Brady Vineyard Subdivision Project

SCH# 2019012050

Draft Environmental Impact Report

Volume II of II (Appendices C-L)

Prepared for

Placer County

November 2019

Prepared by

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APPENDIX C

CalEEMOD Emissions Modeling

Proposed Project
Unmitigated

Brady Vineyards

Placer County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	119.00	Dwelling Unit	26.90	214,200.00	367

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	440.00
tblGrading	AcresOfGrading	112.50	26.90
tblLandUse	LotAcreage	38.64	26.90
tblLandUse	Population	340.00	367.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.6592	2.7950	2.2244	4.2700e-003	0.3676	0.1345	0.5021	0.1853	0.1255	0.3109	0.0000	374.2698	374.2698	0.0901	0.0000	376.5227
2022	1.0657	2.4014	2.5435	4.8400e-003	0.0641	0.1165	0.1806	0.0173	0.1102	0.1276	0.0000	422.9222	422.9222	0.0773	0.0000	424.8541
2023	0.2431	0.5909	0.7341	1.3200e-003	0.0143	0.0279	0.0421	3.8400e-003	0.0262	0.0300	0.0000	115.8325	115.8325	0.0255	0.0000	116.4694
Maximum	**1.0657**	**2.7950**	**2.5435**	**4.8400e-003**	**0.3676**	**0.1345**	**0.5021**	**0.1853**	**0.1255**	**0.3109**	**0.0000**	**422.9222**	**422.9222**	**0.0901**	**0.0000**	**424.8541**

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	0.6592	2.7950	2.2244	4.2700e-003	0.3676	0.1345	0.5021	0.1853	0.1255	0.3109	0.0000	374.2694	374.2694	0.0901	0.0000	376.5223
2022	1.0657	2.4014	2.5435	4.8400e-003	0.0641	0.1165	0.1806	0.0173	0.1102	0.1276	0.0000	422.9218	422.9218	0.0773	0.0000	424.8537
2023	0.2431	0.5909	0.7341	1.3200e-003	0.0143	0.0279	0.0421	3.8400e-003	0.0262	0.0300	0.0000	115.8324	115.8324	0.0255	0.0000	116.4693
Maximum	**1.0657**	**2.7950**	**2.5435**	**4.8400e-003**	**0.3676**	**0.1345**	**0.5021**	**0.1853**	**0.1255**	**0.3109**	**0.0000**	**422.9218**	**422.9218**	**0.0901**	**0.0000**	**424.8537**

Brady Vineyards - Placer County APCD Air District, Annual

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-1-2021**	**6-30-2021**	1.5856	1.5856
2	**7-1-2021**	**9-30-2021**	0.9101	0.9101
3	**10-1-2021**	**12-31-2021**	0.9506	0.9506
4	**1-1-2022**	**3-31-2022**	0.8578	0.8578
5	**4-1-2022**	**6-30-2022**	0.8664	0.8664
6	**7-1-2022**	**9-30-2022**	0.8760	0.8760
7	**10-1-2022**	**12-31-2022**	0.8768	0.8768
8	**1-1-2023**	**3-31-2023**	0.6713	0.6713
9	**4-1-2023**	**6-30-2023**	0.1614	0.1614
		Highest	1.5856	1.5856

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4639	0.1560	10.1002	0.0168		1.2972	1.2972		1.2972	1.2972	122.9220	52.9950	175.9170	0.1148	9.6700e-003	181.6688
Energy	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	276.1236	276.1236	0.0164	5.7400e-003	278.2439
Mobile	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	26.8192	0.0000	26.8192	1.5850	0.0000	66.4434
Water						0.0000	0.0000		0.0000	0.0000	2.4598	6.5871	9.0468	0.2534	6.1300e-003	17.2079
Total	**8.7393**	**2.0660**	**12.9088**	**0.0292**	**0.9011**	**1.3168**	**2.2179**	**0.2424**	**1.3163**	**1.5587**	**152.2009**	**1,404.1842**	**1,556.3851**	**2.0069**	**0.0215**	**1,612.9754**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4639	0.1560	10.1002	0.0168		1.2972	1.2972		1.2972	1.2972	122.9220	52.9950	175.9170	0.1148	9.6700e-003	181.6688
Energy	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
Mobile	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	26.8192	0.0000	26.8192	1.5850	0.0000	66.4434
Water						0.0000	0.0000		0.0000	0.0000	2.4598	6.5871	9.0468	0.2534	6.1300e-003	17.2079
Total	**8.7393**	**2.0660**	**12.9088**	**0.0292**	**0.9011**	**1.3168**	**2.2179**	**0.2424**	**1.3163**	**1.5587**	**152.2009**	**1,292.1185**	**1,444.3194**	**1.9937**	**0.0188**	**1,499.7643**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7.98**	**7.20**	**0.66**	**12.67**	**7.02**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/28/2021	5	20	
2	Grading	Grading	4/29/2021	6/30/2021	5	45	
3	Building Construction	Building Construction	7/1/2021	3/8/2023	5	440	
4	Architectural Coating	Architectural Coating	7/15/2021	3/22/2023	5	440	
5	Paving	Paving	3/23/2023	5/10/2023	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 26.9

Acres of Paving: 0

Residential Indoor: 433,755; Residential Outdoor: 144,585; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	43.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	9.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.9000e-004	4.2700e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.1771	1.1771	3.0000e-005	0.0000	1.1778
Total	**5.8000e-004**	**3.9000e-004**	**4.2700e-003**	**1.0000e-005**	**1.4100e-003**	**1.0000e-005**	**1.4200e-003**	**3.8000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1771**	**1.1771**	**3.0000e-005**	**0.0000**	**1.1778**

3.2 Site Preparation - 2021

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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.9000e-004	4.2700e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.1771	1.1771	3.0000e-005	0.0000	1.1778
Total	**5.8000e-004**	**3.9000e-004**	**4.2700e-003**	**1.0000e-005**	**1.4100e-003**	**1.0000e-005**	**1.4200e-003**	**3.8000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1771**	**1.1771**	**3.0000e-005**	**0.0000**	**1.1778**

3.3 Grading - 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					0.1498	0.0000	0.1498	0.0760	0.0000	0.0760	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0943	1.0440	0.6948	1.4000e-003		0.0447	0.0447		0.0411	0.0411	0.0000	122.6137	122.6137	0.0397	0.0000	123.6051
Total	**0.0943**	**1.0440**	**0.6948**	**1.4000e-003**	**0.1498**	**0.0447**	**0.1944**	**0.0760**	**0.0411**	**0.1171**	**0.0000**	**122.6137**	**122.6137**	**0.0397**	**0.0000**	**123.6051**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4500e-003	9.8000e-004	0.0107	3.0000e-005	3.5300e-003	2.0000e-005	3.5600e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.9428	2.9428	7.0000e-005	0.0000	2.9444
Total	**1.4500e-003**	**9.8000e-004**	**0.0107**	**3.0000e-005**	**3.5300e-003**	**2.0000e-005**	**3.5600e-003**	**9.4000e-004**	**2.0000e-005**	**9.6000e-004**	**0.0000**	**2.9428**	**2.9428**	**7.0000e-005**	**0.0000**	**2.9444**

3.3 Grading - 2021

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					0.1498	0.0000	0.1498	0.0760	0.0000	0.0760	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0943	1.0440	0.6948	1.4000e-003		0.0447	0.0447		0.0411	0.0411	0.0000	122.6136	122.6136	0.0397	0.0000	123.6050
Total	**0.0943**	**1.0440**	**0.6948**	**1.4000e-003**	**0.1498**	**0.0447**	**0.1944**	**0.0760**	**0.0411**	**0.1171**	**0.0000**	**122.6136**	**122.6136**	**0.0397**	**0.0000**	**123.6050**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4500e-003	9.8000e-004	0.0107	3.0000e-005	3.5300e-003	2.0000e-005	3.5600e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.9428	2.9428	7.0000e-005	0.0000	2.9444
Total	**1.4500e-003**	**9.8000e-004**	**0.0107**	**3.0000e-005**	**3.5300e-003**	**2.0000e-005**	**3.5600e-003**	**9.4000e-004**	**2.0000e-005**	**9.6000e-004**	**0.0000**	**2.9428**	**2.9428**	**7.0000e-005**	**0.0000**	**2.9444**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1255	1.1505	1.0940	1.7800e-003		0.0633	0.0633		0.0595	0.0595	0.0000	152.8806	152.8806	0.0369	0.0000	153.8027
Total	**0.1255**	**1.1505**	**1.0940**	**1.7800e-003**		**0.0633**	**0.0633**		**0.0595**	**0.0595**	**0.0000**	**152.8806**	**152.8806**	**0.0369**	**0.0000**	**153.8027**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6500e-003	0.0937	0.0179	2.5000e-004	5.6000e-003	2.1000e-004	5.8200e-003	1.6200e-003	2.0000e-004	1.8300e-003	0.0000	23.4960	23.4960	1.1000e-003	0.0000	23.5234
Worker	9.1500e-003	6.1600e-003	0.0674	2.1000e-004	0.0223	1.4000e-004	0.0224	5.9300e-003	1.3000e-004	6.0600e-003	0.0000	18.5589	18.5589	4.2000e-004	0.0000	18.5695
Total	**0.0118**	**0.0998**	**0.0853**	**4.6000e-004**	**0.0279**	**3.5000e-004**	**0.0283**	**7.5500e-003**	**3.3000e-004**	**7.8900e-003**	**0.0000**	**42.0549**	**42.0549**	**1.5200e-003**	**0.0000**	**42.0929**

3.4 Building Construction - 2021

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	0.1255	1.1505	1.0940	1.7800e-003		0.0633	0.0633		0.0595	0.0595	0.0000	152.8804	152.8804	0.0369	0.0000	153.8025
Total	**0.1255**	**1.1505**	**1.0940**	**1.7800e-003**		**0.0633**	**0.0633**		**0.0595**	**0.0595**	**0.0000**	**152.8804**	**152.8804**	**0.0369**	**0.0000**	**153.8025**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6500e-003	0.0937	0.0179	2.5000e-004	5.6000e-003	2.1000e-004	5.8200e-003	1.6200e-003	2.0000e-004	1.8300e-003	0.0000	23.4960	23.4960	1.1000e-003	0.0000	23.5234
Worker	9.1500e-003	6.1600e-003	0.0674	2.1000e-004	0.0223	1.4000e-004	0.0224	5.9300e-003	1.3000e-004	6.0600e-003	0.0000	18.5589	18.5589	4.2000e-004	0.0000	18.5695
Total	**0.0118**	**0.0998**	**0.0853**	**4.6000e-004**	**0.0279**	**3.5000e-004**	**0.0283**	**7.5500e-003**	**3.3000e-004**	**7.8900e-003**	**0.0000**	**42.0549**	**42.0549**	**1.5200e-003**	**0.0000**	**42.0929**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.8500e-003	0.1750	0.0327	4.8000e-004	0.0110	3.6000e-004	0.0114	3.1900e-003	3.5000e-004	3.5400e-003	0.0000	45.8993	45.8993	2.0400e-003	0.0000	45.9503
Worker	0.0169	0.0109	0.1222	3.9000e-004	0.0439	2.8000e-004	0.0442	0.0117	2.6000e-004	0.0119	0.0000	35.2168	35.2168	7.5000e-004	0.0000	35.2356
Total	**0.0217**	**0.1859**	**0.1549**	**8.7000e-004**	**0.0549**	**6.4000e-004**	**0.0556**	**0.0149**	**6.1000e-004**	**0.0155**	**0.0000**	**81.1161**	**81.1161**	**2.7900e-003**	**0.0000**	**81.1858**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.8500e-003	0.1750	0.0327	4.8000e-004	0.0110	3.6000e-004	0.0114	3.1900e-003	3.5000e-004	3.5400e-003	0.0000	45.8993	45.8993	2.0400e-003	0.0000	45.9503
Worker	0.0169	0.0109	0.1222	3.9000e-004	0.0439	2.8000e-004	0.0442	0.0117	2.6000e-004	0.0119	0.0000	35.2168	35.2168	7.5000e-004	0.0000	35.2356
Total	**0.0217**	**0.1859**	**0.1549**	**8.7000e-004**	**0.0549**	**6.4000e-004**	**0.0556**	**0.0149**	**6.1000e-004**	**0.0155**	**0.0000**	**81.1161**	**81.1161**	**2.7900e-003**	**0.0000**	**81.1858**

3.4 Building Construction - 2023

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	0.0378	0.3452	0.3899	6.5000e-004		0.0168	0.0168		0.0158	0.0158	0.0000	55.6331	55.6331	0.0132	0.0000	55.9640
Total	**0.0378**	**0.3452**	**0.3899**	**6.5000e-004**		**0.0168**	**0.0168**		**0.0158**	**0.0158**	**0.0000**	**55.6331**	**55.6331**	**0.0132**	**0.0000**	**55.9640**

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	6.8000e-004	0.0267	5.2400e-003	9.0000e-005	2.0400e-003	3.0000e-005	2.0700e-003	5.9000e-004	3.0000e-005	6.2000e-004	0.0000	8.3215	8.3215	2.8000e-004	0.0000	8.3285
Worker	2.9200e-003	1.8200e-003	0.0208	7.0000e-005	8.1000e-003	5.0000e-005	8.1500e-003	2.1600e-003	5.0000e-005	2.2000e-003	0.0000	6.2540	6.2540	1.2000e-004	0.0000	6.2571
Total	**3.6000e-003**	**0.0286**	**0.0260**	**1.6000e-004**	**0.0101**	**8.0000e-005**	**0.0102**	**2.7500e-003**	**8.0000e-005**	**2.8200e-003**	**0.0000**	**14.5755**	**14.5755**	**4.0000e-004**	**0.0000**	**14.5855**

3.4 Building Construction - 2023

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	0.0378	0.3452	0.3899	6.5000e-004		0.0168	0.0168		0.0158	0.0158	0.0000	55.6331	55.6331	0.0132	0.0000	55.9639
Total	**0.0378**	**0.3452**	**0.3899**	**6.5000e-004**		**0.0168**	**0.0168**		**0.0158**	**0.0158**	**0.0000**	**55.6331**	**55.6331**	**0.0132**	**0.0000**	**55.9639**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8000e-004	0.0267	5.2400e-003	9.0000e-005	2.0400e-003	3.0000e-005	2.0700e-003	5.9000e-004	3.0000e-005	6.2000e-004	0.0000	8.3215	8.3215	2.8000e-004	0.0000	8.3285
Worker	2.9200e-003	1.8200e-003	0.0208	7.0000e-005	8.1000e-003	5.0000e-005	8.1500e-003	2.1600e-003	5.0000e-005	2.2000e-003	0.0000	6.2540	6.2540	1.2000e-004	0.0000	6.2571
Total	**3.6000e-003**	**0.0286**	**0.0260**	**1.6000e-004**	**0.0101**	**8.0000e-005**	**0.0102**	**2.7500e-003**	**8.0000e-005**	**2.8200e-003**	**0.0000**	**14.5755**	**14.5755**	**4.0000e-004**	**0.0000**	**14.5855**

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	0.3716					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0134	0.0931	0.1109	1.8000e-004		5.7400e-003	5.7400e-003		5.7400e-003	5.7400e-003	0.0000	15.5749	15.5749	1.0700e-003	0.0000	15.6016
Total	**0.3850**	**0.0931**	**0.1109**	**1.8000e-004**		**5.7400e-003**	**5.7400e-003**		**5.7400e-003**	**5.7400e-003**	**0.0000**	**15.5749**	**15.5749**	**1.0700e-003**	**0.0000**	**15.6016**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.1900e-003	0.0130	4.0000e-005	4.3100e-003	3.0000e-005	4.3400e-003	1.1500e-003	3.0000e-005	1.1700e-003	0.0000	3.5902	3.5902	8.0000e-005	0.0000	3.5922
Total	**1.7700e-003**	**1.1900e-003**	**0.0130**	**4.0000e-005**	**4.3100e-003**	**3.0000e-005**	**4.3400e-003**	**1.1500e-003**	**3.0000e-005**	**1.1700e-003**	**0.0000**	**3.5902**	**3.5902**	**8.0000e-005**	**0.0000**	**3.5922**

3.5 Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3716					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0134	0.0931	0.1109	1.8000e-004		5.7400e-003	5.7400e-003		5.7400e-003	5.7400e-003	0.0000	15.5748	15.5748	1.0700e-003	0.0000	15.6016
Total	**0.3850**	**0.0931**	**0.1109**	**1.8000e-004**		**5.7400e-003**	**5.7400e-003**		**5.7400e-003**	**5.7400e-003**	**0.0000**	**15.5748**	**15.5748**	**1.0700e-003**	**0.0000**	**15.6016**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.1900e-003	0.0130	4.0000e-005	4.3100e-003	3.0000e-005	4.3400e-003	1.1500e-003	3.0000e-005	1.1700e-003	0.0000	3.5902	3.5902	8.0000e-005	0.0000	3.5922
Total	**1.7700e-003**	**1.1900e-003**	**0.0130**	**4.0000e-005**	**4.3100e-003**	**3.0000e-005**	**4.3400e-003**	**1.1500e-003**	**3.0000e-005**	**1.1700e-003**	**0.0000**	**3.5902**	**3.5902**	**8.0000e-005**	**0.0000**	**3.5922**

3.5 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7920					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.1831	0.2358	3.9000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	33.1923	33.1923	2.1600e-003	0.0000	33.2463
Total	**0.8186**	**0.1831**	**0.2358**	**3.9000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**33.1923**	**33.1923**	**2.1600e-003**	**0.0000**	**33.2463**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e-003	2.2800e-003	0.0256	8.0000e-005	9.1900e-003	6.0000e-005	9.2500e-003	2.4500e-003	5.0000e-005	2.5000e-003	0.0000	7.3710	7.3710	1.6000e-004	0.0000	7.3749
Total	**3.5300e-003**	**2.2800e-003**	**0.0256**	**8.0000e-005**	**9.1900e-003**	**6.0000e-005**	**9.2500e-003**	**2.4500e-003**	**5.0000e-005**	**2.5000e-003**	**0.0000**	**7.3710**	**7.3710**	**1.6000e-004**	**0.0000**	**7.3749**

3.5 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7920					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.1831	0.2358	3.9000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	33.1923	33.1923	2.1600e-003	0.0000	33.2463
Total	**0.8186**	**0.1831**	**0.2358**	**3.9000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**33.1923**	**33.1923**	**2.1600e-003**	**0.0000**	**33.2463**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e-003	2.2800e-003	0.0256	8.0000e-005	9.1900e-003	6.0000e-005	9.2500e-003	2.4500e-003	5.0000e-005	2.5000e-003	0.0000	7.3710	7.3710	1.6000e-004	0.0000	7.3749
Total	**3.5300e-003**	**2.2800e-003**	**0.0256**	**8.0000e-005**	**9.1900e-003**	**6.0000e-005**	**9.2500e-003**	**2.4500e-003**	**5.0000e-005**	**2.5000e-003**	**0.0000**	**7.3710**	**7.3710**	**1.6000e-004**	**0.0000**	**7.3749**

3.5 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1767					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5600e-003	0.0378	0.0525	9.0000e-005		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	7.4044	7.4044	4.4000e-004	0.0000	7.4155
Total	**0.1822**	**0.0378**	**0.0525**	**9.0000e-005**		**2.0500e-003**	**2.0500e-003**		**2.0500e-003**	**2.0500e-003**	**0.0000**	**7.4044**	**7.4044**	**4.4000e-004**	**0.0000**	**7.4155**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2500e-003	2.0000e-005	2.0500e-003	1.0000e-005	2.0600e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5817	1.5817	3.0000e-005	0.0000	1.5825
Total	**7.4000e-004**	**4.6000e-004**	**5.2500e-003**	**2.0000e-005**	**2.0500e-003**	**1.0000e-005**	**2.0600e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5817**	**1.5817**	**3.0000e-005**	**0.0000**	**1.5825**

3.5 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1767					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5600e-003	0.0378	0.0525	9.0000e-005		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	7.4044	7.4044	4.4000e-004	0.0000	7.4155
Total	**0.1822**	**0.0378**	**0.0525**	**9.0000e-005**		**2.0500e-003**	**2.0500e-003**		**2.0500e-003**	**2.0500e-003**	**0.0000**	**7.4044**	**7.4044**	**4.4000e-004**	**0.0000**	**7.4155**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2500e-003	2.0000e-005	2.0500e-003	1.0000e-005	2.0600e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5817	1.5817	3.0000e-005	0.0000	1.5825
Total	**7.4000e-004**	**4.6000e-004**	**5.2500e-003**	**2.0000e-005**	**2.0500e-003**	**1.0000e-005**	**2.0600e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5817**	**1.5817**	**3.0000e-005**	**0.0000**	**1.5825**

3.6 Paving - 2023

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	0.0181	0.1784	0.2552	4.0000e-004		8.9300e-003	8.9300e-003		8.2100e-003	8.2100e-003	0.0000	35.0470	35.0470	0.0113	0.0000	35.3304
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0181**	**0.1784**	**0.2552**	**4.0000e-004**		**8.9300e-003**	**8.9300e-003**		**8.2100e-003**	**8.2100e-003**	**0.0000**	**35.0470**	**35.0470**	**0.0113**	**0.0000**	**35.3304**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5908	1.5908	3.0000e-005	0.0000	1.5916
Total	**7.4000e-004**	**4.6000e-004**	**5.2800e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5908**	**1.5908**	**3.0000e-005**	**0.0000**	**1.5916**

3.6 Paving - 2023

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	0.0181	0.1784	0.2552	4.0000e-004		8.9300e-003	8.9300e-003		8.2100e-003	8.2100e-003	0.0000	35.0470	35.0470	0.0113	0.0000	35.3304
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0181**	**0.1784**	**0.2552**	**4.0000e-004**		**8.9300e-003**	**8.9300e-003**		**8.2100e-003**	**8.2100e-003**	**0.0000**	**35.0470**	**35.0470**	**0.0113**	**0.0000**	**35.3304**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5908	1.5908	3.0000e-005	0.0000	1.5916
Total	**7.4000e-004**	**4.6000e-004**	**5.2800e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5908**	**1.5908**	**3.0000e-005**	**0.0000**	**1.5916**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810
Unmitigated	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,123.36	1,123.36	1123.36	2,423,587	2,423,587
Total	1,123.36	1,123.36	1,123.36	2,423,587	2,423,587

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	112.0657	112.0657	0.0132	2.7300e-003	113.2111
NaturalGas Mitigated	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
NaturalGas Unmitigated	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.07433e+006	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
Total		**0.0166**	**0.1417**	**0.0603**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**	**0.0000**	**164.0579**	**164.0579**	**3.1400e-003**	**3.0100e-003**	**165.0328**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.07433e+006	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
Total		**0.0166**	**0.1417**	**0.0603**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**	**0.0000**	**164.0579**	**164.0579**	**3.1400e-003**	**3.0100e-003**	**165.0328**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.00481e+006	112.0657	0.0132	2.7300e-003	113.2111
Total		**112.0657**	**0.0132**	**2.7300e-003**	**113.2111**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.4639	0.1560	10.1002	0.0168		1.2972	1.2972		1.2972	1.2972	122.9220	52.9950	175.9170	0.1148	9.6700e-003	181.6688
Unmitigated	8.4639	0.1560	10.1002	0.0168		1.2972	1.2972		1.2972	1.2972	122.9220	52.9950	175.9170	0.1148	9.6700e-003	181.6688

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1340					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8366					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.4668	0.1458	9.2170	0.0167		1.2923	1.2923		1.2923	1.2923	122.9220	51.5517	174.4737	0.1134	9.6700e-003	180.1909
Landscaping	0.0266	0.0102	0.8832	5.0000e-005		4.9000e-003	4.9000e-003		4.9000e-003	4.9000e-003	0.0000	1.4433	1.4433	1.3800e-003	0.0000	1.4780
Total	**8.4640**	**0.1560**	**10.1002**	**0.0168**		**1.2972**	**1.2972**		**1.2972**	**1.2972**	**122.9220**	**52.9950**	**175.9170**	**0.1148**	**9.6700e-003**	**181.6688**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1340					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8366					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.4668	0.1458	9.2170	0.0167		1.2923	1.2923		1.2923	1.2923	122.9220	51.5517	174.4737	0.1134	9.6700e-003	180.1909
Landscaping	0.0266	0.0102	0.8832	5.0000e-005		4.9000e-003	4.9000e-003		4.9000e-003	4.9000e-003	0.0000	1.4433	1.4433	1.3800e-003	0.0000	1.4780
Total	**8.4640**	**0.1560**	**10.1002**	**0.0168**		**1.2972**	**1.2972**		**1.2972**	**1.2972**	**122.9220**	**52.9950**	**175.9170**	**0.1148**	**9.6700e-003**	**181.6688**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.0468	0.2534	6.1300e-003	17.2079
Unmitigated	9.0468	0.2534	6.1300e-003	17.2079

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.75333 / 4.88797	9.0468	0.2534	6.1300e-003	17.2079
Total		**9.0468**	**0.2534**	**6.1300e-003**	**17.2079**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.75333 / 4.88797	9.0468	0.2534	6.1300e-003	17.2079
Total		**9.0468**	**0.2534**	**6.1300e-003**	**17.2079**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	26.8192	1.5850	0.0000	66.4434
Unmitigated	26.8192	1.5850	0.0000	66.4434

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	132.12	26.8192	1.5850	0.0000	66.4434
Total		**26.8192**	**1.5850**	**0.0000**	**66.4434**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	132.12	26.8192	1.5850	0.0000	66.4434
Total		**26.8192**	**1.5850**	**0.0000**	**66.4434**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Total	**4.9000e-004**	**1.3800e-003**	**1.2600e-003**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2296**	**0.2296**	**3.0000e-005**	**0.0000**	**0.2304**

11.0 Vegetation

Brady Vineyards

Placer County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	119.00	Dwelling Unit	26.90	214,200.00	367

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	440.00
tblGrading	AcresOfGrading	112.50	26.90
tblLandUse	LotAcreage	38.64	26.90
tblLandUse	Population	340.00	367.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	8.4390	46.4381	31.4172	0.0636	18.2141	2.0454	20.2595	9.9699	1.8818	11.8516	0.0000	6,165.0107	6,165.0107	1.9464	0.0000	6,213.6707
2022	8.2151	18.4447	19.6997	0.0376	0.5152	0.8960	1.4112	0.1387	0.8479	0.9865	0.0000	3,626.2898	3,626.2898	0.6550	0.0000	3,642.6646
2023	8.0491	16.8722	19.4513	0.0374	0.5152	0.7743	1.2895	0.1387	0.7327	0.8714	0.0000	3,604.9879	3,604.9879	0.7162	0.0000	3,621.0929
Maximum	**8.4390**	**46.4381**	**31.4172**	**0.0636**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8818**	**11.8516**	**0.0000**	**6,165.0107**	**6,165.0107**	**1.9464**	**0.0000**	**6,213.6707**

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	8.4390	46.4381	31.4172	0.0636	18.2141	2.0454	20.2595	9.9699	1.8818	11.8516	0.0000	6,165.0107	6,165.0107	1.9464	0.0000	6,213.6707
2022	8.2151	18.4447	19.6997	0.0376	0.5152	0.8960	1.4112	0.1387	0.8479	0.9865	0.0000	3,626.2898	3,626.2898	0.6550	0.0000	3,642.6646
2023	8.0491	16.8722	19.4513	0.0374	0.5152	0.7743	1.2895	0.1387	0.7327	0.8714	0.0000	3,604.9879	3,604.9879	0.7162	0.0000	3,621.0929
Maximum	**8.4390**	**46.4381**	**31.4172**	**0.0636**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8818**	**11.8516**	**0.0000**	**6,165.0107**	**6,165.0107**	**1.9464**	**0.0000**	**6,213.6707**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**189.5783**	**13.9594**	**251.0187**	**0.4805**	**5.1739**	**31.6817**	**36.8556**	**1.3866**	**31.6788**	**33.0653**	**3,304.8360**	**9,270.6549**	**12,575.4909**	**3.3097**	**0.2781**	**12,741.1132**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**189.5783**	**13.9594**	**251.0187**	**0.4805**	**5.1739**	**31.6817**	**36.8556**	**1.3866**	**31.6788**	**33.0653**	**3,304.8360**	**9,270.6549**	**12,575.4909**	**3.3097**	**0.2781**	**12,741.1132**

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

3.0 Construction Detail

Construction Phase

Brady Vineyards - Placer County APCD Air District, Summer

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/28/2021	5	20	
2	Grading	Grading	4/29/2021	6/30/2021	5	45	
3	Building Construction	Building Construction	7/1/2021	3/8/2023	5	440	
4	Architectural Coating	Architectural Coating	7/15/2021	3/22/2023	5	440	
5	Paving	Paving	3/23/2023	5/10/2023	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 26.9

Acres of Paving: 0

Residential Indoor: 433,755; Residential Outdoor: 144,585; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Brady Vineyards - Placer County APCD Air District, Summer

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

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	43.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	9.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	0.0650	0.0344	0.4849	1.4300e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		142.1705	142.1705	3.2400e-003		142.2516
Total	**0.0650**	**0.0344**	**0.4849**	**1.4300e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**142.1705**	**142.1705**	**3.2400e-003**		**142.2516**

3.2 Site Preparation - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	0.0650	0.0344	0.4849	1.4300e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		142.1705	142.1705	3.2400e-003		142.2516
Total	**0.0650**	**0.0344**	**0.4849**	**1.4300e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**142.1705**	**142.1705**	**3.2400e-003**		**142.2516**

3.3 Grading - 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					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.6560**	**1.9853**	**8.6414**	**3.3787**	**1.8265**	**5.2052**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	0.0722	0.0383	0.5387	1.5900e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		157.9673	157.9673	3.6000e-003		158.0573
Total	**0.0722**	**0.0383**	**0.5387**	**1.5900e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**157.9673**	**157.9673**	**3.6000e-003**		**158.0573**

3.3 Grading - 2021

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					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.6560**	**1.9853**	**8.6414**	**3.3787**	**1.8265**	**5.2052**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	0.0722	0.0383	0.5387	1.5900e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		157.9673	157.9673	3.6000e-003		158.0573
Total	**0.0722**	**0.0383**	**0.5387**	**1.5900e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**157.9673**	**157.9673**	**3.6000e-003**		**158.0573**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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	0.0390	1.4014	0.2453	3.8000e-003	0.0881	3.1800e-003	0.0912	0.0254	3.0400e-003	0.0284		398.0750	398.0750	0.0173		398.5062
Worker	0.1553	0.0823	1.1583	3.4100e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		339.6296	339.6296	7.7400e-003		339.8232
Total	**0.1944**	**1.4836**	**1.4036**	**7.2100e-003**	**0.4413**	**5.3700e-003**	**0.4467**	**0.1190**	**5.0500e-003**	**0.1241**		**737.7046**	**737.7046**	**0.0250**		**738.3295**

3.4 Building Construction - 2021

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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	0.0390	1.4014	0.2453	3.8000e-003	0.0881	3.1800e-003	0.0912	0.0254	3.0400e-003	0.0284		398.0750	398.0750	0.0173		398.5062
Worker	0.1553	0.0823	1.1583	3.4100e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		339.6296	339.6296	7.7400e-003		339.8232
Total	**0.1944**	**1.4836**	**1.4036**	**7.2100e-003**	**0.4413**	**5.3700e-003**	**0.4467**	**0.1190**	**5.0500e-003**	**0.1241**		**737.7046**	**737.7046**	**0.0250**		**738.3295**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	0.0363	1.3310	0.2279	3.7700e-003	0.0881	2.7200e-003	0.0908	0.0254	2.6000e-003	0.0280		394.8562	394.8562	0.0163		395.2637
Worker	0.1453	0.0741	1.0708	3.2800e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		327.1737	327.1737	6.9600e-003		327.3478
Total	**0.1816**	**1.4051**	**1.2986**	**7.0500e-003**	**0.4413**	**4.8600e-003**	**0.4461**	**0.1190**	**4.5700e-003**	**0.1236**		**722.0299**	**722.0299**	**0.0233**		**722.6116**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	0.0363	1.3310	0.2279	3.7700e-003	0.0881	2.7200e-003	0.0908	0.0254	2.6000e-003	0.0280		394.8562	394.8562	0.0163		395.2637
Worker	0.1453	0.0741	1.0708	3.2800e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		327.1737	327.1737	6.9600e-003		327.3478
Total	**0.1816**	**1.4051**	**1.2986**	**7.0500e-003**	**0.4413**	**4.8600e-003**	**0.4461**	**0.1190**	**4.5700e-003**	**0.1236**		**722.0299**	**722.0299**	**0.0233**		**722.6116**

3.4 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0277	1.1036	0.1994	3.7000e-003	0.0880	1.2000e-003	0.0892	0.0254	1.1400e-003	0.0265		387.7685	387.7685	0.0120		388.0674
Worker	0.1362	0.0668	0.9896	3.1600e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		314.6950	314.6950	6.2500e-003		314.8514
Total	**0.1639**	**1.1704**	**1.1891**	**6.8600e-003**	**0.4413**	**3.2900e-003**	**0.4446**	**0.1190**	**3.0700e-003**	**0.1221**		**702.4635**	**702.4635**	**0.0182**		**702.9187**

3.4 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0277	1.1036	0.1994	3.7000e-003	0.0880	1.2000e-003	0.0892	0.0254	1.1400e-003	0.0265		387.7685	387.7685	0.0120		388.0674
Worker	0.1362	0.0668	0.9896	3.1600e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		314.6950	314.6950	6.2500e-003		314.8514
Total	**0.1639**	**1.1704**	**1.1891**	**6.8600e-003**	**0.4413**	**3.2900e-003**	**0.4446**	**0.1190**	**3.0700e-003**	**0.1221**		**702.4635**	**702.4635**	**0.0182**		**702.9187**

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	6.0923					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	**6.3112**	**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	0.0325	0.0172	0.2424	7.1000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		71.0853	71.0853	1.6200e-003		71.1258
Total	**0.0325**	**0.0172**	**0.2424**	**7.1000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**71.0853**	**71.0853**	**1.6200e-003**		**71.1258**

3.5 Architectural Coating - 2021

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	6.0923					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	**6.3112**	**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	0.0325	0.0172	0.2424	7.1000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		71.0853	71.0853	1.6200e-003		71.1258
Total	**0.0325**	**0.0172**	**0.2424**	**7.1000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**71.0853**	**71.0853**	**1.6200e-003**		**71.1258**

3.5 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.2968**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	0.0304	0.0155	0.2241	6.9000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		68.4782	68.4782	1.4600e-003		68.5147
Total	**0.0304**	**0.0155**	**0.2241**	**6.9000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**68.4782**	**68.4782**	**1.4600e-003**		**68.5147**

3.5 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.2968**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	0.0304	0.0155	0.2241	6.9000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		68.4782	68.4782	1.4600e-003		68.5147
Total	**0.0304**	**0.0155**	**0.2241**	**6.9000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**68.4782**	**68.4782**	**1.4600e-003**		**68.5147**

3.5 Architectural Coating - 2023

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.2840**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	0.0285	0.0140	0.2071	6.6000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		65.8664	65.8664	1.3100e-003		65.8991
Total	**0.0285**	**0.0140**	**0.2071**	**6.6000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**65.8664**	**65.8664**	**1.3100e-003**		**65.8991**

3.5 Architectural Coating - 2023

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.2840**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	0.0285	0.0140	0.2071	6.6000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		65.8664	65.8664	1.3100e-003		65.8991
Total	**0.0285**	**0.0140**	**0.2071**	**6.6000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**65.8664**	**65.8664**	**1.3100e-003**		**65.8991**

3.6 Paving - 2023

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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

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	0.0475	0.0233	0.3452	1.1000e-003	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		109.7773	109.7773	2.1800e-003		109.8319
Total	**0.0475**	**0.0233**	**0.3452**	**1.1000e-003**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**109.7773**	**109.7773**	**2.1800e-003**		**109.8319**

3.6 Paving - 2023

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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

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	0.0475	0.0233	0.3452	1.1000e-003	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		109.7773	109.7773	2.1800e-003		109.8319
Total	**0.0475**	**0.0233**	**0.3452**	**1.1000e-003**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**109.7773**	**109.7773**	**2.1800e-003**		**109.8319**

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	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634
Unmitigated	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,123.36	1,123.36	1123.36	2,423,587	2,423,587
Total	1,123.36	1,123.36	1,123.36	2,423,587	2,423,587

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
NaturalGas Unmitigated	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082

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					
Single Family Housing	8422.82	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

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					
Single Family Housing	8.42282	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

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	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Unmitigated	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483

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	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	182.1170	3.5565	224.8037	0.4073		31.5196	31.5196		31.5196	31.5196	3,304.8360	1,386.0000	4,690.8360	3.0498	0.2600	4,844.5465
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**187.7304**	**3.6696**	**234.6172**	**0.4078**		**31.5740**	**31.5740**		**31.5740**	**31.5740**	**3,304.8360**	**1,403.6777**	**4,708.5137**	**3.0668**	**0.2600**	**4,862.6483**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	182.1170	3.5565	224.8037	0.4073		31.5196	31.5196		31.5196	31.5196	3,304.8360	1,386.0000	4,690.8360	3.0498	0.2600	4,844.5465
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**187.7304**	**3.6696**	**234.6172**	**0.4078**		**31.5740**	**31.5740**		**31.5740**	**31.5740**	**3,304.8360**	**1,403.6777**	**4,708.5137**	**3.0668**	**0.2600**	**4,862.6483**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Brady Vineyards

Placer County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	119.00	Dwelling Unit	26.90	214,200.00	367

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	440.00
tblGrading	AcresOfGrading	112.50	26.90
tblLandUse	LotAcreage	38.64	26.90
tblLandUse	Population	340.00	367.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	8.4356	46.4478	31.3583	0.0634	18.2141	2.0454	20.2595	9.9699	1.8818	11.8516	0.0000	6,147.6812	6,147.6812	1.9461	0.0000	6,196.3328
2022	8.2123	18.4743	19.6019	0.0371	0.5152	0.8962	1.4114	0.1387	0.8480	0.9867	0.0000	3,569.4348	3,569.4348	0.6564	0.0000	3,585.8442
2023	8.0464	16.8961	19.3468	0.0369	0.5152	0.7743	1.2895	0.1387	0.7328	0.8714	0.0000	3,550.0465	3,550.0465	0.7159	0.0000	3,566.1730
Maximum	**8.4356**	**46.4478**	**31.3583**	**0.0634**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8818**	**11.8516**	**0.0000**	**6,147.6812**	**6,147.6812**	**1.9461**	**0.0000**	**6,196.3328**

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	8.4356	46.4478	31.3583	0.0634	18.2141	2.0454	20.2595	9.9699	1.8818	11.8516	0.0000	6,147.6812	6,147.6812	1.9461	0.0000	6,196.3328
2022	8.2123	18.4743	19.6019	0.0371	0.5152	0.8962	1.4114	0.1387	0.8480	0.9867	0.0000	3,569.4348	3,569.4348	0.6564	0.0000	3,585.8442
2023	8.0464	16.8961	19.3468	0.0369	0.5152	0.7743	1.2895	0.1387	0.7328	0.8714	0.0000	3,550.0465	3,550.0465	0.7159	0.0000	3,566.1729
Maximum	**8.4356**	**46.4478**	**31.3583**	**0.0634**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8818**	**11.8516**	**0.0000**	**6,147.6812**	**6,147.6812**	**1.9461**	**0.0000**	**6,196.3328**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**189.1851**	**14.2375**	**250.7350**	**0.4750**	**5.1739**	**31.6820**	**36.8559**	**1.3866**	**31.6791**	**33.0657**	**3,304.8360**	**8,722.4850**	**12,027.3210**	**3.3211**	**0.2781**	**12,193.2275**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**189.1851**	**14.2375**	**250.7350**	**0.4750**	**5.1739**	**31.6820**	**36.8559**	**1.3866**	**31.6791**	**33.0657**	**3,304.8360**	**8,722.4850**	**12,027.3210**	**3.3211**	**0.2781**	**12,193.2275**

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

3.0 Construction Detail

Construction Phase

Brady Vineyards - Placer County APCD Air District, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/28/2021	5	20	
2	Grading	Grading	4/29/2021	6/30/2021	5	45	
3	Building Construction	Building Construction	7/1/2021	3/8/2023	5	440	
4	Architectural Coating	Architectural Coating	7/15/2021	3/22/2023	5	440	
5	Paving	Paving	3/23/2023	5/10/2023	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 26.9

Acres of Paving: 0

Residential Indoor: 433,755; Residential Outdoor: 144,585; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Brady Vineyards - Placer County APCD Air District, Winter

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

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	43.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	9.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	0.0629	0.0431	0.4319	1.2700e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		126.5740	126.5740	2.9400e-003		126.6474
Total	**0.0629**	**0.0431**	**0.4319**	**1.2700e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**126.5740**	**126.5740**	**2.9400e-003**		**126.6474**

3.2 Site Preparation - 2021

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	0.0629	0.0431	0.4319	1.2700e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		126.5740	126.5740	2.9400e-003		126.6474
Total	**0.0629**	**0.0431**	**0.4319**	**1.2700e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**126.5740**	**126.5740**	**2.9400e-003**		**126.6474**

3.3 Grading - 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					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.6560**	**1.9853**	**8.6414**	**3.3787**	**1.8265**	**5.2052**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	0.0699	0.0479	0.4798	1.4100e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		140.6378	140.6378	3.2600e-003		140.7193
Total	**0.0699**	**0.0479**	**0.4798**	**1.4100e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**140.6378**	**140.6378**	**3.2600e-003**		**140.7193**

3.3 Grading - 2021

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					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.6560**	**1.9853**	**8.6414**	**3.3787**	**1.8265**	**5.2052**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	0.0699	0.0479	0.4798	1.4100e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		140.6378	140.6378	3.2600e-003		140.7193
Total	**0.0699**	**0.0479**	**0.4798**	**1.4100e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**140.6378**	**140.6378**	**3.2600e-003**		**140.7193**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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	0.0416	1.4110	0.3000	3.6800e-003	0.0881	3.3400e-003	0.0914	0.0254	3.1900e-003	0.0285		384.6198	384.6198	0.0196		385.1088
Worker	0.1504	0.1031	1.0317	3.0300e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		302.3712	302.3712	7.0100e-003		302.5466
Total	**0.1920**	**1.5141**	**1.3317**	**6.7100e-003**	**0.4413**	**5.5300e-003**	**0.4468**	**0.1190**	**5.2000e-003**	**0.1243**		**686.9911**	**686.9911**	**0.0266**		**687.6554**

3.4 Building Construction - 2021

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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	0.0416	1.4110	0.3000	3.6800e-003	0.0881	3.3400e-003	0.0914	0.0254	3.1900e-003	0.0285		384.6198	384.6198	0.0196		385.1088
Worker	0.1504	0.1031	1.0317	3.0300e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		302.3712	302.3712	7.0100e-003		302.5466
Total	**0.1920**	**1.5141**	**1.3317**	**6.7100e-003**	**0.4413**	**5.5300e-003**	**0.4468**	**0.1190**	**5.2000e-003**	**0.1243**		**686.9911**	**686.9911**	**0.0266**		**687.6554**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	0.0388	1.3381	0.2788	3.6400e-003	0.0881	2.8600e-003	0.0909	0.0254	2.7400e-003	0.0281		381.3799	381.3799	0.0185		381.8425
Worker	0.1410	0.0927	0.9478	2.9200e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		291.3029	291.3029	6.2800e-003		291.4600
Total	**0.1797**	**1.4308**	**1.2266**	**6.5600e-003**	**0.4413**	**5.0000e-003**	**0.4463**	**0.1190**	**4.7100e-003**	**0.1238**		**672.6828**	**672.6828**	**0.0248**		**673.3025**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	0.0388	1.3381	0.2788	3.6400e-003	0.0881	2.8600e-003	0.0909	0.0254	2.7400e-003	0.0281		381.3799	381.3799	0.0185		381.8425
Worker	0.1410	0.0927	0.9478	2.9200e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		291.3029	291.3029	6.2800e-003		291.4600
Total	**0.1797**	**1.4308**	**1.2266**	**6.5600e-003**	**0.4413**	**5.0000e-003**	**0.4463**	**0.1190**	**4.7100e-003**	**0.1238**		**672.6828**	**672.6828**	**0.0248**		**673.3025**

3.4 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0296	1.1072	0.2396	3.5800e-003	0.0880	1.2400e-003	0.0893	0.0254	1.1900e-003	0.0265		374.5265	374.5265	0.0136		374.8661
Worker	0.1324	0.0835	0.8700	2.8100e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		280.2128	280.2128	5.6200e-003		280.3532
Total	**0.1620**	**1.1907**	**1.1096**	**6.3900e-003**	**0.4413**	**3.3300e-003**	**0.4446**	**0.1190**	**3.1200e-003**	**0.1222**		**654.7394**	**654.7394**	**0.0192**		**655.2193**

3.4 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0296	1.1072	0.2396	3.5800e-003	0.0880	1.2400e-003	0.0893	0.0254	1.1900e-003	0.0265		374.5265	374.5265	0.0136		374.8661
Worker	0.1324	0.0835	0.8700	2.8100e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		280.2128	280.2128	5.6200e-003		280.3532
Total	**0.1620**	**1.1907**	**1.1096**	**6.3900e-003**	**0.4413**	**3.3300e-003**	**0.4446**	**0.1190**	**3.1200e-003**	**0.1222**		**654.7394**	**654.7394**	**0.0192**		**655.2193**

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	6.0923					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	**6.3112**	**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	0.0315	0.0216	0.2159	6.4000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		63.2870	63.2870	1.4700e-003		63.3237
Total	**0.0315**	**0.0216**	**0.2159**	**6.4000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**63.2870**	**63.2870**	**1.4700e-003**		**63.3237**

3.5 Architectural Coating - 2021

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	6.0923					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	**6.3112**	**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	0.0315	0.0216	0.2159	6.4000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		63.2870	63.2870	1.4700e-003		63.3237
Total	**0.0315**	**0.0216**	**0.2159**	**6.4000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**63.2870**	**63.2870**	**1.4700e-003**		**63.3237**

3.5 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.2968**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	0.0295	0.0194	0.1984	6.1000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		60.9704	60.9704	1.3200e-003		61.0033
Total	**0.0295**	**0.0194**	**0.1984**	**6.1000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**60.9704**	**60.9704**	**1.3200e-003**		**61.0033**

3.5 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.2968**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	0.0295	0.0194	0.1984	6.1000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		60.9704	60.9704	1.3200e-003		61.0033
Total	**0.0295**	**0.0194**	**0.1984**	**6.1000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**60.9704**	**60.9704**	**1.3200e-003**		**61.0033**

3.5 Architectural Coating - 2023

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.2840**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	0.0277	0.0175	0.1821	5.9000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		58.6492	58.6492	1.1800e-003		58.6786
Total	**0.0277**	**0.0175**	**0.1821**	**5.9000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**58.6492**	**58.6492**	**1.1800e-003**		**58.6786**

3.5 Architectural Coating - 2023

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.2840**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

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	0.0277	0.0175	0.1821	5.9000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		58.6492	58.6492	1.1800e-003		58.6786
Total	**0.0277**	**0.0175**	**0.1821**	**5.9000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**58.6492**	**58.6492**	**1.1800e-003**		**58.6786**

3.6 Paving - 2023

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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

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	0.0462	0.0291	0.3035	9.8000e-004	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		97.7487	97.7487	1.9600e-003		97.7976
Total	**0.0462**	**0.0291**	**0.3035**	**9.8000e-004**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**97.7487**	**97.7487**	**1.9600e-003**		**97.7976**

3.6 Paving - 2023

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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

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	0.0462	0.0291	0.3035	9.8000e-004	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		97.7487	97.7487	1.9600e-003		97.7976
Total	**0.0462**	**0.0291**	**0.3035**	**9.8000e-004**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**97.7487**	**97.7487**	**1.9600e-003**		**97.7976**

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	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777
Unmitigated	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,123.36	1,123.36	1123.36	2,423,587	2,423,587
Total	1,123.36	1,123.36	1,123.36	2,423,587	2,423,587

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
NaturalGas Unmitigated	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082

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					
Single Family Housing	8422.82	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

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					
Single Family Housing	8.42282	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

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	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Unmitigated	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483

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	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	182.1170	3.5565	224.8037	0.4073		31.5196	31.5196		31.5196	31.5196	3,304.8360	1,386.0000	4,690.8360	3.0498	0.2600	4,844.5465
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**187.7304**	**3.6696**	**234.6172**	**0.4078**		**31.5740**	**31.5740**		**31.5740**	**31.5740**	**3,304.8360**	**1,403.6777**	**4,708.5137**	**3.0668**	**0.2600**	**4,862.6483**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	182.1170	3.5565	224.8037	0.4073		31.5196	31.5196		31.5196	31.5196	3,304.8360	1,386.0000	4,690.8360	3.0498	0.2600	4,844.5465
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**187.7304**	**3.6696**	**234.6172**	**0.4078**		**31.5740**	**31.5740**		**31.5740**	**31.5740**	**3,304.8360**	**1,403.6777**	**4,708.5137**	**3.0668**	**0.2600**	**4,862.6483**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Brady Vineyards

Placer County APCD Air District, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Forklifts	Diesel	No Change	0	3	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	4	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	9	No Change	0.00
Welders	Diesel	No Change	0	1	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	4.55000E-002	3.14030E-001	3.99160E-001	6.50000E-004	1.84200E-002	1.84200E-002	0.00000E+000	5.61716E+001	5.61716E+001	3.67000E-003	0.00000E+000	5.62634E+001
Cranes	7.36500E-002	8.36140E-001	3.68290E-001	1.11000E-003	3.44800E-002	3.17200E-002	0.00000E+000	9.75853E+001	9.75853E+001	3.15600E-002	0.00000E+000	9.83743E+001
Excavators	1.03100E-002	9.69000E-002	1.47230E-001	2.30000E-004	4.70000E-003	4.32000E-003	0.00000E+000	2.04195E+001	2.04195E+001	6.60000E-003	0.00000E+000	2.05846E+001
Forklifts	7.72900E-002	7.13970E-001	7.63620E-001	1.01000E-003	4.80900E-002	4.42500E-002	0.00000E+000	8.86323E+001	8.86323E+001	2.86700E-002	0.00000E+000	8.93489E+001
Generator Sets	7.38300E-002	6.54810E-001	8.09130E-001	1.45000E-003	3.32500E-002	3.32500E-002	0.00000E+000	1.24346E+002	1.24346E+002	5.99000E-003	0.00000E+000	1.24495E+002
Graders	1.01900E-002	1.33300E-001	3.97600E-002	1.50000E-004	4.22000E-003	3.89000E-003	0.00000E+000	1.30978E+001	1.30978E+001	4.24000E-003	0.00000E+000	1.32037E+001
Pavers	6.72000E-003	6.59000E-002	1.00910E-001	1.60000E-004	3.10000E-003	2.85000E-003	0.00000E+000	1.44538E+001	1.44538E+001	4.67000E-003	0.00000E+000	1.45707E+001
Paving Equipment	5.98000E-003	5.61000E-002	8.94900E-002	1.40000E-004	2.73000E-003	2.51000E-003	0.00000E+000	1.25249E+001	1.25249E+001	4.05000E-003	0.00000E+000	1.26262E+001
Rollers	5.38000E-003	5.63500E-002	6.48300E-002	9.00000E-005	3.10000E-003	2.85000E-003	0.00000E+000	8.06829E+000	8.06829E+000	2.61000E-003	0.00000E+000	8.13353E+000
Rubber Tired Dozers	5.49300E-002	5.75990E-001	2.11980E-001	4.50000E-004	2.79500E-002	2.57200E-002	0.00000E+000	3.94045E+001	3.94045E+001	1.27400E-002	0.00000E+000	3.97231E+001
Scrapers	4.18300E-002	4.81630E-001	3.15210E-001	6.80000E-004	1.87400E-002	1.72400E-002	0.00000E+000	5.99250E+001	5.99250E+001	1.93800E-002	0.00000E+000	6.04095E+001
Tractors/Loaders/ Backhoes	1.14110E-001	1.15815E+000	1.48798E+000	2.06000E-003	6.44000E-002	5.92400E-002	0.00000E+000	1.80987E+002	1.80987E+002	5.85400E-002	0.00000E+000	1.82451E+002
Welders	6.20600E-002	3.23860E-001	3.74170E-001	5.60000E-004	1.45200E-002	1.45200E-002	0.00000E+000	4.14085E+001	4.14085E+001	5.04000E-003	0.00000E+000	4.15345E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	4.55000E-002	3.14030E-001	3.99160E-001	6.50000E-004	1.84200E-002	1.84200E-002	0.00000E+000	5.61715E+001	5.61715E+001	3.67000E-003	0.00000E+000	5.62633E+001
Cranes	7.36500E-002	8.36140E-001	3.68290E-001	1.11000E-003	3.44800E-002	3.17200E-002	0.00000E+000	9.75851E+001	9.75851E+001	3.15600E-002	0.00000E+000	9.83742E+001
Excavators	1.03100E-002	9.69000E-002	1.47230E-001	2.30000E-004	4.70000E-003	4.32000E-003	0.00000E+000	2.04195E+001	2.04195E+001	6.60000E-003	0.00000E+000	2.05846E+001
Forklifts	7.72900E-002	7.13970E-001	7.63620E-001	1.01000E-003	4.80900E-002	4.42500E-002	0.00000E+000	8.86322E+001	8.86322E+001	2.86700E-002	0.00000E+000	8.93488E+001
Generator Sets	7.38300E-002	6.54810E-001	8.09130E-001	1.45000E-003	3.32500E-002	3.32500E-002	0.00000E+000	1.24345E+002	1.24345E+002	5.99000E-003	0.00000E+000	1.24495E+002
Graders	1.01900E-002	1.33300E-001	3.97600E-002	1.50000E-004	4.22000E-003	3.89000E-003	0.00000E+000	1.30978E+001	1.30978E+001	4.24000E-003	0.00000E+000	1.32037E+001
Pavers	6.72000E-003	6.59000E-002	1.00910E-001	1.60000E-004	3.10000E-003	2.85000E-003	0.00000E+000	1.44538E+001	1.44538E+001	4.67000E-003	0.00000E+000	1.45707E+001
Paving Equipment	5.98000E-003	5.61000E-002	8.94900E-002	1.40000E-004	2.73000E-003	2.51000E-003	0.00000E+000	1.25249E+001	1.25249E+001	4.05000E-003	0.00000E+000	1.26262E+001
Rollers	5.38000E-003	5.63500E-002	6.48300E-002	9.00000E-005	3.10000E-003	2.85000E-003	0.00000E+000	8.06828E+000	8.06828E+000	2.61000E-003	0.00000E+000	8.13352E+000
Rubber Tired Dozers	5.49300E-002	5.75990E-001	2.11980E-001	4.50000E-004	2.79500E-002	2.57200E-002	0.00000E+000	3.94044E+001	3.94044E+001	1.27400E-002	0.00000E+000	3.97230E+001
Scrapers	4.18300E-002	4.81620E-001	3.15210E-001	6.80000E-004	1.87400E-002	1.72400E-002	0.00000E+000	5.99249E+001	5.99249E+001	1.93800E-002	0.00000E+000	6.04095E+001
Tractors/Loaders/Backhoes	1.14110E-001	1.15815E+000	1.48798E+000	2.06000E-003	6.44000E-002	5.92400E-002	0.00000E+000	1.80987E+002	1.80987E+002	5.85300E-002	0.00000E+000	1.82451E+002
Welders	6.20600E-002	3.23860E-001	3.74170E-001	5.60000E-004	1.45200E-002	1.45200E-002	0.00000E+000	4.14085E+001	4.14085E+001	5.04000E-003	0.00000E+000	4.15344E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.06816E-006	1.06816E-006	0.00000E+000	0.00000E+000	1.06641E-006
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.22969E-006	1.22969E-006	0.00000E+000	0.00000E+000	1.21983E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	9.79456E-007	9.79456E-007	0.00000E+000	0.00000E+000	1.45740E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.12826E-006	1.12826E-006	0.00000E+000	0.00000E+000	1.11921E-006
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20631E-006	1.20631E-006	0.00000E+000	0.00000E+000	1.20486E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.52697E-006	1.52697E-006	0.00000E+000	0.00000E+000	1.51472E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.38372E-006	1.38372E-006	0.00000E+000	0.00000E+000	6.86310E-007
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.59682E-006	1.59682E-006	0.00000E+000	0.00000E+000	1.58401E-006
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.23942E-006	1.23942E-006	0.00000E+000	0.00000E+000	1.22948E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.26889E-006	1.26889E-006	0.00000E+000	0.00000E+000	1.00697E-006
Scrapers	0.00000E+000	2.07628E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.16813E-006	1.16813E-006	0.00000E+000	0.00000E+000	1.32429E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.21555E-006	1.21555E-006	1.70823E-004	0.00000E+000	1.15099E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20748E-006	1.20748E-006	0.00000E+000	0.00000E+000	1.20382E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	

No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.02	0.00	0.02	0.00	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.09	0.03	0.09	0.03	0.00	0.00
Grading	Fugitive Dust	0.15	0.08	0.15	0.08	0.00	0.00
Grading	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.18	0.10	0.18	0.10	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
Yes	On-site Renewable		100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Proposed Project
Mitigated

Brady Vineyards

Placer County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	119.00	Dwelling Unit	26.90	214,200.00	367

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Construction Off-road Equipment Mitigation - Engine Tier Mitigation

Area Mitigation -

Brady Vineyards - Placer County APCD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstructionPhase	NumDays	35.00	440.00
tblGrading	AcresOfGrading	112.50	26.90
tblLandUse	LotAcreage	38.64	26.90
tblLandUse	Population	340.00	367.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.6592	2.7950	2.2244	4.2700e-003	0.3676	0.1345	0.5021	0.1853	0.1255	0.3109	0.0000	374.2698	374.2698	0.0901	0.0000	376.5227
2022	1.0657	2.4014	2.5435	4.8400e-003	0.0641	0.1165	0.1806	0.0173	0.1102	0.1276	0.0000	422.9222	422.9222	0.0773	0.0000	424.8541
2023	0.2431	0.5909	0.7341	1.3200e-003	0.0143	0.0279	0.0421	3.8400e-003	0.0262	0.0300	0.0000	115.8325	115.8325	0.0255	0.0000	116.4694
Maximum	**1.0657**	**2.7950**	**2.5435**	**4.8400e-003**	**0.3676**	**0.1345**	**0.5021**	**0.1853**	**0.1255**	**0.3109**	**0.0000**	**422.9222**	**422.9222**	**0.0901**	**0.0000**	**424.8541**

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	0.4325	0.3522	2.3286	4.2700e-003	0.3676	6.2600e-003	0.3738	0.1853	6.2300e-003	0.1916	0.0000	374.2694	374.2694	0.0901	0.0000	376.5223
2022	0.8637	0.4955	2.6885	4.8400e-003	0.0641	6.5100e-003	0.0706	0.0173	6.4700e-003	0.0238	0.0000	422.9218	422.9218	0.0773	0.0000	424.8537
2023	0.1954	0.1081	0.8114	1.3200e-003	0.0143	1.8500e-003	0.0161	3.8400e-003	1.8500e-003	5.6900e-003	0.0000	115.8324	115.8324	0.0255	0.0000	116.4693
Maximum	**0.8637**	**0.4955**	**2.6885**	**4.8400e-003**	**0.3676**	**6.5100e-003**	**0.3738**	**0.1853**	**6.4700e-003**	**0.1916**	**0.0000**	**422.9218**	**422.9218**	**0.0901**	**0.0000**	**424.8537**

Brady Vineyards - Placer County APCD Air District, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**24.21**	**83.49**	**-5.93**	**0.00**	**0.00**	**94.76**	**36.46**	**0.00**	**94.44**	**52.81**	**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	**4-1-2021**	**6-30-2021**	1.5856	0.1197
2	**7-1-2021**	**9-30-2021**	0.9101	0.3148
3	**10-1-2021**	**12-31-2021**	0.9506	0.3474
4	**1-1-2022**	**3-31-2022**	0.8578	0.3366
5	**4-1-2022**	**6-30-2022**	0.8664	0.3395
6	**7-1-2022**	**9-30-2022**	0.8760	0.3432
7	**10-1-2022**	**12-31-2022**	0.8768	0.3441
8	**1-1-2023**	**3-31-2023**	0.6713	0.2809
9	**4-1-2023**	**6-30-2023**	0.1614	0.0224
		Highest	1.5856	0.3474

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.4639	0.1560	10.1002	0.0168		1.2972	1.2972		1.2972	1.2972	122.9220	52.9950	175.9170	0.1148	9.6700e-003	181.6688
Energy	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	276.1236	276.1236	0.0164	5.7400e-003	278.2439
Mobile	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	26.8192	0.0000	26.8192	1.5850	0.0000	66.4434
Water						0.0000	0.0000		0.0000	0.0000	2.4598	6.5871	9.0468	0.2534	6.1300e-003	17.2079
Total	**8.7393**	**2.0660**	**12.9088**	**0.0292**	**0.9011**	**1.3168**	**2.2179**	**0.2424**	**1.3163**	**1.5587**	**152.2009**	**1,404.1842**	**1,556.3851**	**2.0069**	**0.0215**	**1,612.9754**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0057	0.0830	0.9142	5.1000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	85.8006	85.8006	3.0000e-003	1.5500e-003	86.3365
Energy	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
Mobile	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	26.8192	0.0000	26.8192	1.5850	0.0000	66.4434
Water						0.0000	0.0000		0.0000	0.0000	2.4598	6.5871	9.0468	0.2534	6.1300e-003	17.2079
Total	**1.2810**	**1.9930**	**3.7228**	**0.0130**	**0.9011**	**0.0304**	**0.9315**	**0.2424**	**0.0299**	**0.2723**	**29.2789**	**1,324.9241**	**1,354.2030**	**1.8818**	**0.0107**	**1,404.4320**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**85.34**	**3.53**	**71.16**	**55.54**	**0.00**	**97.69**	**58.00**	**0.00**	**97.73**	**82.53**	**80.76**	**5.64**	**12.99**	**6.23**	**50.37**	**12.93**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/28/2021	5	20	
2	Grading	Grading	4/29/2021	6/30/2021	5	45	
3	Building Construction	Building Construction	7/1/2021	3/8/2023	5	440	
4	Architectural Coating	Architectural Coating	7/15/2021	3/22/2023	5	440	
5	Paving	Paving	3/23/2023	5/10/2023	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 26.9

Acres of Paving: 0

Residential Indoor: 433,755; Residential Outdoor: 144,585; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	43.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	9.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Site Preparation - 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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.9000e-004	4.2700e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.1771	1.1771	3.0000e-005	0.0000	1.1778
Total	**5.8000e-004**	**3.9000e-004**	**4.2700e-003**	**1.0000e-005**	**1.4100e-003**	**1.0000e-005**	**1.4200e-003**	**3.8000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1771**	**1.1771**	**3.0000e-005**	**0.0000**	**1.1778**

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					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0202	0.2087	3.8000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**4.6600e-003**	**0.0202**	**0.2087**	**3.8000e-004**	**0.1807**	**6.2000e-004**	**0.1813**	**0.0993**	**6.2000e-004**	**0.0999**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	3.9000e-004	4.2700e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.1771	1.1771	3.0000e-005	0.0000	1.1778
Total	**5.8000e-004**	**3.9000e-004**	**4.2700e-003**	**1.0000e-005**	**1.4100e-003**	**1.0000e-005**	**1.4200e-003**	**3.8000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.1771**	**1.1771**	**3.0000e-005**	**0.0000**	**1.1778**

3.3 Grading - 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					0.1498	0.0000	0.1498	0.0760	0.0000	0.0760	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0943	1.0440	0.6948	1.4000e-003		0.0447	0.0447		0.0411	0.0411	0.0000	122.6137	122.6137	0.0397	0.0000	123.6051
Total	**0.0943**	**1.0440**	**0.6948**	**1.4000e-003**	**0.1498**	**0.0447**	**0.1944**	**0.0760**	**0.0411**	**0.1171**	**0.0000**	**122.6137**	**122.6137**	**0.0397**	**0.0000**	**123.6051**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4500e-003	9.8000e-004	0.0107	3.0000e-005	3.5300e-003	2.0000e-005	3.5600e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.9428	2.9428	7.0000e-005	0.0000	2.9444
Total	**1.4500e-003**	**9.8000e-004**	**0.0107**	**3.0000e-005**	**3.5300e-003**	**2.0000e-005**	**3.5600e-003**	**9.4000e-004**	**2.0000e-005**	**9.6000e-004**	**0.0000**	**2.9428**	**2.9428**	**7.0000e-005**	**0.0000**	**2.9444**

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					0.1498	0.0000	0.1498	0.0760	0.0000	0.0760	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0171	0.0743	0.7425	1.4000e-003		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	122.6136	122.6136	0.0397	0.0000	123.6050
Total	**0.0171**	**0.0743**	**0.7425**	**1.4000e-003**	**0.1498**	**2.2800e-003**	**0.1520**	**0.0760**	**2.2800e-003**	**0.0783**	**0.0000**	**122.6136**	**122.6136**	**0.0397**	**0.0000**	**123.6050**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4500e-003	9.8000e-004	0.0107	3.0000e-005	3.5300e-003	2.0000e-005	3.5600e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.9428	2.9428	7.0000e-005	0.0000	2.9444
Total	**1.4500e-003**	**9.8000e-004**	**0.0107**	**3.0000e-005**	**3.5300e-003**	**2.0000e-005**	**3.5600e-003**	**9.4000e-004**	**2.0000e-005**	**9.6000e-004**	**0.0000**	**2.9428**	**2.9428**	**7.0000e-005**	**0.0000**	**2.9444**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1255	1.1505	1.0940	1.7800e-003		0.0633	0.0633		0.0595	0.0595	0.0000	152.8806	152.8806	0.0369	0.0000	153.8027
Total	**0.1255**	**1.1505**	**1.0940**	**1.7800e-003**		**0.0633**	**0.0633**		**0.0595**	**0.0595**	**0.0000**	**152.8806**	**152.8806**	**0.0369**	**0.0000**	**153.8027**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6500e-003	0.0937	0.0179	2.5000e-004	5.6000e-003	2.1000e-004	5.8200e-003	1.6200e-003	2.0000e-004	1.8300e-003	0.0000	23.4960	23.4960	1.1000e-003	0.0000	23.5234
Worker	9.1500e-003	6.1600e-003	0.0674	2.1000e-004	0.0223	1.4000e-004	0.0224	5.9300e-003	1.3000e-004	6.0600e-003	0.0000	18.5589	18.5589	4.2000e-004	0.0000	18.5695
Total	**0.0118**	**0.0998**	**0.0853**	**4.6000e-004**	**0.0279**	**3.5000e-004**	**0.0283**	**7.5500e-003**	**3.3000e-004**	**7.8900e-003**	**0.0000**	**42.0549**	**42.0549**	**1.5200e-003**	**0.0000**	**42.0929**

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	0.0216	0.1475	1.1524	1.7800e-003		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	152.8804	152.8804	0.0369	0.0000	153.8025
Total	**0.0216**	**0.1475**	**1.1524**	**1.7800e-003**		**2.6900e-003**	**2.6900e-003**		**2.6900e-003**	**2.6900e-003**	**0.0000**	**152.8804**	**152.8804**	**0.0369**	**0.0000**	**153.8025**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6500e-003	0.0937	0.0179	2.5000e-004	5.6000e-003	2.1000e-004	5.8200e-003	1.6200e-003	2.0000e-004	1.8300e-003	0.0000	23.4960	23.4960	1.1000e-003	0.0000	23.5234
Worker	9.1500e-003	6.1600e-003	0.0674	2.1000e-004	0.0223	1.4000e-004	0.0224	5.9300e-003	1.3000e-004	6.0600e-003	0.0000	18.5589	18.5589	4.2000e-004	0.0000	18.5695
Total	**0.0118**	**0.0998**	**0.0853**	**4.6000e-004**	**0.0279**	**3.5000e-004**	**0.0283**	**7.5500e-003**	**3.3000e-004**	**7.8900e-003**	**0.0000**	**42.0549**	**42.0549**	**1.5200e-003**	**0.0000**	**42.0929**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.8500e-003	0.1750	0.0327	4.8000e-004	0.0110	3.6000e-004	0.0114	3.1900e-003	3.5000e-004	3.5400e-003	0.0000	45.8993	45.8993	2.0400e-003	0.0000	45.9503
Worker	0.0169	0.0109	0.1222	3.9000e-004	0.0439	2.8000e-004	0.0442	0.0117	2.6000e-004	0.0119	0.0000	35.2168	35.2168	7.5000e-004	0.0000	35.2356
Total	**0.0217**	**0.1859**	**0.1549**	**8.7000e-004**	**0.0549**	**6.4000e-004**	**0.0556**	**0.0149**	**6.1000e-004**	**0.0155**	**0.0000**	**81.1161**	**81.1161**	**2.7900e-003**	**0.0000**	**81.1858**

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	0.0426	0.2905	2.2698	3.5000e-003		5.3000e-003	5.3000e-003		5.3000e-003	5.3000e-003	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.0426**	**0.2905**	**2.2698**	**3.5000e-003**		**5.3000e-003**	**5.3000e-003**		**5.3000e-003**	**5.3000e-003**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.8500e-003	0.1750	0.0327	4.8000e-004	0.0110	3.6000e-004	0.0114	3.1900e-003	3.5000e-004	3.5400e-003	0.0000	45.8993	45.8993	2.0400e-003	0.0000	45.9503
Worker	0.0169	0.0109	0.1222	3.9000e-004	0.0439	2.8000e-004	0.0442	0.0117	2.6000e-004	0.0119	0.0000	35.2168	35.2168	7.5000e-004	0.0000	35.2356
Total	**0.0217**	**0.1859**	**0.1549**	**8.7000e-004**	**0.0549**	**6.4000e-004**	**0.0556**	**0.0149**	**6.1000e-004**	**0.0155**	**0.0000**	**81.1161**	**81.1161**	**2.7900e-003**	**0.0000**	**81.1858**

3.4 Building Construction - 2023

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	0.0378	0.3452	0.3899	6.5000e-004		0.0168	0.0168		0.0158	0.0158	0.0000	55.6331	55.6331	0.0132	0.0000	55.9640
Total	**0.0378**	**0.3452**	**0.3899**	**6.5000e-004**		**0.0168**	**0.0168**		**0.0158**	**0.0158**	**0.0000**	**55.6331**	**55.6331**	**0.0132**	**0.0000**	**55.9640**

3.4 Building Construction - 2023

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	6.8000e-004	0.0267	5.2400e-003	9.0000e-005	2.0400e-003	3.0000e-005	2.0700e-003	5.9000e-004	3.0000e-005	6.2000e-004	0.0000	8.3215	8.3215	2.8000e-004	0.0000	8.3285
Worker	2.9200e-003	1.8200e-003	0.0208	7.0000e-005	8.1000e-003	5.0000e-005	8.1500e-003	2.1600e-003	5.0000e-005	2.2000e-003	0.0000	6.2540	6.2540	1.2000e-004	0.0000	6.2571
Total	**3.6000e-003**	**0.0286**	**0.0260**	**1.6000e-004**	**0.0101**	**8.0000e-005**	**0.0102**	**2.7500e-003**	**8.0000e-005**	**2.8200e-003**	**0.0000**	**14.5755**	**14.5755**	**4.0000e-004**	**0.0000**	**14.5855**

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	7.8700e-003	0.0536	0.4191	6.5000e-004		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	55.6331	55.6331	0.0132	0.0000	55.9639
Total	**7.8700e-003**	**0.0536**	**0.4191**	**6.5000e-004**		**9.8000e-004**	**9.8000e-004**		**9.8000e-004**	**9.8000e-004**	**0.0000**	**55.6331**	**55.6331**	**0.0132**	**0.0000**	**55.9639**

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8000e-004	0.0267	5.2400e-003	9.0000e-005	2.0400e-003	3.0000e-005	2.0700e-003	5.9000e-004	3.0000e-005	6.2000e-004	0.0000	8.3215	8.3215	2.8000e-004	0.0000	8.3285
Worker	2.9200e-003	1.8200e-003	0.0208	7.0000e-005	8.1000e-003	5.0000e-005	8.1500e-003	2.1600e-003	5.0000e-005	2.2000e-003	0.0000	6.2540	6.2540	1.2000e-004	0.0000	6.2571
Total	**3.6000e-003**	**0.0286**	**0.0260**	**1.6000e-004**	**0.0101**	**8.0000e-005**	**0.0102**	**2.7500e-003**	**8.0000e-005**	**2.8200e-003**	**0.0000**	**14.5755**	**14.5755**	**4.0000e-004**	**0.0000**	**14.5855**

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	0.3716					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0134	0.0931	0.1109	1.8000e-004		5.7400e-003	5.7400e-003		5.7400e-003	5.7400e-003	0.0000	15.5749	15.5749	1.0700e-003	0.0000	15.6016
Total	**0.3850**	**0.0931**	**0.1109**	**1.8000e-004**		**5.7400e-003**	**5.7400e-003**		**5.7400e-003**	**5.7400e-003**	**0.0000**	**15.5749**	**15.5749**	**1.0700e-003**	**0.0000**	**15.6016**

3.5 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.1900e-003	0.0130	4.0000e-005	4.3100e-003	3.0000e-005	4.3400e-003	1.1500e-003	3.0000e-005	1.1700e-003	0.0000	3.5902	3.5902	8.0000e-005	0.0000	3.5922
Total	**1.7700e-003**	**1.1900e-003**	**0.0130**	**4.0000e-005**	**4.3100e-003**	**3.0000e-005**	**4.3400e-003**	**1.1500e-003**	**3.0000e-005**	**1.1700e-003**	**0.0000**	**3.5902**	**3.5902**	**8.0000e-005**	**0.0000**	**3.5922**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3716					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8100e-003	7.8500e-003	0.1118	1.8000e-004		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	15.5748	15.5748	1.0700e-003	0.0000	15.6016
Total	**0.3734**	**7.8500e-003**	**0.1118**	**1.8000e-004**		**2.4000e-004**	**2.4000e-004**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**15.5748**	**15.5748**	**1.0700e-003**	**0.0000**	**15.6016**

3.5 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.1900e-003	0.0130	4.0000e-005	4.3100e-003	3.0000e-005	4.3400e-003	1.1500e-003	3.0000e-005	1.1700e-003	0.0000	3.5902	3.5902	8.0000e-005	0.0000	3.5922
Total	**1.7700e-003**	**1.1900e-003**	**0.0130**	**4.0000e-005**	**4.3100e-003**	**3.0000e-005**	**4.3400e-003**	**1.1500e-003**	**3.0000e-005**	**1.1700e-003**	**0.0000**	**3.5902**	**3.5902**	**8.0000e-005**	**0.0000**	**3.5922**

3.5 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7920					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.1831	0.2358	3.9000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	33.1923	33.1923	2.1600e-003	0.0000	33.2463
Total	**0.8186**	**0.1831**	**0.2358**	**3.9000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**33.1923**	**33.1923**	**2.1600e-003**	**0.0000**	**33.2463**

3.5 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e-003	2.2800e-003	0.0256	8.0000e-005	9.1900e-003	6.0000e-005	9.2500e-003	2.4500e-003	5.0000e-005	2.5000e-003	0.0000	7.3710	7.3710	1.6000e-004	0.0000	7.3749
Total	**3.5300e-003**	**2.2800e-003**	**0.0256**	**8.0000e-005**	**9.1900e-003**	**6.0000e-005**	**9.2500e-003**	**2.4500e-003**	**5.0000e-005**	**2.5000e-003**	**0.0000**	**7.3710**	**7.3710**	**1.6000e-004**	**0.0000**	**7.3749**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7920					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8600e-003	0.0167	0.2382	3.9000e-004		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	33.1923	33.1923	2.1600e-003	0.0000	33.2463
Total	**0.7959**	**0.0167**	**0.2382**	**3.9000e-004**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**33.1923**	**33.1923**	**2.1600e-003**	**0.0000**	**33.2463**

3.5 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e-003	2.2800e-003	0.0256	8.0000e-005	9.1900e-003	6.0000e-005	9.2500e-003	2.4500e-003	5.0000e-005	2.5000e-003	0.0000	7.3710	7.3710	1.6000e-004	0.0000	7.3749
Total	**3.5300e-003**	**2.2800e-003**	**0.0256**	**8.0000e-005**	**9.1900e-003**	**6.0000e-005**	**9.2500e-003**	**2.4500e-003**	**5.0000e-005**	**2.5000e-003**	**0.0000**	**7.3710**	**7.3710**	**1.6000e-004**	**0.0000**	**7.3749**

3.5 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1767					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5600e-003	0.0378	0.0525	9.0000e-005		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	7.4044	7.4044	4.4000e-004	0.0000	7.4155
Total	**0.1822**	**0.0378**	**0.0525**	**9.0000e-005**		**2.0500e-003**	**2.0500e-003**		**2.0500e-003**	**2.0500e-003**	**0.0000**	**7.4044**	**7.4044**	**4.4000e-004**	**0.0000**	**7.4155**

3.5 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2500e-003	2.0000e-005	2.0500e-003	1.0000e-005	2.0600e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5817	1.5817	3.0000e-005	0.0000	1.5825
Total	**7.4000e-004**	**4.6000e-004**	**5.2500e-003**	**2.0000e-005**	**2.0500e-003**	**1.0000e-005**	**2.0600e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5817**	**1.5817**	**3.0000e-005**	**0.0000**	**1.5825**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1767					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6000e-004	3.7300e-003	0.0531	9.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	7.4044	7.4044	4.4000e-004	0.0000	7.4155
Total	**0.1775**	**3.7300e-003**	**0.0531**	**9.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**	**0.0000**	**7.4044**	**7.4044**	**4.4000e-004**	**0.0000**	**7.4155**

3.5 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2500e-003	2.0000e-005	2.0500e-003	1.0000e-005	2.0600e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5817	1.5817	3.0000e-005	0.0000	1.5825
Total	**7.4000e-004**	**4.6000e-004**	**5.2500e-003**	**2.0000e-005**	**2.0500e-003**	**1.0000e-005**	**2.0600e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5817**	**1.5817**	**3.0000e-005**	**0.0000**	**1.5825**

3.6 Paving - 2023

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	0.0181	0.1784	0.2552	4.0000e-004		8.9300e-003	8.9300e-003		8.2100e-003	8.2100e-003	0.0000	35.0470	35.0470	0.0113	0.0000	35.3304
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0181**	**0.1784**	**0.2552**	**4.0000e-004**		**8.9300e-003**	**8.9300e-003**		**8.2100e-003**	**8.2100e-003**	**0.0000**	**35.0470**	**35.0470**	**0.0113**	**0.0000**	**35.3304**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5908	1.5908	3.0000e-005	0.0000	1.5916
Total	**7.4000e-004**	**4.6000e-004**	**5.2800e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5908**	**1.5908**	**3.0000e-005**	**0.0000**	**1.5916**

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	4.9100e-003	0.0213	0.3027	4.0000e-004		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004	0.0000	35.0470	35.0470	0.0113	0.0000	35.3304
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.9100e-003**	**0.0213**	**0.3027**	**4.0000e-004**		**6.5000e-004**	**6.5000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**35.0470**	**35.0470**	**0.0113**	**0.0000**	**35.3304**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	4.6000e-004	5.2800e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.5908	1.5908	3.0000e-005	0.0000	1.5916
Total	**7.4000e-004**	**4.6000e-004**	**5.2800e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.5908**	**1.5908**	**3.0000e-005**	**0.0000**	**1.5916**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810
Unmitigated	0.2583	1.7670	2.7471	0.0116	0.9011	8.1000e-003	0.9092	0.2424	7.5700e-003	0.2500	0.0000	1,068.2489	1,068.2489	0.0373	0.0000	1,069.1810

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,123.36	1,123.36	1123.36	2,423,587	2,423,587
Total	1,123.36	1,123.36	1,123.36	2,423,587	2,423,587

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	112.0657	112.0657	0.0132	2.7300e-003	113.2111
NaturalGas Mitigated	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
NaturalGas Unmitigated	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.07433e+006	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
Total		**0.0166**	**0.1417**	**0.0603**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**	**0.0000**	**164.0579**	**164.0579**	**3.1400e-003**	**3.0100e-003**	**165.0328**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.07433e+006	0.0166	0.1417	0.0603	9.0000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.0579	164.0579	3.1400e-003	3.0100e-003	165.0328
Total		**0.0166**	**0.1417**	**0.0603**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**	**0.0000**	**164.0579**	**164.0579**	**3.1400e-003**	**3.0100e-003**	**165.0328**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.00481e+006	112.0657	0.0132	2.7300e-003	113.2111
Total		**112.0657**	**0.0132**	**2.7300e-003**	**113.2111**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	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

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0057	0.0830	0.9142	5.1000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	85.8006	85.8006	3.0000e-003	1.5500e-003	86.3365
Unmitigated	8.4639	0.1560	10.1002	0.0168		1.2972	1.2972		1.2972	1.2972	122.9220	52.9950	175.9170	0.1148	9.6700e-003	181.6688

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1340					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8366					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.4668	0.1458	9.2170	0.0167		1.2923	1.2923		1.2923	1.2923	122.9220	51.5517	174.4737	0.1134	9.6700e-003	180.1909
Landscaping	0.0266	0.0102	0.8832	5.0000e-005		4.9000e-003	4.9000e-003		4.9000e-003	4.9000e-003	0.0000	1.4433	1.4433	1.3800e-003	0.0000	1.4780
Total	**8.4640**	**0.1560**	**10.1002**	**0.0168**		**1.2972**	**1.2972**		**1.2972**	**1.2972**	**122.9220**	**52.9950**	**175.9170**	**0.1148**	**9.6700e-003**	**181.6688**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1340					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8366					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.5200e-003	0.0728	0.0310	4.6000e-004		5.8900e-003	5.8900e-003		5.8900e-003	5.8900e-003	0.0000	84.3573	84.3573	1.6200e-003	1.5500e-003	84.8586
Landscaping	0.0266	0.0102	0.8832	5.0000e-005		4.9000e-003	4.9000e-003		4.9000e-003	4.9000e-003	0.0000	1.4433	1.4433	1.3800e-003	0.0000	1.4780
Total	**1.0057**	**0.0830**	**0.9142**	**5.1000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**	**0.0000**	**85.8006**	**85.8006**	**3.0000e-003**	**1.5500e-003**	**86.3365**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.0468	0.2534	6.1300e-003	17.2079
Unmitigated	9.0468	0.2534	6.1300e-003	17.2079

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.75333 / 4.88797	9.0468	0.2534	6.1300e-003	17.2079
Total		**9.0468**	**0.2534**	**6.1300e-003**	**17.2079**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.75333 / 4.88797	9.0468	0.2534	6.1300e-003	17.2079
Total		**9.0468**	**0.2534**	**6.1300e-003**	**17.2079**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	26.8192	1.5850	0.0000	66.4434
Unmitigated	26.8192	1.5850	0.0000	66.4434

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	132.12	26.8192	1.5850	0.0000	66.4434
Total		**26.8192**	**1.5850**	**0.0000**	**66.4434**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	132.12	26.8192	1.5850	0.0000	66.4434
Total		**26.8192**	**1.5850**	**0.0000**	**66.4434**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Total	**4.9000e-004**	**1.3800e-003**	**1.2600e-003**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2296**	**0.2296**	**3.0000e-005**	**0.0000**	**0.2304**

11.0 Vegetation

Brady Vineyards

Placer County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	119.00	Dwelling Unit	26.90	214,200.00	367

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Construction Off-road Equipment Mitigation - Engine Tier Mitigation

Area Mitigation -

Brady Vineyards - Placer County APCD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstructionPhase	NumDays	35.00	440.00
tblGrading	AcresOfGrading	112.50	26.90
tblLandUse	LotAcreage	38.64	26.90
tblLandUse	Population	340.00	367.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	8.4390	46.4381	31.4172	0.0636	18.2141	2.0454	20.2595	9.9699	1.8818	11.8516	0.0000	6,165.0107	6,165.0107	1.9464	0.0000	6,213.6707
2022	8.2151	18.4447	19.6997	0.0376	0.5152	0.8960	1.4112	0.1387	0.8479	0.9865	0.0000	3,626.2898	3,626.2898	0.6550	0.0000	3,642.6646
2023	8.0491	16.8722	19.4513	0.0374	0.5152	0.7743	1.2895	0.1387	0.7327	0.8714	0.0000	3,604.9879	3,604.9879	0.7162	0.0000	3,621.0929
Maximum	**8.4390**	**46.4381**	**31.4172**	**0.0636**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8818**	**11.8516**	**0.0000**	**6,165.0107**	**6,165.0107**	**1.9464**	**0.0000**	**6,213.6707**

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	6.6767	3.8643	33.5379	0.0636	18.2141	0.1026	18.2771	9.9699	0.1025	10.0328	0.0000	6,165.0107	6,165.0107	1.9464	0.0000	6,213.6707
2022	6.6619	3.7840	20.8154	0.0376	0.5152	0.0501	0.5653	0.1387	0.0497	0.1884	0.0000	3,626.2898	3,626.2898	0.6550	0.0000	3,642.6646
2023	6.6422	3.5478	20.6888	0.0374	0.5152	0.0485	0.5637	0.1387	0.0482	0.1869	0.0000	3,604.9879	3,604.9879	0.7162	0.0000	3,621.0929
Maximum	**6.6767**	**3.8643**	**33.5379**	**0.0636**	**18.2141**	**0.1026**	**18.2771**	**9.9699**	**0.1025**	**10.0328**	**0.0000**	**6,165.0107**	**6,165.0107**	**1.9464**	**0.0000**	**6,213.6707**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**19.12**	**86.31**	**-6.34**	**0.00**	**0.00**	**94.59**	**15.48**	**0.00**	**94.21**	**24.08**	**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	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**189.5783**	**13.9594**	**251.0187**	**0.4805**	**5.1739**	**31.6817**	**36.8556**	**1.3866**	**31.6788**	**33.0653**	**3,304.8360**	**9,270.6549**	**12,575.4909**	**3.3097**	**0.2781**	**12,741.1132**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.8213	1.8897	10.5695	0.0119		0.1980	0.1980		0.1980	0.1980	0.0000	2,285.6777	2,285.6777	0.0604	0.0416	2,299.5794
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**7.6692**	**12.1795**	**26.9711**	**0.0845**	**5.1739**	**0.3057**	**5.4796**	**1.3866**	**0.3028**	**1.6893**	**0.0000**	**10,152.6549**	**10,152.6549**	**0.3034**	**0.0598**	**10,178.0443**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**95.95**	**12.75**	**89.26**	**82.41**	**0.00**	**99.04**	**85.13**	**0.00**	**99.04**	**94.89**	**100.00**	**-9.51**	**19.27**	**90.83**	**78.52**	**20.12**

3.0 Construction Detail

Construction Phase

Brady Vineyards - Placer County APCD Air District, Summer

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/28/2021	5	20	
2	Grading	Grading	4/29/2021	6/30/2021	5	45	
3	Building Construction	Building Construction	7/1/2021	3/8/2023	5	440	
4	Architectural Coating	Architectural Coating	7/15/2021	3/22/2023	5	440	
5	Paving	Paving	3/23/2023	5/10/2023	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 26.9

Acres of Paving: 0

Residential Indoor: 433,755; Residential Outdoor: 144,585; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Brady Vineyards - Placer County APCD Air District, Summer

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

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	43.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	9.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Site Preparation - 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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0650	0.0344	0.4849	1.4300e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		142.1705	142.1705	3.2400e-003		142.2516
Total	**0.0650**	**0.0344**	**0.4849**	**1.4300e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**142.1705**	**142.1705**	**3.2400e-003**		**142.2516**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	0.4656	2.0175	20.8690	0.0380		0.0621	0.0621		0.0621	0.0621	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**0.4656**	**2.0175**	**20.8690**	**0.0380**	**18.0663**	**0.0621**	**18.1283**	**9.9307**	**0.0621**	**9.9928**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0650	0.0344	0.4849	1.4300e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		142.1705	142.1705	3.2400e-003		142.2516
Total	**0.0650**	**0.0344**	**0.4849**	**1.4300e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**142.1705**	**142.1705**	**3.2400e-003**		**142.2516**

3.3 Grading - 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					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.6560**	**1.9853**	**8.6414**	**3.3787**	**1.8265**	**5.2052**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0722	0.0383	0.5387	1.5900e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		157.9673	157.9673	3.6000e-003		158.0573
Total	**0.0722**	**0.0383**	**0.5387**	**1.5900e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**157.9673**	**157.9673**	**3.6000e-003**		**158.0573**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**6.6560**	**0.1015**	**6.7576**	**3.3787**	**0.1015**	**3.4802**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0722	0.0383	0.5387	1.5900e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		157.9673	157.9673	3.6000e-003		158.0573
Total	**0.0722**	**0.0383**	**0.5387**	**1.5900e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**157.9673**	**157.9673**	**3.6000e-003**		**158.0573**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0390	1.4014	0.2453	3.8000e-003	0.0881	3.1800e-003	0.0912	0.0254	3.0400e-003	0.0284		398.0750	398.0750	0.0173		398.5062
Worker	0.1553	0.0823	1.1583	3.4100e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		339.6296	339.6296	7.7400e-003		339.8232
Total	**0.1944**	**1.4836**	**1.4036**	**7.2100e-003**	**0.4413**	**5.3700e-003**	**0.4467**	**0.1190**	**5.0500e-003**	**0.1241**		**737.7046**	**737.7046**	**0.0250**		**738.3295**

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	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0390	1.4014	0.2453	3.8000e-003	0.0881	3.1800e-003	0.0912	0.0254	3.0400e-003	0.0284		398.0750	398.0750	0.0173		398.5062
Worker	0.1553	0.0823	1.1583	3.4100e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		339.6296	339.6296	7.7400e-003		339.8232
Total	**0.1944**	**1.4836**	**1.4036**	**7.2100e-003**	**0.4413**	**5.3700e-003**	**0.4467**	**0.1190**	**5.0500e-003**	**0.1241**		**737.7046**	**737.7046**	**0.0250**		**738.3295**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0363	1.3310	0.2279	3.7700e-003	0.0881	2.7200e-003	0.0908	0.0254	2.6000e-003	0.0280		394.8562	394.8562	0.0163		395.2637
Worker	0.1453	0.0741	1.0708	3.2800e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		327.1737	327.1737	6.9600e-003		327.3478
Total	**0.1816**	**1.4051**	**1.2986**	**7.0500e-003**	**0.4413**	**4.8600e-003**	**0.4461**	**0.1190**	**4.5700e-003**	**0.1236**		**722.0299**	**722.0299**	**0.0233**		**722.6116**

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	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0363	1.3310	0.2279	3.7700e-003	0.0881	2.7200e-003	0.0908	0.0254	2.6000e-003	0.0280		394.8562	394.8562	0.0163		395.2637
Worker	0.1453	0.0741	1.0708	3.2800e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		327.1737	327.1737	6.9600e-003		327.3478
Total	**0.1816**	**1.4051**	**1.2986**	**7.0500e-003**	**0.4413**	**4.8600e-003**	**0.4461**	**0.1190**	**4.5700e-003**	**0.1236**		**722.0299**	**722.0299**	**0.0233**		**722.6116**

3.4 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.4 Building Construction - 2023

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	0.0277	1.1036	0.1994	3.7000e-003	0.0880	1.2000e-003	0.0892	0.0254	1.1400e-003	0.0265		387.7685	387.7685	0.0120		388.0674
Worker	0.1362	0.0668	0.9896	3.1600e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		314.6950	314.6950	6.2500e-003		314.8514
Total	**0.1639**	**1.1704**	**1.1891**	**6.8600e-003**	**0.4413**	**3.2900e-003**	**0.4446**	**0.1190**	**3.0700e-003**	**0.1221**		**702.4635**	**702.4635**	**0.0182**		**702.9187**

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	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.4 Building Construction - 2023

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	0.0277	1.1036	0.1994	3.7000e-003	0.0880	1.2000e-003	0.0892	0.0254	1.1400e-003	0.0265		387.7685	387.7685	0.0120		388.0674
Worker	0.1362	0.0668	0.9896	3.1600e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		314.6950	314.6950	6.2500e-003		314.8514
Total	**0.1639**	**1.1704**	**1.1891**	**6.8600e-003**	**0.4413**	**3.2900e-003**	**0.4446**	**0.1190**	**3.0700e-003**	**0.1221**		**702.4635**	**702.4635**	**0.0182**		**702.9187**

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	6.0923					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	**6.3112**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0325	0.0172	0.2424	7.1000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		71.0853	71.0853	1.6200e-003		71.1258
Total	**0.0325**	**0.0172**	**0.2424**	**7.1000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**71.0853**	**71.0853**	**1.6200e-003**		**71.1258**

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**6.1220**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0325	0.0172	0.2424	7.1000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		71.0853	71.0853	1.6200e-003		71.1258
Total	**0.0325**	**0.0172**	**0.2424**	**7.1000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**71.0853**	**71.0853**	**1.6200e-003**		**71.1258**

3.5 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.2968**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.5 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0304	0.0155	0.2241	6.9000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		68.4782	68.4782	1.4600e-003		68.5147
Total	**0.0304**	**0.0155**	**0.2241**	**6.9000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**68.4782**	**68.4782**	**1.4600e-003**		**68.5147**

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.1220**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.5 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0304	0.0155	0.2241	6.9000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		68.4782	68.4782	1.4600e-003		68.5147
Total	**0.0304**	**0.0155**	**0.2241**	**6.9000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**68.4782**	**68.4782**	**1.4600e-003**		**68.5147**

3.5 Architectural Coating - 2023

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.2840**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 2023

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	0.0285	0.0140	0.2071	6.6000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		65.8664	65.8664	1.3100e-003		65.8991
Total	**0.0285**	**0.0140**	**0.2071**	**6.6000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**65.8664**	**65.8664**	**1.3100e-003**		**65.8991**

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.1220**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 2023

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	0.0285	0.0140	0.2071	6.6000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		65.8664	65.8664	1.3100e-003		65.8991
Total	**0.0285**	**0.0140**	**0.2071**	**6.6000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**65.8664**	**65.8664**	**1.3100e-003**		**65.8991**

3.6 Paving - 2023

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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

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	0.0475	0.0233	0.3452	1.1000e-003	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		109.7773	109.7773	2.1800e-003		109.8319
Total	**0.0475**	**0.0233**	**0.3452**	**1.1000e-003**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**109.7773**	**109.7773**	**2.1800e-003**		**109.8319**

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	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

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	0.0475	0.0233	0.3452	1.1000e-003	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		109.7773	109.7773	2.1800e-003		109.8319
Total	**0.0475**	**0.0233**	**0.3452**	**1.1000e-003**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**109.7773**	**109.7773**	**2.1800e-003**		**109.8319**

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	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634
Unmitigated	1.7538	9.5044	16.0628	0.0677	5.1739	0.0444	5.2183	1.3866	0.0415	1.4281		6,874.3702	6,874.3702	0.2237		6,879.9634

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,123.36	1,123.36	1123.36	2,423,587	2,423,587
Total	1,123.36	1,123.36	1,123.36	2,423,587	2,423,587

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
NaturalGas Unmitigated	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082

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					
Single Family Housing	8422.82	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

5.2 Energy by Land Use - NaturalGas

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					
Single Family Housing	8.42282	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive 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	5.8213	1.8897	10.5695	0.0119		0.1980	0.1980		0.1980	0.1980	0.0000	2,285.6777	2,285.6777	0.0604	0.0416	2,299.5794
Unmitigated	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483

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	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	182.1170	3.5565	224.8037	0.4073		31.5196	31.5196		31.5196	31.5196	3,304.8360	1,386.0000	4,690.8360	3.0498	0.2600	4,844.5465
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**187.7304**	**3.6696**	**234.6172**	**0.4078**		**31.5740**	**31.5740**		**31.5740**	**31.5740**	**3,304.8360**	**1,403.6777**	**4,708.5137**	**3.0668**	**0.2600**	**4,862.6483**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2079	1.7766	0.7560	0.0113		0.1436	0.1436		0.1436	0.1436	0.0000	2,268.0000	2,268.0000	0.0435	0.0416	2,281.4776
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**5.8213**	**1.8897**	**10.5695**	**0.0119**		**0.1980**	**0.1980**		**0.1980**	**0.1980**	**0.0000**	**2,285.6777**	**2,285.6777**	**0.0604**	**0.0416**	**2,299.5794**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Brady Vineyards

Placer County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	119.00	Dwelling Unit	26.90	214,200.00	367

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Construction Off-road Equipment Mitigation - Engine Tier Mitigation

Area Mitigation -

Brady Vineyards - Placer County APCD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstructionPhase	NumDays	35.00	440.00
tblGrading	AcresOfGrading	112.50	26.90
tblLandUse	LotAcreage	38.64	26.90
tblLandUse	Population	340.00	367.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	8.4356	46.4478	31.3583	0.0634	18.2141	2.0454	20.2595	9.9699	1.8818	11.8516	0.0000	6,147.6812	6,147.6812	1.9461	0.0000	6,196.3328
2022	8.2123	18.4743	19.6019	0.0371	0.5152	0.8962	1.4114	0.1387	0.8480	0.9867	0.0000	3,569.4348	3,569.4348	0.6564	0.0000	3,585.8442
2023	8.0464	16.8961	19.3468	0.0369	0.5152	0.7743	1.2895	0.1387	0.7328	0.8714	0.0000	3,550.0465	3,550.0465	0.7159	0.0000	3,566.1730
Maximum	**8.4356**	**46.4478**	**31.3583**	**0.0634**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8818**	**11.8516**	**0.0000**	**6,147.6812**	**6,147.6812**	**1.9461**	**0.0000**	**6,196.3328**

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	6.6733	3.8991	33.4790	0.0634	18.2141	0.1026	18.2771	9.9699	0.1025	10.0328	0.0000	6,147.6812	6,147.6812	1.9461	0.0000	6,196.3328
2022	6.6590	3.8137	20.7176	0.0371	0.5152	0.0502	0.5654	0.1387	0.0499	0.1885	0.0000	3,569.4348	3,569.4348	0.6564	0.0000	3,585.8442
2023	6.6395	3.5717	20.5843	0.0369	0.5152	0.0485	0.5637	0.1387	0.0483	0.1869	0.0000	3,550.0465	3,550.0465	0.7159	0.0000	3,566.1729
Maximum	**6.6733**	**3.8991**	**33.4790**	**0.0634**	**18.2141**	**0.1026**	**18.2771**	**9.9699**	**0.1025**	**10.0328**	**0.0000**	**6,147.6812**	**6,147.6812**	**1.9461**	**0.0000**	**6,196.3328**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**19.12**	**86.21**	**-6.36**	**0.00**	**0.00**	**94.58**	**15.48**	**0.00**	**94.21**	**24.08**	**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	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**189.1851**	**14.2375**	**250.7350**	**0.4750**	**5.1739**	**31.6820**	**36.8559**	**1.3866**	**31.6791**	**33.0657**	**3,304.8360**	**8,722.4850**	**12,027.3210**	**3.3211**	**0.2781**	**12,193.2275**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.8213	1.8897	10.5695	0.0119		0.1980	0.1980		0.1980	0.1980	0.0000	2,285.6777	2,285.6777	0.0604	0.0416	2,299.5794
Energy	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Mobile	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**7.2760**	**12.4576**	**26.6873**	**0.0791**	**5.1739**	**0.3060**	**5.4799**	**1.3866**	**0.3031**	**1.6897**	**0.0000**	**9,604.4850**	**9,604.4850**	**0.3148**	**0.0598**	**9,630.1585**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**96.15**	**12.50**	**89.36**	**83.35**	**0.00**	**99.03**	**85.13**	**0.00**	**99.04**	**94.89**	**100.00**	**-10.11**	**20.14**	**90.52**	**78.52**	**21.02**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/28/2021	5	20	
2	Grading	Grading	4/29/2021	6/30/2021	5	45	
3	Building Construction	Building Construction	7/1/2021	3/8/2023	5	440	
4	Architectural Coating	Architectural Coating	7/15/2021	3/22/2023	5	440	
5	Paving	Paving	3/23/2023	5/10/2023	5	35	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 26.9

