 2021).
- Feature 14: This feature is a concrete machine mount with a reinforced concrete wall foundation (Photograph 7). This feature measures 13 feet north to south, 9 feet east to west, and is 6 inches high. The foundation is set with a series of metal tubes that contain severed wires. This feature was constructed prior to 1952 and was demolished between 1994 and 2002 (HistoricAerials 2021).
- Feature 15: This feature consists of two thick poured reinforced concrete foundations that may be associated with the demolished tank (Feature 6). The foundations measure 7 feet north to south by 15 feet east to west and 5 feet north to south by seven feet east to west. One foundation still has an intact metal cap. This feature was constructed between 1952 and 1963 and was demolished after 2002 (HistoricAerials 2021).
- Feature 16: This feature consists of a series of five concrete footings: one is square (measuring 4 feet by 4 feet by 6 inches), two are long and rectangular (measuring 7 feet by 8 inches by 5 inches), and two are short and rectangular (measuring 9 inches by 1.5 feet by 6 inches). These appear to have been placed between 1963 and 1972; the associated structure appears to have been demolished after 2002 (HistoricAerials 2021).



Photograph 7. Feature 14, concrete machine mount, view north.

- Feature 17: This feature consists of a poured concrete foundation that is flush to the ground. It measures 42 feet north to south and 70 feet east to west. There is no visible rebar in the foundation. To the north and west are additional foundations that are associated with existing infrastructure. This feature was constructed prior to 1952 and was demolished between 1980 and 1994 (HistoricAerials 2021).
- Feature 18: This feature consists of a poured concrete pad with seven reinforced concrete machine mounts around the perimeter on the north, east, and south sides (Photograph 8). This irregularly shaped feature measures 42 feet north to south and 43 feet east to west. It appears the structure associated with this feature was constructed between 1972 and 1980 and was demolished between 1994 and 2002 (HistoricAerials 2021).



Photograph 8. Feature 18, concrete foundations, view northwest.

- Feature 19: This feature consists of a poured concrete “shell” (Photograph 9). The feature is flush to the ground and measures 12 feet northwest to southeast and 11 feet northeast to southwest. This decorative feature is not visible on historical aerials but may date between 1972 and 1980 when other changes were made in the vicinity (HistoricAerials 2021).



Photograph 9. Feature 19, concrete “shell,” view west.

- Feature 20: This feature consists of a board-formed concrete sump with a pipe in the bottom. The sump measures 8 feet north to south and 5 feet east to west; it is 2 feet tall. It is coated with black material and has been decommissioned. This feature is not visible on historical aerials but may date to the 1950s (HistoricAerials 2021).
- Feature 21: This feature consists of a concrete machine mount that measures 7 feet north to south and 6 feet east to west. This feature is not visible on historical aerials but may date to the 1950s (HistoricAerials 2021).

The foundations are all associated with buildings that are visible on historical aerials. Bricks used in their construction were made both locally and in Northern California. The Argon bricks were made by the Vitrefax Corporation in Vernon (1920-1943) (Mosier 2017). Bricks made in Northern California include Carnegie bricks from the Gladding, McBean, and Company plant in Pittsburg, California (1943-1962); and Trojan bricks, which were also made by Gladding, McBean, and Company at their Lincoln, California plant (1935-1952) (Mosier 2009; 2015). The other marks were too fragmentary to identify. All of the bricks date the period of time when the Dominguez Refinery has been in operation.

No buildings are in the project site and structures in the project site (e.g., pipe supports) are of recent construction (less than 45 years old) and have been modified and maintained. The project site is

adjacent to the administrative area and the ethanol fueling rack documented by AECOM (2011). The buildings adjacent to the project site were found ineligible in 2011 either because of age (the ethanol fueling rack was constructed in 2003), alterations, or lack of architectural significance. No changes to these built environment resources were observed.

No previously unrecorded resources were identified during the survey. No indications of potential precontact resources were identified. The updated California Department of Parks and Recreation 523 series forms for P-19-188395 are included in Attachment A.

SUMMARY AND MANAGEMENT RECOMMENDATIONS

The project site is partially within the boundary of resource P-19-188395, the Shell Oil Company Dominguez Refinery. Portions of this site were revisited during the 2020 pedestrian survey. Previous evaluations in 2007 and 2011 concluded that the resource is not eligible for the CRHR. Existing conditions are consistent with recorded conditions in 2011, and all buildings adjacent to the project site that were extant in 2011 remain. These buildings remain insignificant examples of typical industrial building types and have not gained significance over the previous decade. The buildings that were not of sufficient age in 2011 have not yet met the 45 year age threshold. The resource has not acquired additional significance or integrity to make it eligible for the CRHR. Therefore, it is not considered a historical resource for the purposes of CEQA.