Acres of Paving: 0

Residential Indoor: 433,755; Residential Outdoor: 144,585; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Brady Vineyards - Placer County APCD Air District, Winter

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

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	43.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	9.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Site Preparation - 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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0629	0.0431	0.4319	1.2700e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		126.5740	126.5740	2.9400e-003		126.6474
Total	**0.0629**	**0.0431**	**0.4319**	**1.2700e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**126.5740**	**126.5740**	**2.9400e-003**		**126.6474**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	0.4656	2.0175	20.8690	0.0380		0.0621	0.0621		0.0621	0.0621	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**0.4656**	**2.0175**	**20.8690**	**0.0380**	**18.0663**	**0.0621**	**18.1283**	**9.9307**	**0.0621**	**9.9928**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0629	0.0431	0.4319	1.2700e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		126.5740	126.5740	2.9400e-003		126.6474
Total	**0.0629**	**0.0431**	**0.4319**	**1.2700e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**126.5740**	**126.5740**	**2.9400e-003**		**126.6474**

3.3 Grading - 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					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.6560**	**1.9853**	**8.6414**	**3.3787**	**1.8265**	**5.2052**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0699	0.0479	0.4798	1.4100e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		140.6378	140.6378	3.2600e-003		140.7193
Total	**0.0699**	**0.0479**	**0.4798**	**1.4100e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**140.6378**	**140.6378**	**3.2600e-003**		**140.7193**

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					6.6560	0.0000	6.6560	3.3787	0.0000	3.3787			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**6.6560**	**0.1015**	**6.7576**	**3.3787**	**0.1015**	**3.4802**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0699	0.0479	0.4798	1.4100e-003	0.1643	1.0200e-003	0.1653	0.0436	9.4000e-004	0.0445		140.6378	140.6378	3.2600e-003		140.7193
Total	**0.0699**	**0.0479**	**0.4798**	**1.4100e-003**	**0.1643**	**1.0200e-003**	**0.1653**	**0.0436**	**9.4000e-004**	**0.0445**		**140.6378**	**140.6378**	**3.2600e-003**		**140.7193**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0416	1.4110	0.3000	3.6800e-003	0.0881	3.3400e-003	0.0914	0.0254	3.1900e-003	0.0285		384.6198	384.6198	0.0196		385.1088
Worker	0.1504	0.1031	1.0317	3.0300e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		302.3712	302.3712	7.0100e-003		302.5466
Total	**0.1920**	**1.5141**	**1.3317**	**6.7100e-003**	**0.4413**	**5.5300e-003**	**0.4468**	**0.1190**	**5.2000e-003**	**0.1243**		**686.9911**	**686.9911**	**0.0266**		**687.6554**

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	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0416	1.4110	0.3000	3.6800e-003	0.0881	3.3400e-003	0.0914	0.0254	3.1900e-003	0.0285		384.6198	384.6198	0.0196		385.1088
Worker	0.1504	0.1031	1.0317	3.0300e-003	0.3532	2.1900e-003	0.3554	0.0937	2.0100e-003	0.0957		302.3712	302.3712	7.0100e-003		302.5466
Total	**0.1920**	**1.5141**	**1.3317**	**6.7100e-003**	**0.4413**	**5.5300e-003**	**0.4468**	**0.1190**	**5.2000e-003**	**0.1243**		**686.9911**	**686.9911**	**0.0266**		**687.6554**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0388	1.3381	0.2788	3.6400e-003	0.0881	2.8600e-003	0.0909	0.0254	2.7400e-003	0.0281		381.3799	381.3799	0.0185		381.8425
Worker	0.1410	0.0927	0.9478	2.9200e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		291.3029	291.3029	6.2800e-003		291.4600
Total	**0.1797**	**1.4308**	**1.2266**	**6.5600e-003**	**0.4413**	**5.0000e-003**	**0.4463**	**0.1190**	**4.7100e-003**	**0.1238**		**672.6828**	**672.6828**	**0.0248**		**673.3025**

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	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0388	1.3381	0.2788	3.6400e-003	0.0881	2.8600e-003	0.0909	0.0254	2.7400e-003	0.0281		381.3799	381.3799	0.0185		381.8425
Worker	0.1410	0.0927	0.9478	2.9200e-003	0.3532	2.1400e-003	0.3554	0.0937	1.9700e-003	0.0957		291.3029	291.3029	6.2800e-003		291.4600
Total	**0.1797**	**1.4308**	**1.2266**	**6.5600e-003**	**0.4413**	**5.0000e-003**	**0.4463**	**0.1190**	**4.7100e-003**	**0.1238**		**672.6828**	**672.6828**	**0.0248**		**673.3025**

3.4 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.4 Building Construction - 2023

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	0.0296	1.1072	0.2396	3.5800e-003	0.0880	1.2400e-003	0.0893	0.0254	1.1900e-003	0.0265		374.5265	374.5265	0.0136		374.8661
Worker	0.1324	0.0835	0.8700	2.8100e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		280.2128	280.2128	5.6200e-003		280.3532
Total	**0.1620**	**1.1907**	**1.1096**	**6.3900e-003**	**0.4413**	**3.3300e-003**	**0.4446**	**0.1190**	**3.1200e-003**	**0.1222**		**654.7394**	**654.7394**	**0.0192**		**655.2193**

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	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.4 Building Construction - 2023

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	0.0296	1.1072	0.2396	3.5800e-003	0.0880	1.2400e-003	0.0893	0.0254	1.1900e-003	0.0265		374.5265	374.5265	0.0136		374.8661
Worker	0.1324	0.0835	0.8700	2.8100e-003	0.3532	2.0900e-003	0.3553	0.0937	1.9300e-003	0.0956		280.2128	280.2128	5.6200e-003		280.3532
Total	**0.1620**	**1.1907**	**1.1096**	**6.3900e-003**	**0.4413**	**3.3300e-003**	**0.4446**	**0.1190**	**3.1200e-003**	**0.1222**		**654.7394**	**654.7394**	**0.0192**		**655.2193**

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	6.0923					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	**6.3112**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0315	0.0216	0.2159	6.4000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		63.2870	63.2870	1.4700e-003		63.3237
Total	**0.0315**	**0.0216**	**0.2159**	**6.4000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**63.2870**	**63.2870**	**1.4700e-003**		**63.3237**

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**6.1220**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.5 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0315	0.0216	0.2159	6.4000e-004	0.0739	4.6000e-004	0.0744	0.0196	4.2000e-004	0.0200		63.2870	63.2870	1.4700e-003		63.3237
Total	**0.0315**	**0.0216**	**0.2159**	**6.4000e-004**	**0.0739**	**4.6000e-004**	**0.0744**	**0.0196**	**4.2000e-004**	**0.0200**		**63.2870**	**63.2870**	**1.4700e-003**		**63.3237**

3.5 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.2968**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.5 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0295	0.0194	0.1984	6.1000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		60.9704	60.9704	1.3200e-003		61.0033
Total	**0.0295**	**0.0194**	**0.1984**	**6.1000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**60.9704**	**60.9704**	**1.3200e-003**		**61.0033**

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.1220**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.5 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0295	0.0194	0.1984	6.1000e-004	0.0739	4.5000e-004	0.0744	0.0196	4.1000e-004	0.0200		60.9704	60.9704	1.3200e-003		61.0033
Total	**0.0295**	**0.0194**	**0.1984**	**6.1000e-004**	**0.0739**	**4.5000e-004**	**0.0744**	**0.0196**	**4.1000e-004**	**0.0200**		**60.9704**	**60.9704**	**1.3200e-003**		**61.0033**

3.5 Architectural Coating - 2023

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.2840**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 2023

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	0.0277	0.0175	0.1821	5.9000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		58.6492	58.6492	1.1800e-003		58.6786
Total	**0.0277**	**0.0175**	**0.1821**	**5.9000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**58.6492**	**58.6492**	**1.1800e-003**		**58.6786**

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	6.0923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.1220**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 2023

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	0.0277	0.0175	0.1821	5.9000e-004	0.0739	4.4000e-004	0.0744	0.0196	4.0000e-004	0.0200		58.6492	58.6492	1.1800e-003		58.6786
Total	**0.0277**	**0.0175**	**0.1821**	**5.9000e-004**	**0.0739**	**4.4000e-004**	**0.0744**	**0.0196**	**4.0000e-004**	**0.0200**		**58.6492**	**58.6492**	**1.1800e-003**		**58.6786**

3.6 Paving - 2023

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	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

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	0.0462	0.0291	0.3035	9.8000e-004	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		97.7487	97.7487	1.9600e-003		97.7976
Total	**0.0462**	**0.0291**	**0.3035**	**9.8000e-004**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**97.7487**	**97.7487**	**1.9600e-003**		**97.7976**

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	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

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	0.0462	0.0291	0.3035	9.8000e-004	0.1232	7.3000e-004	0.1240	0.0327	6.7000e-004	0.0334		97.7487	97.7487	1.9600e-003		97.7976
Total	**0.0462**	**0.0291**	**0.3035**	**9.8000e-004**	**0.1232**	**7.3000e-004**	**0.1240**	**0.0327**	**6.7000e-004**	**0.0334**		**97.7487**	**97.7487**	**1.9600e-003**		**97.7976**

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	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777
Unmitigated	1.3606	9.7825	15.7791	0.0623	5.1739	0.0448	5.2187	1.3866	0.0418	1.4284		6,326.2003	6,326.2003	0.2351		6,332.0777

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,123.36	1,123.36	1123.36	2,423,587	2,423,587
Total	1,123.36	1,123.36	1,123.36	2,423,587	2,423,587

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
NaturalGas Unmitigated	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082

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					
Single Family Housing	8422.82	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

5.2 Energy by Land Use - NaturalGas

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					
Single Family Housing	8.42282	0.0908	0.7762	0.3303	4.9500e-003		0.0628	0.0628		0.0628	0.0628		990.9196	990.9196	0.0190	0.0182	996.8082
Total		**0.0908**	**0.7762**	**0.3303**	**4.9500e-003**		**0.0628**	**0.0628**		**0.0628**	**0.0628**		**990.9196**	**990.9196**	**0.0190**	**0.0182**	**996.8082**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive 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	5.8213	1.8897	10.5695	0.0119		0.1980	0.1980		0.1980	0.1980	0.0000	2,285.6777	2,285.6777	0.0604	0.0416	2,299.5794
Unmitigated	187.7304	3.6696	234.6172	0.4078		31.5740	31.5740		31.5740	31.5740	3,304.8360	1,403.6777	4,708.5137	3.0668	0.2600	4,862.6483

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	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	182.1170	3.5565	224.8037	0.4073		31.5196	31.5196		31.5196	31.5196	3,304.8360	1,386.0000	4,690.8360	3.0498	0.2600	4,844.5465
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**187.7304**	**3.6696**	**234.6172**	**0.4078**		**31.5740**	**31.5740**		**31.5740**	**31.5740**	**3,304.8360**	**1,403.6777**	**4,708.5137**	**3.0668**	**0.2600**	**4,862.6483**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7344					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.5839					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2079	1.7766	0.7560	0.0113		0.1436	0.1436		0.1436	0.1436	0.0000	2,268.0000	2,268.0000	0.0435	0.0416	2,281.4776
Landscaping	0.2951	0.1131	9.8135	5.2000e-004		0.0544	0.0544		0.0544	0.0544		17.6777	17.6777	0.0170		18.1018
Total	**5.8213**	**1.8897**	**10.5695**	**0.0119**		**0.1980**	**0.1980**		**0.1980**	**0.1980**	**0.0000**	**2,285.6777**	**2,285.6777**	**0.0604**	**0.0416**	**2,299.5794**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Brady Vineyards

Placer County APCD Air District, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.03	0.90	-0.01	0.00	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.74	0.79	-0.06	0.00	0.95	0.94	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.81	0.93	-0.07	0.00	0.95	0.94	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.70	0.88	-0.18	0.00	0.93	0.92	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.87	0.95	0.01	0.00	0.97	0.97	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	Tier 4 Final	1	1	No Change	0.00
Cranes	Diesel	Tier 4 Final	1	1	No Change	0.00
Excavators	Diesel	Tier 4 Final	2	2	No Change	0.00
Forklifts	Diesel	Tier 4 Final	3	3	No Change	0.00
Generator Sets	Diesel	Tier 4 Final	1	1	No Change	0.00
Graders	Diesel	Tier 4 Final	1	1	No Change	0.00
Pavers	Diesel	Tier 4 Final	2	2	No Change	0.00
Paving Equipment	Diesel	Tier 4 Final	2	2	No Change	0.00
Rollers	Diesel	Tier 4 Final	2	2	No Change	0.00
Rubber Tired Dozers	Diesel	Tier 4 Final	4	4	No Change	0.00
Scrapers	Diesel	Tier 4 Final	2	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	9	9	No Change	0.00
Welders	Diesel	Tier 4 Final	1	1	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	4.55000E-002	3.14030E-001	3.99160E-001	6.50000E-004	1.84200E-002	1.84200E-002	0.00000E+000	5.61716E+001	5.61716E+001	3.67000E-003	0.00000E+000	5.62634E+001
Cranes	7.36500E-002	8.36140E-001	3.68290E-001	1.11000E-003	3.44800E-002	3.17200E-002	0.00000E+000	9.75853E+001	9.75853E+001	3.15600E-002	0.00000E+000	9.83743E+001
Excavators	1.03100E-002	9.69000E-002	1.47230E-001	2.30000E-004	4.70000E-003	4.32000E-003	0.00000E+000	2.04195E+001	2.04195E+001	6.60000E-003	0.00000E+000	2.05846E+001
Forklifts	7.72900E-002	7.13970E-001	7.63620E-001	1.01000E-003	4.80900E-002	4.42500E-002	0.00000E+000	8.86323E+001	8.86323E+001	2.86700E-002	0.00000E+000	8.93489E+001
Generator Sets	7.38300E-002	6.54810E-001	8.09130E-001	1.45000E-003	3.32500E-002	3.32500E-002	0.00000E+000	1.24346E+002	1.24346E+002	5.99000E-003	0.00000E+000	1.24495E+002
Graders	1.01900E-002	1.33300E-001	3.97600E-002	1.50000E-004	4.22000E-003	3.89000E-003	0.00000E+000	1.30978E+001	1.30978E+001	4.24000E-003	0.00000E+000	1.32037E+001
Pavers	6.72000E-003	6.59000E-002	1.00910E-001	1.60000E-004	3.10000E-003	2.85000E-003	0.00000E+000	1.44538E+001	1.44538E+001	4.67000E-003	0.00000E+000	1.45707E+001
Paving Equipment	5.98000E-003	5.61000E-002	8.94900E-002	1.40000E-004	2.73000E-003	2.51000E-003	0.00000E+000	1.25249E+001	1.25249E+001	4.05000E-003	0.00000E+000	1.26262E+001
Rollers	5.38000E-003	5.63500E-002	6.48300E-002	9.00000E-005	3.10000E-003	2.85000E-003	0.00000E+000	8.06829E+000	8.06829E+000	2.61000E-003	0.00000E+000	8.13353E+000
Rubber Tired Dozers	5.49300E-002	5.75990E-001	2.11980E-001	4.50000E-004	2.79500E-002	2.57200E-002	0.00000E+000	3.94045E+001	3.94045E+001	1.27400E-002	0.00000E+000	3.97231E+001
Scrapers	4.18300E-002	4.81630E-001	3.15210E-001	6.80000E-004	1.87400E-002	1.72400E-002	0.00000E+000	5.99250E+001	5.99250E+001	1.93800E-002	0.00000E+000	6.04095E+001
Tractors/Loaders/ Backhoes	1.14110E-001	1.15815E+000	1.48798E+000	2.06000E-003	6.44000E-002	5.92400E-002	0.00000E+000	1.80987E+002	1.80987E+002	5.85400E-002	0.00000E+000	1.82451E+002
Welders	6.20600E-002	3.23860E-001	3.74170E-001	5.60000E-004	1.45200E-002	1.45200E-002	0.00000E+000	4.14085E+001	4.14085E+001	5.04000E-003	0.00000E+000	4.15345E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	6.54000E-003	2.83300E-002	4.03130E-001	6.50000E-004	8.70000E-004	8.70000E-004	0.00000E+000	5.61715E+001	5.61715E+001	3.67000E-003	0.00000E+000	5.62633E+001
Cranes	1.36500E-002	5.91300E-002	5.00370E-001	1.11000E-003	1.82000E-003	1.82000E-003	0.00000E+000	9.75851E+001	9.75851E+001	3.15600E-002	0.00000E+000	9.83742E+001
Excavators	2.86000E-003	1.23900E-002	1.76310E-001	2.30000E-004	3.80000E-004	3.80000E-004	0.00000E+000	2.04195E+001	2.04195E+001	6.60000E-003	0.00000E+000	2.05846E+001
Forklifts	1.24300E-002	5.38700E-002	7.66640E-001	1.01000E-003	1.66000E-003	1.66000E-003	0.00000E+000	8.86322E+001	8.86322E+001	2.86700E-002	0.00000E+000	8.93488E+001
Generator Sets	1.44700E-002	6.27100E-002	8.92400E-001	1.45000E-003	1.93000E-003	1.93000E-003	0.00000E+000	1.24345E+002	1.24345E+002	5.99000E-003	0.00000E+000	1.24495E+002
Graders	1.83000E-003	7.91000E-003	6.69400E-002	1.50000E-004	2.40000E-004	2.40000E-004	0.00000E+000	1.30978E+001	1.30978E+001	4.24000E-003	0.00000E+000	1.32037E+001
Pavers	2.02000E-003	8.76000E-003	1.24710E-001	1.60000E-004	2.70000E-004	2.70000E-004	0.00000E+000	1.44538E+001	1.44538E+001	4.67000E-003	0.00000E+000	1.45707E+001
Paving Equipment	1.76000E-003	7.63000E-003	1.08540E-001	1.40000E-004	2.30000E-004	2.30000E-004	0.00000E+000	1.25249E+001	1.25249E+001	4.05000E-003	0.00000E+000	1.26262E+001
Rollers	1.13000E-003	4.88000E-003	6.94300E-002	9.00000E-005	1.50000E-004	1.50000E-004	0.00000E+000	8.06828E+000	8.06828E+000	2.61000E-003	0.00000E+000	8.13352E+000
Rubber Tired Dozers	5.49000E-003	2.37900E-002	2.01260E-001	4.50000E-004	7.30000E-004	7.30000E-004	0.00000E+000	3.94044E+001	3.94044E+001	1.27400E-002	0.00000E+000	3.97230E+001
Scrapers	8.39000E-003	3.63500E-002	3.07590E-001	6.80000E-004	1.12000E-003	1.12000E-003	0.00000E+000	5.99249E+001	5.99249E+001	1.93800E-002	0.00000E+000	6.04095E+001
Tractors/Loaders/Backhoes	2.51600E-002	1.09030E-001	1.55162E+000	2.06000E-003	3.35000E-003	3.35000E-003	0.00000E+000	1.80987E+002	1.80987E+002	5.85300E-002	0.00000E+000	1.82451E+002
Welders	9.64000E-003	2.20880E-001	3.29310E-001	5.60000E-004	6.40000E-004	6.40000E-004	0.00000E+000	4.14085E+001	4.14085E+001	5.04000E-003	0.00000E+000	4.15344E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	8.56264E-001	9.09786E-001	-9.94589E-003	0.00000E+000	9.52769E-001	9.52769E-001	0.00000E+000	1.06816E-006	1.06816E-006	0.00000E+000	0.00000E+000	1.06641E-006
Cranes	8.14664E-001	9.29282E-001	-3.58630E-001	0.00000E+000	9.47216E-001	9.42623E-001	0.00000E+000	1.22969E-006	1.22969E-006	0.00000E+000	0.00000E+000	1.21983E-006
Excavators	7.22599E-001	8.72136E-001	-1.97514E-001	0.00000E+000	9.19149E-001	9.12037E-001	0.00000E+000	9.79456E-007	9.79456E-007	0.00000E+000	0.00000E+000	1.45740E-006
Forklifts	8.39177E-001	9.24549E-001	-3.95485E-003	0.00000E+000	9.65481E-001	9.62486E-001	0.00000E+000	1.12826E-006	1.12826E-006	0.00000E+000	0.00000E+000	1.11921E-006
Generator Sets	8.04009E-001	9.04232E-001	-1.02913E-001	0.00000E+000	9.41955E-001	9.41955E-001	0.00000E+000	1.20631E-006	1.20631E-006	0.00000E+000	0.00000E+000	1.20486E-006
Graders	8.20412E-001	9.40660E-001	-6.83602E-001	0.00000E+000	9.43128E-001	9.38303E-001	0.00000E+000	1.52697E-006	1.52697E-006	0.00000E+000	0.00000E+000	1.51472E-006
Pavers	6.99405E-001	8.67071E-001	-2.35854E-001	0.00000E+000	9.12903E-001	9.05263E-001	0.00000E+000	1.38372E-006	1.38372E-006	0.00000E+000	0.00000E+000	6.86310E-007
Paving Equipment	7.05686E-001	8.63993E-001	-2.12873E-001	0.00000E+000	9.15751E-001	9.08367E-001	0.00000E+000	1.59682E-006	1.59682E-006	0.00000E+000	0.00000E+000	1.58401E-006
Rollers	7.89963E-001	9.13398E-001	-7.09548E-002	0.00000E+000	9.51613E-001	9.47368E-001	0.00000E+000	1.23942E-006	1.23942E-006	0.00000E+000	0.00000E+000	1.22948E-006
Rubber Tired Dozers	9.00055E-001	9.58697E-001	5.05708E-002	0.00000E+000	9.73882E-001	9.71617E-001	0.00000E+000	1.26889E-006	1.26889E-006	0.00000E+000	0.00000E+000	1.00697E-006
Scrapers	7.99426E-001	9.24527E-001	2.41744E-002	0.00000E+000	9.40235E-001	9.35035E-001	0.00000E+000	1.16813E-006	1.16813E-006	0.00000E+000	0.00000E+000	1.32429E-006
Tractors/Loaders/Backhoes	7.79511E-001	9.05858E-001	-4.27694E-002	0.00000E+000	9.47981E-001	9.43450E-001	0.00000E+000	1.21555E-006	1.21555E-006	1.70823E-004	0.00000E+000	1.15099E-006
Welders	8.44666E-001	3.17977E-001	1.19892E-001	0.00000E+000	9.55923E-001	9.55923E-001	0.00000E+000	1.20748E-006	1.20748E-006	0.00000E+000	0.00000E+000	1.20382E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Water Exposed Area	PM10 Reduction	0.00	PM2.5 Reduction	0.00	Frequency (per day)	

No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.02	0.00	0.02	0.00	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.09	0.03	0.09	0.03	0.00	0.00
Grading	Fugitive Dust	0.15	0.08	0.15	0.08	0.00	0.00
Grading	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.18	0.10	0.18	0.10	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00
Hearth	99.89	50.05	99.66	97.25	99.54	99.54	100.00	-63.64	51.65	98.57	83.97	52.91
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
Yes	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
Yes	On-site Renewable		100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Accessory Dwelling Units
Unmitigated

Brady Vineyards ADUs

Placer County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	12.00	Dwelling Unit	0.75	12,000.00	34

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Construction not modeled separately

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment - Construction not modeled separately

Trips and VMT - Construction not modeled separately

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	CO_EF	5.97	5.97
tblStationaryGeneratorsPumpsEF	NOX_EF	5.32	5.32
tblStationaryGeneratorsPumpsEF	PM10_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.00
tblVehicleTrips	ST_TR	7.16	7.32
tblVehicleTrips	SU_TR	6.07	7.32
tblVehicleTrips	WD_TR	6.59	7.32

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8100	0.0157	1.0185	1.6900e-003		0.1308	0.1308		0.1308	0.1308	12.3955	5.3440	17.7395	0.0116	9.7000e-004	18.3195
Energy	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	13.7625	13.7625	8.6000e-004	2.9000e-004	13.8700
Mobile	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	1.1205	0.0000	1.1205	0.0662	0.0000	2.7760
Water						0.0000	0.0000		0.0000	0.0000	0.2480	0.6642	0.9123	0.0256	6.2000e-004	1.7353
Total	**0.8332**	**0.1771**	**1.2863**	**2.8900e-003**	**0.0936**	**0.1322**	**0.2257**	**0.0252**	**0.1321**	**0.1573**	**13.7640**	**126.8734**	**140.6375**	**0.1076**	**1.8800e-003**	**143.8884**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8100	0.0157	1.0185	1.6900e-003		0.1308	0.1308		0.1308	0.1308	12.3955	5.3440	17.7395	0.0116	9.7000e-004	18.3195
Energy	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
Mobile	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	1.1205	0.0000	1.1205	0.0662	0.0000	2.7760
Water						0.0000	0.0000		0.0000	0.0000	0.2480	0.6642	0.9123	0.0256	6.2000e-004	1.7353
Total	**0.8332**	**0.1771**	**1.2863**	**2.8900e-003**	**0.0936**	**0.1322**	**0.2257**	**0.0252**	**0.1321**	**0.1573**	**13.7640**	**120.8585**	**134.6226**	**0.1069**	**1.7300e-003**	**137.8121**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.74**	**4.28**	**0.66**	**7.98**	**4.22**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

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**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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**	**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	tons/yr										MT/yr					
Mitigated	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876
Unmitigated	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87.84	87.84	87.84	251,621	251,621
Total	87.84	87.84	87.84	251,621	251,621

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6.0149	6.0149	7.1000e-004	1.5000e-004	6.0764
NaturalGas Mitigated	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
NaturalGas Unmitigated	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	145185	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
Total		**7.8000e-004**	**6.6900e-003**	**2.8500e-003**	**4.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**7.7476**	**7.7476**	**1.5000e-004**	**1.4000e-004**	**7.7937**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	145185	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
Total		**7.8000e-004**	**6.6900e-003**	**2.8500e-003**	**4.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**7.7476**	**7.7476**	**1.5000e-004**	**1.4000e-004**	**7.7937**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	53930.9	6.0149	7.1000e-004	1.5000e-004	6.0764
Total		**6.0149**	**7.1000e-004**	**1.5000e-004**	**6.0764**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8100	0.0157	1.0185	1.6900e-003		0.1308	0.1308		0.1308	0.1308	12.3955	5.3440	17.7395	0.0116	9.7000e-004	18.3195
Unmitigated	0.8100	0.0157	1.0185	1.6900e-003		0.1308	0.1308		0.1308	0.1308	12.3955	5.3440	17.7395	0.0116	9.7000e-004	18.3195

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.5100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0469					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.7530	0.0147	0.9294	1.6800e-003		0.1303	0.1303		0.1303	0.1303	12.3955	5.1985	17.5940	0.0114	9.7000e-004	18.1705
Landscaping	2.6800e-003	1.0300e-003	0.0891	0.0000		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.1456	0.1456	1.4000e-004	0.0000	0.1490
Total	**0.8100**	**0.0157**	**1.0185**	**1.6800e-003**		**0.1308**	**0.1308**		**0.1308**	**0.1308**	**12.3955**	**5.3440**	**17.7395**	**0.0116**	**9.7000e-004**	**18.3196**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.5100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0469					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.7530	0.0147	0.9294	1.6800e-003		0.1303	0.1303		0.1303	0.1303	12.3955	5.1985	17.5940	0.0114	9.7000e-004	18.1705
Landscaping	2.6800e-003	1.0300e-003	0.0891	0.0000		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.1456	0.1456	1.4000e-004	0.0000	0.1490
Total	**0.8100**	**0.0157**	**1.0185**	**1.6800e-003**		**0.1308**	**0.1308**		**0.1308**	**0.1308**	**12.3955**	**5.3440**	**17.7395**	**0.0116**	**9.7000e-004**	**18.3196**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.9123	0.0256	6.2000e-004	1.7353
Unmitigated	0.9123	0.0256	6.2000e-004	1.7353

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.781848 / 0.492904	0.9123	0.0256	6.2000e-004	1.7353
Total		**0.9123**	**0.0256**	**6.2000e-004**	**1.7353**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.781848 / 0.492904	0.9123	0.0256	6.2000e-004	1.7353
Total		**0.9123**	**0.0256**	**6.2000e-004**	**1.7353**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.1205	0.0662	0.0000	2.7760
Unmitigated	1.1205	0.0662	0.0000	2.7760

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.52	1.1205	0.0662	0.0000	2.7760
Total		**1.1205**	**0.0662**	**0.0000**	**2.7760**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.52	1.1205	0.0662	0.0000	2.7760
Total		**1.1205**	**0.0662**	**0.0000**	**2.7760**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	0	0	0	0	0	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (0 - 11 HP)	0.0000	0.0000	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**	**0.0000**

11.0 Vegetation

Brady Vineyards ADUs

Placer County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	12.00	Dwelling Unit	0.75	12,000.00	34

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Construction not modeled separately

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment - Construction not modeled separately

Trips and VMT - Construction not modeled separately

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	CO_EF	5.97	5.97
tblStationaryGeneratorsPumpsEF	NOX_EF	5.32	5.32
tblStationaryGeneratorsPumpsEF	PM10_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.00
tblVehicleTrips	ST_TR	7.16	7.32
tblVehicleTrips	SU_TR	6.07	7.32
tblVehicleTrips	WD_TR	6.59	7.32

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151
Stationary	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	**18.8462**	**1.2340**	**25.2532**	**0.0481**	**0.5372**	**3.1913**	**3.7285**	**0.1440**	**3.1911**	**3.3350**	**333.2608**	**877.8432**	**1,211.1040**	**0.3308**	**0.0271**	**1,227.4403**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151
Stationary	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	**18.8462**	**1.2340**	**25.2532**	**0.0481**	**0.5372**	**3.1913**	**3.7285**	**0.1440**	**3.1911**	**3.3350**	**333.2608**	**877.8432**	**1,211.1040**	**0.3308**	**0.0271**	**1,227.4403**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	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**		**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151
Unmitigated	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87.84	87.84	87.84	251,621	251,621
Total	87.84	87.84	87.84	251,621	251,621

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
NaturalGas Unmitigated	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741

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					
Apartments Low Rise	397.766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

5.2 Energy by Land Use - NaturalGas

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					
Apartments Low Rise	0.397766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

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	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Unmitigated	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511

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	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.3647	0.3586	22.6693	0.0411		3.1785	3.1785		3.1785	3.1785	333.2608	139.7647	473.0255	0.3075	0.0262	488.5257
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**18.6924**	**0.3700**	**23.6589**	**0.0411**		**3.1839**	**3.1839**		**3.1839**	**3.1839**	**333.2608**	**141.5473**	**474.8081**	**0.3093**	**0.0262**	**490.3511**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.3647	0.3586	22.6693	0.0411		3.1785	3.1785		3.1785	3.1785	333.2608	139.7647	473.0255	0.3075	0.0262	488.5257
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**18.6924**	**0.3700**	**23.6589**	**0.0411**		**3.1839**	**3.1839**		**3.1839**	**3.1839**	**333.2608**	**141.5473**	**474.8081**	**0.3093**	**0.0262**	**490.3511**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	0	0	0	0	0	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (0 - 11 HP)	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**

11.0 Vegetation

Brady Vineyards ADUs

Placer County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	12.00	Dwelling Unit	0.75	12,000.00	34

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Construction not modeled separately

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment - Construction not modeled separately

Trips and VMT - Construction not modeled separately

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	CO_EF	5.97	5.97
tblStationaryGeneratorsPumpsEF	NOX_EF	5.32	5.32
tblStationaryGeneratorsPumpsEF	PM10_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.00
tblVehicleTrips	ST_TR	7.16	7.32
tblVehicleTrips	SU_TR	6.07	7.32
tblVehicleTrips	WD_TR	6.59	7.32

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277
Stationary	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	**18.8153**	**1.2658**	**25.1789**	**0.0476**	**0.5372**	**3.1914**	**3.7285**	**0.1440**	**3.1911**	**3.3350**	**333.2608**	**823.6388**	**1,156.8996**	**0.3314**	**0.0271**	**1,173.2529**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277
Stationary	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	**18.8153**	**1.2658**	**25.1789**	**0.0476**	**0.5372**	**3.1914**	**3.7285**	**0.1440**	**3.1911**	**3.3350**	**333.2608**	**823.6388**	**1,156.8996**	**0.3314**	**0.0271**	**1,173.2529**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	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**		**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277
Unmitigated	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87.84	87.84	87.84	251,621	251,621
Total	87.84	87.84	87.84	251,621	251,621

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
NaturalGas Unmitigated	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741

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					
Apartments Low Rise	397.766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

5.2 Energy by Land Use - NaturalGas

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					
Apartments Low Rise	0.397766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

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	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Unmitigated	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511

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	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.3647	0.3586	22.6693	0.0411		3.1785	3.1785		3.1785	3.1785	333.2608	139.7647	473.0255	0.3075	0.0262	488.5257
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**18.6924**	**0.3700**	**23.6589**	**0.0411**		**3.1839**	**3.1839**		**3.1839**	**3.1839**	**333.2608**	**141.5473**	**474.8081**	**0.3093**	**0.0262**	**490.3511**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.3647	0.3586	22.6693	0.0411		3.1785	3.1785		3.1785	3.1785	333.2608	139.7647	473.0255	0.3075	0.0262	488.5257
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**18.6924**	**0.3700**	**23.6589**	**0.0411**		**3.1839**	**3.1839**		**3.1839**	**3.1839**	**333.2608**	**141.5473**	**474.8081**	**0.3093**	**0.0262**	**490.3511**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	0	0	0	0	0	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (0 - 11 HP)	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**

11.0 Vegetation

Brady Vineyards ADUs

Placer County APCD Air District, Mitigation Report

Construction Mitigation Summary

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

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Graders	Diesel	No Change	0	0	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/ Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
Yes	On-site Renewable		100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Accessory Dwelling Units Mitigated

Brady Vineyards ADUs

Placer County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	12.00	Dwelling Unit	0.75	12,000.00	34

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Brady Vineyards ADUs - Placer County APCD Air District, Annual

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Construction not modeled separately

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment - Construction not modeled separately

Trips and VMT - Construction not modeled separately

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	CO_EF	5.97	5.97
tblStationaryGeneratorsPumpsEF	NOX_EF	5.32	5.32
tblStationaryGeneratorsPumpsEF	PM10_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.00
tblVehicleTrips	ST_TR	7.16	7.32
tblVehicleTrips	SU_TR	6.07	7.32
tblVehicleTrips	WD_TR	6.59	7.32

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8100	0.0157	1.0185	1.6900e-003		0.1308	0.1308		0.1308	0.1308	12.3955	5.3440	17.7395	0.0116	9.7000e-004	18.3195
Energy	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	13.7625	13.7625	8.6000e-004	2.9000e-004	13.8700
Mobile	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	1.1205	0.0000	1.1205	0.0662	0.0000	2.7760
Water						0.0000	0.0000		0.0000	0.0000	0.2480	0.6642	0.9123	0.0256	6.2000e-004	1.7353
Total	**0.8332**	**0.1771**	**1.2863**	**2.8900e-003**	**0.0936**	**0.1322**	**0.2257**	**0.0252**	**0.1321**	**0.1573**	**13.7640**	**126.8734**	**140.6375**	**0.1076**	**1.8800e-003**	**143.8884**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0579	8.3700e-003	0.0922	5.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	8.6522	8.6522	3.0000e-004	1.6000e-004	8.7062
Energy	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
Mobile	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	1.1205	0.0000	1.1205	0.0662	0.0000	2.7760
Water						0.0000	0.0000		0.0000	0.0000	0.2480	0.6642	0.9123	0.0256	6.2000e-004	1.7353
Total	**0.0811**	**0.1697**	**0.3600**	**1.2500e-003**	**0.0936**	**2.4400e-003**	**0.0960**	**0.0252**	**2.3900e-003**	**0.0276**	**1.3686**	**124.1667**	**125.5352**	**0.0956**	**9.2000e-004**	**128.1988**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**90.27**	**4.16**	**72.01**	**56.75**	**0.00**	**98.15**	**57.47**	**0.00**	**98.19**	**82.48**	**90.06**	**2.13**	**10.74**	**11.14**	**51.06**	**10.90**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

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**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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**	**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	tons/yr										MT/yr					
Mitigated	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876
Unmitigated	0.0224	0.1547	0.2649	1.1600e-003	0.0936	8.1000e-004	0.0944	0.0252	7.6000e-004	0.0259	0.0000	107.1027	107.1027	3.4000e-003	0.0000	107.1876

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87.84	87.84	87.84	251,621	251,621
Total	87.84	87.84	87.84	251,621	251,621

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6.0149	6.0149	7.1000e-004	1.5000e-004	6.0764
NaturalGas Mitigated	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
NaturalGas Unmitigated	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	145185	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
Total		**7.8000e-004**	**6.6900e-003**	**2.8500e-003**	**4.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**7.7476**	**7.7476**	**1.5000e-004**	**1.4000e-004**	**7.7937**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	145185	7.8000e-004	6.6900e-003	2.8500e-003	4.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	7.7476	7.7476	1.5000e-004	1.4000e-004	7.7937
Total		**7.8000e-004**	**6.6900e-003**	**2.8500e-003**	**4.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**7.7476**	**7.7476**	**1.5000e-004**	**1.4000e-004**	**7.7937**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	53930.9	6.0149	7.1000e-004	1.5000e-004	6.0764
Total		**6.0149**	**7.1000e-004**	**1.5000e-004**	**6.0764**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	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

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0579	8.3700e-003	0.0922	5.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	8.6522	8.6522	3.0000e-004	1.6000e-004	8.7062
Unmitigated	0.8100	0.0157	1.0185	1.6900e-003		0.1308	0.1308		0.1308	0.1308	12.3955	5.3440	17.7395	0.0116	9.7000e-004	18.3195

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.5100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0469					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.7530	0.0147	0.9294	1.6800e-003		0.1303	0.1303		0.1303	0.1303	12.3955	5.1985	17.5940	0.0114	9.7000e-004	18.1705
Landscaping	2.6800e-003	1.0300e-003	0.0891	0.0000		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.1456	0.1456	1.4000e-004	0.0000	0.1490
Total	**0.8100**	**0.0157**	**1.0185**	**1.6800e-003**		**0.1308**	**0.1308**		**0.1308**	**0.1308**	**12.3955**	**5.3440**	**17.7395**	**0.0116**	**9.7000e-004**	**18.3196**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.5100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0469					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.6000e-004	7.3500e-003	3.1300e-003	5.0000e-005		5.9000e-004	5.9000e-004		5.9000e-004	5.9000e-004	0.0000	8.5066	8.5066	1.6000e-004	1.6000e-004	8.5572
Landscaping	2.6800e-003	1.0300e-003	0.0891	0.0000		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.1456	0.1456	1.4000e-004	0.0000	0.1490
Total	**0.0579**	**8.3800e-003**	**0.0922**	**5.0000e-005**		**1.0800e-003**	**1.0800e-003**		**1.0800e-003**	**1.0800e-003**	**0.0000**	**8.6522**	**8.6522**	**3.0000e-004**	**1.6000e-004**	**8.7062**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.9123	0.0256	6.2000e-004	1.7353
Unmitigated	0.9123	0.0256	6.2000e-004	1.7353

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.781848 / 0.492904	0.9123	0.0256	6.2000e-004	1.7353
Total		**0.9123**	**0.0256**	**6.2000e-004**	**1.7353**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.781848 / 0.492904	0.9123	0.0256	6.2000e-004	1.7353
Total		**0.9123**	**0.0256**	**6.2000e-004**	**1.7353**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.1205	0.0662	0.0000	2.7760
Unmitigated	1.1205	0.0662	0.0000	2.7760

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.52	1.1205	0.0662	0.0000	2.7760
Total		**1.1205**	**0.0662**	**0.0000**	**2.7760**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	5.52	1.1205	0.0662	0.0000	2.7760
Total		**1.1205**	**0.0662**	**0.0000**	**2.7760**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	0	0	0	0	0	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (0 - 11 HP)	0.0000	0.0000	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**	**0.0000**

11.0 Vegetation

Brady Vineyards ADUs

Placer County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	12.00	Dwelling Unit	0.75	12,000.00	34

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Brady Vineyards ADUs - Placer County APCD Air District, Summer

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Construction not modeled separately

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment - Construction not modeled separately

Trips and VMT - Construction not modeled separately

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	CO_EF	5.97	5.97
tblStationaryGeneratorsPumpsEF	NOX_EF	5.32	5.32
tblStationaryGeneratorsPumpsEF	PM10_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.00
tblVehicleTrips	ST_TR	7.16	7.32
tblVehicleTrips	SU_TR	6.07	7.32
tblVehicleTrips	WD_TR	6.59	7.32

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151
Stationary	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	**18.8462**	**1.2340**	**25.2532**	**0.0481**	**0.5372**	**3.1913**	**3.7285**	**0.1440**	**3.1911**	**3.3350**	**333.2608**	**877.8432**	**1,211.1040**	**0.3308**	**0.0271**	**1,227.4403**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3487	0.1906	1.0658	1.2000e-003		0.0200	0.0200		0.0200	0.0200	0.0000	230.4885	230.4885	6.0900e-003	4.1900e-003	231.8904
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151
Stationary	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	**0.5024**	**1.0545**	**2.6601**	**8.2200e-003**	**0.5372**	**0.0274**	**0.5645**	**0.1440**	**0.0271**	**0.1710**	**0.0000**	**966.7844**	**966.7844**	**0.0276**	**5.0500e-003**	**968.9796**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**97.33**	**14.55**	**89.47**	**82.92**	**0.00**	**99.14**	**84.86**	**0.00**	**99.15**	**94.87**	**100.00**	**-10.13**	**20.17**	**91.66**	**81.34**	**21.06**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	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**		**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151
Unmitigated	0.1495	0.8273	1.5787	6.7900e-003	0.5372	4.4500e-003	0.5416	0.1440	4.1600e-003	0.1481		689.4999	689.4999	0.0206		690.0151

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87.84	87.84	87.84	251,621	251,621
Total	87.84	87.84	87.84	251,621	251,621

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
NaturalGas Unmitigated	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741

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					
Apartments Low Rise	397.766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

5.2 Energy by Land Use - NaturalGas

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					
Apartments Low Rise	0.397766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive 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	0.3487	0.1906	1.0658	1.2000e-003		0.0200	0.0200		0.0200	0.0200	0.0000	230.4885	230.4885	6.0900e-003	4.1900e-003	231.8904
Unmitigated	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511

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	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.3647	0.3586	22.6693	0.0411		3.1785	3.1785		3.1785	3.1785	333.2608	139.7647	473.0255	0.3075	0.0262	488.5257
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**18.6924**	**0.3700**	**23.6589**	**0.0411**		**3.1839**	**3.1839**		**3.1839**	**3.1839**	**333.2608**	**141.5473**	**474.8081**	**0.3093**	**0.0262**	**490.3511**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0210	0.1792	0.0762	1.1400e-003		0.0145	0.0145		0.0145	0.0145	0.0000	228.7059	228.7059	4.3800e-003	4.1900e-003	230.0650
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**0.3487**	**0.1906**	**1.0658**	**1.1900e-003**		**0.0200**	**0.0200**		**0.0200**	**0.0200**	**0.0000**	**230.4885**	**230.4885**	**6.0900e-003**	**4.1900e-003**	**231.8904**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	0	0	0	0	0	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (0 - 11 HP)	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**

11.0 Vegetation

Brady Vineyards ADUs

Placer County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	12.00	Dwelling Unit	0.75	12,000.00	34

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Brady Vineyards ADUs - Placer County APCD Air District, Winter

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Projet Information

Construction Phase - Project Information

Grading - Construction not modeled separately

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps -

Off-road Equipment - Construction not modeled separately

Trips and VMT - Construction not modeled separately

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	CO_EF	5.97	5.97
tblStationaryGeneratorsPumpsEF	NOX_EF	5.32	5.32
tblStationaryGeneratorsPumpsEF	PM10_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.60	0.60
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.00
tblVehicleTrips	ST_TR	7.16	7.32
tblVehicleTrips	SU_TR	6.07	7.32
tblVehicleTrips	WD_TR	6.59	7.32

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277
Stationary	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	**18.8153**	**1.2658**	**25.1789**	**0.0476**	**0.5372**	**3.1914**	**3.7285**	**0.1440**	**3.1911**	**3.3350**	**333.2608**	**823.6388**	**1,156.8996**	**0.3314**	**0.0271**	**1,173.2529**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3487	0.1906	1.0658	1.2000e-003		0.0200	0.0200		0.0200	0.0200	0.0000	230.4885	230.4885	6.0900e-003	4.1900e-003	231.8904
Energy	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Mobile	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277
Stationary	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	**0.4715**	**1.0863**	**2.5858**	**7.6900e-003**	**0.5372**	**0.0274**	**0.5646**	**0.1440**	**0.0271**	**0.1711**	**0.0000**	**912.5800**	**912.5800**	**0.0283**	**5.0500e-003**	**914.7922**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**97.49**	**14.18**	**89.73**	**83.85**	**0.00**	**99.14**	**84.86**	**0.00**	**99.15**	**94.87**	**100.00**	**-10.80**	**21.12**	**91.47**	**81.34**	**22.03**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	4/1/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	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**		**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	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**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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**	**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	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277
Unmitigated	0.1186	0.8591	1.5044	6.2600e-003	0.5372	4.4800e-003	0.5416	0.1440	4.1800e-003	0.1481		635.2955	635.2955	0.0213		635.8277

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87.84	87.84	87.84	251,621	251,621
Total	87.84	87.84	87.84	251,621	251,621

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
NaturalGas Unmitigated	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741

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					
Apartments Low Rise	397.766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

5.2 Energy by Land Use - NaturalGas

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					
Apartments Low Rise	0.397766	4.2900e-003	0.0367	0.0156	2.3000e-004		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003		46.7960	46.7960	9.0000e-004	8.6000e-004	47.0741
Total		**4.2900e-003**	**0.0367**	**0.0156**	**2.3000e-004**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**		**46.7960**	**46.7960**	**9.0000e-004**	**8.6000e-004**	**47.0741**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive 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	0.3487	0.1906	1.0658	1.2000e-003		0.0200	0.0200		0.0200	0.0200	0.0000	230.4885	230.4885	6.0900e-003	4.1900e-003	231.8904
Unmitigated	18.6924	0.3700	23.6589	0.0411		3.1839	3.1839		3.1839	3.1839	333.2608	141.5473	474.8081	0.3093	0.0262	490.3511

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	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.3647	0.3586	22.6693	0.0411		3.1785	3.1785		3.1785	3.1785	333.2608	139.7647	473.0255	0.3075	0.0262	488.5257
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**18.6924**	**0.3700**	**23.6589**	**0.0411**		**3.1839**	**3.1839**		**3.1839**	**3.1839**	**333.2608**	**141.5473**	**474.8081**	**0.3093**	**0.0262**	**490.3511**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0210	0.1792	0.0762	1.1400e-003		0.0145	0.0145		0.0145	0.0145	0.0000	228.7059	228.7059	4.3800e-003	4.1900e-003	230.0650
Landscaping	0.0298	0.0114	0.9896	5.0000e-005		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003		1.7826	1.7826	1.7100e-003		1.8254
Total	**0.3487**	**0.1906**	**1.0658**	**1.1900e-003**		**0.0200**	**0.0200**		**0.0200**	**0.0200**	**0.0000**	**230.4885**	**230.4885**	**6.0900e-003**	**4.1900e-003**	**231.8904**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	0	0	0	0	0	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (0 - 11 HP)	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**

11.0 Vegetation

Brady Vineyards ADUs

Placer County APCD Air District, Mitigation Report

Construction Mitigation Summary

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

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Graders	Diesel	No Change	0	0	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/ Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00
Hearth	99.89	50.00	99.66	97.02	99.55	99.55	100.00	-63.64	51.65	98.60	83.51	52.91
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
Yes	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
Yes	On-site Renewable		100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Buildout Pursuant to Existing Zoning Alternative

Buildout Pursuant to Existing Zoning Alternative

Placer County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	30.00	Dwelling Unit	23.44	54,000.00	86

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Applicant provided

Construction Phase - Project Information

Off-road Equipment - Construction not modeled

On-road Fugitive Dust - Construction not modeled

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Trips and VMT - Construction not modeled

Buildout Pursuant to Existing Zoning Alternative - Placer County APCD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	4/14/2021	3/31/2021
tblLandUse	LotAcreage	9.74	23.44
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.1338	0.0393	2.5463	4.2200e-003		0.3270	0.3270		0.3270	0.3270	30.9887	13.3601	44.3488	0.0290	2.4400e-003	45.7989
Energy	4.1800e-003	0.0357	0.0152	2.3000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	69.6110	69.6110	4.1200e-003	1.4500e-003	70.1455
Mobile	0.0651	0.4455	0.6925	2.9200e-003	0.2272	2.0400e-003	0.2292	0.0611	1.9100e-003	0.0630	0.0000	269.3065	269.3065	9.4000e-003	0.0000	269.5414
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	6.2846	0.0000	6.2846	0.3714	0.0000	15.5698
Water						0.0000	0.0000		0.0000	0.0000	0.6201	1.6606	2.2807	0.0639	1.5400e-003	4.3381
Total	**2.2036**	**0.5219**	**3.2553**	**7.3700e-003**	**0.2272**	**0.3320**	**0.5592**	**0.0611**	**0.3319**	**0.3930**	**37.8934**	**354.1678**	**392.0612**	**0.4778**	**5.4300e-003**	**405.6242**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.1338	0.0393	2.5463	4.2200e-003		0.3270	0.3270		0.3270	0.3270	30.9887	13.3601	44.3488	0.0290	2.4400e-003	45.7989
Energy	4.1800e-003	0.0357	0.0152	2.3000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	41.3591	41.3591	7.9000e-004	7.6000e-004	41.6049
Mobile	0.0651	0.4455	0.6925	2.9200e-003	0.2272	2.0400e-003	0.2292	0.0611	1.9100e-003	0.0630	0.0000	269.3065	269.3065	9.4000e-003	0.0000	269.5414
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	6.2846	0.0000	6.2846	0.3714	0.0000	15.5698
Water						0.0000	0.0000		0.0000	0.0000	0.6201	1.6606	2.2807	0.0639	1.5400e-003	4.3381
Total	**2.2036**	**0.5219**	**3.2553**	**7.3700e-003**	**0.2272**	**0.3320**	**0.5592**	**0.0611**	**0.3319**	**0.3930**	**37.8934**	**325.9159**	**363.8093**	**0.4745**	**4.7400e-003**	**377.0836**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7.98**	**7.21**	**0.70**	**12.71**	**7.04**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	3/31/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

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**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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**	**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	tons/yr										MT/yr					
Mitigated	0.0651	0.4455	0.6925	2.9200e-003	0.2272	2.0400e-003	0.2292	0.0611	1.9100e-003	0.0630	0.0000	269.3065	269.3065	9.4000e-003	0.0000	269.5414
Unmitigated	0.0651	0.4455	0.6925	2.9200e-003	0.2272	2.0400e-003	0.2292	0.0611	1.9100e-003	0.0630	0.0000	269.3065	269.3065	9.4000e-003	0.0000	269.5414

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	283.20	283.20	283.20	610,988	610,988
Total	283.20	283.20	283.20	610,988	610,988

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	28.2519	28.2519	3.3300e-003	6.9000e-004	28.5406
NaturalGas Mitigated	4.1800e-003	0.0357	0.0152	2.3000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	41.3591	41.3591	7.9000e-004	7.6000e-004	41.6049
NaturalGas Unmitigated	4.1800e-003	0.0357	0.0152	2.3000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	41.3591	41.3591	7.9000e-004	7.6000e-004	41.6049

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	775041	4.1800e-003	0.0357	0.0152	2.3000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	41.3591	41.3591	7.9000e-004	7.6000e-004	41.6049
Total		**4.1800e-003**	**0.0357**	**0.0152**	**2.3000e-004**		**2.8900e-003**	**2.8900e-003**		**2.8900e-003**	**2.8900e-003**	**0.0000**	**41.3591**	**41.3591**	**7.9000e-004**	**7.6000e-004**	**41.6049**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	775041	4.1800e-003	0.0357	0.0152	2.3000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	41.3591	41.3591	7.9000e-004	7.6000e-004	41.6049
Total		**4.1800e-003**	**0.0357**	**0.0152**	**2.3000e-004**		**2.8900e-003**	**2.8900e-003**		**2.8900e-003**	**2.8900e-003**	**0.0000**	**41.3591**	**41.3591**	**7.9000e-004**	**7.6000e-004**	**41.6049**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	253313	28.2519	3.3300e-003	6.9000e-004	28.5406
Total		**28.2519**	**3.3300e-003**	**6.9000e-004**	**28.5406**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.1338	0.0393	2.5463	4.2200e-003		0.3270	0.3270		0.3270	0.3270	30.9887	13.3601	44.3488	0.0290	2.4400e-003	45.7989
Unmitigated	2.1338	0.0393	2.5463	4.2200e-003		0.3270	0.3270		0.3270	0.3270	30.9887	13.3601	44.3488	0.0290	2.4400e-003	45.7989

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0338					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.8824	0.0368	2.3236	4.2100e-003		0.3258	0.3258		0.3258	0.3258	30.9887	12.9962	43.9850	0.0286	2.4400e-003	45.4263
Landscaping	6.6900e-003	2.5700e-003	0.2227	1.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	0.3639	0.3639	3.5000e-004	0.0000	0.3726
Total	**2.1338**	**0.0393**	**2.5463**	**4.2200e-003**		**0.3270**	**0.3270**		**0.3270**	**0.3270**	**30.9887**	**13.3601**	**44.3488**	**0.0290**	**2.4400e-003**	**45.7989**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0338					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.8824	0.0368	2.3236	4.2100e-003		0.3258	0.3258		0.3258	0.3258	30.9887	12.9962	43.9850	0.0286	2.4400e-003	45.4263
Landscaping	6.6900e-003	2.5700e-003	0.2227	1.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	0.3639	0.3639	3.5000e-004	0.0000	0.3726
Total	**2.1338**	**0.0393**	**2.5463**	**4.2200e-003**		**0.3270**	**0.3270**		**0.3270**	**0.3270**	**30.9887**	**13.3601**	**44.3488**	**0.0290**	**2.4400e-003**	**45.7989**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.2807	0.0639	1.5400e-003	4.3381
Unmitigated	2.2807	0.0639	1.5400e-003	4.3381

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.95462 / 1.23226	2.2807	0.0639	1.5400e-003	4.3381
Total		**2.2807**	**0.0639**	**1.5400e-003**	**4.3381**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.95462 / 1.23226	2.2807	0.0639	1.5400e-003	4.3381
Total		**2.2807**	**0.0639**	**1.5400e-003**	**4.3381**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.2846	0.3714	0.0000	15.5698
Unmitigated	6.2846	0.3714	0.0000	15.5698

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	30.96	6.2846	0.3714	0.0000	15.5698
Total		**6.2846**	**0.3714**	**0.0000**	**15.5698**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	30.96	6.2846	0.3714	0.0000	15.5698
Total		**6.2846**	**0.3714**	**0.0000**	**15.5698**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Total	**4.9000e-004**	**1.3800e-003**	**1.2600e-003**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2296**	**0.2296**	**3.0000e-005**	**0.0000**	**0.2304**

11.0 Vegetation

Buildout Pursuant to Existing Zoning Alternative

Placer County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	30.00	Dwelling Unit	23.44	54,000.00	86

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Buildout Pursuant to Existing Zoning Alternative - Placer County APCD Air District, Summer

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Applicant provided

Construction Phase - Project Information

Off-road Equipment - Construction not modeled

On-road Fugitive Dust - Construction not modeled

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Trips and VMT - Construction not modeled

Buildout Pursuant to Existing Zoning Alternative - Placer County APCD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	4/14/2021	3/31/2021
tblLandUse	LotAcreage	9.74	23.44
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777
Energy	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Mobile	0.4421	2.3961	4.0495	0.0171	1.3044	0.0112	1.3155	0.3496	0.0105	0.3600		1,733.0345	1,733.0345	0.0564		1,734.4446
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**47.7953**	**3.5261**	**63.2883**	**0.1212**	**1.3044**	**7.9873**	**9.2917**	**0.3496**	**7.9866**	**8.3362**	**833.1519**	**2,338.4019**	**3,171.5538**	**0.8346**	**0.0701**	**3,213.3118**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777
Energy	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Mobile	0.4421	2.3961	4.0495	0.0171	1.3044	0.0112	1.3155	0.3496	0.0105	0.3600		1,733.0345	1,733.0345	0.0564		1,734.4446
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**47.7953**	**3.5261**	**63.2883**	**0.1212**	**1.3044**	**7.9873**	**9.2917**	**0.3496**	**7.9866**	**8.3362**	**833.1519**	**2,338.4019**	**3,171.5538**	**0.8346**	**0.0701**	**3,213.3118**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	3/31/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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					
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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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	0.4421	2.3961	4.0495	0.0171	1.3044	0.0112	1.3155	0.3496	0.0105	0.3600		1,733.0345	1,733.0345	0.0564		1,734.4446
Unmitigated	0.4421	2.3961	4.0495	0.0171	1.3044	0.0112	1.3155	0.3496	0.0105	0.3600		1,733.0345	1,733.0345	0.0564		1,734.4446

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	283.20	283.20	283.20	610,988	610,988
Total	283.20	283.20	283.20	610,988	610,988

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
NaturalGas Unmitigated	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962

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					
Single Family Housing	2123.4	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Total		**0.0229**	**0.1957**	**0.0833**	**1.2500e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**		**249.8117**	**249.8117**	**4.7900e-003**	**4.5800e-003**	**251.2962**

5.2 Energy by Land Use - NaturalGas

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					
Single Family Housing	2.1234	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Total		**0.0229**	**0.1957**	**0.0833**	**1.2500e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**		**249.8117**	**249.8117**	**4.7900e-003**	**4.5800e-003**	**251.2962**

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	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777
Unmitigated	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777

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	0.1852					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	45.9119	0.8966	56.6732	0.1027		7.9461	7.9461		7.9461	7.9461	833.1519	349.4118	1,182.5637	0.7689	0.0655	1,221.3143
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**47.3270**	**0.9251**	**59.1472**	**0.1028**		**7.9598**	**7.9598**		**7.9598**	**7.9598**	**833.1519**	**353.8683**	**1,187.0203**	**0.7731**	**0.0655**	**1,225.8777**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1852					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	45.9119	0.8966	56.6732	0.1027		7.9461	7.9461		7.9461	7.9461	833.1519	349.4118	1,182.5637	0.7689	0.0655	1,221.3143
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**47.3270**	**0.9251**	**59.1472**	**0.1028**		**7.9598**	**7.9598**		**7.9598**	**7.9598**	**833.1519**	**353.8683**	**1,187.0203**	**0.7731**	**0.0655**	**1,225.8777**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Buildout Pursuant to Existing Zoning Alternative

Placer County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	30.00	Dwelling Unit	23.44	54,000.00	86

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Applicant provided

Construction Phase - Project Information

Off-road Equipment - Construction not modeled

On-road Fugitive Dust - Construction not modeled

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Trips and VMT - Construction not modeled

Buildout Pursuant to Existing Zoning Alternative - Placer County APCD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	4/14/2021	3/31/2021
tblLandUse	LotAcreage	9.74	23.44
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777
Energy	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Mobile	0.3430	2.4662	3.9779	0.0157	1.3044	0.0113	1.3156	0.3496	0.0105	0.3601		1,594.8404	1,594.8404	0.0593		1,596.3221
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**47.6962**	**3.5962**	**63.2168**	**0.1198**	**1.3044**	**7.9874**	**9.2918**	**0.3496**	**7.9867**	**8.3362**	**833.1519**	**2,200.2078**	**3,033.3598**	**0.8374**	**0.0701**	**3,075.1893**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777
Energy	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Mobile	0.3430	2.4662	3.9779	0.0157	1.3044	0.0113	1.3156	0.3496	0.0105	0.3601		1,594.8404	1,594.8404	0.0593		1,596.3221
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**47.6962**	**3.5962**	**63.2168**	**0.1198**	**1.3044**	**7.9874**	**9.2918**	**0.3496**	**7.9867**	**8.3362**	**833.1519**	**2,200.2078**	**3,033.3598**	**0.8374**	**0.0701**	**3,075.1893**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	3/31/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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					
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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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	0.3430	2.4662	3.9779	0.0157	1.3044	0.0113	1.3156	0.3496	0.0105	0.3601		1,594.8404	1,594.8404	0.0593		1,596.3221
Unmitigated	0.3430	2.4662	3.9779	0.0157	1.3044	0.0113	1.3156	0.3496	0.0105	0.3601		1,594.8404	1,594.8404	0.0593		1,596.3221

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	283.20	283.20	283.20	610,988	610,988
Total	283.20	283.20	283.20	610,988	610,988

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
NaturalGas Unmitigated	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962

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					
Single Family Housing	2123.4	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Total		**0.0229**	**0.1957**	**0.0833**	**1.2500e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**		**249.8117**	**249.8117**	**4.7900e-003**	**4.5800e-003**	**251.2962**

5.2 Energy by Land Use - NaturalGas

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					
Single Family Housing	2.1234	0.0229	0.1957	0.0833	1.2500e-003		0.0158	0.0158		0.0158	0.0158		249.8117	249.8117	4.7900e-003	4.5800e-003	251.2962
Total		**0.0229**	**0.1957**	**0.0833**	**1.2500e-003**		**0.0158**	**0.0158**		**0.0158**	**0.0158**		**249.8117**	**249.8117**	**4.7900e-003**	**4.5800e-003**	**251.2962**

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	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777
Unmitigated	47.3270	0.9251	59.1472	0.1028		7.9598	7.9598		7.9598	7.9598	833.1519	353.8683	1,187.0203	0.7731	0.0655	1,225.8777

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	0.1852					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	45.9119	0.8966	56.6732	0.1027		7.9461	7.9461		7.9461	7.9461	833.1519	349.4118	1,182.5637	0.7689	0.0655	1,221.3143
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**47.3270**	**0.9251**	**59.1472**	**0.1028**		**7.9598**	**7.9598**		**7.9598**	**7.9598**	**833.1519**	**353.8683**	**1,187.0203**	**0.7731**	**0.0655**	**1,225.8777**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1852					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	45.9119	0.8966	56.6732	0.1027		7.9461	7.9461		7.9461	7.9461	833.1519	349.4118	1,182.5637	0.7689	0.0655	1,221.3143
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**47.3270**	**0.9251**	**59.1472**	**0.1028**		**7.9598**	**7.9598**		**7.9598**	**7.9598**	**833.1519**	**353.8683**	**1,187.0203**	**0.7731**	**0.0655**	**1,225.8777**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Buildout Pursuant to Existing Zoning Alternative

Placer County APCD Air District, Mitigation Report

Construction Mitigation Summary

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

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Rubber Tired Dozers	Diesel	No Change	0	0	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/ Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
Yes	On-site Renewable		100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Reduced Density Alternative

Reduced Density Alternative

Placer County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	83.00	Dwelling Unit	21.16	149,400.00	237

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Applicant provided

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Off-road Equipment -

On-road Fugitive Dust - Construction not modeled

Reduced Density Alternative - Placer County APCD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	4/14/2021	3/31/2021
tblLandUse	LotAcreage	26.95	21.16
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.9034	0.1088	7.0447	0.0117		0.9048	0.9048		0.9048	0.9048	85.7355	36.9629	122.6984	0.0801	6.7400e-003	126.7102
Energy	0.0116	0.0988	0.0420	6.3000e-004		7.9900e-003	7.9900e-003		7.9900e-003	7.9900e-003	0.0000	192.5904	192.5904	0.0114	4.0100e-003	194.0693
Mobile	0.1802	1.2324	1.9160	8.0800e-003	0.6285	5.6500e-003	0.6341	0.1691	5.2800e-003	0.1743	0.0000	745.0812	745.0812	0.0260	0.0000	745.7313
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	17.3192	0.0000	17.3192	1.0235	0.0000	42.9076
Water						0.0000	0.0000		0.0000	0.0000	1.7156	4.5943	6.3100	0.1768	4.2700e-003	12.0022
Total	**6.0956**	**1.4414**	**9.0040**	**0.0204**	**0.6285**	**0.9185**	**1.5469**	**0.1691**	**0.9181**	**1.0872**	**104.7703**	**979.4584**	**1,084.2288**	**1.3178**	**0.0150**	**1,121.6509**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.9034	0.1088	7.0447	0.0117		0.9048	0.9048		0.9048	0.9048	85.7355	36.9629	122.6984	0.0801	6.7400e-003	126.7102
Energy	0.0116	0.0988	0.0420	6.3000e-004		7.9900e-003	7.9900e-003		7.9900e-003	7.9900e-003	0.0000	114.4269	114.4269	2.1900e-003	2.1000e-003	115.1069
Mobile	0.1802	1.2324	1.9160	8.0800e-003	0.6285	5.6500e-003	0.6341	0.1691	5.2800e-003	0.1743	0.0000	745.0812	745.0812	0.0260	0.0000	745.7313
Stationary	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Waste						0.0000	0.0000		0.0000	0.0000	17.3192	0.0000	17.3192	1.0235	0.0000	42.9076
Water						0.0000	0.0000		0.0000	0.0000	1.7156	4.5943	6.3100	0.1768	4.2700e-003	12.0022
Total	**6.0956**	**1.4414**	**9.0040**	**0.0204**	**0.6285**	**0.9185**	**1.5469**	**0.1691**	**0.9181**	**1.0872**	**104.7703**	**901.2950**	**1,006.0653**	**1.3086**	**0.0131**	**1,042.6885**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7.98**	**7.21**	**0.70**	**12.72**	**7.04**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	3/31/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

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**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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**	**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	tons/yr										MT/yr					
Mitigated	0.1802	1.2324	1.9160	8.0800e-003	0.6285	5.6500e-003	0.6341	0.1691	5.2800e-003	0.1743	0.0000	745.0812	745.0812	0.0260	0.0000	745.7313
Unmitigated	0.1802	1.2324	1.9160	8.0800e-003	0.6285	5.6500e-003	0.6341	0.1691	5.2800e-003	0.1743	0.0000	745.0812	745.0812	0.0260	0.0000	745.7313

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	783.52	783.52	783.52	1,690,401	1,690,401
Total	783.52	783.52	783.52	1,690,401	1,690,401

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	78.1635	78.1635	9.2200e-003	1.9100e-003	78.9624
NaturalGas Mitigated	0.0116	0.0988	0.0420	6.3000e-004		7.9900e-003	7.9900e-003		7.9900e-003	7.9900e-003	0.0000	114.4269	114.4269	2.1900e-003	2.1000e-003	115.1069
NaturalGas Unmitigated	0.0116	0.0988	0.0420	6.3000e-004		7.9900e-003	7.9900e-003		7.9900e-003	7.9900e-003	0.0000	114.4269	114.4269	2.1900e-003	2.1000e-003	115.1069

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.14428e+006	0.0116	0.0988	0.0420	6.3000e-004		7.9900e-003	7.9900e-003		7.9900e-003	7.9900e-003	0.0000	114.4269	114.4269	2.1900e-003	2.1000e-003	115.1069
Total		**0.0116**	**0.0988**	**0.0420**	**6.3000e-004**		**7.9900e-003**	**7.9900e-003**		**7.9900e-003**	**7.9900e-003**	**0.0000**	**114.4269**	**114.4269**	**2.1900e-003**	**2.1000e-003**	**115.1069**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.14428e+006	0.0116	0.0988	0.0420	6.3000e-004		7.9900e-003	7.9900e-003		7.9900e-003	7.9900e-003	0.0000	114.4269	114.4269	2.1900e-003	2.1000e-003	115.1069
Total		**0.0116**	**0.0988**	**0.0420**	**6.3000e-004**		**7.9900e-003**	**7.9900e-003**		**7.9900e-003**	**7.9900e-003**	**0.0000**	**114.4269**	**114.4269**	**2.1900e-003**	**2.1000e-003**	**115.1069**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	700834	78.1635	9.2200e-003	1.9100e-003	78.9624
Total		**78.1635**	**9.2200e-003**	**1.9100e-003**	**78.9624**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.9034	0.1088	7.0447	0.0117		0.9048	0.9048		0.9048	0.9048	85.7355	36.9629	122.6984	0.0801	6.7400e-003	126.7102
Unmitigated	5.9034	0.1088	7.0447	0.0117		0.9048	0.9048		0.9048	0.9048	85.7355	36.9629	122.6984	0.0801	6.7400e-003	126.7102

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0935					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5835					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	5.2079	0.1017	6.4286	0.0117		0.9014	0.9014		0.9014	0.9014	85.7355	35.9562	121.6917	0.0791	6.7400e-003	125.6793
Landscaping	0.0185	7.1000e-003	0.6160	3.0000e-005		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.0000	1.0067	1.0067	9.7000e-004	0.0000	1.0308
Total	**5.9034**	**0.1088**	**7.0447**	**0.0117**		**0.9048**	**0.9048**		**0.9048**	**0.9048**	**85.7355**	**36.9629**	**122.6984**	**0.0801**	**6.7400e-003**	**126.7102**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0935					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5835					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	5.2079	0.1017	6.4286	0.0117		0.9014	0.9014		0.9014	0.9014	85.7355	35.9562	121.6917	0.0791	6.7400e-003	125.6793
Landscaping	0.0185	7.1000e-003	0.6160	3.0000e-005		3.4100e-003	3.4100e-003		3.4100e-003	3.4100e-003	0.0000	1.0067	1.0067	9.7000e-004	0.0000	1.0308
Total	**5.9034**	**0.1088**	**7.0447**	**0.0117**		**0.9048**	**0.9048**		**0.9048**	**0.9048**	**85.7355**	**36.9629**	**122.6984**	**0.0801**	**6.7400e-003**	**126.7102**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	6.3100	0.1768	4.2700e-003	12.0022
Unmitigated	6.3100	0.1768	4.2700e-003	12.0022

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.40778 / 3.40926	6.3100	0.1768	4.2700e-003	12.0022
Total		**6.3100**	**0.1768**	**4.2700e-003**	**12.0022**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.40778 / 3.40926	6.3100	0.1768	4.2700e-003	12.0022
Total		**6.3100**	**0.1768**	**4.2700e-003**	**12.0022**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	17.3192	1.0235	0.0000	42.9076
Unmitigated	17.3192	1.0235	0.0000	42.9076

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	85.32	17.3192	1.0235	0.0000	42.9076
Total		**17.3192**	**1.0235**	**0.0000**	**42.9076**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	85.32	17.3192	1.0235	0.0000	42.9076
Total		**17.3192**	**1.0235**	**0.0000**	**42.9076**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	4.9000e-004	1.3800e-003	1.2600e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2296	0.2296	3.0000e-005	0.0000	0.2304
Total	**4.9000e-004**	**1.3800e-003**	**1.2600e-003**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2296**	**0.2296**	**3.0000e-005**	**0.0000**	**0.2304**

11.0 Vegetation

Reduced Density Alternative

Placer County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	83.00	Dwelling Unit	21.16	149,400.00	237

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Applicant provided

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Off-road Equipment -

On-road Fugitive Dust - Construction not modeled

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	4/14/2021	3/31/2021
tblLandUse	LotAcreage	26.95	21.16
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.0000	0.0000	0.0000	0.0000	0.0000	2.0454	0.0000	0.0000	1.8818	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0454**	**0.0000**	**0.0000**	**1.8818**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	2.0454	0.0000	0.0000	1.8818	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0454**	**0.0000**	**0.0000**	**1.8818**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950
Energy	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Mobile	1.2233	6.6291	11.2035	0.0472	3.6087	0.0310	3.6397	0.9671	0.0289	0.9960		4,794.7288	4,794.7288	0.1561		4,798.6300
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**132.2279**	**9.7392**	**175.0828**	**0.3351**	**3.6087**	**22.0974**	**25.7061**	**0.9671**	**22.0954**	**23.0625**	**2,305.0537**	**6,466.5975**	**8,771.6512**	**2.3086**	**0.1940**	**8,887.1711**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950
Energy	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Mobile	1.2233	6.6291	11.2035	0.0472	3.6087	0.0310	3.6397	0.9671	0.0289	0.9960		4,794.7288	4,794.7288	0.1561		4,798.6300
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**132.2279**	**9.7392**	**175.0828**	**0.3351**	**3.6087**	**22.0974**	**25.7061**	**0.9671**	**22.0954**	**23.0625**	**2,305.0537**	**6,466.5975**	**8,771.6512**	**2.3086**	**0.1940**	**8,887.1711**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	3/31/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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					
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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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	1.2233	6.6291	11.2035	0.0472	3.6087	0.0310	3.6397	0.9671	0.0289	0.9960		4,794.7288	4,794.7288	0.1561		4,798.6300
Unmitigated	1.2233	6.6291	11.2035	0.0472	3.6087	0.0310	3.6397	0.9671	0.0289	0.9960		4,794.7288	4,794.7288	0.1561		4,798.6300

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	783.52	783.52	783.52	1,690,401	1,690,401
Total	783.52	783.52	783.52	1,690,401	1,690,401

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
NaturalGas Unmitigated	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528

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					
Single Family Housing	5874.74	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Total		**0.0634**	**0.5414**	**0.2304**	**3.4600e-003**		**0.0438**	**0.0438**		**0.0438**	**0.0438**		**691.1456**	**691.1456**	**0.0133**	**0.0127**	**695.2528**

5.2 Energy by Land Use - NaturalGas

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					
Single Family Housing	5.87474	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Total		**0.0634**	**0.5414**	**0.2304**	**3.4600e-003**		**0.0438**	**0.0438**		**0.0438**	**0.0438**		**691.1456**	**691.1456**	**0.0133**	**0.0127**	**695.2528**

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	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950
Unmitigated	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950

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	0.5122					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.1972					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	127.0228	2.4806	156.7958	0.2841		21.9843	21.9843		21.9843	21.9843	2,305.0537	966.7059	3,271.7595	2.1272	0.1813	3,378.9694
Landscaping	0.2058	0.0789	6.8447	3.6000e-004		0.0379	0.0379		0.0379	0.0379		12.3298	12.3298	0.0118		12.6256
Total	**130.9380**	**2.5595**	**163.6406**	**0.2844**		**22.0222**	**22.0222**		**22.0222**	**22.0222**	**2,305.0537**	**979.0357**	**3,284.0894**	**2.1390**	**0.1813**	**3,391.5950**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5122					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.1972					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	127.0228	2.4806	156.7958	0.2841		21.9843	21.9843		21.9843	21.9843	2,305.0537	966.7059	3,271.7595	2.1272	0.1813	3,378.9694
Landscaping	0.2058	0.0789	6.8447	3.6000e-004		0.0379	0.0379		0.0379	0.0379		12.3298	12.3298	0.0118		12.6256
Total	**130.9380**	**2.5595**	**163.6406**	**0.2844**		**22.0222**	**22.0222**		**22.0222**	**22.0222**	**2,305.0537**	**979.0357**	**3,284.0894**	**2.1390**	**0.1813**	**3,391.5950**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Reduced Density Alternative

Placer County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	83.00	Dwelling Unit	21.16	149,400.00	237

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	245.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity adjusted based on PG&E progress towards RPS

Land Use - Applicant provided

Construction Phase - Project Information

Grading - Project Information

Vehicle Trips - Based on information from KD Anderson

Energy Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - Pump Station

Off-road Equipment -

On-road Fugitive Dust - Construction not modeled

Reduced Density Alternative - Placer County APCD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	4/14/2021	3/31/2021
tblLandUse	LotAcreage	26.95	21.16
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	245.88
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	201.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.01
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	HO_TL	7.50	5.65
tblVehicleTrips	HS_TL	7.30	5.50
tblVehicleTrips	HW_TL	10.80	8.13
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	9.52	9.44

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	0.0000	0.0000	0.0000	0.0000	0.0000	2.0454	0.0000	0.0000	1.8818	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0454**	**0.0000**	**0.0000**	**1.8818**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	2.0454	0.0000	0.0000	1.8818	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0454**	**0.0000**	**0.0000**	**1.8818**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950
Energy	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Mobile	0.9490	6.8231	11.0056	0.0434	3.6087	0.0312	3.6399	0.9671	0.0292	0.9963		4,412.3918	4,412.3918	0.1640		4,416.4912
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**131.9536**	**9.9332**	**174.8849**	**0.3313**	**3.6087**	**22.0977**	**25.7064**	**0.9671**	**22.0956**	**23.0627**	**2,305.0537**	**6,084.2605**	**8,389.3142**	**2.3165**	**0.1940**	**8,505.0323**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950
Energy	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Mobile	0.9490	6.8231	11.0056	0.0434	3.6087	0.0312	3.6399	0.9671	0.0292	0.9963		4,412.3918	4,412.3918	0.1640		4,416.4912
Stationary	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**131.9536**	**9.9332**	**174.8849**	**0.3313**	**3.6087**	**22.0977**	**25.7064**	**0.9671**	**22.0956**	**23.0627**	**2,305.0537**	**6,084.2605**	**8,389.3142**	**2.3165**	**0.1940**	**8,505.0323**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2021	3/31/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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					
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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	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**	**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	0.9490	6.8231	11.0056	0.0434	3.6087	0.0312	3.6399	0.9671	0.0292	0.9963		4,412.3918	4,412.3918	0.1640		4,416.4912
Unmitigated	0.9490	6.8231	11.0056	0.0434	3.6087	0.0312	3.6399	0.9671	0.0292	0.9963		4,412.3918	4,412.3918	0.1640		4,416.4912

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	783.52	783.52	783.52	1,690,401	1,690,401
Total	783.52	783.52	783.52	1,690,401	1,690,401

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	8.13	5.50	5.65	42.60	21.00	36.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.508452	0.038117	0.220648	0.118923	0.018903	0.005550	0.032516	0.046999	0.001390	0.001157	0.005613	0.000748	0.000985

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable 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	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
NaturalGas Unmitigated	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528

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					
Single Family Housing	5874.74	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Total		**0.0634**	**0.5414**	**0.2304**	**3.4600e-003**		**0.0438**	**0.0438**		**0.0438**	**0.0438**		**691.1456**	**691.1456**	**0.0133**	**0.0127**	**695.2528**

5.2 Energy by Land Use - NaturalGas

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					
Single Family Housing	5.87474	0.0634	0.5414	0.2304	3.4600e-003		0.0438	0.0438		0.0438	0.0438		691.1456	691.1456	0.0133	0.0127	695.2528
Total		**0.0634**	**0.5414**	**0.2304**	**3.4600e-003**		**0.0438**	**0.0438**		**0.0438**	**0.0438**		**691.1456**	**691.1456**	**0.0133**	**0.0127**	**695.2528**

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	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950
Unmitigated	130.9380	2.5595	163.6406	0.2844		22.0222	22.0222		22.0222	22.0222	2,305.0537	979.0357	3,284.0894	2.1390	0.1813	3,391.5950

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	0.5122					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.1972					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	127.0228	2.4806	156.7958	0.2841		21.9843	21.9843		21.9843	21.9843	2,305.0537	966.7059	3,271.7595	2.1272	0.1813	3,378.9694
Landscaping	0.2058	0.0789	6.8447	3.6000e-004		0.0379	0.0379		0.0379	0.0379		12.3298	12.3298	0.0118		12.6256
Total	**130.9380**	**2.5595**	**163.6406**	**0.2844**		**22.0222**	**22.0222**		**22.0222**	**22.0222**	**2,305.0537**	**979.0357**	**3,284.0894**	**2.1390**	**0.1813**	**3,391.5950**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5122					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.1972					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	127.0228	2.4806	156.7958	0.2841		21.9843	21.9843		21.9843	21.9843	2,305.0537	966.7059	3,271.7595	2.1272	0.1813	3,378.9694
Landscaping	0.2058	0.0789	6.8447	3.6000e-004		0.0379	0.0379		0.0379	0.0379		12.3298	12.3298	0.0118		12.6256
Total	**130.9380**	**2.5595**	**163.6406**	**0.2844**		**22.0222**	**22.0222**		**22.0222**	**22.0222**	**2,305.0537**	**979.0357**	**3,284.0894**	**2.1390**	**0.1813**	**3,391.5950**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.01	3	201	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

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					
Emergency Generator - Diesel (175 - 300 HP)	3.3000e-003	9.2200e-003	8.4100e-003	2.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004		1.6874	1.6874	2.4000e-004		1.6933
Total	**3.3000e-003**	**9.2200e-003**	**8.4100e-003**	**2.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**		**1.6874**	**1.6874**	**2.4000e-004**		**1.6933**

11.0 Vegetation

Reduced Density Alternative

Placer County APCD Air District, Mitigation Report

Construction Mitigation Summary

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

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Rubber Tired Dozers	Diesel	No Change	0	3	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	4	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/ Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
Yes	On-site Renewable		100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

RoadMod Emissions Modeling

Off-Site Pipeline Construction
Unmitigated

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Brady Vineyard Pipeline

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.62	6.64	0.62	0.37	0.23	0.14	0.12	0.09	0.03	0.02	1,680.18	0.06	0.05	1,697.77
Grading/Excavation	2.39	22.19	15.35	1.24	1.10	0.14	0.97	0.94	0.03	0.04	4,046.90	0.37	0.07	4,077.87
Drainage/Utilities/Sub-Grade	2.39	22.21	15.46	1.24	1.10	0.14	0.97	0.94	0.03	0.04	4,105.74	0.37	0.08	4,139.47
Paving	1.17	12.35	5.54	0.48	0.48	0.00	0.33	0.33	0.00	0.03	2,523.47	0.30	0.06	2,549.31
Maximum (pounds/day)	2.39	22.21	15.46	1.24	1.10	0.14	0.97	0.94	0.03	0.04	4,105.74	0.37	0.08	4,139.47
Total (tons/construction project)	0.13	1.26	0.82	0.07	0.06	0.01	0.05	0.05	0.00	0.00	237.56	0.02	0.00	239.52

Notes:

Project Start Year ->	2021
Project Length (months) ->	6
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	2,200	0
Grading/Excavation	0	0	0	0	2,200	0
Drainage/Utilities/Sub-Grade	5	0	15	0	2,200	0
Paving	0	0	0	0	2,200	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Brady Vineyard Pipeline

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.09	0.00	0.00	10.17
Grading/Excavation	0.07	0.66	0.46	0.04	0.03	0.00	0.03	0.03	0.00	0.00	120.19	0.01	0.00	109.87
Drainage/Utilities/Sub-Grade	0.05	0.44	0.31	0.02	0.02	0.00	0.02	0.02	0.00	0.00	81.29	0.01	0.00	74.35
Paving	0.01	0.12	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.98	0.00	0.00	22.90
Maximum (tons/phase)	0.07	0.66	0.46	0.04	0.03	0.00	0.03	0.03	0.00	0.00	120.19	0.01	0.00	109.87
Total (tons/construction project)	0.13	1.26	0.82	0.07	0.06	0.01	0.05	0.05	0.00	0.00	237.56	0.02	0.00	217.29

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Off-Site Pipeline Construction
Mitigation Measure 5-1(a)

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Brady Vineyard Pipeline (5-1[a])

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.62	6.64	0.62	0.37	0.23	0.14	0.12	0.09	0.03	0.02	1,680.18	0.06	0.05	1,697.77
Grading/Excavation	2.39	22.19	12.40	0.85	0.71	0.14	0.59	0.56	0.03	0.04	4,046.90	0.37	0.07	4,077.87
Drainage/Utilities/Sub-Grade	2.39	22.21	12.51	0.85	0.71	0.14	0.59	0.56	0.03	0.04	4,105.74	0.37	0.08	4,139.47
Paving	1.17	12.35	4.55	0.36	0.36	0.00	0.22	0.22	0.00	0.03	2,523.47	0.30	0.06	2,549.31
Maximum (pounds/day)	2.39	22.21	12.51	0.85	0.71	0.14	0.59	0.56	0.03	0.04	4,105.74	0.37	0.08	4,139.47
Total (tons/construction project)	0.13	1.26	0.67	0.05	0.04	0.01	0.03	0.03	0.00	0.00	237.56	0.02	0.00	239.52

Notes:

Project Start Year ->	2021
Project Length (months) ->	6
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	2,200	0
Grading/Excavation	0	0	0	0	2,200	0
Drainage/Utilities/Sub-Grade	5	0	15	0	2,200	0
Paving	0	0	0	0	2,200	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Brady Vineyard Pipeline (5-1[a])

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.09	0.00	0.00	10.17
Grading/Excavation	0.07	0.66	0.37	0.03	0.02	0.00	0.02	0.02	0.00	0.00	120.19	0.01	0.00	109.87
Drainage/Utilities/Sub-Grade	0.05	0.44	0.25	0.02	0.01	0.00	0.01	0.01	0.00	0.00	81.29	0.01	0.00	74.35
Paving	0.01	0.12	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.98	0.00	0.00	22.90
Maximum (tons/phase)	0.07	0.66	0.37	0.03	0.02	0.00	0.02	0.02	0.00	0.00	120.19	0.01	0.00	109.87
Total (tons/construction project)	0.13	1.26	0.67	0.05	0.04	0.01	0.03	0.03	0.00	0.00	237.56	0.02	0.00	217.29

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Off-Site Pipeline Construction
Tier 4 Equipment

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Brady Vineyard Pipeline (Tier 4)

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.62	6.64	0.62	0.37	0.23	0.14	0.12	0.09	0.03	0.02	1,680.18	0.06	0.05	1,697.77
Grading/Excavation	1.31	23.45	3.24	0.51	0.37	0.14	0.25	0.22	0.03	0.04	4,046.90	0.37	0.07	4,077.87
Drainage/Utilities/Sub-Grade	1.31	23.46	3.35	0.51	0.37	0.14	0.25	0.22	0.03	0.04	4,105.74	0.37	0.08	4,139.47
Paving	0.92	13.65	2.45	0.33	0.33	0.00	0.19	0.19	0.00	0.03	2,523.47	0.30	0.06	2,549.31
Maximum (pounds/day)	1.31	23.46	3.35	0.51	0.37	0.14	0.25	0.22	0.03	0.04	4,105.74	0.37	0.08	4,139.47
Total (tons/construction project)	0.08	1.34	0.19	0.03	0.02	0.01	0.02	0.01	0.00	0.00	237.56	0.02	0.00	239.52

Notes:

Project Start Year ->	2021
Project Length (months) ->	6
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	2,200	0
Grading/Excavation	0	0	0	0	2,200	0
Drainage/Utilities/Sub-Grade	5	0	15	0	2,200	0
Paving	0	0	0	0	2,200	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Brady Vineyard Pipeline (Tier 4)

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.09	0.00	0.00	10.17
Grading/Excavation	0.04	0.70	0.10	0.02	0.01	0.00	0.01	0.01	0.00	0.00	120.19	0.01	0.00	109.87
Drainage/Utilities/Sub-Grade	0.03	0.46	0.07	0.01	0.01	0.00	0.01	0.00	0.00	0.00	81.29	0.01	0.00	74.35
Paving	0.01	0.14	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.98	0.00	0.00	22.90
Maximum (tons/phase)	0.04	0.70	0.10	0.02	0.01	0.00	0.01	0.01	0.00	0.00	120.19	0.01	0.00	109.87
Total (tons/construction project)	0.08	1.34	0.19	0.03	0.02	0.01	0.02	0.01	0.00	0.00	237.56	0.02	0.00	217.29

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Off-Site Road Widening Construction
Unmitigated

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Brady Vineyard Roadway

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.10	9.83	11.68	3.91	0.51	3.40	1.16	0.46	0.71	0.02	1,961.49	0.58	0.02	1,982.10
Grading/Excavation	5.67	46.73	62.75	6.10	2.70	3.40	3.15	2.44	0.71	0.10	9,569.85	2.87	0.12	9,675.93
Drainage/Utilities/Sub-Grade	3.29	29.75	33.09	4.95	1.55	3.40	2.15	1.44	0.71	0.06	5,475.20	1.19	0.06	5,521.44
Paving	1.51	17.42	14.74	0.85	0.85	0.00	0.76	0.76	0.00	0.03	2,730.25	0.74	0.05	2,763.11
Maximum (pounds/day)	5.67	46.73	62.75	6.10	2.70	3.40	3.15	2.44	0.71	0.10	9,569.85	2.87	0.12	9,675.93
Total (tons/construction project)	0.26	2.21	2.74	0.31	0.12	0.19	0.15	0.11	0.04	0.00	432.61	0.12	0.01	437.14

Notes:

Project Start Year ->	2021
Project Length (months) ->	6
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	4	0	30	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	12	0	30	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Brady Vineyard Roadway

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.06	0.08	0.03	0.00	0.02	0.01	0.00	0.00	0.00	12.95	0.00	0.00	11.87
Grading/Excavation	0.17	1.39	1.86	0.18	0.08	0.10	0.09	0.07	0.02	0.00	284.22	0.09	0.00	260.70
Drainage/Utilities/Sub-Grade	0.07	0.59	0.66	0.10	0.03	0.07	0.04	0.03	0.01	0.00	108.41	0.02	0.00	99.18
Paving	0.01	0.17	0.15	0.01	0.01	0.00	0.01	0.01	0.00	0.00	27.03	0.01	0.00	24.82
Maximum (tons/phase)	0.17	1.39	1.86	0.18	0.08	0.10	0.09	0.07	0.02	0.00	284.22	0.09	0.00	260.70
Total (tons/construction project)	0.26	2.21	2.74	0.31	0.12	0.19	0.15	0.11	0.04	0.00	432.61	0.12	0.01	396.57

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Off-Site Road Widening Construction Mitigation Measure 5-1(a)

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Brady Vineyard Roadway (5-1[a])

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.10	9.83	9.36	3.69	0.29	3.40	0.96	0.25	0.71	0.02	1,961.49	0.58	0.02	1,982.10
Grading/Excavation	5.67	46.73	50.28	4.92	1.52	3.40	2.07	1.36	0.71	0.10	9,569.85	2.87	0.12	9,675.93
Drainage/Utilities/Sub-Grade	3.29	29.75	26.50	4.28	0.88	3.40	1.51	0.80	0.71	0.06	5,475.20	1.19	0.06	5,521.44
Paving	1.51	17.42	11.86	0.49	0.49	0.00	0.43	0.43	0.00	0.03	2,730.25	0.74	0.05	2,763.11
Maximum (pounds/day)	5.67	46.73	50.28	4.92	1.52	3.40	2.07	1.36	0.71	0.10	9,569.85	2.87	0.12	9,675.93
Total (tons/construction project)	0.26	2.21	2.20	0.26	0.07	0.19	0.10	0.06	0.04	0.00	432.61	0.12	0.01	437.14

Notes:

Project Start Year ->	2021
Project Length (months) ->	6
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	4	0	30	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	12	0	30	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Brady Vineyard Roadway (5-1[a])

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.06	0.06	0.02	0.00	0.02	0.01	0.00	0.00	0.00	12.95	0.00	0.00	11.87
Grading/Excavation	0.17	1.39	1.49	0.15	0.05	0.10	0.06	0.04	0.02	0.00	284.22	0.09	0.00	260.70
Drainage/Utilities/Sub-Grade	0.07	0.59	0.52	0.08	0.02	0.07	0.03	0.02	0.01	0.00	108.41	0.02	0.00	99.18
Paving	0.01	0.17	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.03	0.01	0.00	24.82
Maximum (tons/phase)	0.17	1.39	1.49	0.15	0.05	0.10	0.06	0.04	0.02	0.00	284.22	0.09	0.00	260.70
Total (tons/construction project)	0.26	2.21	2.20	0.26	0.07	0.19	0.10	0.06	0.04	0.00	432.61	0.12	0.01	396.57

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Off-Site Road Widening Construction
Tier 4 Equipment

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Brady Vineyard Roadway (Tier 4)

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.62	13.09	1.63	3.50	0.10	3.40	0.79	0.08	0.71	0.02	1,961.49	0.58	0.02	1,982.10
Grading/Excavation	2.95	58.56	6.45	3.79	0.39	3.40	1.03	0.32	0.71	0.10	9,569.85	2.87	0.12	9,675.93
Drainage/Utilities/Sub-Grade	1.63	34.21	3.90	3.65	0.25	3.40	0.91	0.20	0.71	0.06	5,475.20	1.19	0.06	5,521.44
Paving	0.81	19.31	2.20	0.15	0.15	0.00	0.11	0.11	0.00	0.03	2,730.25	0.74	0.05	2,763.11
Maximum (pounds/day)	2.95	58.56	6.45	3.79	0.39	3.40	1.03	0.32	0.71	0.10	9,569.85	2.87	0.12	9,675.93
Total (tons/construction project)	0.13	2.69	0.30	0.21	0.02	0.19	0.05	0.02	0.04	0.00	432.61	0.12	0.01	437.14

Notes:

Project Start Year ->	2021
Project Length (months) ->	6
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	4	0	30	0	800	0
Drainage/Utilities/Sub-Grade	0	0	0	0	560	0
Paving	0	12	0	30	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Brady Vineyard Roadway (Tier 4)

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.09	0.01	0.02	0.00	0.02	0.01	0.00	0.00	0.00	12.95	0.00	0.00	11.87
Grading/Excavation	0.09	1.74	0.19	0.11	0.01	0.10	0.03	0.01	0.02	0.00	284.22	0.09	0.00	260.70
Drainage/Utilities/Sub-Grade	0.03	0.68	0.08	0.07	0.00	0.07	0.02	0.00	0.01	0.00	108.41	0.02	0.00	99.18
Paving	0.01	0.19	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.03	0.01	0.00	24.82
Maximum (tons/phase)	0.09	1.74	0.19	0.11	0.01	0.10	0.03	0.01	0.02	0.00	284.22	0.09	0.00	260.70
Total (tons/construction project)	0.13	2.69	0.30	0.21	0.02	0.19	0.05	0.02	0.04	0.00	432.61	0.12	0.01	396.57

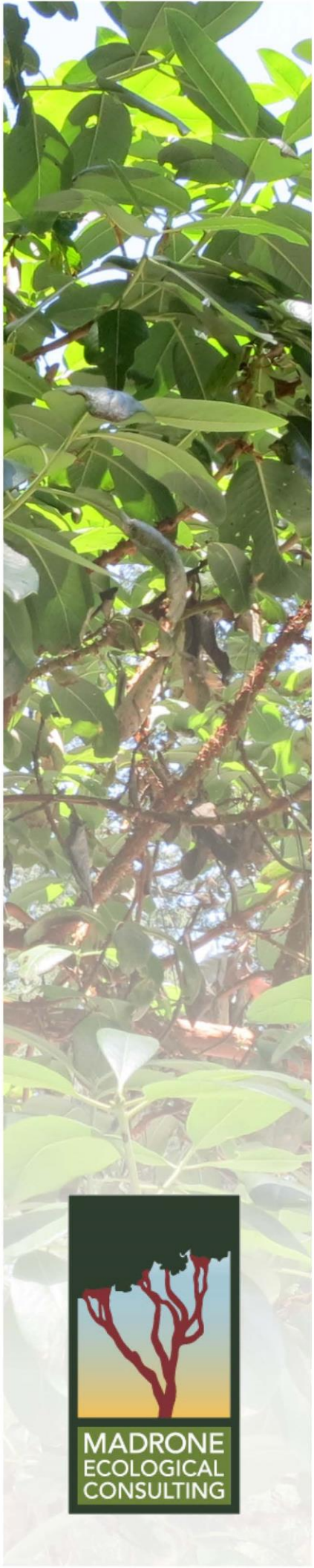
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

APPENDIX D



Biological Resources Assessment

Brady at Vineyard

Placer County, California
March 2019
Revised August 2019

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Attachment D. CNPS Inventory of Rare and Endangered Plants Query for the "Citrus Heights, California" USGS Quadrangle and Eight Surrounding Quadrangles
Attachment E. Wildlife List
Attachment F. USACE PJD Verification E-mail and Figure for Study Area 1 (SPK-2017-00976)
Attachment G. USACE AJD Verification Letter and Figure for Study Area 2 (SPK-2017-00976)
Attachment H. Tree Removal Exhibit – RFE Engineering, Inc.

1.0 INTRODUCTION

This report presents the results of a Biological Resources Assessment (BRA) conducted for the Brady at Vineyard Property (Project Area). The approximately 35-acre Project Area is located northwest of the Brady Road-Vineyard Lane intersection in southwestern Placer County, California in Section 3, Township 10 North, Range 6 East, MDB&M (Longitude -121.318156, Latitude 38.747297; NAD83). The Project Area is portrayed on the USGS "*Citrus Heights, California*" 7.5-Minute Series Topographic Quadrangle (USGS 1992) (**Figure 1**).

1.1 Project Description

The Applicant is proposing to subdivide the approximately 35-acre Project Area into 116 single-family residential lots on the 30.5 acres located east of an unnamed tributary of Dry Creek. The remaining property, located at the southwest corner of the Project Area, will be created as a separate parcel for future development. The proposed lot sizes range from a minimum of 5,000 square feet (sf) to 11,538 sf with an average lot size of 6,416 sf. The proposed Project will also include private roadways and a gated entry, an open space and trails system, and on- and off-site improvements.

1.1.1 Roadways

The gated entry is proposed from Brady Lane, with an emergency vehicle access (EVA) provided off Vineyard Road, also serving as a secondary access to the proposed sewer lift station. The proposed street pattern essentially consists of two connecting loops, with a cul-de-sac at the northwest corner.

1.1.2 Open Space and Trails

A decomposed granite (DG) trail/sidewalk system will run from the northern property boundary, connecting to three different park areas with lawn and benches along the designated open space. The trail will also provide for access to Vineyard Road and looping back around to the entry gate. Fencing along the open space corridor will be post and cable fences where adjacent to the road or trails, and open iron fences where adjacent to residential lots.

In addition, the Vineyard Road frontage will include a setback/buffer of nearly 40 feet (minimum 30-foot from back of right-of-way) and will be screened with a heavily landscaped berm between the DG trail/sidewalk system and property lines. Approximately half of the homes backing onto Vineyard Road and Brady Lane will be limited to single story elevations.

1.1.3 On- and Off-Site Improvements

Grading of the site will be required, as well as import of materials for lot padding. All lots within the Project Area will be padded and the lots adjacent to the 100-year flood-plain will be padded a minimum of two

additional feet. The Applicant team anticipates that approximately 46,070 cubic yards (CY) of soil will be cut in Phase 1 and 5,300 CY of import will be needed to balance the site.

The proposed Project will also include the continuation of the Brady Lane widening all the way to the intersection of Vineyard Road. Currently, Brady Lane has been widened to include a parking lane/bicycle lane, curb, gutter, and sidewalk for approximately 210 feet of the northernmost portion of the Project's frontage. This existing improvements are approximately 22 feet wide as measured from the fog line of the existing south-bound lane to the lip of gutter. In addition, the proposed Project includes widening Vineyard Road to accommodate a new bike lane, two-way left turn lane, and asphaltic concrete dike to direct drainage to a bioretention planter.

Furthermore, underground infrastructure improvements for the proposed Project will also include new public water mains on-site and along Brady Lane and Vineyard Road frontages, as well as on-site gravity sanitary sewer and storm drain collection systems. The on-site sanitary sewer system will flow to a proposed lift-station serving the entire Northeast Dry Creek Community Plan Area. The Project will be served by public sewer (Placer County CSA 28, Zone 173) and water (Cal Am/PCWA).

The proposed lift station, located on the northern side Vineyard Road, east of the tributary and opposite Misty Lane, will pump to the regional waste water treatment plan (WWTP) east on Vineyard to Riesling, then to a 15-inch City main in Foothills Boulevard, where it gravity flows south to the WWTP.

1.1.4 Entitlements

The Applicant is requesting approval of the following entitlements for the Project:

- Community Plan/General Plan Amendment for the following:
  - Low Density Residential (LDR 1-2 du/ac) to Medium Density Residential (MDR);
- Rezone for the following: `
  - RS-AG-B-20 to RS-B-X-5,000
- Vesting and Phased Tentative Map and Minor Boundary Line Adjustment; and
- Conditional Use Permit to allow a deviation from the County's allowed on-site street standards.

The current conceptual site plan is included as **Attachment A**.