Archaeological elements of the refinery were identified and documented. New elements of the site (22 features, primarily concrete foundations or footings from demolished buildings and structures) were identified and briefly documented. The presence of these foundations does not change the 2011 evaluation and eligibility determination of the site. The buildings associated with these foundations have already been documented, and the refinery has been found ineligible under CRHR criteria 1-3, as well as 4. The data contained in the foundations do not have the potential to yield information important in the history of the area, and do not change the prior determination under Criterion 4. Therefore, no mitigation for impacts to this resource is required.

The project site has been heavily disturbed by prior construction, reducing the potential for encountering intact archaeological sites. However, the soils in the project site consist of recent alluvium that may have buried archaeological resources that were formerly on the surface, and the vicinity of the project site was ecologically rich and attractive for settlement during the precontact period. The ethnographic village of Suangna is in the vicinity of the project site. Due to the sensitivity of the project site for precontact resources, and concerns that were identified by Native American representatives, the 2011 AECOM study recommended that ground-disturbing activities should be monitored by a qualified archaeologist and Native American monitor.

Based on the amount of prior construction at the project site, it is anticipated that the upper 2 to 3 feet of the project site has been heavily disturbed. It is expected that the only proposed ground-disturbing work that has the potential to encounter intact, undisturbed soils are the few project elements that would require excavation that extends 3 feet or more below the current ground surface (e.g., precast trenches, canopy footings). It is recommended that an archaeological monitor be present during the initiation of these activities. If after construction has started a qualified archaeologist confirms that the subsurface has previously been fully disturbed to the maximum depth of ground disturbance, the qualified archaeologist will recommend that monitoring be reduced or concluded. The unexpected

discoveries measure would continue to apply. . A Native American monitor should also be present for these activities and any others identified during consultation.

Unexpected Discoveries

In the event of the discovery of an archaeological resource during construction, all soil-disturbing activities within 100 feet of the find will cease, and the project manager will be notified. The project manager will contact a Secretary of the Interior-qualified archaeologist, who will assess the identity, integrity, and significance of the encountered archeological deposit, and identify appropriate next steps in consultation with the Native American monitor, as appropriate.

Human Remains

In the unlikely event that human remains are discovered during project implementation, work in the immediate vicinity of the discovery will be suspended, and the Los Angeles County Coroner contacted. If the remains are deemed Native American in origin, the Coroner will contact the NAHC and identify a Most Likely Descendant pursuant to Public Resources Code Section 5097.98 and California Code of Regulations Section 15064.5. Work may resume but will only commence after consultation and treatment have been concluded.

Tribal Monitoring

Prior to the commencement of any ground disturbing activity at the project site, the project applicant shall retain a Native American Monitor approved by the Gabrieleno Band of Mission Indians-Kizh Nation – the tribe that consulted on this project pursuant to Assembly Bill A52 - SB18 (the “Tribe” or the “Consulting Tribe”). A copy of the executed contract shall be submitted to the City of Carson Planning and Building Department prior to the issuance of any permit necessary to commence a ground-disturbing activity.

The Tribal monitor will only be present on-site during the construction phases that involve ground-disturbing activities. Ground disturbing activities are defined by the Tribe as activities that may include, but are not limited to, pavement removal, potholing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the project area. The Tribal Monitor will complete daily monitoring logs that will provide descriptions of the day’s activities, including construction activities, locations, soil, and any cultural materials identified. The on-site monitoring shall end when all ground-disturbing activities on the Project Site are completed, or when the Tribal Representatives and Tribal Monitor have indicated that all upcoming ground-disturbing activities at the Project Site have little to no potential for impacting Tribal Cultural Resources.

Upon discovery of any Tribal Cultural Resources, construction activities shall cease in the immediate vicinity of the find (not less than the surrounding 100 feet) until the find can be assessed. All Tribal Cultural Resources unearthed by project activities shall be evaluated by the qualified archaeologist and Tribal monitor approved by the Consulting Tribe. If the resources are Native American in origin, the Consulting Tribe will retain it/them in the form and/or manner the Tribe deems appropriate, for educational, cultural and/or historic purposes. If human remains and/or grave goods are discovered or recognized at the Project Site, all ground disturbance shall immediately cease, and the county

coroner shall be notified per Public Resources Code Section 5097.98, and Health & Safety Code Section 7050.5. Human remains and grave/burialgoods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). Work may continue on other parts of the Project Site while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section 15064.5[f]).