1.1.5 Drainage and Stormwater Management

The applicant has contracted with RFE Engineering, Inc (RFE) to prepare a preliminary drainage study and stormwater quality plan for the Project (RFE 2018). To mitigate for potential impacts to water quality, the applicant will comply with the recommendations of this report which presents RFE's design for the storm drainage system for the project and demonstrates that the design complies with Placer County drainage and water quality requirements. **Attachment B** is a figure provided by RFE summarizing drainage

improvements.

RFE's report is structured to present stormwater runoff peak flow calculations in accordance with the Placer County Stormwater Management Manual (PCSWMM) (Placer County 1990) and Placer County Land Development Manual (Placer County 1996) and stormwater quality measures to be implemented as Best Management Practices (BMPs) in accordance with the West Placer Storm Water Quality Design Manual (WPSWQDM) (Placer County 2016), which are the governing design documents for stormwater management for Placer County. In July of 2015, Placer County began requiring the submittal of a Stormwater Quality Plan (SWQP) with improvement plans. The SWQP, which is included as part of RFE's report, includes stormwater quality BMP calculations and is intended to aid in project compliance to the Placer County Phase II MS4 General Permit.

The increase in impervious surface area due to construction of proposed improvements will necessitate drainage infrastructure to convey stormwater runoff safely away from improved areas. The project is not required to detain runoff for flood control; however, since the increase in impervious surface area due to proposed improvements will cause post-construction runoff peak flows to be higher than existing conditions, it is important to ensure the increased peak flows will not have negative downstream impacts.

2.0 REGULATORY SETTING

This section describes federal, state and local laws and policies that are relevant to this assessment of biological resources.

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 protects species that are federally listed as endangered or threatened with extinction. FESA prohibits the unauthorized "take" of listed wildlife species. Take includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such activities. Harm includes significant modifications or degradations of habitats that may cause death or injury to protected species by impairing their behavioral patterns. Harassment includes disruption of normal behavior patterns that may result in injury to or mortality of protected species. Civil or criminal penalties can be levied against persons convicted of unauthorized "take." In addition, FESA prohibits malicious damage or destruction of listed plant species on federal lands or in association with federal actions, and the removal, cutting, digging up, damage, or destruction of listed plant species in violation of state law. FESA does not afford any protections to federally listed plant species that are not also included on a state endangered species list on private lands with no associated federal action.

2.1.2 Clean Water Act, Section 404

Section 404 of the Federal Clean Water Act requires that a Department of the Army permit be issued prior to the discharge of any dredged or fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) administers this program, with oversight from the U. S. Environmental Protection Agency. Waters of the United States include all navigable waters; interstate waters and wetlands; all intrastate waters and wetlands that could affect interstate or foreign commerce; impoundments of the above; tributaries of the above; territorial seas; and wetlands adjacent to the above.

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any native migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11.). Likewise, Section 3513 of the California Fish & Game Code prohibits the "take or possession" of any migratory non-game bird identified under the MBTA. Therefore, activities that may result in the injury or mortality of native migratory birds, including eggs and nestlings, would be prohibited under the MBTA.

2.2 State Regulations

2.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires evaluations of project effects on biological resources. Determining the significance of those effects is guided by Appendix G of the CEQA guidelines. These evaluations must consider direct effects on a biological resource within the project site itself, indirect effects on adjacent resources, and cumulative effects within a larger area or region. Effects can be locally important but not significant according to CEQA if they would not substantially affect the regional population of the biological resource. Significant adverse impacts on biological resources would include the following:

- Substantial adverse effects on any species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife (CDFW) or the U.S. Fish and Wildlife Service (USFWS) (these effects could be either direct or via habitat modification);
- Substantial adverse impacts to species designated by the California Department of Fish and Game (2009) as Species of Special Concern;
- Substantial adverse effects on riparian habitat or other sensitive habitat identified in local or regional plans, policies, or regulations or by CDFW and USFWS;
- Substantial adverse effects on federally protected wetlands defined under Section 404 of the Clean Water Act (these effects include direct removal, filling, or hydrologic interruption of marshes, vernal pools, coastal wetlands, or other wetland types);

- Substantial interference with movements of native resident or migratory fish or wildlife species population, or with use of native wildlife nursery sites;
- Conflicts with local policies or ordinances protecting biological resources (e.g. tree preservation policies); and
- Conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

2.2.2 State Endangered Species Act

With limited exceptions, the California Endangered Species Act (CESA) of 1984 protects state-designated endangered and threatened species in a way similar to FESA. For projects on private property (i.e. that for which a state agency is not a lead agency), CESA enables CDFW to authorize take of a listed species that is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish & Game Code Section 2081).

2.2.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the Fish and Game Commission to designate plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations; emergencies; and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

2.2.4 Clean Water Act, Section 401

Section 401 of the Clean Water Act requires any Applicant for a 404 permit in support of activities that may result in any discharge into waters of the United States to obtain a water quality certification with the Regional Water Quality Control Board (RWQCB). This program is meant to protect these waters and wetlands by ensuring that waste discharged into them meets state water quality standards. Because the water quality certification program is triggered by the need for a Section 404 permit (and both programs are a part of the Clean Water Act), the definition of waters of the United States under Section 401 is the same as that used by the USACE under Section 404.

2.2.5 California Water Code, Porter-Cologne Act

The Porter Cologne Act, from Division 7 of the California Water Code, requires any person discharging waste or proposing to discharge waste that could affect the quality of waters of the state to file a report of waste discharge (RWD) with the RWQCB. The RWQCB can waive the filing of a report, but once a report is filed, the RWQCB must either waive or adopt water discharge requirements (WDRs). "Waters of the state" are defined as any surface water or groundwater, including saline waters, within the boundaries of the state.

2.2.6 California Fish and Game Code, Section 1600 – Streambed and Lake Alteration

The Department of California Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code, Section 1602, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. If notification is required and CDFW believes the proposed activity is likely to result in adverse harm to the natural environment, it will require that the parties enter into a Lake or Streambed Alteration Agreement (LSAA).

2.2.7 California Fish and Game Code, Section 3503.5 - Raptor Nests

Section 3503.5 of the Fish and Game Code makes it unlawful to take, possess, or destroy hawks or owls, unless permitted to do so, or to destroy the nest or eggs of any hawk or owl.

2.3 Local Regulations

2.3.1 Placer County Tree Ordinance

The Placer County (County) Tree Ordinance (Chapter 12.16 of the Placer County Code) (Tree Ordinance) regulates the removal and preservation of trees within the County. "Trees" under the Tree Ordinance includes all tall woody plants native to California (except grey pines and "brush"), with a single main stem or trunk at least six inches in diameter at breast height (DBH), or with multiple trunks with an aggregate of at least ten inches DBH. Each Tree has a "Protected Zone," which is a circle equal to the largest radius of a protected tree's dripline plus one foot. The radius is measured from the trunk at the base of the tree to the greatest extent of the tree's dripline. The Tree Ordinance requires a Tree Permit for any activity within the Protected Zone of a Tree related to a discretionary project. In addition, a Tree Permit is required for the removal of any Protected Tree, unless otherwise exempted.

2.3.2 Placer County Interim Oak Woodland Guidelines

The County enforces the above Tree Ordinance for cases of impacts to individual, isolated native trees; however, where tree crown canopy coverage is 10 percent/acre or greater and the dominant tree species

are native California oaks, the County regulates impacts to these areas as impact to oak woodland under the 2008 *Interim Guidelines for Evaluating Development Impacts on Oak Woodland* (Interim Guidelines). Under the Interim Guidelines, impacts to oak woodlands include all areas within 50 feet of the development footprint, and for every acre of oak woodland impacted, two acres of the same woodland type must be preserved off-site. In addition, any "significant trees" (generally trees >24 inches in diameter at breast height (DBH) or clumps >72 inches in circumference measured at ground level) impacted within the oak woodland must also be mitigated separately in accordance with the Tree Ordinance, above.

3.0 METHODOLOGY

3.1 Literature Review

A list of special-status species with potential to occur within the Project Area was developed by conducting a query of the following databases:

- California Natural Diversity Database (CNDDB) (CNDDB 2018) query of the Project Area and all areas within 5 miles of the Project Area (**Figures 2** and **3**);
- USFWS Information for Planning and Conservation (IPaC) (USFWS 2018) query for the Project Area (**Attachment C**);
- California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2018) query of the "*Citrus Heights, California*" USGS topo quadrangle, and the eight surrounding quadrangles (**Attachment D**); and
- Western Bat Working Group (WBWG) Species Matrix (WBWG 2017).

In addition, any special-status species that are known to occur in the region, but that were not identified in any of the above database searches were also analyzed for their potential to occur within the Project Area.

For the purposes of this Biological Resources Assessment, special-status species is defined as those species that are:

- listed as threatened or endangered, or proposed or candidates for listing by the USFWS or National Marine Fisheries Service;
- listed as threatened or endangered and candidates for listing by CDFW;
- identified as Fully Protected species or species of special concern by CDFW;
- identified as Medium or High priority species by the WBWG (WBWG 2017); and
- plant species considered to be rare, threatened, or endangered in California by the CNPS and CDFW [California Rare Plant Rank (CRPR) 1, 2, and 3]:
  - CRPR 1A: Plants presumed extinct.
  - CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere.
  - CRPR 2A: Plants extirpated in California, but common elsewhere.
  - CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
  - CRPR 3: Plants about which the CNPS needs more information – a review list.

3.2 Field Surveys

Madrone senior biologist Matt Hirkala conducted field surveys of the Project Area on 14 September 2017, and 2 May and 13 July 2018, to assess the suitability of habitats on-site to support special-status species. Meandering pedestrian surveys were performed on foot throughout the Project Area. Vegetation communities were classified in accordance with *The Manual of California Vegetation, Second Edition* (Sawyer, Keeler-Wolf and Evens 2009), and plant taxonomy was based on the nomenclature in the *Jepson eFlora* (Jepson Flora Project 2017). A list of all wildlife species observed during field surveys is included as **Attachment E**.

The results of the following surveys were also incorporated into this report:

- An aquatic resources delineation conducted by Madrone for the Project Area (Madrone 2017),
- Special-status plant surveys conducted by Madrone throughout the Project Area including adjacent areas on the neighboring parcel to the north (Madrone 2018a),
- Wet-season and dry-season vernal pool branchiopod surveys conducted by Madrone in all areas of suitable habitat within the Project Area including aquatic features that extend onto the adjacent parcel to the north (Madrone 2018b), and
- A Valley elderberry longhorn beetle habitat survey (Madrone 2018c).

4.0 EXISTING CONDITIONS

The Project Area is flat to gently hilly and primarily comprised of annual brome grassland, Valley oak (*Quercus lobata*) riparian woodland, and small disturbed areas located along the east and south edges. Elevations range from 122 to 152 feet above mean sea level and slopes range from 0 to 9%. An unnamed tributary to Dry Creek and its associated Valley oak riparian woodland traverses the parcel from north to south, and a drainage ditch crosses the site from east to west and conveys irrigation runoff from a residential development east of Brady Lane towards the Dry Creek tributary just north of Vineyard Road. A pair of seasonal wetlands and a seasonal wetland swale are located within the annual brome grasslands, and five riparian wetlands abut the unnamed tributary of Dry Creek on the west side of the Project Area.

Along Vineyard Road, the Project Area surrounds a rural residential property on three sides. This residence has a number of buildings, scattered Valley oak trees, and ornamental vegetation. The unnamed tributary enters this parcel from the west before exiting the area under Vineyard Road.

Lands directly to the north, south, and west are in a combination of undeveloped, rural, residential, and agricultural uses. Developed portions of the City of Roseville are located to the east, and a church is located adjacent to the northeast corner of the Project Area off of Brady Lane. The site was not mowed or disked prior to any of the above-listed surveys.

4.1 Terrestrial Vegetation Communities

4.1.1 Annual Brome Grassland

Approximately 28.5 acres of annual brome grasslands occupy the Project Area; common grass species included soft brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), perennial ryegrass (*Festuca perennis*), and wild oats (*Avena fatua*) (**Figure 4**). Forbs observed included yellow star-thistle (*Centaurea solstitialis*), which heavily infests much of the uplands in the southeast corner of the Project Area, prickly wild lettuce (*Lactuca serriola*), and wild radish (*Raphanus sativus*). Several isolated specimens of almond (*Prunus dulcis*) and coyote brush (*Baccharis pilularis*) are scattered throughout these areas.

4.1.2 Valley Oak Riparian Woodland

Approximately 3.4 acres of Valley oak riparian woodland parallel both sides of an unnamed tributary to Dry Creek for most of its length throughout the Project Area. Common tree species include Valley oak, live oak (*Quercus wislizeni*), Fremont's cottonwood (*Populus fremontii*), Pacific willow (*Salix lucida*), southern catalpa (*Catalpa bignonioides*), and walnut hybrids (*Juglans* sp.). Common understory shrubs include Himalayan blackberry (*Rubus armeniacus*), poison oak (*Toxicodendron diversilobum*), wild rose (*Rosa californica*), purple river hemp (*Sesbania punicea*), and narrow-leaf willow (*Salix exigua*).

4.1.3 Disturbed

Approximately 3.1 acres of heavily disturbed areas occur parallel to Vineyard Road and Brady Lane along the southern and eastern edges of Project Area, respectively. Areas adjacent to the church parking lot appear to have been historically graded within the northeastern corner of the Project Area. Most of these support minimal or ruderal vegetation including yellow star-thistle (*Centaurea solstitialis*), bindweed (*Convolvulus arvensis*), purple sand-spurrey (*Spergularia rubra*), and turkey mullein (*Croton setigerus*).

4.2 Aquatic Resources

Madrone senior biologist Matt Hirkala conducted a delineation of aquatic resources within the Project Area on 14 September 2017. The delineation was performed in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b), and the Sacramento District's *Minimum Standards for Acceptance of Preliminary Wetlands Delineations* (USACE 2016a). USACE regulations (33 CFR 328) were used to determine the presence of Waters of the United States other than wetlands. The most recent *National Wetland Plant List* (Lichvar et al. 2016) was used to determine the wetland indicator status of plants observed in the Project Area. The *Jepson eFlora* (Jepson Flora Project 2017) was used for plant nomenclature, except where it conflicted with the nomenclature in the *National Wetland Plant List*, which was given priority. The delineation map was prepared in accordance with the *Updated Map and Drawing Standards for the South Pacific Division*

Regulatory Program (USACE 2016b). The field data was overlaid on an ortho-rectified aerial photograph (NAIP 2017).

After coordinating with the USACE, the Project Area was divided into Study Area 1 (approximately 28 acres on the north) and Study Area 2 (approximately 7 acres on the south) for the purposes of the verification process. Study Area 1 encompasses the majority of the Project Area and includes the majority of the site's natural water features, while Study Area 2 contains a single non-jurisdiction ditch.

On 17 November 2017, Madrone requested from the USACE a Preliminary Jurisdictional Determination (PJD) for Study Area 1, and an Approved Jurisdictional Determination (AJD) for Study Area 2.

On 14 February 2018, the USACE issued a PJD verification in an e-mail to Ms. Sarah VonderOhe and concurred with Madrone's Aquatic Resources Delineation for Study Area 1 (under Corps Action ID SPK-2017-00976). **Attachment F** includes the e-mail and the figure referenced in this verification titled "*Aquatic Resources Delineation, Brady at Vineyard, Study Area 1*" prepared by Madrone.

On 20 March 2018, the USACE issued an AJD verification letter for Study Area 2 (also under Corps Action ID SPK-2017-00976) and determined the drainage ditch was excavated wholly in and drains only uplands, and does not carry a relatively permanent flow of water. This feature is not a water of the United States and is currently not regulated by the USACE; however, the drainage ditch may still fall within the authority of Section 1602 of the Fish and Game Code. **Attachment G** includes the verification letter and its referenced figure titled "*Aquatic Resources Delineation, Brady at Vineyard, Study Area 2*" prepared by Madrone.

A total of 1.064 acres of aquatic resources were mapped and verified within the Project Area (**Figure 5** and **Table 1**) (Madrone 2017). A description of each aquatic resource type is included below.

Table 1. Aquatic Resources Mapped within the Project Area

Resource Type	Acreage
Project Area	
Riparian Wetland	0.40
Seasonal Wetland	0.21
Seasonal Wetland Swale	0.07
Intermittent Stream	0.30
Drainage Ditch	0.084*
Total	**1.064**

*Not jurisdictional under Section 404 CWA.

4.2.1 Seasonal Wetlands

Two seasonal wetlands were delineated within the Project Area. Seasonal wetlands inundate and/or saturate during the wet-season and/or irrigation-season, and typically dry by late spring and remain dry through the summer months unless irrigation water is present. The feature labeled as "SW1" on **Figure 5** is located on the northern edge of Project Area and extends onto the property to the north. The portion of "SW1" within

the Project Area, which is slightly higher in elevation, possesses a thick thatch layer, and saturated rather than ponded during the wet-season. The portions of this feature north of the Project Area boundary supported persistent ponding throughout the wet-season. This entire feature, including those areas located on the neighboring parcel to the north, was surveyed during protocol wet and dry-season vernal pool branchiopod surveys and special-status plant surveys.

A second seasonal wetland labeled as "SW2" is located along Vineyard Road and receives irrigation run-off from the non-jurisdictional drainage ditch. This feature fills after storm events in the wet-season and ponds sporadically during the dry-season depending on the irrigation habits of and runoff from the upslope residential developments.

Plant species commonly occurring in these features include perennial ryegrass (*Festuca perennis*), common spikerush (*Eleocharis palustris*), toad rush (*Juncus bufonius*), rabbit's-foot grass (*Polypogon monspeliensis*), Mediterranean barley (*Hordeum marinum*), annual hair grass (*Deschampsia danthonioides*), and curly dock (*Rumex crispus*). Indicators of wetland hydrology observed included the presence of oxidized rhizospheres along live roots and biotic crust in the form of algal matting.

4.2.2 Seasonal Wetland Swale

One seasonal wetland swale was delineated within the Project Area. Although it appears as though it should connect to the intermittent drainage, it terminates short of the channel due to topography. During storm events it certainly discharges to the creek; however, flows do not have the duration or the intensity to expand the lower reach of the seasonal wetland swale all the way to the intermittent drainage. Seasonal wetland swales are sloping, linear seasonal wetlands that convey surface runoff while maintaining saturated soil conditions, though ponding often occurs in the deeper reaches. Plant species commonly occurring in the seasonal wetland swale included Mediterranean barley (*Hordeum marinum*), perennial ryegrass (*Festuca perennis*), toad rush (*Juncus bufonius*), rabbit's foot grass (*Polypogon monspeliensis*), and curly dock (*Rumex crispus*). A thick thatch layer was present due to the lack of grazing.

The most common indicator of wetland hydrology was the presence of oxidized rhizospheres along live roots. The seasonal wetland swale is situated on an approximately 5% slope and did not support sustained ponding during protocol wet-season vernal pool branchiopod surveys.

4.2.3 Riparian Wetlands

Five riparian wetlands were delineated within Project Area. These features represent depressions or low terraces that receive water from the immediately adjacent unnamed intermittent tributary of Dry Creek during and after storm events. Plant species commonly occurring in these features included Mediterranean barley (*Hordeum marinum*), perennial ryegrass (*Festuca perennis*), Himalayan blackberry (*Rubus armeniacus*), rabbit's foot grass (*Polypogon monspeliensis*), and curly dock (*Rumex crispus*). Riparian wetlands deeper within the riparian corridor also supported cottonwood (*Populus fremontii*), black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), and narrow-leaf willow (*Salix exigua*).

The most common indicators of wetland hydrology were the presence of oxidized rhizospheres along live roots and biotic crust in the form of algal matting.

4.2.4 Intermittent Stream

One intermittent stream was delineated within Project Area. The bed of this unnamed tributary of Dry Creek was almost completely unvegetated due to the scouring effects of seasonal flows. Adjacent vegetation was that typical of the surrounding Valley oak riparian woodland. The boundaries were delineated at the Ordinary High Water Mark (OHWM), which was identified based primarily on the extent of scour and the destruction of terrestrial vegetation.

4.2.5 Non-Jurisdictional Drainage Ditch

One non-jurisdictional drainage ditch in the southern portion of Project Area conveys irrigation run-off from the residential developments east of Brady Lane to the seasonal wetland labeled as "SW2" on **Figure 5**. This feature was apparently constructed concurrent with the adjacent development to the east. It was constructed in uplands (Historic Aerials 2017) and drains uplands.

The ditch runs relatively parallel to the slope contours of the small ridgeline located to the north and possesses an OHWM, which was used to determine its extent. Based on a review of historic aerial photography, periodic vegetation removal is performed along the banks. At the time of the field survey several inches of water were present in the east portions and noted vegetation in these areas including cattails (*Typha* spp.), smartweed (*Persicaria* sp.). Fewer plants were present in the lower reaches and mostly consisted of scattered perennial ryegrass (*Festuca perennis*) or tall flat-sedge (*Cyperus eragrostis*).

4.3 Soils

The Natural Resources Conservation Service has mapped the three soil units listed below within the Project Area (**Figure 6**). Though none of the major components of these three units are classified as hydric, all contain at least one hydric inclusion (Soil Survey Staff 2017):

- Cometa-Fiddyment complex, 1 to 5% slopes (141) – the Alamo inclusion is classified as hydric;
- Cometa-Ramona sandy loams, 1 to 5% slopes (142) – the Alamo and Xerofluvent inclusions are classified as hydric; and
- Ramona sandy loam, 2 to 9% slopes (175) – an unnamed soil inclusion within this map unit is classified as hydric.

5.0 RESULTS

Table 2 provides a list of special-status species that were evaluated, including their listing status, habitat associations, and their potential to occur in the Project Area. The following set of criteria was used to determine each species' potential for occurrence on the site:

Table 2. Special-Status Species with Potential to Occur within the Brady at Vineyard Study Area

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
Plants				
Balsamorhiza macrolepis Big-scale balsamroot	--	CRPR 1B.2	Prefers chaparral, cismontane woodland, and valley and foothill grasslands. Often associated with serpentine soils.	**Absent.** Marginally suitable habitat is present in the annual brome grassland. Protocol-level surveys did not detect this species.
Chloropyron molle ssp. *hispidum* Hispid bird's-beak	--	CRPR 1B.1	Prefers seasonally flooded , saline-alkali soils at elevations below 500 feet.	**No Habitat Present.** No saline-alkali soils are present within the Study Area.
Downingia pusilla Dwarf downingia	--	CRPR 2B.2	Vernal pools and other depressional wetlands	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. Protocol-level surveys did not detect this species.
Gratiola heterosepala Bogg's Lake hedge-hyssop	--	CE, CRPR 1B.2	Vernal pools and margins of lakes/ponds	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. Protocol-level surveys did not detect this species.
Juncus leiospermus var. *ahartii* Ahart's dwarf rush	--	CRPR 1B.2	Edges of vernal pools and other seasonally ponded features.	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. Protocol-level surveys did not detect this species.
Juncus leiospermus var. *leiospermus* Red Bluff dwarf rush	--	CRPR 1B.1	Occurs in vernal mesic areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools between 100' and 4,100' elevation.	**No Habitat Present.** The only documented occurrence in Placer County is, according to the notes on this occurrence, considered to be erroneous (CNDDB 2017).
Legenere limosa Legenere	--	CRPR 1B.1	Vernal pools	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. Protocol-level surveys did not detect this species.
Navarretia myersii ssp. *myersii* Pincushion navarretia	--	CRPR 1B.1	Vernal pools	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. Protocol-level surveys did not detect this species.

Scientific Name **(Common Name)**	**Federal Status**	**State Status**	**Habitat Requirements**	**Potential for Occurrence**
Orcuttia tenuis Slender Orcutt grass	FT	CE, CRPR 1B.1	Vernal pools and other seasonally ponded features.	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. Protocol-level surveys did not detect this species.
Orcuttia viscida Sacramento Orcutt grass	FE	CE, CRPR 1B.1	Vernal pools	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. Protocol-level surveys did not detect this species.
Sagittaria sanfordii Sanford's arrowhead	--	CRPR 1B.2	Emergent marsh habitat, typically associated with drainages, canals, or irrigation ditches.	**Absent.** The intermittent channel and ditch within the Study Area provides the necessary to support Sanford's arrowhead; however, protocol-level surveys did not detect this species.
Invertebrates				
Branchinecta conservatio Conservancy fairy shrimp	FE	--	Very large, turbid vernal pools.	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species; however, protocol-level wet-season and dry-season surveys did not detect this species.
Branchinecta lynchi Vernal pool fairy shrimp	FT	--	Vernal pools.	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species; however, protocol-level wet-season and dry-season surveys did not detect this species.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	--	Dependent upon elderberry *(Sambucus* species) shrubs as primary host species.	**Absent.** No elderberry shrubs are present in the Study Area (Madrone 2018c).
Lepidurus packardi Vernal pool tadpole shrimp	FE	--	Vernal pools.	**Absent.** The seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species; however, protocol-level wet-season and dry-season surveys did not detect this species.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
Fish				
Hypomesus transpacificus Delta smelt	FT	CE	Adults are found in the brackish open surface waters of the Delta and Suisun Bay. Though spawning has never been observed, it is believed to occur in tidally influenced sloughs and drainages on the freshwater side of the mixing zone.	**No Habitat Present.** No tidally influenced sloughs or drainages are present within the Study Area.
Oncorhynchus mykiss irideus Central Valley steelhead	FE	--	Anadromous species requiring freshwater water courses with gravelly substrates for breeding. The young remain in freshwater areas before migrating to estuarine and marine environments.	**No Habitat Present.** The unnamed tributary within the Study Area lacks gravel spawning substrate and flows too briefly to support this species. Also, this tributary appears to have been dammed on the property south of Vineyard Road, thereby presenting a barrier to migration.
Amphibians				
Ambystoma californiense California tiger salamander	FT	CT, CSC	Breeds in ponds or other deeply ponded wetlands, and uses gopher holes and ground squirrel burrows in adjacent grasslands for upland refugia/foraging.	**No Habitat Present.** Outside of the known range of the species.
Rana draytonii California red-legged frog	FT	CSC	Breeds in permanent to semi-permanent aquatic habitats including lakes, ponds, marshes, creeks, and other drainages.	**No Habitat Present.** Outside of the known range of the species.
Spea hammondii Western spadefoot toad	--	CSC	Breeds in vernal pools, seasonal wetlands and associated swales. Forages and hibernates in adjacent grasslands.	**Absent.** The seasonal wetlands within the Study Area represent suitable habitat for western spadefoot toad; however, this species was not detected during protocol-level vernal pool branchiopod wet-season surveys.
Reptiles				
Actinemys marmorata Western pond turtle	--	CSC	Ponds, rivers, streams, wetlands, and irrigation ditches with associated marsh habitat.	**No Habitat Present.** The aquatic resources within the resources are too ephemeral in nature to support this species.
Thamnophis gigas Giant garter snake	FT	CT	Rivers, canals, irrigation ditches, rice fields, and other aquatic habitats with slow moving water and heavy emergent vegetation.	**No Habitat Present.** Outside of the known range of the species.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
Birds				
Agelaius tricolor Tricolored blackbird	--	CE, CSC	Colonial nester in cattails, bulrush, or blackberries associated with marsh habitats.	**Low.** Blackberry brambles scattered throughout the oak woodland represent marginally suitable nesting habitat for this species.
Aquila chrysaetos Golden eagle	--	CFP	Forages in open areas including grasslands, savannahs, deserts, and early successional stages of shrub and forest communities. Nests in large trees and cliffs.	**No Habitat Present.** The annual brome grasslands within the Study Area are not sufficiently expansive to support this species.
Athene cunicularia Burrowing owl	--	CSC	Nests in abandoned ground squirrel burrows, culverts, and debris piles associated with open grassland habitats.	**Moderate.** Although few ground squirrel burrows were observed, debris scattered throughout the Study Area could provide surrogate burrows. The annual brome grasslands provide marginally suitable foraging habitat due to high density of yellow star-thistle.
Buteo swainsoni Swainson's hawk	--	CT	Nests in large trees, preferably in riparian areas. Forages in fields, cropland, irrigated pasture, and grassland near large riparian corridors.	**High.** The annual brome grasslands throughout the Study Area represent suitable foraging habitat for Swainson's hawk, and the trees within the Study Area provide suitable nesting habitat.
Circus cyaneus Northern harrier	--	CSC	Nests in emergent wetland/marsh, open grasslands, or savannah habitats. Forages in open areas such as marshes, agricultural fields, and grasslands.	**High.** The annual brome grassland is suitable nesting and foraging habitat for this species.
Elanus leucurus White-tailed kite	--	CFP	Open grasslands, fields, and meadows are used for foraging. Isolated trees in close proximity to foraging habitat are used for perching and nesting.	**Present.** The annual brome grasslands throughout the Study Area represent suitable foraging habitat for white-tailed kite, and the trees throughout the Study Area provide suitable nesting habitat. This species was observed foraging on-site during a field survey.
Geothlypis trichas sinuosa San Francisco Common yellowthroat	--	CSC	Strongly associated with San Francisco Bay including the Napa Sloughs south to San Jose. Favors woody swamp, brackish and freshwater marsh.	**No Habitat Present.** Outside of the known range of the species.

Scientific Name (Common Name)	Federal Status	State Status	Habitat Requirements	Potential for Occurrence
Haliaeetus leucocephalus Bald eagle	Delisted	CE/CFP	In California, breeding habitats are mainly in montane and foothill forests and woodlands near reservoirs, lakes, and rivers.	**Low.** The annual brome grasslands represent marginally suitable foraging habitat for this species.
Lanius ludovicianus Loggerhead shrike	--	CSC	Occurs in open areas with sparse trees, shrubs, and other perches.	**High.** The annual brome grasslands throughout the Study Area represent suitable foraging habitat for loggerhead shrike, and the trees and shrubs within the Study Area provide suitable nesting habitat.
Melospiza melodia mailliardi Song sparrow "Modesto" population	--	CSC	Nest in emergent freshwater marshes dominated by tules and cattails as well as riparian willow thickets. This species also nests in riparian forests of valley oak with a blackberry understory, along vegetated irrigation canals and levees, and in recently planted valley oak restoration sites (Shuford and Gardali 2008).	**No Habitat Present.** Although the riparian woodland would otherwise represent suitable nesting habitat for this species, it has not been documented nesting in Placer County, and only nests in extensive marshes in the Sacramento Valley area (Humple and Guepel 2004), which are not present.
Pipilo maculatus clementae San Clemente spotted towhee	--	CSC	Occurs in open areas with sparse trees, shrubs, and other perches.	**No Habitat Present.** Outside of the known range of the species.
Progne subis Purple martin	--	CSC	Endemic to the Channel Islands. Habitat requirements are poorly documented, but likely requires dense chaparral and woodlands with well-developed leaf litter and humus sheltered by overhead foliage.	**No Habitat Present.** No tall bridges or overpasses are present within the Study Area.
Setophaga petechia Yellow warbler	--	CSC	Occupy riparian vegetation in close proximity to water along streams and in wet meadows. This species no longer breeds in the Central Valley, but occurs as a common migrant in the fall and winter months (Shuford and Gardali 2008).	**High.** Although the Study Area is outside of this species' breeding range, it has been documented along Dry Creek just downstream of the Study Area (eBird 2017), and suitable winter foraging habitat is present in the Valley oak riparian woodland within the Study Area.
Mammals				
Antrozous pallidus Pallid bat	--	CSC, WBWG H	Roosts in crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of coast redwoods and giant sequoias, bole cavities of oaks, exfoliating bark, deciduous trees in riparian areas, and fruit trees in orchards), bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBWG 2017).	**High.** Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees scattered throughout the site.

Scientific Name **(Common Name)**	**Federal Status**	**State Status**	**Habitat Requirements**	**Potential for Occurrence**
Corynorhinus townsendii townsendii Townsend's big-eared bat	--	CC, WBWG H	Roosts in caves and cave analogues, such as abandoned mines, buildings, bridges, rock crevices and large basal hollows of coast redwoods and giant sequoias. Extremely sensitive to human disturbance. (WBWG 2017).	**No Habitat Present.** No caves or cave analogues present on-site.
Lasionycteris noctivagans Silver-haired bat	--	WBWG M	Roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. It forages in open wooded areas near water features.	**High.** Suitable roosting habitat for this species is present in tree hollows and under exfoliating bark on trees scattered throughout the site.
Lasiurus blossevillii Western red bat	--	CSC, WBWG H	Roosts primarily in the foliage of trees or shrubs (WBWG 2017). Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2017).	**High.** Trees scattered throughout the site are suitable roosting habitat for this species.
Lasiurus cinereus Hoary bat	--	WBWG M	Roosts primarily in foliage of both coniferous and deciduous trees at the edges of clearings (WBWG 2017).	**High.** Trees scattered throughout the site are suitable roosting habitat for this species.

Status Codes:

CC - CDFW Candidate for Listing
CE - CDFW Endangered
CFP - CDFW Fully Protected
CRPR - California Rare Plant Rank
CSC - CDFW Species of Concern
CT - CDFW Threatened
FE - Federally Endangered
FT - Federally Threatened
WBWG M - Western Bat Working Group Medium Threat Rank
WBWG H - Western Bat Working Group High Threat Rank

- Present: Species occurs on the site based on CNDDB records, and/or was observed on the site during field surveys.
- High: The site is within the known range of the species and suitable habitat exists.
- Moderate: The site is within the known range of the species and very limited suitable habitat exists.
- Low: The site is within the known range of the species and there is marginally suitable habitat.
- Absent/No Habitat Present: The site does not contain suitable habitat for the species, the species was not observed during protocol-level floristic surveys conducted on-site, the species was not observed during protocol-level wet-season and dry-season large listed vernal pool branchiopod surveys conducted on-site, or the site is outside the known range of the species.

Figures 2 and **3** are exhibits displaying CNDDB occurrences of plants and wildlife/critical habitats, respectively, within five miles of the Project Area. Below is a discussion of all special-status plant and animal species with potential to occur on the site.

5.1 Amphibians

5.1.1 Western Spadefoot

The western spadefoot (*Spea hammondii*) is not federally or state listed, but is a CDFW species of special concern. This amphibian is a nocturnal animal that forages in grassland, chaparral, and pine-oak woodlands for a variety of invertebrates such as insects and worms (USFWS 2005). Western Spadefoot breeds from January through May in variety of temporary wetlands including creeks, pools in intermittent drainages, vernal pools, and seasonal wetlands, and other fish-free water features. The tadpoles develop in 3 to 11 weeks, and must complete their metamorphosis before the temporary pools dry. Post-metamorphic juveniles feed and then immediately seek underground refugia. Following metamorphosis, the adults are largely terrestrial in nature and will burrow into sandy or gravelly soils utilizing the "spades" on the hind feet. The majority of the adult's life is spent underground in burrows (USFWS 2005). In Placer County, western spadefoot are known to breed in relatively deep man-made features, such as ponded areas adjacent to railroad tracks, and in intermittent drainage plunge pools or similar pools that hold water through late spring (CNDDB 2018).

The seasonal wetlands within the Project Area represent suitable breeding habitat for western spadefoot and the surrounding annual brome grasslands provide suitable dry-season habitat; however, no adults or tadpoles were observed during protocol wet-season branchiopod surveys, which consisted of twelve site visits that sampled all appropriate aquatic habitat and were conducted between 14 November 2017 and 18 March 2018. The nearest documented occurrence of western spadefoot is CNDDB Occurrence #171, which is dated 12 April 1991 and is located approximately 1.4 miles northwest of the site in the Woodcreek Oaks Open Space Preserve, near the intersection of Woodcreek Oaks Blvd and Junction Blvd (CNDDB 2018).

5.2 Birds

5.2.1 Tricolored Blackbird

Tricolored blackbirds (*Agelaius tricolor*) are not federally listed, but are state listed as threatened. They are colonial nesters preferring to nest in dense stands of cattails, bulrush, or blackberry thickets, often associated with aquatic features (Shuford and Gardali 2008).

Blackberry brambles in the vicinity of the intermittent stream represent marginally suitable nesting habitat for tricolored blackbird. Tricolored blackbird has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

5.2.2 Burrowing Owl

Burrowing owl (*Athene cunicularia*) is not listed pursuant to either the California or federal Endangered Species Acts; however, it is designated as a species of special concern by the CDFW. They typically inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel, but may also use man-made structures such as culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement. The breeding season extends from February 1 through August 31 (CBOC 1993, CDFG 2012).

Although only a few ground squirrel burrows were observed, debris scattered throughout the Project Area could provide artificial burrows for burrowing owl, and the annual brome grasslands provide suitable foraging habitat for this species. The nearest known occurrence of burrowing owl, CNDDB Occurrence #952, is dated 5 May 2003 and is approximately 3.5 miles northwest of the Project Area in a pasture north of Philip Road (CNDDB 2018). This is the only occurrence of burrowing owl within five miles of the Project Area.

5.2.3 Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a raptor species that is not federally listed, but is listed as threatened under CESA. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents. The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter (Shuford and Gardali 2008).

The annual brome grasslands throughout the Project Area represent suitable foraging habitat for Swainson's hawk, and the trees within the Project Area provide suitable nesting habitat. The nearest documented Swainson’s hawk nest classified as extant is CNDDB Occurrence #952, which is located along Pleasant Grove Creek, approximately 5.5 miles north west of the Project Area (CNDDB 2018).

5.2.4 Northern Harrier

The northern harrier *(Circus cyaneus)* is not listed pursuant to either the CESA or FESA; however, it is considered to be a species of special concern by the CDFW. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and grasslands (Shuford and Gardali 2008).

The annual brome grasslands throughout the Project Area are suitable nesting and foraging habitat for this species. Northern harrier has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

5.2.5 White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not federally or state listed, but is a CDFW fully protected species. This species is a yearlong resident in the Central Valley and is primarily found in or near foraging areas such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands. White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range (Shuford and Gardali 2008).

The annual brome grasslands throughout the Project Area represent suitable foraging habitat for white-tailed kite, and the trees within the Project Area provide suitable nesting habitat. This species was observed foraging in the eastern portion of the Project Area during a field survey. The nearest documented occurrence of white-tailed kite in the CNDDB is Occurrence #56, which is located approximately 2.4 miles northwest of the Project Area, near the Woodcreek Golf Club (CNDDB 2018).

5.2.6 Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is a raptor species that is federally delisted, but is listed as endangered under the CESA and is a CDFW fully protected species. In California, nests are mainly located in large trees or on cliff ledges in montane and foothill forests and woodlands near reservoirs, lakes, and rivers.

The annual brome grasslands within the Project Area represent marginally suitable foraging habitat for migrating bald eagle. Bald eagle has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

5.2.7 Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed pursuant to either the CESA or FESA; however, it is a CDFW species of special concern. Loggerhead shrikes nest in small trees and shrubs in woodland and

savannah vegetation communities, and forage in open habitats throughout California (Shuford and Gardali 2008). The nesting season ranges from March through June.

The trees and annual brome grassland within the Project Area provide suitable nesting and foraging habitat for loggerhead shrike. Loggerhead shrike has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

5.2.8 Yellow Warbler

The yellow warbler *(Setophaga petechia)* is not listed pursuant to either the CESA or FESA; however, it is classified as a CDFW species of special concern. The yellow warbler is largely extirpated as a breeder in the Sacramento Valley, but it is a common migrant during the fall and winter months (Shuford and Gardali 2008). Yellow warblers generally occupy riparian vegetation in close proximity to streams. Preferred habitat in northern California is dominated by willows (*Salix* spp.), cottonwoods (*Populus* spp.), and Oregon ash (*Fraxinus latifolia*) (Shuford and Gardali 2008).

Although the Project Area is outside of this species' breeding range, it has been documented along Dry Creek, which is downstream of the Project Area (eBird 2017). Suitable winter foraging habitat is present in the Valley oak riparian woodlands within the Project Area.

5.3 Bats

An assessment of bat habitat within the Project Area, including all potential roosting habitat features, was performed in the field to determine the likelihood of the presence of the following species.

5.3.1 Pallid Bat

Pallid bat (*Antrozous pallidus*) is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the Western Bat Working Group (WBWG) as a High priority species. It favors roosting sites in crevices in rock outcrops, caves, abandoned mines, hollow trees, and human-made structures such as barns, attics, and sheds (WBWG 2017). Though pallid bats are gregarious, they tend to group in smaller colonies of 10 to 100 individuals. It is a nocturnal hunter and captures prey in flight, but unlike most American bats, the species has been observed foraging for flightless insects, which it seizes after landing (WBWG 2017).

Tree hollows and exfoliating bark on trees throughout the Project Area represent suitable roosting habitat for pallid bat. Pallid bat has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

5.3.2 Silver-Haired Bat

Silver-haired bat (*Lasionycteris noctivagans*) is not federally or state listed, but is classified by the WBWG as a Medium priority species. Primarily considered a coastal and montane forest species, the silver-haired bat occurs in more xeric environments during winter and seasonal migrations (WBWG 2017). It roosts in abandoned woodpecker holes, under bark, and occasionally in rock crevices. This insectivore's favored foraging sites include open wooded areas near water features (WBWG 2017).

Tree hollows and exfoliating bark on trees throughout the Project Area represent suitable roosting habitat for silver-haired bat. Silver-haired bat has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

5.3.3 Western Red Bat

Western red bat (*Lasiurus blossevillii*) is not federally or state listed, but is considered a CDFW species of special concern, and is classified by the WBWG as a High priority species. Western red bat is typically solitary, roosting primarily in the foliage of trees or shrubs (WBWG 2017). Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2017).

Trees within the Valley oak riparian woodland represent suitable roosting habitat for western red bat. Western red bat has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

5.3.4 Hoary Bat

The hoary bat (*Lasiurus cinereus*) is not federally or state listed, but is classified by the WBWG as a Medium priority species. It is considered to be one of the most widespread of all American bats with a range extending from Canada to central Chile and Argentina as well as Hawaii (WBWG 2017). Hoary bats are solitary and roost primarily in foliage of both coniferous and deciduous trees, near the ends of branches at the edge of clearings (WBWG 2017). This species may also occasionally roost in caves, beneath rock ledges, in woodpecker holes, in grey squirrel nests, under wood planks, or clinging to the side of buildings (WBWG 2017).

Trees within the Valley oak riparian woodland represent suitable roosting habitat for hoary bat. Hoary bat has not been documented in the CNDDB within 5 miles of the Project Area (CNDDB 2018).

6.0 IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES

This section details potential project impacts to the sensitive biological resources discussed above.

6.1 Vegetation Communities

Project construction will result in impacts to approximately 26.5 acres of upland vegetation communities (**Table 3** and **Figure 7**).

Table 3. Vegetation Community Impacts and Avoidance within the Project Area

Vegetation Communities	Existing (ac.)	Impacts (ac.)	Avoided (ac.)
Annual Brome Grassland	28.5	23.3	5.2
Disturbed	3.1	3.1	0
Valley Oak Riparian Woodland	3.4	0.1	3.3
Total	**35.0**	**26.5**	**8.5**

6.2 Aquatic Resources

Of the approximately 1.064 acres of aquatic resources mapped within the Project Area, 0.234 acres will be impacted by the Project and 0.83 acre will be avoided in the open space areas (**Table 4** and **Figure 8**).

Table 4. Aquatic Resources Impacts and Avoidance within the Project Area

Resource Type	Existing (ac.)	Impacts (ac.)	Avoided (ac.)
Riparian Wetland	0.40	0	0.40
Seasonal Wetland	0.21	0.08	0.13
Seasonal Wetland Swale	0.07	0.07	0
Intermittent Stream	0.30	0	0.30
Total - Jurisdictional under 404 CWA	**0.98**	**0.15**	**0.83**
Drainage Ditch	0.084*	0.084*	0
Project Area Total	**1.064**	**0.234**	**0.83**

*Not jurisdictional under Section 404 CWA; however, may fall under the authority of Section 1602 of the Fish and Game Code.

Table 5 breaks down impacts to aquatic resources by Project improvement.

Table 5. Aquatic Resources Impacts by Project Improvement

Impacted Resource	Impact Acreage	Project Improvement
Riparian Wetland	0	Avoided - no improvement impacts
Seasonal Wetland	0.04	Mass grading for building pads/subdivision streets
Seasonal Wetland	0.04	Widening of Vineyard Road
Seasonal Wetland Swale	0.07	Mass grading for building pads/subdivision streets
Intermittent Stream	0	Avoided - no improvement impacts
Total - Jurisdictional under 404 CWA	**0.15**	**0.15**
Drainage Ditch	0.084*	Mass grading for building pads/subdivision streets
Total Project Impacts	**0.234**	

*Not jurisdictional under Section 404 CWA; however, may fall under the authority of Section 1602 of the Fish and Game Code.

6.3 Water Quality

Mass grading associated with Project construction will result in the disturbance of the existing vegetation cover and potentially could result in the deposition of sediment- or chemical-laden run-off in down-stream or down-slope aquatic features,

Similarly, completion of the Project will result in the creation of new impervious surfaces and thereby potentially increasing stormwater run-off from the Project Area adversely affecting down-stream aquatic features including the unnamed tributary to Dry Creek.

6.4 Special-Status Plant Species

The vegetation communities proposed for impact represent suitable habitat for a variety of special-status plant species, but protocol-level special-status plant surveys were conducted throughout the Project Area and in areas immediately to the north including the entire seasonal wetland that extends onto the adjacent parcel to the north, and none were found (Madrone 2018a). Therefore, no impacts to special-status plant species are anticipated for the Project.

6.5 Federally-Listed Large Vernal Pool Branchiopods

The seasonal wetlands and seasonal wetland swale proposed for impact represent suitable habitat for federally-listed large vernal pool branchiopods including vernal pool fairy shrimp, vernal pool tadpole shrimp, and Conservancy fairy shrimp, but protocol dry-season and wet-season surveys were conducted throughout the Project Area and in areas immediately to the north including the entire seasonal wetland that extends onto the adjacent parcel to the north, and none were found (Madrone 2018b). Therefore, no impacts to federally-listed large vernal pool branchiopods are anticipated for the Project.

6.6 Western Spadefoot Toad

The seasonal wetlands anticipated to be impacted by the Project represent suitable breeding habitat for western spadefoot toad; however, protocol wet-season vernal pool branchiopod surveys were conducted throughout the Project Area and in areas immediately to the north including the entire seasonal wetland that extends onto the adjacent parcel to the north (Madrone 2018b). Since no adults or tadpoles were observed, no impacts to western spadefoot toad are anticipated for the Project.

6.7 Nesting Raptors and Songbirds

Swainson's hawk, white-tailed kite, northern harrier, tricolored blackbird, and loggerhead shrike have the potential to nest within the Project Area, as do other more common bird species protected by the MBTA. If they were nesting on-site, removal of the nests would impact these species. Furthermore, birds nesting in avoided areas adjacent to construction could be disturbed by construction, which could result in nest abandonment.

6.8 Foraging Raptors

The annual brome grassland within the Project Area provides suitable foraging habitat for Swainson's hawk, white-tailed kite, northern harrier, bald eagle, and other more common raptors. Approximately 23.3 acres of annual brome grassland will be impacted during Project implementation (**Figure 7**).

6.9 Burrowing Owl

The annual brome grassland throughout the BRA Project Area provides marginally suitable foraging habitat for burrowing owl due to the relatively high density of yellow star-thistle (*Centaurea solstitialis*), and occasional ground-squirrel burrows and debris throughout the provide marginally suitable nesting habitat. If ground disturbances occur while burrowing owls were occupying burrows, fatalities may result.

6.10 Winter Foraging Birds

Yellow warbler has the potential to utilize the Valley oak riparian woodland within the Project. Only minimal impacts to riparian woodland are proposed as part of this Project, and as there is a relatively large amount of this vegetation type in the vicinity, this species is not anticipated to be impacted.

6.11 Roosting Bats

Trees throughout the BRA Project Area are habitat for various special-status bats species. If special-status bats were roosting in trees to be removed by Project construction, they could be injured or killed during the removal.

6.12 Individual Native Tree Impacts

RFE prepared a tree impact exhibit based on an arborist survey conducted by Sierra Nevada Arborists (**Attachment H**). Seven trees meeting the criteria of Protected Trees are slated for removal and have a combined DBH of 157 inches. An eighth native tree meets the DBH requirements, but was rated as poor (90% dead), and is therefore not considered a Protected Tree (**Table 6**).

Table 6. Summary of Project Tree Impacts

Tag No.	Common Name	Species	Multi-Stems (inches)	Total DBH (inches)	Dripline (feet)	Vigor
1	Interior Live Oak	*Quercus wislizeni*	14, 16, 25	55	29	Fair
7	Blue Oak	*Quercus douglasii*		6	8	Fair
8	Blue Oak	*Quercus douglasii*	4, 4, 6	14	10	Fair
13	Blue Oak	*Quercus douglasii*		11	15	Fair
103	Interior Live Oak	*Quercus wislizeni*		26	28	Fair
104	Interior Live Oak	*Quercus wislizeni*	5, 6, 6	17	20	Fair
105	Interior Live Oak	*Quercus wislizeni*	14, 14	28	30	Fair
106	*Pacific Willow*	*Salix lucida*	*8, 10, 11*	*29*	*14*	*Poor – 90% dead*

Protected trees remaining onsite could be subject to construction-related impacts as a result of work within their Protected Zone.

6.13 Oak Woodland Impacts

In accordance with the Interim Guidelines, impacts to individual native trees within any oak woodland areas that are less than two acres in total size are to be assessed and mitigated under the provisions of the Tree Ordinance. Likewise, trees within impact areas that are less than one acre in size are to be assessed and mitigated under the provisions of the Tree Ordinance. Therefore, impacts to native trees will be assessed as individual tree impacts under the Tree Ordinance.

7.0 MITIGATION FOR IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES

The following are mitigation measures that are often required by CEQA lead agencies for impacts to sensitive biological resources that may be associated with construction of the Project.

7.1 Aquatic Resources

1. The Project Applicant shall apply for a Section 404 permit from the U.S. Army Corps of Engineers for impacts to Waters of the U.S. (Waters). Waters that will be impacted shall be replaced or rehabilitated on a "no-net-loss" basis. Habitat restoration, rehabilitation, and/or replacement shall be at a location and by methods acceptable to the USACE.
2. The Applicant shall apply for a Section 401 water quality certification from the RWQCB, and adhere to the certification conditions.
3. The Applicant shall apply for a Section 1600 Lake or Streambed Alteration Agreement from CDFW. The information provided will include a description of all of the activities associated with the Project, not just those closely associated with the drainages and/or riparian vegetation. Impacts will be outlined in the application and are expected to be in substantial conformance with the impacts to biological resources outlined in this document. Impacts for each activity will be broken down by temporary and permanent, and a description of the proposed mitigation for biological resource impacts will be outlined per activity and then by temporary and permanent. Information regarding Project-specific drainage and hydrology changes resulting from Project implementation will be provided as well as a description of storm water treatment methods. Minimization and avoidance measures will be proposed as appropriate and may include preconstruction species surveys and reporting, protective fencing around avoided biological resources, worker environmental awareness training, seeding disturbed areas adjacent to open space areas with native seed, and installation of project-specific storm water BMPs. Mitigation may include restoration or enhancement of resources on- or off-site, purchase habitat credits from an agency-approved mitigation/conservation bank, off-site, working with a local land trust to preserve land, or any other method acceptable to CDFW.

7.2 Water Quality

As discussed in Section 1.1.5 (Drainage and Stormwater Management), the applicant has contracted RFE to prepare a preliminary drainage study and stormwater quality plan for the Project (RFE 2018). To mitigate for potential impacts to water quality, the applicant will comply with the recommendations of this report.

Proposed development may cause additional stormwater pollution that must be mitigated for the 2-year, 24-hour storm event before runoff leaves the site per the WPSWQDM. Proposed development will require hydromodification for the 2-year, 24-hour storm event before runoff leaves the site per the WPSWQDM.

RFE designed the drainage improvements per the standards of the Placer County SWMM and Placer Land Development Manual with underground storm drain pipes designed to convey peak flows expected during the design (10-year, 24-hour) storm event. RFE evaluated the peak downstream impacts in the unnamed tributary to Dry Creek from the project peak flows for the 10-year, 25-year, 50-year, 100-year, and 500-year design storm and found that there will not be any negative impacts.

RFE also designed bioretention planters to intercept and treat runoff prior to overland discharge into the unnamed tributary of Dry Creek. RFE designed these measures to meet the requirements of the WPSWQDM. The site design measures and treatment BMPs required for stormwater quality mitigation prove to be adequate to meet the hydromodification requirements of the WPSWQDM for the 2-year,24-hour storm event.

The project will use a combination of downspout disconnection and bio-retention to treat the project impervious surfaces (building roofs, driveways, and roads). The lot grading for this project assumes Type A drainage to the front of the lot without the use of subdrains. Therefore, downspouts from the future houses can be disconnected from the underground system, meaning runoff will flow overland through the lots before reaching street curb and gutters. Runoff from the roads and from the residential lots that does not infiltrate into the ground within the lots will flow into bioretention planters located adjacent to the roadways – in most cases, at the intersections. Stormwater that overflows the bioretention planters will enter the on-site underground storm drainage system. **Attachment B** is a figure provided by RFE summarizing drainage improvements.

Additionally, the project will minimize impacts to water quality through the implementation of appropriate BMPs during construction, which may include the following:

- All exposed soils and other fills will be permanently stabilized at the earliest practicable date with the use of hydroseeding and/or other means of revegetation or erosion control.
- The applicant will need to apply for a Clean Water Act Section 401 water quality certification from the Central Valley Regional Water Quality Control Board (RWQCB) and will comply with the terms and conditions (including erosion and sediment controls) specified by the RWQCB.

- Temporary erosion control measures (such as silt fences, staked straw bales, and temporary revegetation) will be employed for disturbed areas. No disturbed surfaces will be left without erosion control measures in place during the winter and spring months.
- A spill prevention and countermeasure plan shall be developed which would identify proper storage, collection and disposal measures for potential pollutants used onsite. The plan will also require the proper storage, handling, use, and disposal of petroleum products.
- Construction activities shall be scheduled to minimize land disturbance during peak runoff periods and to the immediate area required for construction. Soil conservation practices shall be completed during the fall or winter to reduce erosion during spring runoff. Existing vegetation will be retained where possible. To the extent feasible, grading activities shall be limited to the immediate area required for construction.
- Surface water runoff shall be controlled by directing flowing water away from critical areas and by reducing runoff velocity. Diversion structures such as terraces, dikes, and ditches shall collect and direct runoff water around vulnerable areas to prepared drainage outlets. Surface roughening, berms, check dams, hay bales, or similar devices shall be used to reduce runoff velocity and erosion.
- Sediment shall be contained when conditions are too extreme for treatment by surface protection. Temporary sediment traps, filter fabric fences, inlet protectors, vegetative filters and buffers, or settling basins shall be used to detain runoff water long enough for sediment particles to settle out. The applicant will store, cover, and isolate construction materials, including topsoil and chemicals, to prevent runoff losses and contamination of groundwater.
- Topsoil removed during construction shall be carefully stored. Berms shall be placed around topsoil stockpiles to prevent runoff during storm events.
- Fuel and vehicle maintenance areas will be established away from all drainage courses and will be designed to control runoff.
- Disturbed areas shall be revegetated after completion of construction activities.

7.3 Special-Status Plant Species

Special-status plant surveys conducted throughout the Project Area in 2018 were negative, but given enough time, plants may become established in areas where suitable habitat exists. Therefore, if Project construction does not commence prior to the spring of 2021, another round of special-status plant surveys shall be conducted in areas proposed for impact prior to commencement of construction. If no special-status plant species are found, no further mitigation would be required. If special-status plants are found and will be impacted, mitigation for those impacts will be determined during consultation with the County. If the plant found is a perennial such as Sanford's arrowhead or big-scale balsamroot, then mitigation could consist of digging up the plant and transplanting into a suitable avoided area on-site prior to construction. If the plant found is an annual such as dwarf downingia, then mitigation could consist of collecting seed-bearing soil and spreading into a suitable constructed wetland at a mitigation site (as placing soil into an avoided wetland on-site would be considered fill).

7.4 Nesting Raptors and Other Birds

The following nest survey requirements apply if construction activities take place during the typical bird breeding/nesting season (typically February 1 through September 1):

7.4.1 Swainson's Hawk

A targeted Swainson's hawk nest survey shall be conducted throughout all accessible areas within ¼ mile of the proposed construction area no later than 14 days prior to construction activities. If active Swainson's hawk nests are found within ¼ mile of a construction area, construction shall cease within ¼ mile of the nest until a qualified biologist (Project Biologist) determines that the young have fledged, or it is determined that the nesting attempt has failed. If the Applicant desires to work within ¼ mile of the nest, the Applicant shall consult with CDFW and the County to determine if the nest buffer can be reduced. The Project Applicant, the Project biologist, the County, and CDFW shall collectively determine the nest avoidance buffer, and what (if any) nest monitoring is necessary. If an active Swainson's hawk nest is found within the Project site prior to construction and is in a tree that is proposed for removal, then the Project Applicant shall implement additional mitigation recommended by a qualified biologist based on CDFW guidelines and obtain any required permits from CDFW.

7.4.2 Burrowing Owls

A targeted burrowing owl nest survey shall be conducted of all accessible areas within 500 feet of the proposed construction area within 14 days prior to construction activities utilizing 60 foot transects as outlined in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) (Staff Report). If an active burrowing owl nest burrow (i.e., occupied by more than one adult owl, and/or juvenile owls are observed) is found within 250 feet of a construction area, construction shall cease within 250 feet of the nest burrow until a qualified biologist (Project Biologist) determines that the young have fledged or it is determined that the nesting attempt has failed. If the Applicant desires to work within 250 feet of the nest burrow, the Applicant shall consult with CDFW and the County to determine if the nest buffer can be reduced. During the non-breeding season (late September through the end of January), the Applicant may choose to conduct a survey for burrows or debris that represent suitable nesting habitat for burrowing owls within areas of proposed ground disturbance, exclude any burrowing owls observed, and collapse any burrows or remove the debris in accordance with the methodology outlined in the Staff Report.

7.4.3 Other Birds

A pre-construction nesting bird survey shall be conducted by a qualified biologist on the project site and within a 500-foot radius of proposed construction areas, where access is available, no more than three (3) days prior to the initiation of construction. If there is a break in construction activity of more than two (2) weeks then subsequent surveys shall be conducted.

If active raptor nests, not including Swainson's hawk, or a tricolored blackbird nesting colony are found, no construction activities shall take place within 500 feet of the nest until the young have fledged. If active songbird nests are found, a 100-foot no disturbance buffer will be established. These no-disturbance buffers may be reduced if a smaller buffer is proposed by the Project Biologist and approved by the County (and CDFW if it is a tricolored blackbird nesting colony) after taking into consideration the natural history of the species of bird nesting, the proposed activity level adjacent to the nest, habituation to existing or ongoing activity, and nest concealment (are there visual or acoustic barriers between the proposed activity and the nest). A qualified biologist can visit the nest as needed to determine when the young have fledged the nest and are independent of the site or the nest can be left undisturbed until the end of the nesting season.

7.4.4 Survey Report

A report summarizing the survey(s), including those for Swainson's hawk and burrowing owls, shall be provided to the Placer County Development Review Committee (DRC) and CDFW within 30 days of the completed survey and is valid for one construction season. If no nests are found, no further mitigation is required.

7.4.5 Changes to Buffers and Completion of Nesting

Should construction activities cause a nesting bird do any of the following in a way that would be considered a result of construction activities: vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop this agitated behavior. The exclusionary buffer will remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the County.

Construction activities may only resume within the buffer zone after a follow-up survey by the Project Biologist has been conducted and a report has been prepared indicating that the nest (or nests) are no longer active, and that no new nests have been identified.

7.5 Loss of Foraging Habitat

7.5.1 Swainson's Hawk

Approximately 23.3 acres of annual brome grassland within the Project Area that represents suitable foraging habitat for Swainson's hawks will be impacted during construction of the proposed Project (**Figure 7**). These impacts shall be mitigated through purchase and conservation of similar habitat as follows:

Prior to Project construction, a qualified biologist shall conduct a review of Swainson's hawk nest data available in the CNDDB and contact CDFW to determine if they have any additional nest data. If desired by the Project proponent, the biologist may conduct a survey of these nests to determine if they are still present. The biologist shall provide the County with a summary of his/her findings. If it is determined that

the project site is within 10 miles of an active Swainson's hawk nest (an active nest is defined as a nest with documented Swainson's hawk use within the past 5 years), the Applicant will mitigate for the loss of suitable Swainson's hawk foraging habitat by implementing one of the below measures:

- Active nest identified within 1 mile of the project site: One acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat developed. Protection shall be via purchase of mitigation bank credits or other land protection mechanism acceptable to the County.
- Active nest identified within 5 miles (but greater than 1 mile) of the project site: 0.75 acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat developed. Protection shall be via purchase of mitigation bank credits or other land protection mechanism acceptable to the County.
- Active nest identified within 10 miles (but greater than 5 miles) of the project site: 0.5 acre of suitable foraging habitat shall be protected for each acre of suitable foraging habitat developed. Protection shall be via purchase of mitigation bank credits or other land protection mechanism acceptable to the County.

7.5.2 Burrowing Owl

If nesting burrowing owls are found during the pre-construction survey, mitigation for the permanent loss of burrowing owl foraging habitat (defined as all areas of suitable habitat within 250 feet of the active burrow) shall be accomplished at a 1:1 ratio. The mitigation provided shall be consistent with recommendations in the Staff Report and may be accomplished within the Swainson's Hawk Foraging Habitat mitigation area if burrowing owls have been documented utilizing that area, or if the Project Biologist, the County, and CDFW collectively determine that the area is suitable.

7.5.3 Other Birds

Approximately 23.3 acres of annual brome grassland within the Project Area that represents suitable foraging habitat for northern harrier, white-tailed kite, bald eagle, and loggerhead shrike will be impacted by construction of the proposed Project (**Figure 7**). Though mitigation for impacts to foraging habitat for these species is not required pursuant to CEQA, the purchase of Swainson's hawk foraging habitat credits as described above in Section 7.5.1 will offset the loss of foraging habitat for these and other birds.

7.6 Roosting Bats

To protect bats potentially roosting within the Project Area, the following mitigation measures shall be implemented:

- If potential roosting habitat in the form of cavities in trees is identified within the areas proposed for development, the biologist will survey the potential roosting habitat during the active season (generally April through October or from January through March on days with temperatures in excess of 50 degrees F) to determine presence of roosting bats. These surveys are recommended

to be conducted utilizing methods that are considered acceptable by bat experts. Methods may include evening emergence surveys, acoustic surveys, inspecting potential roosting habitat with fiberoptic cameras or a combination thereof;

- If cavity roosting bats are identified within any of the trees planned for removal, or if presence is assumed, trees should be removed outside of pup season only on days with temperatures in excess of 50 degrees F. Pup season is generally during the months of May through August. Two-step tree removal shall be utilized under the supervision of the qualified biologist. Two-step tree removal involves removal of all branches of the tree that do not provide roosting habitat on the first day, and then the next day cutting down the remaining portion of the tree;
- To avoid potential impacts to foliage-roosting bat species (as opposed to the above-described cavity roosting species), it is recommended that all other tree removal be conducted from January through April on days with temperatures in excess of 50 degrees F.

7.7 Native Trees

The Project would require the removal of seven Protected Trees with a combined DBH of 157 inches. To mitigate for the loss of Protected Trees, the Project Applicant shall obtain a Tree Permit from Placer County's Planning Services Division prior to Improvement Plan approval. The Planning Services Division shall review the Tree Permit application as well as the final site improvement plans and determine the precise mitigation requirement at that time. The fee shall be paid into the Placer County Tree Preservation Fund at $100 per inch DBH removed or impacted.

The Tree Permit may be obtained as part of the improvement plan approval, or as a separate permit. To support the approval process, an Arborist Report will need to be prepared by an arborist or registered professional forester that includes specific information on the locations, condition, potential impacts of the activity, recommended actions and mitigation measures for all Protected Trees that could be impacted by the activity. Additionally, all Protected Trees within 50 feet of any development activity must be depicted on the site plan map. The site plan map shall indicate the exact location of the base and dripline of all Protected Trees within the project areas. A survey of the exact locations of the Protected Trees should be conducted by a California professional engineer or California professional land surveyor. The tree numbers should be shown on both the site plan and grading plan. The base elevation of each Protected Tree shall be shown on the grading plan.

Efforts should be made to save trees where feasible. This may include the use of retaining walls, planter islands, pavers, or other techniques commonly associated with tree preservation. The Improvement Plans shall include a note and show placement of temporary construction fencing around trees to be saved: The Applicant shall install a four foot tall, brightly colored (typically orange), synthetic mesh material fence (or an equivalent approved by the DRC at the following locations prior to any construction equipment being moved on-site or any construction activities taking place: at the limits of construction; outside the Protected Zone of all single-trunk trees six inches DBH or greater, or 10 inches DBH aggregate for multi-trunk trees; within 50 feet of any grading, road improvements, underground utilities, or other development activity; or as otherwise shown on the Tentative Subdivision Map.

No development of the Project, including grading, shall be allowed until this requirement is satisfied. Any encroachment within these areas, including Protected Zones of trees to be saved, must first be approved by the DRC. Temporary fencing shall not be altered during construction without written approval of the DRC. No grading, clearing, storage of equipment or machinery, etc., may occur until a representative of the DRC has inspected and approved all temporary construction fencing.

7.8 Worker Environmental Awareness Training

Prior to any ground-disturbing or vegetation-removal activities, a Worker Environmental Awareness Training (WEAT) shall be prepared and administered to the construction crews. The WEAT will include the following: discussion of the state and federal Endangered Species Act, the Clean Water Act, the Project's permits and CEQA documentation, and associated mitigation measures; consequences and penalties for violation or noncompliance with these laws and regulations; identification of special-status wildlife, location of any avoided Waters of the U.S; hazardous substance spill prevention and containment measures; and the contact person in the event of the discovery of a special-status wildlife species. The WEAT will also discuss the different habitats used by the species' different life stages and the annual timing of these life stages. A handout summarizing the WEAT information shall be provided to workers to keep on-site for future reference. Upon completion of the WEAT training, workers will sign a form stating that they attended the training, understand the information presented and will comply with the regulations discussed. Workers will be shown designated "avoidance areas" during the WEAT training; worker access should be restricted to outside of those areas to minimize the potential for inadvertent environmental impacts. Fencing and signage around the boundary of avoidance areas may be helpful.

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Figures

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Figure 2. California Natural Diversity Database Occurrences of Plant Species

Figure 3. California Natural Diversity Database Occurrences of Wildlife Species and Critical Habitat

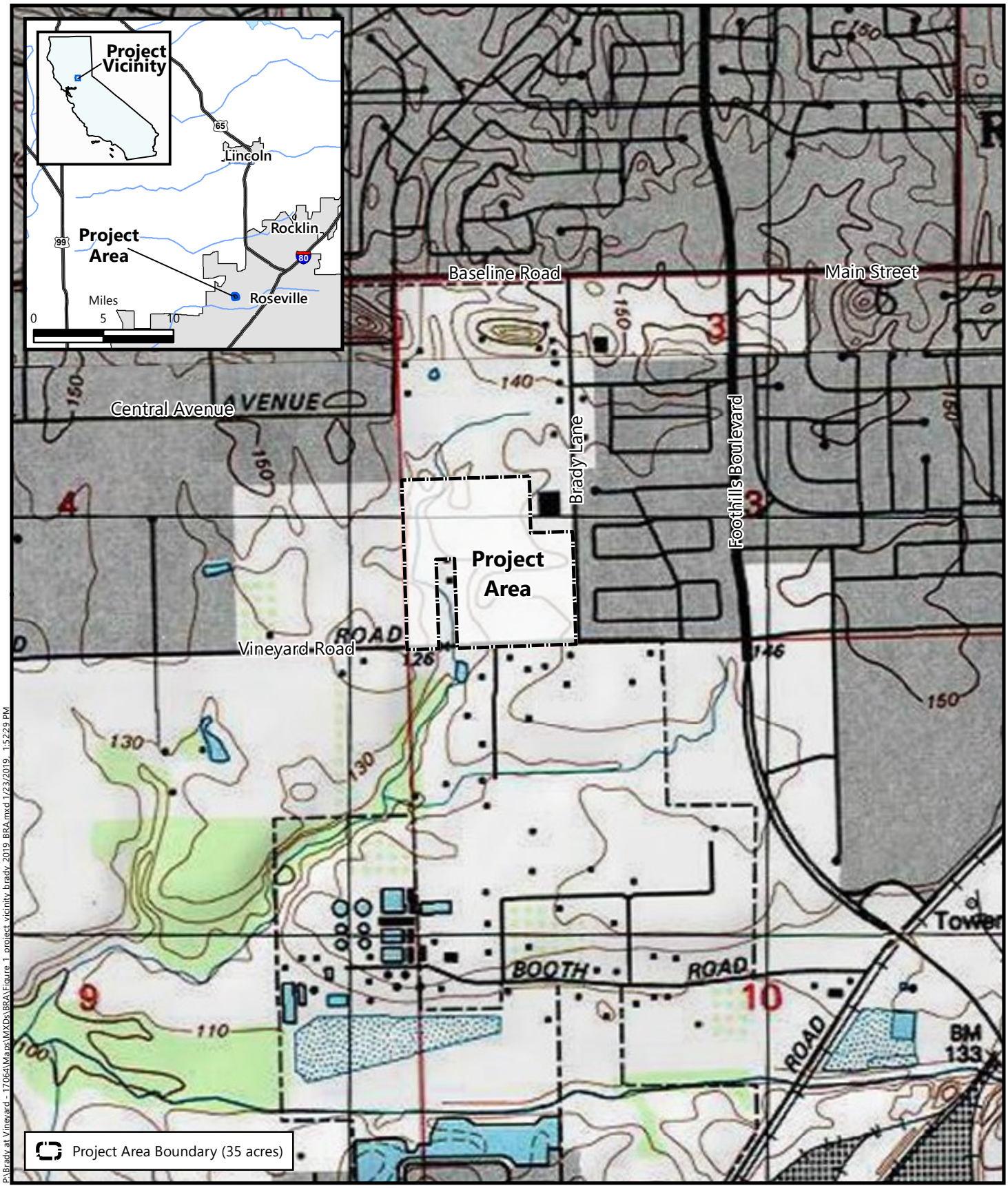
Figure 4. Vegetation Communities

Figure 5. Aquatic Resources

Figure 6. NRCS Soils

Figure 7. Vegetation Community Impacts

Figure 8. Imapacts to Aquatic Resources



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Source: United States Geologic Survey, 1992.
Section 3, Township 10 North, Range 6 East, MDB&M
"Roseville" and "Citrus Heights," California 7.5-Minute Topographic Quadrangles
Latitude: 38.745672; Longitude:-121.316204

Figure 1
Site and Vicinity

Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING

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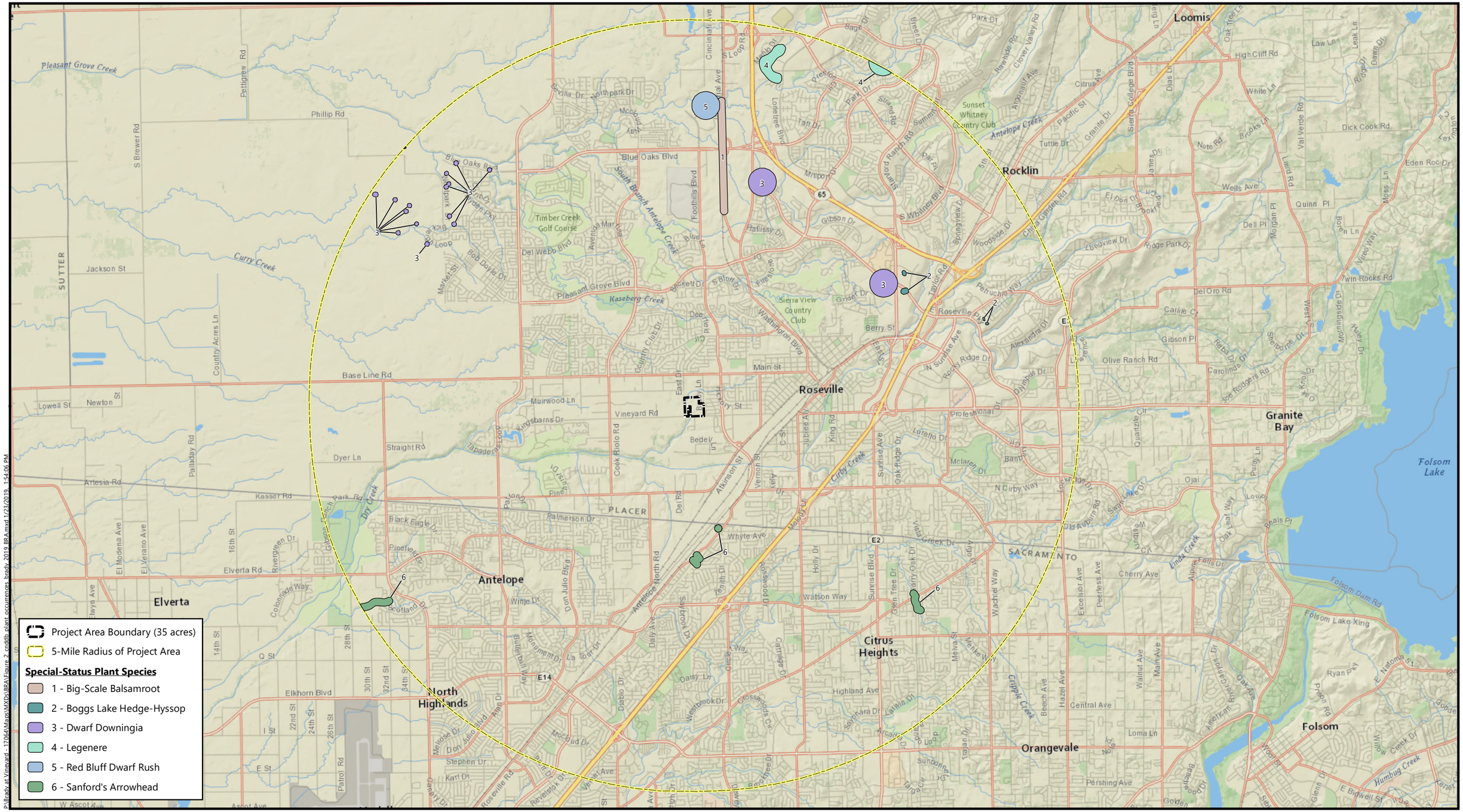

Source: *California Department of Fish and Wildlife*, August, 2018
Basemap Source: *National Geographic* and *ESRI*

Figure 2
California Natural Diversity Database Occurrences of Plant Species

Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING

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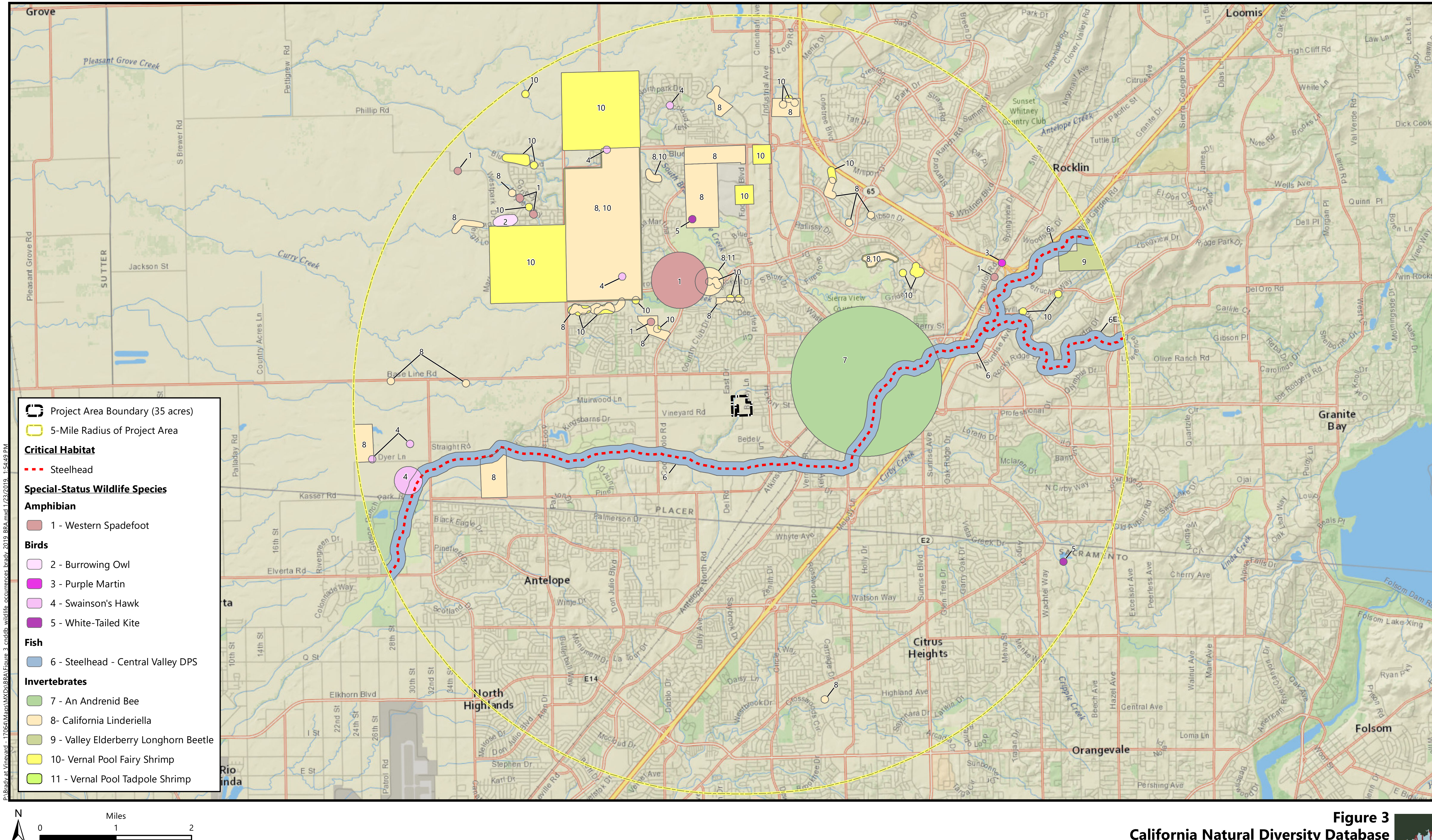

Source: *California Department of Fish and Wildlife*, August 2018
Basemap Source: *National Geographic* and *ESRI*

Figure 3
California Natural Diversity Database Occurrences of Wildlife Species and Critical Habitat
Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING

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Feet

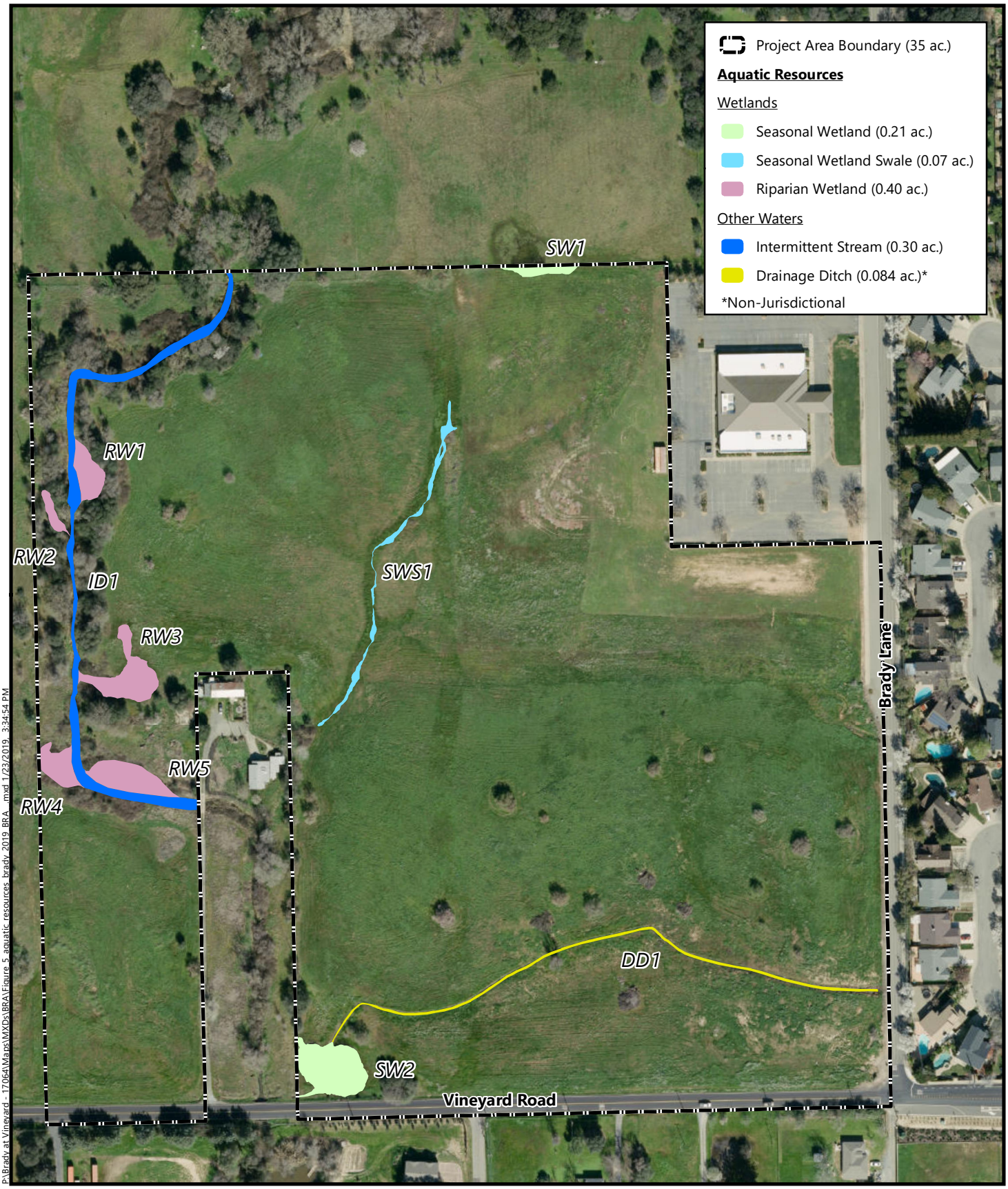
0 100 200

Aerial Source: *USDA, National Agriculture Imagery Program*, 1 March 2017

Figure 4
Vegetation Communities

Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING



P:\Brady at Vineyard - 17064\Maps\MXDs\BRA\Figure 5_aquatic resources_brady_2019_BRA_.mxd 1/23/2019, 3:34:54 PM

N

Feet

0 100 200

Aerial Source: *USDA, National Agriculture Imagery Program*, 1 March 2017

Figure 5
Aquatic Resources

Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING

N

Feet

0 100 200

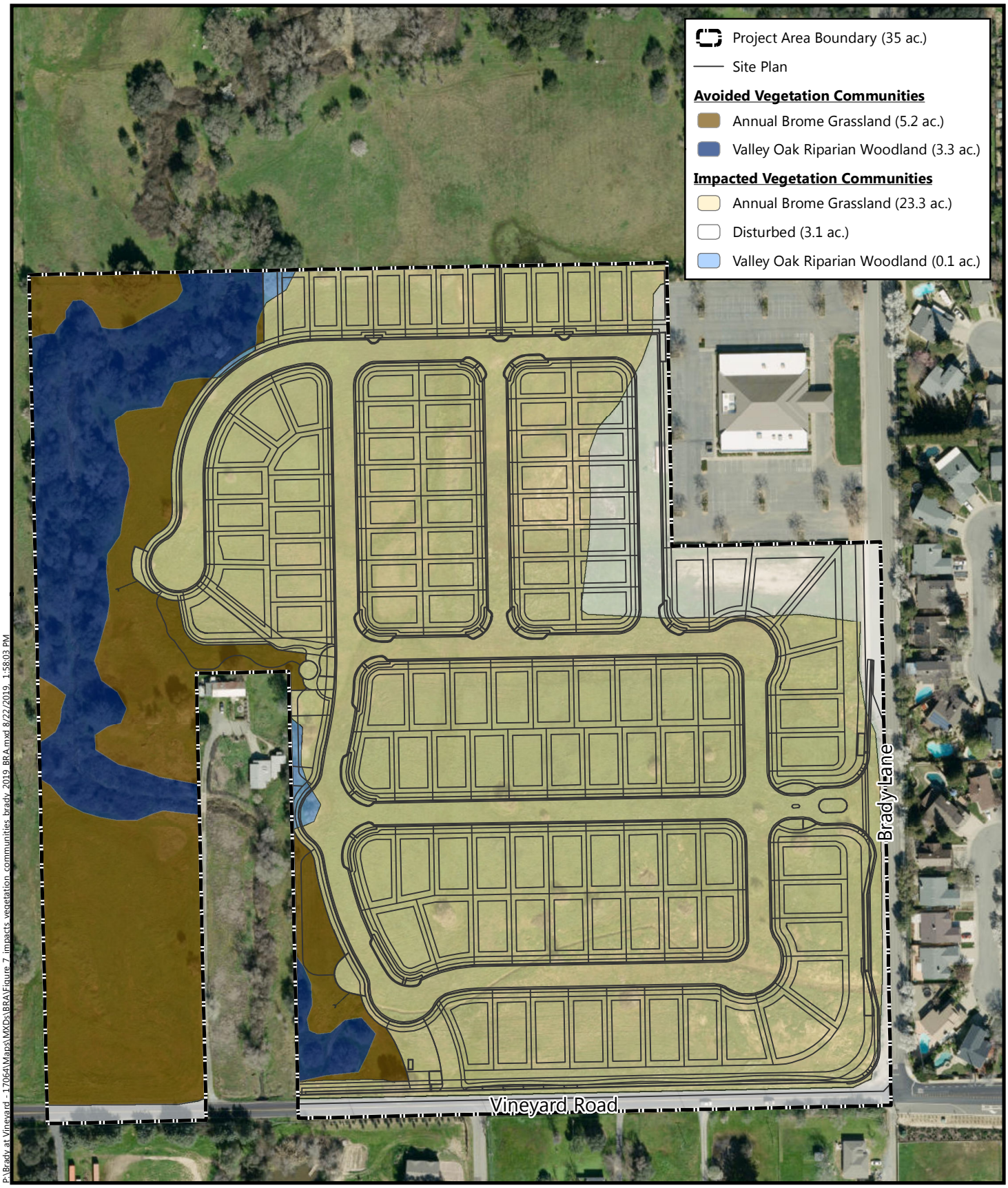
Soil Data Source: *USDA, SSURGO Data for Soil Survey, Placer County, California, Western Part.* 2017

Aerial Source: *USDA, National Agriculture Imagery Program,* 1 March 2017

Figure 6
NRCS Soils

Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING



N

Feet
0 100 200

Figure 7
Vegetation Community Impacts

Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING

Aerial Source: City of Roseville, 1 March 2017

PROJECT AREA AQUATIC RESOURCES						
Waters of the U.S.	**Directly Impacted**		**Avoided**		**Total Acreage**	**Total Linear Feet**
	(acres)	**(linear feet)**	**(acres)**	**(linear feet)**		
Riparian Wetland	0	-	0.40	-	0.40	-
Seasonal Wetland	0.08	-	0.13	-	0.21	-
Seasonal Wetland Swale	0.07	-	0.00	-	0.07	-
Intermittent Stream	0	-	0.30	1,180	0.30	1,180
Total:	**0.15**	**0**	**0.83**	**1,180**	**0.98**	**1,180**
Non-Jurisdictional	**Directly Impacted**		**Avoided**		**Total Acreage**	**Total Linear Feet**
	(acres)	**(linear feet)**	**(acres)**	**(linear feet)**		
Drainage Ditch	0.084	945	0	0	0.084	945
Project Area Total:	**0.234**	**945**	**0.83**	**1180**	**1.064**	**2,125**

P:\Brady at Vineyard - 17061\Maps\MXDs\BRA\Figure 8 Impacts aquatic resources brady 2019 BRA.mxd 8/22/2019, 1:48:08 PM

N

Feet
0 80 160

Aerial Source: City of Roseville, 1 March 2017

Figure 8
Impacts to Aquatic Resources

Brady at Vineyard
Placer County, California

MADRONE ECOLOGICAL CONSULTING

Attachments

Attachment A. Vesting Tentative Subdivision Map

Attachment B. Stormwater Quality Shed Map

Attachment C. IPaC Trust Resource Report for the Project Area

Attachment D. CNPS Inventory of Rare and Endangered Plants Query for the "Citrus Heights, California" USGS Quadrangle and Eight Surrounding Quadrangles

Attachment E. Wildlife List

Attachment F. USACE PJD Verification E-mail and Figure for Study Area 1 (SPK-2017-00976)

Attachment G. USACE AJD Verification Letter and Figure for Study Area 2 (SPK-2017-00976)

Attachment H. Tree Removal Exhibit – RFE Engineering, Inc.

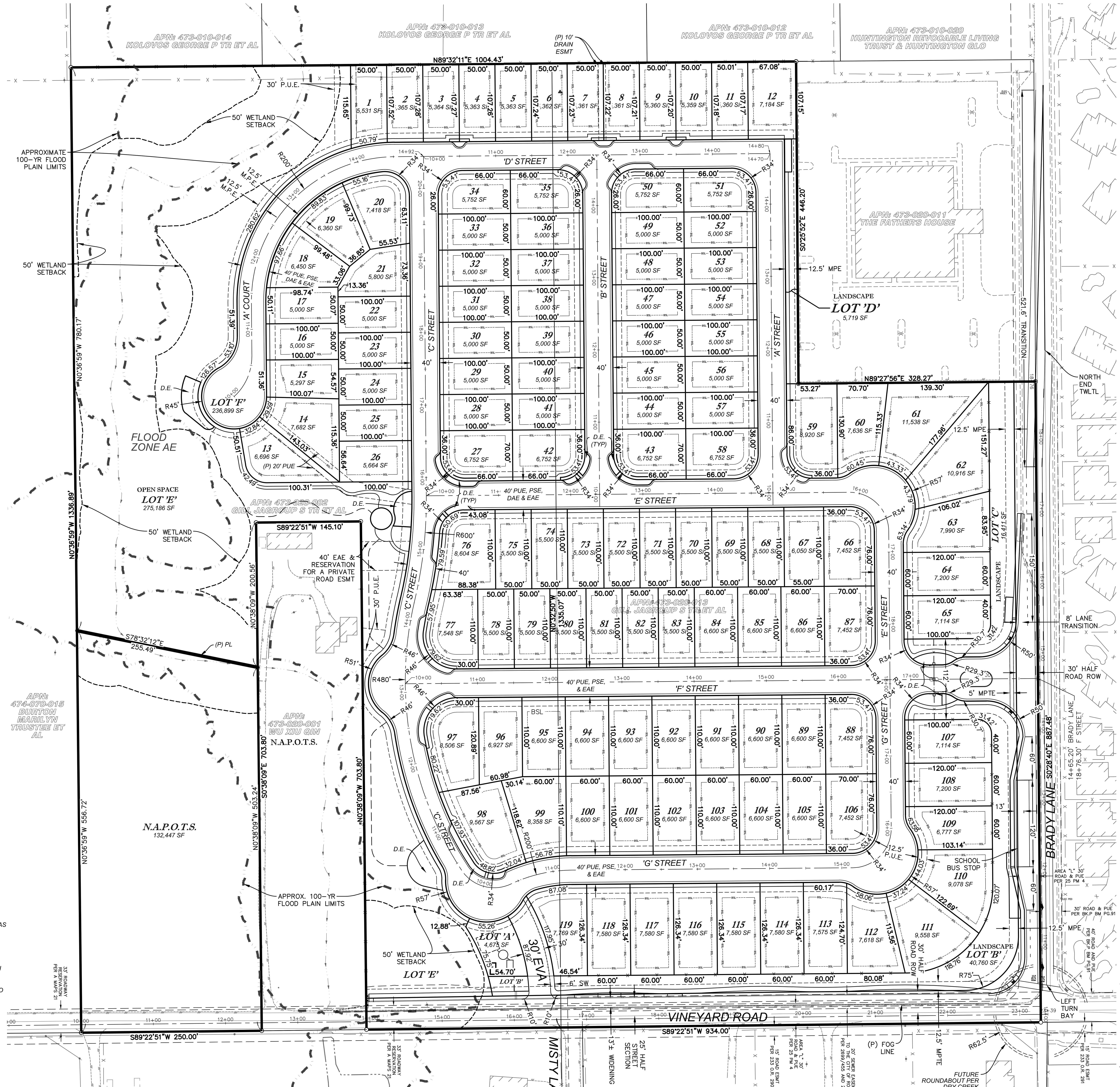
Attachment A

Vesting Tentative Subdivision Map

VESTING TENTATIVE SUBDIVISION MAP

BRADY VINEYARD SUBDIVISION

BRADY LANE AND VINEYARD ROAD PLN18-00234
PLACER COUNTY, CA
(PORTION OF APN'S 473-020-002 AND 013)



LEGEND:

○	DIMENSION POINT - NOTHING FOUND OR SET
	CENTERLINE
	BOUNDARY
	PROPOSED LOT LINE
	ROW
	EASEMENT
----BSL----	SET BACK LINE
— x — x —	FENCE
	100-YR FLOOD PLAIN LIMITS
	STORM DRAIN MANHOLE
	SEWER MANHOLE
	JOINT POLE
	STREET LIGHT
	SIGN
	TEMPORARY SITE BENCHMARK
	CONTROL POINT

ASSESSOR'S PARCEL NO.:

PLACER COUNTY APN'S: 473-020-002 AND 013

USE:

VACANT

ZONING:

CURRENT: RS-AG-B-20; O; F-DR

PROPOSED: RS-B-X-5,000; O; F-DR

SETBACKS:

FRONT: 20'
SIDE (EXTERIOR): 7.5'
REAR: 10'

JURISDICTION:

PLACER COUNTY

EXISTING EASEMENTS:

AS SHOWN ON MAP.

PROPOSED EASEMENTS:

AS SHOWN ON MAP.

OWNER'S :

JAGROOP S. GILL, ET AL AS TO APN NO. 473-020-002, AND
SUKHBIR BRAR, ET AL AS TO APN NO. 473-020-013

CONTACT: SUKHBIR "STEVE" BRAR
2351 SUNSET BOULEVARD
ROCKLIN, CA 95765
PHONE: (916) 749-0967

ENGINEER:

SHAWN SOMERS, P.E.
RFE ENGINEERING, INC.
2260 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
PH: 916-772-7800

SURVEYOR:

WILLIAM F. McKINNEY, PLS
RFE ENGINEERING, INC.
2260 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
PH: 916-772-7800

FLOOD PLAIN:

ZONE AE
FEMA MAP NUMBER: 06061C1027H
EFFECTIVE DATE: NOVEMBER 2, 2018

AREA OF FLOOD PLAIN WITHIN PROPERTY: 3.82 ACRES.

FLOOD PLAIN SHOWN HEREON IS A COMBINATION OF FEMA BASE FLOOD ELEVATIONS (BFEs) - FROM THE FEMA STUDY TO BE RELEASED 11/2/2018 - AND THE FLOOD ELEVATIONS FROM THIS PROJECT'S HEC-RAS MODEL (WHICHEVER IS HIGHER AT A GIVEN STREAM STATION).

SERVICE REPRESENTATIVES

SERVICE	COMPANY	PHONE
GAS	PG&E	800-468-4743
ELECTRIC	PG&E	800-468-4743
TELEPHONE	AT&T	888-944-0447
WATER	CAL AM WATER	916-568-4210
SEWER	PLACER COUNTY CSA 28, ZONE 173 (DRY CREEK)	530-886-4916
DRAINAGE	PLACER COUNTY	530-889-7528
U.S.A.	UNDERGROUND SERVICE ALERT	800-227-2600
FIRE	CAL FIRE	530-745-3575
CABLE	WAVE BROADBAND	866-928-3123
PLANNING	PLACER COUNTY	530-745-3084
ELEMENTARY SCHOOL	DRY CREEK ELEMENTARY	916-770-8800
HIGH SCHOOL	ROSEVILLE JOINT UNION HIGH SCHOOL	916-786-2051
POLICE	PLACER COUNTY SHERIFF'S DEPARTMENT	530-889-7800
SOLID WASTE	RECOLOGY	530-885-3735

NOTES:

1) THE BRADY SUBDIVISION HOMEOWNER'S ASSOCIATION IS RESPONSIBLE FOR PRIVATE DRAINAGE EASEMENT MAINTENANCE.

2) THE PROPOSED ROADSIDE BIO-RETENTION AREAS ARE TO BE OWNED AND MAINTAINED BY BRADY SUBDIVISION HOMEOWNER'S ASSOCIATION.

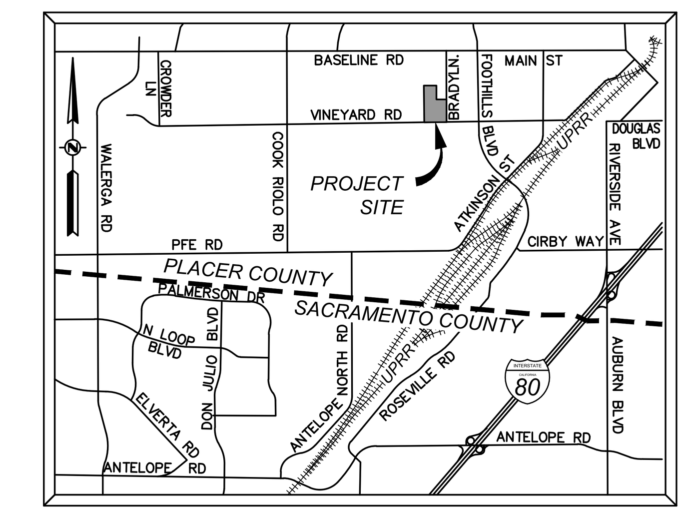
3) RESIDENTIAL DRIVEWAY LENGTHS SHALL BE A MINIMUM OF 20 FEET IN LENGTH AS MEASURED FROM THE EDGE OF PAVEMENT OF THE ROAD TO THE FACE OF THE GARAGE DOOR.

4) LETTERED LOT 'A' IS FOR THE SEWER LIFT STATION.

5) LETTERED LOTS 'B', 'C', & 'D' ARE LOTS FOR LANDSCAPE PURPOSES. LOT 'E' IS AN OPEN SPACE LOT.

6) LETTERED LOT 'F' IS A DESIGNATED PRIVATE ROAD EASEMENT APPURTENANT TO LOTS 1-119 AND A PUBLIC UTILITY EASEMENT, PUBLIC SUPPORT EASEMENT, EMERGENCY ACCESS EASEMENT AND PRIVATE DRAINAGE ACCESS EASEMENT.