If a non-Native American resource is determined by the qualified archaeologist to constitute a “historical resource” or “unique archaeological resource,” time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, must be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources and PRC Sections 21083.2(b) for unique archaeological resources.

Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes. The tribal monitor and any other site visitors must adhere to all site HSSE (Health, Safety, Security, Environmental) rules including COVID precautions.

REFERENCES CITED

- AECOM, 2011. *Cultural Resources Survey Report for the Carson Revitalization Project Specific Plan, Carson, California*. On file at AECOM.
- Bates, E. H., 1972. Los Altos (LAN-270): A Late Horizon Site in Long Beach, California. *Pacific Coast Archaeological Society Quarterly* 8(2):1–56.
- Bean, Lowell J., and Charles R. Smith, 1978. Serrano. In *California*, edited by Robert F. Heizer, pp. 570–574. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Dixon, E. J., 1999. *Bones, Boats, and Bison: Archaeology & the First Colonization of Western North America*. University of New Mexico Press, Albuquerque.
- Drover, C. E., H. C. Koerper, and P. Langenwaller II, 1983. Early Holocene Human Adaptation on the Southern California Coast: A Summary Report of Investigations at the Irvine Site (CA-ORA-64), Newport Bay, Orange County, California. *Pacific Coast Archaeological Society Quarterly*, 19(3 & 4):1–84.
- Eggers, A.V., 1977. *Cultural Resource Inventory Of The City Of Carson, California*. Study (LA-04512) on file at the South Coastal Central Information Center, Fullerton, California.
- Erlandson, Jon M., 1994. *Early Hunter-Gatherers of the California Coast*. Plenum Press, New York.

- Franks, Kenny A. and Paul F. Lambert, 1985. *Early California Oil: A Photographic History, 1865-1940*. Texas A&M University Press, College Station.
- Galbraith, John, and Richard K. Shaw, 2017. Human-Altered and Human-Transported Soils. In *Soil Survey Manual*, 4th, Ed. Ditzler C, Scheffe K, Monger HC, pp. 525–554. USDA Handbook 18. USDA-Natural Resources Conservation Service. Government Printing Office, Washington, D.C. Available: https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/ref/?cid=nrcs142p2_054262. Accessed October 10, 2020.
- Gallegos, D., 1987. A Review and Synthesis of Environmental and Cultural Material for the Batiquitos Lagoon Region. In *San Dieguito–La Jolla: Chronology and Controversy*, edited by Dennis Gallegos, pp. 23–24. Research Paper No. 1. San Diego County Archaeological Society, San Diego.
- Glassow, Michael A., 1980. Recent Developments in the Archaeology of the Channel Islands. In *The California Islands, An Interdisciplinary Symposium*, edited by D.M. Power, pp. 79–99. Santa Barbara Museum of National History, Santa Barbara.
- Gumprecht, Blake, 1999. *The Los Angeles River: Its Life, and Possible Rebirth*. The Johns Hopkins University Press, Baltimore.
- HistoricAerials, 2020. Historical aerial photographs of Carson, California. Available: <https://www.historicaerials.com/>. Accessed November 13, 2020.
2021. Historical aerial photographs of Carson, California. Available: <https://www.historicaerials.com/>. Accessed February 24, 2021.
- Jennings, C.W., 1962. *Geologic Map of California: Long Beach Sheet*. 1:250,000. California Division of Mines and Geology, Sacramento, California.
- Jones, Terry L., 1992. Settlement Trends Along the California Coast. In *Essays on the Prehistory of Maritime California*, edited by Terry L. Jones, pp. 1–38. No. 10, Center for Archaeological Research at Davis, University of California at Davis.
- Kielbasa, John R., 1997. “Rancho San Pedro, The Dominguez Ranch Adobe.” *Historic Adobes of Los Angeles County*. Available: <http://www.laokay.com/halac/DominguezRanch> Adobe.htm. Accessed April 6, 2010.
- Knell, Edward J., and James Steely, 2007. *Cultural Resources Survey for the Carson Terminal Redevelopment Project, Los Angeles County, CA*. Report (LA-10158) on file at the South Central Coastal Information Center, California State University, Fullerton.
- Koerper, Henry C., 1979. On the Question of the Chronological Placement of the Shoshonean Presence in Orange County, California. *Pacific Coast Archaeological Society Quarterly* 15(3):69–84.