811
Know what's below.
Call before you dig.
or (800) 227-2600



VICINITY MAP
NOT TO SCALE

SHEET INDEX:

TM1 VESTING TENTATIVE SUBDIVISION MAP
TM2 VESTING TENTATIVE SUBDIVISION MAP SECTIONS
C1 EXISTING CONDITIONS PLAN
C2 PRELIMINARY GRADING PLAN (OVERALL)
C3 PRELIMINARY GRADING PLAN (NORTH HALF)
C4 PRELIMINARY GRADING PLAN (SOUTH HALF)
C5 PRELIMINARY UTILITY PLAN (NORTH HALF)
C6 PRELIMINARY UTILITY PLAN (SOUTH HALF)
C7 PRELIMINARY SITE PLAN WITH AERIAL
C8 PRELIMINARY STORM WATER QUALITY PLAN (BMPs)
C9 PRELIMINARY TREE REMOVAL PLAN
C10 PRELIMINARY TREE INVENTORY

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE UNINCORPORATED AREA IN COUNTY OF PLACER, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

TRACT ONE:
ALL THAT REAL PROPERTY SITUATED, LYING AND BEING IN SECTION 3, TOWNSHIP 10 NORTH, RANGE 6 EAST, M.D.B.& M., AND FURTHER DESCRIBED AS BEING A PORTION OF LOT 4 AND LOT 8, AS SHOWN ON THE OFFICIAL MAP OF THE "HICKEN TRACT", ON FILE IN THE OFFICE OF THE COUNTY RECORDER AND MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS, TO-WIT: BEGINNING AT A POINT MARKING THE SOUTHWEST CORNER OF THE HEREIN DESCRIBED PARCEL AND WHICH POINT OF BEGINNING IS FURTHER DESCRIBED AS BEING THE SOUTHWEST CORNER OF THE AFORESAID SECTION 3; AND RUNNING THENCE FROM SAID POINT OF BEGINNING NORTH 89° 33' 45" EAST, 250 FEET ALONG THE SOUTH LINE OF SAID SECTION 3; THENCE RUNNING NORTH 00° 27' 15" WEST, 703.80 FEET; THENCE NORTH 89° 33' 45" EAST, 145.10 FEET; THENCE SOUTH 00° 27' 15" EAST, 703.80 FEET TO A POINT ON THE SOUTHERLY LINE OF SAID SECTION 3; THENCE ALONG THE SOUTHERLY LINE OF SECTION 3, NORTH 89° 33' 45" EAST, 273.09 FEET; THENCE NORTH 00° 54' 00" WEST, 1319.92 FEET TO A POINT ON THE NORTH LINE OR THE AFOREMENTIONED "HICKEN TRACT"; THENCE ALONG THE SAID NORTH LINE OF THE "HICKEN TRACT", SOUTH 89° 25' 30" WEST, 668.80 FEET TO THE NORTHWEST CORNER OF LOT 4 OF THE SAID "HICKEN TRACT", WHICH POINT IS FURTHER DESCRIBED AS BEING COMMON TO THE SOUTHEAST CORNER OF LOT 31, AS SHOWN ON THE OFFICIAL AMENDED MAP OF "ROSECREST SUBDIVISION", ON FILE IN THE OFFICE OF THE COUNTY RECORDER; AND RUNNING THENCE SOUTH 00° 54' 45" EAST, 1318.36 FEET TO THE POINT OF BEGINNING. EXCEPTING THEREFROM THE AMOUNT TAKEN FOR COUNTY ROAD ALONG THE SOUTH LINE.

TRACT TWO:
PARCEL 2 AS SHOWN ON THAT CERTAIN PARCEL MAP FILED IN BOOK 25 OF PARCEL MAPS, AT PAGE 4, OFFICIAL RECORDS OF PLACER COUNTY, SAID PARCEL 2 BEING GRANTED TO R & S TRUST, ET. AL. PER DOCUMENT NO. 2016-0049026, OFFICIAL RECORDS OF PLACER COUNTY, TOGETHER ALL OF THE LAND DESCRIBED IN THE GRANT DEED TO IMPACT CHURCH PER DOCUMENT NO. 2011-0003666, OFFICIAL RECORDS OF PLACER COUNTY, BEING A PORTION OF PARCEL 1 AS SHOWN ON SAID PARCEL MAP, SAID PARCELS BEING A PORTION OF FRACTIONAL SECTION 3, T. 10N., R. 6E., M.D.M., EXCEPTING THEREFROM ALL THAT PORTION OF SAID DOC #2011-0003666 BEING DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE NORTH LINE OF SAID PARCEL 1, SAID POINT ALSO BEING ON THE NORTH LINE OF SAID DOC #2011-0003666, FROM WHICH POINT, THE NORTHWEST CORNER OF SAID PARCEL 1 BEARS SOUTH 89° 31' 52" WEST, 338.39 FEET; THENCE FROM SAID POINT OF BEGINNING, ALONG THE NORTH LINE OF SAID DOC #2011-0003666, THE FOLLOWING THREE (3) COURSES AND DISTANCES: (1) NORTH 89° 31' 52" EAST, 51.76 FEET; (2)SOUTH 00° 28' 19" EAST, 17.33 FEET; AND (3) NORTH 89° 27' 41" EAST, 276.15 FEET, TO THE NORTHEAST CORNER OF SAID DOC #2011-0003666, SAID POINT ALSO BEING ON THE EAST LINE OF SAID PARCEL 1; THENCE ALONG THE EAST LINE OF SAID DOC #2011-0003666 AND THE EAST LINE OF SAID PARCEL 1, SOUTH 00° 28' 19" EAST, 428.80 FEET; THENCE LEAVING SAID EAST LINE, SOUTH 89° 27' 36" WEST, 328.27 FEET; THENCE NORTH 00° 25' 31" WEST, 446.20 FEET, TO THE POINT OF BEGINNING.
THE ABOVE DESCRIPTION ENCOMPASSES ONE LEGAL PARCEL OF LAND AS APPROVED BY MINOR BOUNDARY LINE ADJUSTMENT NO.
PLN16-00287, RECORDED APRIL 6, 2017 AS INSTRUMENT NO. 2017-0025722-00, OF OFFICIAL RECORDS
APN: 473-020-007-000 AND PORTION 473-020-009-000 (OLD)
473-020-013-000 (NEW NOT YET ASSESSED)

PROPOSED LOT AREAS

TOTAL SIZE:	32.04 AC
FLOODPLAIN AREA:	3.82 AC
ROW DEDICATION:	1.57 AC
NET BUILDABLE AREA:	26.65 AC
OPEN SPACE LOT 'E':	6.34 AC
LANDSCAPE LOTS:	1.44 AC (LOTS 'B', 'C', & 'D')
PARK AREA:	1.25 AC (WITHIN OPEN SPACE LOT 'E')

DATE OF AERIAL SURVEY:

POINT CO.
DATE: JUNE 6, 2017

ABBREVIATIONS

AC	ASPHALT CONCRETE
DAE	DRAINAGE ACCESS EASEMENT
DE	DRAINAGE EASEMENT
DI	DROP INLET
BSL	BUILDING SETBACK LINE
CL	CENTERLINE
EAE	EMERGENCY ACCESS EASEMENT
(E)	EXISTING
EP	EDGE OF PAVEMENT
FL	FLOW LINE
GR	GRATE
INV	INVERT
IRR	IRRIGATION
MPE	MULTI-PURPOSE EASEMENT
MPTE	MULTI-PURPOSE TRAIL EASEMENT
NAP	NOT A PART
OH	OVER HEAD POWER LINES
PSE	PUBLIC SUPPORT EASEMENT
PUE	PUBLIC UTILITY EASEMENT
(P)	PROPOSED
ROW	RIGHT-OF-WAY
SDMH	STORM DRAIN MANHOLE
SSMH	SANITARY SEWER MANHOLE
TBC	TOP BACK OF CURB
UG	UNDERGROUND
WA	WATER
WM	WATER METER

ENGINEER'S STATEMENT:

THIS VESTING TENTATIVE SUBDIVISION MAP ACCURATELY CONFORMS TO SECTION 16.12.040 OF PLACER COUNTY LAND DEVELOPMENT MANUAL.

SIGNATURE DATE

REGISTERED PROFESSIONAL ENGINEER SHAWN B. SOMERS No. C 80625 Exp. 3-31-21 CIVIL STATE OF CALIFORNIA

SURVEYOR'S STATEMENT:

I HEREBY STATE THAT THIS TENTATIVE MAP ACCURATELY DEPICTS THE LOCATION, WIDTH, TYPE, AND RECORDING INFORMATION OF ALL RECORD EASEMENTS LISTED IN THE PRELIMINARY TITLE REPORT ISSUED BY PLACER TITLE COMPANY, ORDER NO. P-170175 DATED MARCH 30, 2017.

SIGNATURE DATE

PROFESSIONAL LAND SURVEYOR WILLIAM F. McKINNEY No. 4715 Exp. 09-30-21 STATE OF CALIFORNIA

NO.	REVISION	DATE	BY	APPR'D
	PRELIMINARY PLAN DRAFT - NOT FOR CONSTRUCTION			

	BY	CHECK
DESIGN	RFE	RFE
DRAWN	XXX	RFE
QUANT.		

0 1 2 ORIGINAL SCALE IS IN INCHES

RFE ENGINEERING, INC
Civil Engineers • Planners • Surveyors
2260 Douglas Blvd, Suite 160, Roseville, CA 95661
Ph: 916-772-7800 Fax: 916-772-7804
www.RFEengineering.com

SUKHBIR BRAR
2351 SUNSET BOULEVARD,
ROCKLIN, CA 95765
PH: (916) 749-0967

VESTING TENTATIVE SUBDIVISION MAP
BRADY VINEYARD SUBDIVISION
PLACER COUNTY, CA
(APN'S 473-020-002 & 013) PLN18-00234

Drawing — of — | Sheet TM1 of Total 12

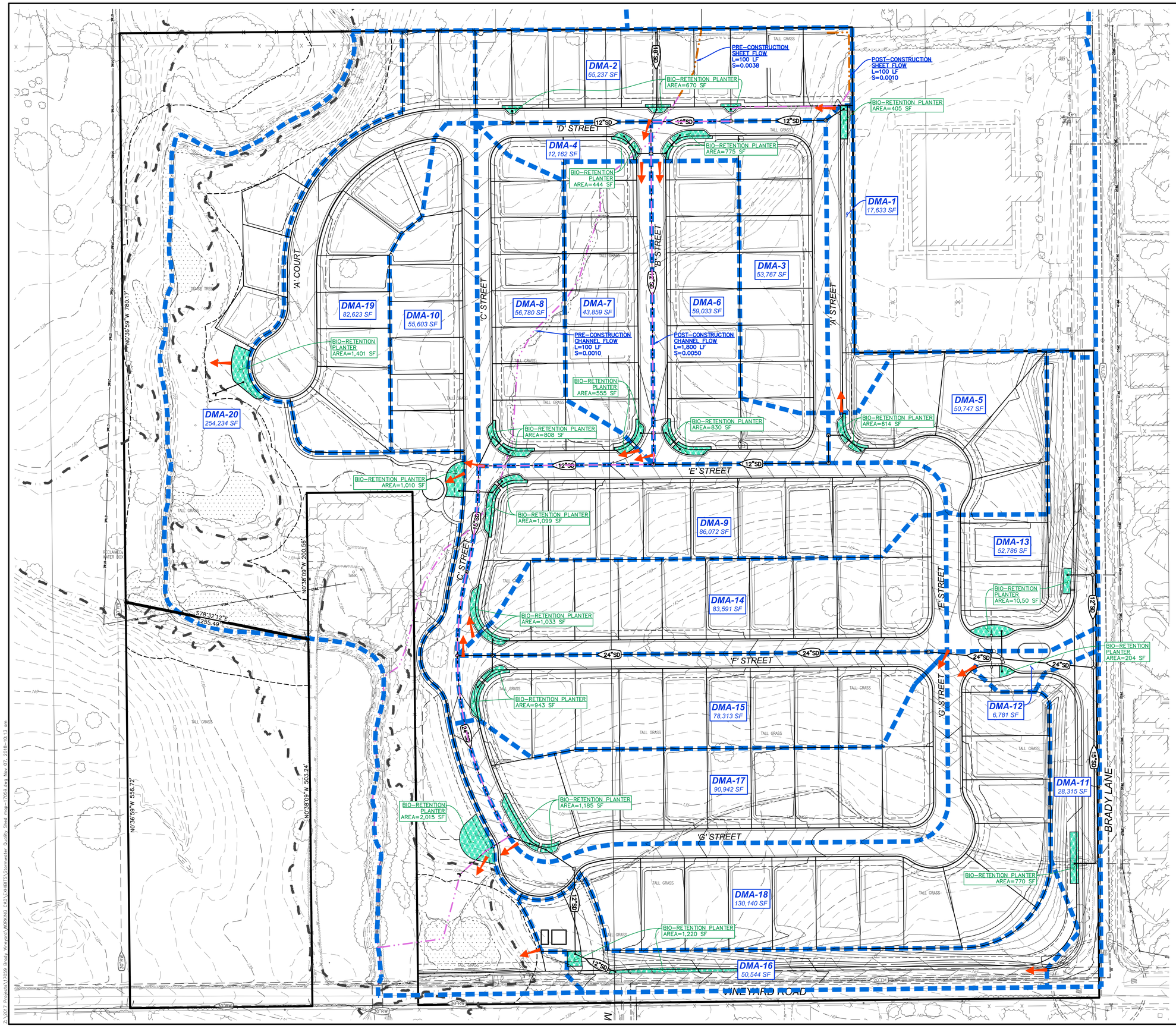
08/01/2019

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

Z:\2017 Projects\17059 Brady Vineyard\WORKING CAD\PRELIMINARY\Brady Vineyard_TSM.dwg Aug 01, 2019-03:33 pm

Attachment B

Stormwater Quality Shed Map



LEGEND

DRAINAGE AREA DESIGNATIONS AND AREA	DMA-3 53,767 SF
DRAINAGE AREA BOUNDARY	
SHEET FLOW	
CHANNEL FLOW	
OVERLAND RELEASE	
FLOW NODE ID	D1
PIPE ID	SD1
POND LIMITS	
BIORETENTION	
WETLAND AREA	

APPRV'D	BY	DATE	REVISION

BY	CHECK NO.
DESIGN SBS	RFE
DRAWN SBS	RFE
QUANT.	

0 1 2 ORIGINAL SCALE IS IN INCHES

PRELIMINARY NOT FOR CONSTRUCTION

SUKHBIR BRAR
2351 SUNSET BOULEVARD,
ROCKLIN, CA 95765
PH: (916) 749-0967

RFE ENGINEERING, INC.
Civil Engineers • Planners • Surveyors
2260 Douglas Blvd. Suite 160, Roseville, CA 95661
Ph: 916-772-1700 Fax: 916-772-7904
www.RFEengineering.com

BRADY VINEYARD SUBDIVISION
B RADY LANE AND VINEYARD ROAD,
PLACER COUNTY, CA
(APNS 417-020-002 & 013) FLN16-00234

STORMWATER QUALITY SHED MAP

Drawing SM1 of Total 1

11/07/2018

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

Z:\2017 Projects\17059 Brady Vineyard\WORKING CAD\EXHIBITS\Stormwater Quality Shed map-17059.dwg Nov 07, 2018-10:13 am

Attachment C

IPaC Trust Resource Report for the Project Area

IPaC resource list

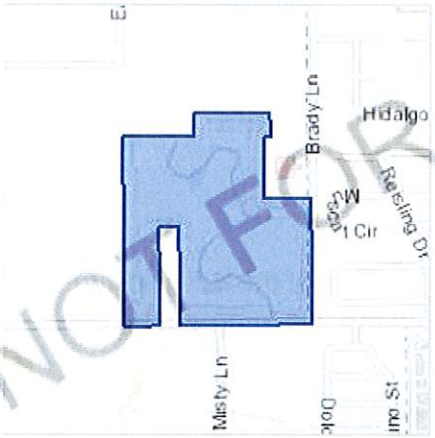
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Placer County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Reptiles

NAME	STATUS
Giant Garter Snake Thamnophis gigas No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

NOT FOR CONSULTATION

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOT FOR CONSULTATION

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment D

CNPS Inventory of Rare and Endangered Plants Query for the "Citrus Heights, California" USGS Quadrangle and Eight Surrounding Quadrangles Area

CNPS California Native Plant Society

Inventory of Rare and Endangered Plants

Plant List

14 matches found. *Click on scientific name for details*

Search Criteria

uads 3812174, 3812173, 3812172, 3812164, 3812163, 3812162, 3812154 3812153 and 3812152;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Chloropyron molle ssp. hispidum	hispid bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	1B.1	S1	G2T1
Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	Onagraceae	annual herb	May-Jul	4.2	S4	G4G5T4
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	2B.2	S2	GU
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	4.2	S3	G3
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	1B.2	S2	G2

Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	1B.2	S1	G2T1
Juncus leiospermus var. leiospermus	Red Bluff dwarf rush	Juncaceae	annual herb	Mar-Jun	1B.1	S2	G2T2
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	1B.1	S2	G2
Navarretia myersii ssp. myersii	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	1B.1	S2	G2T2
Navarretia nigelliformis ssp. nigelliformis	adobe navarretia	Polemoniaceae	annual herb	Apr-Jun	4.2	S3	G4T3
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	1B.1	S2	G2
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	1B.1	S1	G1
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	1B.2	S3	G3

Suggested Citation

California Native Plant Society, Rare Plant Program. 2018. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 30 June 2018].

- Search the Inventory
- Simple Search
- Advanced Search
- Glossary

- Information

- About the Inventory
- About the Rare Plant Program
- CNPS Home Page
- About CNPS
- Join CNPS

- Contributors
- The Calflora Database
- The California Lichen Society
- California Natural Diversity Database
- The Jepson Flora Project
- The Consortium of California Herbaria
- CalPhotos

- Questions and Comments
- rareplants@cnps.org Contact us

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Attachment E

Wildlife List

Wildlife Species Observed within the Brady at Vineyard BRA Study Area

Species Name	Common name
Reptiles and Amphibians	
Pseudacris regilla	Pacific tree frog
Sceloporus occidentalis	Western fence lizard
Birds	
Accipiter cooperii	Cooper's hawk
Agelaius phoeniceus	Red-winged blackbird
Antigone canadensis	Sandhill crane
Aphelocoma californica	California scrub jay
Ardea alba	Great egret
Branta canadensis	Canada goose
Buteo jamaicensis	Red-tailed Hawk
Cathartes aura	Turkey vulture
Columbia livia	Rock dove
Charadrius vociferous	Killdeer
Corvus brachyrhynchos	American crow
Elanus leucurus	White-tailed kite
Euphagus cyanocephalus	Brewer's blackbird
Falco sparverius	American kestrel
Mimus polyglottos	Northern mockingbird
Passerculus sandwichensis	Savannah sparrow
Sayornis nigricans	Black phoebe
Tyrannus verticalis	Western kingbird
Zenaida macroura	Mourning dove
Zonotrichia leucophrys	White-crowned sparrow
Mammals	
Lepus californicus	Black-tailed hare
Mephitis mephitis	Striped skunk
Otospermophilus beecheyi	California ground squirrel

Attachment F

USACE PJD Verification E-mail and Figure for Study Area 1 (SPK-2017-00976)

Matt Hirkala

From: Fisher, Leah M CIV USARMY CESPK (US) <Leah.M.Fisher@usace.army.mil>
Sent: Wednesday, February 14, 2018 9:15 AM
To: Sarah Vonderohe
Cc: Matt Hirkala
Subject: Notification of AR verification for the Brady at Vineyard, Study Area 1, Placer County, CA (SPK-2017-00976) (UNCLASSIFIED)
Attachments: brady_vineyard_ARD_2017_PJD.PDF

CLASSIFICATION: UNCLASSIFIED

Dear Ms. VonderOhe:

We are responding to your November 17, 2017, request for verification of an aquatic resources delineation for the Brady at Vineyard, Study Area 1. The approximately 28-acre site is located near Dry Creek and is west of Brady Lane and north of Vineyard Road in Section 3, Township 10 N, Range 6 E, MDB&M, Latitude 38.7455356°, Longitude -121.316222°, Placer County, California.

Based on available information, we concur with your aquatic resources delineation for Study Area 1, which consists of approximately 0.30 acre of intermittent stream, 0.07 acre of seasonal wetland swale, 0.21 acre of seasonal wetland, and 0.40 acre of riparian wetland, as depicted on the attached November 1, 2017 (revised February 13, 2018), Aquatic Resources Delineation for Brady at Vineyard, Study Area 1 drawing, prepared by Madrone Ecological Consulting.

This verification letter does not constitute a determination of jurisdiction (JD). A JD is not required to process an Nationwide Permit verification or application for a Department of the Army permit. If you do not require a JD for the site, your permit application/verification request may be processed sooner.

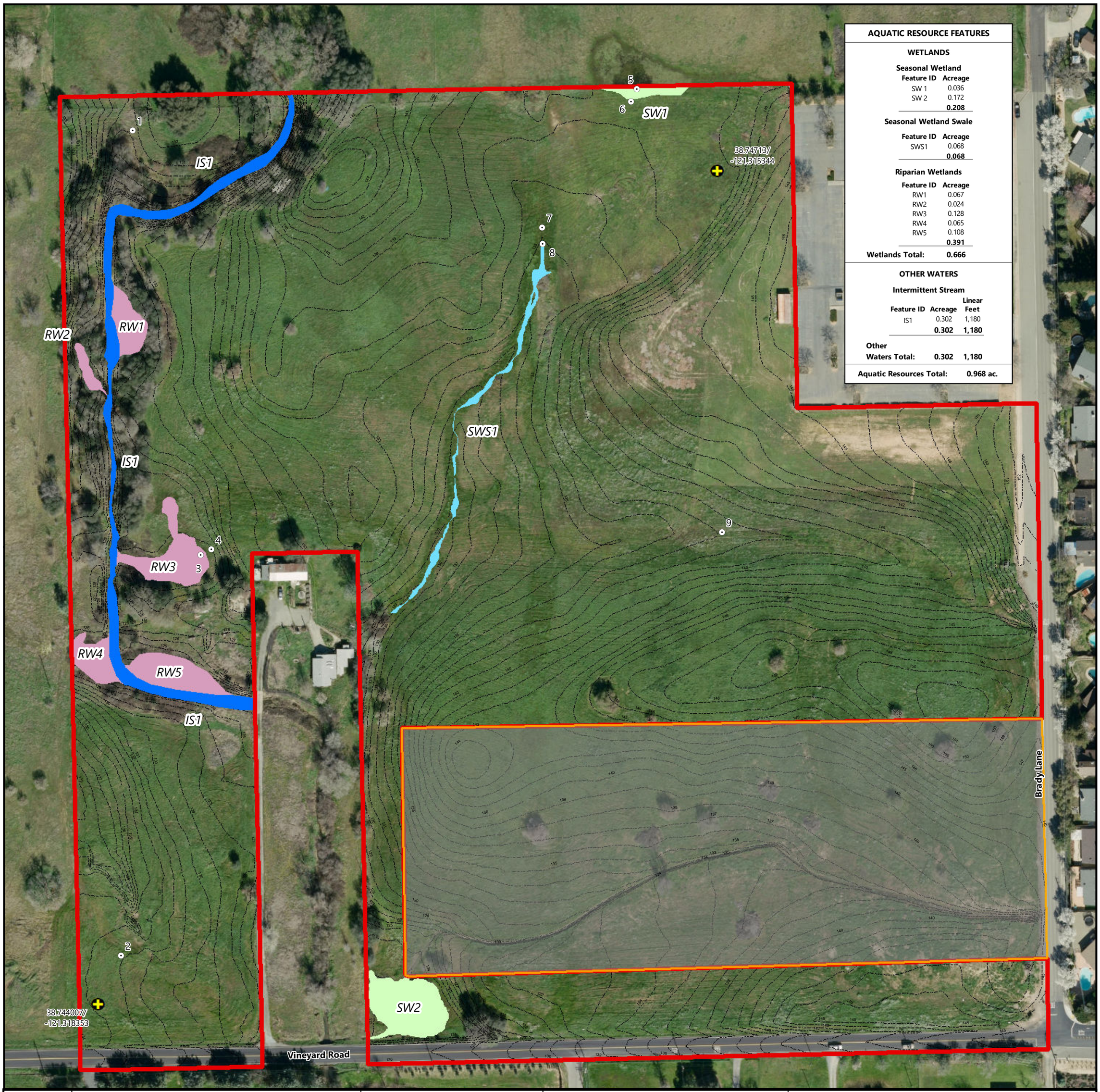
Please refer to identification number SPK-2017-00976 in any correspondence concerning this project. If you have any questions, please contact me at the address below.

v/r, Leah

Leah M. Fisher
Senior Regulatory Project Manager
United States Army Corps of Engineers
Sacramento District, Regulatory Division
1325 J Street, Room 1350
Sacramento, California 95814-2922
Leah.M.Fisher@usace.army.mil
Office: 916.557.6639 | Fax: 916.557.7803 Customer Service Hours: 9:00am to 3:00pm M-F

We want your feedback! Take the survey:
http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

Information on our Regulatory Program:
http://www.spk.usace.army.mil/Missions/Regulatory.aspx



AQUATIC RESOURCE FEATURES

WETLANDS

Seasonal Wetland

Feature ID	Acreage
SW 1	0.036
SW 2	0.172
	0.208

Seasonal Wetland Swale

Feature ID	Acreage
SWS1	0.068
	0.068

Riparian Wetlands

Feature ID	Acreage
RW1	0.067
RW2	0.024
RW3	0.128
RW4	0.065
RW5	0.108
	0.391

Wetlands Total: 0.666

OTHER WATERS

Intermittent Stream

Feature ID	Acreage	Linear Feet
IS1	0.302	1,180
	0.302	**1,180**

Other Waters Total: 0.302 1,180

Aquatic Resources Total: 0.968 ac.

Project Name: Brady at Vineyard
Map Title: Aquatic Resources Delineation, Study Area 1
Path: P:\Brady at Vineyard - 170564\Maps\brady_vineyard_ARD_2017_PID.mxd
Date Map Prepared: 1 November 2017
Date Map Revised: 13 February 2018

Notes:
Scale: 1 inch = 100 feet
Coordinate System: CORS96 California State Plane, Zone II (FIPS 0402)
Datum: NAD83
Vertical Datum: NAVD 88
Projection: Lambert Conformal Conic
Aerial Base: USDA, National Agriculture Imagery Program
Aerial Base Flown: 1 March 2017
Date Map Prepared: 1 November 2017
Date Map Revised: 13 February 2018
Map Prepared by: N. Bente, M. Hirkaka
Delineation Performed by: M. Hirkaka
Definitions:
ac. = acre
USDA = United States Department of Agriculture

N

0 50 100 200
Feet

Prepared For:

Sukhbir Brar
2351 Sunset Boulevard
Suite 170-280
Rocklin, California 95746

Study Area 1 (28 ac.)
Study Area 2 (7 ac.)
Reference Point (decimal degrees, NAD83)
1-Foot Topographic Contour

Aquatic Resources

Wetlands
Riparian Wetland (0.391 ac.)
Seasonal Wetland (0.208 ac.)
Seasonal Wetland Swale (0.068 ac.)

Other Waters
Intermittent Stream (0.302 ac.)

Aquatic Resources Delineation
Brady at Vineyard
Study Area 1

Placer County, California

MADRONE ECOLOGICAL CONSULTING
8421 Auburn Boulevard, Suite 248
Citrus Heights, California 95610
(916) 822.3220 | www.madroneeco.com

Attachment G

USACE AJD Verification Letter and Figure for Study Area 2 (SPK-2017-00976)

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

March 20, 2018

Regulatory Division (SPK-2017-00976)

Mr. Sukhbir Brar
2351 Sunset Boulevard
Rocklin, California 95746

Dear Mr. Brar:

We are responding to your agent's November 17, 2017, request for an approved jurisdictional determination for the Brady at Vineyard site, Study Area 2. The approximately 7-acre study area is located near Dry Creek and is west of Brady Lane and north of Vineyard Road, in Section 3, Township 10 North, Range 6 East, Mount Diablo Baseline & Meridian, Latitude 38.7455356°, Longitude -121.316222°, Placer County, California.

Based on available information, we concur with your agent's aquatic resources delineation for Study Area 2, as depicted on the enclosed November 1, 2017, *Aquatic Resources Delineation, Brady at Vineyard, Study Area 2*, drawing, prepared by Madrone Ecological Consulting (enclosure 1).

The 0.084 acre of drainage ditch, identified as "DD1" on the enclosed drawing, was excavated wholly in and drains only uplands, and does not carry a relatively permanent flow of water. Therefore, this feature is not a water of the United States and is currently not regulated by the U.S. Army Corps of Engineers. Based upon this information, we have determined that there are no waters of the United States within Study Area 2.

We are enclosing a copy of the *Approved Jurisdictional Determination Form* for your site (enclosure 2).

This approved jurisdictional determination is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 Code of Federal Regulations (CFR) Part 331.

A *Notification of Appeal Process (NAP) and Request for Appeal (RFA) Form* is enclosed (enclosure 3). If you request to appeal this determination, you must submit a completed RFA form to the South Pacific Division Office at the following address: Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPD-PDO, 1455 Market Street, 2052B, San Francisco, California 94103-1399, Telephone: 415-503-6574, FAX: 415-503-6646.

In order for an RFA to be accepted by the Corps, we must determine that the form is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that the form was received by the Division Office within 60 days of the date of the NAP. It is not necessary to submit an RFA form to the Division Office unless you object to the determination in this letter.

We recommend that you provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This approved jurisdictional determination has been conducted to identify the limits of aquatic resources subject to U.S. Army Corps of Engineers jurisdiction under Section 404 of the Clean Water Act for the particular site identified in this request.

We appreciate feedback, especially about interaction with our staff and our processes.

Please refer to identification number SPK-2017-00976 in any correspondence concerning this project. If you have any questions, please contact me at our California North Section Office, Regulatory Division, U.S. Army Corps of Engineers, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at *Leah.M.Fisher@usace.army.mil*, or telephone at (916) 557-6639. For program information or to complete our Customer Survey, visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

Sincerely,

Leah M. Fisher
Senior Project Manager
California North Section

Enclosures

cc (w/enlc. 1):
Sarah VonderOhe, Madrone Ecological Consulting, svonderohe@MadroneEco.com
Robert Leidy, USEPA, leidy.robert@epa.gov
CA Regional Water Quality Control Board, Region 5, info5@waterboards.ca.gov
CA Department of Fish and Wildlife, North Central Region, R2Info@wildlife.ca.gov
Placer County, Planning Services Division, planning@placer.ca.gov

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mr. Sukhbir Brar	File No.: SPK-2017-00976	Date: March 20, 2018

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
→	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at *http://www.usace.army.mil/cecw/pages/reg_materials.aspx* or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

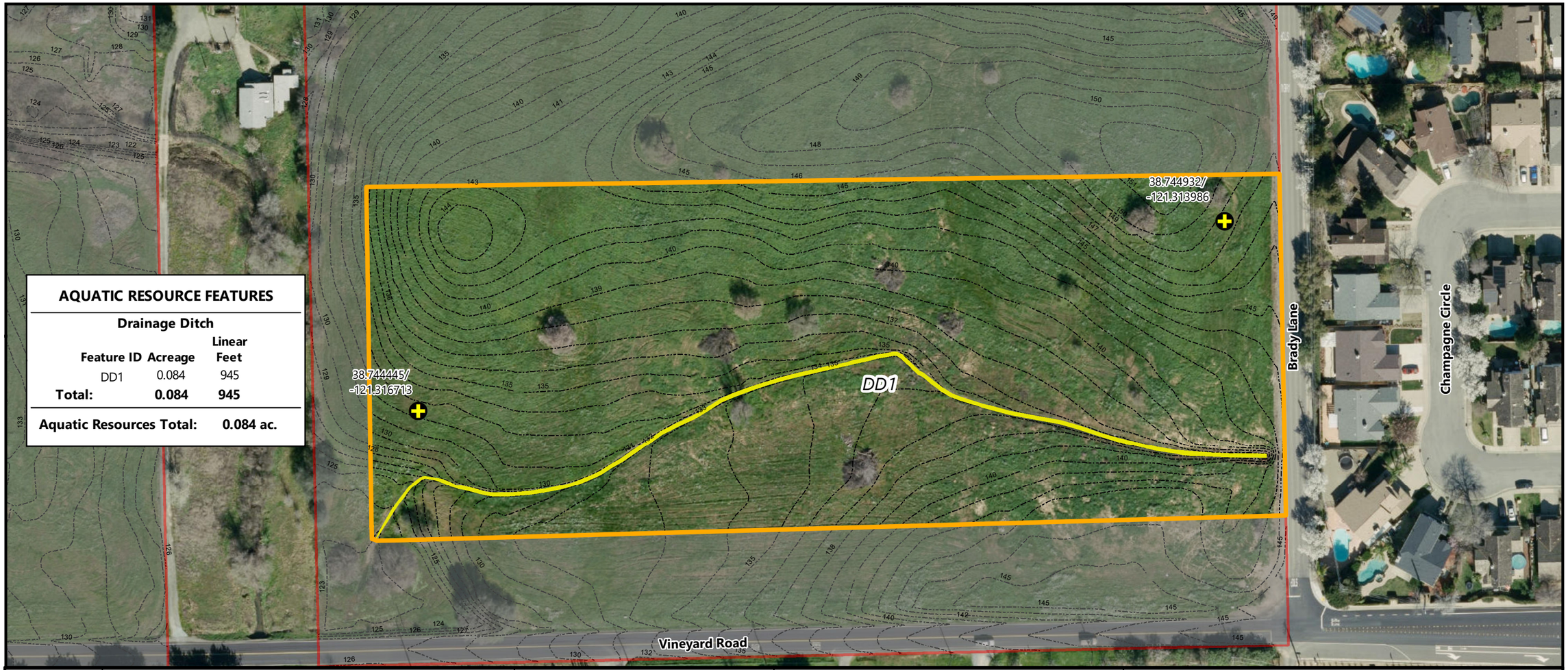
Leah M. Fisher
Senior Regulatory Project Manager
U.S. Army Corps of Engineers
Sacramento District
1325 J Street, Room 1350
Sacramento, California 95814-2922
Phone: (916) 557-6639, FAX 916-557-7803
Email: Leah.M.Fisher@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

Thomas J. Cavanaugh
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division
1455 Market Street, 2052B
San Francisco, California 94103-1399
Phone: 415-503-6574, FAX 415-503-6646)
Email: Thomas.J.Cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:



AQUATIC RESOURCE FEATURES

Drainage Ditch

Feature ID	Acreage	Linear Feet
DD1	0.084	945
Total:	**0.084**	**945**

Aquatic Resources Total: 0.084 ac.

Project Name: Brady at Vineyard
Map Title: Aquatic Resources Delineation, Study Area 2
Path: P:\Brady at Vineyard - 1706\4-Maps\brady_vineyard_ARD_2017_A1D.mxd
Date Map Prepared: 1 November 2017
Date Map Updated:

Notes:

Scale: 1 inch = 100 feet
Coordinate System: CORS96 California State Plane, Zone II (FIPS 0402)
Datum: NAD83
Vertical Datum: NAVD 88
Projection: Lambert Conformal Conic
Aerial Base: USDA, National Agriculture Imagery Program
Aerial Base Flown: 1 March 2017
Date Map Prepared: 1 November 2017
Map Prepared by: N. Bente, M. Hirkaka
Delineation Performed by: M. Hirkaka

Definitions:

ac. = acre
USDA = United States Department of Agriculture

N

0 50 100 200
Feet

Prepared For:

Sukhbir Brar
2351 Sunset Boulevard
Suite 170-280
Rocklin, California 95746

Study Area 2 (7 ac.)
Study Area 1 (28 ac.)
Reference Point (decimal degrees, NAD83)
1-Foot Topographic Contour

Aquatic Resources

Drainage Ditch (0.084 ac.)

Aquatic Resources Delineation
Brady at Vineyard
Study Area 2

Placer County, California

MADRONE ECOLOGICAL CONSULTING
8421 Auburn Boulevard, Suite 248
Citrus Heights, California 95610
(916) 822.3220 | www.madroneeco.com

Attachment H

Tree Removal Exhibit – RFE Engineering, Inc.

LEGEND

DESCRIPTION	EXISTING
TREE & DRIP	
TREE REMOVAL	
WETLAND AREA	
50' WETLAND SETBACK	
100-YEAR FLOOD PLAIN LIMITS	

APN: 473-010-014 KOLOVOS GEORGE P TR ET AL

APN: 473-010-013 KOLOVOS GEORGE P TR ET AL

APN: 473-010-012 KOLOVOS GEORGE P TR ET AL

APN: 473-010-020 HUNTINGTON REVOCABLE LIVING TRUST & HUNTINGTON GLO

APN: 473-020-011 THE FATHER'S HOUSE

APN: 473-020-002 GILL JABGROUP S TR ET AL

APN: 473-020-013 GILL JABGROUP S TR ET AL

APN: 474-020-01 S. BURTON HARLYN TRUSTEE ET AL

APN: 473-020-001 WU XIU QIN

APPROX. 100-YR FLOOD PLAIN LIMITS

FLOOD ZONE AE

50' WETLAND SETBACK

N.A.P.

N.A.P.O.T.S.

'A' COURT

'A' STREET

'B' STREET

'C' STREET

'D' STREET

'E' STREET

'F' STREET

'G' STREET

LOT 'A'

LOT 'B'

LOT 'C'

LOT 'D'

LOT 'E'

LOT 'F'

30' EVE

BRADY LANE

VINEYARD ROAD

MISTY LANE

1 INCH = 60 FEET

Know what's below. Call before you dig. or (800) 227-2600

DESIGN	SBS	RFE	
DRAWN	SBS	RFE	
QUANT.			

ORIGINAL SCALE IS IN INCHES 0 1 2

PRELIMINARY NOT FOR CONSTRUCTION

SUKHBIR BRAR
2351 SUNSET BOULEVARD,
ROCKLIN, CA 95765
PH: (916) 749-0967

RFE ENGINEERING, INC
Civil Engineers • Planners • Surveyors
2260 Douglas Blvd. Suite 160, Roseville, CA 95661
Ph: (916) 772-7700 Fax: (916) 772-7904
www.RFEengineering.com

BRADY SUBDIVISION
VINEYARD ROAD AND BRADY LANE,
PLACER COUNTY, CA
(APNs 473-020-002 & 013) PLN18-00234

TREE REMOVAL EXHIBIT

Drawing 1 of Total 2

10/12/2018

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

Z:\2017 Projects\17059 Brady Vineyard\WORKING CAD\EXHIBITS\Tree Removal Exhibit.dwg Oct 12, 2018-01:59 pm

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS	REMOVE
						RTCR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR			
1	Interior Live Oak	*(Quercus wislizeni)*	14,16,25	55	29	Fair	Fair	Fair	Fair	Fair	Fair	Forks 2' above grade; slightly above average amount of deadwood.	None at this time.	Remove
2	Interior Live Oak	*(Quercus wislizeni)*	4,6	10	7	Fair	Fair	Fair	Fair	Fair	Fair	Supporting a partially failed Willow tree.	None at this time.	
3	Interior Live Oak	*(Quercus wislizeni)*		7	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
4	Interior Live Oak	*(Quercus wislizeni)*		7	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
5	Pacific Willow	*(Salix lucida)*	14,16	30	35	Poor	Poor	Fair	Fair	Poor	Fair	Recent partial failure of the root system has left the tree lying on grade and in adjacent trees; slightly above average amount of deadwood.	None at this time.	
6	Interior Live Oak	*(Quercus wislizeni)*		17	17	Fair	Fair	Fair	Fair	Fair	Fair	Measured 2' above grade; trunk and some limbs are covered with dense poison oak growth.	***Remove the poison oak growth.***	
7	Blue Oak	*(Quercus douglasii)*		6	8	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	Remove
8	Blue Oak	*(Quercus douglasii)*	4,4,6	14	10	Fair	Fair	Fair	Fair	Fair	Fair	Forks at grade and 3' above grade; slightly above average amount of deadwood.	None at this time.	Remove
9	Interior Live Oak	*(Quercus wislizeni)*	8,9	17	30	Obscured	Obscured	Fair	Fair	Obscured	Fair	Tag on branch. Root collar and lower trunk not visible due to dense vegetation around the base of the tree; main stems grow one sided to the east and then turn downward.	***Clear surrounding vegetation and reevaluate.***	
10	Interior Live Oak	*(Quercus wislizeni)*	14,14,16	44	25	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Forks just above grade; callusing basal lower trunk wounds, various locations, with minor to moderate decay; weak attachments; out of balance south and east, with portions of the tree lying on grade; slightly above average amount of deadwood.	None at this time.	
11	Blue Oak	*(Quercus douglasii)*		11	10	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
12	Blue Oak	*(Quercus douglasii)*		23	28	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the southwest; slightly above average amount of deadwood.	None at this time.	
13	Blue Oak	*(Quercus douglasii)*		11	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	Remove
14	Interior Live Oak	*(Quercus wislizeni)*		6	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
15	Interior Live Oak	*(Quercus wislizeni)*		15	24	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
16	Interior Live Oak	*(Quercus wislizeni)*	6,7	13	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
17	Interior Live Oak	*(Quercus wislizeni)*		13	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly out of balance to the south; slightly above average amount of deadwood.	None at this time.	
18	Blue Oak	*(Quercus douglasii)*		6	7	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
19	Blue Oak	*(Quercus douglasii)*		6	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
20	Blue Oak	*(Quercus douglasii)*		10	16	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Southerly stem has wounding 7'-9' above grade; above average amount of deadwood.	None at this time.	
21	Blue Oak	*(Quercus douglasii)*		7	10	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
22	Blue Oak	*(Quercus douglasii)*	8,8	16	24	Obscured	Obscured	Poor to fair	Poor to fair	Obscured	Poor to fair	Root collar and lower trunk obscured by dense vegetation; partially over creek bank; some of the tree is lying prone on grade; above average amount of deadwood.	None at this time.	
23	Interior Live Oak	*(Quercus wislizeni)*		10	22	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Past partial failure of the root system has left the tree growing at an angle; out of balance to the south; above average amount of deadwood.	None at this time.	
24	Blue Oak	*(Quercus douglasii)*		7	14	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
25	Blue Oak	*(Quercus douglasii)*	4,6	10	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
26	Interior Live Oak	*(Quercus wislizeni)*	6,8	14	25	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Past partial failure of the root system has left the lower portion of the tree lying prone on grade; out of balance to the southwest; slightly above average amount of deadwood.	None at this time.	
27	Blue Oak	*(Quercus douglasii)*		29	30	Fair	Fair	Poor to fair	Poor to fair	Poor to fair	Fair	Tree is growing on the edge of the creek bank; above average amount of deadwood; sparse foliage.	None at this time.	
28	Interior Live Oak	*(Quercus wislizeni)*		23	29	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the southeast; slightly above average amount of deadwood.	None at this time.	
29	Interior Live Oak	*(Quercus wislizeni)*		10	16	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; out of balance to the southwest; slightly above average amount of deadwood.	None at this time.	
30	Valley Oak	*(Quercus lobata)*		29	30	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.	
31	Interior Live Oak	*(Quercus wislizeni)*		14	22	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
32	Valley Oak	*(Quercus lobata)*		14	17	Obscured	Obscured	Fair	Fair	Obscured	Fair	Root collar and lower trunk covered by dense vegetation.	***Remove vegetation and reevaluate.***	
33	Blue Oak	*(Quercus douglasii)*		6	8	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
34	Blue Oak	*(Quercus douglasii)*		17	25	Fair	Fair	Fair	Fair	Fair	Fair	Measured 1.5' above grade; slightly above average amount of deadwood.	None at this time.	
35	Blue Oak	*(Quercus douglasii)*	8,13	21	22	Fair	Fair	Fair	Fair	Fair	Fair	Measured 2' above grade; forks 1' above grade; weak attachments; slightly above average amount of deadwood.	None at this time.	
36	Interior Live Oak	*(Quercus wislizeni)*		6	13	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; out of balance to the west; slightly above average amount of deadwood.	None at this time.	
37	Interior Live Oak	*(Quercus wislizeni)*		6	10	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; slightly out of balance to the north; slightly above average amount of deadwood.	None at this time.	
38	Interior Live Oak	*(Quercus wislizeni)*		15	24	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
39	Interior Live Oak	*(Quercus wislizeni)*		13	27	Fair	Fair	Fair	Fair	Fair	Fair	Measured 2' above grade; slightly above average amount of deadwood.	None at this time.	
40	Interior Live Oak	*(Quercus wislizeni)*		15	28	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the west; slightly above average amount of deadwood.	None at this time.	
41	Valley Oak	*(Quercus lobata)*	9,11,15	35	28	Fair	Fair	Fair	Fair	Fair	Fair	Forks grade to 3.5' above grade; weak attachments; above average amount of deadwood.	None at this time.	
42	Valley Oak	*(Quercus lobata)*	4,6	10	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
43	Pacific Willow	*(Salix lucida)*	5,5,6,8,9	33	18	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
44	Valley Oak	*(Quercus lobata)*		6	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
45	Blue Oak	*(Quercus douglasii)*		7	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
46	Valley Oak	*(Quercus lobata)*		8	18	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
47	Valley Oak	*(Quercus lobata)*		14	24	Poor to fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Callusing basal lower trunk wound to 4' above grade, west side, with minor decay; out of balance to the west; slightly above average amount of deadwood.	None at this time.	
48	Interior Live Oak	*(Quercus wislizeni)*		9	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
49	Valley Oak	*(Quercus lobata)*		14	23	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
50	Valley Oak	*(Quercus lobata)*		11	22	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS	REMOVE
						RTCR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR			
51	Valley Oak	*(Quercus lobata)*		11	29	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the southwest; above average amount of deadwood.	None at this time.	
52	Interior Live Oak	*(Quercus wislizeni)*		10	28	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Suppressed; out of balance to the west; slightly above average amount of deadwood.	None at this time.	
53	Blue Oak	*(Quercus douglasii)*		10	14	Fair	Fair	Fair	Fair	Fair	Fair	Measured 1.5' above grade; slightly above average amount of deadwood.	None at this time.	
54	Blue Oak	*(Quercus douglasii)*		7	12	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
55	Blue Oak	*(Quercus douglasii)*		9	12	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
56	Blue Oak	*(Quercus douglasii)*		9	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
57	Valley Oak	*(Quercus lobata)*		9	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
58	Valley Oak	*(Quercus lobata)*		15	26	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.	
59	Interior Live Oak	*(Quercus wislizeni)*	10,13	23	29	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
60	Interior Live Oak	*(Quercus wislizeni)*	6,8,10	24	26	Fair	Fair	Fair	Fair	Fair	Fair	Forks at grade to 1' above grade; weak attachments; slightly above average amount of deadwood.	None at this time.	
61	Interior Live Oak	*(Quercus wislizeni)*		11	17	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the northeast; slightly above average amount of deadwood.	None at this time.	
62	Pacific Willow	*(Salix lucida)*		25	33	Fair	Fair	Poor to fair	Fair	Poor to fair	Fair	Measured 1' above grade; above average amount of deadwood.	None at this time.	
63	Interior Live Oak	*(Quercus wislizeni)*		7	13	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
64	Valley Oak	*(Quercus lobata)*		20	23	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
65	Interior Live Oak	*(Quercus wislizeni)*	6,6	12	17	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.	
66	Interior Live Oak	*(Quercus wislizeni)*		8	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
67	Interior Live Oak	*(Quercus wislizeni)*		7	18	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
68	Interior Live Oak	*(Quercus wislizeni)*		7	24	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
69	Interior Live Oak	*(Quercus wislizeni)*	6,7,8,10	31	23	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Forks 2' above grade; weak attachments; above average amount of deadwood.	None at this time.	
70	Interior Live Oak	*(Quercus wislizeni)*		11	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
71	Interior Live Oak	*(Quercus wislizeni)*		7	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
72	Interior Live Oak	*(Quercus wislizeni)*		7	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
73	Interior Live Oak	*(Quercus wislizeni)*		14	25	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the north; slightly above average amount of deadwood.	None at this time.	
74	Interior Live Oak	*(Quercus wislizeni)*		21	35	Poor	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Tree emanates from the creek and is lying prone on grade to the east for its length.	None at this time.	
75	Interior Live Oak	*(Quercus wislizeni)*		11	15	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.	
76	Valley Oak	*(Quercus lobata)*		20	25	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
77	Interior Live Oak	*(Quercus wislizeni)*		15	24	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.	
78	Interior Live Oak	*(Quercus wislizeni)*		9	24	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.	
79	Interior Live Oak	*(Quercus wislizeni)*	5,6	11	25	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
80	Interior Live Oak	*(Quercus wislizeni)*	4,6,6	16	28	Fair	Fair	Fair	Fair	Fair	Fair	Tag on branch. Out of balance to the east; slightly above average amount of deadwood.	None at this time.	
81	Interior Live Oak	*(Quercus wislizeni)*	8,9	17	32	Fair	Fair	Fair	Fair	Fair	Fair	Tag on branch approximately 30' away from the base. Out of balance to the east; above average amount of deadwood.	None at this time.	
82	Valley Oak	*(Quercus lobata)*		24	29	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
83	Interior Live Oak	*(Quercus wislizeni)*	6,8	14	23	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
84	Interior Live Oak	*(Quercus wislizeni)*	5,8,9	22	23	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.	
85	Interior Live Oak	*(Quercus wislizeni)*		18	30	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Emanating out of the creek bank; out of balance to the east; above average amount of deadwood.	None at this time.	
86	Interior Live Oak	*(Quercus wislizeni)*		10	14	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
87	Interior Live Oak	*(Quercus wislizeni)*		9	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
88	Blue Oak	*(Quercus douglasii)*		6	7	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
89	Interior Live Oak	*(Quercus wislizeni)*	7,10	17	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
90	Interior Live Oak	*(Quercus wislizeni)*	6,7	13	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
91	Interior Live Oak	*(Quercus wislizeni)*		10	19	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.	
92	Interior Live Oak	*(Quercus wislizeni)*		8	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
93	Blue Oak	*(Quercus douglasii)*		31	33	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
94	Interior Live Oak	*(Quercus wislizeni)*	13,15	28	25	Fair	Fair	Fair	Fair	Fair	Fair	Forks 3' above grade; weak attachments; above average amount of deadwood.	None at this time.	
95	Interior Live Oak	*(Quercus wislizeni)*		16	21	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
96	Interior Live Oak	*(Quercus wislizeni)*	4,6	10	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
97	Interior Live Oak	*(Quercus wislizeni)*	11,13	24	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
98	Interior Live Oak	*(Quercus wislizeni)*	13,14,14	41	25	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Forks at grade; weak attachments; out of balance to the south; above average amount of deadwood.	None at this time.	
99	Interior Live Oak	*(Quercus wislizeni)*		16	22	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the north; slightly above average amount of deadwood.	None at this time.	
100	Pacific Willow	*(Salix lucida)*	6,8,8,10	32	22	Poor to fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Weak attachments; above average amount of deadwood.	None at this time.	
101	Interior Live Oak	*(Quercus wislizeni)*	4,8	12	20	Fair	Fair	Fair	Fair	Fair	Fair		None at this time.	
102	Interior Live Oak	*(Quercus wislizeni)*		10	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.	
103	Interior Live Oak	*(Quercus wislizeni)*		26	28	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.	Remove
104	Interior Live Oak	*(Quercus wislizeni)*	5,6,6	17	20	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; out of balance to the northeast; slightly above average amount of deadwood.	None at this time.	Remove
105	Interior Live Oak	*(Quercus wislizeni)*	14,14	28	30	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Suppressed; lying prone on grade for the length; slightly above average amount of deadwood.	None at this time.	Remove
106	Pacific Willow	*(Salix lucida)*	8,10,11	29	14	Poor	Poor	Poor	Poor	Poor	Poor	Tree is 90% dead.	***Recommend removal due to nature and extent of noted defects.***	Remove
107	Fremont Cottonwood	*(Populus fremontii)*	8,9	17	12	Fair	Fair	Fair	Fair	Fair	Fair	Weak attachments; above average amount of deadwood.	None at this time.	

TOTAL INVENTORIED TREES = 107 Trees (1,652 aggregate diameter inches)
RECOMMENDED REMOVALS = 1 Tree (29 aggregate diameter inches)
REMOVALS FOR PROJECT IMPROVEMENTS = 7 Trees (157 aggregate diameter inches)
TOTAL REMOVALS = 8 Trees (186 aggregate diameter inches)

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BRADY SUBDIVISION
VINEYARD ROAD AND BRADY LANE,
PLACER COUNTY, CA
(APNS 473-020-002 & 013) PLN18-00234

TREE INVENTORY

DESIGN SBS RFE
DRAWN SBS RFE

Sheet 2 of Total 2

10/12/2018

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

APPENDIX E

ARBORIST REPORT
AND
TREE INVENTORY SUMMARY

DRY CREEK COMMUNITY PLAN PROJECT SITE
Brady Lane and Vineyard Road
County of Placer, California

Prepared for:

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Prepared by:

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May 22, 2017

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APPENDICES:

A. Tree Inventory Summary (sorted by tree number)

B. Tree Inventory Exhibits (Brady Lane North and South)

COPYRIGHT STATEMENT

This consultant's report, dated May 22, 2017, is for the exclusive and confidential use of Sukhbir Brar concerning potential development of the Dry Creek Community Plan Project Site, located at Brady Lane and Vineyard Road in the County of Placer, California. Any use of this report, the accompanying appendices, or portions thereof, other than for project review and approval by appropriate governmental authorities, shall be subject to and require the written permission of Sierra Nevada Arborists. Unauthorized modification, distribution and/or use of this report, including the data or portions thereof contained within the accompanying appendices, is strictly prohibited.

QUALIFICATION STATEMENT

Sierra Nevada Arborists is a fully insured, Rio Linda-based arboriculture consulting firm founded in January of 1998 by its Principal, Edwin E. Stirtz. Mr. Stirtz is an ISA Certified Arborist and is ISA Tree Risk Assessment Qualified. He is a member of the American Society of Consulting Arborists and International Society of Arboriculture. Mr. Stirtz possesses in excess of 30 years of experience in horticulture and arboriculture, both maintenance and construction, and has spent the last 23 years as a consulting and preservation specialist in the Sacramento and surrounding regions.

INTRODUCTION

Sierra Nevada Arborists is pleased to present this Arborist Report and Tree Inventory Summary for the trees located within and/or overhanging the property located at the Dry Creek Community Plan Project Site, Brady Lane and Vineyard Road in the County of Placer, California. This Arborist Report and Tree Inventory Summary memorializes tree data obtained by Edwin E. Stirtz, ISA Certified Arborist WE-0510A, at the time of field reconnaissance and inventory efforts on May 17, 2017.

SCOPE OF INVENTORY EFFORT

The purpose of this site visit was to conduct a field inspection to identify, inventory, and evaluate all protected trees within and/or overhanging the proposed project site with a single main stem or trunk measuring at least 6" in diameter or greater measured at breast height ("DBH"), or multiple trunks with an aggregate measurement of at least 10" DBH, per the County of Placer Tree Preservation Ordinance (Article 12.16, Chapter 12.16.020).

METHODOLOGY

During field reconnaissance and inventory efforts, Edwin E. Stirtz of Sierra Nevada Arborists conducted a visual review from ground level of the trees within and/or overhanging the selected lots within the project area as depicted on the project exhibits provided by Dave Cook of Cook Development Consulting Services. The trees which met the defined criteria were identified in the field by affixing square tags with orange flagging to the tree trunks. The tree numbers utilized in this report and accompanying Tree Inventory Summary correspond to the tree tags which were affixed to the trees in the field, and those tree numbers or grouping of numbers were rough-plotted on the attached Tree Inventory Exhibits (Brady Lane North and South) so that the precise vertical and horizontal location of the trees may be surveyed in the field by a licensed land surveyor and data for the trees (i.e. tree number, diameter, dripline and protected root zone radii) may be properly depicted on future development plans and Tree Location Exhibit.

At the time of field identification and inventory efforts specific data was gathered for each tagged tree including the tree's species, diameter measured at breast height ("DBH") and dripline radius ("DLR"). Utilizing this data the tree's overall structural condition and vigor were separately assessed ranging from "excellent"[1] to "poor" based upon the observed characteristics noted within the tree and the Arborist's best professional judgment. Ratings

[1] It is rare that a tree qualifies in an "excellent" category, and it should be noted that there were no trees observed within the project area which fell within the criteria of an "excellent" or "good" rating. A complete description of the terms and ratings utilized in this report and accompany inventory summary are found on pages 8-9.

are subjective and are dependent upon both the structure and vigor of the tree. The vigor rating considers factors such as the size, color and density of the foliage; the amount of deadwood within the canopy; bud viability; evidence of wound closure; and the presence or evidence of stress, disease, nutrient deficiency and insect infestation. The structural rating reflects the root crown/collar, trunk and branch configurations; canopy balance; the presence of included bark, weak crotches and other structural defects and decay and the potential for structural failure. Finally, notable characteristics were documented and recommendations on a tree-by-tree basis were made which logically followed the observed characteristics noted within the trees at the time of the field inventory effort. The recommendations are based on the assumption that the tree would be introduced into a developed environment and may require maintenance and/or may not be suitable for retention within a post-development setting.

SUMMARY OF INVENTORY EFFORT

Field reconnaissance and inventory efforts found 107 trees measuring 6 inches in diameter and larger measured at breast height within and/or overhanging the proposed project area. Composition of the 107 inventoried trees includes the following species and accompanying aggregate diameter inches:

SPECIES DIVERSIFICATION			
Blue Oak	=	23 trees	(279 aggregate diameter inches)
Fremont Cottonwood	=	1 tree	(17 aggregate diameter inches)
Interior Live Oak	=	63 trees	(967 aggregate diameter inches)
Pacific Willow	=	5 trees	(149 aggregate diameter inches)
Valley Oak	=	15 trees	(240 aggregate diameter inches)
TOTAL	**=**	**107 trees**	**(1,652 aggregate diameter inches)**

Recommended Removals

At this time, one tree has been recommended for removal from the proposed project area due to the nature and extent of defects, compromised health, and/or structural instability noted at the time of field inventory efforts. If this tree was retained within the proposed project area it is our opinion that it may be hazardous depending upon its proximity to planned development activities. For reference, the tree which has been recommended for removal due to the severity of noted defects, compromised health, and/or structural instability is highlighted in green within the accompanying Tree Inventory Summary and is briefly summarized as follows:

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT	
						STRUCTURE	VIGOR
106	Pacific Willow	*(Salix lucida)*	8,10,11	29	14	Poor	Poor

It should also be noted that some of the trees within the proposed project area are trees which may be undesirable on residential lots, or are trees which will require periodic/seasonal monitoring to assess the trees' ongoing structural integrity. At this early stage of the project Sierra Nevada Arborists has not recommended the removal of these trees since development plans, including proposed home sites and building footprints, have not yet been finalized and the precise location of these trees in proximity to planned improvement activities is not known. At this time it is recommended that these trees be monitored and thoroughly inspected by a qualified ISA Certified Arborist on at least an annual basis to keep abreast of the trees' changing condition(s) and to assess the trees' ongoing structural integrity and potential for hazard in a developed environment.

CONSTRUCTION IMPACT ASSESSMENT

This Arborist Report and Tree Inventory Summary is intended to provide to Sukhbir Brar, the County of Placer, and other members of the development team a detailed *pre-development review* of the species, size, and current structure and vigor of the trees within and/or overhanging the proposed project area. It is not an exhaustive review of the impacts which will be sustained from project implementation. At this early stage of the project specific root system and canopy impacts on a tree-by-tree basis cannot be definitively assessed until the site development, grading, and other improvement plans have been refined and finalized and data from the accompanying inventory summary (i.e., tree numbers, dripline radius, and root protection zones) is properly depicted on the plans.

Since trees are living organisms whose condition may change at any time a complete assessment of construction impacts and specific recommendations to help mitigate for the adverse impacts which may be sustained by the trees from contemplated construction activities cannot be made until the development plans have been refined and finalized. Once final plans have been developed for the site a qualified ISA Certified Arborist with special expertise and demonstrated experience with construction projects in and among native and non-native trees should review those plans and provide a more detailed assessment of impacts, including identification of trees which may require removal to facilitate home construction and other contemplated site development activities. This review will be particularly important if structures and/or residential activities will fall within or near the fall zone of a tree which has been noted as exhibiting structural defects, questionable long-term longevity and/or a conditional rating which is less than "fair", and for trees which measure 16 inches and greater in diameter which will be retained within close proximity to

development as trees of this size may pose a more significant hazard if a sudden limb shed and/or catastrophic failure should occur. In addition, the review should include an assessment of root system and canopy impacts which will be sustained by the trees which will be retained within the proposed development area, along with specific recommendations on a tree-by-tree basis to help reduce adverse impacts of construction on the retained trees. In the meantime, this report provides some pre-development recommendations which logically follow the observed characteristics noted in the trees at the time of the field inventory efforts, as well as General Protection Measures which should be utilized as a guideline for the protection of trees which may be retained within the development area. These recommendations will require modification and/or augmentation as development plans are refined and finalized.

GENERAL COMMENTS AND ARBORISTS' DISCLAIMER

The County of Placer regulates both the removal of "protected trees" and the encroachment of construction activities within their driplines. Therefore, a tree permit and/or additional development authorization should be obtained from the County of Placer prior to the removal of any trees within the proposed project area. All terms and conditions of the tree permit and/or other Conditions of Approval are the sole and exclusive responsibility of the project applicant. It should be noted that prior to final inspection written verification from an ISA Certified Arborist may be required certifying the approved removal activities and/or implementation of other Conditions of Approval outlined for the retained trees on the site. ***Sierra Nevada Arborists will not provide written Certification of Compliance unless we have been provided with a copy of the approved site development plans, applicable permits and/or Conditions of Approval, and are on site to monitor and observe regulated activities during the course of construction.*** Therefore, it will be necessary for the project applicant to notify Sierra Nevada Arborists well in advance (at least 72 hours prior notice) of any regulated activities which are scheduled to occur on site so that those activities can be properly monitored and documented for compliance certification.

Please bear in mind that implementation of the recommendations provided within this report will help to reduce adverse impacts of construction on the retained trees; however, implementation of any recommendations should not be viewed as a guarantee or warranty against the trees' ultimate demise and/or failure in the future. Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of the trees and ***attempt to reduce the risk of living near trees***. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. There are some inherent risks with trees that cannot be predicted with any degree of certainty, even by a skilled and experienced arborist. Entities who choose to construct homes on wooded property are accepting a certain level of risk from unpredictable tree related hazards such as toppling in storms, limbs falling and fires that may damage property at some time in the future. Since trees are living organisms their structure and vigor constantly change over time, and they are not immune to changes in site conditions or seasonal variations in the weather. Further, conditions are often hidden within the tree

and/or below ground. Arborists and other tree care professionals cannot guarantee that a tree will be healthy and/or safe under all circumstances or for a specific period of time. Likewise remedial treatments cannot be guaranteed. Trees can be managed but they cannot be controlled. To develop land and live near trees is to accept some degree of risk and the only way to eliminate all risk associated with trees would be to eliminate all of the trees. ***An entity who develops land and builds a home with a tree in the vicinity should be aware of and inform their future residents of this Arborists' Disclaimer, and be further advised that the developer and the future residents assume the risk that a tree could at any time suffer a branch and/or limb failure, blow over in a storm and/or fail for no apparent reason which may cause bodily injury or property damage***. Sierra Nevada Arborists cannot predict acts of nature including, without limitation, storms of sufficient strength which can even take down a tree with a structurally sound and vigorous appearance.

Finally, the trees preserved within and/or overhanging the proposed project area will experience a physical environment different from the pre-development environment. As a result, tree health and structural stability should be regularly monitored. Occasional pruning, fertilization, mulch, pest management, replanting and/or irrigation may be required. In addition, ***provisions for monitoring both tree health and structural stability following construction must be made a priority***. As trees age, the likelihood of failure of branches or entire trees increases. Therefore, ***the future management plan must include an annual inspection*** by a qualified ISA Certified Arborist to keep abreast of the trees' changing condition(s) and to assess the trees' ongoing structural integrity and potential for hazard in a developed environment.

Thank you for allowing Sierra Nevada Arborists to assist you with this review. Please feel free to give me a call if you have any questions or require additional information and/or clarification.

Sincerely,

Edwin E. Stirtz
International Society of Arboriculture
Certified Arborist WE-0510A
ISA Tree Risk Assessment Qualified
Member, American Society of Consulting Arborists

ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.

2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations.

3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.

4. The consultant shall not be required to give a deposition and/or attend court by reason of this report unless subsequent contractual arrangements are made for in advance, including payment of an additional fee for such services according to our standard fee schedule, adjusted yearly, and terms of the subsequent contract of engagement.

5. Loss or alteration of any part of this report invalidates the entire report. Ownership of any documents produced passes to the Client only when all fess have been paid.

6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant.

7. Neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the prior expressed written or verbal consent of the consultant, particularly as to value conclusions, identity of the consultant, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant as stated in his qualifications.

8. This report and any values expressed herein represent the opinion of the consultant and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

9. Sketches, diagrams, graphs, drawings and photographs within this report are intended as visual aids and are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of information generated by other consultants is for coordination and ease of

reference. Inclusion of such information does not constitute a representation by the consultant as to the sufficiency or accuracy of the information.

10. Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without laboratory analysis, dissection, excavation, probing or coring, unless otherwise stated.

11. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

12. This report is based on the observations and opinions of Edwin E. Stirtz, and does not provide guarantees regarding the future performance, health, vigor, structural stability or safety of the plants described herein. Neither this author nor Sierra Nevada Arborists has assumed any responsibility for liability associated with the trees on or adjacent to this Project Site, their future demise and/or any damage which may result therefrom.

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13. The information contained within this report is true to the best of the author's knowledge and experience as of the date it was prepared; however, certain conditions may exist which only a comprehensive, scientific, investigation might reveal which should be performed by other consulting professionals.

14. The legal description, dimensions, and areas herein are assumed to be correct. No responsibility is assumed for matters that are legal in nature.

15. Any changes to an established tree's environment can cause its decline, death and/or structural failure.

DEFINITIONS

Tree Number:	Corresponds to aluminum tag attached to the tree.
Species Identification:	Scientific and common species name.
Diameter ("DBH"):	This is the trunk diameter measured at breast height (industry standard 4.5 feet above ground level).
Dripline radius ("DLR"):	A radius equal to the horizontal distance from the trunk of the tree to the end of the farthest most branch tip prior to any cutting. When depicted on a map, the dripline will appear as an irregularly shaped circle that follows the contour of the tree's branches as seen from overhead.
Protected Zone:	A circle equal to the largest radius of a protected tree's dripline plus 1 foot.
Root Crown:	Assessment of the root crown/collar area located at the base of the trunk of the tree at soil level.
Trunk:	Assessment of the tree's main trunk from ground level generally to the point of the primary crotch structure.
Limbs:	Assessment of both smaller and larger branching, generally from primary crotch structure to branch tips.
Foliage:	Tree's leaves.
Overall Condition:	Describes overall condition of the tree in terms of structure and vigor.
Recommendation:	Pre-development recommendations based upon observed characteristics noted at the time of the field inventory effort.
Obscured:	Occasionally some portion of the tree may be obscured from visual inspection due to the presence of dense vegetation which, during the course of inspection for the arborist report, prevented a complete evaluation of the tree. In these cases, if the tree is to be retained on site the vegetation should be removed to allow for a complete assessment of the tree prior to making final decisions regarding the suitability for retention.

TREE CONDITION RATING CRITERIA

RATING TERM	ROOT CROWN	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR
Good	No apparent injuries, decay, cavities or evidence of hollowing; no anchoring roots exposed; no indications of infestation or disease	No apparent injuries, decay, cavities or evidence of hollowing; no codominant attachments or multiple trunk attachments are observed; no indications of infestation or disease	No apparent injuries, decay, cavities or evidence of hollowing; below average amount of dead limbs or twigs; no major limb failures or included bark; callus growth is vigorous	Leaf size, color and density are typical for the species; buds are normal in size, viable, abundant and uniform throughout the canopy; annual seasonal growth increments are average or above average; no insect or disease infestations/ infections evident	No apparent structural defects; no weak crotches; no excessively weighted branches and no significant cavities or decay	Tree appears healthy and has little or no significant deadwood; foliage is normal and healthy
Fair	Small to moderate injuries, decay, cavities or hollowing may be evident but are not currently affecting the overall structure; some evidence of infestation or disease may be present but is not currently affecting the tree's structure	Small to moderate injuries, decay, cavities or hollowing may be evident; codominant branching or multiple trunk attachments or minor bark inclusion may be observed; some infestation or disease may be present but not currently affecting the tree's structure	Small to moderate injuries, decay or cavities may be present; average or above average dead limbs or twigs may be present; some limb failures or bark inclusion observed; callus growth is average	Leaf size, color and density are typical or slightly below typical for the species; buds are normal or slightly sparse with potentially varied viability, abundance and distribution throughout the canopy; annual seasonal growth increments are average or slightly below average; minor insect or disease infestation/infection may be present	Minor structural problems such as weak crotches, minor wounds and/or cavities or moderate amount of excessive weight; non-critical structural defects which can be mitigated through pruning, cabling or bracing	Tree appears stressed or partially damaged; minimal vegetative growth since previous season; moderate amount of deadwood, abnormal foliage and minor lesions or cambium dieback
Poor	Moderate to severe injuries, decay, cavities or hollowing may be evident and are affecting the overall structure; presence of infestation or disease may be significant and affecting the tree's structure	Moderate to severe injuries, decay, cavities or hollowing may be evident and are affecting the tree's structure; presence of infestation or disease may be significant and affecting the tree's structure	Severe injuries, decay or cavities may be present; major deadwood, twig dieback, limb failures or bark inclusion observed; callus growth is below average	Leaf size, color and density are obviously abnormal; buds are obviously abnormal or absent; annual seasonal growth is well below average for the species; insect or disease problems may be severe	Obvious major structural problems which cannot be corrected with mitigation; potential for major limb, trunk or root system failure is high; significant decay or dieback may be present	Tree health is declining; no new vegetative growth; large amounts of deadwood; foliage is severely abnormal

The ratings "good to fair" and "fair to poor" are used to describe trees that fall between the described major categories and have elements of both

GENERAL PROTECTION GUIDELINES FOR TREES PLANNED FOR PRESERVATION

Great care must be exercised when work is conducted upon or around protected trees. The purpose of these General Protection Measures is to provide guidelines to protect the health of the affected protected trees. These guidelines apply to all encroachments into the protected zone of a protected tree, and may be incorporated into tree permits and/or other Conditions of Approval as deemed appropriate by the applicable governing body.

- A circle with a radius measurement from the trunk of the tree to the tip of its longest limb, plus one foot, shall constitute the critical root zone protection area of each protected tree. Limbs must not be cut back in order to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area of each protected tree. Removing limbs that make up the dripline does not change the protected area.

- Any protected trees on site which require pruning shall be pruned by an ISA Certified Arborist prior to the start of construction work. All pruning shall be in accordance with the American National Standards Institute (ANSI) A300 pruning standards, ANSI Standard 2133.1-2000 regarding safety practices, and the International Society of Arboriculture (ISA) "Tree Pruning Guidelines" and Best Management Practices.

- Prior to initiating construction, temporary protective fencing shall be installed at least one foot outside the root protection zone of the protected trees in order to avoid damage to the tree canopies and root systems. Fencing shall be installed in accordance with the approved fencing plan prior to the commencement of any grading operations or such other time as determined by the review body. The developer shall contact the Project Arborist and the Planning Department for an inspection of the fencing prior to commencing construction activities on site.

- Signs shall be installed on the protective fence in four (4) equidistant locations around each individual protected tree. The size of each sign must be a minimum of two (2) feet by two (2) feet and must contain the following language:

  WARNING: THIS FENCE SHALL NOT BE REMOVED OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE COUNTY OF PLACER.

  Once approval has been obtained by the County of Placer protective fencing shall remain in place throughout the entire construction period and shall not be removed, relocated, taken down or otherwise modified in whole or in part without prior written authorization from the Agency, or as deemed necessary by the Project Arborist to facilitate approved activities within the root protection zone.

- Any removal of paving or structures (i.e. demolition) that occurs within the dripline of a protected tree shall be done under the direct supervision of the Project Arborist. To the maximum extent feasible, demolition work within the dripline protection area of the protected tree shall be performed by hand. If the Project Arborist determines that it is not feasible to perform some portion(s) of this work by hand, then the smallest/lightest weight equipment that will adequately perform the demolition work shall be used.

- No signs, ropes, cables (except those which may be installed by an ISA Certified Arborist to provide limb support) or any other items shall be attached to the protected trees. Small metallic numbering tags for the purpose of identification in preparing tree reports and inventories shall be allowed.

- No vehicles, construction equipment, mobile homes/office, supplies, materials or facilities shall be driven, parked, stockpiled or located within the driplines of protected trees.

- Drainage patterns on the site shall not be modified so that water collects, stands or is diverted across the dripline of any protected tree.

- No trenching shall be allowed within the driplines of protected trees, except as specifically approved by the Planning Department as set forth in the project's Conditions of Approval and/or approved tree permit. If it is absolutely necessary to install underground utilities within the dripline of a protected tree the utility line within the protected zone shall be "bored and jacked" or performed utilizing hand tools to avoid root injury under the direct supervision of the Project Arborist.

- Grading within the protected zone of a protected tree shall be minimized. Cuts within the protected zone shall be maintained at less than 20% of the critical root zone area. Grade cuts shall be monitored by the Project Arborist. Any damaged roots encountered shall be root pruned and properly treated as deemed necessary by the Project Arborist.

- Minor roots less than one (1) inch in diameter encountered during approved excavation and/or grading activities may be cut, but damaged roots shall be traced back and cleanly cut behind any split, cracked or damaged area as deemed necessary by the Project Arborist.

- Major roots greater than one (1) inch in diameter encountered during approved excavation and/or grading activities may not be cut without approval of the Project Arborist. Depending upon the type of improvement being proposed, bridging techniques or a new site design may need to be employed to protect the roots and the tree.

- Cut faces, which will be exposed for more than 2-3 days, shall be covered with dense burlap fabric and watered to maintain soil moisture at least on a daily basis (or possibly more frequently during summer months). If any native ground surface fabric within the protected zone must be removed for any reason, it shall be replaced within forty-eight (48) hours.

- If fills exceed 1 foot in depth up to 20% of the critical root zone area, aeration systems may serve to mitigate the presence of the fill materials as determined by the Project Arborist.

- When fill materials are deemed necessary on two or three sides of a tree it is critical to provide for drainage away from the critical root zone area of the tree (particularly when considering heavy winter rainfalls). Overland releases and subterranean drains dug outside the critical root zone area and tied directly to the main storm drain system are two options.

- In cases where a permit has been approved for construction of a retaining wall(s) within the protected zone of a protected tree the applicant will be required to provide for immediate protection of exposed roots from moisture loss during the time prior to completion of the wall. The retaining wall within the protected zone of the protected tree shall be constructed within seventy-two (72) hours after completion of grading within the root protection zone.

- The construction of impervious surfaces within the dripline of a protected tree shall be minimized. When necessary, a piped aeration system shall be installed under the direct supervision of the Project Arborist.

- Preservation devices such as aeration systems, tree wells, drains, special paving and cabling systems must be installed in conformance with approved plans and certified by the Project Arborist.

- No sprinkler or irrigation system shall be installed in such a manner that sprays water or requires trenching within the dripline of a protected tree. An above ground drip irrigation system is recommended. An independent low-flow drip irrigation system may be used for establishing drought-tolerant plants within the protected zone of a protected tree. Irrigation shall be gradually reduced and discontinued after a two (2) year period.

- All portions of permanent fencing that will encroach into the protected zone of a protected tree shall be constructed using posts set no closer than ten (10) feet on center. Posts shall be spaced in such a manner as to maximize the separation between the tree trunks and the posts in order to reduce impacts to the tree(s).

- Landscaping beneath native oak trees may include non-plant materials such as bark mulch, wood chips, boulders, etc. Planting live material under protected native oak trees is generally discouraged, and is not recommended within six (6) feet of the trunk of a native oak tree with a diameter a breast height (DBH) of eighteen (18) inches or less, or within ten (10) feet of the trunk of a native oak tree with a DBH of more than eighteen (18) inches. The only plant species which shall be planted within the dripline of native oak trees are those which are tolerant of the natural, semi-arid environs of the tree(s).

SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
1	Interior Live Oak	*(Quercus wislizeni)*	14,16,25	55	29	Fair	Fair	Fair	Fair	Fair	Fair	Forks 2' above grade; slightly above average amount of deadwood.	None at this time.
2	Interior Live Oak	*(Quercus wislizeni)*	4,6	10	7	Fair	Fair	Fair	Fair	Fair	Fair	Supporting a partially failed Willow tree.	None at this time.
3	Interior Live Oak	*(Quercus wislizeni)*		7	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
4	Interior Live Oak	*(Quercus wislizeni)*		7	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
5	Pacific Willow	*(Salix lucida)*	14,16	30	35	Poor	Poor	Fair	Fair	Poor	Fair	Recent partial failure of the root system has left the tree lying on grade and in adjacent trees; slightly above average amount of deadwood.	None at this time.
6	Interior Live Oak	*(Quercus wislizeni)*		17	17	Fair	Fair	Fair	Fair	Fair	Fair	Measured 2' above grade; trunk and some limbs are covered with dense poison oak growth.	***Remove the poison oak growth.***
7	Blue Oak	*(Quercus douglasii)*		6	8	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
8	Blue Oak	*(Quercus douglasii)*	4,4,6	14	10	Fair	Fair	Fair	Fair	Fair	Fair	Forks at grade and 3' above grade; slightly above average amount of deadwood.	None at this time.
9	Interior Live Oak	*(Quercus wislizeni)*	8,9	17	30	Obscured	Obscured	Fair	Fair	Obscured	Fair	Tag on branch. Root collar and lower trunk not visible due to dense vegetation around the base of the tree; main stems grow one sided to the east and then turn downward.	***Clear surrounding vegetation and reevaluate.***
10	Interior Live Oak	*(Quercus wislizeni)*	14,14,16	44	25	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Forks just above grade; callusing basal lower trunk wounds, various locations, with minor to moderate decay; weak attachments; out of balance south and east, with portions of the tree lying on grade; slightly above average amount of deadwood.	None at this time.

SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
11	Blue Oak	*(Quercus douglasii)*		11	10	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
12	Blue Oak	*(Quercus douglasii)*		23	28	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the southwest; slightly above average amount of deadwood.	None at this time.
13	Blue Oak	*(Quercus douglasii)*		11	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
14	Interior Live Oak	*(Quercus wislizeni)*		6	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
15	Interior Live Oak	*(Quercus wislizeni)*		15	24	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
16	Interior Live Oak	*(Quercus wislizeni)*	6,7	13	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
17	Interior Live Oak	*(Quercus wislizeni)*		13	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly out of balance to the south; slightly above average amount of deadwood.	None at this time.
18	Blue Oak	*(Quercus douglasii)*		6	7	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
19	Blue Oak	*(Quercus douglasii)*		6	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
20	Blue Oak	*(Quercus douglasii)*		10	16	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Southerly stem has wounding 7'-9' above grade; above average amount of deadwood.	None at this time.
21	Blue Oak	*(Quercus douglasii)*		7	10	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
22	Blue Oak	*(Quercus douglasii)*	8,8	16	24	Obscured	Obscured	Poor to fair	Poor to fair	Obscured	Poor to fair	Root collar and lower trunk obscured by dense vegetation; partially over creek bank; some of the tree is lying prone on grade; above average amount of deadwood.	None at this time.
23	Interior Live Oak	*(Quercus wislizeni)*		10	22	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Past partial failure of the root system has left the tree growing at an angle; out of balance to the south; above average amount of deadwood.	None at this time.

SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
24	Blue Oak	*(Quercus douglasii)*		7	14	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
25	Blue Oak	*(Quercus douglasii)*	4,6	10	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
26	Interior Live Oak	*(Quercus wislizeni)*	6,8	14	25	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Past partial failure of the root system has left the lower portion of the tree lying prone on grade; out of balance to the southwest; slightly above average amount of deadwood.	None at this time.
27	Blue Oak	*(Quercus douglasii)*		29	30	Fair	Fair	Poor to fair	Poor to fair	Poor to fair	Fair	Tree is growing on the edge of the creek bank; above average amount of deadwood; sparse foliage.	None at this time.
28	Interior Live Oak	*(Quercus wislizeni)*		23	29	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the southeast; slightly above average amount of deadwood.	None at this time.
29	Interior Live Oak	*(Quercus wislizeni)*		10	16	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; out of balance to the southwest; slightly above average amount of deadwood.	None at this time.
30	Valley Oak	*(Quercus lobata)*		29	30	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.
31	Interior Live Oak	*(Quercus wislizeni)*		14	22	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
32	Valley Oak	*(Quercus lobata)*		14	17	Obscured	Obscured	Fair	Fair	Obscured	Fair	Root collar and lower trunk covered by dense vegetation.	***Remove vegetation and reevaluate.***
33	Blue Oak	*(Quercus douglasii)*		6	8	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
34	Blue Oak	*(Quercus douglasii)*		17	25	Fair	Fair	Fair	Fair	Fair	Fair	Measured 1.5' above grade; slightly above average amount of deadwood.	None at this time.
35	Blue Oak	*(Quercus douglasii)*	8,13	21	22	Fair	Fair	Fair	Fair	Fair	Fair	Measured 2' above grade; forks 1' above grade; weak attachments; slightly above average amount of deadwood.	None at this time.
36	Interior Live Oak	*(Quercus wislizeni)*		6	13	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; out of balance to the west; slightly above average amount of deadwood.	None at this time.

SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
37	Interior Live Oak	*(Quercus wislizeni)*		6	10	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; slightly out of balance to the north; slightly above average amount of deadwood.	None at this time.
38	Interior Live Oak	*(Quercus wislizeni)*		15	24	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
39	Interior Live Oak	*(Quercus wislizeni)*		13	27	Fair	Fair	Fair	Fair	Fair	Fair	Measured 2' above grade; slightly above average amount of deadwood.	None at this time.
40	Interior Live Oak	*(Quercus wislizeni)*		15	28	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the west; slightly above average amount of deadwood.	None at this time.
41	Valley Oak	*(Quercus lobata)*	9,11,15	35	28	Fair	Fair	Fair	Fair	Fair	Fair	Forks grade to 3.5' above grade; weak attachments; above average amount of deadwood.	None at this time.
42	Valley Oak	*(Quercus lobata)*	4,6	10	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
43	Pacific Willow	*(Salix lucida)*	5,5,6,8,9	33	18	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
44	Valley Oak	*(Quercus lobata)*		6	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
45	Blue Oak	*(Quercus douglasii)*		7	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
46	Valley Oak	*(Quercus lobata)*		8	18	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
47	Valley Oak	*(Quercus lobata)*		14	24	Poor to fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Callusing basal lower trunk wound to 4' above grade, west side, with minor decay; out of balance to the west; slightly above average amount of deadwood.	None at this time.
48	Interior Live Oak	*(Quercus wislizeni)*		9	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
49	Valley Oak	*(Quercus lobata)*		14	23	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
50	Valley Oak	*(Quercus lobata)*		11	22	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
51	Valley Oak	*(Quercus lobata)*		11	29	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the southwest; above average amount of deadwood.	None at this time.

SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
52	Interior Live Oak	*(Quercus wislizeni)*		10	28	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Suppressed; out of balance to the west; slightly above average amount of deadwood.	None at this time.
53	Blue Oak	*(Quercus douglasii)*		10	14	Fair	Fair	Fair	Fair	Fair	Fair	Measured 1.5' above grade; slightly above average amount of deadwood.	None at this time.
54	Blue Oak	*(Quercus douglasii)*		7	12	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
55	Blue Oak	*(Quercus douglasii)*		9	12	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
56	Blue Oak	*(Quercus douglasii)*		9	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
57	Valley Oak	*(Quercus lobata)*		9	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
58	Valley Oak	*(Quercus lobata)*		15	26	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.
59	Interior Live Oak	*(Quercus wislizeni)*	10,13	23	29	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
60	Interior Live Oak	*(Quercus wislizeni)*	6,8,10	24	26	Fair	Fair	Fair	Fair	Fair	Fair	Forks at grade to 1' above grade; weak attachments; slightly above average amount of deadwood.	None at this time.
61	Interior Live Oak	*(Quercus wislizeni)*		11	17	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the northeast; slightly above average amount of deadwood.	None at this time.
62	Pacific Willow	*(Salix lucida)*		25	33	Fair	Fair	Poor to fair	Fair	Poor to fair	Fair	Measured 1' above grade; above average amount of deadwood.	None at this time.
63	Interior Live Oak	*(Quercus wislizeni)*		7	13	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
64	Valley Oak	*(Quercus lobata)*		20	23	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
65	Interior Live Oak	*(Quercus wislizeni)*	6,6	12	17	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.
66	Interior Live Oak	*(Quercus wislizeni)*		8	11	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
67	Interior Live Oak	*(Quercus wislizeni)*		7	18	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.

SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
68	Interior Live Oak	*(Quercus wislizeni)*		7	24	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
69	Interior Live Oak	*(Quercus wislizeni)*	6,7,8,10	31	23	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Forks 2' above grade; weak attachments; above average amount of deadwood.	None at this time.
70	Interior Live Oak	*(Quercus wislizeni)*		11	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
71	Interior Live Oak	*(Quercus wislizeni)*		7	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
72	Interior Live Oak	*(Quercus wislizeni)*		7	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
73	Interior Live Oak	*(Quercus wislizeni)*		14	25	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the north; slightly above average amount of deadwood.	None at this time.
74	Interior Live Oak	*(Quercus wislizeni)*		21	35	Poor	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Tree emanates from the creek and is lying prone on grade to the east for its length.	None at this time.
75	Interior Live Oak	*(Quercus wislizeni)*		11	15	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.
76	Valley Oak	*(Quercus lobata)*		20	25	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
77	Interior Live Oak	*(Quercus wislizeni)*		15	24	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.
78	Interior Live Oak	*(Quercus wislizeni)*		9	24	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.
79	Interior Live Oak	*(Quercus wislizeni)*	5,6	11	25	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
80	Interior Live Oak	*(Quercus wislizeni)*	4,6,6	16	28	Fair	Fair	Fair	Fair	Fair	Fair	Tag on branch. Out of balance to the east; slightly above average amount of deadwood.	None at this time.
81	Interior Live Oak	*(Quercus wislizeni)*	8,9	17	32	Fair	Fair	Fair	Fair	Fair	Fair	Tag on branch approximately 30' away from the base. Out of balance to the east; above average amount of deadwood.	None at this time.
82	Valley Oak	*(Quercus lobata)*		24	29	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.

SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
83	Interior Live Oak	*(Quercus wislizeni)*	6,8	14	23	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
84	Interior Live Oak	*(Quercus wislizeni)*	5,8,9	22	23	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.
85	Interior Live Oak	*(Quercus wislizeni)*		18	30	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Emanating out of the creek bank; out of balance to the east; above average amount of deadwood.	None at this time.
86	Interior Live Oak	*(Quercus wislizeni)*		10	14	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
87	Interior Live Oak	*(Quercus wislizeni)*		9	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
88	Blue Oak	*(Quercus douglasii)*		6	7	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
89	Interior Live Oak	*(Quercus wislizeni)*	7,10	17	16	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
90	Interior Live Oak	*(Quercus wislizeni)*	6,7	13	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
91	Interior Live Oak	*(Quercus wislizeni)*		10	19	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the east; slightly above average amount of deadwood.	None at this time.
92	Interior Live Oak	*(Quercus wislizeni)*		8	15	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
93	Blue Oak	*(Quercus douglasii)*		31	33	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
94	Interior Live Oak	*(Quercus wislizeni)*	13,15	28	25	Fair	Fair	Fair	Fair	Fair	Fair	Forks 3' above grade; weak attachments; above average amount of deadwood.	None at this time.
95	Interior Live Oak	*(Quercus wislizeni)*		16	21	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
96	Interior Live Oak	*(Quercus wislizeni)*	4,6	10	9	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
97	Interior Live Oak	*(Quercus wislizeni)*	11,13	24	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
98	Interior Live Oak	*(Quercus wislizeni)*	13,14,14	41	25	Poor to fair	Poor to fair	Fair	Fair	Poor to fair	Fair	Forks at grade; weak attachments; out of balance to the south; above average amount of deadwood.	None at this time.

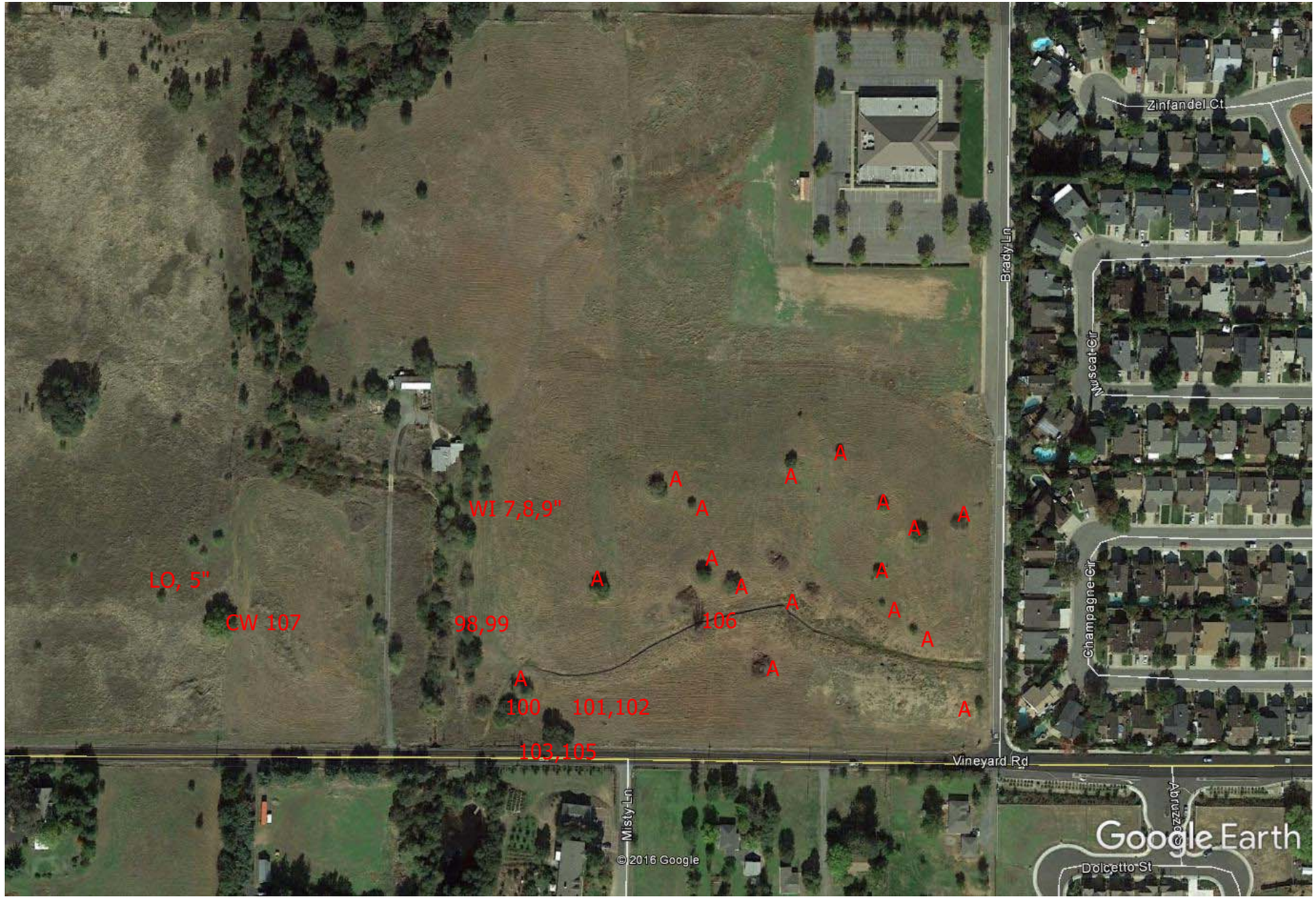
SUKHBIR BRAR
Brady Lane at Vineyard Road Project Site
County of Placer, California
TREE INVENTORY SUMMARY

TREE #	COMMON NAME	SPECIES	MULTI-STEMS (inches)	TOTAL DBH (inches)	DLR (feet)	CONDITIONAL ASSESSMENT						NOTABLE CHARACTERISTICS	MAINTENANCE RECOMMENDATIONS
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR		
99	Interior Live Oak	*(Quercus wislizeni)*		16	22	Fair	Fair	Fair	Fair	Fair	Fair	Out of balance to the north; slightly above average amount of deadwood.	None at this time.
100	Pacific Willow	*(Salix lucida)*	6,8,8,10	32	22	Poor to fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Weak attachments; above average amount of deadwood.	None at this time.
101	Interior Live Oak	*(Quercus wislizeni)*	4,8	12	20	Fair	Fair	Fair	Fair	Fair	Fair		None at this time.
102	Interior Live Oak	*(Quercus wislizeni)*		10	17	Fair	Fair	Fair	Fair	Fair	Fair	Slightly above average amount of deadwood.	None at this time.
103	Interior Live Oak	*(Quercus wislizeni)*		26	28	Fair	Fair	Fair	Fair	Fair	Fair	Above average amount of deadwood.	None at this time.
104	Interior Live Oak	*(Quercus wislizeni)*	5,6,6	17	20	Fair	Fair	Fair	Fair	Fair	Fair	Suppressed; out of balance to the northeast; slightly above average amount of deadwood.	None at this time.
105	Interior Live Oak	*(Quercus wislizeni)*	14,14	28	30	Fair	Poor to fair	Poor to fair	Fair	Poor to fair	Fair	Suppressed; lying prone on grade for the length; slightly above average amount of deadwood.	None at this time.
106	Pacific Willow	*(Salix lucida)*	8,10,11	29	14	Poor	Poor	Poor	Poor	Poor	Poor	Tree is 90% dead.	***Recommend removal due to nature and extent of noted defects.***
107	Fremont Cottonwood	*(Populus fremontii)*	8,9	17	12	Fair	Fair	Fair	Fair	Fair	Fair	Weak attachments; above average amount of deadwood.	None at this time.

TOTAL INVENTORIED TREES = 107 Trees (1,652 aggregate diameter inches)
TOTAL RECOMMENDED REMOVALS = 1 Tree (29 aggregate diameter inches)
PRECAUTIONARY TREES HIGHLIGHTED FOR REFERENCE

COOK DEVELOPMENT: Brady Ln/Vineyard South Area, Placer County

A=Almond
CW=Cottonwood
LO=Live Oak
WI=Willow



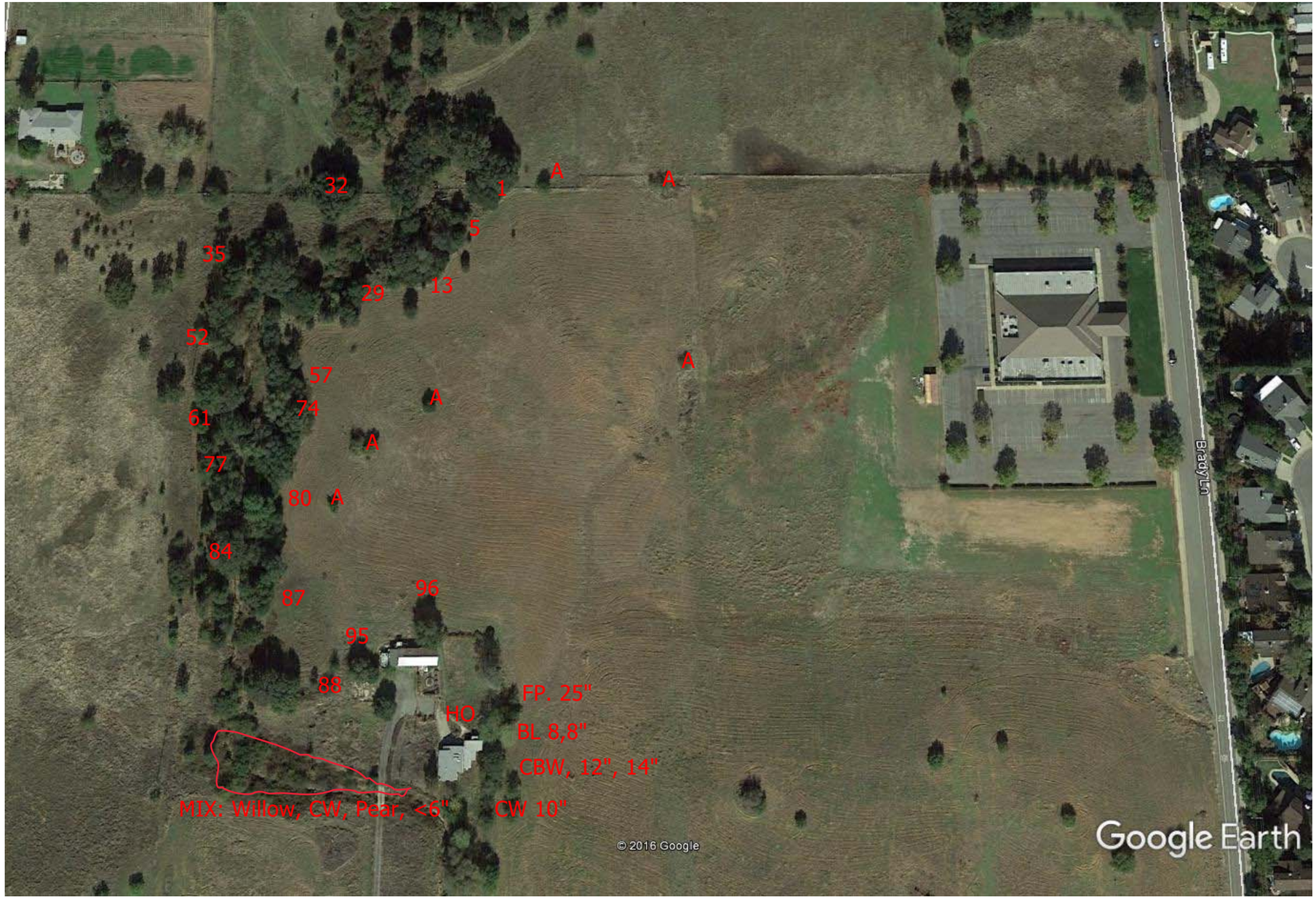
Google Earth

feet 2000
meters 600

Tree Inventory Exhibit

Prep. by Sierra Nevada Arborists
May 19, 2017

COOK DEVELOPMENT: Brady Ln/Vineyard North Area, Placer County



A=Almond
BL=Black Locust
CBW=CA Black Walnut
CW=Cottonwood
FP=Flowering Pear
HO=Holly Oak

Google Earth

feet 1000
meters 400

Tree Inventory Exhibit

Prep. by Sierra Nevada Arborists, May 17, 2017

APPENDIX F

PRELIMINARY GEOTECHNICAL ENGINEERING STUDY
BRADY RESIDENTIAL SUBDIVISION
NWC BRADY LANE AND VINEYARD ROAD
ROSEVILLE, CALIFORNIA

ACE QUALITY CONTROL
PROJECT NO. 10-17049G

July 25, 2017

PREPARED FOR:

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PRELIMINARY GEOTECHNICAL ENGINEERING STUDY

BRADY RESIDENTIAL SUBDIVISION
NWC BRADY LANE AND VINEYARD ROAD
ROSEVILLE, CALIFORNIA

INTRODUCTION

PURPOSE AND SCOPE OF STUDY

This report presents the results of our Preliminary Geotechnical Engineering Study for the proposed new residential subdivision to be located at the above referenced site and as shown on the appended Location Plan (Figure 1, Appendix A). The purpose of the study was to evaluate the general conditions of the earth materials at the site in order to provide conclusions and recommendations related to the geotechnical aspects of the project as discussed in our proposal / agreement dated May 15, 2017.

The scope of our work included exploring the general subsurface conditions, performing soil mechanics laboratory tests, and determining soil parameters for earth grading, foundation design, lateral resistance, floor slab-on-grade and pavement support, and expansive soil conditions, structural pavement support and material thicknesses, and evaluating potential for soil liquefaction. Site specific geologic hazards assessment (including naturally occurring asbestos – NOA) is not a part of our scope of work.

The attached Appendices contain further information including graphic presentations (Location Plan and Map of Explorations -- Appendix A); field exploration procedures, legend and logs of subsurface explorations (Appendix B); laboratory testing and procedures used (Appendix C); and, Guide Specifications for Earthwork (Appendix D).

PROPOSED PROJECT INFORMATION

The project is proposed on a +/- 35-acre parcel located at the northwestern corner of Brady Lane and Vineyard Road in Roseville, California (the subject site). The project will include removing vegetation (including designated trees) that are in the proposed new construction area, designing and constructing approximately 86 new residential homes, new underground utilities, paved entry and connecting roads,

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parking and sidewalks. Cutting / filling on the order of 5 - 10 feet is anticipated, but the grading plans were not available for review.

FINDINGS

SITE DESCRIPTION

At the time of our field exploration, June 13, 2017, the parcel was bounded by Brady Lane to the east, undeveloped parcels to the west and north, and Vineyard Road to the south. A church occupied a parcel at the northeastern segment of the site. An occupied rectangular parcel (not a part of the subject site) extended northerly into the southwestern segment of the property from Vineyard Road to about the west-central area. The overall topography of the site was generally gently undulating.

The parcel was undeveloped and densely overgrown with weeds. Numerous trees lined a seasonal swale that trended northerly to southerly in the western area of the parcel. Trees were scattered on the remainder of the property. Relatively smaller swales trended easterly to westerly to the western larger swale. An approximately 3 to 4 feet deep ditch trended westerly from Brady Lane through the southeastern segment of the site to the swale on the rectangular parcel.

As part of our project site exploration, historical Google Earth aerial imagery was used to identify any possible past activities on the subject site that are no longer visible. Plug dumped fill was noticeable on 7/2015 and 11/2015 photographs, but the fill appeared to have been either been removed or spread out on a 7/2016 photograph. Photographs dating back to 1993 indicated that some grading had occurred on the site along the sides of the Church's parcel to the northeast, and was most obvious on the southern side of that parcel. It is not clear if or where on the property other undocumented fill might be present.

GENERALIZED EARTH MATERIAL CONDITIONS

As shown on the Test Borings Logs (Figure 2, Appendix B), the subsurface earth material conditions varied slightly throughout the site and with depth. The soil encountered in the exploratory borings was mainly medium dense to very dense, brown and brown with red and gray discolorations, moist, silty SAND with variable gravel (Unified Soil Classification: SM) and well graded SAND (SW) to maximum depths explored of approximately 21-1/2 feet below existing ground surface (egs). Some lenses of

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dense, brown, moist, SILT (Unified Soil Classification: ML) were encountered at variable depths and thicknesses in some of the explorations.

Since the earth material profile is generalized, the reader is advised to consult the Explorations Logs contained in Appendix B, if the earth material conditions at a specific depth and location are desired. The logs contain a more detailed earth material description regarding color, earth material type, and Unified Soil Classification System (USCS) symbol.

It should be noted that earth material conditions cannot be fully determined by exploratory borings and earth material sampling. Hence, unexpected earth material conditions might be encountered during construction. If earth material deposits are encountered during construction which vary substantially from materials encountered during the investigation, then appropriate recommendations will be needed during construction. Therefore, we suggest a contingency fund for additional expenditures that might have to be made due to unforeseen conditions.

GROUNDWATER

Observations of groundwater conditions were made during the excavation of our exploratory borings at the time of field exploration. Free groundwater was not observed in borings B3 and B7. Free groundwater was encountered in the other borings during our exploration at approximate depths below estimated ground surface ranging from 13 to 21 feet. Please reference the Explorations Logs contained in Appendix B, if the approximate depths to free groundwater are desired for individual borings.

Groundwater levels can fluctuate on a seasonal basis due to changes in precipitation, irrigation, pumping, etc. Based on site topography and the time period our investigation was performed, groundwater levels might change. However, excavations below perched groundwater (if encountered) might be impacted by seepage; therefore, we recommend grading and utility excavations be performed during dry-season when groundwater levels are lowest.

GENERALIZED GEOLOGY

The site is located within California's Great Valley Geomorphic Province, a geologically young, large, flat-lying alluvial plain in the central portion of California. It is 40 to 60 miles (60 to 100 km) wide and stretches approximately 450 miles (720 km) from north-northwest to south-southeast, inland from and

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parallel to the Pacific Ocean Coast Ranges to the west and Sierra Nevada Mountains to the east. The Great Valley has been filled with hundreds to thousands of feet of eroded sediments, ranging in age from Pleistocene to Holocene. Relatively recent alluvial deposits generally consist of poorly sorted silts, fine sands and clays with less extensive lenses of medium to coarse grained sands and gravel.

The native earth materials underlying the site are considered to be alluvial materials and consistent with the earth materials discovered in the explorations. Based on our review of readily available published geologic literature/maps (CGS Geologic Map 1A "Geologic Map of the Sacramento Quadrangle", third printing 2010; scale 1:250,000) the site is mapped to be underlain by Pleistocene alluvial deposits consisting of gravels, sands, silts and clays of the Turlock Lake Formation. The total thickness of the formation at this site was not determined and is beyond the scope of this study.

SITE SPECIFIC GEOLOGIC ASSESSMENT

Not a part of this study.

PRIMARY SEISMIC HAZARDS

Fault Rupture

Fault rupture hazards are important near active faults and tend to reoccur along the surface traces of previous fault movements. The site is not located within an Alquist-Priolo Special Studies Zone and the potential for fault rupture, damage from fault displacement, or fault movement directly below the site is considered to be very low. However, the site is located within an area where shaking from earthquake generated ground motion waves should be considered likely.

Seismic Shaking

The mapped and design spectral response accelerations below presents seismic design criteria for the subject project site obtained from the United States Geological Survey (USGS) website (http://earthquake.usgs.gov/designmaps/us/application.php) with the USGS Seismic Design Maps application. The values are based on data provided by the 2008 USGS National Seismic Hazard Mapping Project and are for use with the 2013 California Building Code (CBC). The values for spectral response accelerations reference with a risk category of I or II or III.

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Mapped and Design Spectral Accelerations	
Description	**Value**
Site Soil Classification[1] / Seismic Design Category[2]	D / D
Site Latitude / Longitude	38.744°N / 121.314°W
S_s - Spectral Acceleration for a Short Period	0.518 g
S_1 - Spectral Acceleration for a 1-Second Period	0.255 g
S_{MS} - MCE_R, 5% damped Spectral Acceleration for a Short Period	0.718 g
S_{M1} - MCE_R, Spectral Acceleration for a 1-Second Period	0.481 g
S_{DS} - design, 5% damped, Spectral Acceleration for a Short Period	0.479 g
S_{D1} - design, 5% damped, Spectral Accel. for a 1-Second Period	0.321 g

[1] The *2016 CBC* requires a site soil profile determination extending to a depth of 100 feet for site soil classification. Explorations extended to a maximum depth of about 21½ feet, and this seismic site class definition considers similar material continues below the maximum depth of the deepest subsurface exploration.

[2] In general accordance with the 2016 CBC (refers to *ASCE 7-10*) Seismic Design Category is based on short & 1-sec period response acceleration parameters (S_{DS} & S_{D1}, respectively) and corresponding Risk Category.

Liquefaction and Seismic Settlement Evaluation

Liquefaction occurs when saturated fine-grained sands and/or silts lose their physical strength temporarily during earthquake induced shaking and behave as a liquid. This is due to loss of point-to-point grain contact and transfer of normal stress to the pore water. Liquefaction potential varies with water level, soil type, material gradation, relative density, and probable intensity and duration of ground shaking. Saturated and loose fine sands/silts were not encountered in our explorations.

The California Geological Survey (CGS) has designated certain areas within California as potential liquefaction hazard zones. These are areas considered at risk of liquefaction-related ground failure during a seismic event based upon mapped surficial deposits and the depth to the areal groundwater table. The project site is not currently mapped for potential liquefaction hazard by the CGS (refer to CGS website: (http://gmw.consrv.ca.gov/shmp/html/pdf_maps_no.html). Based on the information discussed above, it is our opinion that the overall potential for liquefaction at the site is very low if a seismic event should occur.

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Earthquake Induced Landsliding

Based on information available on the California Geological Survey (CGS) website the subject site is not currently within a State of California Seismic Hazard Zone for seismically induced landsliding. In addition, the main site area is relatively gently sloping; and, the slope on the north end of the property does not have any indications of historic slumping. Therefore, seismically induced and/or other landslides are not considered a significant hazard at the site.

Tsunamis and Seiche Evaluation

The site is not located near large bodies of water and is approximately 120 to 150 feet above MSL. Based on the geometry of the site, the potential for tsunami damage or damage caused by oscillatory waves (Seiche) is not considered likely at the site.

CONCLUSIONS AND DISCUSSIONS

SITE SUITABILITY AND GEOTECHNICAL CONSIDERATIONS

From a geotechnical standpoint, the site is considered suitable for the proposed construction provided the conclusions and recommendations presented in this report are incorporated into the design and construction of the project.

Geotechnical considerations that were evaluated by our office are discussed in the following sections of this report.

BEARING CAPABILITY

Field and laboratory tests show that the affirmed undisturbed, native earth materials encountered at the boring locations are competent for support of the proposed construction. Any loose, wet, soft soils or disturbed soils (including undocumented fill) that are present at the time of construction are not considered stable and should not be utilized to directly support new structural elements without first being overexcavated and then reworked as engineered fill (if deemed suitable); or, placed outside the proposed improvements.

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Engineered fill, composed of approved materials placed and compacted according to the following recommendations, are considered competent for support of low to moderate loading increases.

GROUNDWATER

Free groundwater was encountered in multiple test borings at approximate depths of 13 to 21 feet below the estimated ground surface. In addition, there is potential that shallow groundwater might be encountered in low lying areas and intermittent swales. It is our opinion that groundwater should not have significant impact on the proposed design or construction. However, groundwater levels at the site might be higher during the winter and spring months. Depending on the depth of utilities, there might be some impact on trenching during those seasons. In addition, if the uppermost soils should become saturated, then this condition could impede or delay grading operations.

COMPRESSIBLE AND EXPANSIVE SOILS

Compressible materials consisting of surficial organic material, loose soils, undocumented fills, debris, rubble, rubbish, etc., are considered unsuitable materials for support of proposed structures. Such materials can differentially settle. We consider that all loose/undocumented fill and/or disturbed soil materials that might be encountered during the earthwork construction should be removed. Those earth materials deemed suitable for re-use as engineered fill could be stockpiled. If the unsuitable materials are not removed, then special foundation systems should be designed to account for the potential settlements. In addition, in areas where loose, wet soils are removed as well as areas where trees have been or will be cleared, remedial grading will also be required to remove the loose soils and ensure the removal of the entire tree root systems. It is our experience that the granular soils have relatively low plasticity, and are considered to have very low potential for expansion.

Native undisturbed soil and/or engineered fill, composed of approved granular materials placed and compacted according to those discussed in the recommendations section, below, are considered competent for support of low to moderate loading increases anticipated for this project.

MATERIALS SUITABILITY

On-site soils similar to those encountered in the test borings are generally considered suitable for re-use as engineered fill provided the materials are processed to remove excessive moisture, rubble, rubbish,

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oversize materials, significant organic matter, highly plastic soil (if such should be encountered), or any other substance deemed unsuitable.

POTENTIAL EXCAVATION DIFFICULTIES

It is anticipated that the soil materials at the site can be readily moved by conventional earth moving equipment.

POTENTIAL SLOPE STABILITY

No landslides, slumps, or other indications of slope instabilities were observed in the general area during our field reconnaissance. We conclude that the natural relatively shallow slopes present within the site area are stable under the conditions observed.

FOUNDATION TYPE

A number of possible foundation alternatives are available to support the proposed buildings. Due to the relatively low to moderate loads anticipated and in accordance with current construction practices, the foundation system considered appropriate for the structures at this site is one consisting of conventional spread footings supported either on two or more feet of non-expansive engineered fill and/or native, undisturbed, medium dense to very dense soil. Design criteria for these footings are discussed in the following Recommendations Section, below.

RECOMMENDATIONS

EARTHWORK

General

Earthwork specifications which may be used as a guide in the preparation of contract documents for site grading are included in Appendix D. However, recommendations in the text of this report supersede those presented in Appendix D. **The conclusions and recommendations contained in this report should be incorporated into the guide specifications.** All recommendations could require modifications based on conditions encountered during grading. In addition, changes in the locations of the proposed structures and pavements could also necessitate modifications to the recommendations

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provided herein. Recommendations for the design and construction of the proposed structures and associated improvements are included below.

Site Clearing and Stripping

We recommend removal of any unstable or unsuitable materials such as soils disturbed during removal of loose soils, undocumented fills and / or other hidden features, trees, or otherwise unsuitable/unstable materials, from the areas where new structures, pavements, retaining walls, flatwork, fill slopes, etc., are planned. The excavated unstable soils could be evaluated for reuse as engineered fill. The resulting excavation(s) should be prepared and filled to subgrade level with engineered fill as discussed in the following sections.

The building pads and pavement areas should be cleared of all obstructions or unsuitable materials, including ***all undocumented fill and/or loose, wet or disturbed soil***, rubble, rubbish, vegetation, and any buried utility lines to be removed. Tree root bowls due to tree removal should be cleared of all large roots and loose soils. Any cisterns, septic tanks, leach fields, water wells, etcetera that might be encountered and are to be abandoned should be removed.

Excavations resulting from the removal of unsuitable materials and/or loose soils should be cleared to expose firm, stable material and backfilled with approved earth materials compacted to the requirements given below under compaction. Utilities that extend into the construction area and are scheduled to be abandoned should be properly capped at the perimeter of the construction zone or moved as directed in the plans. The surface of the resulting excavations should be scarified to a depth of 8 inches and recompacted to 95 percent relative compaction per ASTM D1557 at moisture content to between one to three percent above optimum moisture content.

The building pad is considered to extend laterally away from (outside of) all perimeter footing/building edges at least five (5) feet in plan view. The pavement area is considered to extend at least three (3) feet beyond the perimeter edges of the structural pavement section.

In conjunction with clearing, the building pad and pavement areas should be stripped to sufficient depth to remove all organic laden topsoil. The actual stripping depth should be determined by our representative at the time of construction. The cleared and stripped materials should be removed from the site or stockpiled for possible use as landscape materials.

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Subgrade Preparation

Once the construction areas have been cleared, any unsuitable soils over-excavated and any other excavations made, then subgrades that will receive engineered fill, that are to be left at existing grade, or that represent final subgrades achieved by excavation should be scarified to at least 8 inches. Suitability of soils exposed in the bottom of all subgrades should be verified by an ACE special inspector during site grading. Upon favorable review, exposed subgrades should be scarified and recompacted (in-place) an additional 8 inches and/or prior to placing engineered fill materials to planned rough pad grade. The loosened soils should be uniformly moisture conditioned to 1 to 3 percent over optimum and compacted to at least 90 percent relative compaction per ASTM D 1557; in pavement subgrade areas, to at least 95 percent in the upper twelve inches. ACE's special inspector should observe the recompacted subgrades be proof-rolled with very heavy construction equipment (e.g., loaded water truck) in order to verify subgrade soil stability. Inability to achieve the stated moisture content, compaction, or instability of the subgrade materials could be used as further criteria for the removal of loose, wet or soft soils, or for the need of special stabilizing measures.

If unanticipated unsuitable materials are encountered at subgrade such that they are unstable and/or proper compaction cannot be obtained, then mitigation measures, such as overexcavations to remove such material, would be recommended. In addition, construction equipment on saturated soils could destabilize the earth materials, sometimes to several feet of depth, which might necessitate further overexcavation and/or special stabilization.

An ACE special inspector should observe and approve the bottom of all overexcavations to confirm adequate conditions have been reached and shall observe and approve the scarification, moisture conditioning and recompaction of the excavated surfaces.

Material for Fill

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer. Approved imported materials or onsite fill materials may be used as fill material for general site grading, foundation backfill, foundation areas, trench backfill, slab areas, and pavement areas.

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Soils from any source (on-site or off-site) for use as fill material within the proposed improvement areas should conform to low volume change materials as indicated as follows:

Gradation	Percent Finer by Weight (ASTM C 136)
3"	100
No. 4 Sieve	50 - 100
No. 200 Sieve	20 - 50

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansive index* ..... 30 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed eight inches in loose thickness.

All fill materials that are pre-approved by this firm at least 48 hours in advance of grading are considered suitable for use as fill. Earth materials from any source to be used for engineered fill should be observed by our representative and samples obtained for laboratory testing (if required) at least four days prior to any materials used for engineered fill.

In areas proposed for general fill not proposed to support improvements (e.g., buildings and pavements) the materials to be re-used as engineered fill three feet or more below soil subgrade level should have an Expansion Index not exceeding 50 (EI<50); not more than 35 percent passing a #200 sieve; do not contain rocks or lumps greater than 8 inches in greatest dimension with not more than 35 percent larger than 4 inches; and, which are pre-approved by this firm.

Fill Placement and Compaction

Materials for engineered fill should be spread and compacted in lifts not exceeding 8 inches in uncompacted thickness. Engineered fill placed at the site and subgrades requiring recompaction should be uniformly compacted to 90 percent relative compaction in building areas, and to 95 percent relative compaction in the upper two feet of pavement and flatwork areas, as determined by ASTM Test Designation D 1557, or to the method as might be determined by an ACE special inspector. The moisture content of engineered fill materials should be determined by ACE's field representative based upon the compaction characteristics of the earth material (typically 1 to 3 percent over optimum). ACE

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should continuously observe and test the grading and earthwork operations for this project. Such observations and tests are essential to identify field conditions that differ from those predicted by this investigation, to adjust these recommendations to actual field conditions encountered, and to verify that the grading is in overall accordance with the recommendations presented in this report.

If construction proceeds during or shortly after the wet winter months, it may require time to dry the on-site soils since their moisture content will probably be appreciably above the optimum. In addition, if subgrade soils are wet at the time of construction, they could be rutted, loosened or otherwise disturbed to several feet of depth by the construction equipment and require additional over-excavation and/or stabilization.

Construction occurring in later summer or early fall (subsequent to on-site earth materials becoming dry) may require substantial amounts of water to be added during earthwork operations to enable the appropriate moisture content and compaction to be achieved.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of foundations, exterior flatwork/slabs and pavements. Construction traffic over the completed subgrade should be avoided in order to prevent disturbance of subgrade soils. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade consisting of engineered fill should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to construction.

The geotechnical engineer should be retained during the earthwork construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, backfilling of excavations to the completed subgrade, placement and compaction of engineered fills, proof-rolling, backfilling of utility trenches, etc.

Trench Backfill

Utility trenches should be backfilled with mechanically compacted fill placed in lifts not exceeding 8 inches in uncompacted thickness. Water content of the fill material should be adjusted (typically 1 to 3 percent over optimum) during the trench backfilling operations to obtain compaction. If on-site soil is

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used, the material should be compacted to at least 90 percent relative compaction. Imported sand could also be used for backfilling trenches provided it is compacted to at least 95 percent relative compaction.

Utility trenches should be plugged with lean concrete wherever the utility line passes beneath the perimeters of the structures. The plug should be at least one foot on either side of the perimeter of the building perimeter footing and extend from the bottom of the building perimeter (e.g., foundation) to the bottom of the trench.

Finish Grading and Drainage

On-site soils are considered moderately susceptible to erosion where drainage concentrations occur. Concentrated flowing water should be either dissipated or channeled to appropriate discharge facilities. Appropriate erosion control measures should be provided, where applicable, by the general civil engineer on his grading and/or winterization plan.

Positive surface gradients should be provided adjacent to the buildings and within pavement areas to direct surface water away from the buildings and pavement for at least ten feet and toward suitable discharge facilities. Ponding of surface water should not be allowed adjacent to the buildings or pavement nor on top of pavement. Positive drainage should be provided during construction and maintained throughout the life of the buildings. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention.

Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems should not be installed within 5 feet of foundation walls. Landscaped irrigation adjacent to the foundation system should be minimized or eliminated.

All grades must provide effective drainage away from the building during and after construction. Water permitted to pond next to the building can result in greater soil movements than those discussed in this report. These greater movements can result in unacceptable differential floor slab movements, cracked

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slabs and walls, and roof leaks. Estimated movements described in this report are based on effective drainage for the life of the structure and cannot be relied upon if effective drainage is not maintained.

Exposed ground should be sloped at a minimum 2 percent down and away from the building for at least 10 feet beyond the perimeter of the building or pavement. After building construction and landscaping, we recommend verifying final grades to document that effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary, as part of the structure's maintenance program.

Slopes

Permanent excavation and embankment slopes up to 15 feet of height in soil should be graded at an inclination of 2 horizontal to 1 vertical (2h: 1v) or flatter. The crowns of all slopes should be constructed so that surface run-off water is not allowed to flow over the faces of the slopes. All cut slopes should be observed during grading by the Engineering Geologist to determine if any adverse defects are present. If defects are observed, then additional study and/or recommendations would be made at that time.

For construction slopes, the individual contractor(s) is/are responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.

Earthwork Construction Considerations

At the time of our study, moisture contents of the surface and near-surface native soils ranged from approximately 4 percent to 27 percent. Based on these moisture contents, some moisture conditioning will likely be needed for the project. The soils may need to be dried by aeration during wet weather conditions, or a chemical treatment, such as cement, lime, or kiln dust, may be needed to stabilize the soil. Subgrade conditions may require a rock protective mat covering of exposed subgrades in order to limit disturbance of the site soils as well as provide a stable base for construction equipment.

Although the exposed subgrades are anticipated to be relatively stable upon initial exposure, on site soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light

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construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. If unstable subgrade conditions develop, then stabilization measures will need to be employed. Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of the floor slabs and pavements. Construction traffic over the completed subgrades should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

We anticipate that site grading for concrete foundations, slab construction, pavements and utility trenches can be performed with conventional earthmoving equipment. We emphasize the contractor is responsible for designing and constructing stable, temporary excavations (including utility trenches) as required to maintain stability of both the excavation sides and bottom and should be in accordance with OSHA excavation and trench safety standards.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through May) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork may require additional mitigation measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

If unstable subgrade conditions develop during construction, suitable methods of stabilization will be dependent upon factors such as schedule, weather, size of area to be stabilized, and the nature of the instability. If soil stabilization is needed, ACE should be consulted to evaluate the situation as needed.

Construction Observation

As previously discussed, variations in subsurface conditions are possible and may be encountered during construction. In order to permit correlation between the preliminary subsurface data obtained during this investigation and the actual subsurface conditions encountered during construction, as well as affirm

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substantial conformance with the plans and specifications, a representative of this firm should be present during all phases of the site earthwork to make tests and observations of the site preparation, selection of satisfactory fill materials, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade, etc. Additionally, if lime treatment is needed, then he should perform observations during mixing, remixing and compaction.

Any site earthwork performed without the presence of our representative will be entirely at the grading contractor's and/or owner's risk and no responsibility for such operations will be accepted by our firm. Sufficient notification **(at least 48 hours)** is necessary to assure that our work will coincide with the construction schedule.

We emphasize the importance of ACE's presence during the observation and testing of the grading operations. ACE's observation of the subsurface soil conditions, especially under the loads imposed by construction equipment, is considered an extension of our investigation, particularly within those areas away from the test borings.

Guide Specifications

Earthwork guide specifications which may be used as a guide in the preparation of contract documents for site grading are included in Appendix D. **The conclusions and recommendations contained in this report should be incorporated into the guide specifications.**

CRITERIA FOR FOUNDATION DESIGN

General

An important factor in soils is a change in moisture content. The following is predicated on the soil moisture beneath and within five feet of the building slabs being maintained in a uniform condition during and after construction. Please be advised that over watering or under watering, types of plants (trees should be a distance equal to at least their maximum height away from the slab), altering site drainage, and etc., might be detrimental to the foundation and/or pavements. We suggest that automatic timing devices be utilized on irrigation systems; however, provision should be made to interrupt the normal watering cycle during and following periods of rainfall.

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Foundation Design Criteria

Based on the field and laboratory information for this study, we recommend that the proposed buildings and any retaining walls (up to 5 feet high) be supported upon isolated and/or continuous spread footings that extend at least 12- or 18-inches below the building pad engineered soil surface or lowest abutting engineered soil grade for one- or two-story structures, respectively. All foundations beneath the entire structure should be founded on native, undisturbed soil and / or engineered fill. ACE's geotechnical engineer or his representative should observe earth material conditions exposed in foundation excavations in order to confirm the adequacy for structural foundation bearing, confirm the appropriateness of these recommendations, and to allow for an opportunity to provide additional recommendations if deemed necessary. If the earth material conditions encountered differ significantly from those presented in this report, then supplemental recommendations will be required.

Foundation dimensions and reinforcement should be based on allowable soil bearing value of 2,500 pounds per square foot (psf) for spread footings of at least 12-inches in width penetrating into and embedded below rough pad bearing ***soil*** grade at least 12- or 18-inches for one- or two-story structures (or equivalent), respectively.

Spread footing excavations that are deeper than the planned bottoms of the footing excavations could be filled to the planned footing bottom elevation with either footing concrete or Controlled Low-Strength Material (CLSM) per section 1803.5.9 of the 2013 CBC, with approval of the Geotechnical Engineer. The CLSM should have at least 400 psi compressive strength at 28 days. The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include short duration wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

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Footings should be proportioned to reduce differential foundation movement. Proportioning on the basis of equal total settlement is recommended; however, proportioning to relative constant dead-load pressure will reduce differential settlement between adjacent footings. Additional foundation movements could occur if water, from any source, saturates the foundation soils; therefore, proper drainage should be provided during construction and in the final design.

We recommend that all footings be reinforced as required by the structural engineer to provide structural continuity, to permit strong spanning of local irregularities and to be rigid enough to accommodate potential differential movements estimated at about one-half inch over 20 linear feet. The use of joints at openings, or other discontinuities, especially in masonry walls, is recommended. Based on the conditions observed at the site, the total structure settlement is expected to be on the order of one inch for static compression. Dynamic settlement due to an earthquake event is not expected to adversely affect the proposed improvements. The foundation settlement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the footings, the thickness of compacted fill, and the quality of the earthwork operations. We estimate that total and differential settlements should not exceed the predicted values, provided that the foundations are designed and constructed as recommended herein, and essentially no changes occur in water contents of foundation soils. Additional foundation movements could occur if water from any source infiltrates the foundation soils; therefore, proper drainage should be provided in the final design and during construction. All foundations should be designed by the project structural engineer.

The foundation excavations should be clean (i.e., free of all loose slough) and moist prior to placing steel and concrete. Foundation excavations should be maintained at moisture contents of between 1 to 3 percent over optimum moisture content just prior to foundation concrete placement. The concrete for the foundation should not be placed against a dry excavation surface.

The base of all foundation excavations should be free of water, loose soil, and gravel prior to placing concrete. Concrete should be placed soon after excavating and placement of engineered fill (and lime treatment, if needed) to reduce bearing soil disturbance. Should the soils at bearing level become excessively dry, disturbed, or saturated, the affected soil should be removed prior to placing concrete. In addition, as previously described unsuitable soils should be completely removed from any proposed construction areas prior to construction.

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Concrete should not be chuted against the excavation sidewalls. For excavations over five feet deep concrete should be pumped or placed by means of a tremie or elephant's trunk to avoid aggregate segregation and earth contamination. Rebar reinforcement should be properly supported with proper clearances maintained during concrete placement. The concrete should be properly vibrated to mitigate formation of voids and to promote bonding of the concrete to steel reinforcing. These recommendations are predicated upon ACE's representative observing the bearing materials as well as the manner of concrete placement.

Footing Setback

The bottoms of utility trenches placed along the perimeter of the footing should be above an imaginary plane that projects at a 45-degree angle down from the lowest outermost edge of the footing. Where trenches pass through the plane the trench should be installed perpendicular to the face of the footing for a distance of at least the depth of the foundation. Alternatively, the footing could be deepened to attain the recommended setback.

Foundations planned within or adjacent to slope areas should be deepened to provide sufficient horizontal distance from the bottom, outer edge of the foundations to daylight. The distance should be equal to half the slope height or five (5) feet, whichever is greater. Foundation details under the influence of this recommendation should be forwarded along with the structural load information to the geotechnical engineer for review.

Footing Lateral Resistance

Foundations placed in approved bearing materials (excludes undocumented fill) may be designed using a coefficient of friction of 0.30 for soil (total frictional resistance equals the coefficient of friction times the dead load). A design passive resistance value of 300 pounds per square foot per foot (psf/ft) of depth (with a maximum value of 1000 pounds per square foot) may be used for native soil or engineered fill comprised of native soil. If both friction and passive pressures are combined, then the smaller value should be halved.

The sides of the excavations for the spread footing foundations should be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure values to be

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valid. If the loaded side is sloped or benched in the soil, and then backfilled with engineered fill, the nominal passive pressure is reduced to the soil resistance pressure.

Slab-On-Grade Floor Support

On most project sites, the site mass grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade soils may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade soils may not be suitable for placement of base rock and concrete and corrective action will be required.

We recommend the recompacted native soil and/or engineered fill underlying the floor slabs be rough graded and then thoroughly proofrolled with a loaded tandem axle dump truck or water truck prior to final grading and placement of base rock. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material as engineered fill.

A building pad comprised of engineered fill constructed in accordance with the criteria contained within the above "Earthwork" section is considered suitable for support of the slab-on-grade floors of the buildings without further treatment. The subgrade soils should be maintained at 1 to 3 percent above the compaction moisture content in the upper 12 inches. In all cases the floor slab should not be placed on a dry subgrade.

Building floor slab design, thickness and reinforcement should be as required by the structural designer, based on a soil modulus of subgrade reaction estimated at 100 psi/in for engineered fill/recompacted native soil. We suggest that slabs-on-grade supported on engineered fill / native soils should be at least 4-inches thick for light duty use. The exterior ground surface should be at least 6 inches below the top of the floor slab. We emphasize that all surfaces should slope to drain away from all sides of the building.

Slabs-on-grade subject to light vehicle traffic should be at least five inches thick, or as per the project structural engineer, and have a minimum six-inch thick layer of Class 2 aggregate base compacted to at least 95 percent relative compaction placed beneath the slabs. If elastic design is utilized for designing slabs-on-grade, a modulus of subgrade reaction (k) value of 100 pci should be used for slabs supported

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on engineered fill/native soils. For design of slabs founded on Class 2 aggregate base the design k value may be increased to 125 pci. We suggest the minimum reinforcement could consist of #3 reinforcing bars placed on maximum 24-inch centers at mid-slab height. The modulus was provided based on the slab being supported on 6 inches or more of compacted aggregate base and estimates obtained from NAVFAC 7.1 design charts. This value is for a small loaded area (1 sq. foot or less) such as for small truck wheel loads or point loads and should be adjusted for larger loaded areas. Slabs subjected to heavier loads may require thicker slab sections and/or increased reinforcement. The slabs should be separated from the foundations supporting the structures to allow for differential movements between the two elements.

We are not experts regarding measures for mitigating (or preventing) moisture intrusion into building's first floor slab(s)-on-grade. If such should be desired, then an expert regarding moisture intrusion should be consulted.

We suggest the following measures for mitigating (not preventing) moisture intrusion into moisture sensitive interior floor slab(s). The floor slabs should be underlain by a 4-inch thick layer of crushed washed rock which is intended to serve as a capillary mitigating moisture break and to provide uniform slab support. Gradation of this material should be such that 100 percent will pass a 1-inch sieve and 0 to 5 percent passes the No. 4 sieve. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder. At a minimum, we recommend a 10-mil moisture vapor barrier (sealed at all laps, splices, penetrations, etc.) be placed above the gravel moisture break. The vapor barrier should extend laterally into the footings. If maximum two-inches of clean sand should be placed above the vapor retarder (not recommended), then we recommend a moisture barrier be placed against the outer face of the perimeter footing. Please note that the sand can be a conduit for water beneath the slab. In addition, the sand can form boils/pockets in the slab concrete. If proposed floor areas or coverings are considered especially sensitive to moisture emissions, additional recommendations from a specialty consultant should be obtained.

If desired, further resistance to moisture vapor intrusion could be achieved with proper curing of the concrete, adding a sealant to the mix (e.g., Moxie), having a mix design with low slump (e.g., 2 to 4

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inches), low water/cement ratio (we suggest not greater than 0.48), and high strength (we suggest at least 3000 psi).

The structural engineer/Architect and slab installation contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor barrier. In areas of exposed concrete, control joints should be saw-cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). To control the width of cracking, continuous slab reinforcement should be considered in exposed concrete slabs.

Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report and Appendix D. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

Exterior Flatwork

To reduce the potential for distress to exterior flatwork caused by differential settlement of foundation soils, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the project architect. Flatwork, which should be installed with crack control joints, includes driveways, sidewalks, and architectural features. All subgrades should be prepared according to the earthwork recommendations previously given before placing concrete. Positive drainage should be established and maintained adjacent to all flatwork.

FLEXIBLE PAVEMENT SECTION ALTERNATIVES

We understand that asphalt concrete (A/C) pavement is proposed for the new paved entry roads. Curb, gutter, driveway and sidewalk areas are expected to be constructed of Portland cement concrete. A Resistance ("R") Value test per CTM 301 was performed on a representative sample of the site soil. The R-value result by exudation was 61 (results tabulated in Appendix C and was used with the CalTrans Design Method for Flexible Pavements and the traffic indices (T.I.) indicated below. A factor of safety per CalTrans was not applied. The Traffic Index selected for the final pavement design should be based upon the CalTrans "Highway Design Manual" (HDM) - latest revision and/or edition - including consideration of the vehicular traffic anticipated, number of repetitions, etc., - as determined by your

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general civil engineer or per regulatory agency requirements. Recommended pavement sections are on the following table:

DESIGN TRAFFIC INDEX	RECOMMENDED PAVEMENT SECTION ALTERNATIVES Inches (Feet)			
	Asphalt Concrete (Type B)	Aggregate Base (Class 2*)	Portland Cement Concrete**	Aggregate Base (Class 2*)
5.0	2" (0.15') 2.5" (0.20')	6" (0.5') 5" (0.4')	4" (0.35')	4" (0.50')
6.0	2.5" (0.20') 3" (0.25')	6" (0.5') 5" (0.4')	5" (0.40')	4" (0.50')
7.0	3" (0.25') 3.5" (0.3')	8" (0.65') 6" (0.5')	6" (0.50')	4" (0.50')

(* Caltrans Class 2 aggregate base. ** Concrete should have a modulus of rupture of at least 600 psi.)

The preliminary sections above should be reviewed and approved by the owner, his civil engineer, and the governing authorities prior to construction. In addition, other recommendations for the stated traffic indices are available, if needed. The total thickness of most sections would closely approximate those given. Thinner sections than those recommended could result in increased maintenance and/or shorter pavement life. If desired, please contact this office for further analysis.

Asphalt concrete paved areas should be designed, constructed, and maintained in accordance with, for example, the recommendations of the Asphalt Institute, CalTrans Highway Design Manual, or other widely recognized authority. Concrete paved areas should be designed and constructed in accordance with the recommendations of the American Concrete Institute or other widely recognized authority, particularly with regard to thickened edges, joints, and drainage.

Materials and compaction requirements within the structural sections should conform to the applicable provisions of the CalTrans Standard Specifications (latest edition) including minimum 95 percent relative compaction of at least the uppermost six inches of subgrade materials. Asphalt concrete pavement should conform to the specifications of Type A or B per section 39, and aggregate base should conform to the specifications of Class II per Section 26 of the referenced specifications.

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Concrete pavements could be reinforced with nominal rebar, such as minimum #4 bars spaced no greater than 24 inches, on center, both ways, placed at above mid-slab height, but with proper concrete cover, as designed by the pavement engineer. Alternatively, concrete pavements can be unreinforced provided they are constructed with expansion/contraction and/or construction joints spaced no greater than 24 times the pavement thickness, both ways, in nearly square patterns, and are detailed in general accordance with ACI Guidelines. Doweling of concrete pavements at critical pathways is also recommended.

We recommend that reinforced concrete pads be provided for truck pad areas – especially at least 30 feet in front of and beneath trash receptacles. The trash collection trucks should be parked on the rigid concrete pavement when the trash receptacles are lifted. The concrete pads should be at least 5 inches thick and properly reinforced. Thickened edges should be used along outside edges of concrete pavements. Edge thickness should be at least 2 inches thicker than concrete pavement thickness and taper to the actual concrete pavement thickness 36 inches inward from the edge. Integral curbs may be used in lieu of thickened edges.

The above pavement section alternatives were calculated on the basis that a comparable soil type to that tested would constitute the final subgrade of the pavement. ACE should be retained to observe final subgrade soil(s) exposed to affirm that the soil is comparable to that tested. Where differing earth materials are encountered they should be tested to affirm that they will also provide the same or better support for pavement sections similar to those above.

The above sections should be used for preliminary design and planning purposes <u>only</u>. We recommend representative subgrade sample(s) be obtained and additional "R" Value test(s) be performed on actual earth materials exposed once pavements have been pioneered. These additional test results may then be used to evaluate pavement sections for construction. It is possible that significant variations in pavement sections (vs. those listed above) could result if the resulting test(s) is/are different than that used for this study.

Adequate drainage systems should be provided to prevent both surface and subsurface saturation of the subgrade soils. As a design option, a subdrain system beneath and along the edges of the pavements might be considered. The purpose of the system would be to mitigate saturation and loss of strength/stability of the subgrade soils. Subdrains should be especially considered beneath valley drains,

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if utilized for the project. As an alternate to edge drains (especially around landscape planters), barrier curbing that extends to at least four inches into the soil subgrade below the bottom of the aggregate base layer could be considered to limit infiltration of water beneath the adjacent pavement. Drainage inlets should be perforated (weep holes installed) at the level of the aggregate base layer. A layer of geotextile fabric should be placed on the outside of the drain inlet over the weep holes to reduce the potential for migration or piping of fines through the holes.

Base course or pavement materials should not be placed when the subgrade surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

Pavement Construction Considerations

On most project sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrades may become disturbed due to utility excavations, construction traffic, rainfall, etc. As a result, the pavement subgrade may not be suitable for placement of aggregate base and pavement. We recommend the area underlying the pavement be rough graded and proof-rolled prior to placement of aggregate base material. Particular attention should be paid to high traffic areas and utility trenches that were backfilled. Areas where disturbance has occurred and materials are unsuitable should be removed and replaced with compacted structural fill.

The aggregate base should be uniformly moisture-conditioned and compacted to a minimum of 95 percent relative compaction (modified proctor) in accordance with this report. Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

Minimizing subgrade saturation is an important factor in maintaining subgrade strength. Water allowed to pond on or adjacent to pavements could saturate the subgrade and cause premature pavement deterioration. The pavement should be sloped to provide rapid surface drainage, and positive surface drainage should be maintained away from the edge of the paved areas. Design alternatives which could reduce the risk of subgrade saturation and improve long-term pavement performance include crowning the pavement subgrades to drain toward the edges, rather than to the center of the pavement areas; and installing surface drains next to any areas where surface water could pond. Properly designed and

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constructed subsurface drainage will reduce the time subgrade soils are saturated and can also improve subgrade strength and performance. In areas where there will be irrigation adjacent to pavements, we recommend the owner consider installing perimeter drains for the pavements.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Subdrainage

Subdrains might be needed to control subsurface water that might become perched in top and/or fill soils. Each case should be evaluated by the Geotechnical Engineer so that he could make appropriate mitigation recommendations.

LIMITATIONS

The analysis and recommendations submitted in this report are based in part upon the data from the exploratory borings at the indicated locations and in part on information provided by the client. The nature and extent of subsurface variations between the test borings across the site (or due to the modifying effects of weather and/or man) may not become evident until further exploration or during construction. If variations then appear evident, then the conclusions, opinions, and recommendations in this report shall be considered invalid, unless the variations are reviewed and the conclusions, opinions, and recommendations are modified or approved in writing.

This report was prepared in order to assist the client in the evaluation of the site and to assist the architect and/or engineer in the design of the improvements. This firm should be provided the opportunity for a general review of final plans and specifications to determine that the recommendations of this report have been properly interpreted and implemented in the plans and specifications.

In the event that there are any significant changes in the project as described herein, then the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions and recommendations modified or verified in writing.

This report is issued for the client's use only. In addition, it is his responsibility to ensure that the information and recommendations contained herein are called to the attention of the designer for the project; and, that necessary steps are taken to implement the recommendations during construction.

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The findings in this report were developed on the date(s) indicated. Changes in the conditions of the property can occur with the passage of time, whether they are due to natural processes or the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control. Therefore, this report and the findings on which it is based are subject to our review at the onset of and during construction, or within two years, whichever first occurs.

The scope of services of this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria, etc.) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential of such contamination or pollution, other studies should be undertaken.

No warranties, either expressed or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusion and recommendations contained in this report shall not be considered valid unless ACE reviews the changes, and either verifies or modifies the conclusions of this report in writing.

This report is applicable only for the project and site studied, and should not be used for design and/or construction on any other site.

We appreciate this opportunity to be of service on this project. If you have any questions regarding this report, then please do not hesitate to contact us.

Sincerely;
ACE Quality Control

REGISTERED PROFESSIONAL ENGINEER
CURTIS EDWARD HENDRICK
No. GE 002021
GEOTECHNICAL
STATE OF CALIFORNIA

Mr. Dillon Stemberger, EIT
Staff Engineer
EIT No. 160693

Mr. Ed Hendrick, PE, GE, RG, CEG
Principal Geotechnical Engineer / Engineering Geologist
Registered Geotechnical Engineer No. GE002021
Certified Engineering Geologist No. CEG105

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APPENDIX A

GRAPHIC PRESENTATIONS

VICINITY MAP

EXPLORATIONS MAP

NOTES:

Location of site is approximate. Source for base map: Imagery (7/14/2017) from Google Earth 2016©.

ACE Quality Control
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Roseville, CA 95678
Phone: 916-778-0950

VICINITY MAP

Proposed Brady Residential Subdivision
Brady Lane and Vineyard Road
Roseville, California

ACE JOB NO.
10-17049G
DATE
07/21/2017
FIGURE
1

N

N.T.S.

NOTES:

Locations of exploratory borings (shown as ⊗ B1) are approximate. Base map from Google Earth imagery 2/28/2015.

ACE Quality Control
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Roseville, CA 95678
Phone: 916-778-0950

EXPLORATIONS MAP

Proposed Brady Residential Subdivision
Brady Lane and Vineyard Road
Roseville, California

ACE JOB NO.	10-17049G
DATE	07/21/2017
FIGURE	2

APPENDIX B

FIELD EXPLORATION METHODS

LOGS OF SUBSURFACE EXPLORATIONS

LEGEND

FIELD EXPLORATION METHODS

Field exploration included a general geotechnical engineering reconnaissance within the study area, as well as the excavation of subsurface explorations (exploratory borings) at the approximate locations shown on the Explorations Map, Figure 2, Appendix A. Exploration locations were located in the field by estimating from the existing site features shown on an aerial photo. The exploration locations should only be considered accurate to the degree implied by the means and methods used to define them. The explorations were conducted in order to assess the geometry and geotechnical characteristics of subsurface geologic deposits at the site.

The explorations were accomplished and the soil sampling/logging performed by a Staff Engineer under the direct supervision of a Geotechnical Engineer. The borings were advanced with a 4-inch outer-diameter continuous flight helical solid stem augers powered by a CME 45 truck mounted drill rig. Relatively undisturbed soil samples were recovered from the borings at selected intervals by a 1.4-inch inner-diameter "standard penetration" sampler advanced with an automatic hammer driving a 140 lb. hammer freely falling 30 inches (standard 350-foot/lb. striking force). The number of blows of the hammer required to drive the samplers each 6-inch to 18-inch interval of each drive is denoted as the penetration resistance or "blow count" and provides a field estimate of soil consistency/relative density. Blow counts shown on the logs have not been corrected/converted. Selected undisturbed samples were retained in moisture-proof containers for laboratory testing and reference.

Samples of the subsurface soil deposits were obtained from the test borings for use in laboratory testing to determine the engineering properties and geotechnical design parameters to be used for future site improvements. The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. A bulk soil sample was recovered directly from excavation cuttings of anticipated pavement subgrade soil and placed in a plastic sample bag. Soil samples were then transported to ACE’s laboratory for further testing. Field descriptions within the test borings logs have been modified, where appropriate, to reflect laboratory test results. Upon completion of drilling the test borings were backfilled from final test boring depth up to original ground surface with excavated soils.

Soils were logged in the field by a Staff Engineer and were field classified based on the Unified Soil Classification System (ASTM D2487) by color, gradation, texture, type, etc., on the basis of visual observation of samples and auger cuttings. Groundwater observations were made in the borings during and after drilling. Exploration logs prepared for each of the test borings provide soil descriptions and field sample depths. The exploration borings logs are included in this Appendix B which also contains the Explorations Log Legend. These logs include visual classifications of the materials encountered during drilling as well as the field engineer’s interpretation of the subsurface conditions between samples. Final logs included with this report represent the engineer's interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

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EXPLORATION LOG

CLIENT	MR. SUKHBIR BRAR	BORING #	B-1
PROJECT NAME	Brady Residential Subdivision	JOB NO.	10-17049G
PROJECT LOCATION	NWC Brady Lane and Vineyard Road	DRAWN BY	DS
	Roseville, California	APPROVED BY	EH

DRILLING and SAMPLING INFO

Date Started	06/13/17	Hammer Wt. (lbs.)	140 lbs. (automatic)
Date Completed	06/13/17	Hammer Drop (in.)	30"
Driller	Cal Nev Geoexploration	Spoon Sampler ID (in.)	1.4, 2.0
Field Geologist	Stemberger		
Boring Method			

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: egs	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to dense, brown to gray-brown, dry to moist, silty fine to medium SAND SM	1		1	MC		83		18	103	4				
		5	2	MC		100		42						
		10	3	ST		100		49						
Medium dense, brown with white and gray, moist, medium to coarse SAND with gravel SP	2	15	4	ST		100	9:15 9:40	29						
		20	5	ST		100		26						
Boring completed at approximately 21-1/2' below egs. GW initially at 16', and after drilling at 17-1/2' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

SuperLog CivilTech Software, USA www.civiltech.com File: Z:\ACE Projects\ACE Projects\Geotechnical Projects\2017\10-17049G Brady Vineyard 36 Acre Development\GRAPHICS\10-17049G LOGS.log Date: 7/24/2017

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-2
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, brown to light brown, dry to moist, silty SAND with gravel and near surface root SM	1		1	MC		50		22						
		5	2	ST		100		26	110	14				
		10	3	ST		100	10:00 15	30	121	13				
Dense, brown, wet,silty SAND with gravel. SM	3	15	4	ST		100		45						
		20	5	ST		100		54						
Boring completed at approximately 21-1/2' below egs. GW initially at 13', and after drilling at 13-1/2' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT: MR. SUKHBIR BRAR
PROJECT NAME: Brady Residential Subdivision
PROJECT LOCATION: NWC Brady Lane and Vineyard Road
Roseville, California

BORING #: B-3
JOB NO.: 10-17049G
DRAWN BY: DS
APPROVED BY: EH

DRILLING and SAMPLING INFO

Date Started: 06/13/17
Date Completed: 06/13/17
Driller: Cal Nev Geoexploration
Field Geologist: Stemberger
Boring Method: 4" O.D SSA

Hammer Wt. (140 lbs.): 140# Automatic
Hammer Drop (30"): 30"
Spoon Sampler ID (in.): 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, brown with white, dry, silty SAND with gravel, micaceous SM	1		1	MC		100	GWT not encountered	39						
		5	2	ST		100		22	115	7				
Medium dense, brown with white and red, moist, well graded SAND with gravel SW	2	10	3	ST		100		23	110	5				
		15	4	ST		100		34						
Dense, light brown, moist, silty SAND with gravel. SM	3	20	5	ST		100		37						
Boring completed at approximately 21-1/2' below egs. Free GW not observed. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-4
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to dense, brown with white and red, moist, silty SAND SM	1		1	MC		83		16	95	5				
		5	2	ST		100		15	107	9				
		10	3	ST		100		43						
Dense to medium dense, light brown, moist, silt ML	2	15	4	ST		100	11:50	45						
		20	5	ST		100	11:30	16	125	13				
Boring completed at approximately 21-1/2' below egs. GW initially at 20' below egs; after drilling at 16' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-5
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Dense, light tan, moist, silty SAND with gravel SM	1		1	MC		100		78						
Dense, brown, moist, SILT ML	2	5	2	ST		100		41			64			
Medium dense to dense, brown, moist, silty fine SAND SM	3	10	3	ST		100		16	112	21				
		15	4	ST		100	12:45	32						
		20	5	ST		100		31						
Boring completed at approximately 21-1/2' below egs. GW initially and after drilling at 16-1/2'. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-6
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, moist, silty fine SAND SM	1		1	MC		83		41	142	7				
		5	2	ST		100		23						
Dense, brown with black, moist, low plasticity SILT ML	2	10	3	ST		100		34						
Medium dense to dense, brown with white and black, moist to wet, silty SAND SM	3	15	4	ST		100	1:15	45						
		20	5	ST		100		28						
Boring completed at depth of approximately 21-1/2' below egs. GW initially and after drilling at 18' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

SuperLog CivilTech Software, USA www.civiltech.com File: Z:\ACE Projects\ACE Projects\Geotechnical Projects\2017\10-17049G Brady-Vineyard 36 Acre Development\GRAPHICS\10-17049G LOGS.log Date: 7/25/2017

1830 Vernon Street, Suite 7
Roseville, California 95678
Phone: (916) 778-0950
www.ACEqc.com

EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-7
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to dense, brown with gray and white, moist, silty SAND SM	1		1	MC		100	GWT not encountered	24	105	4				
		5	2	ST		100		31	126	14				
		10	3	ST		100		41						
		15	4	ST		100		29	116	18				
		20	5	ST		100		27	132	16				
Boring completed at approximately 21-1/2' below egs. Free groundwater not encountered. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

SuperLog CivilTech Software, USA www.civiltech.com File: Z:\ACE Projects\ACE Projects\Geotechnical Projects\2017\10-17049G Brady-Vineyard 36 Acre Development\GRAPHICS\10-17049G LOGS.log Date: 7/25/2017

1830 Vernon Street, Suite 7
Roseville, California 95678
Phone: (916) 778-0950
www.ACEqc.com

EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-8
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to very dense, brown with red and white, moist, silty SAND SM	1		1	MC		100		32	100	2				
		5	2	ST		100		70						
		10	3	ST		100		40						
		15	4	ST		100		31						
		20	5	ST		100	02:30	30						
Boring completed at approximately 21-1/2' below egs. Free groundwater not encountered. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

SuperLog CivilTech Software, USA www.civiltech.com File: Z:\ACE Projects\ACE Projects\Geotechnical Projects\2017\10-17049G Brady-Vineyard 36 Acre Development\GRAPHICS\10-17049G LOGS.log Date: 7/25/2017

1830 Vernon Street, Suite 7
Roseville, California 95678
Phone: (916) 778-0950
www.ACEqc.com

EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-9
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, brown, moist, silty SAND SM	1		1	MC		100		24						
		5	2	ST		100		11	110	11				
Dense to very dense, brown with white, moist, silty SAND with gravel SM	2	10	3	ST		50		55	107	8				
		15	4	ST		100		49						
Dense, light tan with gray, moist, fine sandy SILT with gravel ML	3	20	5	ST		100	03:30 ▼ 03:15 ▽	34						
Boring completed at approximately 21-1/2' below egs. GW initially at 20' below egs; after drilling at 19' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

▽ At Drilling
▼ After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

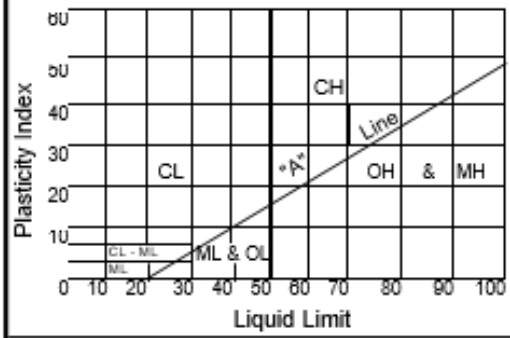
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

SuperLog CivilTech Software, USA www.civiltech.com File: Z:\ACE Projects\ACE Projects\Geotechnical Projects\2017\10-17049G Brady-Vineyard 36 Acre Development\GRAPHICS\10-17049G LOGS.log Date: 7/25/2017

1830 Vernon Street, Suite 7, Roseville, California (916) 778-0950 ACE.com

UNIFIED SOIL CLASSIFICATION

PT	OH	CH	MH	OL	CL	ML	SC	SM	SP	SW	GC	CM	GP	GW
Highly organic soils	Silts and Clays (Liquid Limit > 50)			Silts and Clays (Liquid Limit < 50)			Sands with fines > 12% fines		Clean sands < 5% fines		Gravels with fines > 12% Fines		Clean gravels < 5% fines	
							Sands - more than 50% of coarse fraction is smaller than No. 4 sieve.				Gravels - more than 50% of coarse fraction is larger than No. 4 sieve.			
Fine grained soils (more than 50% is smaller than No. 200 sieve)							Coarse grained soils (more than 50% is larger than No. 200 sieve)							



LABORATORY CLASSIFICATION CRITERIA

GW and SW-$C_u = \frac{D_{60}}{D_{10}}$ greater than 4 for GW & 6 for SW; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 & 3

GP and SP - Clean gravel or sand not meeting requirements for GW and SW.

GM and SM - Atterberg limits below "A" line or P.I. less than 4.

GC and SC - Atterberg limits above "A" line with P.I. greater than 7.

Fines (silt or clay)	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Coarse Gravel	Cobbles	Boulders
Sieve sizes	> # 200	> # 40	> # 10	> # 4	> 3/4"	> 3"	> 10"

Classification of earth materials shown on this sheet is based on field inspection and should not be construed to imply laboratory analysis so stated.

MATERIAL SYMBOLS

- Gravel
- Peat or organic matter
- Sand
- Fill Material
- Silt
- Shale
- Clay
- Sandstone
- Sandy Clay or clayey sand
- Limestone
- Sandy silt or silty Sand
- Metamorphic rock
- Silty clay or clayey silt
- Igneous rock

RELATIVE DENSITY / CONSISTENCY CLASSIFICATION FOR SOILS

According to the Standard Penetration Test

No. of Blows	Granular	No. of Blows	Cohesive
0 - 4	Very Loose	< 2	Very Soft
5 - 10	Loose	3 - 4	Soft
11 - 20	Semicompact	5 - 8	Medium Stiff
21 - 30	Medium Dense	9 - 15	Stiff
31 - 50	Dense	16 - 30	Very Stiff
> 50	Very Dense	> 30	Hard

Where the standard penetration test has not been performed, consistencies shown on the logs are estimated and given in parenthesis, (e.g., Very Stiff).

DEPTH FEET	SAMPLE NO.	SAMPLER SIZE
	1	SPT
	2	Mod. CAL — Sample Location
5	3	2.4" Mod. Split Spoon
		Rock Core

MATERIAL SYMBOL	DESCRIPTION
	Material Change - Layer lines are approximate and in-situ
	the transition may be gradual.
	G.W.S. = Ground Water Surface ▼ Date Observed
	Bottom of Boring

LEGEND FOR EXPLORATIONS LOGS

APPENDIX C

LABORATORY TESTING

Samples retrieved during the field exploration were taken to the soil mechanics laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix B. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Soil mechanics laboratory tests were performed on soil samples recovered from the test borings to further determine the physical and engineering properties of the soils. These tests included gradation (ASTM D422), R-value (CalTrans Test Method CTM 301), dry density, and natural moisture content (ASTM D 2216). The results of these tests are shown on the Test Borings Logs at the depth that each sample was recovered or on the following table. The laboratory test results were used for the geotechnical engineering analyses, and the development of engineering, earthwork, and construction recommendations.

A Resistance ("R") Value test (CTM 301) was performed on a representative sample of the near surface soil by an associate soils mechanics laboratory to determine the soil sample's resistance to repetitive loading characteristics. The results of this test are tabulated on the following table.

SAMPLE: R-1
DESCRIPTION: Silty Sand

SPECIMEN	A	B	C
MOISTURE AT TEST %	10.9	9.9	8.9
DRY DENSITY AT TEST, pcf	124.5	124.3	125.3
EXUDATION PRESSURE, lbs	2160	3430	9240
EXUDATION PRESSURE, psi	172	273	736
RESISTANCE VALUE	46	58	65
"R" VALUE AT 300 PSI EXUDATION PRESSURE	61		

APPENDIX D

GUIDE SPECIFICATIONS FOR EARTHWORK

A. General Description

1. This item shall consist of all clearing and grubbing, removal of existing obstructions, preparation of the land to be filled, filling the land, spreading, compaction and control of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades and slopes as shown on the accepted plans.

2. The Geotechnical Engineer is not responsible for determining line, grade elevations or slope gradients. The property owner or his representative shall designate the party that will be responsible for those items of work.

B. Geotechnical Report

1. The Geotechnical Report has been prepared for this project by ACE Quality Control, Roseville, California, (916-742-5096). This report was for design purposes only and may not be sufficient to prepare an accurate bid. A copy of the report is available for review at **ACE's** office.

2. Contents of these guide specifications shall be integrated with the Geotechnical Report of which they are a part and shall not be used as a self-contained document. Where a conflict occurs between these guide specifications and the conclusions and recommendations contained in the report, then the conclusions and recommendations shall take precedence and these guide specifications adjusted accordingly.

C. Site Preparation

1. Clearing Area(s) to be Filled: All trees, brush, logs, rubbish and other debris shall be removed and disposed of so as to leave the areas that have been disturbed with a neat appearance. Underground structures shall be removed or may be crushed in place upon approval by the Geotechnical Engineer. Excavations and depressions resulting from the removal of the above items shall be cleaned out to firm undisturbed soil and backfilled with suitable materials in accordance with the specifications contained herein. Stockpiles of clean soil may be reused as filled material provided the soil is free of significant vegetation, debris, rubble and rubbish and is approved by the Geotechnical Engineer.

2. Surfaces upon which fill is to be placed, as well as subgrades of building pad(s) left at existing grade, shall have all organic material removed; or, with permission of the Geotechnical Engineer, closes cut and remove vegetation and thoroughly disc and blend the remaining nominal organics into the upper soil. Discing must be thorough enough so that no concentrations of organics remain, which may require re-discing or cross-discing several times.

3. Organic laden material removed per paragraph C.2. above, may be used as fill in landscaped areas provided that the material shall not extend closer than ten (10) feet to any structure, shall not exceed two (2) feet in thickness or be used where the material could, in the opinion of the Geotechnical Engineer, create a slope stability problem, and shall be compacted to at least eighty-two (82) percent relative compaction per ASTM Test Designation D 1557. Alternatively, the organic laden material may be hauled off-site and suitably disposed of.

4. Upon completion of the organic removal, exposed surface shall be plowed or scarified to a depth of at least six (6) inches, and until the surface is free from ruts, hummocks, or other uneven features which would tend to prevent uniform compaction by the equipment to be used. Where vegetation has been close cut and removed and remaining organics blended with the upper soil, further scarifying may not be necessary. Where fills are to be placed on hill slopes, scarifying shall be to depths adequate to provide bond between fill and fill foundation. Where considered necessary by the Geotechnical Engineer, (typically where the slope ratio of the original ground is steeper than five (5) horizontal to one (1) vertical), the ground surface shall be stepped or benched to achieve this bond. Vertical dimension of the required benches shall be as determined by the Geotechnical Engineer, based upon location, degree and condition of the hill slope.

5. After the foundation for the fill has been cleared and scarified, it shall be disced or bladed until it is uniform and free from large clods, uniformly moisture conditioned to the range specified by the Geotechnical Engineer, and compacted to not less than [refer to report -- if not recommended, use 90] percent of maximum dry density as determined by ASTM D 1557, or to such other density as may be determined appropriate for the materials and conditions and acceptable to the Geotechnical Engineer and the owner or his representative.

D. Fill Materials

1. Materials for fill shall consist of material approved by the Geotechnical Engineer.

2. The materials used for fill shall be free from organic matter and other deleterious substances and shall not contain rocks, clods, lumps or cobbles exceeding four (4) inches in greatest dimension with not more than fifteen (15) percent larger than two and one-half (2-1/2) inches.

3. Imported materials to be used for fill shall be non-expansive [typically, have a plasticity index not exceeding twelve (12)], shall be of maximum one (1) inch size, and shall be tested and approved by the Geotechnical Engineer prior to commencement of grading and before being imported to the site.

4. The Contractor shall notify the Geotechnical Engineer at least four (4) working days in advance of the Contractor's intention to import soil; shall designate the borrow area; and, shall permit the Geotechnical Engineer to sample the borrow area for the purposes of examining the material and performing the appropriate tests to evaluate the quality and compaction characteristics of the soil. Compaction requirements for the material shall be based upon the characteristics of the material as determined by the Geotechnical Engineer.

E. Placement of Fill

1. The selected fill material shall be placed in level, uniform layers (lifts) which, when compacted, shall not exceed six (6) inches in thickness. Water shall be added to the fill or the fill allowed to dry as necessary to obtain fill moisture content at which compaction as specified can be achieved. Each layer shall be thoroughly mixed during the spreading to obtain uniformity of moisture in each layer.

2. The fill material shall be compacted within the appropriate moisture content range (typically optimum to slightly above the optimum) as determined by the Geotechnical Engineer for the soil(s) being used.

3. Each layer of fill shall be compacted to not less than [refer to report; if not recommended, use 90] percent of maximum dry density as determined by ASTM Test Designation D 1557. Compaction equipment shall be of such design that it will be able to compact the fill to the

specified density. Compaction shall be accomplished while the fill material is within the specified moisture content range. Compaction of each layer shall be continuous over its entire area and the compaction equipment shall make sufficient trips to insure that the required density has been obtained. No ponding or jetting is permitted.

4. If work has been interrupted for any reason, the Geotechnical Engineer shall be notified by the contractor at least two (2) working days prior to the intended resumption of grading.

F. Geotechnical Engineer

1. Owner is retaining Geotechnical Engineer to make observations and tests to determine general compliance with Plans and Specifications, to verify expected or unexpected variations in subsurface conditions, and to give assistance in appropriate decisions. Cost of Geotechnical Engineer will be borne by the Owner, except costs incurred for re-tests and/or re-observations caused by failure of the Contractor to meet specified requirements will be paid by the Owner and back charged to Contractor.

G. Observation and Testing

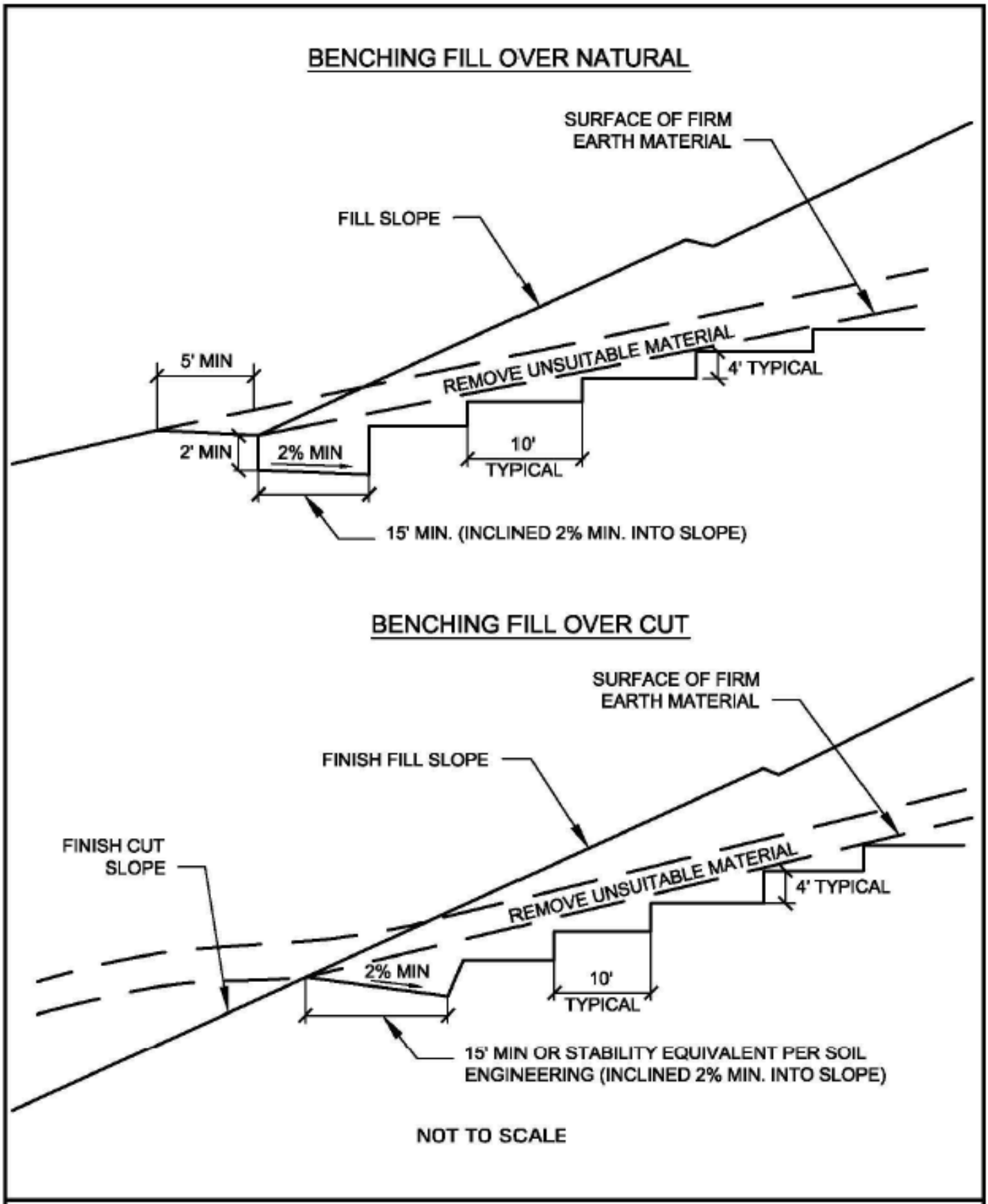
1. Field density tests shall be made by the Geotechnical Engineer or his representative of the compaction of each layer of fill. Density tests shall be taken in the compacted material below any surfaces disturbed by the construction equipment. When these tests indicate that the density of any layer of fill or portion thereof is below the required density or moisture content, the particular layer or portion shall be reworked until the required density or moisture content has been obtained.

2. All aspects of the site earthwork shall be observed and tested as deemed necessary by the Geotechnical Engineer or his representative so that he can render a professional opinion of the completed fill for substantial compliance with plans and specifications and design concepts. The grading contractor shall give the Geotechnical Engineer at least two (2) working days' notice prior to beginning any site earthwork to allow proper scheduling of the work.

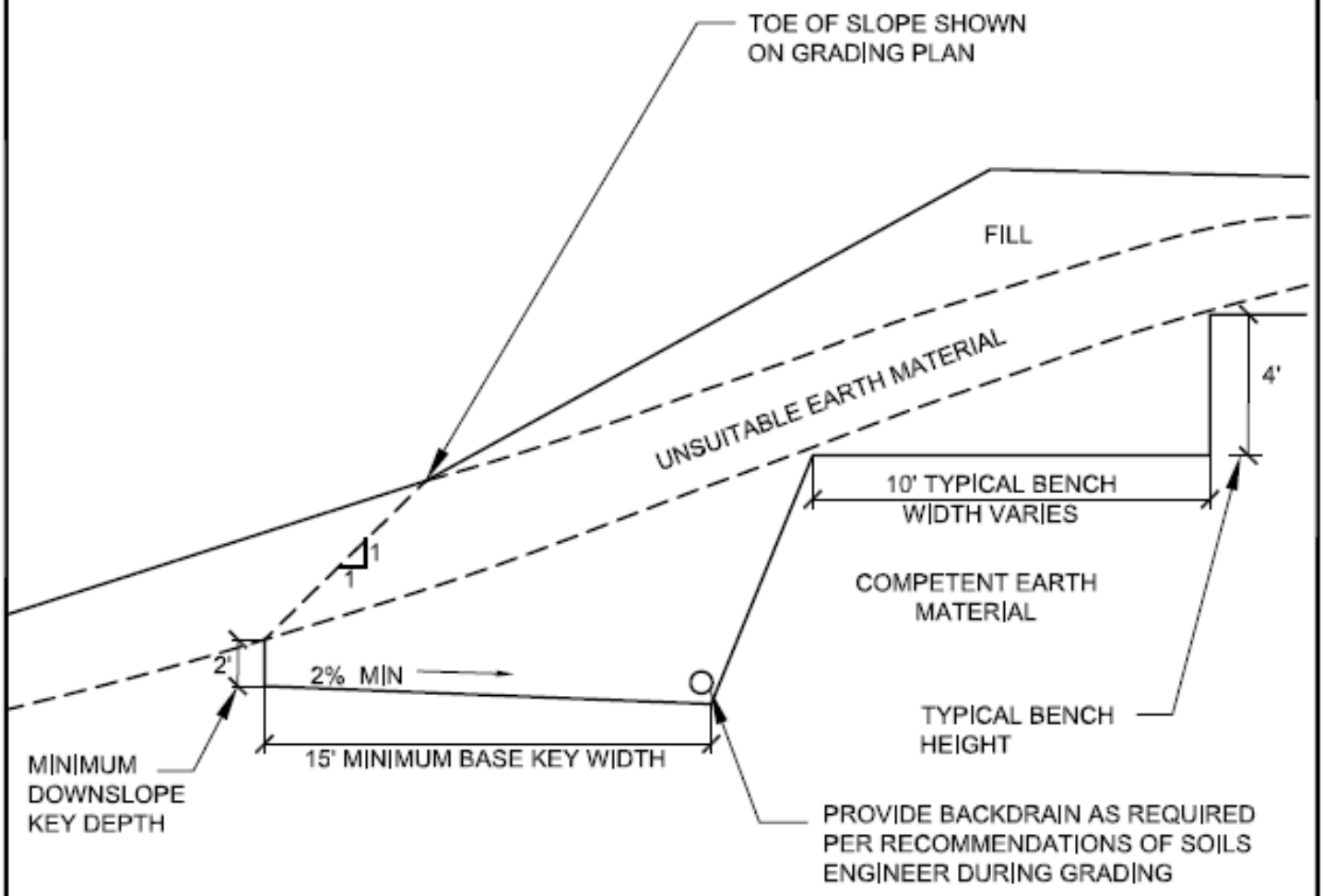
H. Seasonal Limits

1. No fill material shall be placed, spread or compacted during unfavorable weather conditions. When work is interrupted by heavy rain, fill operations shall not be resumed until the Geotechnical Engineer or his representative indicates that the moisture content and density of the previously placed fill are as specified.

GRADING DETAILS
(on following pages)



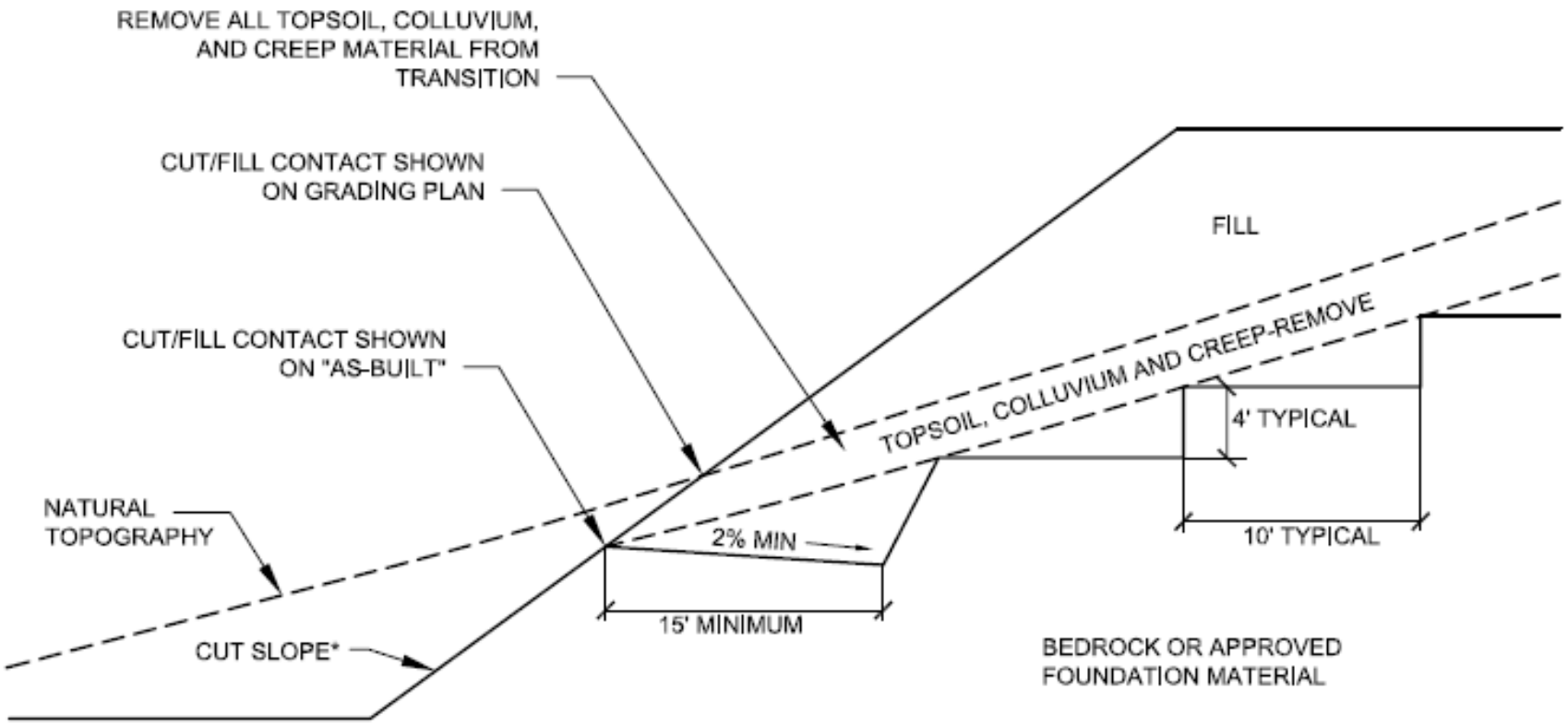
BENCHING FOR COMPACTED FILL DETAIL



WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, BENCHING IS NOT NECESSARY. FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.

NOT TO SCALE

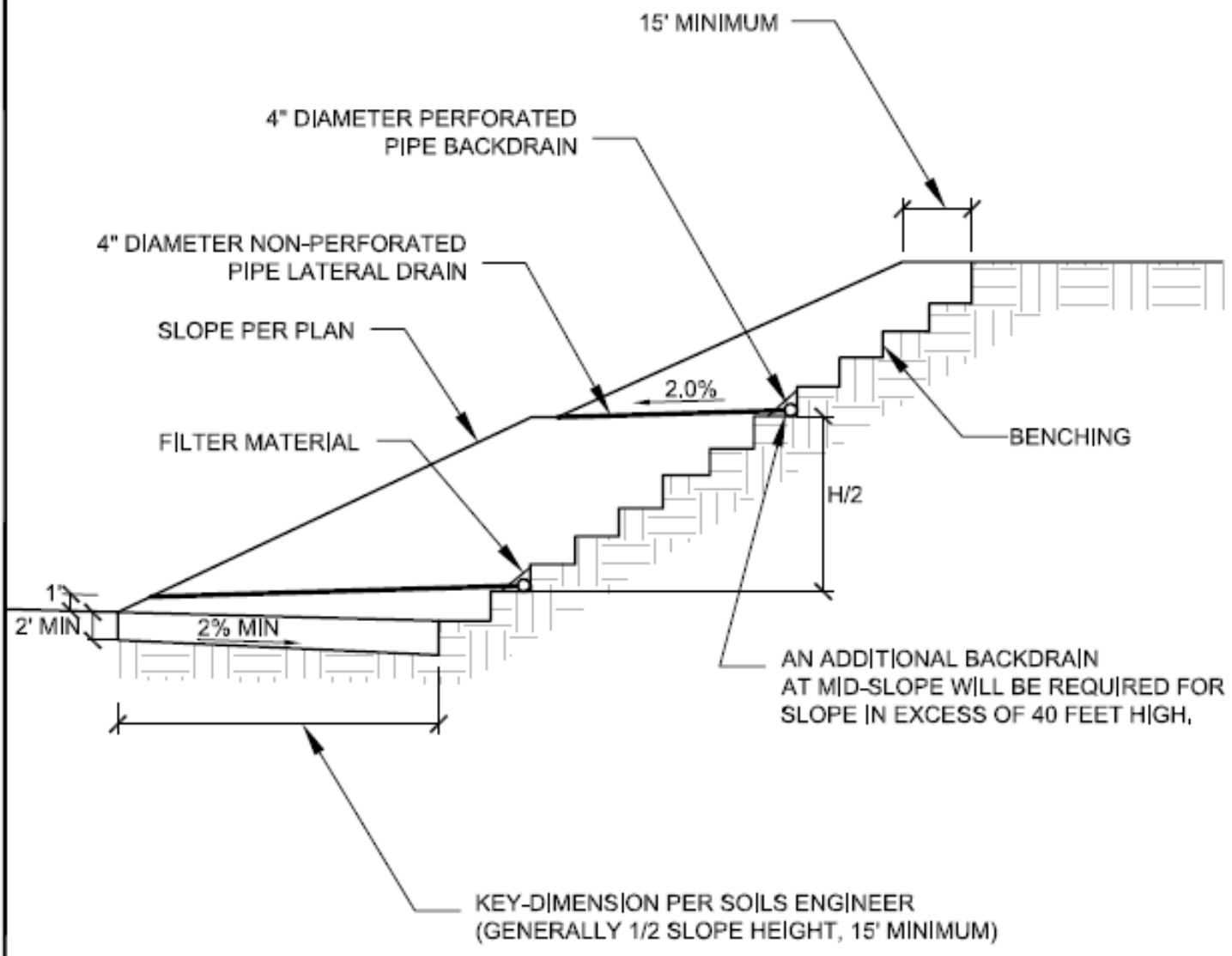
FILL SLOPE ABOVE NATURAL GROUND DETAIL



*NOTE: CUT SLOPE PORTION SHOULD BE MADE PRIOR TO PLACEMENT OF FILL

NOT TO SCALE

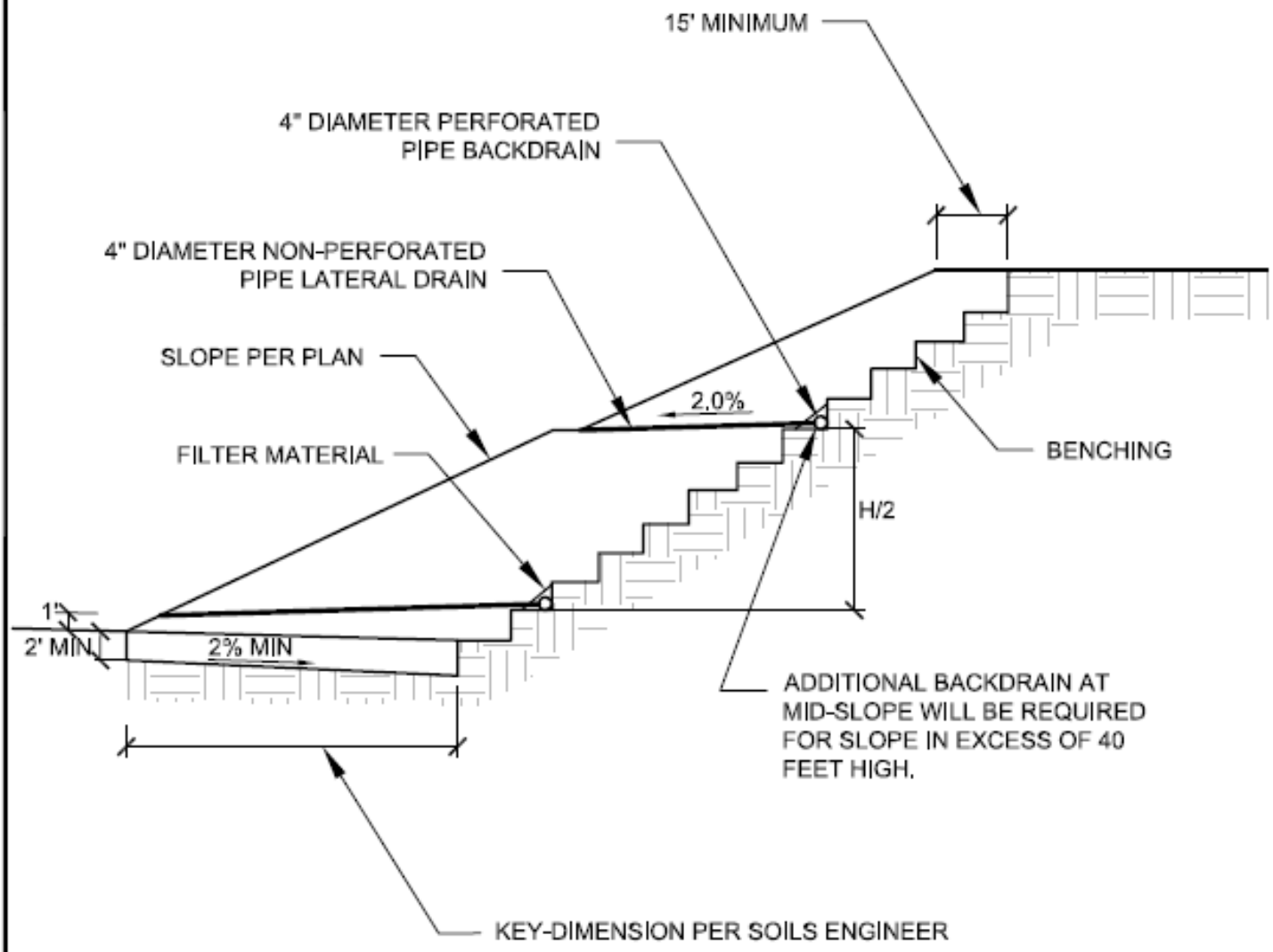
FILL SLOPE ABOVE CUT SLOPE DETAIL



DIMENSIONS ARE MINIMUM RECOMMENDED

NOT TO SCALE

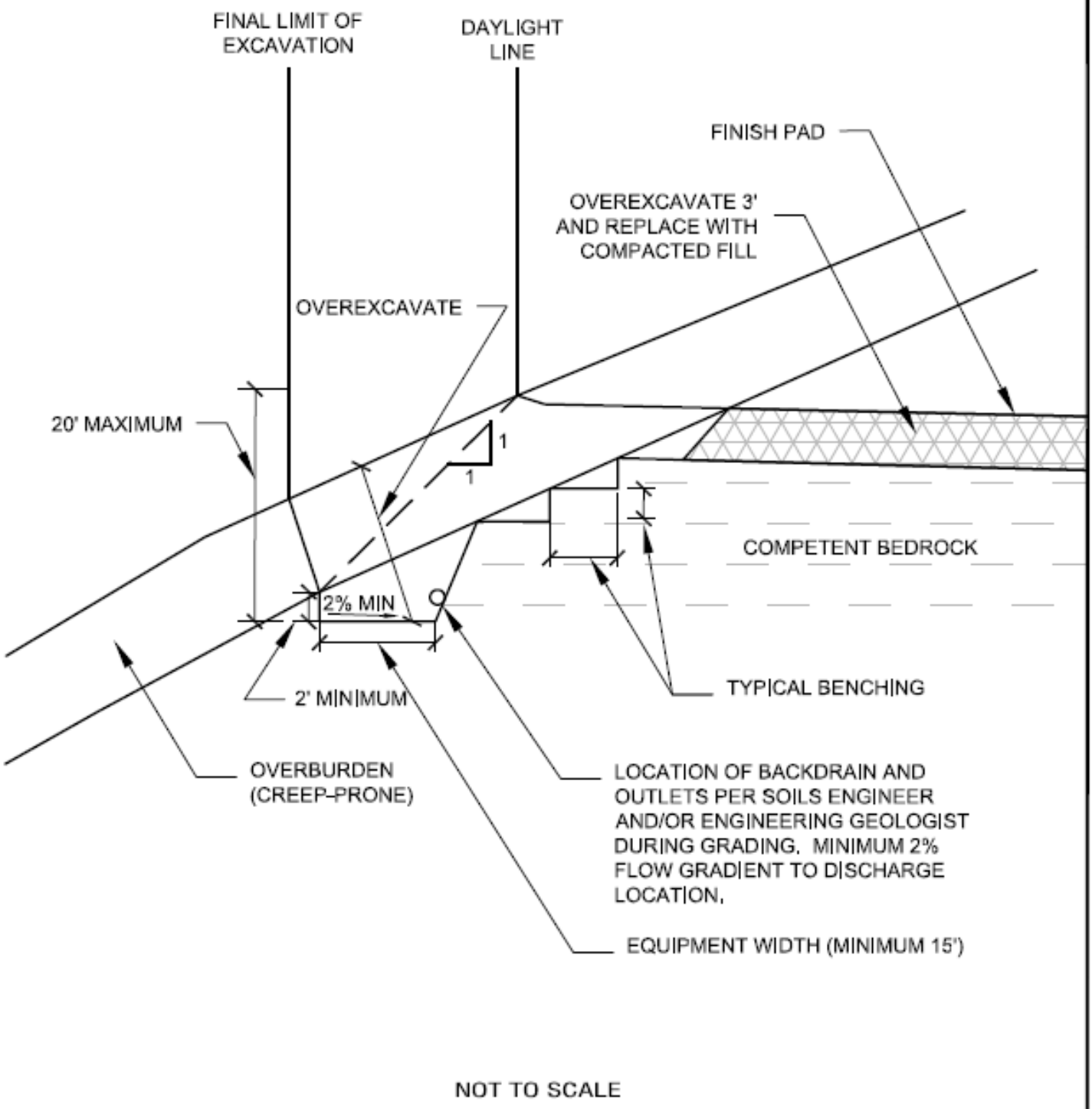
TYPICAL SLOPE STABILIZATION FILL DETAIL



DIMENSIONS ARE MINIMUM RECOMMENDED

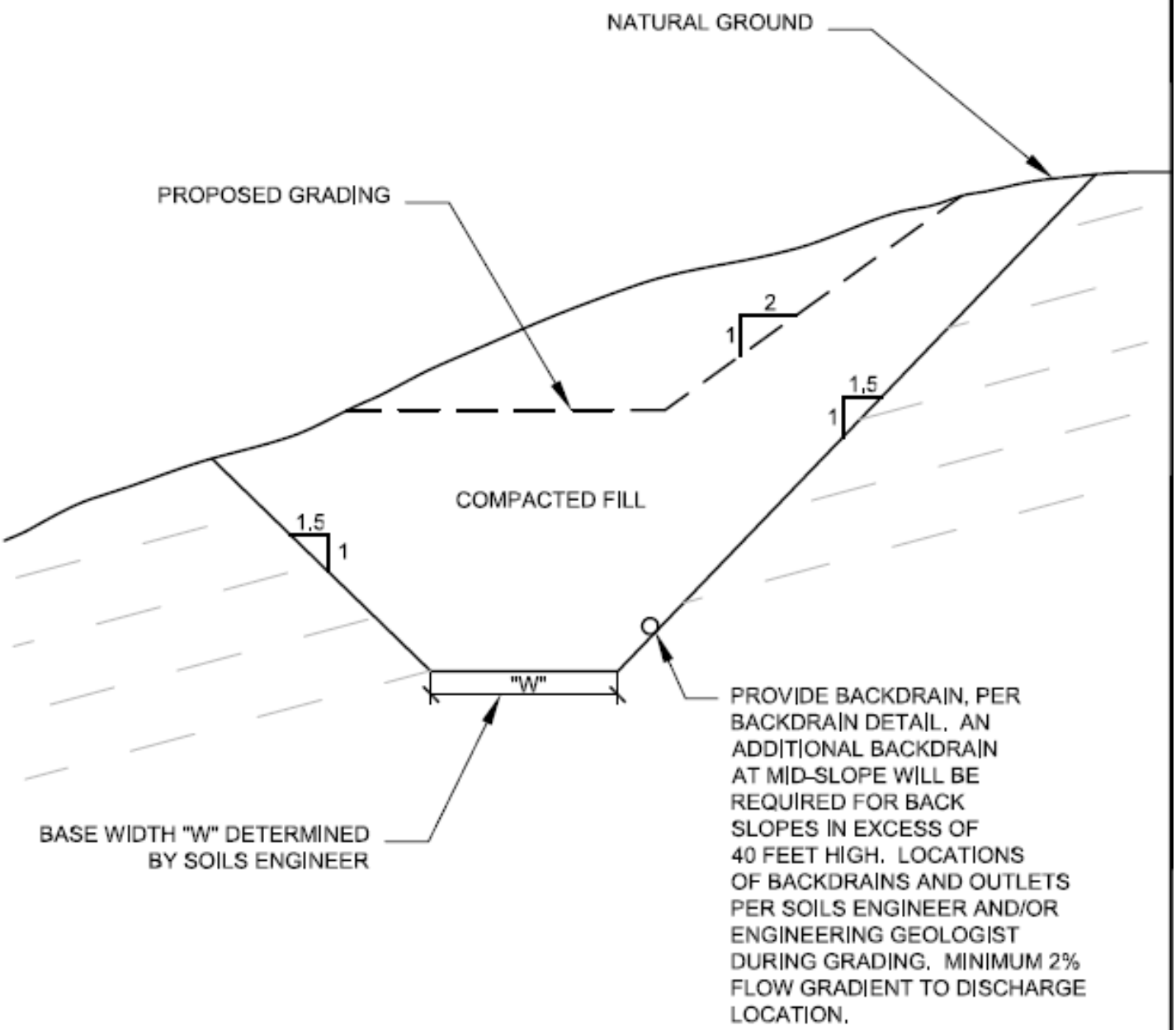
NOT TO SCALE

TYPICAL BUTTRESS FILL DETAIL



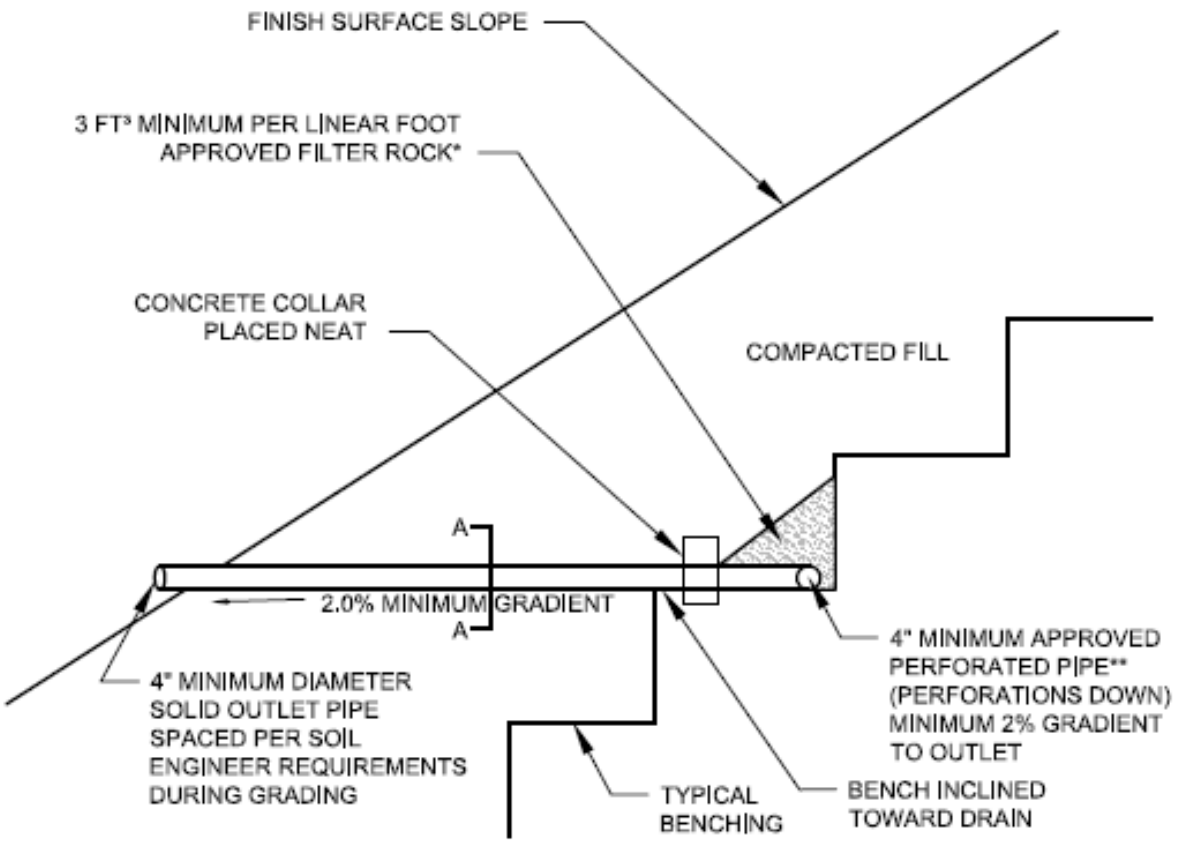
NOT TO SCALE

DAYLIGHT SHEAR KEY DETAIL

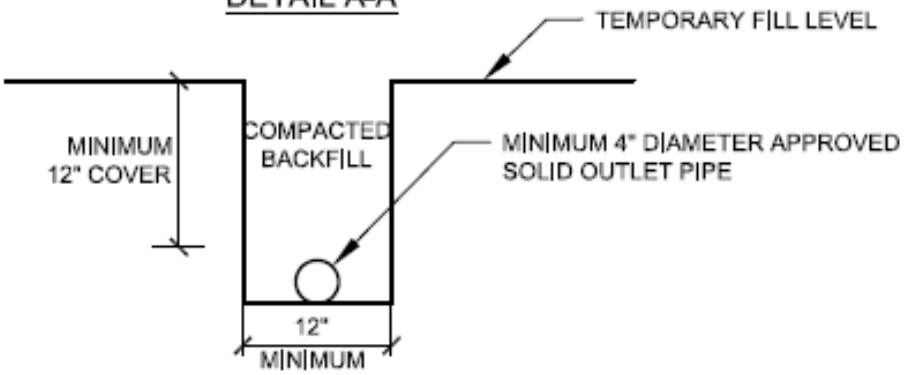


NOT TO SCALE

TYPICAL SHEAR KEY DETAIL



DETAIL A-A



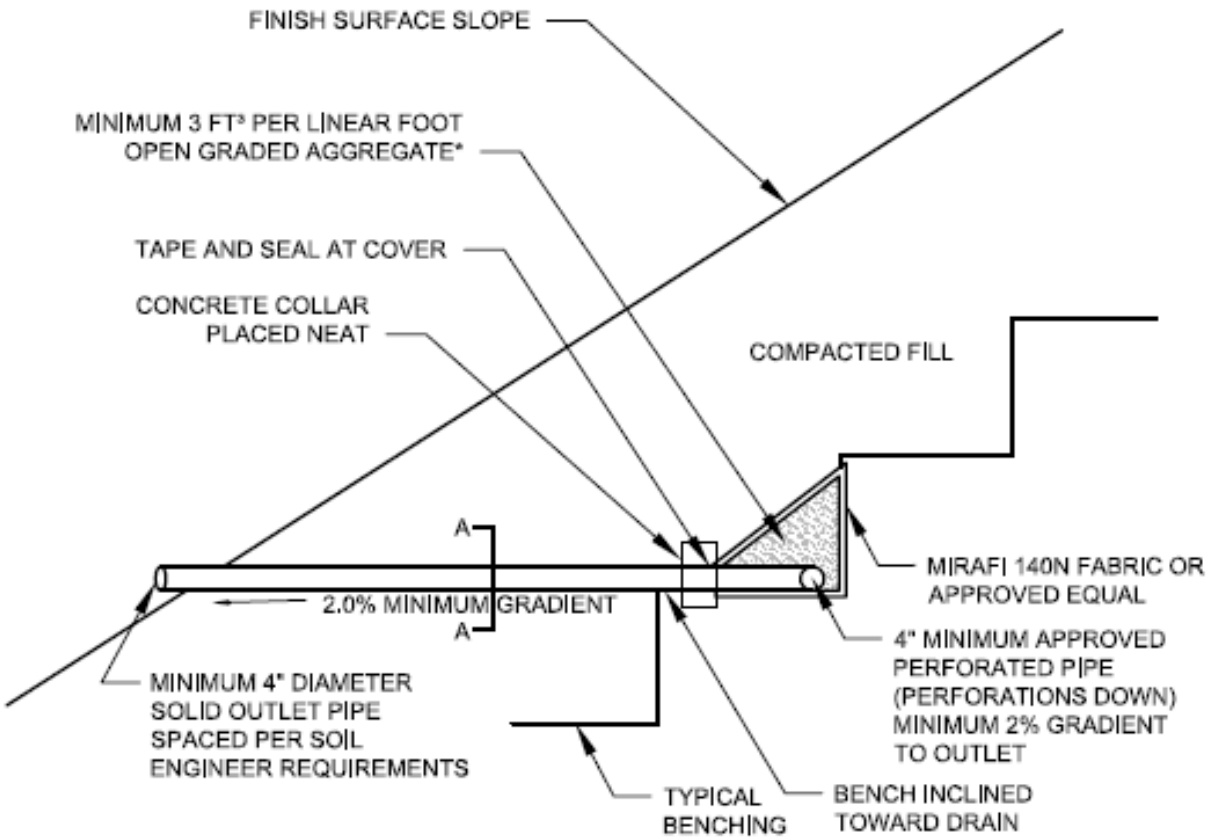
**APPROVED PIPE TYPE:
SCHEDULE 40 POLYVINYL CHLORIDE
(P.V.C.) OR APPROVED EQUAL.
MINIMUM CRUSH STRENGTH 1000 PSI

*FILTER ROCK TO MEET FOLLOWING
SPECIFICATIONS OR APPROVED EQUAL:

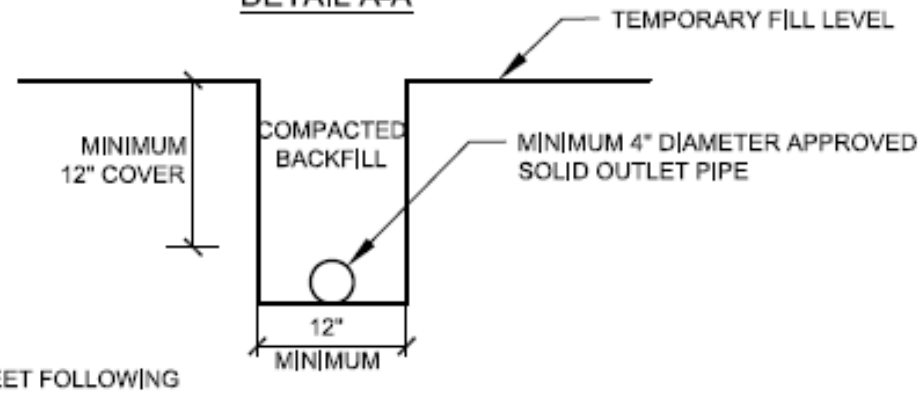
SIEVE SIZE	PERCENTAGE PASSING
1"	100
¾"	90-100
⅜"	40-100
NO. 4	25-40
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