- Koerper, H. C., R. D. Mason, and M. L. Peterson, 2002. Complexity, Demography, and Change in Late Holocene Orange County. In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, edited by J.M. Erlandson and T.L. Jones, pp. 63–81. Perspectives in California Archaeology Volume 6. University of California, Los Angeles.
- Kroeber, A. L., 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington, D.C.
- Macko, M., 1998. *Neolithic Newport Executive Summary: Results of Implementing Mitigation Measures Specified in the Operation Plan and Research Design for the Proposed Newporter North Residential Development at ORA-64*. Prepared for the Irvine Community Development Company, Newport Beach. Macko, Inc., Costa Mesa.
- Mason, R. D., and M. L. Peterson, 1994. *Newport Coast Settlement Systems: Analysis and Discussion, Volume I*. Prepared for Coastal Community Builders, Newport Beach, California. Prepared by The Keith Companies, Costa Mesa.
- Maxon, Patrick, 2012. *Phase I Cultural Resources Assessment, Juanita Millender-McDonald Carson Regional Water Recycling Facility Phase II B Expansion Project, West Basin Municipal Water District, City of Carson, Los Angeles County, California*. Report (LA-11551) on file at the South Central Coastal Information Center, Fullerton, California.
- McCawley, William, 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Malki Museum Press, Banning.
- Mosier, Dan, 2009. *California Bricks: Stockton Fire Brick Company, Pittsburg*. Available: <http://calbricks.netfirms.com/brick.gmcbpittsburg.html>. Accessed November 13, 2020.
2015. *California Bricks: Trojan*. Available: <http://calbricks.netfirms.com/brick.trojan3.html>. Accessed November 13, 2020.
2017. *California Bricks: Argon*. Available: <http://calbricks.netfirms.com/brick.argonfb.html>. Accessed November 13, 2020.
- National Cooperative Soil Survey, 1999. *Metz Series*. United States Department of Agriculture. Available: https://soilseries.sc.egov.usda.gov/OSD_Docs/M/METZ.html. Accessed October 10, 2020.
2003. *Pico Series*. United States Department of Agriculture. Available: https://soilseries.sc.egov.usda.gov/OSD_Docs/P/PICO.html. Accessed October 10, 2020.
- Port of Los Angeles (POLA), 2010. "History of the Port." Electronic document: http://www.portoflosangeles.org/idx_history.asp. Accessed April 6, 2010.

- Raab, L. M., J. L. Porcasi, K. Bradford, and A. Yatsko, 1995. Beyond the 50-Percent Solution: Maritime Intensification at Eel Point, San Clemente Island, California. Presented at the Annual Meetings of the Society for California Archaeology, Eureka.
- Reid, Hugo, 1939 [1852]. Letters on the Los Angeles County Indians. *A Scotch Paisano in Old Los Angeles*, by Susanna Bryant Dakin, pp. 215–286. University of California Press.
- SWCA Environmental Consultants (SWCA), 2007. Cultural Resources Survey for the Carson Terminal Redevelopment Project, Los Angeles County, California.
- Trejos, Charlotte M., 1987. *My Carson, Your Carson*. Trejos Literary Agency. Carson, California.
- U.S. Department of Agriculture (USDA), 1952. Aerial maps. Available: <http://www.historicaerials.com>. Accessed April 6, 2010.
- U.S. Geological Survey (USGS), 1930. *Compton, Calif.* 7.5-minute topographical map.
- Vellanoweth, R. L., and J. H. Altschul, 2002. Antiquarians, Culture Historians, and Scientists: The Archaeology of the Bight. In *Islanders and Mainlanders: Prehistoric Context for the Southern California Bight*, edited by Jeffrey H. Altschul and Donn R. Grenda, pp. 85–111. SRI Press, Tucson.
- Wallace, W. J., 1955. A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology* Vol. 11, no. 3.
- Warren, C. N., 1968. Cultural Traditions and Ecological Adaptation on the Southern California Coast. In *Archaic Prehistory in the Western United States*, edited by Cynthia Irwin-Williams. *Eastern New Mexico University Contributions in Anthropology* 1(3):1–14.

ATTACHMENT

To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources should be kept confidential and therefore this attachment is not included in the publicly available project documentation.

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Appendix D

Noise Attachments

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Appendix D-1

Field Noise Data Sheets

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FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT <u>CARSON SHELL CNG</u>	PROJECT # <u>10029-19</u>
SITE ID _____	OBSERVER(S) <u>PETE VITAR</u>
SITE ADDRESS _____	
START DATE <u>12/15/20</u>	END DATE <u>12/15/20</u>
START TIME _____	END TIME _____

METEOROLOGICAL CONDITIONS

TEMP <u>53</u> F	HUMIDITY <u>46</u> % R.H.	WIND <u>CALM</u>	<input type="checkbox"/> LIGHT	<input type="checkbox"/> MODERATE
WINDSPD _____ MPH	DIR. <u>N</u> NE S SE S SW W NW	<input type="checkbox"/> VARIABLE	<input type="checkbox"/> STEADY	<input type="checkbox"/> GUSTY
SKY <u>SUNNY</u> <u>CLEAR</u>	OVRCAST PRTLY CLDY FOG	RAIN		

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT <u>Piccolo SLM-P3</u>	TYPE <u>1</u> <u>2</u>	SERIAL # <u>140317004</u>
CALIBRATOR <u>BSWA CA 119</u>		SERIAL # <u>490151</u>
CALIBRATION CHECK <u>PRE-TEST</u> <u>dBA SPL</u>	POST-TEST _____	WINDSCREEN <u>YES</u>

SETTINGS

A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

REF. #	BEGIN	END	L _{eq}	L _{max}	L _{min}	L ₉₀	L ₅₀	L ₁₀	OTHER (SPECIFY METRIC)
<u>ST-1</u> <u>I-2</u>	<u>9:12</u>	<u>9:27</u>	<u>63.8</u>	<u>73.2</u>	<u>56.1</u>				

COMMENTS

READING TAKEN IN FRONT OF 21002-21004 MARTIN ST (RESIDENTIAL);
PRIMARY NOISE SOURCE IS DISTANT TRAFFIC NOISE FROM 405 FWY;
SHIPLoader moving in LOT 40 THE NORTH OF THE METER THROUGHOUT READING;

SOURCE INFO AND TRAFFIC COUNTS

PRIMARY NOISE SOURCE TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: _____

ROADWAY TYPE: ASPHALT DIST. TO RDWY/C/L OR EOP: APX 20' TO C/L OF MARTIN ST.

TRAFFIC COUNT DURATION: _____ MIN		SPEED		MIN		SPEED				
COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB	COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB	SB/WB
	AUTOS									
	MED TRKS									
	HVY TRKS									
	BUSES									
	MOTOCLS									

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE

POSTED SPEED LIMIT SIGNS SAY: _____

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONCRETS / YELLING DIST. TRAFFIC (IF ROWS BELOW) DIST. GARDENERS / LANDSCAPING NOISE

OTHER: 405 FWY; SHIPLoader moving in LOT 40 THE NORTH OF METER THROUGHOUT THE READING

DESCRIPTION / SKETCH

TERRAIN HARD SOFT MIXED FLAT OTHER: _____

PHOTOS 9539; 9540; 9542; 9543; 9544; 9545

OTHER COMMENTS / SKETCH _____



FIELD NOISE MEASUREMENT DATA

PROJECT CARSON SMELL CNV PROJECT # 10029-19
 SITE ID _____ OBSERVER(S) PETE VITAR
 SITE ADDRESS _____
 START DATE 12/15/20 END DATE 12/15/20
 START TIME _____ END TIME _____

METEOROLOGICAL CONDITIONS
 TEMP 57 F HUMIDITY 39 % R.H. WIND CALM LIGHT MODERATE
 WINDSPD _____ MPH DIR. N NE S SE S SW W NW VARIABLE STEADY GUSTY
 SKY SUNNY CLEAR OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
 MEAS. INSTRUMENT PICCOLO SEM-P3 TYPE 1 2 SERIAL # 140317064
 CALIBRATOR LSWA CA 114 SERIAL # 490151
 CALIBRATION CHECK _____ PRE-TEST _____ dBA SPL POST-TEST _____ dBA SPL WINDSCREEN YES

SETTINGS A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

REC. #	BEGIN	END	L _{eq}	L _{max}	L _{min}	L ₉₀	L ₅₀	L ₁₀	OTHER (SPECIFY METRIC)
<u>ST2 3-4</u>	<u>9:37</u>	<u>9:52</u>	<u>54.5</u>	<u>70.1</u>	<u>51.0</u>				

COMMENTS
READING TAKEN IN FRONT OF 21003 PONTINE AVE (RESIDENTIAL);
PRIMARY NOISE SOURCE IS DISTANT TRAFFIC NOISE FROM 405 FWY;

SOURCE INFO AND TRAFFIC COUNTS
 PRIMARY NOISE SOURCE TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: _____
 ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR EOP: APX 7' TO EOP