NOT TO SCALE

TYPICAL BACKDRAIN DETAIL



DETAIL A-A

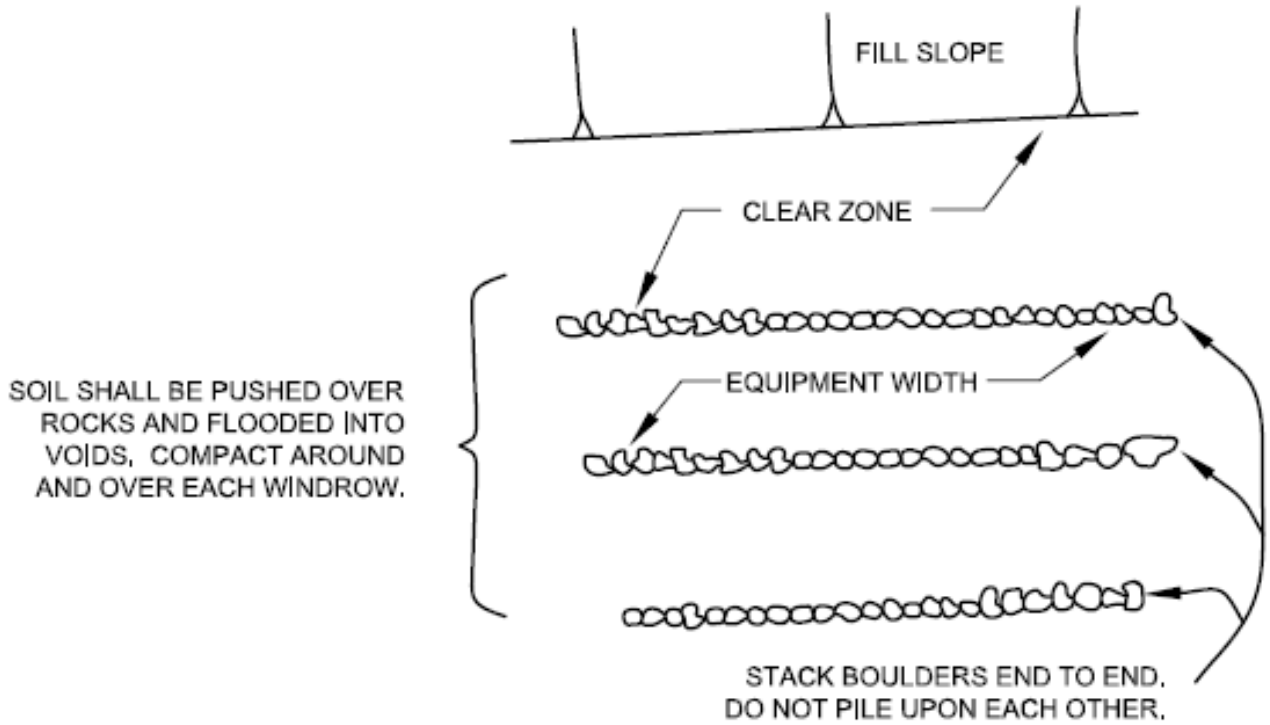


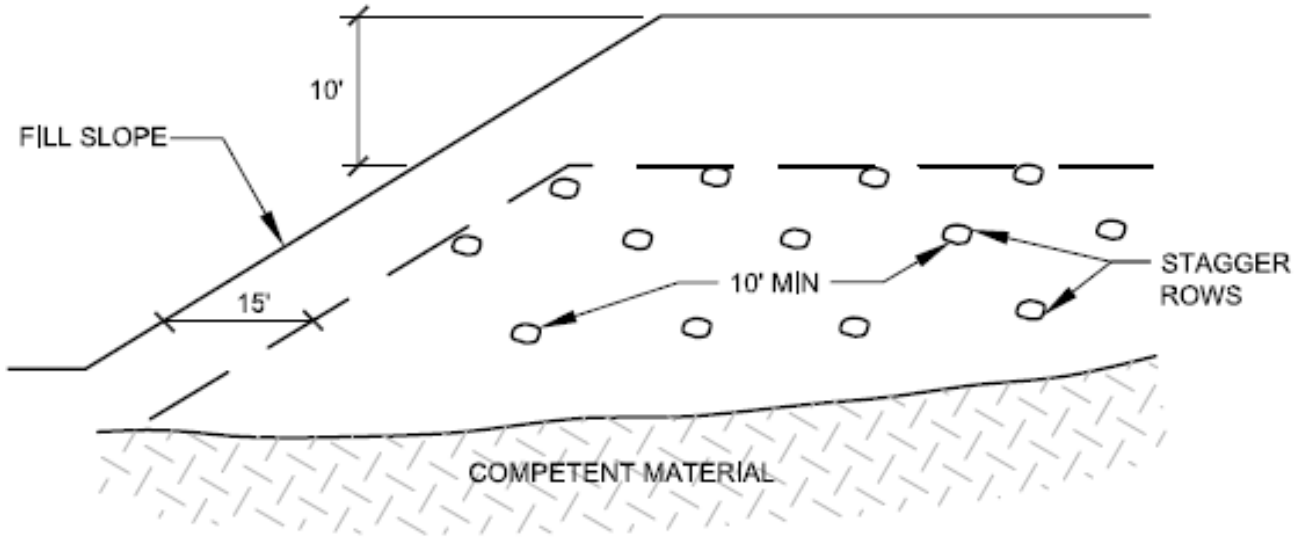
*NOTE: AGGREGATE TO MEET FOLLOWING SPECIFICATIONS OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE PASSING
1 ½"	100
1"	5-40
¾"	0-17
⅜"	0-7
NO. 200	0-3

NOT TO SCALE

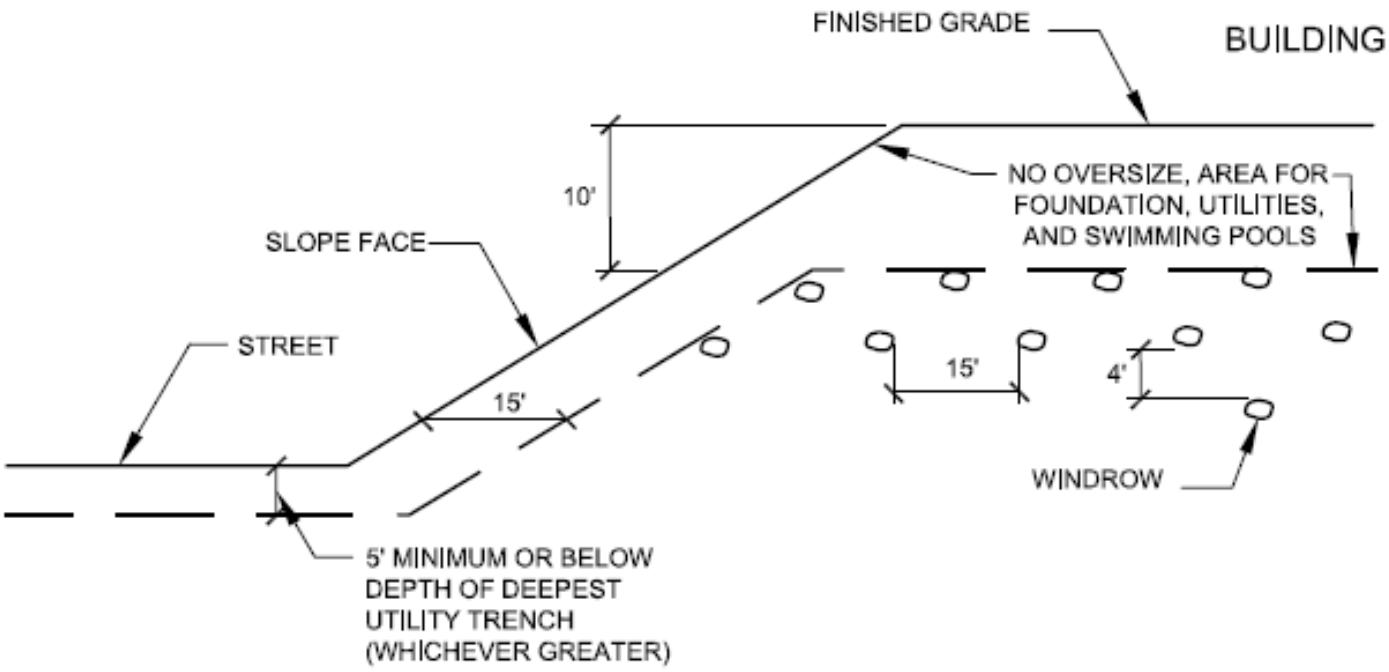
BACKDRAIN DETAIL (GEOFRABIC)



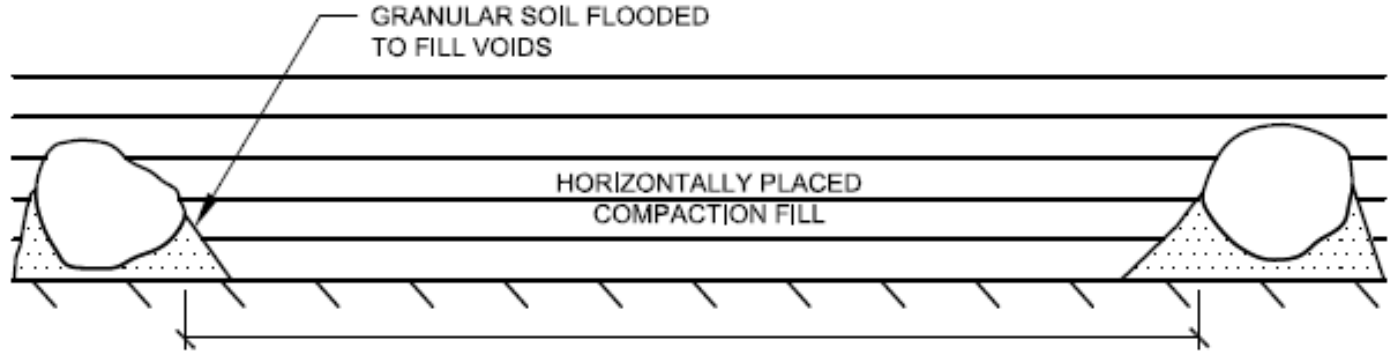


NOT TO SCALE

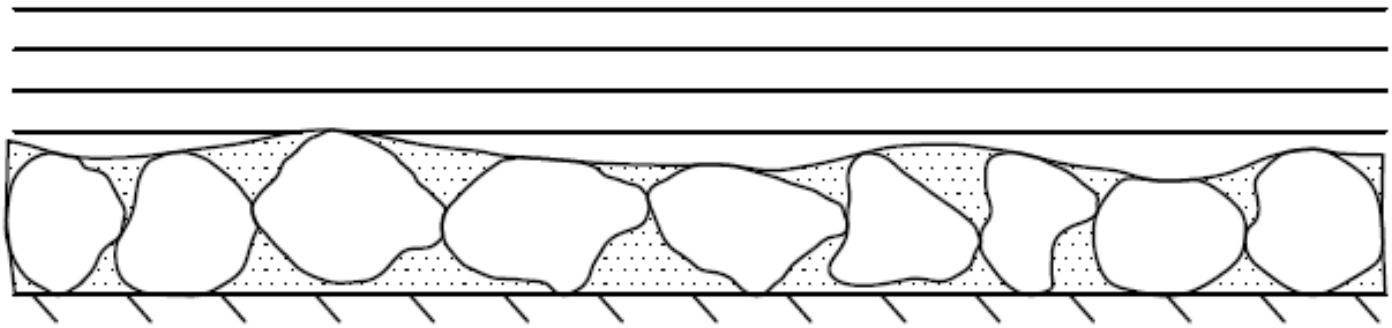
ROCK DISPOSAL DETAIL



TYPICAL WINDROW DETAIL (EDGE VIEW)



PROFILE VIEW

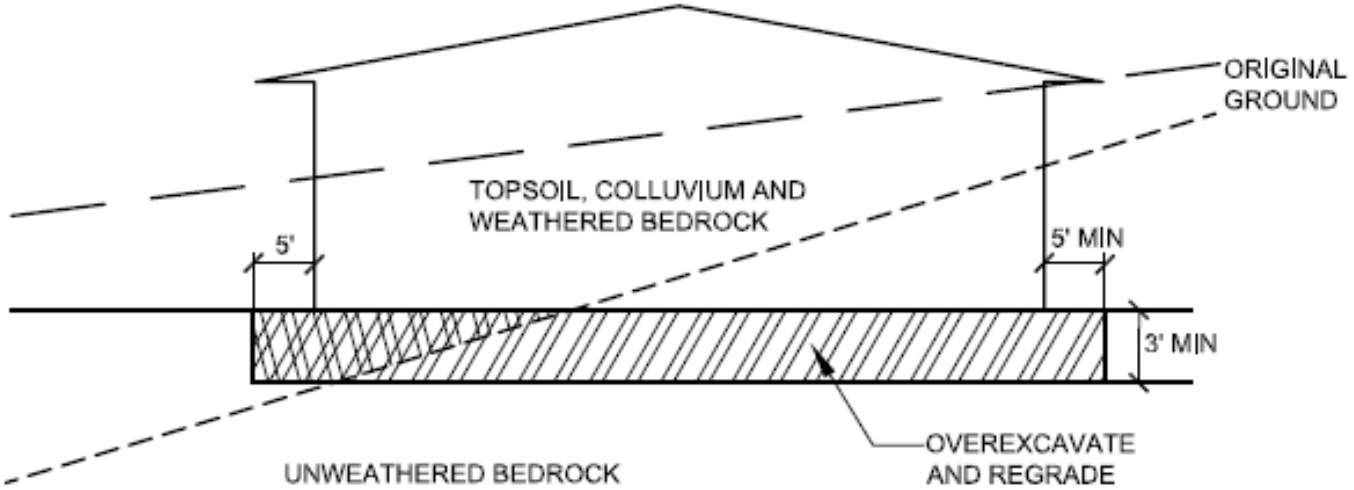


NOT TO SCALE

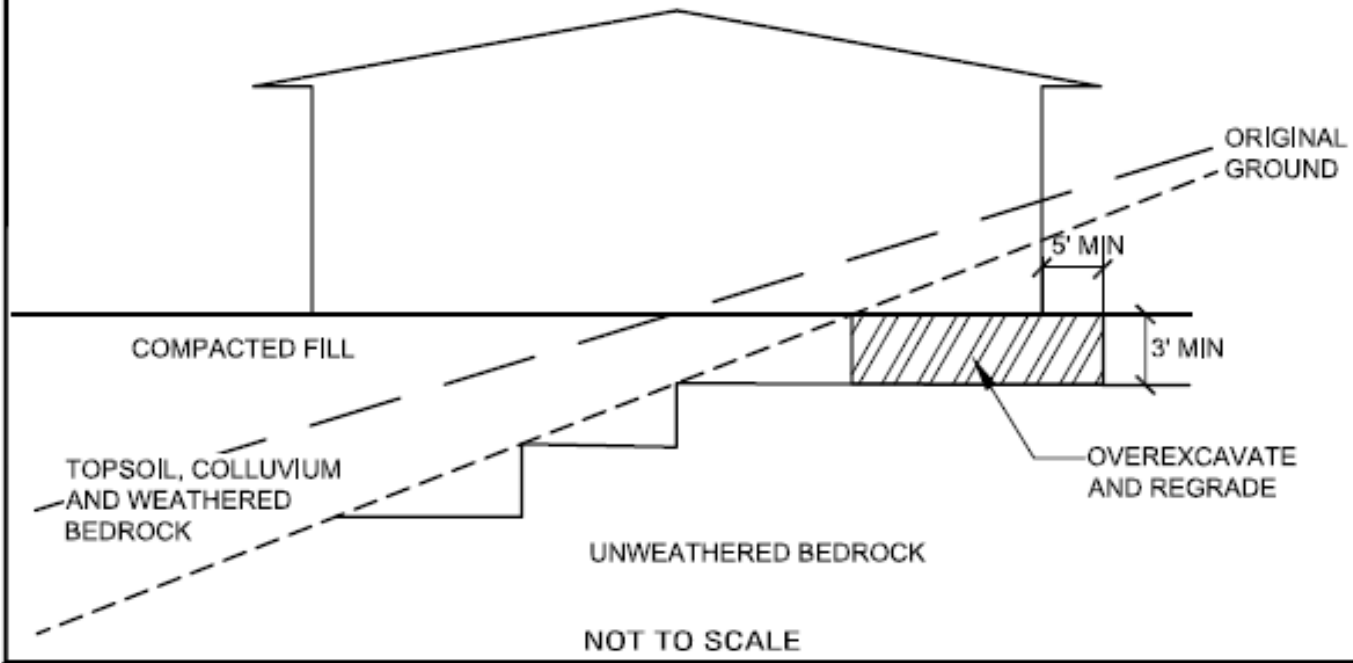
ROCK DISPOSAL DETAIL

GENERAL GRADING RECOMMENDATIONS

CUT LOT

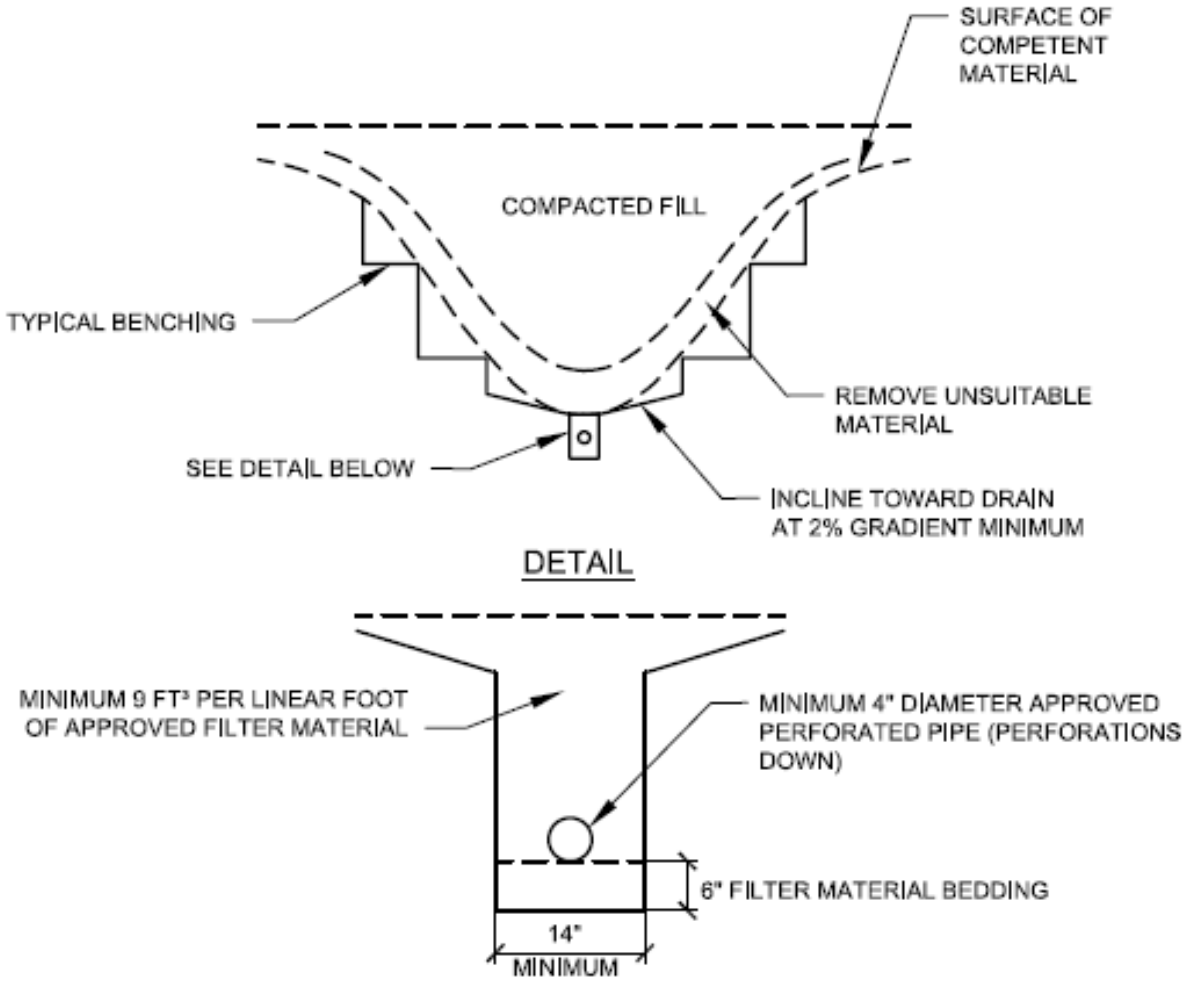


CUT/FILL LOT (TRANSITION)



NOT TO SCALE

TRANSITION LOT DETAIL



FILTER MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE PASSING
1"	100
¾"	90-100
⅜"	40-100
NO. 4	25-40
NO. 30	18-33
NO. 8	5-15
NO. 50	0-7
NO. 200	0-3

APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYL-CHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 psi

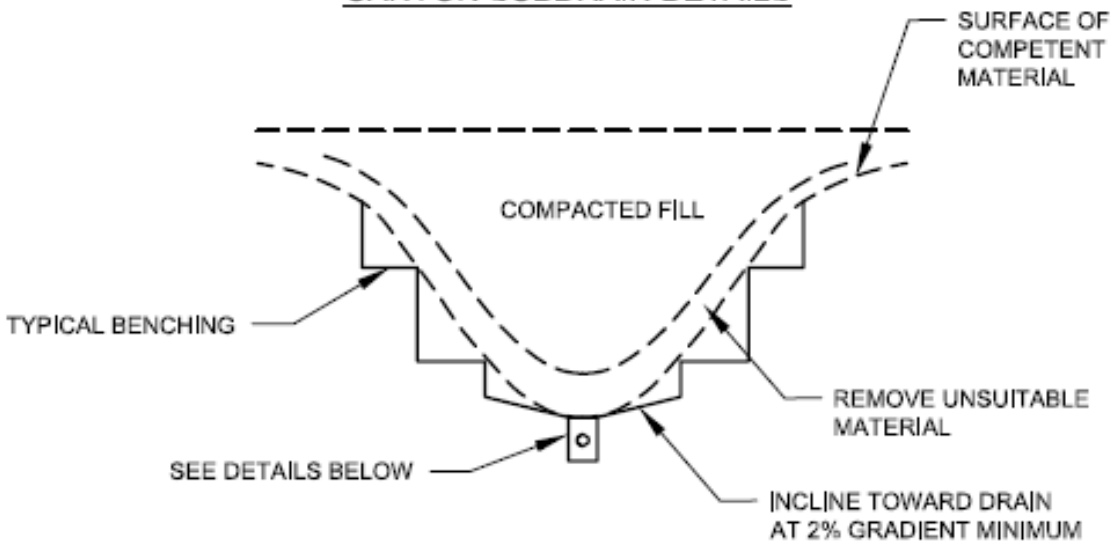
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

LENGTH OF RUN	PIPE DIAMETER
INITIAL 500'	4"
500' TO 1500'	6"
> 1500'	8"

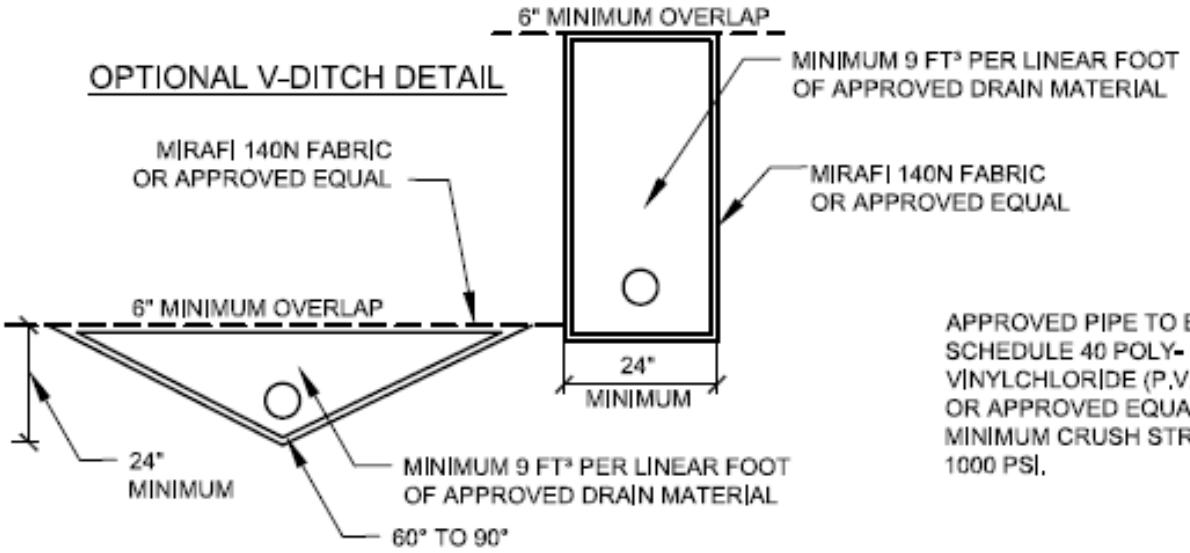
NOT TO SCALE

TYPICAL CANYON SUBDRAIN DETAIL

CANYON SUBDRAIN DETAILS



TRENCH DETAILS



OPTIONAL V-DITCH DETAIL

APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYLCHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 PSI.

DRAIN MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE PASSING
1 ½"	88-100
1"	5-40
¾"	0-17
⅜"	0-7
NO. 200	0-3

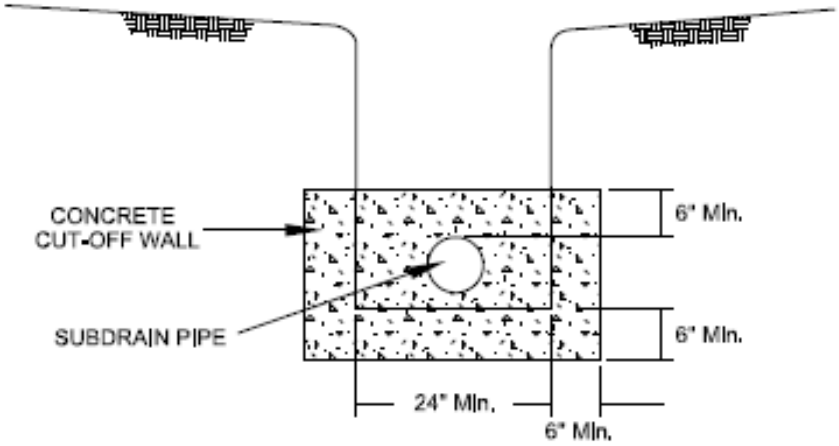
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

LENGTH OF RUN	PIPE DIAMETER
INITIAL 500'	4"
500' TO 1500'	6"
> 1500'	8"

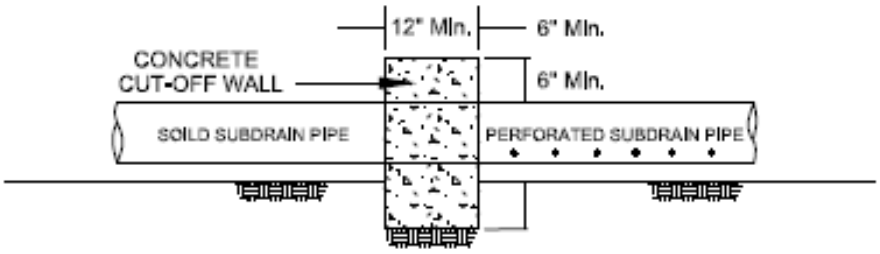
NOT TO SCALE

GEOFABRIC SUBDRAIN

FRONT VIEW



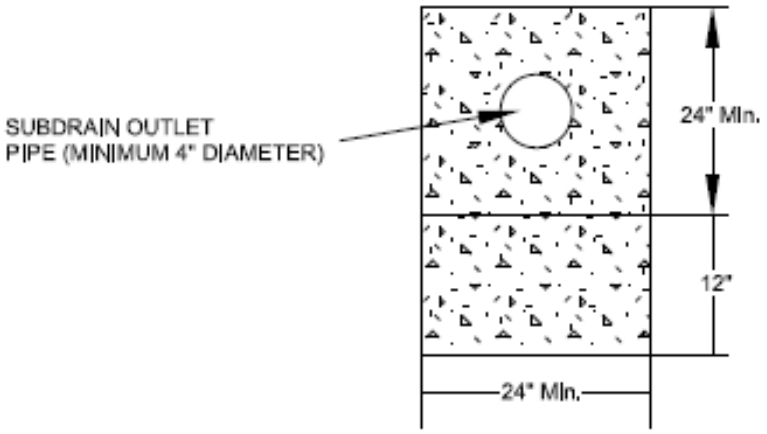
SIDE VIEW



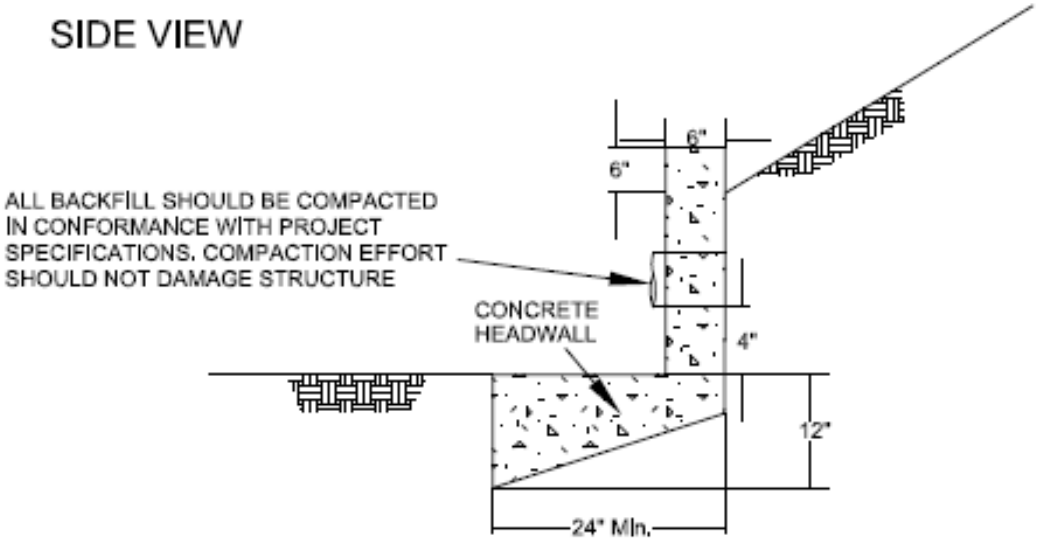
NOT TO SCALE

RECOMMENDED SUBDRAIN CUT-OFF WALL

FRONT VIEW



SIDE VIEW



NOTE: HEADWALL SHOULD OUTLET AT TOE OF SLOPE
OR INTO CONTROLLED SURFACE DRAINAGE DEVICE

ALL DISCHARGE SHOULD BE CONTROLLED

THIS DETAIL IS A MINIMUM DESIGN AND MAY BE
MODIFIED DEPENDING UPON ENCOUNTERED
CONDITIONS AND LOCAL REQUIREMENTS

NOT TO SCALE

TYPICAL SUBDRAIN OUTLET HEADWALL DETAIL

APPENDIX G

PHASE I ENVIRONMENTAL SITE ASSESSMENT
BRADY-VINEYARD 36 ACRE RESIDENTIAL SUBDIVISION
NWC BRADY LANE AND VINEYARD ROAD
ROSEVILLE, CALIFORNIA

PREPARED FOR:

MR. SUKHBIR BRAR
2351 SUNSET BOULEVARD
ROCKLIN,CA 95746

PREPARED BY:

ACE QUALITY CONTROL
1830 VERNON STREET, SUITE 7
ROSEVILLE, CA 95678

ACE JOB NO. 10-17049E

JUNE 23, 2017

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APPENDIX F SANBORN FIRE MAPS
APPENDIX G SITE RECONNAISSANCE PHOTOGRAPHS

1.0 EXECUTIVE SUMMARY

This Phase I Environmental Site Assessment (PESA) was prepared in accordance with ACE's proposal / agreement (dated May 15, 2017; proposal no. 10-0379) executed on May 19, 2017, by Mr. Sukhbir Brar with regard to the 36 +/- acre subject site that is comprised of several parcels including APN 473-020-002, 473-020-007, and portions of 473-020-001 and 473-020-009, Roseville, California. This report substantially follows the Standard Practice for Environmental Site Assessments (ASTM E 1527-13) guidelines, which included reconnaissance level observations of the subject site and nearby area, regulatory document review, review of reasonably accessible historic documents.

Site history has not been definitively traced back to undeveloped native ground. Per ASTM E 1527-13 guidelines, the first developed use of the subject site or uses dating back to 1940, whichever is earlier, must be documented or a data failure must be noted. Because the first developed use of the subject site was not definitive in the standard historical sources, EDR supplied historical aerial photographs, and the earliest standard historical source reasonably ascertainable is dated 1947, a data failure has occurred.

Site Reconnaissance of the subject site and adjacent properties was conducted and no Recognized Environmental Conditions (REC's) were observed.

The Vapor Encroachment Screen (VES) provided by Environmental Data Records (EDR) did not indicate any potential contamination from previous uses at the subject site or nearby areas.

Mr. Sukhbir Brar answered no to all questions provided in the Environmental Questionnaire.

2.0 INTRODUCTION

2.1 Purpose

ACE Quality Control ("ACE") has prepared this Phase I Environmental Site Assessment report for the site comprised of several parcels including APN 473-020-002, 473-020-007, and portions of 473-020-001 and 473-020-009 identified as the subject site. The subject site is located on the northern side of Vineyard Road and north west of the intersection between Vineyard Road and Brady Lane in Roseville, California 95747. The subject site is a combination of irregularly shaped undeveloped parcels. The attached **Site Index Map, Figure 1**, shows the approximate location of the subject site.

This report was authorized by Mr. Sukhbir Brar. The purpose of this PESA is to provide an assessment of obvious environmental conditions on the site or adjoining properties that could potentially impact the subject property and has been performed in substantial conformance with the ASTM E 1527-13 guidelines.

Information collected and referenced by this report is included in the attached Appendices that are organized as follows.

- Appendix A Due Diligence Environmental Questionnaire
- Appendix B Environmental Data Resources (EDR) Records Report
- Appendix C Historical City Directories
- Appendix D Historical Aerial Photographs
- Appendix E Historical Topographic Maps
- Appendix F Sanborn Fire Maps
- Appendix G Site Reconnaissance Photos

2.2 Scope of Services

The scope of services for this PESA generally follows the ASTM guidelines for Phase I Environmental Site Assessments (ASTM E 1527-13). A summary of ACE's scope of services included:

- Site Reconnaissance, including observations from public vantages of adjacent and nearby properties. Photographs were taken of the site and adjacent properties.
- Document Review, including review of regulatory agency file and list summaries completed in general conformance with the guidelines of ASTM E 1527-13 as provided by EDR, a commercial vendor. Review of readily available public records and client provided documents including title reports, owner surveys, city and/or county records.
- Site History, included review of readily and reasonably accessible historical documents as presented in ASTM E 1527-13 to evaluate past uses of the site and selected adjacent or nearby properties. Reviewed historic information includes Sanborn fire insurance maps, historic aerial photographs, historic topographic maps and city reverse telephone directories.
- Reporting, the accumulated data and resulting opinions and conclusions are presented in this report.

2.3 Significant Assumptions

This PESA was conducted in substantial conformance with ASTM E 1527-13 guidelines. No other warranties, expressed or implied, are made by ACE Quality Control (ACE). ACE's evaluations, analyses, conclusions and opinions should not be taken as representations regarding surface and subsurface conditions at the subject site. Conditions may differ from the conditions implied by superficial observations and review of documents/information provided by others.

This report was prepared in general accordance with the standard of practice for reputable environmental consultants practicing in the site area at this time. It makes no other representations or qualifications. ACE should be notified of any variations in the data or findings presented in this report. ACE may re-evaluate this report depending upon changed conditions, or further supplied information.

Documentation provided by Environmental Data Resources Inc. (EDR), third parties and public domain, as referred to in this report, are assumed to be complete and correct, and have been used and referenced with the understanding that ACE assumes no responsibility or liability for their accuracy. ACE's conclusions and opinions are based upon such information and documentation, and ACE's observations of site conditions, as they existed on the date of site observations. Because site conditions may change significantly over a short period of time and additional data may become available, data reported and conclusions/opinions in this report

are limited to current conditions, and may not be relied upon at a significantly later date (generally considered as 180 days) and/or following property use changes, whichever occurs first.

2.4 Limitations and Exceptions

Reasonable efforts have been made during this assessment to uncover *Recognized Environmental Conditions* (REC's) through "reasonable efforts" which are limited to information gathered from visual observations of unobstructed areas, recorded database information held in public record, and available information gathered from interviews and selected historic documents, and may not identify all environmental conditions pertinent to the site. Limitations and exceptions for this site include the following:

- This assessment is not an environmental compliance audit or report. Some observations and discussion in this report may address regulated conditions, operations, or activities; however, compliance with those conditions, operations, or activities is outside the scope of this report. This report does not constitute a legal opinion or legal advice, which should be obtained from independent legal counsel, if considered necessary.

- This report does not address non-scope ASTM considerations outside the stated scope, including, but not limited to, asbestos containing materials (ACMs), radon, lead-based paint (LBP), lead in drinking water, wetlands, protected environments and habitat, industrial hygiene, indoor air quality, vapor intrusion, regulatory permitting requirements, and high voltage power lines.

- Placer County Environmental Health Department (PCEHD) records were not accessed in time for this report.

2.5 Special Terms and Conditions

No special terms or conditions exist between ACE and Mr. Sukhbir Brar. ACE does not have a financial interest in this site, other than preparation of this report.

2.6 User Reliance

This report is prepared exclusively for Mr. Sukhbir Brar (ACE's client) and Mr. Dave Cook of Cook Development Inc. No other parties may rely on this report without express written permission of both ACE and ACE's client (Mr. Sukhbir Brar or his representative). The report is not for use or benefit of another person or entity without advance written consent of ACE and client. This report is prepared using currently accepted standard of care for conducting such assessments in this area at this time.

The findings and opinions presented herein are relative to the dates of the site work and should not be relied upon to represent future dates. This report may be utilized for 180 days from the date of the report. Additionally, this report may not be utilized should the subject site usage or use of adjacent sites change.

3.0 SITE DESCRIPTION AND CONDITIONS

3.1 Location and Description

The subject site is centrally located in the City of Roseville in the County of Placer. The subject site is indicated to be approximately 1,568,200 sq. ft. (36+/-) acres and is irregularly shaped. The site is relatively level with gentle undulations throughout the property with several

seasonal swales that were dry at the time of the site visit. The site is indicated by supplied reports from EDR to have an average elevation of 138 feet above MSL. The site is located northwesterly of the intersection between Vineyard Road and Brady Lane. Vineyard Road runs east and west along the southern side of the subject site and Brady Lane runs north and south along the eastern side of the subject site. Vineyard Road and Brady Lane are public paved roads that services the subject site as well as surrounding properties.

At the time of ACE's representative's field reconnaissance on June 15, 2017, the subject site, located at the referenced parcel numbers, was undeveloped. No structures or paved roads were present on the subject site. The property was relatively open with native grasses and scattered trees. Two seasonal swales trended southwesterly and westerly to an intermittent creek that trended southerly on the western side of the property that was lined with a grove of trees. The drainages were dry at the time of the site visit. The subject site had no paved access lanes from either Vineyard road or Brady Lane. The subject site gently undulated with maximum changes in elevation of approximately 15 feet. Adjacent to the northeastern section of the subject site was Impact Church. One single family home was located relatively near the center of the subject site at 1940 Vineyard Road that occupies a rectangular shaped property that runs north and south with a driveway accessing Vineyard Road. Properties beyond this were primarily single family residential homes. Please refer to Figure 1 and Appendix F for additional details about the subject site and adjacent properties.

4.0 USER PROVIDED INFORMATION

4.1 User Questionnaire

A User Questionnaire was emailed to the client. The questionnaire was filled out by Mr Sukhbir Brar. Mr. Brar answered no (negative) to all of the questions in the environmental questionnaire and returned it to us. The questionnaire is included in Appendix A.

4.2 Preliminary Title Report

A preliminary title report for the site was not provided to ACE.

5.0 RECORDS REVIEW

5.1 Regulatory Data Base Review

ACE reviewed federal, state, and local environmental databases for information regarding documented and suspected releases of regulated materials at the subject site and vicinity based upon reference to an environmental database search performed by EDR, an environmental data base search firm. EDR performed the standard ASTM E1527-13 recommended distances from the center of the site. The center of the standard ASTM search was performed for the site at 38.745601 degrees north latitude and 121.316229 degrees west longitude. This coordinate is located at 1940 Vineyard Road and this was the address provided to EDR. This coordinate is approximately 350 feet from the center of the subject site. ACE has summarized the findings of the EDR report with respect to site proximity from listed sites and position with respect to regional groundwater flow direction that is estimated to be generally

southwesterly toward Dry Creek. A copy of the EDR report is included in Appendix B, and should be referenced for detailed information.

The EDR report showed listings for the subject site, adjacent properties and properties within a 1-mile radius that could have potential environmental impact at the subject site. A summary of Envirostor list is provided in Table 5.1.3b below. Previous identified LUST cases up gradient of the site have all been closed by the reporting regulatory agency. Nearby properties listed by EDR are summarized in the following list:

Table 5.1.3b
ENVIROSTOR LIST

NAME/ADDRESS	STATUS	APPROXIMATE DISTANCE (feet,mile)/DIRECTION FROM SITE	GROUNDWATER GRADIENT POSITION FROM SITE
Mobile Oil Masters 1940 Vineyard Road	Hist Auto	350,0.066/SW	Lower
Mobile Oil Masters 1940 Vineyard Road	RCRA NonGen/NLR	350,0.066/SW	Lower
Mobile Oil Masters 1940 Vineyard Road	FINDS,ECHO	350,0.066/SW	Lower
TRI D Construction 1891 Vineyard Rd.	HIST UST	46,.009/ S	Lower
Mat Consulo	HIST UST	614,.116/NW	Higher
Robert Riolo Construction 8165 Eat Dr.	CA PLACER CO. MS	628,.119/ NNW	Higher
TRI-D Construction 1550 Misty Lane	CA PLACER CO. MS	1050,.199/ SSW	Lower
Riolo Brothers Paving 8101 East Dr.	CA PLACER CO. MS	1307,.248/ NNW	Higher
AM/PM 2998 Foothills Blvd.	UST	1316,.249/ ESE	Higher
Shell Branded Service 3998 Foothills Blvd.	LUST, EMI	2049, .388/ NE	Higher
Shell Branded Service 3998 Foothills Blvd.	LUST	2049, .388/ NE	Higher
Union Pacific Railroad 9451 Atkinson Street	ENVIROSTOR, SLIC, ENF	4578,.867/ SSE	Lower
Union Pacific Railroad 9451 Atkinson Street	CORRACTS, US FIN ASSUR, HWP, RAATS, HAZNET, NPDES	4578,.867/ SSE	Lower
Roseville Rail Yard 9499 Atkinson Street	Envirostor, LUST, HIST CORTESE	4732, .896/ SSE	Lower

5.2 General Setting

The subject site is in Roseville, California which is located in the west-central part of Placer County and has an average elevation of 138 +/- feet above MSL.

5.2.1 Geologic Conditions

The site is located within California's Great Valley Geomorphic Province, a geologically young, large, flat-lying alluvial plain in the central portion of California. It is 40 to 60 miles (60 to 100 km) wide and stretches approximately 450 miles (720 km) from north-northwest to south-southeast, inland from and parallel to the Pacific Ocean Coast Ranges to the west and Sierra Nevada Mountains to the east. The Great Valley has been filled with hundreds to thousands of feet of eroded sediments, ranging in age from Pleistocene to Holocene. Recent alluvial deposits generally consist of poorly sorted silts, fine sands and clays with less extensive lenses of medium to coarse grained sands and gravel. Lacustrine deposits occur along the axis of the valley, and consist of clays, silts, and fine sands. These alluvial units overlie Pliocene-Pleistocene continental clastic deposits, which in turn overly older continental and marine deposits. An unconformable pre-Tertiary basement complex of granitic and metamorphic rocks underlies the sediments.

The native earth materials underlying the site are considered to be alluvial materials. Based on our review of readily available published geologic literature/maps (CGS Geologic Map 1A “Geologic Map of the Sacramento Quadrangle”, third printing 2010;

scale 1:250,000) the site is mapped to be underlain by Pleistocene alluvial deposits consisting of gravels, sands, silts and clays of the Turlock Lake Formation. The total thickness of the formation at this site was not determined and is beyond the scope of this study.

5.2.2 Surface Water

Surface water at the site flows southwesterly to westerly in seasonal swales to an intermittent creek that is along the western side of the site. The creek flows generally southerly to cross Vineyard Road at the southeastern corner of the rectangular parcel located at 1940 Vineyard Road (not a part of the subject site).

5.2.3 Groundwater

A review of reports in the GeoTracker website (http://geotracker.waterboards.ca.gov), indicated that the shallow groundwater in the general Roseville area was at 15 to 25 feet below ground surface and flowed generally westerly to southwesterly.

The words up-gradient, cross-gradient and down-gradient refer to the topographic gradient in relation to the site. The groundwater flow direction and the depth to shallow groundwater, if present, would likely vary depending upon seasonal variations in rainfall and the depth to an aquifer and/or the soil/bedrock interface. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater depth and flow direction beneath the site cannot be directly ascertained.

5.3 Historical Use Information on the Target property and Adjoining Properties

The following historical sources were utilized to prepare this Phase I ESA:

- Due Diligence Environmental Questionnaire in Appendix A
- Environmental Data Resources (EDR) Records Report in Appendix B
- Historical telephone directories, attached in Appendix C
- Historical aerial photographs, attached in Appendix D
- Historical topographic maps, attached in Appendix E
- Sanborn Fire Insurance Maps, attached in Appendix F

5.3.1 Sanborn Fire Insurance Maps

Sanborn Fire Insurance Maps were accessed, but there was no coverage for the subject site according to EDR. The Sanborn fire insurance map report is provided in Appendix F.

5.3.2 Reverse Telephone Directories

Historic reverse ("criss cross") telephone directories provide historical users of properties located on Vineyard Lane. Historical telephone directories do not list any addresses corresponding with the subject site dating back to 1970. This list, sourced from Haines Company, Inc. and Cole Information Services, is included in this report in Appendix C.

5.3.3 Historic Aerial Photographs

Historic aerial photographs dating back to 1951 were provided by EDR and also accessed from Google Earth, and are contained in Appendix D for reference. Following is a brief summary of the reviewed historic aerial photographs.

TABLE 5.3.3 SUMMARY NOTES HISTORIC AERIAL PHOTOGRAPHS	
Aerial Photograph Dates	Observations
2016	The subject site appears similar to that observed during ACE's site visit. Impact Church is at the northeastern corner, vacant land to the north, Brady Lane to the east, Vineyard Road to the south and residence (1940 Vineyard Road) in the southwestern portion. Vacant land is to the north and west, rural residential to the northwest and south, and residential subdivisions to the east.
2012	The subject site appears very similar to how it is described above. Impact Church is visible to the northeast of the subject site as well as the single-family home located at 1940 Vineyard Rd. A single family residential subdivision that is under construction is to the southeast.
2010 2009	Subject site and immediate surrounding areas appears very similar to the 2012 aerial photograph, except the land to the southeast is vacant.
2006 2005	The subject site appears similar to that depicted on the earlier photos. The ARCO gas station site located at 2998 Foothills Blvd, approximately 2000 ft. southeast of the subject site, is being rough graded. An apartment complex is approximately 1800 feet easterly at 1668 Vineyard Road. A commercial development (small supermarket, self-storage facility, gas station, fast food restaurant) is +/-2200 ft. to the northeast.
1998	The subject site remains very similar in appearance to the above 2005 - 2006 aerial photos. The commercial development located approximately 2200 ft. to the northeast of the subject site and apartment complex at 1668 Vineyard are no longer visible.
1993	The subject site remains visibly very similar to the 1998 air photo, except the Shell gas station located at 3998 Foothills Blvd., approximately 2500 ft. northwest of the subject site is no longer visible along with a few surrounding structures.
1984	The subject site remains visibly similar to the 1993 photo, except the church and nearby properties are undeveloped. Rural residences are still evident.
1972	The subject site and surrounding areas appear similar to the 1984 aerial photograph. There are a few single-family homes that are no longer visible approximately 1500 ft. northwest of the subject site. The single-family home located at 2200 Vineyard Rd. is no longer visible.
1966	The subject site and surrounding areas appear rural residential / grass lands with scattered trees.
1957	The subject site and surrounding areas appear visually very similar to 1966. Some single-family homes are no longer visible approximately 1300 ft. to the northwest of the subject site. The supplied photo does not have the clarity necessary to identify the amount of homes no longer visible. Row crops are in the central-eastern portion of the property.
1952	The subject site and surrounding area appears very similar to 1957. It appears that the subject site was being used for agricultural purposes (row crops?), but the type of crops could not be readily discerned.
1947	The subject site and surrounding area appears very similar to the 1952 photo. The subject site appears to be used for agricultural purposes.

5.3.4 Historic Topographic Maps

Historic topographic maps dating back to 1891 were accessed by EDR, and are attached as Appendix E. Following is a brief summary of the reviewed historic topographic maps.

TABLE 5.3.4 SUMMARY NOTES TOPOGRAPHIC MAPS	
Topographic Map Dates/Scale	Observations
2012/1:24,000	There are no structures shown on the on the map. The map shows all current local streets.
1992/1:24,000	No structures on shown on the subject site. All current local streets appear to be present.
1980/1:24,000	No structures are shown on the subject site. The map does not show current local roads immediately to the east of the subject site that service the current residential subdivision.
1975/1:24,000	No structures or use of the subject site is visible.
1967/1:24,000	No structures or use of the subject site is visible.
1951,1953,1954/1:24,000	No structures or use of the subject site are shown. A reservoir is labeled directly west of the subject site. Also a sewage disposal site is identified approximately 4,000 ft. south of the subject site along Dry Creek. No roads are visible north of Baseline Road.
1910,1911/1:24,000	No structures or use of the subject site are shown. The house at 1940 Vineyard Road is not shown.
1902/1:62,500	No structures or use of the subject site are shown. Some rural houses are shown.
1893/1:125,000	No structures or use of the subject site are shown. No houses or roads are shown.
1892/1:125,000	No structures or use of the subject site are shown. No houses or roads are shown.
1891/1:125,000	No structures or use of the subject site are shown. No houses or roads are shown.

6.0 SITE RECONNAISSANCE

The site reconnaissance was conducted on June 15, 2017, by Dillon Stemberger and Ed Hendrick, as representatives of ACE. Observations were taken of the site and nearby properties. Selected pictures taken during the site reconnaissance are attached as Appendix G.

6.1 Methodology and Limiting Conditions

The site reconnaissance consisted of walking the subject site and driving by adjacent and nearby properties from public vantages to observe apparent uses. Photographs were taken during the site reconnaissance and selected photos are provided in Appendix G. The site location is shown on Figure 1 which also shows the approximate subject site limits.

6.2 General Site Setting

The subject site is located within the City of Roseville. General setting of the site and area is largely rural grassland with residential properties. Impact Church is at the northeastern quadrant of the site.

6.3 Site Observations

At the time of the field reconnaissance on June 15, 2017, the subject site was undeveloped with no structures or roads. The subject site was undeveloped with gently undulating hills covered with overgrown grasses/weeds and scattered trees. A few seasonal swales ran generally westerly through the subject site to an intermittent creek that trends southerly along the western side of the site through the 1940 Vineyard Road parcel where it crosses Vineyard Road. Numerous trees grow along the creek.

6.3.1 Summary of Observations

TABLE 6.3.1 SUMMARY OF SUBJECT SITE OBSERVATIONS			
CONDITIONS	NOT OBSERVED OR NOTED	OBSERVED OR NOTED	SIGNIFICANT CONCERN?
Hazardous Substances/Petroleum Products	X		
Waste Generation/Storage/Disposal	X		
ASTs	X		
USTs	X		
PCB Containing Equipment	X		
Chemical/Petroleum Odors	X		
Pools of Liquid	X		
Floor Drains/Sumps/Wells	X		
Drums	X		
Stains or Corrosion	X		
Unidentified Substance Containers	X		
Stained Soil or Pavement	X		
Stressed Vegetation	X		
Pits, Ponds or Lagoons	X		
Wastewater Discharges/Disposal Systems	X		
Septic Systems/Cesspools	X		
Non-Hazardous Solid Waste Disposal Areas	X		
Drinking Water Systems	X		
Wells	X		
Other	X		

Site Reconnaissance of the subject site did not indicate any potential RECs.

6.4 Vicinity Observations

The site reconnaissance was performed June 15, 2017, to assess readily apparent potential environmental impacts to the subject site from adjacent and nearby properties. ACE's site observations are summarized in the following table.

TABLE 6.4 SUMMARY OF VICINITY OBSERVATIONS	
General Direction From Site	Observations
North:	The subject site is bordered by grass land and an intermittent creek with scattered residential properties to the north. A barbed wire fence trends along the northern property boundary. Impact Church occupied a rectangular lot that was in the northeastern quadrant adjacent to the site. Impact Church appears to have a higher gradient than the subject site. Two large steel containers were on the western-central side of the church's parking lot, with some materials stored adjacent to the containers.
South:	The subject site is bordered by Vineyard Rd. Several single family residential homes are just south of Vineyard Rd. On the southwestern end of the subject site a single-family home occupies a lot at 1940 Vineyard Road with an access driveway from Vineyard Road. The parcel is rectangular shaped and intrudes northerly into the subject site.
West:	The subject site is bordered by properties with gradients both higher and lower than that of the subject site. There is one vacant property near the southwest corner with a gradient higher than the subject site and sloped toward the site. Further to the west and northwest are residential properties.
East:	Residential properties are to the east across Brady Lane.

7.0 INTERVIEWS

A user questionnaire was sent to a representative of the subject site. Please refer to section 4.0 "User Provided Information" for further information.

8.0 FINDINGS AND OPINIONS

ACE has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E 1527-13 guidelines for the property identified as APN No. 473-

020-002, 473-020-007, and portions of 473-020-001 and 473-020-009(subject site). Exceptions to this practice are described in Section 2.4 and Section 10.0. Following are ACE's findings and opinions regarding potential Environmental Conditions at the subject site:

- Site history has not been definitively traced back to undeveloped native ground. Per ASTM E 1527-13 guidelines, the first developed use of the subject site or uses dating back to 1940, whichever is earlier, must be documented or a data failure must be noted. Because the first developed use of the subject site was not definitive in the standard historical sources, EDR supplied historical aerial photographs, and the earliest standard historical source reasonably ascertainable is dated 1947, a data failure has occurred. The reviewed historic topographic maps do not provide sufficient detail to ascertain the time when the subject site would be definitively undeveloped natural ground.
- After review of historical aerial photographs, it is apparent from the supplied photograph from 1952 that portions of the subject site were at one time used for agricultural purposes (row crops?). Due to the use at that time of recognized herbicides / pesticides containing carcinogens, such as DDT, there exists a potential that herbicides and pesticides might have been used on the subject site at some time in the past. Without land title records it is difficult to interview any past owner of the subject site whom would have knowledge of the use of the land at that time.
- Shell Branded Service Station, located at 3998 Foothills Blvd. approximately 0.4 miles northeast of the subject site, was identified by Geotracker website, a database updated by the DWR,(http://geotracker.waterboards.ca.gov) as a LUST case with a Pollution

Characterization Status. This business is at a higher groundwater gradient than the subject site. Geotracker indicates that this case is completed and case closed as of 9/22/2010.

- Envirostor database, updated by the Department of Toxic Substances Control, indicated that the Roseville Rail Yard at 9451 Atkinson Street, operated by Union Pacific Railroad Company, has an active cleanup status and was listed on the federal Corrective Actions (CORRACTS) TSD Facilities List. This location was used to fuel and maintain diesel locomotives and in the 1960's fuel began being disposed of on site. Potential contaminants of concern include metals, such as lead, diesel fuel, and volatile organics. This location has a lower groundwater gradient than the subject site and is not considered a potential REC.
- The Vapor Encroachment Screen (VES) accessed through Environmental Data Resources (EDR) records report indicated that 1940 Vineyard Road is recognized as a potential historic gas station/filling station/service station. No cases are reported against this property in other reference databases and no visual signs of fuel tanks or spilled fuel was evident during the site visit. This is not considered a potential REC to the subject site.
- Site Reconnaissance of the subject site did not find any readily apparent potential Recognized Environmental Conditions.
- Based on the scope of services, limitations, and findings of this assessment, it is ACE's opinion that the subject site does not have any readily discernible REC's other than an

unknown possibility of pesticide/herbicide contaminates in surficial soil resulting from historical agricultural usage.

9.0 CONCLUSIONS

ACE has performed an Update Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Practice E 1527-13 guidelines regarding the property identified as APN No. 473-020-002, 473-020-007, and portions of 473-020-001 and 473-020-009 (subject site). Any exceptions to, or deviations from, this practice are described in Sections 2.4 and 10.0 of this report.

The presence of environmental issues at the subject site was considered with respect to guidelines of the ASTM 1527-13 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". *ASTM E 1527-13* defines a *Recognized Environmental Condition (REC) as "—the presence or likely presence of any hazardous substances or petroleum products in, on or at a property: (1) due to release to the environment: (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not Recognized Environmental Conditions."*

ACE has conducted a *Phase I Environmental Assessment* in general conformance with the scope and limitations of ASTM Practice E1527-13 guidelines for the property identified as APN No. 473-020-002, 473-020-007, and portions of 473-020-001 and 473-020-009 (subject site). Any

exceptions to, or deletions, from this practice are described in Section 2.4 and 10.0 of this report. Based on the scope of services, limitations, and findings of this assessment, it is ACE's opinion that the subject site does not have any readily discernible REC's other than unknown possibility of pesticide/herbicide contaminates in surficial soil resulting from historical agricultural usage. If historic agricultural activities on the subject site which might have caused pesticide/herbicide contamination of surficial soils is a concern to the buyer (considering that the site is planned to be mass graded and covered with structures, pavements and landscaping), then a limited Phase 2 assessment could be conducted of the subject site's surficial soils by collecting shallow soil samples and having them tested for pesticides/herbicides.

10.0 DEVIATIONS

The subject site and adjacent sites could not be traced back to a time when there was definitively undeveloped natural ground. In addition, historical aerial photos dating back to 1940 or earlier are not readily available for review. Consequently, data failures have occurred. However, these data failures are not considered likely to impact the findings of this report as, based upon the accumulated data, it is unlikely the site has been utilized for any purposes other than what has been described in this report. Additionally, land title records and environmental lien information was not provided for review. Per Standard Practice for Environmental Site Assessments (ASTM E 1527-13) guidelines, this lack of information represents a significant data gap.

11.0 ADDITIONAL SERVICES

No additional services were conducted by ACE related to this Phase I ESA.

12.0 REFERENCES

ASTM (2013) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process,* Designation E 1527-13.

California State Water Resources Control Board website, *Geotracker.*

California. Department of Toxic Substances Control, *Envirostor*.

Environmental Data Resources, Inc., *EDR.*

California Geological Survey (CGS), "GEOLOGIC MAP OF SACRAMENTO 30' × 60' QUADRANGLE, CALIFORNIA" (1:250,000; 2011), compiled by T.L.T. Grose, G.J.Saucedo, and D.L.Wagner.

13.0 SIGNATURES AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

This report is prepared by appropriately credentialed professionals with experience in preparing environmental site assessments in accordance with ASTM E1527-13 guidelines. This report is prepared in accordance with the standard of practice utilized by reputable consultants practicing in this area at the time of this report. No other warranties are expressed or implied. This report is prepared for Alliance Property Group. No other parties may rely on this report without express written permission of ACE and Alliance Property Group INC.

Respectfully submitted,

ACE Quality Control

Dillon Stemberger
Staff Engineer

Ed Hendrick, PE, GE, RG, CEG
Principal Geotechnical Engineer /
Engineering Geologist

EH/DS

Distribution: (1) Addressee

ASTM E1527-13 USER QUESTIONNAIRE

When the "user" (the party for whom the assessment is being prepared) of the Phase I is required to help the environmental professional identify recognized environmental conditions at the property, a "User Questionnaire" is completed by the user to help gather information that may identify recognized environmental conditions at the property.

We ask that you answer the six questions below to the best of your knowledge. We understand that, in some circumstances, you may have little or no information. Still, we encourage you to complete and return the questionnaire as soon as possible. This will allow us to reflect the fact that the Questionnaire was completed when we issue our report as is required. Completion of the assessment to the new standard, when conducted in connection with the asset purchase of a real property, may entitle the user to certain federal liability protections that result from conducting "All Appropriate Inquiries" into the previous ownership and uses of a property.

On the second page of this form is a list of documentation. The E1527-13 Standard requires that the User will ensure that the consultant is made aware that any of these materials exist for a site, and if so, that these documents be provided for the consultant's review. Please indicate whether any of these documents are available, and ensure that ACE Quality Control will either receive copies or be provided an opportunity to review the relevant materials. We appreciate your assistance. If you have any questions, then please contact us.

1. Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law? No

2. Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? No

3. As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business? No

4. Does the purchase price/loan amount for this property reasonably relect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property? Yes

5. Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user:

   (a.) Do you know the past uses of the property? No

(b.) Do you know of specific chemicals that are present or once were present at the property? No

(c.) Do you know of spills or other chemical releases that have taken place at the property? No

(d.) Do you know of any environmental cleanups that have taken place at the property? No

6. As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?

As part of this study, which of the following are you providing?

1. Previous environmental site assessment reports ☐ Yes ☒ No
2. Environmental compliance audit reports ☐ Yes ☒ No
3. Environmental permits (including but not limited to solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits) ☐ Yes ☒ No
4. Registrations for underground and aboveground storage tanks ☐ Yes ☒ No
5. Registrations for underground injection systems ☐ Yes ☒ No
6. Material safety data sheets ☐ Yes ☒ No
7. Community Right-to-Know plan ☐ Yes ☒ No
8. Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; etc. ☐ Yes ☒ No
9. Reports regarding hydrogeologic conditions on the property or surrounding area

   ☐ Yes ☒ No
10. Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property ☐ Yes ☒ No
11. Hazardous waste generator notices or reports ☐ Yes ☒ No
12. Geotechnical studies ☐ Yes ☒ No

13. Risk assessments ☐ Yes ☒ No

14. Recorded Activity and Use Limitations (AULs). ☐ Yes ☒ No

Please contact us if you have any questions regarding these ASTM requirements. **Please return the completed document to ACE Quality Control via US Mail and/or email to Ed.Hendrick@ACEqc.com**

Company/Client Name: Sukhbir Brar

Completed by (print name): _____

Signature: Sukhbir Brar Date: 6/21/2017

Title: _____ Phone No.: 9167490967

Address: 1500 Woodgrove Way, Roseville, CA 95661

_____

Relationship to site (i.e., purchaser, owner, lender): Owner

ACE Quality Control
1830 Vernon Street, Suite 7
Roseville, CA 95678
Phone: 916.742.5096

www.ACEqc.com

Proposed Residential Subdivision Site – 36 +/- acres
NWC Brady Lane and Vineyard Road
Roseville, California

Due Diligence Environmental Questionnaire – *Owner*

Please email to **Ed.Hendrick@aceqc.com**

Completed by: Sukhbir Brar

Company or Organization:

Title:

Date: 6/21/2017

1.) Who is the current owner of the subject property and when was it purchased?

JAGROOP S. GILL, TRUSTEE OF THE JAGROOP S. GILL & RUPINDER K. GILL REVOCABLE LIVING TRUST ESTABLISHED MAY 6, 2010 AS TO AN UNDIVIDED 1/3 INTEREST AND KULDIP JOHAL AND BALBIR JOHAL, HUSBAND AND WIFE AS JOINT TENANTS AS TO AN UNDIVIDED 1/3 INTEREST AND SUKHBIR SINGH BRAR AND ARSHPREET BRAR, TRUSTEES OF THE R & S TRUST DATED DECEMBER 21, 2012 AS TO AN UNDIVIDED 1/3 INTEREST.
Purchased 2.5 years ago.

2.) What is the current use of the property, and for how long?

Vacant Land, Since I owned it

3.) Who are the past owners of the property and years of ownership (if available)?

Karen Dedman

4.) What was the past use of the subject property?

Unknown

Subject Property Address/Location:

Proposed Residential Subdivision Site
NWC Brady Lane and Vineyard Road
Roseville, California

5.) Are you aware of any environmental cleanup liens that are filed or recorded against the subject property?

No

6.) Are you aware of any activity, environmental engineering, land use limitations, and/or institutional controls that are in place on the property? If so, have any been filed or recorded in a registry?

No

7.) Are you aware of any specialized knowledge or experience related to the property or nearby properties that is pertinent to potential adverse environmental conditions?

No

8.) Are you aware of commonly known or reasonably obtainable information that would help ACE to identify conditions indicative of releases or threatened releases of hazardous wastes/materials at the property? Such information includes (but is not limited to): No

- Past uses of the property
- Specific chemicals that are present or may have been present on the property
- Any hazardous material and/or petroleum product storage (including above ground and underground storage tanks) on the property or adjacent properties
- Any hazardous material or petroleum product spill or release that have taken place on the property or adjacent properties
- Any environmental cleanups on the property or adjacent property
- Additional Information

Subject Property Address/Location:

Residential Site – Proposed Duplexes
383 Sacramento Street
Auburn, California 95603

9.) Based on your knowledge, experience, written and/or verbal reports related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?

No

To the best of my knowledge, I certify that the information provided in this questionnaire is true, correct and provided in good faith.

Signature: Sukhbir Brar

Completed by: Sukhbir Brar

Date: 6/21/2017

Brady-Vineyard 36 Acre Subdivision
1940 Vineyard Road
ROSEVILLE, CA 95747

Inquiry Number: 4944548.2s
May 23, 2017

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1940 VINEYARD ROAD
ROSEVILLE, CA 95747

COORDINATES

Latitude (North):	38.7456010 - 38˚ 44' 44.16''
Longitude (West):	121.3162290 - 121˚ 18' 58.42''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	646329.7
UTM Y (Meters):	4289685.0
Elevation:	137 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5619692 CITRUS HEIGHTS, CA
Version Date:	2012
North Map:	5619746 ROSEVILLE, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140713, 20140621
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
1940 VINEYARD ROAD
ROSEVILLE, CA 95747

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1		1940 VINEYARD RD	EDR Hist Auto		TP
A2	MOBILE OIL MASTERS	1940 VINEYARD RD	RCRA NonGen / NLR		TP
A3	MOBILE OIL MASTERS	1940 VINEYARD RD	FINDS, ECHO		TP
4	TRI D CONSTRUCTION	1891 VINEYARD RD	HIST UST	Lower	46, 0.009, South
5	MAT CONSULO	2073 CENTRAL AVE	HIST UST	Higher	614, 0.116, NW
6	ROBERT RIOLO CONSTRU	8165 EAST DR	CA PLACER CO. MS	Higher	628, 0.119, NNW
7	TRI-D CONSTRUCTION,	1550 MISTY LN	CA PLACER CO. MS	Lower	1050, 0.199, SSW
8	RIOLO BROTHERS PAVIN	8101 EAST DR	CA PLACER CO. MS	Higher	1307, 0.248, NNW
9	AMPM	2998 FOOTHILLS BLVD	UST	Higher	1316, 0.249, ESE
B10	SHELL BRANDED SERVIC	3998 FOOTHILLS BLVD.	LUST, EMI	Higher	2049, 0.388, NE
B11	SHELL BRANDED SERVIC	3998 FOOTHILLS BLVD.	LUST	Higher	2049, 0.388, NE
C12	UNION PACIFIC RAILRO	9451 ATKINSON STREET	ENVIROSTOR, SLIC, ENF	Lower	4578, 0.867, SSE
C13	UNION PACIFIC RAILRO	9451 ATKINSON STREET	CORRACTS, US FIN ASSUR, RAATS, HAZNET, HWP, NPDES	Lower	4578, 0.867, SSE
C14	ROSEVILLE RAIL YARD	9499 ATKINSON	ENVIROSTOR, LUST, HIST CORTESE	Lower	4732, 0.896, SSE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
1940 VINEYARD RD 1940 VINEYARD RD ROSEVILLE, CA 95747	EDR Hist Auto	N/A
MOBILE OIL MASTERS 1940 VINEYARD RD PLACER COUNTY, CA 95747	RCRA NonGen / NLR EPA ID:: CAR000181933	CAR000181933
MOBILE OIL MASTERS 1940 VINEYARD RD PLACER COUNTY, CA 95747	FINDS Registry ID:: 110031278061 ECHO	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY..... Federal Facility Site Information listing
SEMS..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE..... Superfund Enterprise Management System Archive

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

EXECUTIVE SUMMARY

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators
RCRA-SQG..... RCRA - Small Quantity Generators
RCRA-CESQG..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS..... Land Use Control Information System
US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
SLIC..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Properties
INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database

SWRCY	Recycler Database
HAULERS	Registered Waste Tire Haulers Listing
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System

EXECUTIVE SUMMARY

COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Cleaner	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 12/12/2016 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNION PACIFIC RAILRO	***9451 ATKINSON STREET***	***SSE 1/2 - 1 (0.867 mi.)***	***C13***	***29***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 10/31/2016 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNION PACIFIC RAILRO Facility Id: 80001325 Status: Refer: SMBRP	***9451 ATKINSON STREET***	***SSE 1/2 - 1 (0.867 mi.)***	***C12***	***21***
ROSEVILLE RAIL YARD Facility Id: 80000945 Status: No Further Action	***9499 ATKINSON***	***SSE 1/2 - 1 (0.896 mi.)***	***C14***	***37***

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SHELL BRANDED SERVIC	***3998 FOOTHILLS BLVD.***	***NE 1/4 - 1/2 (0.388 mi.)***	***B10***	***12***
Database: LUST REG 5, Date of Government Version: 07/01/2008 Status: Pollution Characterization				
SHELL BRANDED SERVIC	3998 FOOTHILLS BLVD.	NE 1/4 - 1/2 (0.388 mi.)	B11	15
Database: LUST, Date of Government Version: 03/13/2017 Status: Completed - Case Closed Global Id: T0606186564				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AMPM	2998 FOOTHILLS BLVD	ESE 1/8 - 1/4 (0.249 mi.)	9	12
Database: UST, Date of Government Version: 03/12/2017				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MAT CONSULO	2073 CENTRAL AVE	NW 0 - 1/8 (0.116 mi.)	5	10
Facility Id: 00000046389				

Lower Elevation	Address	Direction / Distance	Map ID	Page
TRI D CONSTRUCTION	1891 VINEYARD RD	S 0 - 1/8 (0.009 mi.)	4	9

Facility Id: 00000044629

Other Ascertainable Records

HWP: Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

A review of the HWP list, as provided by EDR, and dated 11/21/2016 has revealed that there is 1 HWP site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNION PACIFIC RAILRO EPA Id: CAD000628255 Cleanup Status: CLOSED	***9451 ATKINSON STREET***	***SSE 1/2 - 1 (0.867 mi.)***	***C13***	***29***

CA PLACER CO. MS: Placer County Master List of Facilities includes Aboveground Hazardous Material tanks, Underground Storage tanks, Site Clean-up sites.

A review of the CA PLACER CO. MS list, as provided by EDR, and dated 09/02/2016 has revealed that there are 3 CA PLACER CO. MS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ROBERT RIOLO CONSTRU Facility Status: Closed Facility Id: FA0012114	8165 EAST DR	NNW 0 - 1/8 (0.119 mi.)	6	11
RIOLO BROTHERS PAVIN Facility Status: Closed Facility Id: FA0002541	8101 EAST DR	NNW 1/8 - 1/4 (0.248 mi.)	8	12

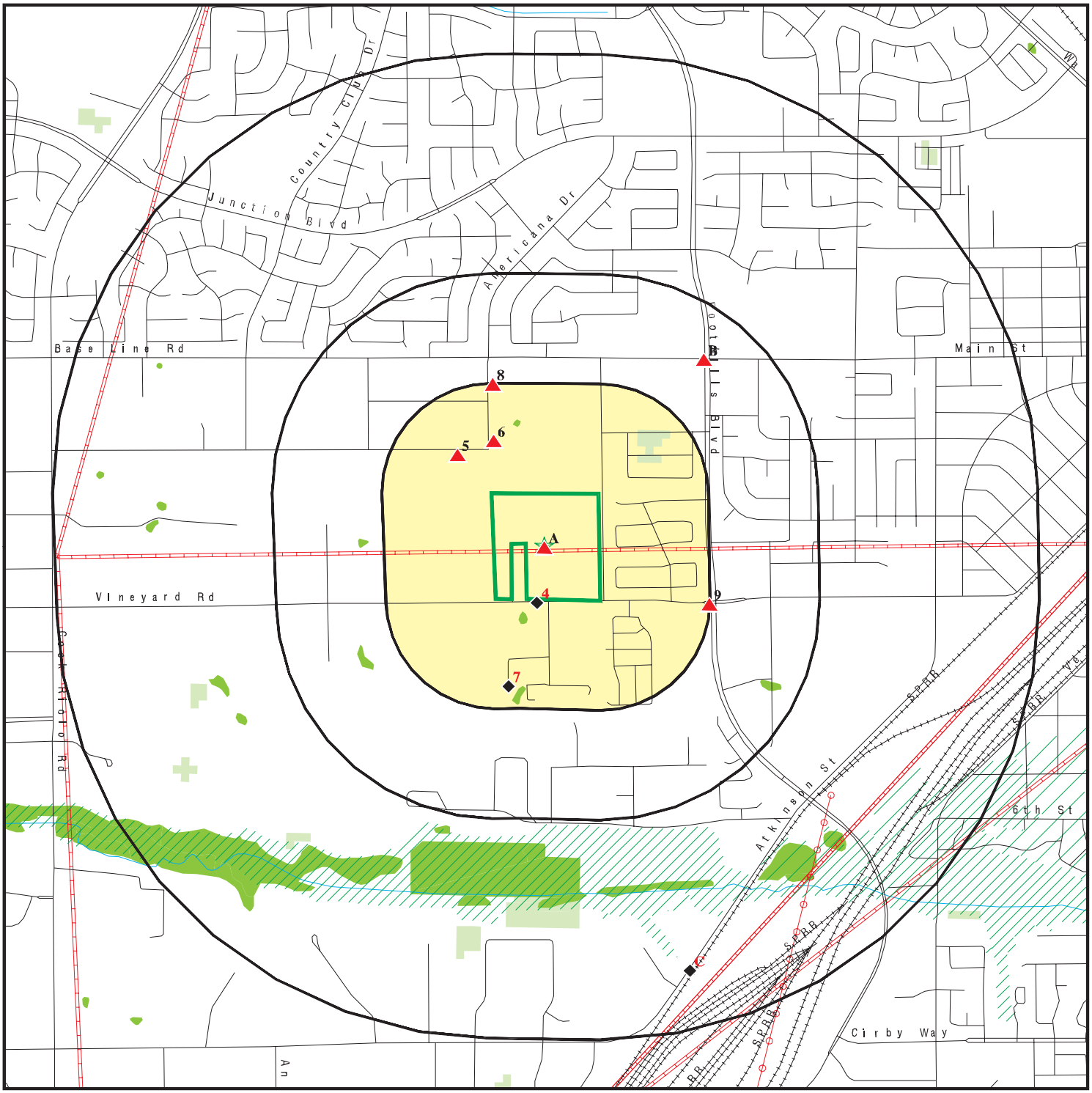
Lower Elevation	Address	Direction / Distance	Map ID	Page
TRI-D CONSTRUCTION, Facility Status: Closed Facility Id: FA0001753 Facility Id: FA0003584	1550 MISTY LN	SSW 1/8 - 1/4 (0.199 mi.)	7	11

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
DEL WEBB SUN CITY ROSEVILLE DEVELO	SLIC

OVERVIEW MAP - 4944548.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Pipelines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Brady-Vineyard 36 Acre Subdivision	CLIENT: Ace Quality Control
ADDRESS: 1940 Vineyard Road ROSEVILLE CA 95747	CONTACT: Dana Smal
LAT/LONG: 38.745601 / 121.316229	INQUIRY #: 4944548.2s
	DATE: May 23, 2017 2:39 pm

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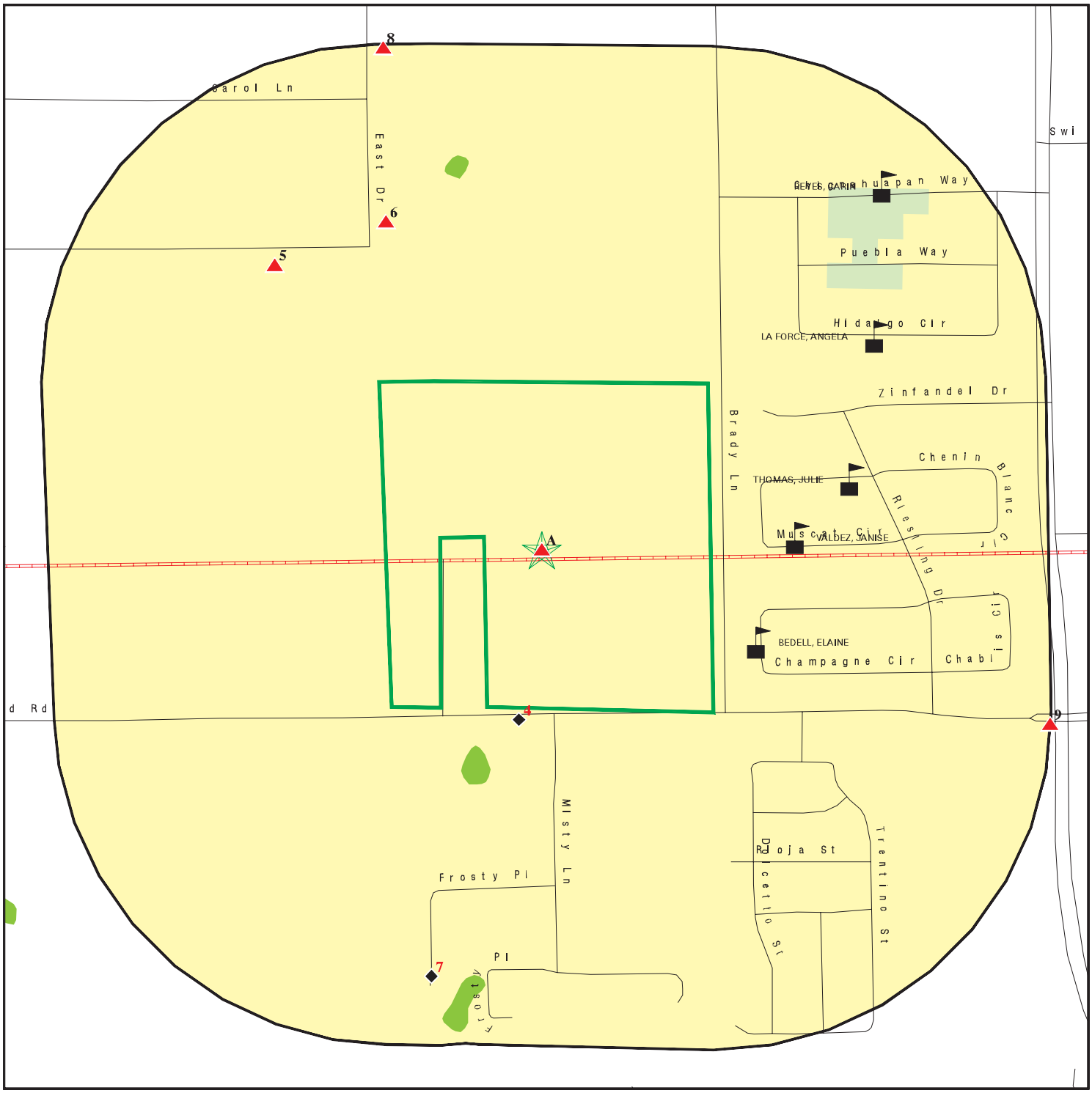
DETAIL MAP - 4944548.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Pipelines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Brady-Vineyard 36 Acre Subdivision	CLIENT: Ace Quality Control
ADDRESS: 1940 Vineyard Road ROSEVILLE CA 95747	CONTACT: Dana Smal
LAT/LONG: 38.745601 / 121.316229	INQUIRY #: 4944548.2s DATE: May 23, 2017 2:41 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	1	NR	1
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	2	NR	2
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	2	NR	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	1	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		2	0	NR	NR	NR	2
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250	1	0	0	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001	1	0	NR	NR	NR	NR	1
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001	1	0	NR	NR	NR	NR	1
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	1	NR	1
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
CA PLACER CO. MS	0.250		1	2	NR	NR	NR	3
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125	1	0	NR	NR	NR	NR	1
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		4	3	3	2	4	0	16

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
Target Property
Actual: 137 ft.

1940 VINEYARD RD
ROSEVILLE, CA 95747

Site 1 of 3 in cluster A

EDR Hist Auto **1015294734**
N/A

A2
Target Property
Actual: 137 ft.

MOBILE OIL MASTERS
1940 VINEYARD RD
PLACER COUNTY, CA 95747

Site 2 of 3 in cluster A

RCRA NonGen / NLR **1010314096**
CAR000181933

RCRA NonGen / NLR:

Date form received by agency:	02/23/2007
Facility name:	MOBILE OIL MASTERS
Facility address:	1940 VINEYARD RD PLACER COUNTY, CA 95747
EPA ID:	CAR000181933
Mailing address:	2504 VINE CIRCLE ROCKLIN, CA 95765
Contact:	JESSICA S WAGNER
Contact address:	2504 VINE CIRCLE ROCKLIN, CA 95765
Contact country:	US
Contact telephone:	916-289-7277
Contact email:	JS.WAGNER@YAHOO.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	MOBIL OIL MASTERS
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	02/24/2007
Owner/Op end date:	Not reported

Owner/operator name:	JESSICA AND DWIGHT WAGNER
Owner/operator address:	2504 VINE CIRCLE ROCKLIN, CA 95765
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	02/24/2007
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No

MOBILE OIL MASTERS (Continued) **1010314096**

Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	Yes

Violation Status: No violations found

A3
Target
Property

MOBILE OIL MASTERS **FINDS** **1010426738**
1940 VINEYARD RD **ECHO** **N/A**
PLACER COUNTY, CA 95747

Site 3 of 3 in cluster A

Actual:
137 ft.

FINDS:

Registry ID: 110031278061

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access
1 additional FINDS: record(s) in the EDR Site Report.

ECHO:

Envid:	1010426738
Registry ID:	110031278061
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110031278061

4
South
< 1/8
0.009 mi.
46 ft.

TRI D CONSTRUCTION **HIST UST** **U001613891**
1891 VINEYARD RD **N/A**
ROSEVILLE, CA 95678

Relative:
Lower

Actual:
131 ft.

HIST UST:

File Number:	0001F3D0
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F3D0.pdf
Region:	STATE
Facility ID:	00000044629
Facility Type:	Other
Other Type:	EXCAVATING
Contact Name:	G. DENNIS DAVIS (PRES)
Telephone:	9167838763

TRI D CONSTRUCTION (Continued) **U001613891**

Owner Name:	TRI D CONSTRUCTION
Owner Address:	1891 VINEYARD RD.
Owner City,St,Zip:	ROSEVILLE, CA 95678
Total Tanks:	0002
Tank Num:	001
Container Num:	1
Year Installed:	1976
Tank Capacity:	00003000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor
Tank Num:	002
Container Num:	2
Year Installed:	Not reported
Tank Capacity:	00002000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor

Click here for Geo Tracker PDF:

5
NW
< 1/8
0.116 mi.
614 ft.

MAT CONSULO **HIST UST** **U001613848**
2073 CENTRAL AVE **N/A**
ROSEVILLE, CA 95678

Relative:
Higher

Actual:
151 ft.

HIST UST:

File Number:	0001F2DC
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F2DC.pdf
Region:	STATE
Facility ID:	00000046389
Facility Type:	Other
Other Type:	SMALL FARM
Contact Name:	Not reported
Telephone:	9167821664
Owner Name:	NAT CONSULO
Owner Address:	2073 CENTRAL AVE
Owner City,St,Zip:	ROSEVILLE, CA 95678
Total Tanks:	0001
Tank Num:	001
Container Num:	#1
Year Installed:	1978
Tank Capacity:	00000550
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	12
Leak Detection:	None

Click here for Geo Tracker PDF:

6
NNW
< 1/8
0.119 mi.
628 ft.

ROBERT RIOLO CONSTRUCTION
8165 EAST DR
ROSEVILLE, CA 95747

CA PLACER CO. MS

S106842955
N/A

Relative:
Higher

Actual:
141 ft.

PLACER CO. MS:

Facility ID:	FA0012114
Facility Status:	Closed
Program Element Code:	2106
Program:	**DO NOT USE**HAZMAT- ABOVE GROUND WITH WASTE
Record Num:	PR0010254
District Code:	999
Decode for Fstatus:	Closed

Facility ID:	FA0012114
Facility Status:	Closed
Program Element Code:	2270
Program:	SMALL QUANTITY GENERATOR
Record Num:	PR0010256
District Code:	999
Decode for Fstatus:	Closed

7
SSW
1/8-1/4
0.199 mi.
1050 ft.

TRI-D CONSTRUCTION, INC
1550 MISTY LN
ROSEVILLE, CA 95747

CA PLACER CO. MS

S104915725
N/A

Relative:
Lower

Actual:
127 ft.

PLACER CO. MS:

Facility ID:	FA0001753
Facility Status:	Closed
Program Element Code:	2106
Program:	**DO NOT USE**HAZMAT- ABOVE GROUND WITH WASTE
Record Num:	PR0002520
District Code:	130
Decode for Fstatus:	Closed

Facility ID:	FA0001753
Facility Status:	Closed
Program Element Code:	2268
Program:	CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR
Record Num:	PR0008275
District Code:	130
Decode for Fstatus:	Closed

Facility ID:	FA0003584
Facility Status:	Closed
Program Element Code:	2301
Program:	UNDERGROUND STORAGE TANK - 1 TANK
Record Num:	PR0005393
District Code:	130
Decode for Fstatus:	Closed

8
NNW
1/8-1/4
0.248 mi.
1307 ft.

RIOLO BROTHERS PAVING
8101 EAST DR
ROSEVILLE, CA 95747

CA PLACER CO. MS **S102286235**
N/A

Relative:
Higher

Actual:
148 ft.

PLACER CO. MS:

Facility ID:	FA0002541
Facility Status:	Closed
Program Element Code:	2105
Program:	HAZMAT BUSINESS PLAN
Record Num:	PR0003774
District Code:	130
Decode for Fstatus:	Closed

9
ESE
1/8-1/4
0.249 mi.
1316 ft.

AMPM
2998 FOOTHILLS BLVD
ROSEVILLE, CA 95747

UST **U004262898**
N/A

Relative:
Higher

Actual:
145 ft.

UST:

Facility ID:	Not reported
Permitting Agency:	Roseville City Fire Department
Latitude:	38.74365
Longitude:	-121.30926

B10
NE
1/4-1/2
0.388 mi.
2049 ft.

SHELL BRANDED SERVICE STATION
3998 FOOTHILLS BLVD.
ROSEVILLE, CA 95747

Site 1 of 2 in cluster B

LUST **S107138450**
EMI **N/A**

Relative:
Higher

Actual:
157 ft.

LUST REG 5:

Region:	5
Status:	Pollution Characterization
Case Number:	310415
Case Type:	Drinking Water Aquifer affected
Substance:	HYDROCARBONS
Staff Initials:	PRS
Lead Agency:	Regional
Program:	LUST
MTBE Code:	N/A

EMI:

Year:	2008
County Code:	31
Air Basin:	SV
Facility ID:	931
Air District Name:	PLA
SIC Code:	5541
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.1821922
Reactive Organic Gases Tons/Yr:	1.17781808886
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0

SHELL BRANDED SERVICE STATION (Continued) **S107138450**

SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2009
County Code:	31
Air Basin:	SV
Facility ID:	931
Air District Name:	PLA
SIC Code:	5541
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.71069
Reactive Organic Gases Tons/Yr:	1.7110000000000001
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2010
County Code:	31
Air Basin:	SV
Facility ID:	931
Air District Name:	PLA
SIC Code:	5541
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.59385
Reactive Organic Gases Tons/Yr:	1.5879527550000001
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2011
County Code:	31
Air Basin:	SV
Facility ID:	931
Air District Name:	PLA
SIC Code:	5541
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.59385
Reactive Organic Gases Tons/Yr:	1.587952755
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2012
County Code:	31

SHELL BRANDED SERVICE STATION (Continued) **S107138450**

Air Basin:	SV
Facility ID:	931
Air District Name:	PLA
SIC Code:	5541
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.59385
Reactive Organic Gases Tons/Yr:	1.587952755
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2013
County Code:	31
Air Basin:	SV
Facility ID:	931
Air District Name:	PLA
SIC Code:	5541
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.59385
Reactive Organic Gases Tons/Yr:	1.59385
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2014
County Code:	31
Air Basin:	SV
Facility ID:	931
Air District Name:	PLA
SIC Code:	5541
Air District Name:	PLACER COUNTY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.27
Reactive Organic Gases Tons/Yr:	1.27
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

B11 NE 1/4-1/2 0.388 mi. 2049 ft. | **SHELL BRANDED SERVICE STATION 3998 FOOTHILLS BLVD. ROSEVILLE, CA 95747** | **LUST** | **S108207051 N/A**

Site 2 of 2 in cluster B

Relative: Higher

Actual: 157 ft.

LUST:

Region:	STATE
Global Id:	T0606186564
Latitude:	38.751351287
Longitude:	-121.309816142
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	09/22/2010
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5S)
Case Worker:	PRS
Local Agency:	Not reported
RB Case Number:	310415
LOC Case Number:	Not reported
File Location:	Not reported
Potential Media Affect:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Other Solvent or Non-Petroleum Hydrocarbon
Site History:	The case was opened following an unauthorized release from an underground storage tank system at the subject site. Corrective action is underway as directed by the CVRWQCB. Corrective action may consist of preliminary site investigation, planning and implementation of remedial action, verification monitoring, or a combination thereof. A summary of the site history is available by clicking on either the "Cleanup Status History", "Regulatory Activities" or the "Site Maps/Documents" tab. For a complete site history the case file at the CVRWQCB should be consulted.

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0606186564
Contact Type:	Regional Board Caseworker
Contact Name:	PAUL SANDERS
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5S)
Address:	11020 SUN CENTER DRIVE #200
City:	RANCHO CORDOVA
Email:	psanders@waterboards.ca.gov
Phone Number:	Not reported

Status History:

Global Id:	T0606186564
Status:	Completed - Case Closed
Status Date:	09/22/2010
Global Id:	T0606186564
Status:	Open - Case Begin Date
Status Date:	10/05/2004
Global Id:	T0606186564
Status:	Open - Site Assessment
Status Date:	04/05/2005
Global Id:	T0606186564
Status:	Open - Site Assessment

SHELL BRANDED SERVICE STATION (Continued) **S108207051**

Status Date: 10/18/2005

Global Id: T0606186564
Status: Open - Site Assessment
Status Date: 10/20/2005

Global Id: T0606186564
Status: Open - Site Assessment
Status Date: 05/01/2007

Global Id: T0606186564
Status: Open - Site Assessment
Status Date: 11/19/2007

Global Id: T0606186564
Status: Open - Site Assessment
Status Date: 02/28/2008

Global Id: T0606186564
Status: Open - Verification Monitoring
Status Date: 02/28/2006

Regulatory Activities:
Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 10/12/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 02/06/2008
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 10/05/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: Other
Date: 10/07/2004
Action: Leak Reported

Global Id: T0606186564
Action Type: RESPONSE
Date: 10/15/2005
Action: Preliminary Site Assessment Workplan

Global Id: T0606186564
Action Type: RESPONSE
Date: 04/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: RESPONSE
Date: 07/15/2008
Action: Monitoring Report - Quarterly

SHELL BRANDED SERVICE STATION (Continued) **S108207051**

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 10/26/2006
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 06/27/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 05/03/2007
Action: Staff Letter

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 03/29/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 03/08/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: Other
Date: 10/05/2004
Action: Leak Began

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 09/25/2009
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: RESPONSE
Date: 01/15/2009
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 07/15/2010
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 09/22/2010
Action: Closure/No Further Action Letter

Global Id: T0606186564
Action Type: RESPONSE
Date: 04/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: RESPONSE

SHELL BRANDED SERVICE STATION (Continued) **S108207051**

Date: 02/29/2008
Action: Soil and Water Investigation Workplan

Global Id: T0606186564
Action Type: RESPONSE
Date: 02/29/2008
Action: Risk Assessment Report

Global Id: T0606186564
Action Type: RESPONSE
Date: 07/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: RESPONSE
Date: 10/15/2006
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: RESPONSE
Date: 04/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: RESPONSE
Date: 10/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: RESPONSE
Date: 07/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 03/28/2008
Action: Staff Letter

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 07/28/2009
Action: Staff Letter

Global Id: T0606186564
Action Type: RESPONSE
Date: 10/15/2009
Action: Monitoring Report - Semi-Annually

Global Id: T0606186564
Action Type: RESPONSE
Date: 10/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 03/24/2010
Action: Technical Correspondence / Assistance / Other

SHELL BRANDED SERVICE STATION (Continued) **S108207051**

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 06/14/2010
Action: Staff Letter

Global Id: T0606186564
Action Type: RESPONSE
Date: 07/15/2008
Action: Soil and Water Investigation Report

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 02/24/2009
Action: Staff Letter

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 06/25/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 03/08/2007
Action: Staff Letter

Global Id: T0606186564
Action Type: RESPONSE
Date: 09/28/2009
Action: Request for Closure

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 01/12/2006
Action: * Verbal Communication

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 08/19/2005
Action: Staff Letter

Global Id: T0606186564
Action Type: RESPONSE
Date: 10/15/2005
Action: Sensitive Receptor Survey Report

Global Id: T0606186564
Action Type: RESPONSE
Date: 01/15/2008
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: RESPONSE
Date: 06/15/2007
Action: Other Workplan

Global Id: T0606186564
Action Type: ENFORCEMENT

SHELL BRANDED SERVICE STATION (Continued) **S108207051**

Date: 10/20/2005
Action: Staff Letter

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 03/11/2008
Action: Staff Letter

Global Id: T0606186564
Action Type: RESPONSE
Date: 04/27/2006
Action: Soil and Water Investigation Workplan

Global Id: T0606186564
Action Type: RESPONSE
Date: 01/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 03/08/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 04/27/2007
Action: Technical Correspondence / Assistance / Other

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 05/11/2006
Action: Staff Letter

Global Id: T0606186564
Action Type: RESPONSE
Date: 09/30/2010
Action: Well Destruction Report

Global Id: T0606186564
Action Type: RESPONSE
Date: 09/28/2007
Action: Soil and Water Investigation Report

Global Id: T0606186564
Action Type: ENFORCEMENT
Date: 12/10/2007
Action: Staff Letter

Global Id: T0606186564
Action Type: Other
Date: 10/05/2004
Action: Leak Discovery

Global Id: T0606186564
Action Type: RESPONSE
Date: 04/17/2006
Action: Soil and Water Investigation Report

SHELL BRANDED SERVICE STATION (Continued) **S108207051**

Global Id:	T0606186564
Action Type:	REMEDIATION
Date:	06/01/2005
Action:	Monitored Natural Attenuation

C12 SSE 1/2-1 0.867 mi. 4578 ft. | **UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YA** | **ENVIROSTOR SLIC ENF** | **S106089951 N/A**

9451 ATKINSON STREET
ROSEVILLE, CA 95747

Site 1 of 3 in cluster C

Relative: Lower

Actual: 130 ft.