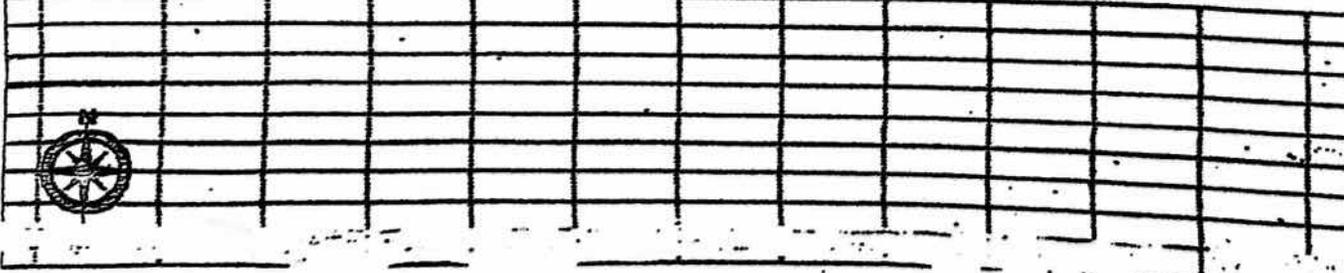
TRAFFIC COUNT DURATION: _____ MIN SPEED _____ MIN SPEED _____

COUNT 1 (OR RDWY 1)	DIRECTION		SPEED		IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE	COUNT 2 (OR RDWY 2)		SPEED	
	NB/EB	SB/WB	NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
 POSTED SPEED LIMIT SIGNS SAY: _____

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
 DIST. KIDS PLAYING DIST. CONVRTNS / YELLING DIST. TRAFFIC (LIST ROWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
 OTHER: 405 FWY;

DESCRIPTION / SKETCH
 TERRAIN HARD SOFT MIXED FLAT OTHER: _____
 PHOTOS 9547; 9548; 9549; 9550
 OTHER COMMENTS / SKETCH _____



DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT CARSON SHELL CNL PROJECT # 10029-19
 SITE ID _____ OBSERVER(S) PETE VITAR
 SITE ADDRESS _____
 START DATE 12/15/20 END DATE 12/15/20
 START TIME _____ END TIME _____

METEOROLOGICAL CONDITIONS
 TEMP 62 F HUMIDITY 29 % R.H. WIND CALM LIGHT MODERATE
 WINDSPD _____ MPH DIR. N NE S SE S SW W NW VARIABLE STEADY GUSTY
 SKY SUNNY CLEAR OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
 MEAS. INSTRUMENT PICCOLO SLM-P3 TYPE 1 2 SERIAL # 140317064
 CALIBRATOR BSWA CA 119 POST-TEST _____ dBA SPL SERIAL # 490151
 CALIBRATION CHECK _____ PRE-TEST _____ dBA SPL WINDSCREEN YES

SETTINGS A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

REC #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC)
<u>5-6</u>	<u>10:02</u>	<u>10:17</u>	<u>55.3</u>	<u>69.9</u>	<u>56.9</u>				

ST3

COMMENTS
READING TAKEN ON NW END OF DOLPHIN PARK, JUST EAST OF
PARKING LOT; PRIMARY NOISE SOURCE IS DISTANT TRAFFIC FROM 405 FWY;
OCCASIONAL NOISE FROM CONVERSATIONS IN THE PARK;

SOURCE INFO AND TRAFFIC COUNTS
 PRIMARY NOISE SOURCE TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: _____
 ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR EOP: APX 215' TO EOP ON MARTIN ST
 TRAFFIC COUNT DURATION: _____ MIN SPEED _____
 NB/WB SB/WB NB/EB SB/WB NB/EB SB/WB NB/EB SB/WB
 COUNT 1 (OR RDWY 1) DIRECTION _____ IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE
 COUNT 2 (OR RDWY 2) _____
 SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
 POSTED SPEED LIMIT SIGNS SAY: _____

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DIST. GARDENERS/LANDSCAPING NOISE
 OTHER: 405 FWY; DISTANT GARDENER NOISE DURING FINAL 3 MINUTES OF READING;

DESCRIPTION / SKETCH
 TERRAIN HARD SOFT MIXED FLAT OTHER: _____
 PHOTOS 9552; 9553; 9554; 9555; 9556
 OTHER COMMENTS / SKETCH _____



FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT <u>CARSON SHELL CNL</u>	PROJECT # <u>10029-14</u>
SITE ID _____	OBSERVER(S) <u>PETE VITAR</u>
SITE ADDRESS _____	
START DATE <u>12/15/20</u>	END DATE <u>12/15/20</u>
START TIME _____	END TIME _____