ENVIROSTOR:

Facility ID:	80001325
Status:	Refer: SMBRP
Status Date:	07/22/2013
Site Code:	Not reported
Site Type:	Corrective Action
Site Type Detailed:	Corrective Action
Acres:	0
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	MBR
Program Manager:	Thomas Tse
Supervisor:	Fernando A. Amador
Division Branch:	Cleanup Sacramento
Assembly:	06
Senate:	04
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	38.73268
Longitude:	-121.3058
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CAD000628255
Alias Type:	EPA Identification Number
Alias Name:	110012532376
Alias Type:	EPA (FRS #)
Alias Name:	SL185022889
Alias Type:	GeoTracker Global ID
Alias Name:	31400005
Alias Type:	Envirostor ID Number
Alias Name:	31400007
Alias Type:	Envirostor ID Number
Alias Name:	80001325
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Interim Measures Implementation Report
Completed Date:	10/21/1991
Comments:	Not reported

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Workplan
Completed Date: 07/12/1990
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AREA A
Completed Document Type: RFI Report
Completed Date: 12/19/1991
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 09/30/1987
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Human Exposure Controlled
Completed Date: 04/07/1998
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Questionnaire
Completed Date: 04/22/1994
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Groundwater Migration Controlled
Completed Date: 06/13/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Groundwater Migration Controlled
Completed Date: 05/06/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Human Exposure Controlled
Completed Date: 06/13/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Consent Agreement
Completed Date: 07/12/1990
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Unilateral Order (I/SE, RAO, CAO, EPA AO)

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

Completed Date: 12/21/1987
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Unilateral Order (I/SE, RAO, CAO, EPA AO)
Completed Date: 03/14/1985
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RFI Workplan
Completed Date: 11/18/1991
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AREA A
Completed Document Type: Corrective Measures Study Workplan
Completed Date: 03/08/1991
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: DIESEL SHOP
Completed Document Type: RFI Workplan
Completed Date: 08/16/1991
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AREA A
Completed Document Type: Interim Measures Workplan
Completed Date: 10/13/1993
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AREA A
Completed Document Type: Corrective Measures Study Report
Completed Date: 05/12/1992
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 04/01/1984
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 04/01/1984
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AREA A
Completed Document Type: RFI Workplan
Completed Date: 03/08/1991
Comments: Not reported

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

Future Area Name:	PROJECT WIDE
Future Sub Area Name:	Not reported
Future Document Type:	Remedy Constructed
Future Due Date:	2020
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SLIC:

Region:	STATE
Facility Status:	**Open - Site Assessment**
Status Date:	05/12/2009
Global Id:	SL185022889
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency Case Number:	31400005
Latitude:	38.7459168371155
Longitude:	-121.291122436523
Case Type:	Cleanup Program Site
Case Worker:	TT
Local Agency:	DEPARTMENT OF TOXIC SUBSTANCES CONTROL
RB Case Number:	SL185022889
File Location:	Regional Board
Potential Media Affected:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Tetrachloroethylene (PCE), Trichloroethylene (TCE), Dioxin / Furans, Polychlorinated biphenyls (PCBs), Copper, Benzene, Diesel, Gasoline, Waste Oil / Motor / Hydraulic / Lubricating
Site History:	The Union Pacific Railroad Roseville Site is an active railyard covering about 640 acres in Roseville. Railyard activities have been carried out at the Site for more than 90 years. The Site is divided into three operable units identified as Area A, South Yard and North Yard. The North Yard Operable Unit consists main active maintenance facilities: the Diesel Shop, the Pump House, the Diesel Servicing Facilities, the Fueling Area and the Pacific Fruit Express (PFE) Ice Plant Area. The Diesel Shop area, consisting of a locomotive maintenance and repair shop and related structures, has been part of an active railyard for more than 80 years. Large quantities of fuel, lubrication oils and solvents were used at the site. The Fueling Area included the West, East and Bypass Fueling areas. Fueling operations at the Bypass Fueling Area and East Fueling Area were discontinued in 1989 and 1998, respectively. Fuel oil and water were dispensed from the fueling areas prior to 1960. In the mid-1960s, diesel fuel began to be dispensed at the Site. The Diesel Servicing Facilities Area includes the locomotive washer and drip gutters, the laboratory, the locomotive servicing and inspection pits, the fuel pump house, fuel supply lines and the locomotive ready tracks. Historic activities in this area included receiving and supplying fuel oil and water to locomotives; painting, dismantling, and minor repair of locomotives; and storage of fuel oil, paint, and scrap metal. Current activities at the Diesel Servicing Facilities include washing, inspection, and fueling (diesel fuel) of locomotives. Water, sand, oil and crater compound are also supplied to locomotives as needed in the area. The PFE Ice Plant Area is the former site of the PFE Ice Plant Facility. This facility consisted of an ice making facility, an ice-storage facility, icing platforms, oil storage building and two water supply wells. Two underground storage tanks were used to store unleaded

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

gasoline and alcohol. These tanks were located adjacent to and east of the former PFE Ice Plant building. The two tanks were closed in 1982 and 1987. The North Operable Unit is the subject of an ongoing Remedial Investigation/Feasibility Study managed by DTSC. Groundwater monitoring is overseen by the Central Valley Water Board. An investigation of the nature and extent of llight non-aqueous phase liquid (petroleum) in the groundwater is in progress, with completion expected in 2011. The South Operable Unit consisted of the Antelope Yard and former RAMAC yard. The former Antelope Yard was developed between 1940 and 1947 with the construction of a small classification yard for railcar organization and hookup. The majority of the construction occurred in the early 1950s with the expansion of the classification yard, the hump area, the inspection pits,the fueling spur, the One-Spot repair and maintenance facility and the railcar cleaning area. Historic activities conducted at the Antelope Yard consisted of organization and hookup of railcar; inspection, repair and maintenance of railcars; dispensing of fuel oil or diesel fuel to the switcher engine from tank cars parked at the fueling spur; and cleaning of railcar. Current activities consist primarily of railcar organization and hookup, with some small equipment storage areas. The South OU is currently in the final stages of a current-conditions human health risk assessment. The former RAMAC Yard was developed between 1925 and 1927 by Pacific Fruit Express (PFC)to handle refrigerated railcars hauling perishable goods across the country. Historic activities consisted of repairing, rebuilding, cleaning, stripping and painting and dismantling of refrigerated railcars. The area included a landfill that was used from 1927 to 1974 for disposal of incinerator ash, rotten fruits and vegetables, spent sandblasting sand and miscellaneous rubble generated from the produce shipping activities. In the early 1970s, tracks were installed over thelandfill and the area was used for railcar storage. In 1980, PFC closed its operation and transferred ownership to Southern Pacific Transportation Company (predecessor to UPRR). SPTCo used the facility for railcar rehabilitation and maintenance. Activities consisted of repairing, cleaning and stripping and painting of railcars; and repairing of air brake units. In 1987, SPTCo ceased the rehabilitation and maintenance activities at the RAMAC. The South Operable Unit was the subject of a Remedial Investigation /Feasibility Study by DTSC and its risk assessment is nearing completion. Area A OU consists of former Ponds A, B, C, D and E and the drainage interceptor. Historically, wastewater generated during the operations was discharged into the unlined ponds by the industrial sewer lines onsite. The ponds removed floating oil from the wastewater. Pond A was in operation from about 1950 to 1984. In 1990, Pond A was closed pursuant to the requirements of the Resource Conservation and Recovery Act (RCRA). Ponds D and E were closed before 1950. The use of Ponds B and C ended in about 1968. Ponds B, C, D and E were subsequently backfilled in the early 1970s without removal of the accumulated impacted material. The drainage interceptor accepted oily wastes until 1985 when it was taken out of service. Implementation of the August 2003 Remedial Action Plan was conducted in October 2004. Under DTSC supervision, UNIION PACIFIC (UP) excavated approximately 1,060 cubic yards of affected soils from the sidewall of the 1994 excavation and abandoned four shallow wells. The excavation was terminated after removing about 1,060 cubic yards of affected soils because of concerns on the integrity of the berm near the lined storm water retention basin. Soil investigation

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

conducted after the current excavation shows about 750 cubic yards of impacted materisls remaining in the sidewall. Land use restrictions were recorded in 2008 for this area

Click here to access the California GeoTracker records for this facility:

ENF:

Region:	5S
Facility Id:	253344
Agency Name:	Union Pacific Railroad Company Roseville Yard
Place Type:	Waste Management Unit
Place Subtype:	Surface Impoundment
Facility Type:	All other facilities
Agency Type:	Privately-Owned Business
# Of Agencies:	1
Place Latitude:	38.731178
Place Longitude:	-121.310589
SIC Code 1:	1522
SIC Desc 1:	General Contractors-Residential Buildings, Other Than Single-Family
SIC Code 2:	4011
SIC Desc 2:	Railroads, Line-haul Operating
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	Not reported
NAICS Desc 1:	Not reported
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	0.7
Threat To Water Quality:	2
Complexity:	B
Pretreatment:	N - POTW does not have EPA approved pretreatment prog.
Facility Waste Type:	Washwater waste
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	LNDISPOTH
Program Category1:	LNDISP
Program Category2:	LNDISP
# Of Programs:	1
WDID:	5A310106003
Reg Measure Id:	383392
Reg Measure Type:	WDR
Region:	Not reported
Order #:	R5-2012-0009
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	N - No
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	4634
Status:	Active
Status Date:	02/25/2015

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

Effective Date:	02/02/2012
Expiration/Review Date:	02/02/2022
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	2/2/2012
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	59 - Land Disposal Site not paying tipping fee
Direction/Voice:	Passive
Enforcement Id(EID):	410441
Region:	Not reported
Order / Resolution Number:	Not reported
Enforcement Action Type:	Notice of Violation
Effective Date:	11/30/2016
Adoption/Issuance Date:	11/30/2016
Achieve Date:	Not reported
Termination Date:	11/30/2016
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Historical
Title:	NOV 11/30/2016 for Union Pacific Railroad Company Roseville Yard
Description:	Not reported
Program:	LNDISPOTH
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

Region:	5S
Facility Id:	253344
Agency Name:	Union Pacific Railroad Company Roseville Yard
Place Type:	Waste Management Unit
Place Subtype:	Surface Impoundment
Facility Type:	All other facilities
Agency Type:	Privately-Owned Business
# Of Agencies:	1
Place Latitude:	38.731178
Place Longitude:	-121.310589
SIC Code 1:	1522
SIC Desc 1:	General Contractors-Residential Buildings, Other Than Single-Family
SIC Code 2:	4011
SIC Desc 2:	Railroads, Line-haul Operating
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	Not reported
NAICS Desc 1:	Not reported
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	0.7
Threat To Water Quality:	2
Complexity:	B
Pretreatment:	N - POTW does not have EPA approved pretreatment prog.
Facility Waste Type:	Washwater waste
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	WDRNONMUNIPRCS
Program Category1:	WDR
Program Category2:	WDR
# Of Programs:	1
WDID:	5A310106003
Reg Measure Id:	140809
Reg Measure Type:	WDR
Region:	Not reported
Order #:	92-197
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	N - No
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Historical
Status Date:	05/07/2014
Effective Date:	09/25/1992
Expiration/Review Date:	09/25/2002
Termination Date:	02/01/2012
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	58 - Non15 Based on (TTWQ)/CPLX)
Direction/Voice:	Passive
Enforcement Id(EID):	223909
Region:	Not reported
Order / Resolution Number:	R5-1989-0703
Enforcement Action Type:	Clean-up and Abatement Order
Effective Date:	02/28/1989
Adoption/Issuance Date:	Not reported
Achieve Date:	Not reported
Termination Date:	Not reported
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Active
Title:	CAO R5-1989-0703 for Union Pacific Railroad, Roseville Rail Yard
Description:	INVESTIGATE STORM WATER SYSTEM, COMPLETE RWD FOR NPDES.
Program:	WDR

UNION PACIFIC RAILROAD COMPANY - ROSEVILLE RAIL YARD (Continued) **S106089951**

Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

C13
SSE
1/2-1
0.867 mi.
4578 ft.

UNION PACIFIC RAILROAD
9451 ATKINSON STREET
ROSEVILLE, CA 95661

Site 2 of 3 in cluster C

CORRACTS **1000409220**
US FIN ASSUR **N/A**
RAATS
HAZNET
HWP
NPDES

Relative:
Lower

Actual:
130 ft.

CORRACTS:

EPA ID:	CAD000628255
EPA Region:	9
Area Name:	ENTIRE FACILITY
Actual Date:	20080506
Action:	CA750YE - Migration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified
NAICS Code(s):	482111 Line-Haul Railroads
Original schedule date:	20080506
Schedule end date:	Not reported

EPA ID:	CAD000628255
EPA Region:	9
Area Name:	ENTIRE FACILITY
Actual Date:	19980407
Action:	CA725NO - Current Human Exposures Under Control, Current human exposures are NOT under control
NAICS Code(s):	482111 Line-Haul Railroads
Original schedule date:	19980407
Schedule end date:	Not reported

EPA ID:	CAD000628255
EPA Region:	9
Area Name:	AREA A
Actual Date:	19910308
Action:	CA150 - RFI Workplan Approved
NAICS Code(s):	482111 Line-Haul Railroads
Original schedule date:	Not reported
Schedule end date:	Not reported

EPA ID:	CAD000628255
EPA Region:	9
Area Name:	AREA A
Actual Date:	19910308
Action:	CA300 - CMS Workplan Approved
NAICS Code(s):	482111

UNION PACIFIC RAILROAD (Continued) **1000409220**

Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: DIESEL SHOP
Actual Date: 20080509
Action: CA750YE - Migration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: AREA A
Actual Date: 20080509
Action: CA750YE - Migration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19900712
Action: CA600SR - Stabilization Measures Implemented, Primary measure is source removal and/or treatment
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: AREA A
Actual Date: 19920512
Action: CA350 - CMS Approved
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20000613
Action: CA725YE - Current Human Exposures Under Control, Yes, Current Human Exposures Under Control has been verified
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: 20000613
Schedule end date: Not reported

UNION PACIFIC RAILROAD (Continued) **1000409220**

EPA ID: CAD000628255
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 20000613
Action: CA750NO - Migration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: 20000613
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: AREA A
Actual Date: 19931013
Action: CA600 - Stabilization Measures Implemented
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: DIESEL SHOP
Actual Date: 19910816
Action: CA150 - RFI Workplan Approved
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19911118
Action: CA150 - RFI Workplan Approved
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: AREA A
Actual Date: 19911219
Action: CA200 - RFI Approved
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19940422
Action: CA225YE - Stabilization Measures Evaluation, This facility ,is

UNION PACIFIC RAILROAD (Continued) **1000409220**

amenable to stabilization activity based on the, status of corrective action work at the facility, technical factors, the degree of risk, timing considerations and administrative considerations
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: 19940422
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19870930
Action: CA050 - RFA Completed
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: 19870930
Schedule end date: Not reported

EPA ID: CAD000628255
EPA Region: 9
Area Name: ENTIRE FACILITY
Actual Date: 19870930
Action: CA070YE - RFA Determination Of Need For An RFI, RFI is Necessary
NAICS Code(s): 482111
Line-Haul Railroads
Original schedule date: 19870930
Schedule end date: Not reported

US FIN ASSUR:
EPA ID: CAD000628255
Provider: UNION PACIFIC
EPA region: 9
County: Not reported
Mechanism type: FINANCIAL TEST
Mechanism ID: FT001
Cost estimate: $2,817,200.00
Face value: $2,817,200.00
Effective date: 3/25/2011

HAZNET:
envid: 1000409220
Year: 2015
GEPAID: CAC002835083
Contact: GRANT JOHANSON
Telephone: 4027591920
Mailing Name: Not reported
Mailing Address: 1050 E 15TH ST
Mailing City,St,Zip: RUSSELL, KS 67665
Gen County: Placer
TSD EPA ID: CAD028409019
TSD County: Los Angeles
Waste Category: Off-specification, aged or surplus organics
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.1
Cat Decode: Off-specification, aged or surplus organics

UNION PACIFIC RAILROAD (Continued) **1000409220**

Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Placer

envid:	1000409220
Year:	2015
GEPAID:	CAC002808814
Contact:	EDDIE ROBLES
Telephone:	7753430500
Mailing Name:	Not reported
Mailing Address:	16580 WEDGE PKWY STE 300
Mailing City,St,Zip:	RENO, NV 895113258
Gen County:	Placer
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Other organic solids
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.05
Cat Decode:	Other organic solids
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Placer

envid:	1000409220
Year:	2015
GEPAID:	CAC002808814
Contact:	EDDIE ROBLES
Telephone:	7753430500
Mailing Name:	Not reported
Mailing Address:	16580 WEDGE PKWY STE 300
Mailing City,St,Zip:	RENO, NV 895113258
Gen County:	Placer
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Unspecified oil-containing waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.2085
Cat Decode:	Unspecified oil-containing waste
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Placer

HWP:

EPA Id:	CAD000628255
Cleanup Status:	CLOSED
Latitude:	38.73248
Longitude:	-121.3080
Facility Type:	Historical - Non-Operating
Facility Size:	Not reported
Team:	Not reported
Supervisor:	Not reported
Site Code:	Not reported
Assembly District:	06
Senate District:	04
Public Information Officer:	Not reported

UNION PACIFIC RAILROAD (Continued) **1000409220**

Public Information Officer: Not reported

Activities:

EPA Id: CAD000628255
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST RECEIVED
Actual Date: 07/30/1984

EPA Id: CAD000628255
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST ACKNOWLEDGED
Actual Date: 11/01/1984

Closure:

EPA Id: CAD000628255
Facility Type: Historical - Non-Operating
Unit Names: SURFTRT1
Event Description: Closure Final - RECEIVE CLOSURE CERTIFICATION
Actual Date: 03/07/1990

EPA Id: CAD000628255
Facility Type: Historical - Non-Operating
Unit Names: SURFTRT1
Event Description: Closure Final - ISSUE CLOSURE VERIFICATION
Actual Date: 04/05/1990

Alias:

EPA Id: CAD000628255
Facility Type: Historical - Non-Operating
Alias Type: FRS
Alias: 110012532376

EPA Id: CAD000628255
Facility Type: Historical - Non-Operating
Alias Type: Envirostor ID Number
Alias: 31400005

EPA Id: CAD000628255
Facility Type: Historical - Non-Operating
Alias Type: Envirostor ID Number
Alias: 31400007

NPDES:

Npdes Number: CAS000002
Facility Status: Active
Agency Id: 0
Region: 5S
Regulatory Measure Id: 458001
Order No: 2009-0009-DWQ
Regulatory Measure Type: Enrollee
Place Id: Not reported
WDID: 5S31C373438
Program Type: Construction

UNION PACIFIC RAILROAD (Continued) **1000409220**

Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	07/15/2015
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Union Pacific Railroad
Discharge Address:	1400 Douglas St
Discharge City:	Omaha
Discharge State:	Nebraska
Discharge Zip:	68179
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported

UNION PACIFIC RAILROAD (Continued) **1000409220**

DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	5S
Regulatory Measure Id:	458001
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	5S31C373438
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	7/7/2015
PROCESSED DATE:	7/15/2015
STATUS CODE NAME:	Active
STATUS DATE:	7/15/2015
PLACE SIZE:	3.5
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	James Rhynas
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	402-689-0432
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	jmrhynas@up.com
OPERATOR NAME:	Union Pacific Railroad
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Private Individual
DEVELOPER NAME:	Union Pacific Railroad
DEVELOPER ADDRESS:	1400 Douglas St
DEVELOPER CITY:	Omaha
DEVELOPER STATE:	Nebraska
DEVELOPER ZIP:	68179
DEVELOPER CONTACT NAME:	James Rhynas
DEVELOPER CONTACT TITLE:	Not reported

UNION PACIFIC RAILROAD (Continued) **1000409220**

CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	Railroad
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	James Rhynas
CERTIFIER TITLE:	Manager of Special Projects
CERTIFICATION DATE:	07-JUL-15
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

C14 **ROSEVILLE RAIL YARD** **ENVIROSTOR** **S100231305**
SSE **9499 ATKINSON** **LUST** **N/A**
1/2-1 **ROSEVILLE, CA 95678** **HIST CORTESE**
0.896 mi.
4732 ft. **Site 3 of 3 in cluster C**

Relative:
Lower

Actual:
133 ft.

ENVIROSTOR:

Facility ID:	80000945
Status:	No Further Action
Status Date:	07/12/2010
Site Code:	Not reported
Site Type:	Military Evaluation
Site Type Detailed:	FUDS
Acres:	6.8
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Dan Ward
Division Branch:	Cleanup Sacramento
Assembly:	06
Senate:	04
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	DERA
Latitude:	38.76638
Longitude:	-121.2894
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED

ROSEVILLE RAIL YARD (Continued) **S100231305**

Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: No Contaminants found
Potential Description: NMA
Alias Name: CA99799FA22800
Alias Type: Federal Facility ID
Alias Name: J09CA7274
Alias Type: INPR
Alias Name: 80000945
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: No Department of Defense Action Indicated (NDAI)
Completed Date: 07/07/2010
Comments: The ACOE submitted responses to DTSC's comments on the original NDAI. The responses resolved our concerns regarding this FUD site. If further information arises regarding the environmental condition of this FUD site DTSC will reopen an investigation.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

LUST REG 5:
Region: 5
Status: Remediation Plan
Case Number: 310029
Case Type: Soil only
Substance: WASTE OIL
Staff Initials: CLC
Lead Agency: Regional
Program: LUST
MTBE Code: N/A

HIST CORTESE:
Region: CORTESE
Facility County Code: 31
Reg By: LTNKA
Reg Id: 310029

Region: CORTESE
Facility County Code: 31
Reg By: WBC&D
Reg Id: 5A310106003

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ROSEVILLE	S106230343	DEL WEBB SUN CITY ROSEVILLE DEVELO	FIDDEYMENT RD NORTH OF BASE LI		SLIC

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/05/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 21

Source: EPA
Telephone: N/A
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/25/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 93

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/15/2016
Date Data Arrived at EDR: 11/29/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/15/2016
Date Data Arrived at EDR: 11/29/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 11/11/2016
Number of Days to Update: 43

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 10/31/2016
Date Data Arrived at EDR: 11/01/2016
Date Made Active in Reports: 01/18/2017
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 10/31/2016
Date Data Arrived at EDR: 11/01/2016
Date Made Active in Reports: 01/18/2017
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/14/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/14/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/11/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/12/2017
Date Data Arrived at EDR: 03/16/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 57

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/16/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/24/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/14/2017
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/06/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/17/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 10/31/2016
Date Data Arrived at EDR: 11/01/2016
Date Made Active in Reports: 01/18/2017
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 01/03/2017
Date Data Arrived at EDR: 01/04/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/02/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/02/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/14/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 08/25/2016
Date Data Arrived at EDR: 08/26/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 49

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 10/31/2016
Date Data Arrived at EDR: 11/01/2016
Date Made Active in Reports: 01/18/2017
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 54

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 12/05/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/01/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 35

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/27/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 01/20/2017
Number of Days to Update: 45

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 37

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 105

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/14/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/14/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/12/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/03/2017
Next Scheduled EDR Contact: 05/29/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/24/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/26/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/09/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 02/17/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 02/17/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/28/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/06/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/02/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 77

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/22/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program
DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 12/05/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/21/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 04/10/2017
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 38

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/28/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/03/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/03/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/14/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 21

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/13/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/04/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 35

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 04/07/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/19/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 03/21/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 79

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/22/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/28/2016
Date Data Arrived at EDR: 12/28/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 64

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/29/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/02/2016
Date Data Arrived at EDR: 09/27/2016
Date Made Active in Reports: 12/15/2016
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 09/23/2016
Date Made Active in Reports: 10/24/2016
Number of Days to Update: 31

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/21/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 12/09/2016
Date Made Active in Reports: 01/18/2017
Number of Days to Update: 40

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/25/2016
Date Data Arrived at EDR: 04/29/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 53

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/16/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 01/20/2017
Number of Days to Update: 63

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 10/12/2016
Date Made Active in Reports: 12/15/2016
Number of Days to Update: 64

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/21/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 62

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 02/22/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/21/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/22/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/11/2017
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 04/26/2017
Number of Days to Update: 13

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/13/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/12/2016
Date Data Arrived at EDR: 09/14/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 30

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/13/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 86

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/15/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 107

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/17/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 12/06/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/03/2017
Number of Days to Update: 87

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 03/07/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/13/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/14/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 12/22/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 04/03/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/14/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/14/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 02/17/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/24/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 31

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/10/2017
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 21

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/08/2017
Date Made Active in Reports: 04/14/2017
Number of Days to Update: 37

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 01/31/2017
Date Data Arrived at EDR: 02/07/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 94

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/23/2017
Date Data Arrived at EDR: 02/24/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 77

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 11/17/2016
Date Data Arrived at EDR: 11/22/2016
Date Made Active in Reports: 01/26/2017
Number of Days to Update: 65

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/31/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/14/2017
Number of Days to Update: 70

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/24/2017
Date Data Arrived at EDR: 02/28/2017
Date Made Active in Reports: 05/12/2017
Number of Days to Update: 73

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/06/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 40

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/31/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 03/20/2017
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 57

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 01/23/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 36

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/07/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 81

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 03/06/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 71

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/18/2017
Date Data Arrived at EDR: 01/20/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 41

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/20/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/14/2016
Date Data Arrived at EDR: 11/18/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 66

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/17/2017
Date Data Arrived at EDR: 04/18/2017
Date Made Active in Reports: 05/02/2017
Number of Days to Update: 14

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/18/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2016
Date Data Arrived at EDR: 01/26/2016
Date Made Active in Reports: 03/22/2016
Number of Days to Update: 56

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/29/2016
Date Data Arrived at EDR: 04/06/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 68

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/17/2017
Date Data Arrived at EDR: 01/18/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 112

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/17/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/10/2017
Date Data Arrived at EDR: 01/13/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 110

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/10/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 03/03/2017
Date Data Arrived at EDR: 03/07/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 71

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 03/31/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/22/2017
Date Data Arrived at EDR: 02/23/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 76

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/24/2016
Date Data Arrived at EDR: 06/27/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 43

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/09/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 03/16/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 54

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/09/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/09/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 05/17/2017
Number of Days to Update: 96

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/10/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 70

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 11/04/2016
Date Data Arrived at EDR: 11/11/2016
Date Made Active in Reports: 01/23/2017
Number of Days to Update: 73

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/06/2017
Date Data Arrived at EDR: 02/07/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 85

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/09/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/02/2016
Date Data Arrived at EDR: 09/06/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 38

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/18/2017
Date Data Arrived at EDR: 04/20/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 1

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/20/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/19/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 98

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/20/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 56

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/08/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 56

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 12/09/2016
Date Data Arrived at EDR: 12/13/2016
Date Made Active in Reports: 03/03/2017
Number of Days to Update: 80

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/08/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 10/05/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 86

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/10/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/28/2017
Date Data Arrived at EDR: 03/02/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 62

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/21/2017
Date Data Arrived at EDR: 03/23/2017
Date Made Active in Reports: 05/09/2017
Number of Days to Update: 47

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/20/2017
Next Scheduled EDR Contact: 07/03/2017
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2016
Date Data Arrived at EDR: 11/21/2016
Date Made Active in Reports: 01/19/2017
Number of Days to Update: 59

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 33

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/09/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 04/07/2017
Date Made Active in Reports: 04/21/2017
Number of Days to Update: 14

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 11/16/2016
Date Data Arrived at EDR: 11/21/2016
Date Made Active in Reports: 01/19/2017
Number of Days to Update: 59

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 02/24/2017
Next Scheduled EDR Contact: 06/12/2017
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 11/10/2016
Date Made Active in Reports: 01/24/2017
Number of Days to Update: 75

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/05/2017
Next Scheduled EDR Contact: 08/21/2017
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List

CUPA facility listing.

Date of Government Version: 11/16/2016
Date Data Arrived at EDR: 11/21/2016
Date Made Active in Reports: 01/19/2017
Number of Days to Update: 59

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List

Cupa Facility List.

Date of Government Version: 12/13/2016
Date Data Arrived at EDR: 12/16/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 76

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 11/29/2016
Date Data Arrived at EDR: 12/21/2016
Date Made Active in Reports: 12/22/2016
Number of Days to Update: 1

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/09/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/15/2017
Date Data Arrived at EDR: 03/17/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 47

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/09/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 12/22/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 65

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/04/2017
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 55

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/27/2017
Next Scheduled EDR Contact: 07/10/2017
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 01/24/2017
Date Made Active in Reports: 05/18/2017
Number of Days to Update: 114

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 12/02/2016
Date Data Arrived at EDR: 12/06/2016
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 35

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/06/2017
Next Scheduled EDR Contact: 06/19/2017
Data Release Frequency: Semi-Annually

TRINITY COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/23/2017
Date Data Arrived at EDR: 01/25/2017
Date Made Active in Reports: 05/18/2017
Number of Days to Update: 113

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/25/2017
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 34

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/27/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 103

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/31/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2016
Date Data Arrived at EDR: 10/27/2016
Date Made Active in Reports: 01/24/2017
Number of Days to Update: 89

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/24/2017
Next Scheduled EDR Contact: 08/07/2017
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2017
Date Data Arrived at EDR: 03/15/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/15/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/31/2017
Date Data Arrived at EDR: 04/06/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 27

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/31/2017
Next Scheduled EDR Contact: 07/17/2017
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 10/28/2016
Date Data Arrived at EDR: 11/03/2016
Date Made Active in Reports: 12/15/2016
Number of Days to Update: 42

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 05/01/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/15/2017
Next Scheduled EDR Contact: 08/28/2017
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 09/29/2016
Date Made Active in Reports: 01/03/2017
Number of Days to Update: 96

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/11/2017
Next Scheduled EDR Contact: 07/24/2017
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/30/2017
Date Data Arrived at EDR: 02/01/2017
Date Made Active in Reports: 02/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/03/2017
Next Scheduled EDR Contact: 08/14/2017
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 07/22/2016
Date Made Active in Reports: 11/22/2016
Number of Days to Update: 123

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/18/2017
Next Scheduled EDR Contact: 07/31/2017
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/21/2017
Next Scheduled EDR Contact: 06/05/2017
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 04/14/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 50

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/13/2017
Next Scheduled EDR Contact: 06/26/2017
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

BRADY-VINEYARD 36 ACRE SUBDIVISION
1940 VINEYARD ROAD
ROSEVILLE, CA 95747

TARGET PROPERTY COORDINATES

Latitude (North):	38.745601 - 38˚ 44' 44.16''
Longitude (West):	121.316229 - 121˚ 18' 58.42''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	646329.7
UTM Y (Meters):	4289685.0
Elevation:	137 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619692 CITRUS HEIGHTS, CA
Version Date:	2012
North Map:	5619746 ROSEVILLE, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

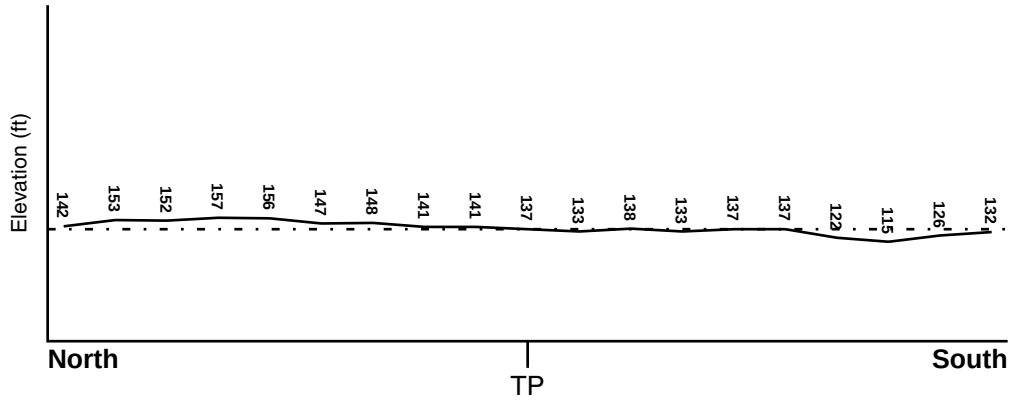
TOPOGRAPHIC INFORMATION

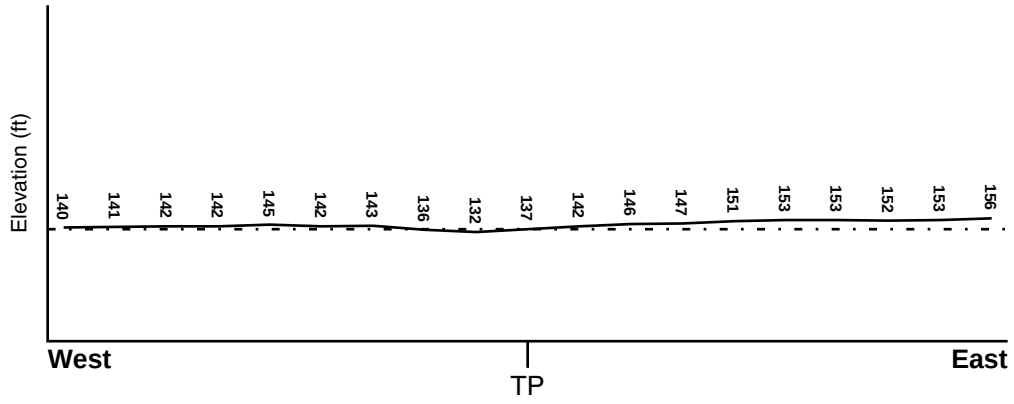
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 137 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06067C0077H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
0602390475E	FEMA Q3 Flood data
0602430012D	FEMA Q3 Flood data
0602430016D	FEMA Q3 Flood data
0602390478C	FEMA Q3 Flood data
06067C0081H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
CITRUS HEIGHTS	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site–specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

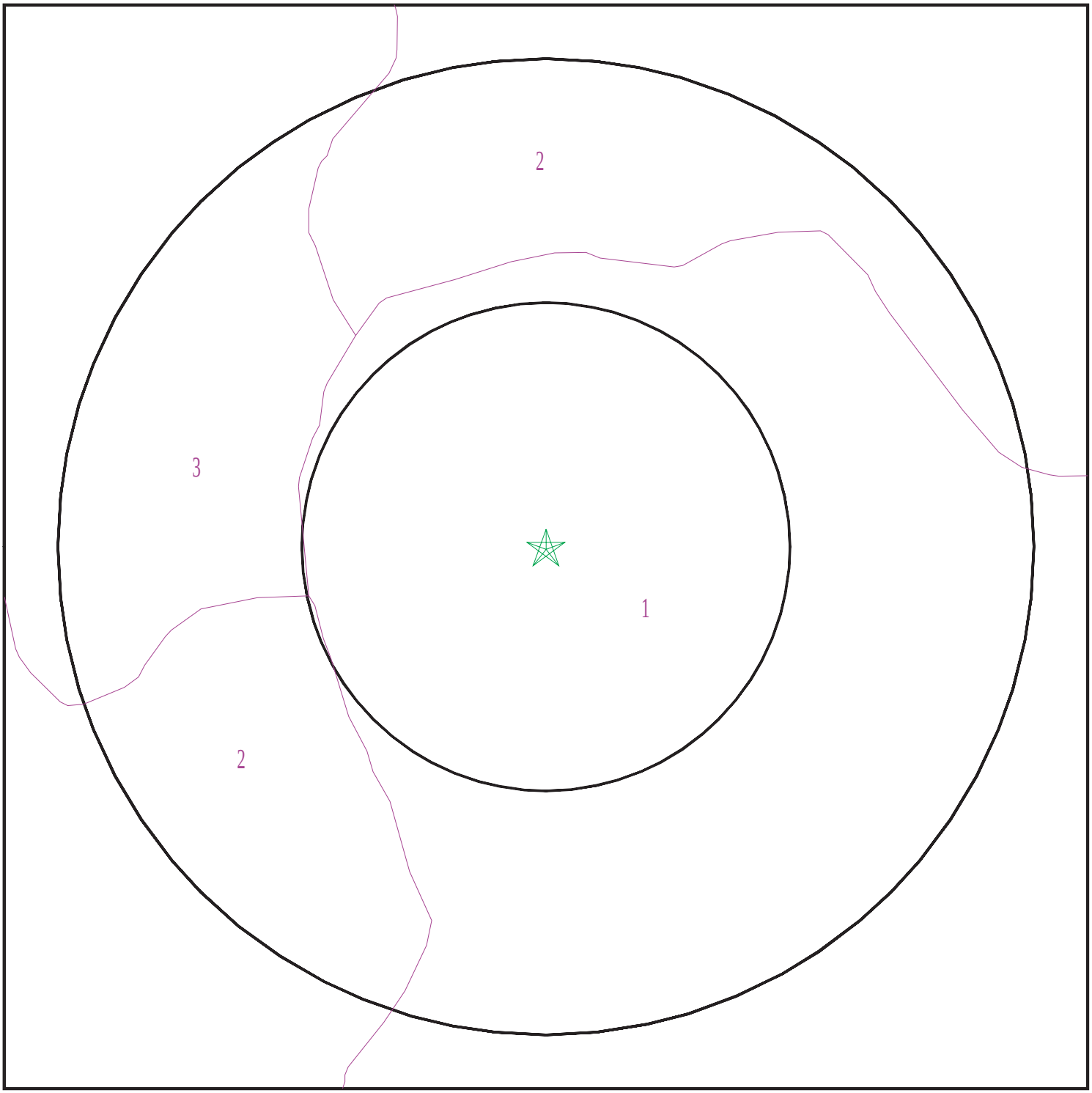
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 4944548.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Brady-Vineyard 36 Acre Subdivision	CLIENT:	Ace Quality Control
ADDRESS:	1940 Vineyard Road ROSEVILLE CA 95747	CONTACT:	Dana Smal
		INQUIRY #:	4944548.2s
LAT/LONG:	38.745601 / 121.316229	DATE:	May 23, 2017 2:42 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: RAMONA

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
2	5 inches	14 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
3	14 inches	55 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	55 inches	72 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: COMETA

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	18 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.42 Min: 0.01	Max: 7.3 Min: 6.1
3	29 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6

Soil Map ID: 3

Soil Component Name: COMETA

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	18 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.42 Min: 0.01	Max: 7.3 Min: 6.1
3	29 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
4	USGS40000190080	1/2 - 1 Mile WNW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

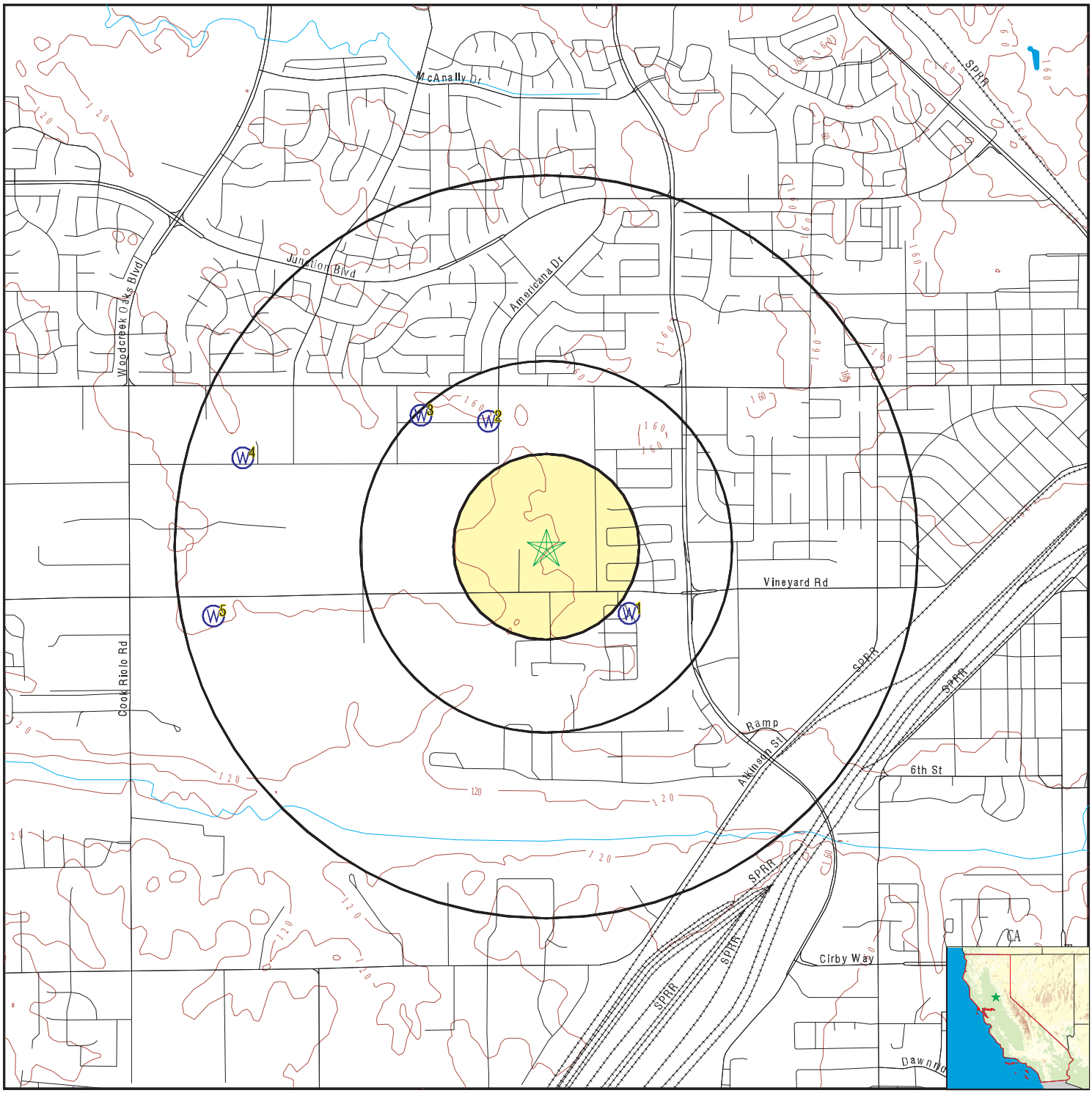
Note: PWS System location is not always the same as well location.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CADW60000030166	1/4 - 1/2 Mile SE
2	CADW60000030161	1/4 - 1/2 Mile NNW
3	9881	1/4 - 1/2 Mile NW
5	CADW60000030165	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 4944548.2s



0 1/4 1/2 1 Miles

- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Brady-Vineyard 36 Acre Subdivision	CLIENT:	Ace Quality Control
ADDRESS:	1940 Vineyard Road ROSEVILLE CA 95747	CONTACT:	Dana Smal
		INQUIRY #:	4944548.2s
LAT/LONG:	38.745601 / 121.316229	DATE:	May 23, 2017 2:42 pm

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Map ID Direction Distance Elevation	Database	EDR ID Number
1 **SE** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADW60000030166**

Objectid:	30166
Latitude:	38.743
Longitude:	-121.3121
Site code:	387430N1213121W001
State well numbe:	10N06E10C001M
Local well name:	”
Well use id:	6
Well use descrip:	Unknown
County id:	31
County name:	Placer
Basin code:	’5-21.64’
Basin desc:	North American
Dwr region id:	80236
Dwr region:	North Central Region Office
Site id:	CADW60000030166

---

2 **NNW** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADW60000030161**

Objectid:	30161
Latitude:	38.7505
Longitude:	-121.3191
Site code:	387505N1213191W001
State well numbe:	10N06E03M001M
Local well name:	”
Well use id:	3
Well use descrip:	Irrigation
County id:	31
County name:	Placer
Basin code:	’5-21.64’
Basin desc:	North American
Dwr region id:	80236
Dwr region:	North Central Region Office
Site id:	CADW60000030161

---

3 **NW** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**9881**

Water System Information:

Prime Station Code:	10N/06E-04J02 M	User ID:	31C
FRDS Number:	3100538001	County:	Placer
District Number:	61	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	384503.0 1211917.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

System Number: 3100538
System Name: ROSECREST MWC
Organization That Operates System:
Not Reported
Pop Served: Unknown, Small System Connections: Unknown, Small System
Area Served: Not Reported

Sample Collected:	16-JUN-11	Findings:	9.5 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	17-MAY-12	Findings:	350. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	17-MAY-12	Findings:	7.34
Chemical:	PH, LABORATORY		
Sample Collected:	17-MAY-12	Findings:	120. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	17-MAY-12	Findings:	146. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	17-MAY-12	Findings:	3. MG/L
Chemical:	NITRITE (AS N)		
Sample Collected:	17-MAY-12	Findings:	130. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	17-MAY-12	Findings:	25. MG/L
Chemical:	CALCIUM		
Sample Collected:	17-MAY-12	Findings:	16. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	17-MAY-12	Findings:	37. MG/L
Chemical:	SODIUM		
Sample Collected:	17-MAY-12	Findings:	1.8 MG/L
Chemical:	POTASSIUM		
Sample Collected:	17-MAY-12	Findings:	24. MG/L
Chemical:	CHLORIDE		
Sample Collected:	17-MAY-12	Findings:	9.5 MG/L
Chemical:	SULFATE		
Sample Collected:	17-MAY-12	Findings:	0.18 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	17-MAY-12	Findings:	3.4 UG/L
Chemical:	ARSENIC		
Sample Collected:	17-MAY-12	Findings:	180. UG/L
Chemical:	BORON		
Sample Collected:	17-MAY-12	Findings:	12. UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	17-MAY-12	Findings:	22. UG/L
Chemical:	VANADIUM		
Sample Collected:	17-MAY-12	Findings:	260. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	17-MAY-12	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	17-MAY-12	Findings:	3000. MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	17-MAY-12	Findings:	0.768 PCI/L
Chemical:	RADIUM 228 COUNTING ERROR		
Sample Collected:	17-MAY-12	Findings:	0.203 PCI/L
Chemical:	RADIUM 228 MDA95		
Sample Collected:	20-JUN-13	Findings:	22. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	18-JUL-13	Findings:	1.4 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	18-JUL-13	Findings:	0.845 PCI/L
Chemical:	RADIUM 228 COUNTING ERROR		
Sample Collected:	18-JUL-13	Findings:	1.75 PCI/L
Chemical:	GROSS ALPHA MDA95		
Sample Collected:	18-JUL-13	Findings:	0.2 PCI/L
Chemical:	RADIUM 228 MDA95		
Sample Collected:	21-NOV-13	Findings:	2.09 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	21-NOV-13	Findings:	0.475 PCI/L
Chemical:	RADIUM 228 COUNTING ERROR		
Sample Collected:	21-NOV-13	Findings:	2.77 PCI/L
Chemical:	GROSS ALPHA MDA95		
Sample Collected:	21-NOV-13	Findings:	0.253 PCI/L
Chemical:	RADIUM 228 MDA95		
Sample Collected:	15-MAY-14	Findings:	19. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	15-MAY-14	Findings:	1.33 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	15-MAY-14	Findings:	1.46 PCI/L
Chemical:	GROSS ALPHA MDA95		
Sample Collected:	21-MAY-15	Findings:	350. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	21-MAY-15	Findings:	7.42
Chemical:	PH, LABORATORY		
Sample Collected:	21-MAY-15	Findings:	120. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	21-MAY-15	Findings:	146. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	21-MAY-15	Findings:	110. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	21-MAY-15	Findings:	22. MG/L
Chemical:	CALCIUM		

Sample Collected:	21-MAY-15	Findings:	14. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	21-MAY-15	Findings:	31. MG/L
Chemical:	SODIUM		
Sample Collected:	21-MAY-15	Findings:	1.2 MG/L
Chemical:	POTASSIUM		
Sample Collected:	21-MAY-15	Findings:	24. MG/L
Chemical:	CHLORIDE		
Sample Collected:	21-MAY-15	Findings:	8.4 MG/L
Chemical:	SULFATE		
Sample Collected:	21-MAY-15	Findings:	0.24 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	21-MAY-15	Findings:	3.1 UG/L
Chemical:	ARSENIC		
Sample Collected:	21-MAY-15	Findings:	140. UG/L
Chemical:	BORON		
Sample Collected:	21-MAY-15	Findings:	20. UG/L
Chemical:	VANADIUM		
Sample Collected:	21-MAY-15	Findings:	260. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	21-MAY-15	Findings:	13. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	21-MAY-15	Findings:	2900. MG/L
Chemical:	NITRATE + NITRITE (AS N)		
Sample Collected:	19-MAY-16	Findings:	2.9 MG/L
Chemical:	NITRATE (AS N)		

4
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000190080**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-384457121194901		
Monloc name:	010N006E04L001M		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18020111	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	38.749068
Longitude:	-121.3313403	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	135.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Central Valley aquifer system		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19671223	Welldepth:	224
Welldepth units:	ft	Wellholedepth:	229
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1982-06-24	138.14				
Note: The site was being pumped.					
1967-12-23	115.00				

5
WSW **CA WELLS** **CADW60000030165**
1/2 - 1 Mile
Higher

Objectid:	30165
Latitude:	38.7429
Longitude:	-121.3328
Site code:	387429N1213328W001
State well numbe:	10N06E09D001M
Local well name:	”
Well use id:	3
Well use descrip:	Irrigation
County id:	31
County name:	Placer
Basin code:	’5-21.64’
Basin desc:	North American
Dwr region id:	80236
Dwr region:	North Central Region Office
Site id:	CADW60000030165

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95747	15	0

Federal EPA Radon Zone for PLACER County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for PLACER COUNTY, CA

Number of sites tested: 68

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.466 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.500 pCi/L	100%	0%	0%
Basement	3.043 pCi/L	71%	29%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Brady-Vineyard 36 Acre Subdivision
1940 Vineyard Road
ROSEVILLE, CA 95747

Inquiry Number: 4944548.5
May 24, 2017

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2013	☑	☐	Cole Information Services
2008	☑	☐	Cole Information Services
2003	☑	☐	Cole Information Services
1999	☑	☐	Cole Information Services
1995	☑	☐	Cole Information Services
1992	☑	☐	Cole Information Services
1989	☑	☐	Haines Criss-Cross Directory
1985	☑	☐	Haines Criss-Cross Directory
1980	☑	☐	Haines Criss-Cross Directory
1974	☑	☐	Haines Criss-Cross Directory
1970	☑	☐	Haines Criss-Cross Directory

RECORD SOURCES

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FINDINGS

TARGET PROPERTY STREET

1940 Vineyard Road
ROSEVILLE, CA 95747

Year	***CD Image***	***Source***
VINEYARD RD		
2013	pg A2	Cole Information Services
2008	pg A6	Cole Information Services
2003	pg A10	Cole Information Services
1999	pg A13	Cole Information Services
1995	pg A16	Cole Information Services
1992	pg A17	Cole Information Services
1989	pg A18	Haines Criss-Cross Directory
1985	pg A19	Haines Criss-Cross Directory
1980	pg A20	Haines Criss-Cross Directory
1974	pg A21	Haines Criss-Cross Directory
1970	pg A22	Haines Criss-Cross Directory

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2013

1550	FOOTHILLSVINEYARD STORAGE
1551	ROYAL BEDDING
	TGW AUCTIONS
	THE LEATHER BELT SHOP
1601	A LOZANO
	AARON ANDERSON
	ALFREDO CEBALLOS
	ALICIA ADAMS
	ALISHA FATUNLA
	ALYSE STUBBLEFIELD
	AMAR HEER
	ANTHONY ONEAL
	ANTONI CARBAJAL
	ARMIN BROUBAKARIAN
	ASHLEY THOMSON
	AUGUSTCO SERRANO
	B TRIMBLE
	BECKY WINGATE
	BEHDAD CHOOPANI
	BILL TALKINGTON
	BONNIE DAVIS
	BRAD GARDING
	BRETT KELLY
	BWELEKA KASONSO
	CANDACE SCHACK
	CARISSA CASTRO
	CARLOS CASTANER
	CAROLINE DIMMEN
	CAROLYN BUTCHER
	CHARLES YOUNG
	CHERLY SILVA
	CHIRANTH KALYANPURA
	CHISTIAN MCGUIRE
	CHRISTOPHER DONAHUE
	CLAUDINE DIZON
	COLENE MCGINNIS
	COLETTE SANTOS
	CORBY STYRON
	DANNY BARBER
	DAVE GREGORY
	DAVID BRYANT
	DAVID GUNN
	DAVID MUSER
	DAVID WARNEMUENDE
	DEANA BRIGGS
	DEBORAH CREAMER
	DEBORAH TAYLOR
	DEBRA HOLMES
	DELBERT STEPHENSON
	DESERAE LYONS

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2013 (Cont'd)

1601	DIANE MORETT
	DOMENIC RUGGIERO
	DONALD JOHNSON
	DONALD STUKERY
	DOUG HEIKKILA
	ELAINE ROBETCY
	ELLEN SCHLITZER
	ERIN RIEGER
	FELICIA BROSIOUS
	FELIPE VALDEZ
	FRANCISCO OCHOA
	GARY MCDUFF
	GREGG REANEY
	I BROOKS
	JACK REEVES
	JAMES BRANSCUM
	JASON PARKER
	JEANNA KASUN
	JEREMY BRUNSON
	JERRET JORDIN
	JERRY PRESSLER
	JESSICA HARMON
	JILL KELLING
	JIM BIXBY
	JIM VUE
	JOSE REYES
	JOSEPH PEREZ
	JOSEPH ROGERS
	JOSHUA FRANKLIN
	JOSHUA JOHNSON
	JULIE SISSON
	JUSTIN BUTLER
	KATE WATSON
	KELLY STAFFORD
	KEVIN HOLDERREAD
	KEVIN KENT
	KRIS ROSENSTRAUCH
	KRISTIN LUSHER
	KURT LENTZ
	KYUNG YI
	LANCE WHITTAKER
	LILIA SILVA
	LINDA TOMPKINS
	MACY JAMES
	MAE SECHLER
	MANDIE TOBIAS
	MARIA GARCIA
	MARILYN SCHROEDER
	MARINA JOMA
	MARVELL LAVY

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2013 (Cont'd)

1601	MARVELLE LEVY
	MARY HILTON
	MATTHEW TACKER
	MAUREEN MABAMBA
	MAURICIO CRUZ
	MICHAEL BAIC
	MICHAEL BOAK
	MICHAEL FERGUSON
	MICHAEL HANSEN
	MICHAEL RAINSFORD
	MICHAEL ROARK
	MICHELLE LABORICO
	MICHELLE TISDALE
	MIRUTHU NAMODURA
	MONIQUE CARDEN
	NELSON SEQUEIRA
	NOAH KIEDROWSKI
	NOLAND ROBLES
	OPAL SPEARS
	PAM CAVES
	PAUL MEYER
	PAUL TOWNE
	PEHAVEE TUCKER
	PHILIP DAVIDSON
	PINKY DHAMI
	QUIN MACK
	RASHMI DESHPANDE
	RICHARD KAISER
	RICHARD REED
	ROBERT JIMENEZ
	ROBERT NALL
	RORY JACKSON
	ROXANNE HUNTER
	RUDOLPH HOLGUIN
	RUEL ANDA
	SALINA TSANG
	SALLY WHITE
	SAMANTHA MONTOYA
	SAMUEL GARCIA
	SARAH DOWLING
	SARAH JOHNSON
	SARAH VAUGHAN
	SCOTT STEELE
	SEENA PATTAMPURATH
	SHEILA CONTRERAS
	SOHAN NANDHA
	STACEY LANDRY
	STEVE ROSS
	STEVEN PHILIPS
	STEVEN TAKIGAWA

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2013 (Cont'd)

1601	SUSAN JENNINGS
	SUSAN MALONE
	TABITHA BAKER
	TERRY DARLING
	TERRY TATTERSON
	THI NGUYEN
	THOMAS MURRAY
	TIM KERRIGAN
	TONY AGUIRRE
	TREVOR HODGE
	VINEYARD GATE APARTMENTS
	WESLEY CLYMER
	YESENIA AYALA
	YOLANDA ROBERTSON
1641	JOE WILSON
1671	C MATRANGA
1783	OCCUPANT UNKNOWN
1791	MATTHEW MORRIS
1801	OCCUPANT UNKNOWN
1815	BRIAN BAKER
1845	BILL MAMIKA
1885	NINE TO FIVE COFFEE SERVICE
1901	GEORGE MCGINNISS
1940	OCCUPANT UNKNOWN
1975	STEVE YETTER
2125	JOANNE OSELLA
2200	GEORGE MATRANGA
2290	RICHARD RYAN
2359	DONALD SHRIEVE
	SHRIEVE DAN & KRYSTN
2480	ERNEST HOBDAY
	HOBDAY E CRAIG M H S CORP COMPACTIO
2510	DAVID HERSON
2525	JEFFREY SETZER
2530	DAVID RIOLO
	RIOLO RACING ENGINES
2660	JAMES RIOLO
2765	JOSEPH OSELLA
2780	GORDON GIMBEL
2800	MARLEY SMITH
2810	CHARLES BARSDALE
2835	VICTOR NOVAK
2890	CHARLES HARROD
2920	THOMAS WILLIAMS
2970	THOMAS STANKO
2990	OCCUPANT UNKNOWN

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2008

1500	BOB REAGAN
1501	STEPHEN COLLINS
1550	FOOTHILLS VINEYARD STORAGE
1551	AQUA ZOO
1601	A HACKETT
	ADRIANA GALANTI
	ALBERT CALISE
	ALFREDO CEBALLOS
	AMANDA PACHECO
	ANDREA EDWARDS
	ANDREW PARSONS
	ANNA GOMEZ
	ANNA HOLDEN
	ANTHONY ABSHIRE
	BEN MOIS
	BONNIE DAVIS
	BRIAN FRIEND
	BRIAN HAMILTON
	BRIAN MICHAELS
	CASEY BURK
	CHARLES JOHNSON
	CHAZ CHILDERS
	CHRIS DELPOZZO
	CHRISTINE ALBRECHT
	CHRISTOPHER TORRES
	CLAYTON LITTLE
	COLENE MCGINNIS
	CRAIG BAMMEL
	DAN SOLTESZ
	DANIEL WATTS
	DANNY KOTZIN
	DAVE PETERS
	DAVID ROBLES
	DAVID WHINERY
	DEBBIE SIMMONS
	DEBORAH CREAMER
	DEL STEPHENSON DEVELOPMENT CO
	DELBERT DELSTEPHENSON
	DIANA CRUZ
	DON STURKEY
	DUWAYNE STEVENS
	EDWIN ALBASTRO
	FELICIA BROSIOUS
	GEORGE VELA
	GINA RALLO
	GREGORY LEE
	GUSTAVO HERNANDEZ
	HARDIK SHAH
	HEATHER CANLETT
	HEY DUDE CLOTHING CO

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2008 (Cont'd)

1601	I BROOKS
	IAN MACLEAN
	JACK REEVES
	JAMES CORRADO
	JAMES DAVIDSON
	JAMES EDWARDS
	JAMIE SOLTAU
	JANET MCDUFF
	JASON WALKER
	JESSICA PANTAGES
	JESSICA ULICH
	JIMMY SANCHEZ
	JON HIGHFILL
	JONATHAN KOSIER
	JOSE REYES
	JOSEPH CHAU
	JOSH VANLEEUWEN
	JOTZ AUTO TRANSPORT
	JULIE HICKEY
	JULIE KOEHN
	JULIE MILLER
	KAREN NAIMAN
	KAREN WOODS
	KATHERINE ROTHMAN
	KELCEY GOODMAN
	KELLIE DONOVAN
	KENT WALTON
	KERI FIRTH
	KIM HUCKABY
	KIMBERLY BRANNAN
	KRISTEN ALLEN
	KRISTEN SHELEY
	KRISTIE STIMSON
	LASZLO PIROK
	LESLIE WALKER
	LINDA BEACH
	LORINDA REED
	LUIS GONZALES
	LUZ LOPEZ
	M LAVY
	MANDI SMITH
	MARCIA PHILEMON
	MARIA CONTRERAS
	MARK PITTMAN
	MARK TIBBLES
	MATTHEW BALL
	MATTHEW METZGER
	MATTHEW TACKER
	MICHAEL CALHOUN
	MICHAEL OBRIEN

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2008 (Cont'd)

1601	MICHAEL STOCKDALE
	MIKAYLA BARBOUR
	MILLARD RICHARDS
	MUSU MAYSON
	NILS SJODIN
	NOAH BYER
	PACIFIC BLUE PRESSURE WASHING
	PAM CAVES
	PETE RODRIGUES
	PRINCE DAVIES
	QUIN MACK
	RANDY BRAATEN
	RHIANNON NANCE
	ROBERT CORRADO
	ROBERT RAM
	RON KNIGHT-SR
	ROYA NESVA
	SARAH WALL
	SHANNON DOUGHERTY
	SHERRY MARTINEZ
	STACEY LANDRY
	STEVE PEDRIN
	STEVEN BARNEY
	STEVEN GUNN
	SUE WILSON
	SUMMER KING
	SUSAN BENTON
	SUSAN BURKETT
	SUSAN GLOSL
	TABITHA BAKER
	TATIANA ANDREYEVA
	TERESA FLESHMAN
	TERESA SALE
	TERRENCE ABEL
	TERRY BROWN
	THOMAS MURRAY
	THUY HOANG
	TIM SAWDY
	TINA CONLEY
	TRIESTA NELSON
	VALRAE BRISCOE
	VIORICA POTERAS
1602	ERIC WERNER
1606	FRANCIS GOLDEN
1641	ERICO ORSI
1671	C MATRANGA
1783	GEORGE MALYJ
1791	HELENA OLOUGHLIN
1801	KATHERINA BRUNE
1815	BRIAN BAKER

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2008 (Cont'd)

1845	BILL MAMIKA
1901	GEORGE MCGINNISS
1940	MOBILE OIL MASTERS
	OCCUPANT UNKNOWN
1975	STEPHEN YETTER
2125	JOANNE OSELLA
2200	GEORGE MATRANGA
2290	RICHARD RYAN
2351	OCCUPANT UNKNOWN
	WINTUN RANCH
2359	OCCUPANT UNKNOWN
2480	CRAIG HOBDAY
2510	DAVID HERSON
2525	G SETZER
2530	DAVID RIOLO
	RIOLO RACING ENGINES
2660	OCCUPANT UNKNOWN
2765	JOSEPH OSELLA
2780	GORDON GIMBEL
2810	CHARLES BARSDALE
2835	VICTOR NOVAK
2890	CHARLES HARROD
2920	THOMAS WILLIAMS
2970	THOMAS STANKO
2990	OCCUPANT UNKNOWN
	STARLITE LIMOUSINE LLC

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2003

1550	FOOTHILLS VINEYARD STORAGE
	OCCUPANT UNKNOWN
1551	BASSETT T JOAN
	DENIOS ROSEVILLE ACTN & FRMR
	DENIOS RSVL FRMRS MRKT AUCTN
	FREDS COLLECTIBLES
	JUAREZ GIFTS & COLLECTIBLES
	KENS BASEBALL CARDS & CMC
	NANAS LAMPS
	OIL PAINTINGS & FRAMES
	RIVAS DECOR
	ROYAL BEDDING
1601	ADAM STEINKE
	ADAM ZULIM
	ALICIA HODNETT
	ANDREW SCHNEIDER
	ANDY LUONG
	ANNA HOLDEN
	ANTHONY GARCIA
	ARVINDER DHUGGA
	BALJIT MANN
	BEJAN FARAHBAKHSH
	BLANE DONALD
	BRET DAIGNEAULT
	BRIDGET SLEDGE
	BRYAN ANDERSON
	CARMEN BUJOR
	CHAD BIEHL
	CHARLES JOHNSON
	COREY NELSEN
	CRAIG GOOCH
	CURTIS BARKVE
	DALE ATKINSON
	DANNY GANTZER
	DARLENE MARTIN
	DAVID JOHNSON
	DELILAH MCCALL
	DIANA DIXON
	DON JONES
	ELDON ANDERSON
	ELLIE JENKINS
	EMERALD ACQUAH
	ERIC HUBBARD
	ERICK WENT
	ERIN ANDERSON
	FAITH MCBRIDE
	FELICIA BROSIOUS
	GURMAIL SINGH
	HARRY MCCLINTON
	HILARY RUNNELLS

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2003 (Cont'd)

1601	JAMES GOFF
	JASON STILL
	JASON STROTHER
	JEANNETTE WEIRICK
	JESSICA BARTZ
	JESSICA FRISCHERZ
	JHON FUJIWARA
	JOSE CAMARENA
	JOSEPH BYRNE
	JOSEPH NAVARRO
	JULIE TONN
	JUNE CHIISON
	KAREN HUFF
	KATHLEEN KELLY
	KATIE BELCHER
	LANCE TATE
	LUETTA RAMIREZ
	LUZ MONTENEGRO
	MARION NUSSBAUM
	MARK SHELLY
	MASTTIE DAVIS
	MATTHEW SEIBERT
	MICHAEL BINFORD
	MICHAEL NUTTALL
	MICHAEL OROZA
	MICHIE WHITE
	MISTY JENSEN
	NEVA WALMSLEY
	NICHOLAS DASH
	P EDGAR
	PAUL EVANS
	PAUL HALEY
	PAUL MAHAN
	PAUL WERNER
	PERRY KLINGMAN
	PHILIP CIAPPONI
	PHILIP TREUIL
	RAFAEL GARCIA
	REGINA DOREMUS
	ROBERT RAM
	ROBERT RUDY
	ROBERTO LOPEZ
	RON BRANDON
	SALLY GRISWALD
	SCOTT KLEINBERG
	SCOTT STUTZ
	SHANNON DOUGHERTY
	SHAWN RILEY
	SHIRAZ QURESHI
	SHIRLEY DAVIS

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 2003 (Cont'd)

1601	SJS ENTERPRISES DS
	STANLEY LONG
	STEPHANIE BARTLETT
	STEPHANIE MEIMANN
	STEVEN RUTTER
	SUSAN BURKETT
	TANISHA BOWERS
	TED LEE
	VERONICA HOLLINGSHEAD
	VICKIE BOOKER
	VINEYARD GATE APARTMENTS
	VIRGINIA CRUZ
	VIVIAN CATALINO
1641	ERICO ORSI
1671	GEORGE MATRANGA
1783	OCCUPANT UNKNOWN
1791	OCCUPANT UNKNOWN
1801	CURTIS BRUNE
1815	DENISE PERES
1845	BILL MAMIKA
1940	DAVID WAGNER
1975	STEPHEN YETTER
2200	KAREN TAYLOR
2290	RICHARD RYAN
2351	OCCUPANT UNKNOWN
	WINTUN RANCH
2359	OCCUPANT UNKNOWN
2480	CRAIG HOBDAY
2510	DAVID HERSON
2525	G SETZER
2530	DAVID RIOLO
	RIOLO RACING ENGINES
2660	JAMES RIOLO
2765	JOSEPH OSELLA
2780	GORDON GIMBEL
2800	BART VALDEZ
2810	CHARLES BARSDALE
2835	PATRICK FINN
2890	CHARLES HARROD
2920	DONALD WILLIAMS
2970	THOMAS STANKO
2990	CLINTON BRILL

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 1999

1500	BOB REAGAN
1501	STEPHEN COLLINS
1550	FOOTHILLS VINEYARD STORAGE
1551	1 HOUR DASHCOVERS
	DENIOS ROSEVILLE FARMERS MARKET & AUCTION INCORPORATED
	FREDS COLLECTIBLES
	NANAS LAMPS
1601	ADRIANA GALANTI
	ALFREDO CEBALLOS
	AMANDA PACHECO
	AMANDA WHITE
	ANDREW PARSONS
	ANNA CRUZ
	ANTHONY DUBRA
	BONNIE DAVIS
	CAREN NAIMAN
	CHERYL CUMMINGS
	CHRIS DYEHIXENBAUGH
	CHRISTINE ALBRECHT
	CHRISTOPHER LESTER
	COLENE MCGINNIS
	CORBY STYRON
	CORRINE ABEL
	DALE COLLINS
	DANIEL SILVERIA
	DANIELLE NIETO
	DANNY BARBER
	DAVID BRYANT
	DAVID ROBLES
	DAVID SMITH
	DAVID WHINERY
	DEBORAH CREAMER
	DELBERT DELSTEPHENSON
	DOMINIQUE GROOM
	DON STURKEY
	DUWAYNE STEVENS
	ELIZABETH GARIBAY
	GEORGE IGNATIUS
	GEORGE VELA
	GINA RALLO
	GREG NAVARRETE
	GUADALUPE HEDDY
	HEATHER HANNEMAN
	JACK REEVES
	JAMES CORRADO
	JAMES DAVIDSON
	JAMES EDWARDS
	JAMES FAZZINO
	JAMES PRATT
	JEANETTE RICHARDS

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 1999 (Cont'd)

1601	JEFFERY WHORTON
	JESSICA ULICH
	JIMMY SANCHEZ
	JOAN MIDDLETON
	JOANN MCMAHON
	JOSE REYES
	JOSHUA PETERSEN
	JOSHUA VANLEEUWEN
	JOSHUA WOLFINGER
	JULIE MILLER
	JUSTIN JOHNSON
	KAREN WOODS
	KARL GETTROST
	KATHERINE ROTHMAN
	KELCEY GOODMAN
	KELLIE DONOVAN
	KENNETH TURNER
	KENT WALTON
	KERI FIRTH
	KIM HUCKABY
	KIMBERLY BRANNAN
	KIMBERLY GLENN
	KIMBERLY MEDEIROS
	KRISTEN ALLEN
	KRISTEN SHELEY
	KRISTIE STIMSON
	LACY SMITH
	LASZLO PIROK
	LATIRZAH PRUITT
	LEANN GILMORE
	LINDA TOMPKINS
	LORINDA REED
	LUIS GONZALES
	MARVELL LAVY
	MATTHEW METZGER
	MIKAYLA BARBOUR
	NILS SJODIN
	NOAH BYER
	PAUL ADCOCK
	RACHEL ELVIN
	ROBERTO PINO
	ROXANNE JENSEN
	RUBEN PEREZ
	RYAN CONSORTI
	SARAH WALL
	SHEILA ZAPANTA
	STACEY LANDRY
	STEPHEN REYNODS
	STEVE PEDRIN
	STEVEN GUNN

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 1999 (Cont'd)

1601	SUSAN BENTON
	SUSAN ZAWIEJA
	TATIANA ANDREYEVA
	TEASHIA BYCROFT
	TERESA FLESHMAN
	TERRENCE ABEL
	THOMAS MURRAY
	THOMAS ZUKOWSKI
	TRACI PHILLIPS
	VICKTOR UNIFATSIY
1602	ERIC WERNER
1606	FRANCIS GOLDEN
1641	JOE WILSON
1671	GEORGE MATRANGA
1783	PAUL MALYJ
1791	OCCUPANT UNKNOWN
1801	KATHERINA BRUNE
1815	JENNIFER SORENSON
1845	BILL MAMIKA
1901	GEORGE MCGINNISS
1940	LELAND MANSUETTI
1975	OCCUPANT UNKNOWN
	STEPHEN YETTER
2125	CARL SAWTELLE
2290	RICHARD RYAN
2480	ERNEST HOBDAY
2510	DAVID HERSON
2525	JEFFREY SETZER
2530	DAVID RIOLO
	RIOLO RACING ENGINES
2660	JAMES RIOLO
2765	JOSEPH OSELLA
2780	GORDON GIMBEL
2800	BART VALDEZ
	OCCUPANT UNKNOWN
2810	CHARLES BARSDALE
2835	VICTOR NOVAK
2890	CHARLES HARROD
2920	THOMAS WILLIAMS
2970	THOMAS STANKO

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 1995

1551	BRAVOS CURIOS
	DENIO, JAMES
	DENIOS ROSEVILLE FARMERS MKT
	TIME TO REMEMBER
1791	OLOUGHLIN, GARY S
1801	BRUNE, CURTIS
1815	BEGLEY, KELLY J
1845	MAMIKA, BILL
1975	OCCUPANT UNKNOWNN
2125	OSELLA, R L
2290	RYAN, RICHARD B
2351	SHRIEVE, DONALD
2359	SHRIEVE, JEREMY
2480	HOBDAY, CRAIG E
2510	HERSON, DAVID M
2530	RIOLO, DAVID L
2660	RIOLO, JAMES A
2765	OSELLA, JOE A
2780	GIRMBEL, GORDON
2800	DANKBAR, DALE
2810	BARSDALE, CHARLES J
2835	ROBNETT, MONICA
2890	HARROD, CHARLES R

Target Street	Cross Street	Source
✓	-	Cole Information Services

VINEYARD RD 1992

1551	DENIO, JAMES
	DENIOS FARMERS MRKT
	TIME TO REMEMBER
1791	OLOUGHLIN, GARY S
1801	BRUNE, CURTIS
1940	MANSUETTI, N M
1975	YETTER, STEVE
2125	OSELLA, R L
2351	SHRIEVE, DONALD
	WINTUN POLLED HRFRD
2359	SHRIEVE, JEREMY
2480	HOBDAY, CRAIG E
2660	RIOLO, JAMES A
2765	OSELLA, JOE A
2780	COBRA PERFORMANCE
	GIMBEL, GORDON
2800	DANKBAR, DALE
2810	BARSDALE, CHARLES J

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

VINEYARD RD 1989

VINEYARD RD 95678
ROSEVILLE

RURAL ROUTE 1

1551	★D F PROPERTIES	786-6658	+9
	DENIO Jas	782-2704	+9
	★DENIOS FARMERS MRKT	782-2704	+9
1671	MATRANGA C V	786-7771	4
1801	BRUNE Curtis	783-4021	
1815	XXXX	00	
1845	XXXX	00	
1875	XXXX	00	
1881	MCNEIL Douglas L	786-5396	3
1885	★AMWAY DIRECT DISTB	786-7755	8
	★PORTRAITS BY LINDA	786-7755	6
	★VIGLIONE LARRY AMWY	786-7755	4
	VIGLIONE Linda	786-7755	
1891	DAVIS Gerald D	783-8763	
	★TRI D CONSTRUCTION	783-8763	2
1901	XXXX	00	
1940	MANSUETTI Leland A	783-7450	
1975	DANKBAR Bernard L	782-5449	
2125	OSELLA R L	782-6415	8
2200	MATRANGA Geo	786-7839	3
2304	XXXX	00	
2308	XXXX	00	
2351	SHRIEVE Donald	771-0718	+9
	★WINTUN POLLED HRFRD	771-0718	+9
2359	SHRIEVE Andrea	771-0758	
	SHRIEVE Jeremy	771-0758	
2480	HOBDAY Craig E	771-0220	4
2510	XXXX	00	
2660	RIOLO Chad	771-0253	7
	★RIOLO JAMES PAVING	771-0145	2
	★RIOLO JAMES PAVING	969-9536	5
	RIOLO Jas A	771-0157	2
2765	OSELLA Joe A	771-0267	2
2780	★COBRA PERFORMANCE	969-1336	2
	GIMBEL Gordon	771-0257	2
2800	DANKBAR Dale	771-0712	3
2810	BARSDALE Chas J	771-0250	8
2815	XXXX	00	
2835	NOVAK Miklos N	771-0580	6
2890	XXXX	00	
3170	MORENO A	771-0283	8
	MORENO J	771-0283	
3207	CROWDER W E	771-0159	2
3309	XXXX	00	
3330	XXXX	00	
3365	NEWELL J	771-0234	5
3506	BENSON Jeri	771-0825	8
	BENSON John	771-0825	
3510	MATTHEWS D A	771-0496	2
3752	BOSKOVICH Michael	771-0492	2
	BOSKOVICH Michael	771-0761	8
3803	SCHNELL J	771-0834	
	★SCHNELL J DSTB INC	771-0203	8
	SCHNELL S	771-0834	8

★ 11 BUS 43 RES 5 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

VINEYARD RD 1985

VINEYARD RD 95678
ROSEVILLE

RURAL ROUTE 1

1671	MATRANGA C V	786-7771	4
1801	BRUNE CURTIS	783-4021	9
1815	XXXX	00	
1845	XXXX	00	
1875	XXXX	00	
1881	MCNEIL DOUGLAS L	786-5396	3
1885	VIGLIONE L	969-6708	+5
	VIGLIONE LINDA	786-7755	4
1891	DAVIS GERALD D	783-8763	8
	TRI D CONSTRUCTION	**783-8763**	2
1901	MCGINNISS GEORGE L	782-6629	7
1940	MANSUETTI LELAND A	783-7450	7
1975	DANKBAR BERNARD L	782-5449	9
2125	SAWTELLE CARL	782-6415	8
2200	MATRANGA GEO	786-7839	3
2304	XXXX	00	
2308	XXXX	00	
2359	SHRIEVE DONALD	771-0718	2
2480	HOBDAY CRAIG E	771-0220	4
	HOBDAY E CRAIG	782-3286	1
2510	THOMAS B	771-0225	4
2660	**RIOLO JAMES PAVING**	**771-0145**	2
	RIOLO JAMES PAVING	**969-9536**	+5
	RIOLO JAS A	771-0157	2
2765	OSELLA R L	771-0267	2
2780	**COBRA PREFORMANCE**	**969-1336**	2
	GIMBEL GORDON	771-0257	2
2800	DANKBAR DALE	771-0712	3
2815	XXXX	00	
2835	NOVAK MIKLOS N	783-0580	7
2890	XXXX	00	
3170	RIOLO MICHAEL	771-0211	2
3207	CROWDER W E	771-0159	2
3309	JOHNSON DAVID	771-0826	+5
3330	XXXX	00	
3365	NEWELL J	771-0234	+5
3510	MATTHEWS D A	771-0496	2
3752	BOSKOVICH MICHAEL	771-0492	2

★ 4 BUS 34 RES 4 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

VINEYARD RD 1980

VINEYARD RD 95678
ROSEVILLE

RURAL ROUTE 1

1671	MATRANGA C V	782-6448	7
1801	BRUNE CURTIS	783-4021	9
1815	BAKER BRIAN A	782-9124	+0
1845	XXXX	00	
1875	KILPATRICK EDWIN	783-0934	+0
1885	FARREY L J	782-7595	+0
1891	DAVIS GERALD D	783-8763	8
	TRI D CONSTR	**783-8763**	**+0**
1901	MCGINNISS GEORGE L	782-6629	7
1940	MANSUETTI LELAND A	783-7450	7
1975	DANKBAR BERNARD L	782-5449	9
2125	SAWTELLE CARL	782-6415	8
2304	XXXX	00	
2308	XXXX	00	
2359	SHRIEVE DONALD	782-3855	7
2510	THOMPSON ERNEST R	783-8675	8
2660	RIOLO JAMES A	783-8394	7
	RIOLO JAMES PAVING	**782-5974**	**9**
2765	OSELLA R L	782-6729	7
2780	DANKBAR DALE	783-7934	7
2815	XXXX	00	
2835	NOVAK MIKLOS N	783-0580	7
2890	WHEELER KENNETH D	783-0125	9
3207	CROWDER W E	783-3858	7
3330	XXXX	00	
3510	MATTHEWS D A	783-8072	+0
3752	BOSKOVICH MICHAEL	782-4332	8
8350	MCBRIDE TOM J	783-9956	8
8370	BAUGHN G L	783-496[illegible]	[illegible]
NO #	**GRANGE CO THE**	782-67[illegible]	
★	3 BUS 27 RES	[illegible]	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

VINEYARD RD 1974

VINEYARD RD 95678 ROSEVILLE

RURAL ROUTE 1

2304	XXXX	OO
2308	XXXX	OO
2815	RIOLO JAS A	783-8394+4
NO #	BAUGHN G L	783-4997
NO #	BENSON F J	782-6404
NO #	BRUNE CURTIS	783-4021
NO #	CROWDER W E	783-3858+4
NO #*	DAVIS EXCAVATION	783-8763 3
NO #	DAVIS GERALD D	783-8763
NO #*	GRANGE CO THE	782-6758+4
NO #	MAMIKA BILL	782-6221
NO #	MANSUETTI LELAND A	783-7450
NO #	MATRANGA C V	782-6448
NO #	MCBRIDE TOM J	783-9959+4
NO #	NOVAK MIKLOS N	783-0580+4
NO #	OSELLA R L	782-6729
NO #	RIOLO DAVID L	782-6703
NO #	ROULLETT ORA	782-6629
NO #	SAWTELLE CARL	782-6415 2
NO #	SETZER G CAL	783-0365 3
NO #	SHRIEVE DONALD	782-3855 3
NO #	VALINE JAS M	782-4131+4

* 2 BUS 20 RES 6 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

VINEYARD RD 1970

VINEYARD RD 95678 ROSEVILLE

2304	MORGAN MARGARET	782-6212
2308	VIRRUETA ELIBERTO N	783-5625
A	VIRRUETA RALPH M	783-3812
NO #	AVARA ROBT L	782-3084
NO #	BACHLI EDW	782-6758
NO #	BAUGHN G L	783-4997
NO #	BENSON F J	782-6404
NO #	BRUNE CURTIS	783-4021
NO #*	DAVIS BROS EXCAVATN	783-8763
NO #	DAVIS GERALD D	783-8763
NO #	HANSON GEO H MRS	782-6464
NO #	HARRIS D L	783-4624
NO #	HUNISCHEWSKYJ GEORG	782-6512
NO #	MAMIKA BILL	782-6221
NO #	MANSUETTI LELAND A	783-7450
NO #	MATRANGA C V	782-6448
NO #	ORSI E J JR	782-1713
NO #	OSELLA R L	782-6729
NO #	RIOLO DAVID L	782-6703
NO #	ROULLETT ORA	782-6629
NO #	SAWTELLE CARL	782-6415
NO #*	STIDUMS MEAT MARKET	783-8906
NO #	VONLOH TERRANCE K	783-5601

* 2 BUS 21 RES

Brady-Vineyard 36 Acre Subdivision

1940 Vineyard Road

ROSEVILLE, CA 95747

Inquiry Number: 4944548.9

May 25, 2017

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

05/25/17

Site Name:

Brady-Vineyard 36 Acre Subdiv
1940 Vineyard Road
ROSEVILLE, CA 95747
EDR Inquiry # 4944548.9

Client Name:

Ace Quality Control
1830 Vernon Street Suite #7
Roseville, CA 95678
Contact: Dana Smal

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1998	1"=500'	Acquisition Date: August 18, 1998	USGS/DOQQ
1993	1"=500'	Flight Date: May 23, 1993	USDA
1984	1"=500'	Flight Date: June 08, 1984	USDA
1972	1"=500'	Flight Date: June 28, 1972	USDA
1966	1"=500'	Flight Date: August 04, 1966	USGS
1957	1"=500'	Flight Date: August 24, 1957	USDA
1952	1"=500'	Flight Date: July 18, 1952	USDA
1947	1"=500'	Flight Date: July 28, 1947	USGS

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INQUIRY #: 4944548.9
YEAR: 2012
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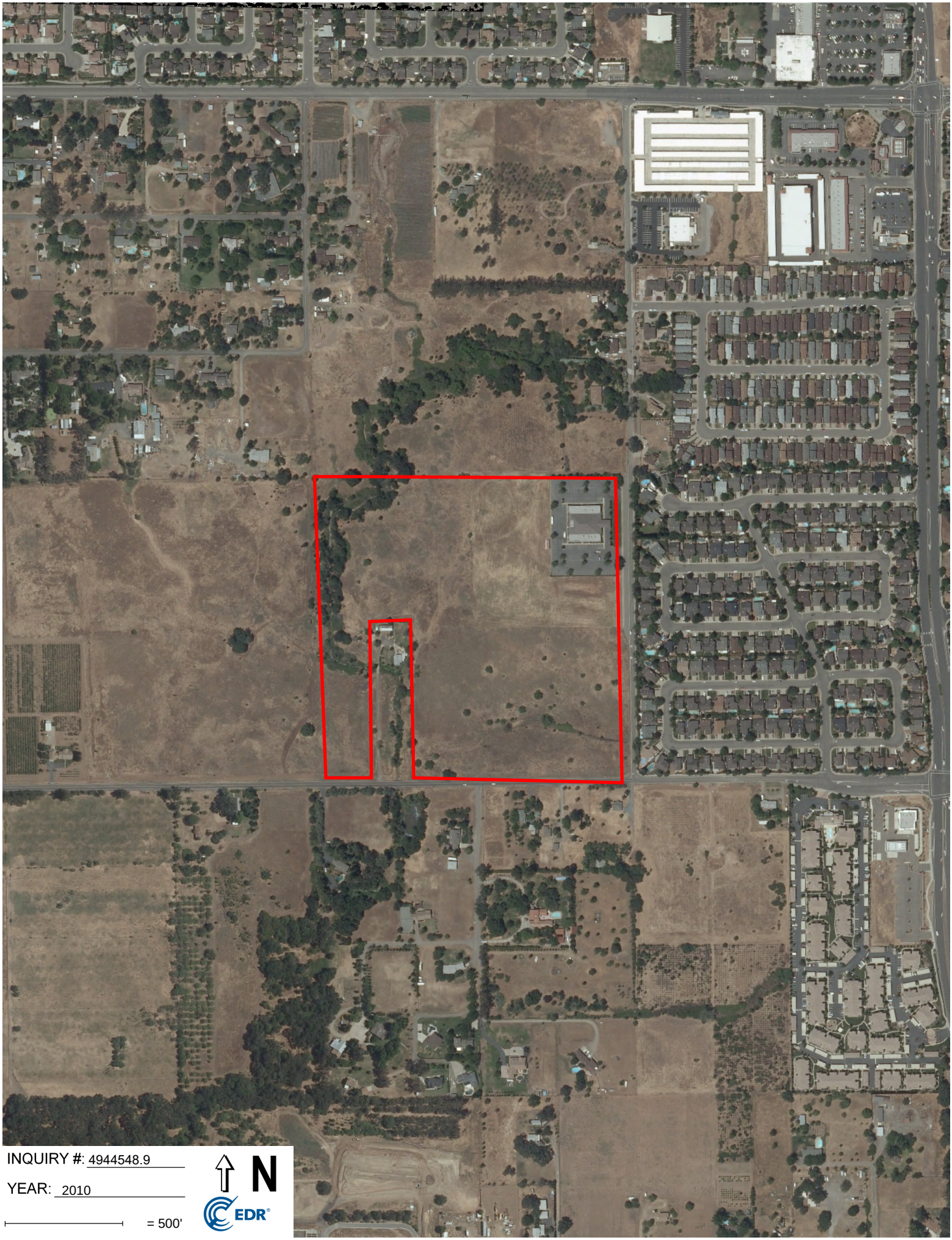
N
EDR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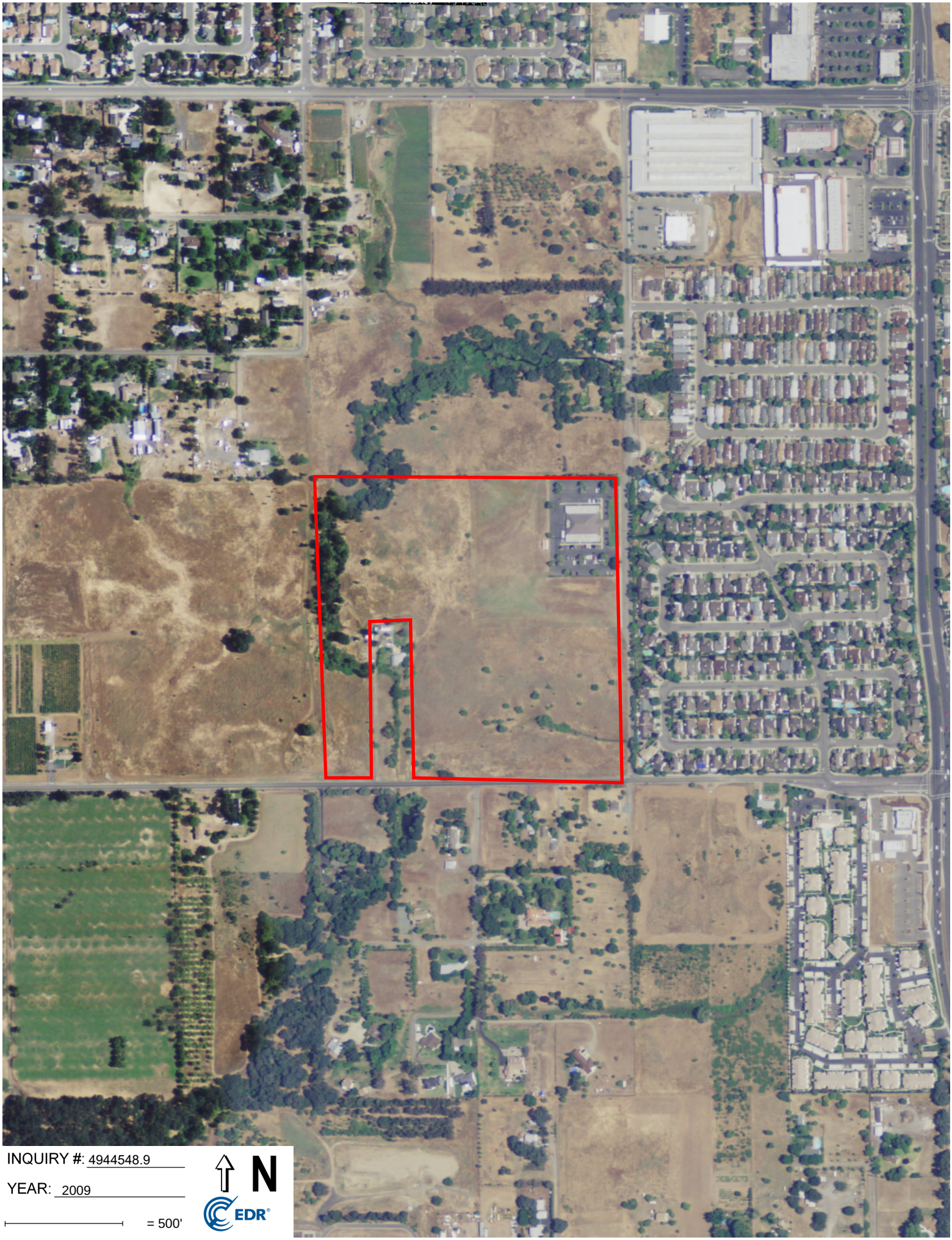
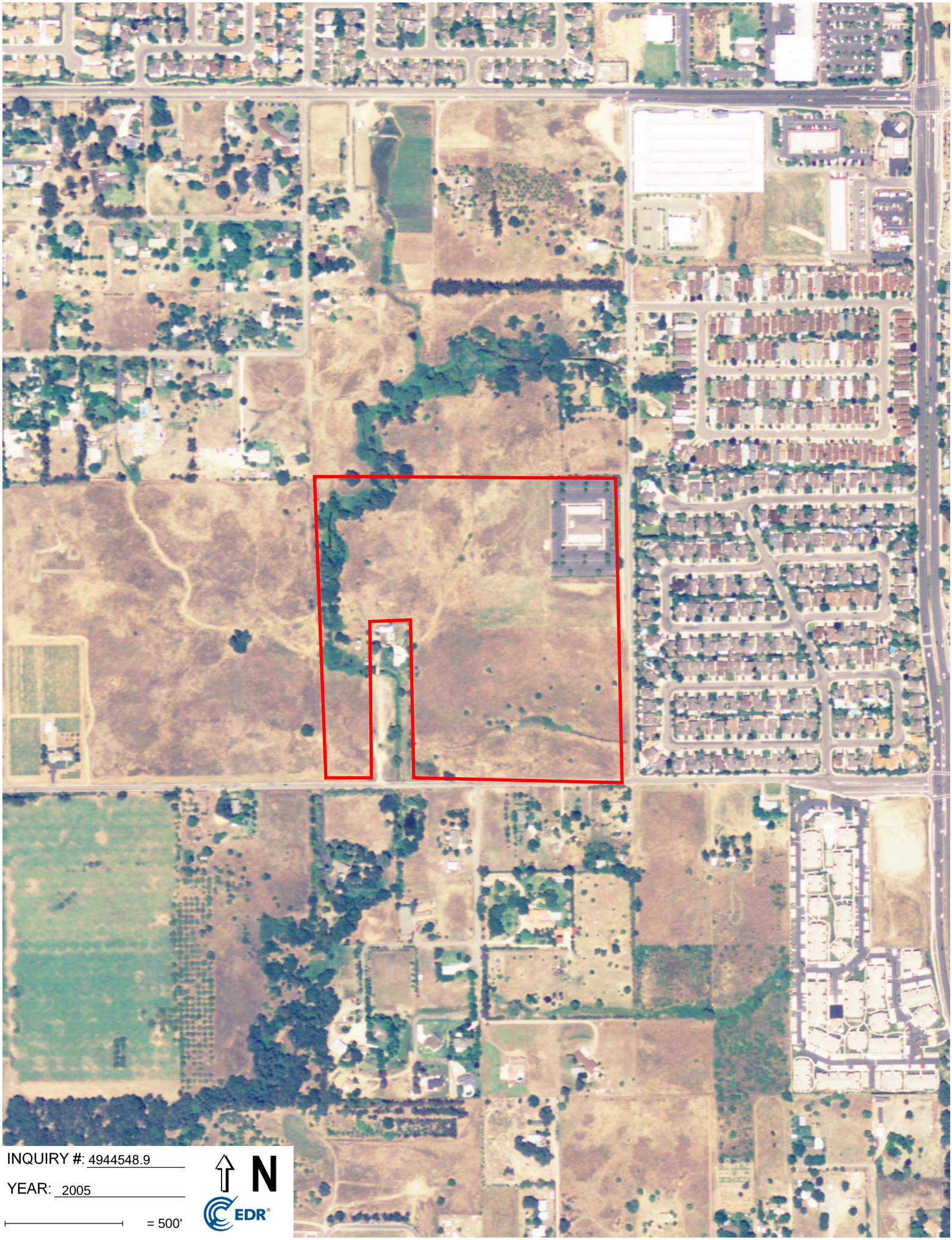
YEAR: 2010
= 500'
N
EDR


INQUIRY #: 4944548.9
YEAR: 2009
= 500'
N
EDR

INQUIRY #: 4944548.9
YEAR: 2006
= 500'
N
EDR


INQUIRY #: 4944548.9
YEAR: 2005
= 500'
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EDR

INQUIRY #: 4944548.9
YEAR: 1998
= 500'
N
EDR

INQUIRY #: 4944548.9

YEAR: 1993

= 500'

N

EDR

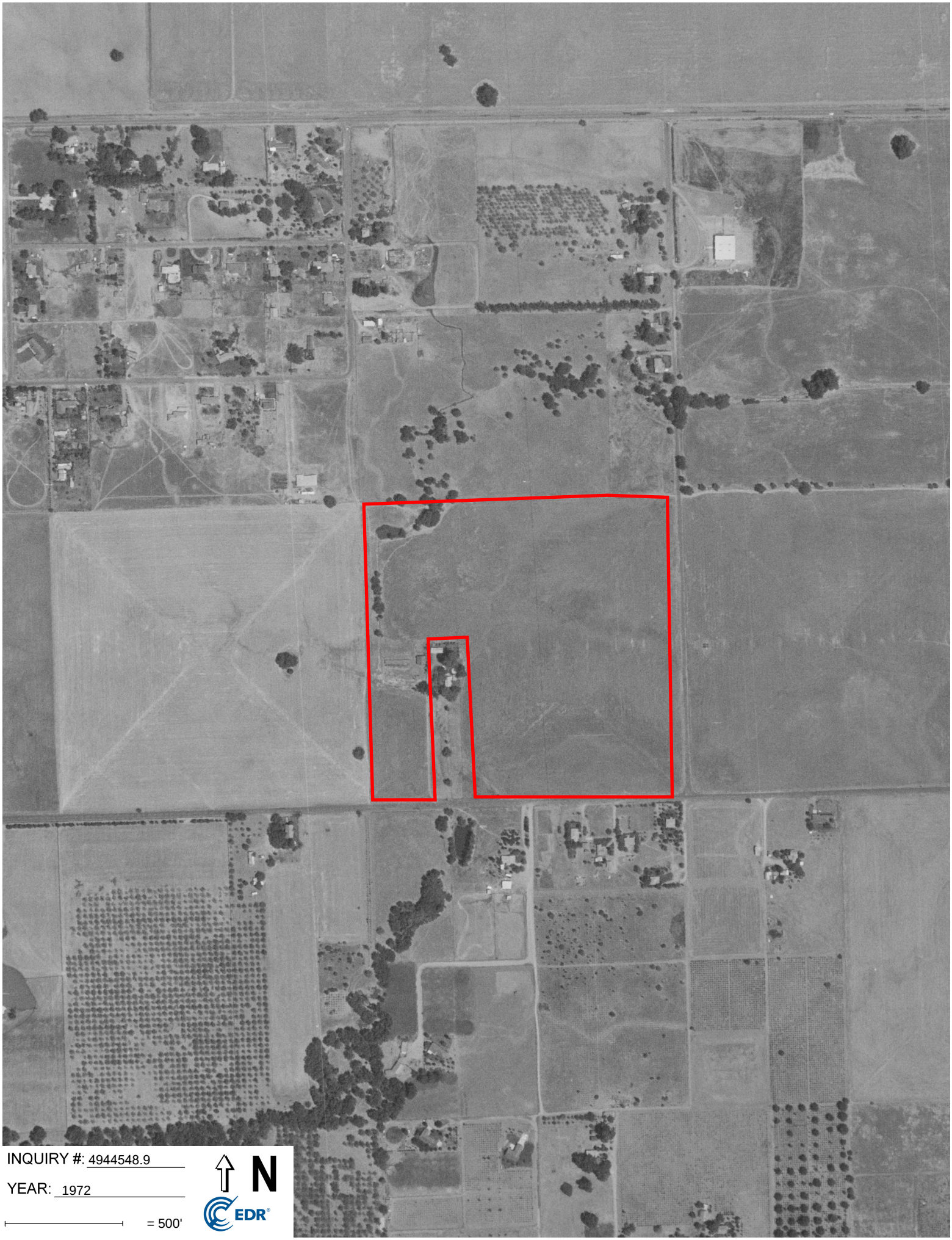
INQUIRY #: 4944548.9

YEAR: 1984

= 500'

N

EDR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YEAR: 1972
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N
EDR

INQUIRY #: 4944548.9
YEAR: 1966
= 500'
N
EDR

INQUIRY #: 4944548.9
YEAR: 1957
= 500'
N
EDR

INQUIRY #: 4944548.9
YEAR: 1952
= 500'
N
EDR

INQUIRY #: 4944548.9
YEAR: 1947
= 500'
N
EDR

Brady-Vineyard 36 Acre Subdivision

1940 Vineyard Road

ROSEVILLE, CA 95747

Inquiry Number: 4944548.4

May 23, 2017

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

05/23/17

Site Name:	Client Name:
Brady-Vineyard 36 Acre Subdiv	Ace Quality Control
1940 Vineyard Road	1830 Vernon Street Suite #7
ROSEVILLE, CA 95747	Roseville, CA 95678
EDR Inquiry # 4944548.4	Contact: Dana Smal

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Ace Quality Control were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: Brady-Vineyard Development

Coordinates:

Latitude:	38.745601 38° 44' 44" North
Longitude:	-121.316229 -121° 18' 58" West
UTM Zone:	Zone 10 North
UTM X Meters:	646325.96
UTM Y Meters:	4289892.13
Elevation:	138.22' above sea level

Maps Provided:

2012	1942
1992	1941
1981	1910, 1911
1980	1902
1975	1893
1967	1892
1953, 1954	1891
1951, 1953	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

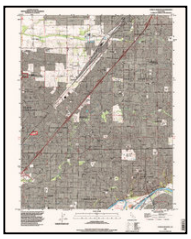
2012 Source Sheets

Roseville
2012
7.5-minute, 24000

Citrus Heights
2012
7.5-minute, 24000

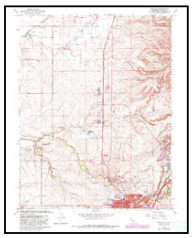
1992 Source Sheets

Roseville
1992
7.5-minute, 24000
Aerial Photo Revised 1992



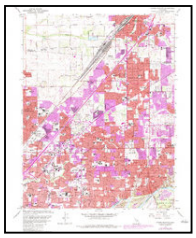
Citrus Heights
1992
7.5-minute, 24000
Aerial Photo Revised 1992

1981 Source Sheets



Roseville
1981
7.5-minute, 24000
Aerial Photo Revised 1978

1980 Source Sheets



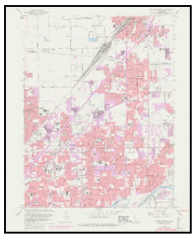
Citrus Heights
1980
7.5-minute, 24000
Aerial Photo Revised 1978

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

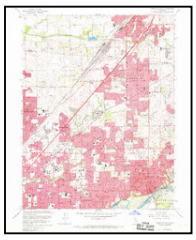
1975 Source Sheets

Roseville
1975
7.5-minute, 24000
Aerial Photo Revised 1975



Citrus Heights
1975
7.5-minute, 24000
Aerial Photo Revised 1975

1967 Source Sheets



Citrus Heights
1967
7.5-minute, 24000
Aerial Photo Revised 1966

Roseville
1967
7.5-minute, 24000
Aerial Photo Revised 1966

1953, 1954 Source Sheets

Lincoln
1953
15-minute, 62500

Fair Oaks
1954
15-minute, 62500

1951, 1953 Source Sheets

Citrus Heights
1951
7.5-minute, 24000
Aerial Photo Revised 1947

Roseville
1953
7.5-minute, 24000
Aerial Photo Revised 1949

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1942 Source Sheets

Markham Ravine
1942
15-minute, 62500
Aerial Photo Revised 1939

1941 Source Sheets

MARKHAM RAVINE
1941
15-minute, 62500

1910, 1911 Source Sheets

Roseville
1910
7.5-minute, 31680

Antelope
1911
7.5-minute, 31680

1902 Source Sheets

Fairoaks
1902
15-minute, 62500

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1893 Source Sheets

Sacramento
1893
30-minute, 125000

1892 Source Sheets

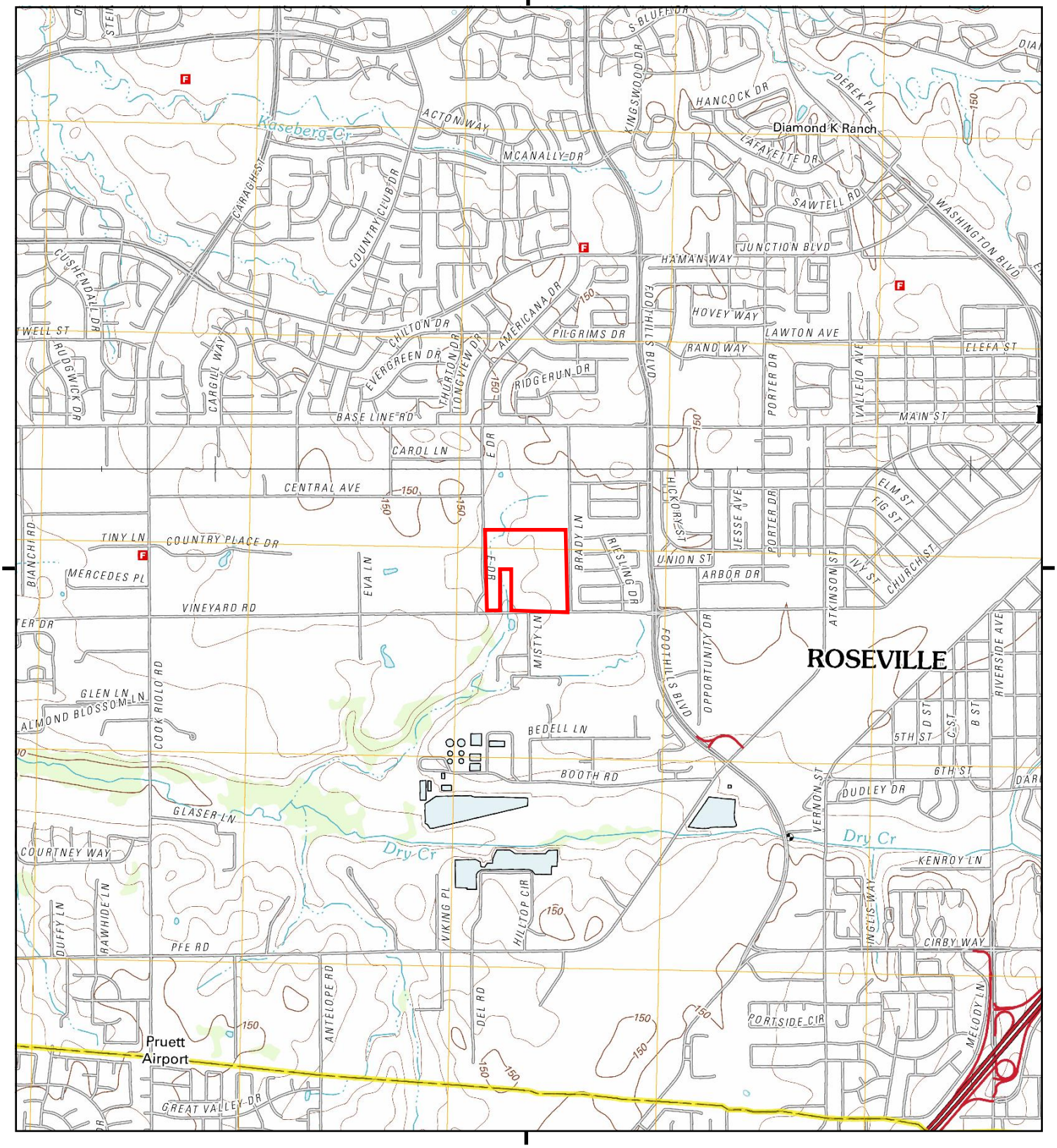
Sacramento
1892
30-minute, 125000

1891 Source Sheets

Sacramento
1891
30-minute, 125000

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

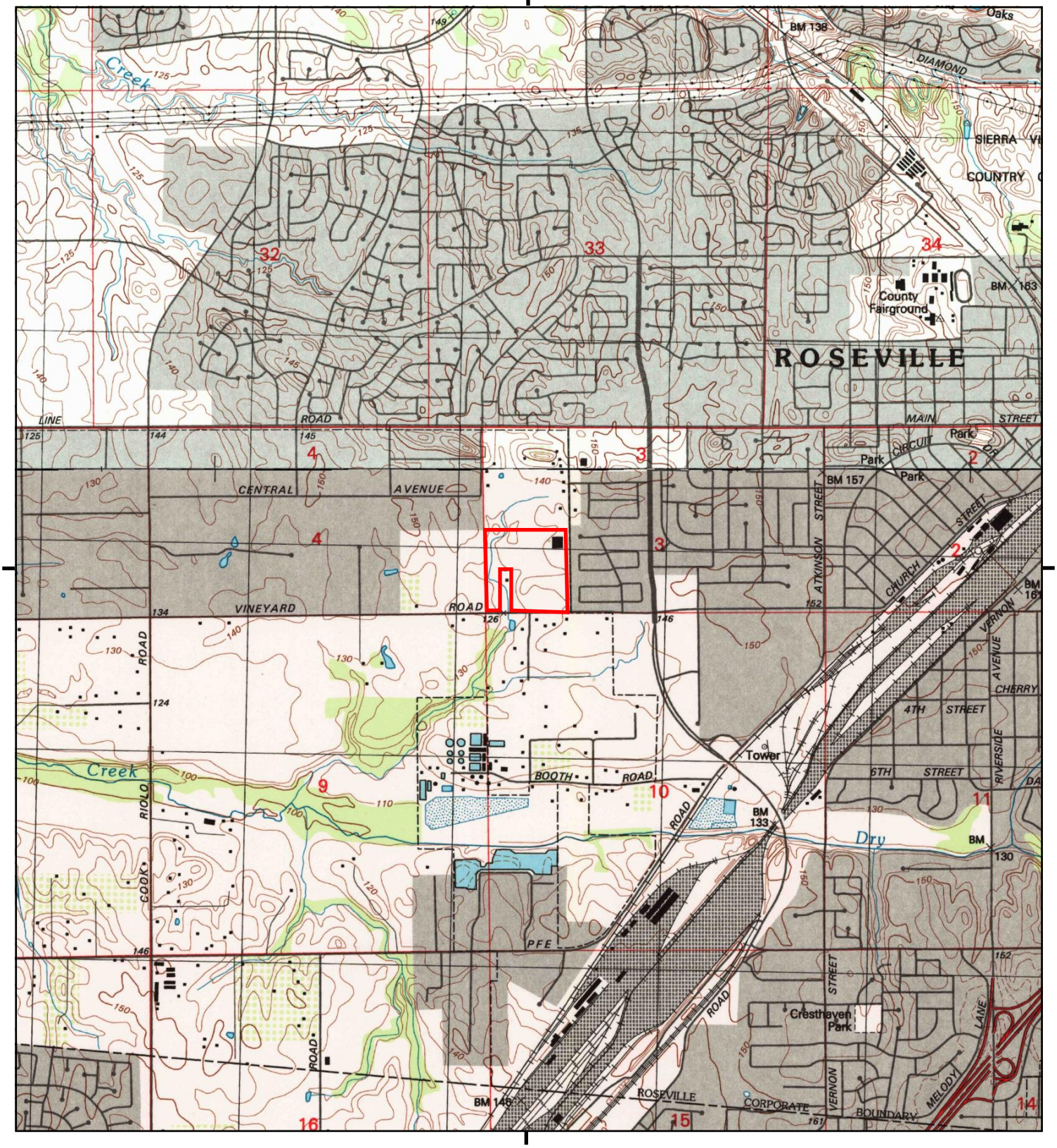
TP, Citrus Heights, 2012, 7.5-minute
N, Roseville, 2012, 7.5-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