METEOROLOGICAL CONDITIONS																																									
TEMP <u>62</u> F	HUMIDITY <u>29</u> % R.H.																																								
WINDSPD _____ MPH	DIR. <u>N</u> NE S SE S SW W NW																																								
SKY <u>(SUNNY)</u> <u>(CLEAR)</u>	OVRCAST PRTLY CLDY FOG RAIN																																								
WIND <u>(CALM)</u> LIGHT MODERATE VARIABLE STEADY GUSTY																																									
ACOUSTIC MEASUREMENTS																																									
MEAS. INSTRUMENT <u>Piccolo SLM-P3</u>	TYPE 1 2																																								
CALIBRATOR <u>BSWA CA 114</u>	SERIAL # <u>140317004</u>																																								
CALIBRATION CHECK _____	SERIAL # <u>490151</u>																																								
PRE-TEST _____ dBA SPL	POST-TEST _____ dBA SPL																																								
WINDSCRN <u>YES</u>																																									
SETTINGS																																									
<u>(A-WTD)</u> <u>(SLOW)</u> FAST FRONTAL RANDOM ANSI OTHER: _____																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REC. #</th> <th>BEGIN</th> <th>END</th> <th>Leq</th> <th>Lmax</th> <th>Lmin</th> <th>L90</th> <th>L50</th> <th>L10</th> <th>OTHER (SPECIFY METRIC)</th> </tr> </thead> <tbody> <tr> <td><u>574</u> 7-8</td> <td><u>10:29</u></td> <td><u>10:44</u></td> <td><u>67.8</u></td> <td><u>83.0</u></td> <td><u>53.4</u></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> </td> </tr> <tr> <td> </td> </tr> </tbody> </table>		REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC)	<u>574</u> 7-8	<u>10:29</u>	<u>10:44</u>	<u>67.8</u>	<u>83.0</u>	<u>53.4</u>																								
REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC)																																
<u>574</u> 7-8	<u>10:29</u>	<u>10:44</u>	<u>67.8</u>	<u>83.0</u>	<u>53.4</u>																																				
COMMENTS <u>AT THE NW CORNER OF</u> <u>READING TAKEN AT THE NW CORNER OF</u> <u>MINIMUM OF 21303 LOSING AVE (RESIDENTIAL), ALONG</u> <u>DRABBY AND OVERLOOKING 21374 STREET; PRIMARY NOISE SOURCE IS</u> <u>LIGHT TRAFFIC ON 21374 ST;</u>																																									

SOURCE INFO AND TRAFFIC COUNTS					
PRIMARY NOISE SOURCE <u>(TRAFFIC)</u>	AIRCRAFT RAIL INDUSTRIAL OTHER: _____				
ROADWAY TYPE: <u>ASPHALT</u>	DIST. TO RDWY <u>(C/L OR EOP)</u> : <u>APX 25' TO CL OF 21374 ST</u>				
TRAFFIC COUNT DURATION: _____	MIN SPEED				
	NB/EB SB/WB NB/EB SB/WB				
COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB
	AUTOS				
	MED TRKS				
	HVY TRKS				
	BUSES				
MOTRCLS					
	IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE				
COUNT 2 (OR RDWY 2)		NB/EB	SB/WB	NB/EB	SB/WB
	AUTOS				
	MED TRKS				
	HVY TRKS				
	BUSES				
MOTRCLS					
SPEEDS ESTIMATED BY: <u>RADAR / DRIVING THE PACE</u> POSTED SPEED LIMIT SIGNS SAY: _____					
OTHER NOISE SOURCES (BACKGROUND): <u>(DIST. AIRCRAFT)</u> RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL DIST. KIDS PLAYING DIST. CONVRTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE OTHER: <u>OCCASIONAL PROPELLED PLANE HEARD IN DISTANCE;</u>					

DESCRIPTION / SKETCH																	
TERRAIN <u>HARD</u> <u>SOFT</u> <u>MIXED</u> <u>FLAT</u> OTHER: _____																	
PHOTOS <u>9558; 9559; 9560; 9561; 9562; 9563; 9565; 9566</u>																	
OTHER COMMENTS / SKETCH																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>																	



Appendix D-2

Construction Noise Modeling Inputs and Outputs

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Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 12/9/2020
 Case Description: Carson Shell CNG - Trenching

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Residence	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	540	0
Backhoe	No	40		77.6	550	0
Welder / Torch	No	40		74	550	0
Welder / Torch	No	40		74	600	0
Welder / Torch	No	40		74	650	0
Welder / Torch	No	40		74	700	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Crane	59.9	51.9	N/A	N/A	N/A	N/A
Backhoe	56.7	52.8	N/A	N/A	N/A	N/A
Welder / Torch	53.2	49.2	N/A	N/A	N/A	N/A
Welder / Torch	52.4	48.4	N/A	N/A	N/A	N/A
Welder / Torch	51.7	47.7	N/A	N/A	N/A	N/A
Welder / Torch	51.1	47.1	N/A	N/A	N/A	N/A
Total	59.9	57.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Park	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1100	5
Backhoe	No	40		77.6	1150	5
Welder / Torch	No	40		74	1160	5
Welder / Torch	No	40		74	1200	5
Welder / Torch	No	40		74	1250	5
Welder / Torch	No	40		74	1300	5

Results

Calculated (dBA)	Noise Limits (dBA)	
	Day	Evening

Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	48.7	40.7	N/A	N/A	N/A	N/A
Backhoe	45.3	41.3	N/A	N/A	N/A	N/A
Welder / Torch	41.7	37.7	N/A	N/A	N/A	N/A
Welder / Torch	41.4	37.4	N/A	N/A	N/A	N/A
Welder / Torch	41	37.1	N/A	N/A	N/A	N/A
Welder / Torch	40.7	36.7	N/A	N/A	N/A	N/A
Total	48.7	46.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 12/9/2020
Case Description: Carson Shell CNG - CNG Compound Installation

		---- Receptor #1 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Nearest Residence	Residential	60	55	50				
		Equipment						
		Impact	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)	
Description		Device						
Crane		No	16		80.6	540	0	
Excavator		No	40		80.7	550	0	
Welder / Torch		No	40		74	550	0	
Welder / Torch		No	40		74	600	0	
Front End Loader		No	40		79.1	575	0	
		Results						
		Calculated (dBA)			Noise Limits (dBA)			
				Day	Evening			
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	
Crane		59.9	51.9	N/A	N/A	N/A	N/A	
Excavator		59.9	55.9	N/A	N/A	N/A	N/A	
Welder / Torch		53.2	49.2	N/A	N/A	N/A	N/A	
Welder / Torch		52.4	48.4	N/A	N/A	N/A	N/A	
Front End Loader		57.9	53.9	N/A	N/A	N/A	N/A	
Total		59.9	59.8	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

		---- Receptor #2 ----						
		Baselines (dBA)						
Description	Land Use	Daytime	Evening	Night				
Park	Residential	60	55	50				
		Equipment						
		Impact	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)	
Description		Device						
Crane		No	16		80.6	1100	5	
Excavator		No	40		80.7	1150	5	

Welder / Torch	No	40	74	1160	5
Welder / Torch	No	40	74	1200	5
Front End Loader	No	40	79.1	1160	5

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	
Lmax			Lmax		Leq	
Crane	48.7	40.7	N/A	N/A	N/A	N/A
Excavator	48.5	44.5	N/A	N/A	N/A	N/A
Welder / Torch	41.7	37.7	N/A	N/A	N/A	N/A
Welder / Torch	41.4	37.4	N/A	N/A	N/A	N/A
Front End Loader	46.8	42.8	N/A	N/A	N/A	N/A
Total	48.7	48.5	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 12/9/2020
Case Description: Carson Shell CNG - Paving

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Residence	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment			
			Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Concrete Mixer Truck	No	40	78.8	78.8	540	0
Concrete Mixer Truck	No	40	78.8	78.8	550	0
Compactor (ground)	No	20	83.2	83.2	550	0
Compactor (ground)	No	20	83.2	83.2	600	0
Front End Loader	No	40	79.1	79.1	575	0
Backhoe	No	40	77.6	77.6	600	0

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	
Lmax			Lmax		Leq	
Concrete Mixer Truck	58.1	54.2	N/A	N/A	N/A	N/A
Concrete Mixer Truck	58	54	N/A	N/A	N/A	N/A
Compactor (ground)	62.4	55.4	N/A	N/A	N/A	N/A
Compactor (ground)	61.6	54.7	N/A	N/A	N/A	N/A
Front End Loader	57.9	53.9	N/A	N/A	N/A	N/A
Backhoe	56	52	N/A	N/A	N/A	N/A
Total	62.4	61.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----
Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Park	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	1100	5
Concrete Mixer Truck	No	40		78.8	1150	5
Compactor (ground)	No	20		83.2	1160	5
Compactor (ground)	No	20		83.2	1200	5
Front End Loader	No	40		79.1	1160	5
Backhoe	No	40		77.6	1200	5

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq
Concrete Mixer Truck	47	43	N/A	N/A	N/A	N/A
Concrete Mixer Truck	46.6	42.6	N/A	N/A	N/A	N/A
Compactor (ground)	50.9	43.9	N/A	N/A	N/A	N/A
Compactor (ground)	50.6	43.6	N/A	N/A	N/A	N/A
Front End Loader	46.8	42.8	N/A	N/A	N/A	N/A
Backhoe	45	41	N/A	N/A	N/A	N/A
Total	50.9	50.7	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.