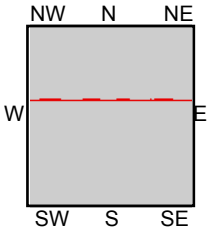
Historical Topo Map

1992



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



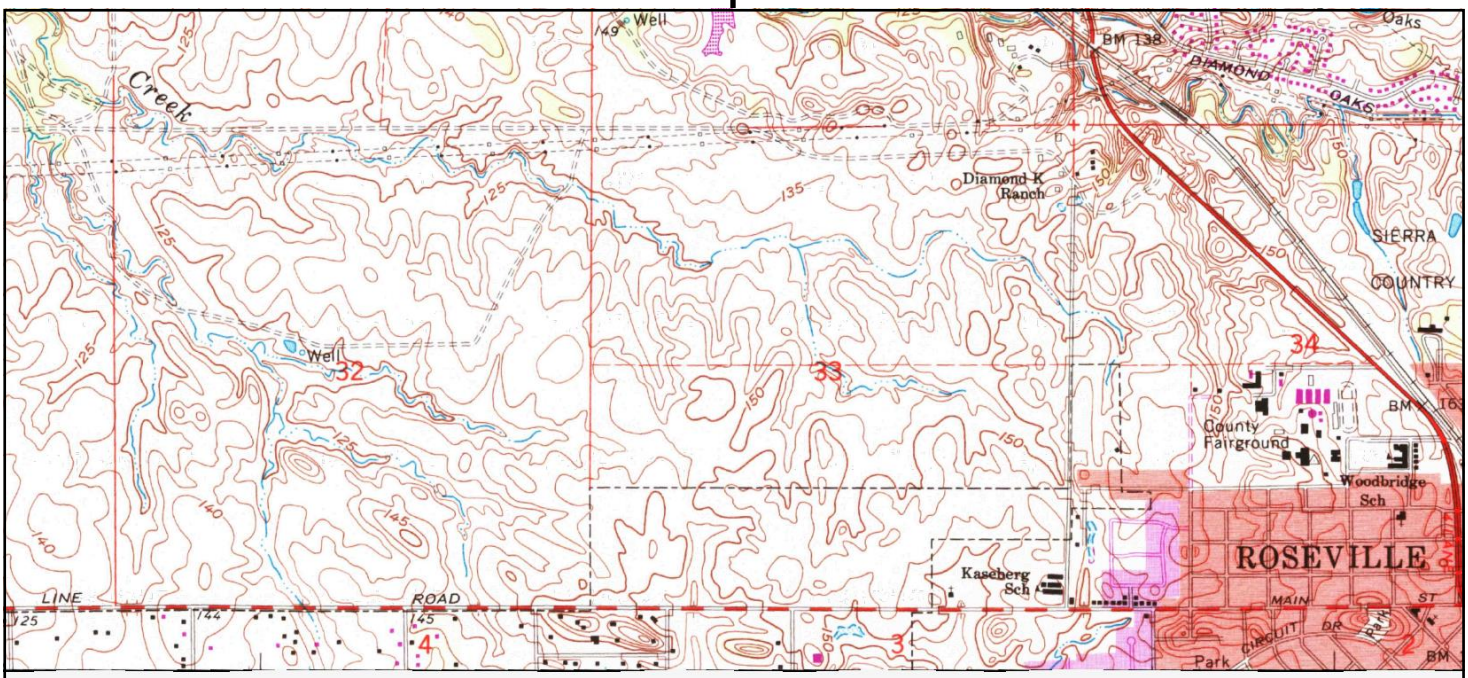
TP, Citrus Heights, 1992, 7.5-minute
N, Roseville, 1992, 7.5-minute

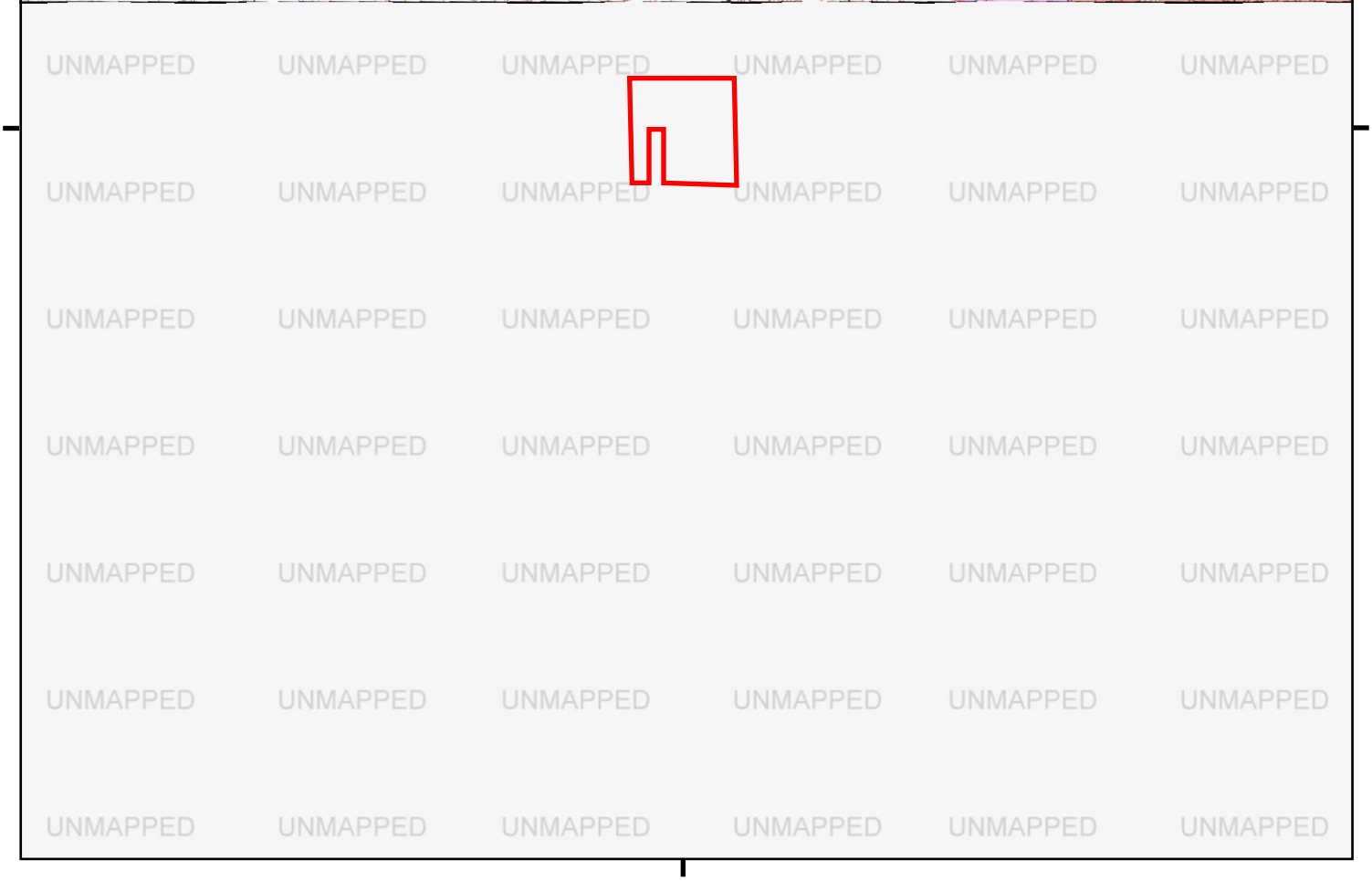
SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1981





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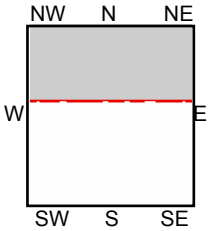
0 Miles 0.25 0.5 1 1.5



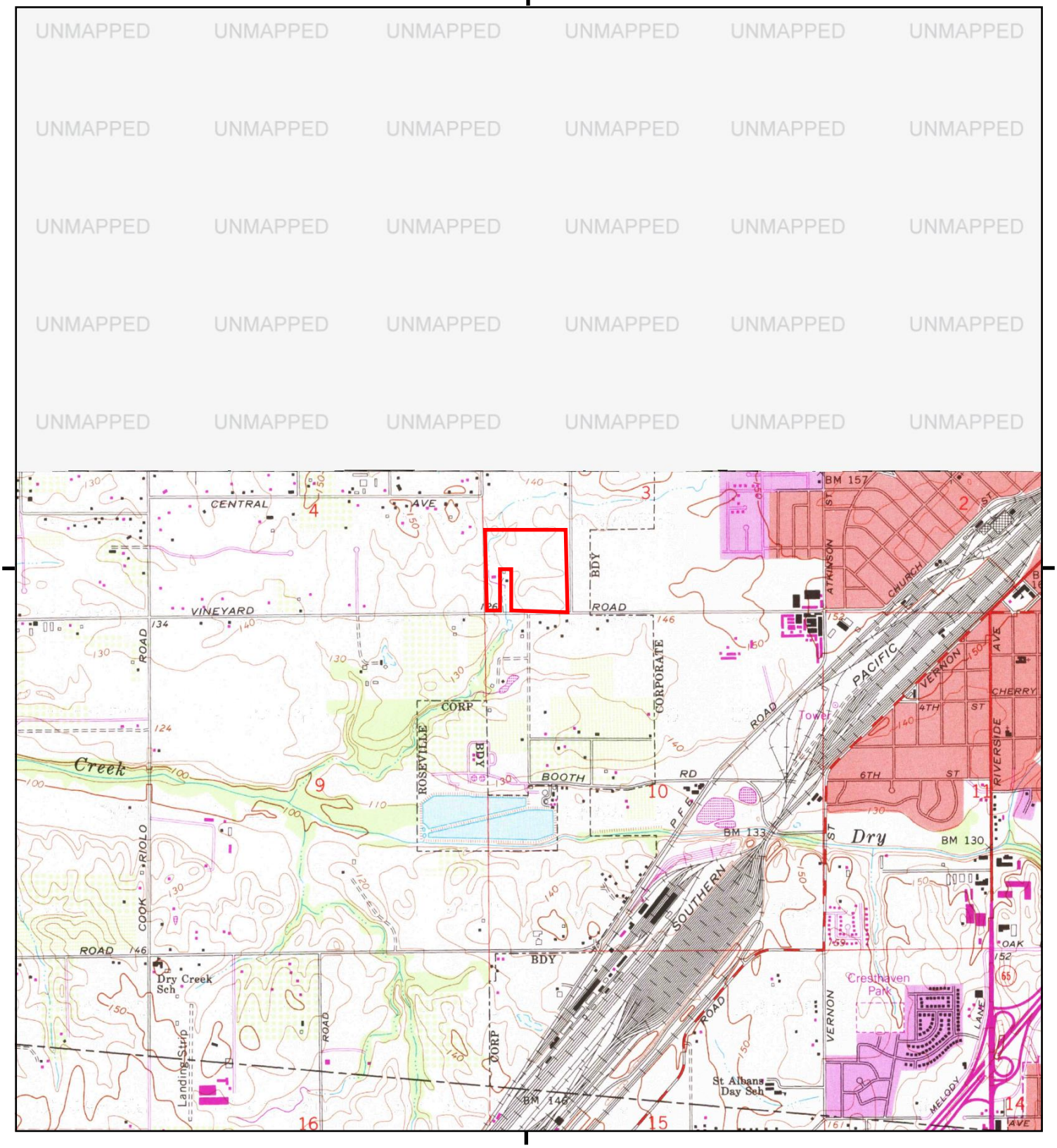
N, Roseville, 1981, 7.5-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

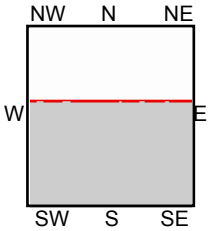
Historical Topo Map

1980



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



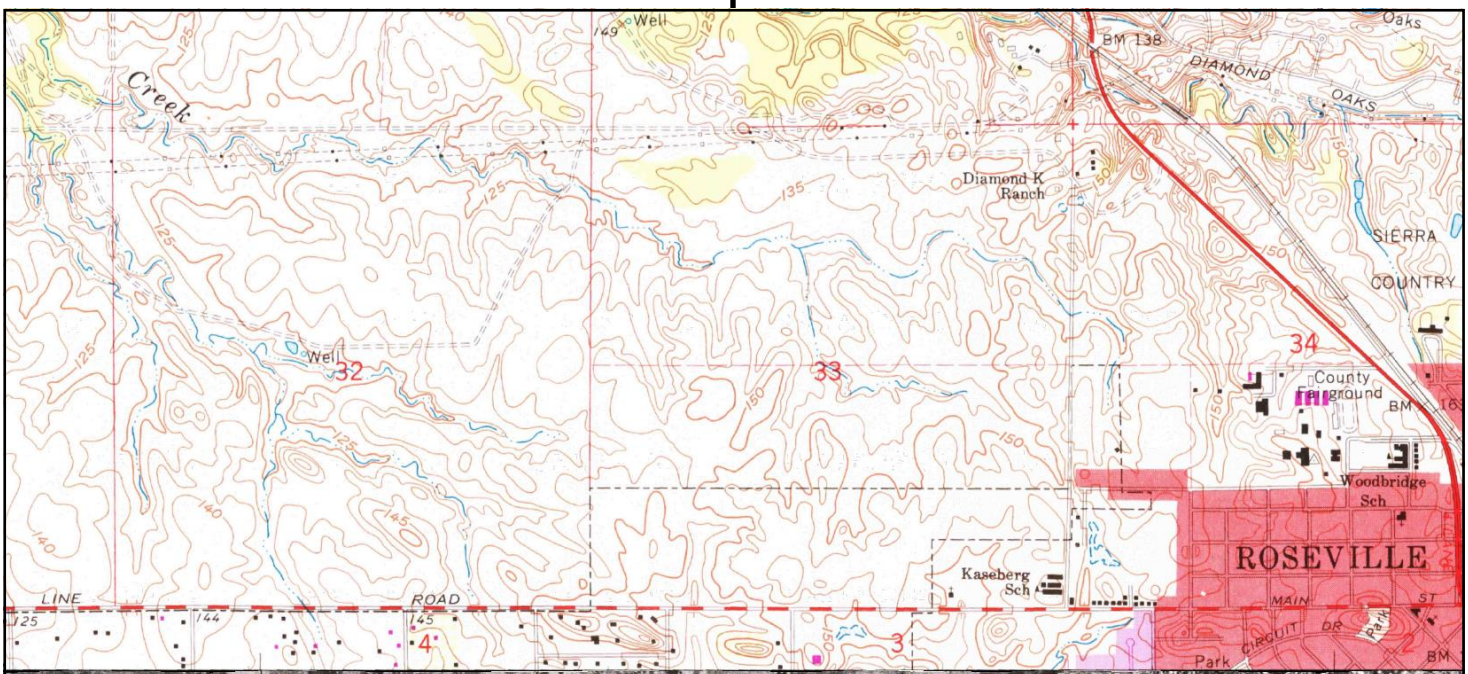
TP, Citrus Heights, 1980, 7.5-minute

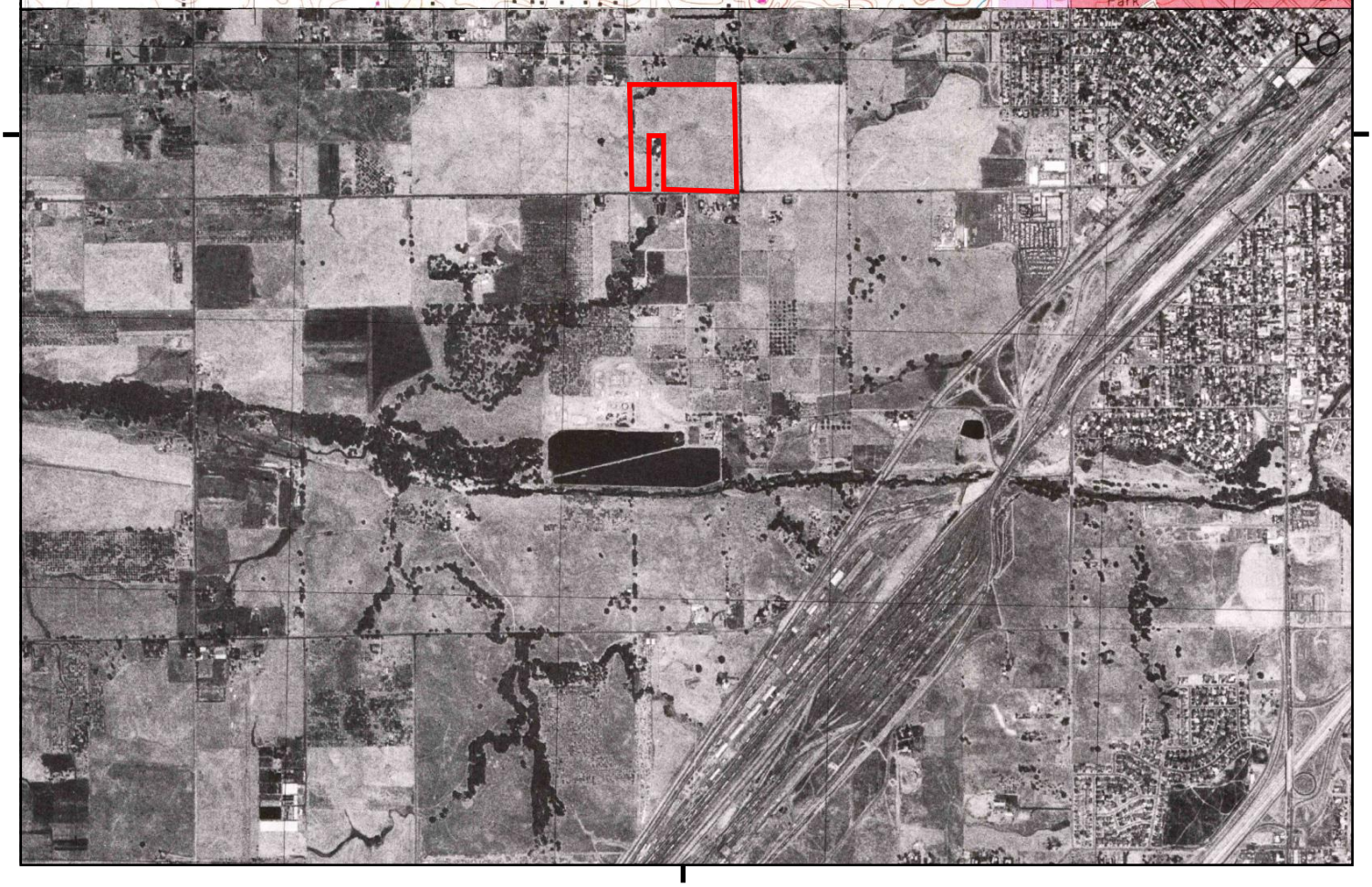
SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1975





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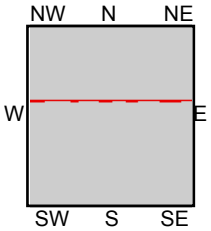
0 Miles 0.25 0.5 1 1.5



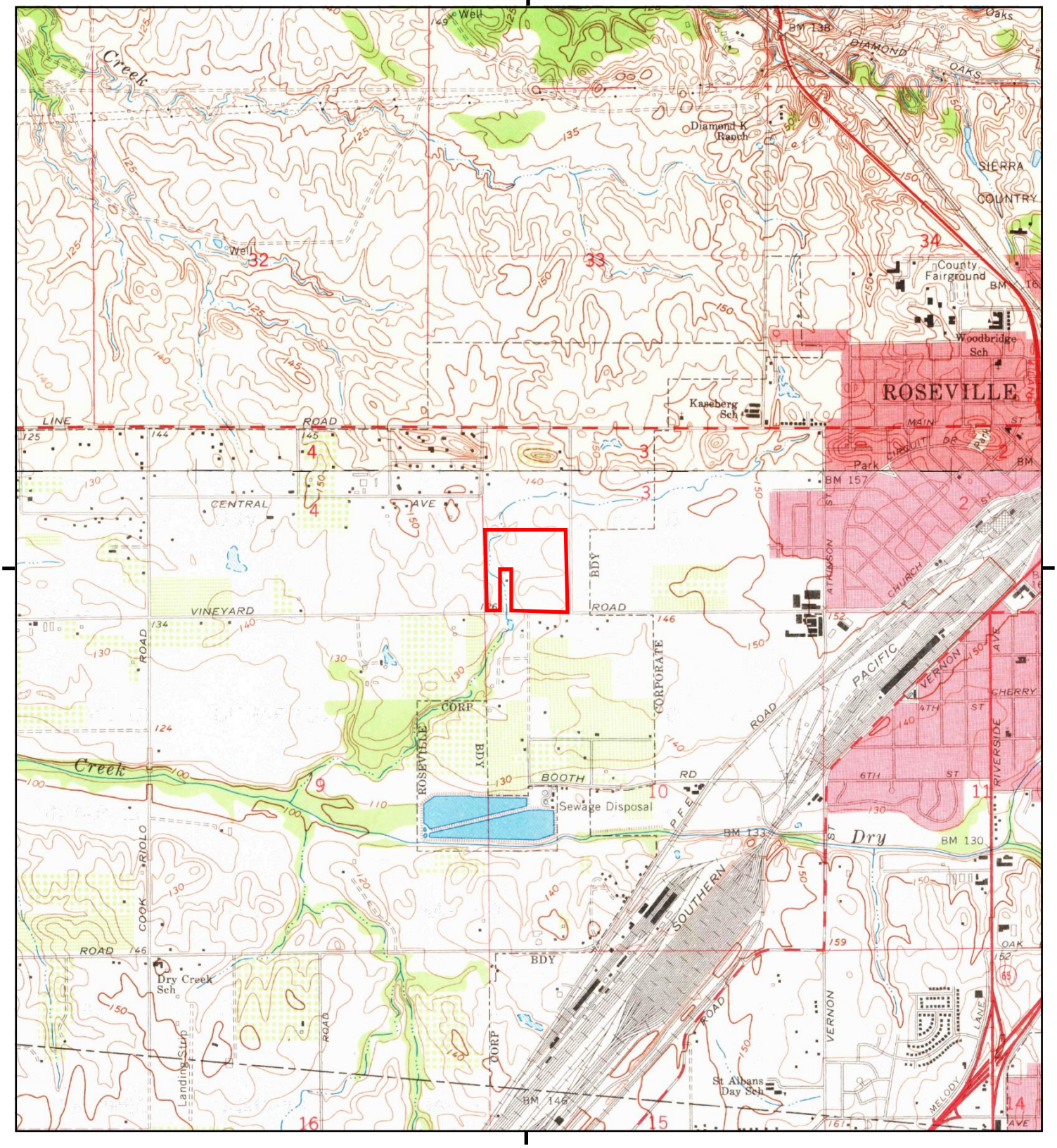
TP, Citrus Heights, 1975, 7.5-minute
N, Roseville, 1975, 7.5-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1967



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

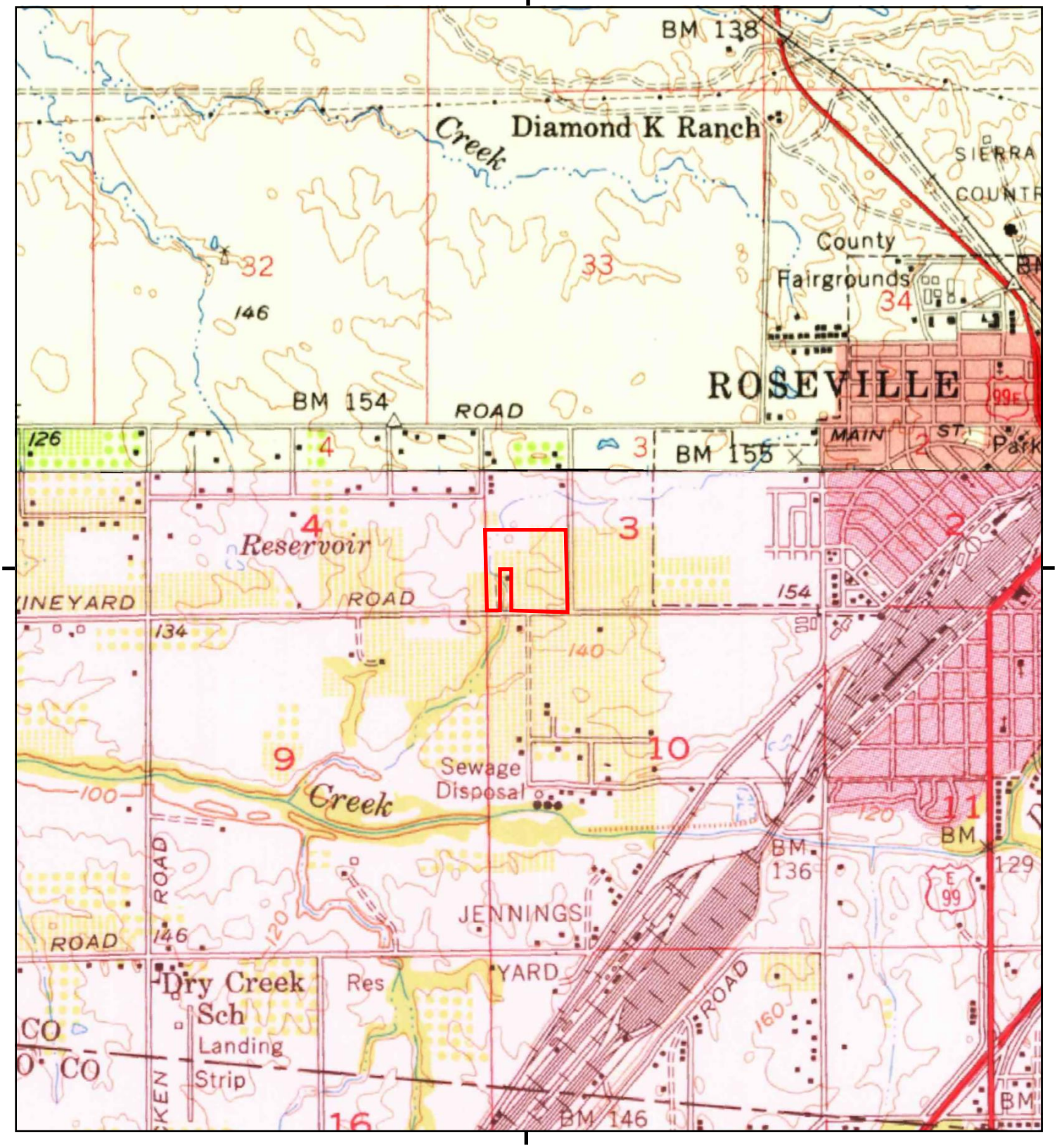
TP, Citrus Heights, 1967, 7.5-minute
N, Roseville, 1967, 7.5-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1953, 1954



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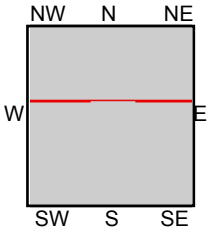
0 Miles 0.25 0.5 1 1.5



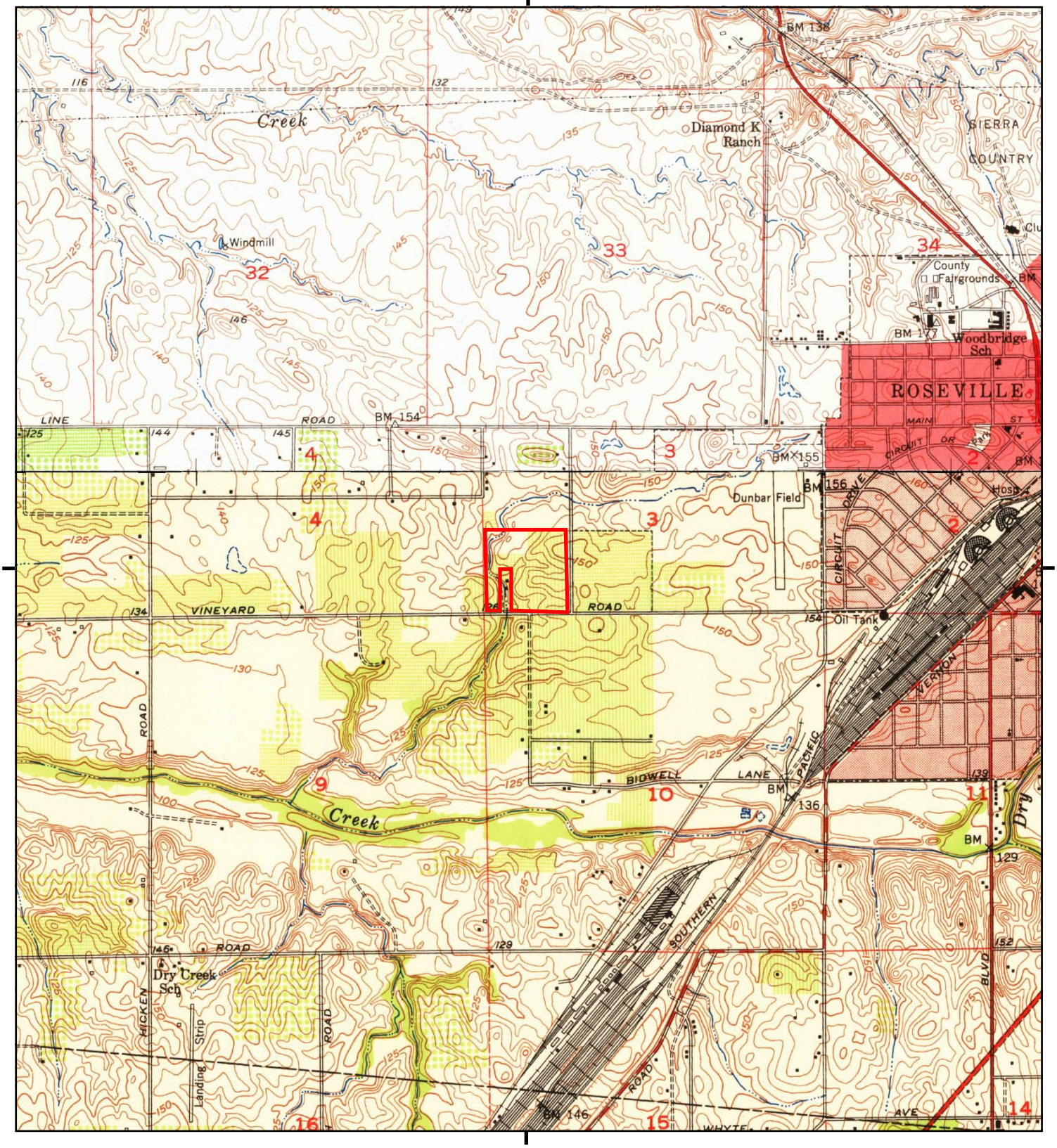
TP, Fair Oaks, 1954, 15-minute
N, Lincoln, 1953, 15-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1951, 1953



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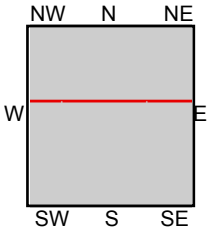
0 Miles 0.25 0.5 1 1.5



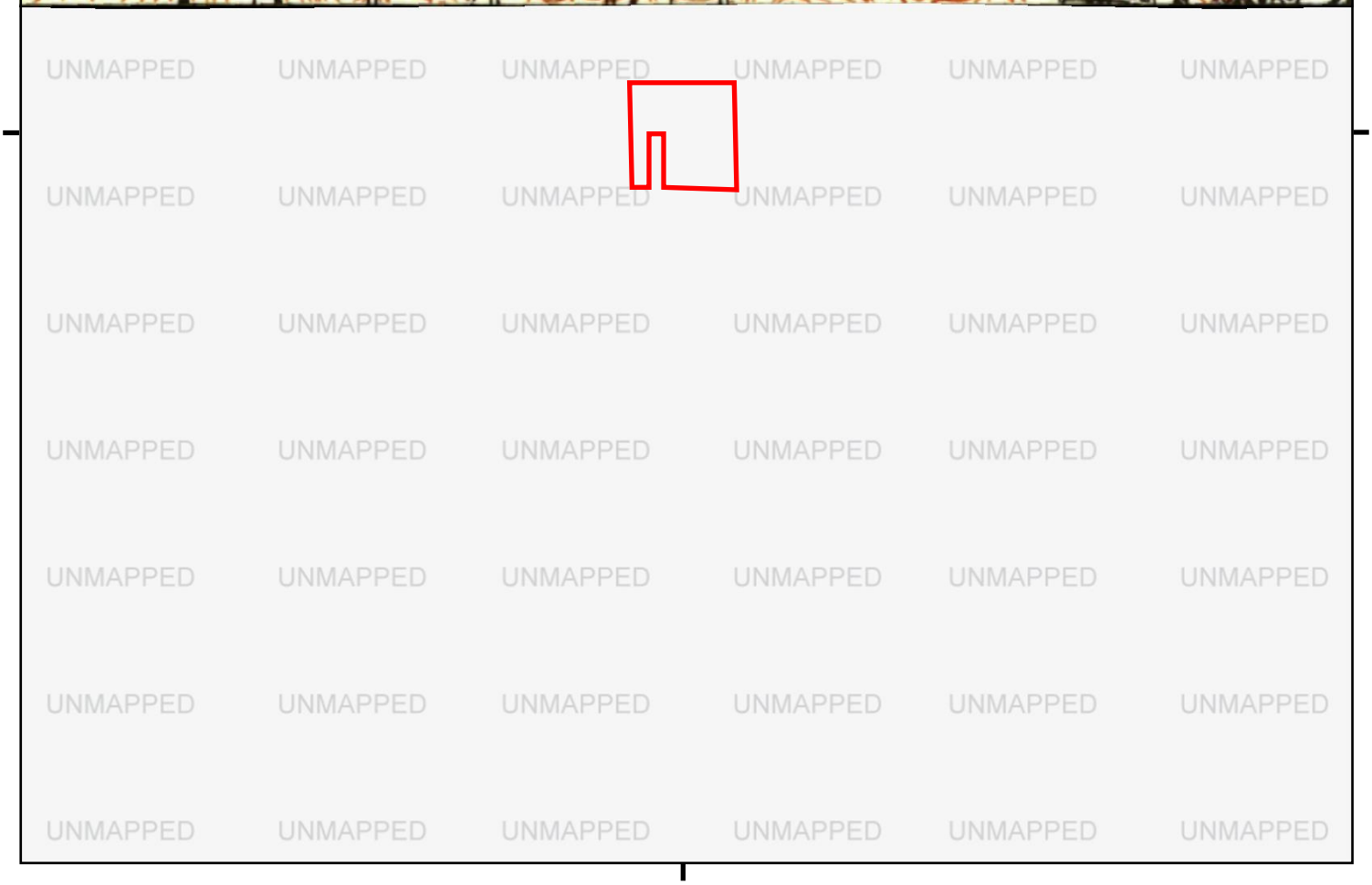
TP, Citrus Heights, 1951, 7.5-minute
N, Roseville, 1953, 7.5-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1942



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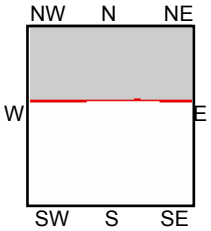
0 Miles 0.25 0.5 1 1.5



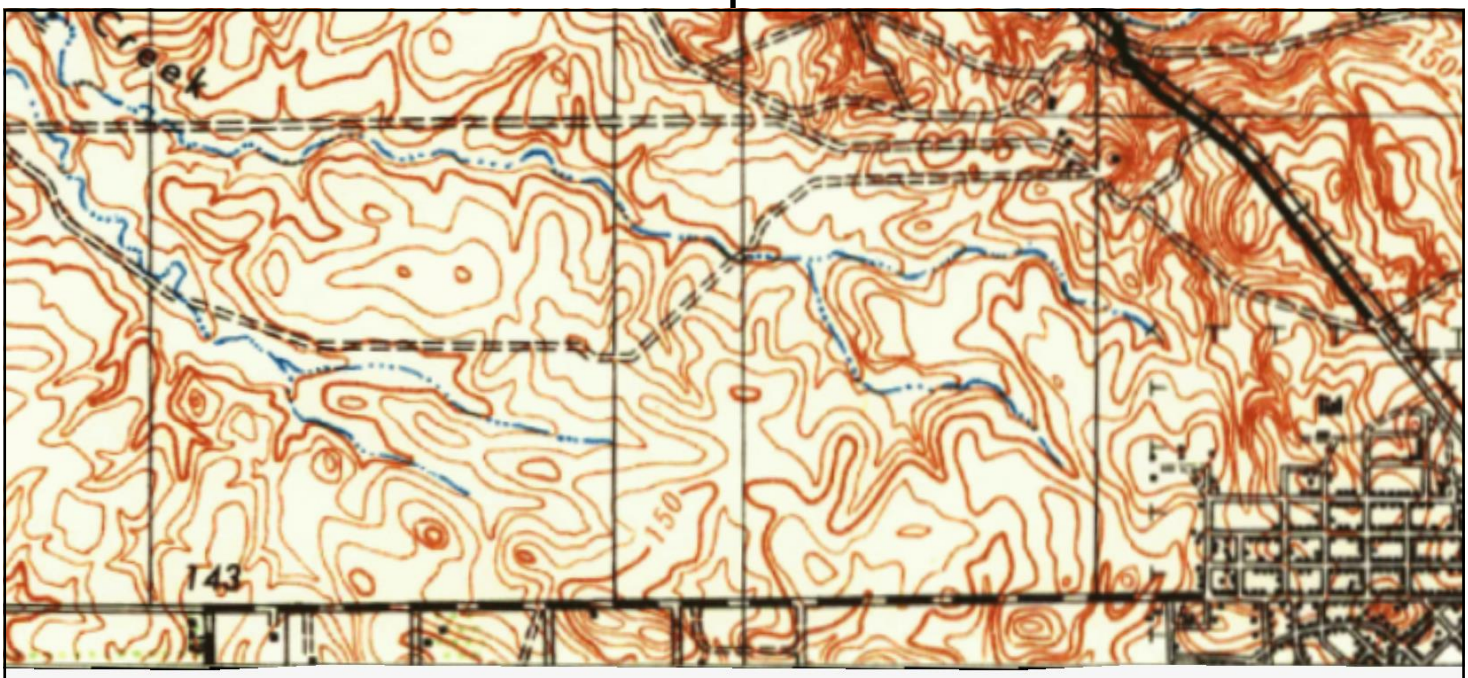
N, Markham Ravine, 1942, 15-minute

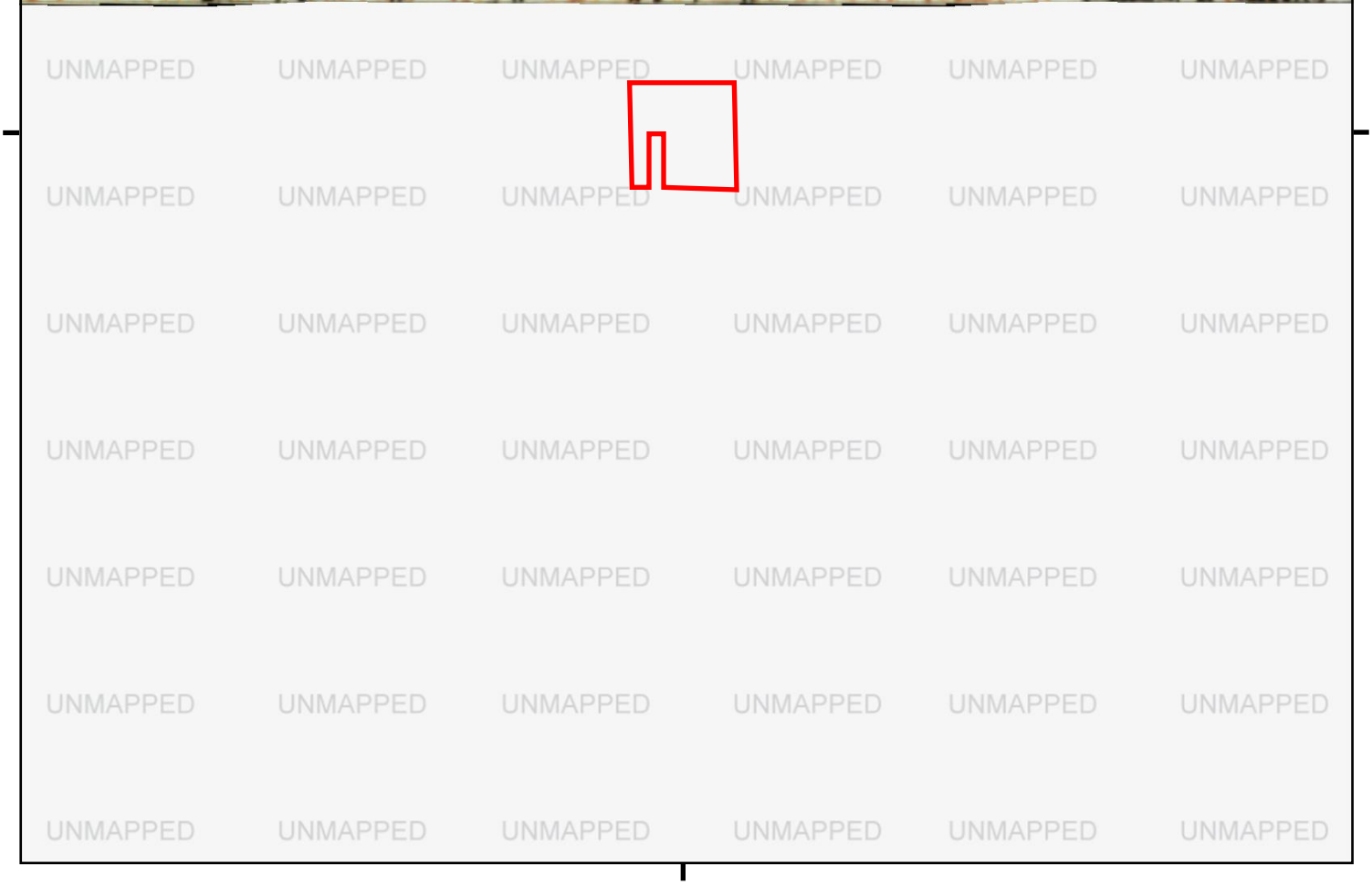
SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1941





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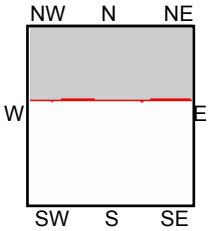
0 Miles 0.25 0.5 1 1.5



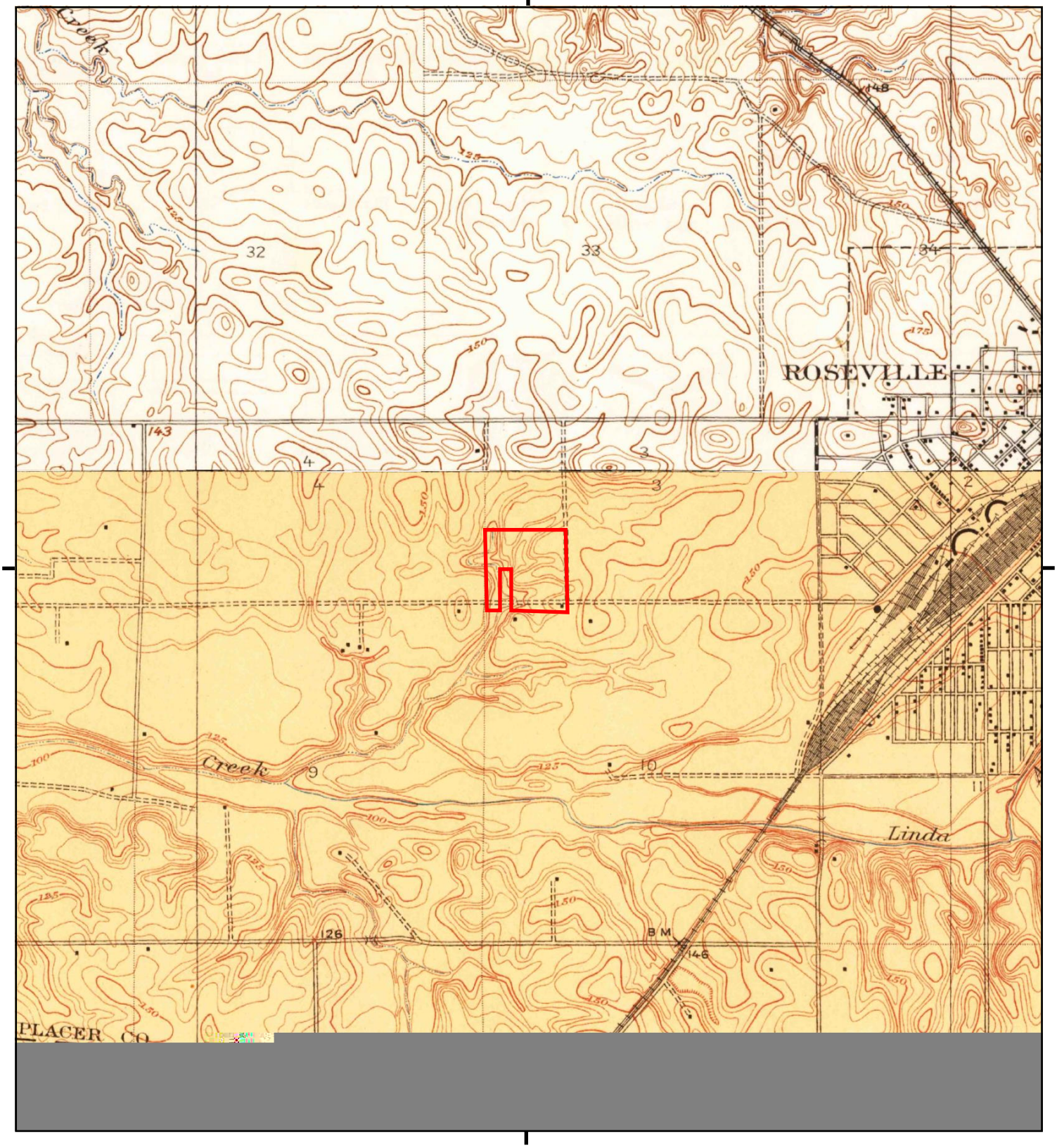
N, MARKHAM RAVINE, 1941, 15-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1910, 1911



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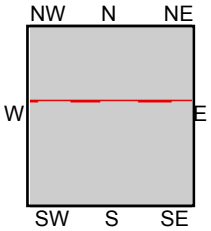


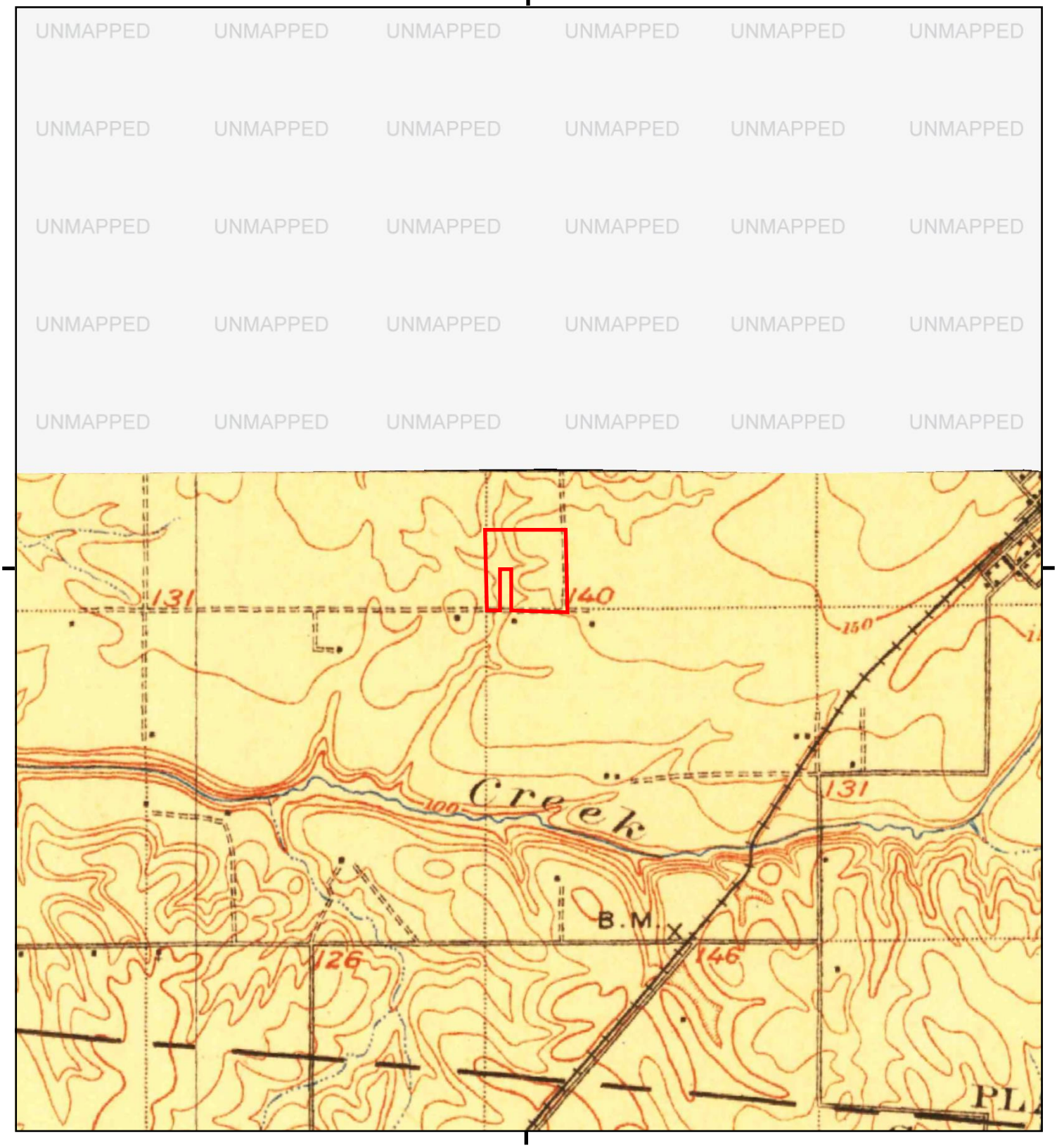
TP, Antelope, 1911, 7.5-minute
N, Roseville, 1910, 7.5-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1902



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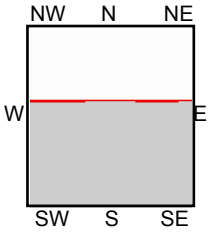


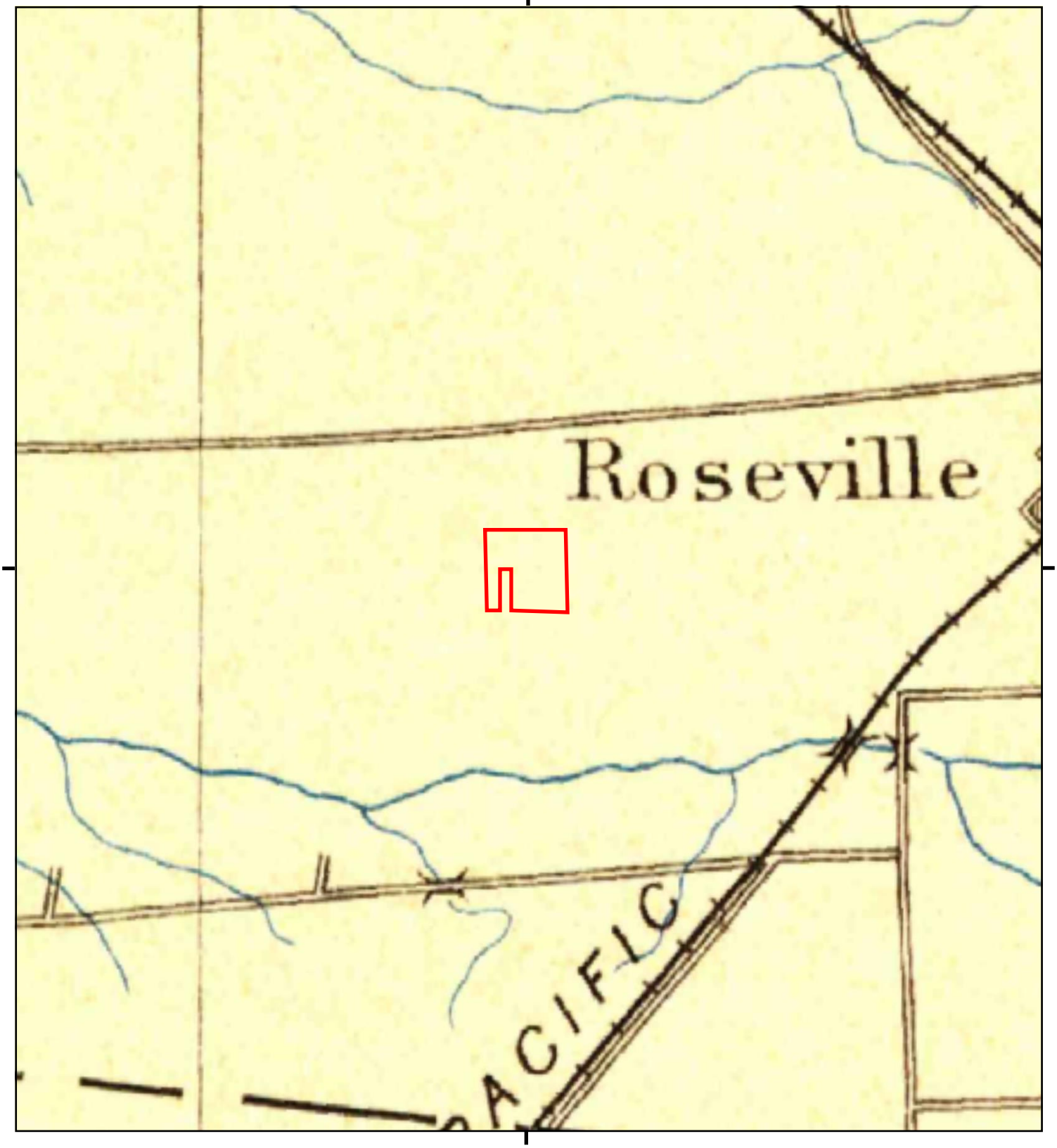
TP, Fairoaks, 1902, 15-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1893



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

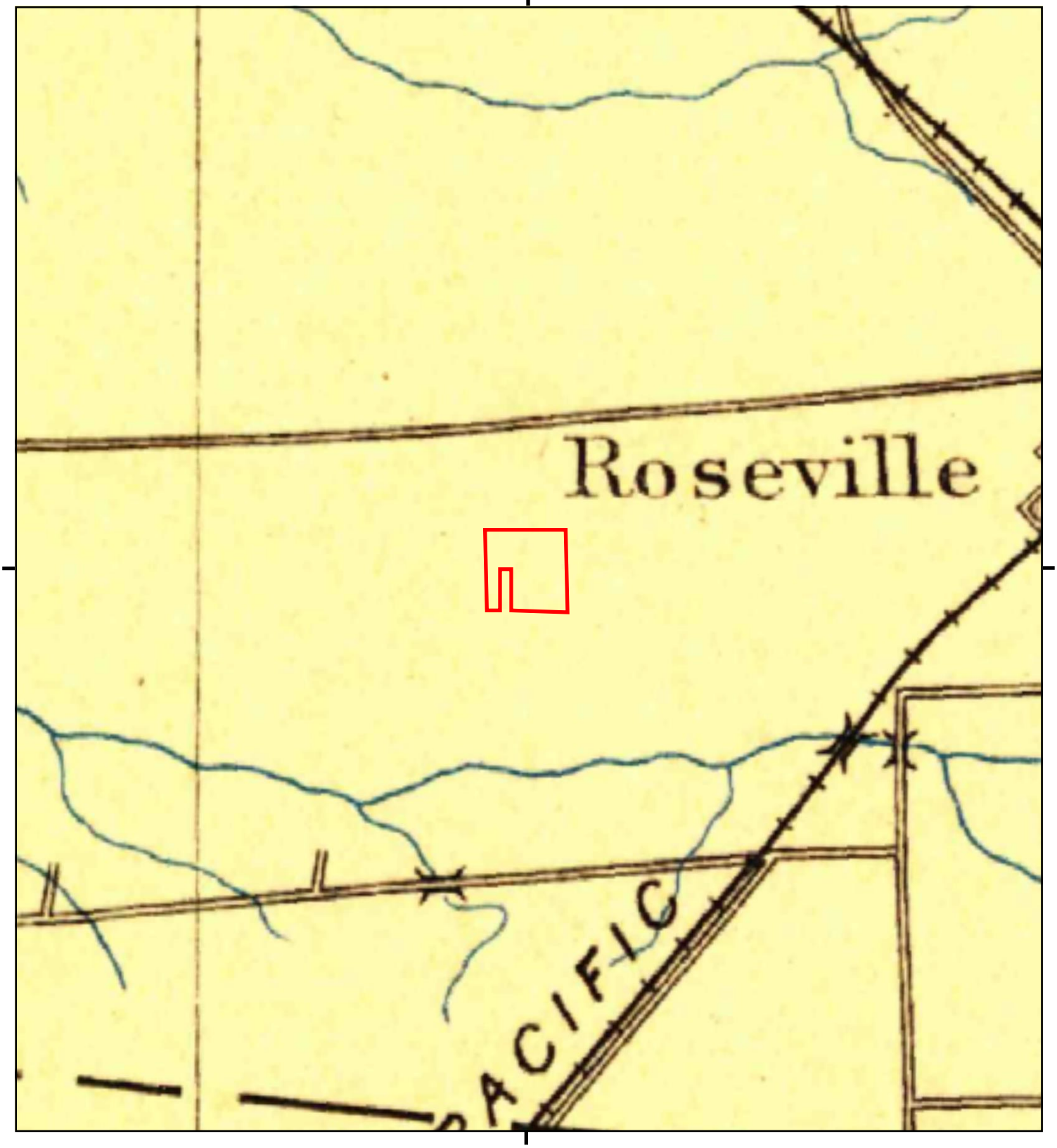
TP, Sacramento, 1893, 30-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1892



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

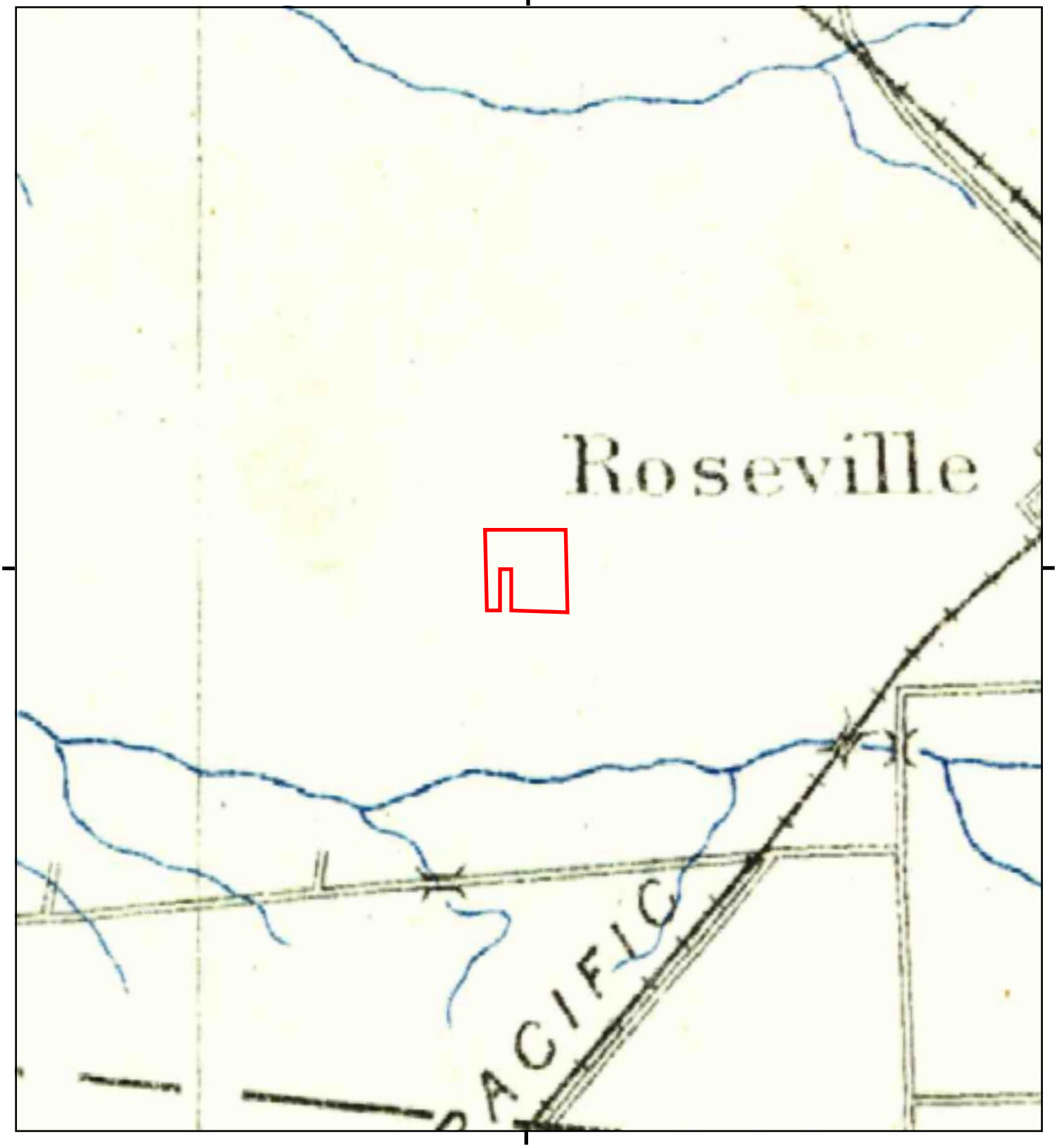
TP, Sacramento, 1892, 30-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Historical Topo Map

1891



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Sacramento, 1891, 30-minute

SITE NAME: Brady-Vineyard 36 Acre Subdivision
ADDRESS: 1940 Vineyard Road
ROSEVILLE, CA 95747
CLIENT: Ace Quality Control

N

Brady-Vineyard 36 Acre Subdivision

1940 Vineyard Road

ROSEVILLE, CA 95747

Inquiry Number: 4944548.3

May 23, 2017

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

05/23/17

Site Name:	Client Name:
Brady-Vineyard 36 Acre Subdiv	Ace Quality Control
1940 Vineyard Road	1830 Vernon Street Suite #7
ROSEVILLE, CA 95747	Roseville, CA 95678
EDR Inquiry # 4944548.3	Contact: Dana Smal

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Ace Quality Control were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 3194-4099-A772

PO # NA

Project Brady-Vineyard Development

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 3194-4099-A772

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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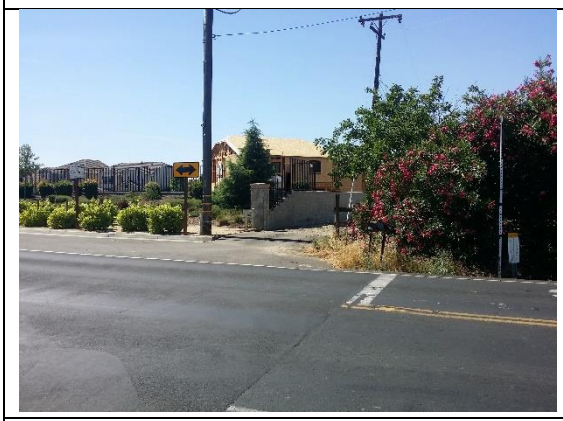
No.1: Photograph from Impact Church lot facing south east towards subject site	**No.2:** Photograph on the northern part of the subject site facing west towards Impact Church.
No.3: Photograph from center of subject site facing south showing 1940 Vineyard Rd.	**No.4:** Photograph was taken on the western side of the subject site facing east showing seasonal swale.
	
No.5: Photograph on the southern part of the subject site facing south showing Vineyard Road and development taking place.	**No.6:** Photograph on the southern part of the subject site facing northerly. Photograph shows representative landscape of subject site.

APPENDIX H

April 2, 2019 Project # 10-17049E

Mr. Sukhbir Brar
C/O Dave Cook
2351 Sunset Boulevard
Rocklin, CA 95746

Sent Via Email: dave@cookdevelopment.us

Subject: **Limited Phase II Environmental Site Assessment**
Proposed 35-acre Dry Creek Community Plan Residential Subdivision
Brady Lane and Vineyard Road
Roseville, California

Dear Mr. Brar,

In accordance with your authorization, ACE Quality Control (ACE) performed limited Phase II Environmental Site Assessment (ESA) services for the 35-acre subject site (APNs 473-020-002, 473-020-007, and portions of 473-020-001 and 473-020-009). Refer to Figure 1, Site Vicinity Map, for the approximate location of the site. Our work scope included review/research of documents, obtained field samples of uppermost soils, had a state approved analytical laboratory perform analytical tests on representative soil samples, and prepared this limited Phase II ESA letter report.

SCOPE

ACE's scope of work for the limited Phase II ESA consisted of:

1. Review of a "Phase 1 Environmental Site Assessment" (June 23, 2017) prepared by ACE Quality Control (ACE job 10-17049E);

2. Prepared a workplan (February 20, 2019) and submitted it to Placer County Environmental Health Department (PCEHD). The workplan was in substantial accordance with the California Department of Toxic Substances Control (DTSC) "Interim Guidance for Sampling Agricultural Properties" (August 7, 2008; third revision), and was accepted by PCEHD on March 5, 2019;

3. Collected representative surficial soil samples from the subject site in substantial accordance with the DTSC "Interim Guidance for Sampling Agricultural Properties" in order to evaluate the presence of DTSC Contaminants of Potential Concern (COPC) identified as metals of concern (arsenic and lead) and organochlorine pesticides (OCPs) for agricultural properties that are above relevant laboratory reporting limits in the on-site soil at selected locations beneath the subject site and also near to the subject site for off-site soil background levels; then,

4. Submitted the samples to a State Certified Analytical Laboratory to perform analytical tests on the representative samples for constituents of potential concern (COPCs); and,

5. Performed limited assessment and prepared this letter report.

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PROJECT BACKGROUND INFORMATION

ACE Quality Control (ACE) prepared a Phase 1 Environmental Site Assessment (PESA) for the subject site (report dated June 23, 2017). ACE indicated the site historical usage was for agricultural purposes. Based on the past use of the target site, "…ACE's opinion that the subject site does not have any readily discernible REC's other than an unknown possibility of pesticide/herbicide contaminates in surficial soil resulting from historical agricultural usage. If historic agricultural activities on the subject site, which might have caused pesticide/herbicide contamination of surficial soils, is a concern to the buyer (considering that the site is planned to be mass graded and covered with structures, pavements and landscaping), then a limited Phase 2 assessment could be conducted of the subject site's surficial soils by collecting shallow soil samples and having them tested for pesticides/herbicides."

PCEHD required an assessment be conducted of the subject site per the DTSC "Interim Guidance for Sampling Agricultural Properties" (August 7, 2008; third revision).

SITE DESCRIPTION

At the times of ACE's field explorations on December 10, 2018 and March 13, 2019 the subject +/-35-acre site was located at the northwestern corner of the intersection between Vineyard Road and Brady Lane in Roseville, California. One single family home occupies a rectangular shaped property at 1940 Vineyard Road in the south – central area of the site. This parcel is not part of the subject site. Adjacent to the northeastern section of the subject site was a parcel occupied by Impact Church. The subject site was relatively open, gently rolling grass land with scattered trees. Two seasonal swales trended southwesterly and westerly to a tree lined, intermittent creek that trended southerly on the western side of the property.

EXPLORATORY SOIL SAMPLING

ACE performed sampling at 36 locations on the estimated undisturbed acreages that had apparently been historically farmed on the site (per aerial images) as well as one background sample. ACE's representative on December 10, 2018, twenty-seven (27) discreet grab soil samples (locations numbered 1 to 27) were obtained from about 0 to ½ feet below the existing ground surface. On March 13, 2019, samples were obtained from eight (8) locations (numbered 28 to 36), one background location (number 37), and re-sampled seven previously sampled locations (13, 16, and 19 to 23). The samples were sandy silt and silty sand soils. Approximate locations of the samples are shown on the attached Sample Location Map, Figure 2. The samples collected were submitted to a state certified analytical laboratory.

ACE obtained the grab samples from on-site surficial soils and one background sample from an area outside the limits of the historical agricultural usage area. The soil samples collected on December 10th were with an AMS split spoon tube sampler fitted with stainless steel sample tubes. The sampler was driven into the soil with a 10-pound hand actuated slide hammer. The stainless-steel tube containing the soil sample was capped with plastic end caps, labelled, placed in a plastic bag and immediately placed on ice in an insulated ice chest. Soil samples obtained on March 13th were obtained with a shovel. The soils collected were placed in laboratory provided sampling jars, capped and placed in an ice chest. Standard environmental QA/QC protocol was maintained throughout all the sampling activities. The soils were sampled, logged and classified by a staff geologist/technician. All samples placed in the insulated ice chests were transported under chain-of-custody protocol to a state certified analytical laboratory.

Each soil sample was taken of the earth material following standard environmental sampling protocols. Excavation and sampling equipment were cleaned using Alconox (or equivalent) detergent wash and potable water rinse prior to beginning the sampling. Non-dedicated sampling equipment was cleaned using an Alconox® (or equivalent) detergent wash and potable water rinse prior to subsequent sampling operations.

ANALYTICAL TEST RESULTS

All samples were submitted by ACE to SunStar Laboratories, Inc. of Lake Forest, California, a state-certified analytical laboratory (ELAP Certificate No.: 2250) under chain-of-custody protocol. The samples were analyzed by the analytical laboratory for COCPs by EPA methods 8081A and EPA 8151A (or equivalent) and arsenic and lead by US EPA 6010. The December 10th samples (sample locations numbered 1 to 27) were composited by the laboratory into seven specimens, then analyzed for COPCs and for metals. The eight samples (locations 28 to 36) collected on March 13th were composited into two specimens which were then analyzed for COPCs and all the samples discretely tested for metals. The results of the tests of the composited specimens from the December 10th locations (13, 16, 19 to 23) that had low levels of lead detected were re-sampled on March 13th. The background sample number 37 was only tested for metals by EPA 6010, and only lead was detected at a relatively high level of 60 mg/kg compared to the other sample test results. Sample 37 was obtained from northwestern corner of the site which was occupied by a homeless camp and the lead result is not considered representative of the background lead content.

SunStar Laboratories, Inc.'s test report (attached in Appendix B) indicated that **no pesticide/herbicide analytes were detected** at or above the reporting detection limits per EPA methods 8081A and 8151A, **no arsenic was detected**, and **lead** was only detected in about one-quarter of the samples obtained from the southern portion of the site. The following table summarizes the results of the laboratory tests for lead.

Sample Numbers (composite number) 12-10-18	1, 25, 26, 27 (No. 1)	2, 3, 4, 10 (No. 2)	5, 6, 11, 24 (No. 3)	7, 8, 9, 12 (No. 4)	20, 21, 22, 23 (No. 5)	13, 16, 19 (No. 6)	14, 15, 17, 18 (No. 7)
Lead mg/kg	ND	ND	ND	ND	**8.3**	**7.9**	ND

Sample Numbers 3-13-19	13	16	19	20	21	22	23	28	29	30	31	32	33	34	35	36	37
Lead mg/kg	ND	**7.3**	**8.7**	ND	ND	ND	**7.3**	**7.6**	ND	**9.4**	**7.7**	ND	**6.0**	ND	**6.8**	ND	**60***

* Sample 37 lead result is not considered representative of the background lead content.

OPINION

Based on the attached analytical test results, and the California Human Health Screening Levels (CHHSLs) for residential land with threshold lead content limit of 80 mg/kg (OEHHA, 2009, Table 3), further assessment and/or mitigation of the subject site for potential contaminants that might have occurred in the on-site soils due to the former agricultural usage is not considered necessary.

Additional Services

If additional investigation and/or remediation should be deemed necessary, or if the site is intended for future development, then ACE can provide services for additional environmental studies/consultations, geotechnical investigations, geologic hazards, construction materials testing, construction plan reviews and scope and budget review services.

LIMITATIONS

ACE's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographic area during the same period. ACE makes no warranties, expressed or implied, regarding its services, findings, conclusions or recommendations. Please note that ACE does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These LSI services will be performed in accordance with the scope of work agreed with you, our client, as set forth in this proposal and are not intended to be in strict conformance with ASTM E1903-11.

Findings and conclusions/opinions resulting from our services are based upon information derived from on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic substances, petroleum products, or other latent conditions beyond those identified for this work scope. Subsurface conditions may vary from those encountered at specific locations or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings and our opinions/conclusions are based solely upon data obtained at the time and within the scope of these services.

This letter report was prepared in accordance with the accepted geo-environmental assessment standards of practice that existed in Northern California at the time this letter was written. It should be recognized that definition and evaluation of geologic and groundwater conditions is a difficult and inexact art. Judgments leading to conclusions and opinions are generally made with incomplete knowledge of subsurface conditions present. More extensive studies, including additional subsurface investigation, can tend to reduce the level of uncertainty associated with subsurface geology and contamination conditions, but that uncertainty can never be totally eliminated. Unexpected conditions might be encountered during construction. Therefore, we suggest a contingency fund for additional expenditures that might have to be made if contamination is discovered in order to remediate that contamination.

If you should have any questions or comments regarding this letter report, then please contact us.

Respectfully Submitted,
ACE Quality Control

Ed Hendrick

Ed Hendrick, PE, GE, RG, CEG
Principal Geotechnical Engineer/Engineering Geologist
GE #002021 / CEG #1052

REGISTERED PROFESSIONAL ENGINEER
CURTIS EDWARD HENDRICK
No. GE 002021
GEOTECHNICAL
STATE OF CALIFORNIA

APPENDIX A

GRAPHIC PRESENTATIONS

FIGURE 1 VICINITY MAP

FIGURE 2 EXPLORATIONS MAP

NOTES:

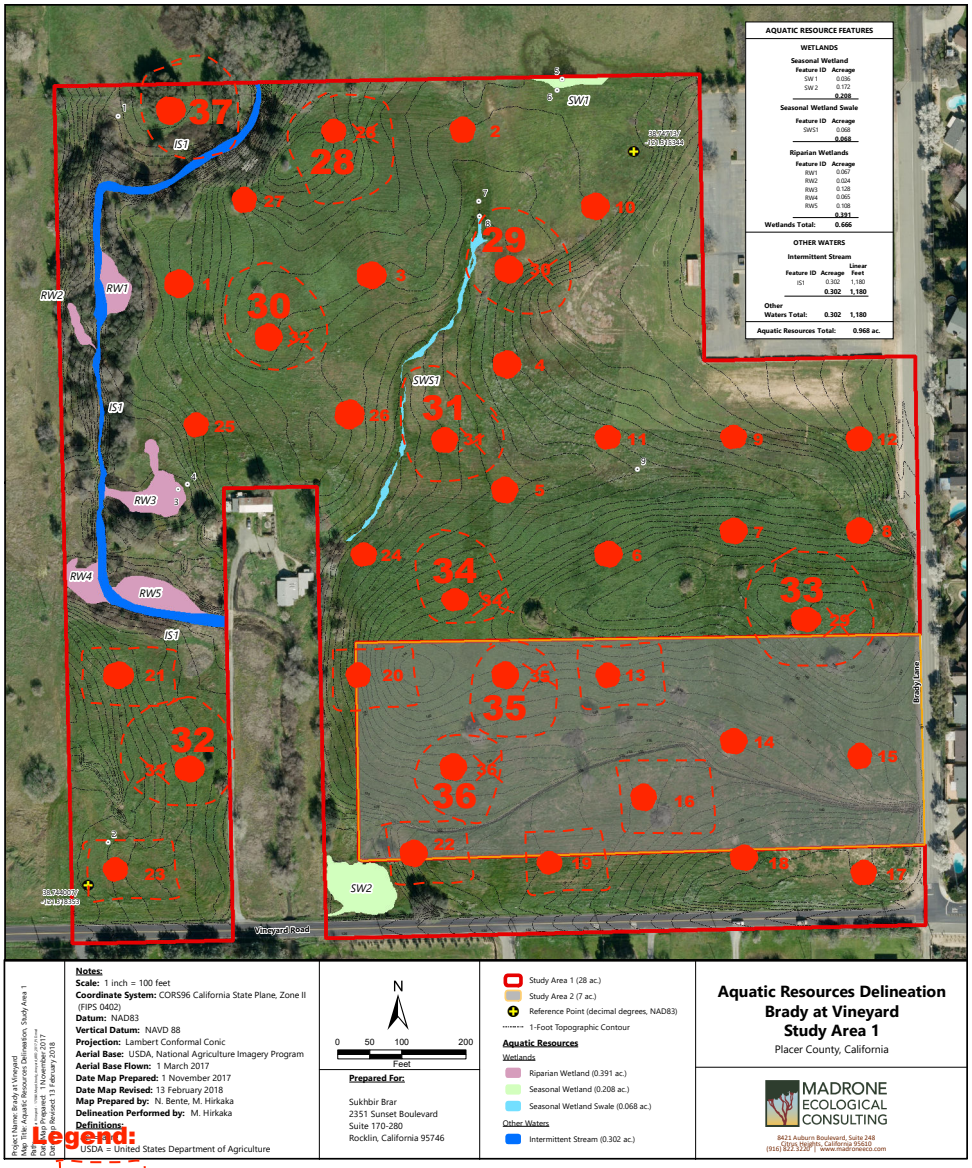
Location of site is approximate. Source for base map: Imagery (7/14/2017) from Google Earth 2016©.

ACE Quality Control
1830 Vernon Street, Suite 7
Roseville, CA 95678
Phone: 916-778-0950

VICINITY MAP

Limited Phase II Environmental Site Assessment
Brady Lane and Vineyard Road
Roseville, California

ACE JOB NO.
10-18040E
DATE
03/29/19
FIGURE
1



Legend:

21 **Resample for discrete Pb & As**

37 **Background Pb & As**

32 **New composite Samples for all COCs and discrete Pb & As**

NOTE:

Locations of soil samples (shown as ●) are approximate. Source for base map noted above. Samples numbered 1 to 27 obtained 12-10-2018 and 28 to 37 on 3-13-2019, as well as resampled locations 13, 16, and 19 to 23.

ACE Quality Control 1830 Vernon Street, Suite 7 Roseville, CA 95678 Phone: 916-778-0950	**EXPLORATIONS MAP** **Limited Phase II Environmental Site Assessment** **Brady Lane and Vineyard Road** **Roseville, California**	**ACE JOB NO.** 10-18040E **DATE** 3/29/2019 **FIGURE** 2

APPENDIX B

ANALYTICAL LABORATORY TEST RESULTS

SunStar Laboratories, Inc.

PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

28 December 2018

Ed Hendrick
ACE Quality Control
1830 Vernon Street, Suite 7
Roseville, CA 95678

RE: Brady & Vineyard Ln.

Enclosed are the results of analyses for samples received by the laboratory on 12/19/18 10:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joann Marroquin

Joann Marroquin
Client Services Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
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949.297.5027 Fax

ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
COMPOSITE 1	T183764-28	Soil	12/18/18 00:00	12/19/18 10:00
COMPOSITE 2	T183764-29	Soil	12/18/18 00:00	12/19/18 10:00
COMPOSITE 3	T183764-30	Soil	12/18/18 00:00	12/19/18 10:00
COMPOSITE 4	T183764-31	Soil	12/18/18 00:00	12/19/18 10:00
COMPOSITE 5	T183764-32	Soil	12/18/18 00:00	12/19/18 10:00
COMPOSITE 6	T183764-33	Soil	12/18/18 00:00	12/19/18 10:00
COMPOSITE 7	T183764-34	Soil	12/18/18 00:00	12/19/18 10:00

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

DETECTIONS SUMMARY

Sample ID: COMPOSITE 1 **Laboratory ID:** T183764-28

No Results Detected

Sample ID: COMPOSITE 2 **Laboratory ID:** T183764-29

No Results Detected

Sample ID: COMPOSITE 3 **Laboratory ID:** T183764-30

No Results Detected

Sample ID: COMPOSITE 4 **Laboratory ID:** T183764-31

No Results Detected

Sample ID: COMPOSITE 5 **Laboratory ID:** T183764-32

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**8.3**	3.0	mg/kg	EPA 6010b	

Sample ID: COMPOSITE 6 **Laboratory ID:** T183764-33

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**7.9**	3.0	mg/kg	EPA 6010b	

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

Sample ID: COMPOSITE 7 **Laboratory ID:** T183764-34

No Results Detected

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 1

T183764-28 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8122036	12/20/18	12/27/18	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	5.0	ug/kg	1	8122034	12/20/18	12/26/18	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4′-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endrin	ND	5.0	"	"	"	"	"	"	
4,4′-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4′-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	5.0	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*85.0 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*93.7 %*	*35-140*		"	"	"	"	

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 1

T183764-28 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	5.00	ug/kg	1	8121945	12/19/18	12/22/18	8151	
2,4,5-TP (Silvex)	ND	5.00	"	"	"	"	"	"	
2,4-D	ND	5.00	"	"	"	"	"	"	
2,4-DB	ND	5.00	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	5.00	"	"	"	"	"	"	
Acifluorfen	ND	5.00	"	"	"	"	"	"	
Bentazon	ND	5.00	"	"	"	"	"	"	
Chloramben	ND	5.00	"	"	"	"	"	"	
Dalapon	ND	30.0	"	"	"	"	"	"	
DCPA diacid	ND	5.00	"	"	"	"	"	"	
Dicamba	ND	5.00	"	"	"	"	"	"	
Dichloroprop	ND	5.00	"	"	"	"	"	"	
Dinoseb	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	5.00	"	"	"	"	"	"	
Picloram	ND	5.00	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*7.36 %*	*35-150*		*"*	*"*	*"*	*"*	*S-03*

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 2

T183764-29 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8122036	12/20/18	12/27/18	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	5.0	ug/kg	1	8122034	12/20/18	12/26/18	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4´-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endrin	ND	5.0	"	"	"	"	"	"	
4,4´-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4´-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	5.0	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*83.6 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*94.2 %*	*35-140*		"	"	"	"	

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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ACE Quality Control	Project: Brady & Vineyard Ln.	
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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 2

T183764-29 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	5.00	ug/kg	1	8121945	12/19/18	12/22/18	8151	
2,4,5-TP (Silvex)	ND	5.00	"	"	"	"	"	"	
2,4-D	ND	5.00	"	"	"	"	"	"	
2,4-DB	ND	5.00	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	5.00	"	"	"	"	"	"	
Acifluorfen	ND	5.00	"	"	"	"	"	"	
Bentazon	ND	5.00	"	"	"	"	"	"	
Chloramben	ND	5.00	"	"	"	"	"	"	
Dalapon	ND	30.0	"	"	"	"	"	"	
DCPA diacid	ND	5.00	"	"	"	"	"	"	
Dicamba	ND	5.00	"	"	"	"	"	"	
Dichloroprop	ND	5.00	"	"	"	"	"	"	
Dinoseb	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	5.00	"	"	"	"	"	"	
Picloram	ND	5.00	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*10.4 %*	*35-150*		*"*	*"*	*"*	*"*	*S-03*

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 3

T183764-30 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8122036	12/20/18	12/27/18	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	5.0	ug/kg	1	8122034	12/20/18	12/26/18	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4´-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endrin	ND	5.0	"	"	"	"	"	"	
4,4´-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4´-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	5.0	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*89.4 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*98.3 %*	*35-140*		"	"	"	"	

SunStar Laboratories, Inc.

Joann Marroquin

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ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 3

T183764-30 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	5.00	ug/kg	1	8121945	12/19/18	12/22/18	8151	
2,4,5-TP (Silvex)	ND	5.00	"	"	"	"	"	"	
2,4-D	ND	5.00	"	"	"	"	"	"	
2,4-DB	ND	5.00	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	5.00	"	"	"	"	"	"	
Acifluorfen	ND	5.00	"	"	"	"	"	"	
Bentazon	ND	5.00	"	"	"	"	"	"	
Chloramben	ND	5.00	"	"	"	"	"	"	
Dalapon	ND	30.0	"	"	"	"	"	"	
DCPA diacid	ND	5.00	"	"	"	"	"	"	
Dicamba	ND	5.00	"	"	"	"	"	"	
Dichloroprop	ND	5.00	"	"	"	"	"	"	
Dinoseb	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	5.00	"	"	"	"	"	"	
Picloram	ND	5.00	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*21.7 %*	*35-150*		*"*	*"*	*"*	*"*	*S-03*

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 4

T183764-31 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8122036	12/20/18	12/27/18	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	5.0	ug/kg	1	8122034	12/20/18	12/26/18	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4´-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endrin	ND	5.0	"	"	"	"	"	"	
4,4´-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4´-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	5.0	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*94.8 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*105 %*	*35-140*		"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 4

T183764-31 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	5.00	ug/kg	1	8121945	12/19/18	12/22/18	8151	
2,4,5-TP (Silvex)	ND	5.00	"	"	"	"	"	"	
2,4-D	ND	5.00	"	"	"	"	"	"	
2,4-DB	ND	5.00	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	5.00	"	"	"	"	"	"	
Acifluorfen	ND	5.00	"	"	"	"	"	"	
Bentazon	ND	5.00	"	"	"	"	"	"	
Chloramben	ND	5.00	"	"	"	"	"	"	
Dalapon	ND	30.0	"	"	"	"	"	"	
DCPA diacid	ND	5.00	"	"	"	"	"	"	
Dicamba	ND	5.00	"	"	"	"	"	"	
Dichloroprop	ND	5.00	"	"	"	"	"	"	
Dinoseb	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	5.00	"	"	"	"	"	"	
Picloram	ND	5.00	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*73.7 %*	*35-150*		"	"	"	"	

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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 5

T183764-32 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8122036	12/20/18	12/27/18	EPA 6010b	
Lead	**8.3**	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	5.0	ug/kg	1	8122034	12/20/18	12/26/18	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4´-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endrin	ND	5.0	"	"	"	"	"	"	
4,4´-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4´-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	5.0	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*94.1 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*103 %*	*35-140*		"	"	"	"	

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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 5

T183764-32 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	5.00	ug/kg	1	8121945	12/19/18	12/22/18	8151	
2,4,5-TP (Silvex)	ND	5.00	"	"	"	"	"	"	
2,4-D	ND	5.00	"	"	"	"	"	"	
2,4-DB	ND	5.00	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	5.00	"	"	"	"	"	"	
Acifluorfen	ND	5.00	"	"	"	"	"	"	
Bentazon	ND	5.00	"	"	"	"	"	"	
Chloramben	ND	5.00	"	"	"	"	"	"	
Dalapon	ND	30.0	"	"	"	"	"	"	
DCPA diacid	ND	5.00	"	"	"	"	"	"	
Dicamba	ND	5.00	"	"	"	"	"	"	
Dichloroprop	ND	5.00	"	"	"	"	"	"	
Dinoseb	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	5.00	"	"	"	"	"	"	
Picloram	ND	5.00	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*84.0 %*	*35-150*		"	"	"	"	

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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 6

T183764-33 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8122036	12/20/18	12/27/18	EPA 6010b	
Lead	**7.9**	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	5.0	ug/kg	1	8122034	12/20/18	12/26/18	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4´-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endrin	ND	5.0	"	"	"	"	"	"	
4,4´-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4´-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	5.0	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*93.2 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*103 %*	*35-140*		"	"	"	"	

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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 6

T183764-33 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	5.00	ug/kg	1	8121945	12/19/18	12/22/18	8151	
2,4,5-TP (Silvex)	ND	5.00	"	"	"	"	"	"	
2,4-D	ND	5.00	"	"	"	"	"	"	
2,4-DB	ND	5.00	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	5.00	"	"	"	"	"	"	
Acifluorfen	ND	5.00	"	"	"	"	"	"	
Bentazon	ND	5.00	"	"	"	"	"	"	
Chloramben	ND	5.00	"	"	"	"	"	"	
Dalapon	ND	30.0	"	"	"	"	"	"	
DCPA diacid	ND	5.00	"	"	"	"	"	"	
Dicamba	ND	5.00	"	"	"	"	"	"	
Dichloroprop	ND	5.00	"	"	"	"	"	"	
Dinoseb	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	5.00	"	"	"	"	"	"	
Picloram	ND	5.00	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*98.4 %*	*35-150*		"	"	"	"	

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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 7

T183764-34 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8122036	12/20/18	12/27/18	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	5.0	ug/kg	1	8122034	12/20/18	12/26/18	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4´-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	
Endrin	ND	5.0	"	"	"	"	"	"	
4,4´-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4´-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	5.0	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	20	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*88.3 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*100 %*	*35-140*		"	"	"	"	

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Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

COMPOSITE 7

T183764-34 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	5.00	ug/kg	1	8121945	12/19/18	12/22/18	8151	
2,4,5-TP (Silvex)	ND	5.00	"	"	"	"	"	"	
2,4-D	ND	5.00	"	"	"	"	"	"	
2,4-DB	ND	5.00	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	5.00	"	"	"	"	"	"	
Acifluorfen	ND	5.00	"	"	"	"	"	"	
Bentazon	ND	5.00	"	"	"	"	"	"	
Chloramben	ND	5.00	"	"	"	"	"	"	
Dalapon	ND	30.0	"	"	"	"	"	"	
DCPA diacid	ND	5.00	"	"	"	"	"	"	
Dicamba	ND	5.00	"	"	"	"	"	"	
Dichloroprop	ND	5.00	"	"	"	"	"	"	
Dinoseb	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	5.00	"	"	"	"	"	"	
Picloram	ND	5.00	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*89.4 %*	*35-150*		"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8122036 - EPA 3050B										
Blank (8122036-BLK1)				Prepared: 12/20/18 Analyzed: 12/27/18						
Arsenic	ND	5.0	mg/kg							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Lead	ND	3.0	"							
Nickel	ND	2.0	"							
Zinc	ND	1.0	"							
LCS (8122036-BS1)				Prepared: 12/20/18 Analyzed: 12/27/18						
Arsenic	98.9	5.0	mg/kg	100		98.9	75-125			
Cadmium	100	2.0	"	100		100	75-125			
Chromium	102	2.0	"	100		102	75-125			
Lead	98.1	3.0	"	100		98.1	75-125			
Matrix Spike (8122036-MS1)		**Source: T183772-01**		Prepared: 12/20/18 Analyzed: 12/27/18						
Arsenic	100	5.0	mg/kg	99.0	5.47	95.6	75-125			
Cadmium	96.6	2.0	"	99.0	1.58	95.9	75-125			
Chromium	131	2.0	"	99.0	26.9	105	75-125			
Lead	102	3.0	"	99.0	9.22	93.4	75-125			
Matrix Spike Dup (8122036-MSD1)		**Source: T183772-01**		Prepared: 12/20/18 Analyzed: 12/27/18						
Arsenic	97.6	4.5	mg/kg	90.9	5.47	101	75-125	2.52	20	
Cadmium	95.0	1.8	"	90.9	1.58	103	75-125	1.61	20	
Chromium	128	1.8	"	90.9	26.9	111	75-125	2.21	20	
Lead	99.4	2.7	"	90.9	9.22	99.2	75-125	2.33	20	

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

Organochlorine Pesticides by EPA Method 8081A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8122034 - EPA 3550 ECD/GCMS										
Blank (8122034-BLK1)				Prepared: 12/20/18 Analyzed: 12/26/18						
alpha-BHC	ND	5.0	ug/kg							
gamma-BHC (Lindane)	ND	5.0	"							
beta-BHC	ND	5.0	"							
delta-BHC	ND	5.0	"							
Heptachlor	ND	5.0	"							
Aldrin	ND	5.0	"							
Heptachlor epoxide	ND	5.0	"							
gamma-Chlordane	ND	5.0	"							
alpha-Chlordane	ND	5.0	"							
Endosulfan I	ND	5.0	"							
4,4′-DDE	ND	5.0	"							
Dieldrin	ND	5.0	"							
Endrin	ND	5.0	"							
4,4′-DDD	ND	5.0	"							
Endosulfan II	ND	5.0	"							
4,4′-DDT	ND	5.0	"							
Endrin aldehyde	ND	5.0	"							
Endosulfan sulfate	ND	5.0	"							
Methoxychlor	ND	5.0	"							
Endrin ketone	ND	5.0	"							
Toxaphene	ND	20	"							
Surrogate: Tetrachloro-meta-xylene	*8.62*		*"*	*9.90*		*87.1*	*35-140*			
Surrogate: Decachlorobiphenyl	*9.62*		*"*	*9.90*		*97.2*	*35-140*			
LCS (8122034-BS1)				Prepared: 12/20/18 Analyzed: 12/26/18						
gamma-BHC (Lindane)	28.0	5.0	ug/kg	39.6		70.7	40-120			
Heptachlor	28.2	5.0	"	39.6		71.2	40-120			
Aldrin	27.4	5.0	"	39.6		69.3	40-120			
Dieldrin	28.6	5.0	"	39.6		72.1	40-120			
Endrin	30.2	5.0	"	39.6		76.3	40-120			
4,4′-DDT	28.9	5.0	"	39.6		73.1	33-147			
Surrogate: Tetrachloro-meta-xylene	*7.60*		*"*	*9.90*		*76.8*	*35-140*			
Surrogate: Decachlorobiphenyl	*8.66*		*"*	*9.90*		*87.5*	*35-140*			

SunStar Laboratories, Inc.

Joann Marroquin

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Joann Marroquin, Client Services Manager

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Providing Quality Analytical Services Nationwide

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Lake Forest, California 92630
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949.297.5027 Fax

ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

Organochlorine Pesticides by EPA Method 8081A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8122034 - EPA 3550 ECD/GCMS										
LCS Dup (8122034-BSD1)				Prepared: 12/20/18 Analyzed: 12/26/18						
gamma-BHC (Lindane)	32.7	5.0	ug/kg	39.6		82.5	40-120	15.4	30	
Heptachlor	33.0	5.0	"	39.6		83.4	40-120	15.8	30	
Aldrin	31.7	5.0	"	39.6		80.0	40-120	14.4	30	
Dieldrin	33.3	5.0	"	39.6		84.0	40-120	15.2	30	
Endrin	35.8	5.0	"	39.6		90.5	40-120	17.0	30	
4,4′-DDT	34.2	5.0	"	39.6		86.4	33-147	16.7	30	
Surrogate: Tetrachloro-meta-xylene	*8.48*		*"*	*9.90*		*85.7*	*35-140*			
Surrogate: Decachlorobiphenyl	*9.80*		*"*	*9.90*		*99.0*	*35-140*			

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ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

Chlorinated Herbicides by EPA Method 8151A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8121945 - 8151 Prep										
Blank (8121945-BLK1)				Prepared: 12/19/18 Analyzed: 12/22/18						
2,4,5-T	ND	5.00	ug/kg							
2,4,5-TP (Silvex)	ND	5.00	"							
2,4-D	ND	5.00	"							
2,4-DB	ND	5.00	"							
3,5-Dichlorobenzoic acid	ND	5.00	"							
4-Nitrophenol	ND	5.00	"							
Acifluorfen	ND	5.00	"							
Bentazon	ND	5.00	"							
Chloramben	ND	5.00	"							
Dalapon	ND	30.0	"							
DCPA diacid	ND	5.00	"							
Dicamba	ND	5.00	"							
Dichloroprop	ND	5.00	"							
Dinoseb	ND	5.00	"							
Pentachlorophenol	ND	5.00	"							
Picloram	ND	5.00	"							
Surrogate: 2,4-DCAA	*360*		*"*	*394*		*91.4*	*35-150*			
LCS (8121945-BS1)				Prepared: 12/19/18 Analyzed: 12/22/18						
2,4,5-T	88.9	5.00	ug/kg	98.6		90.1	20-150			
2,4,5-TP (Silvex)	91.5	5.00	"	98.8		92.6	20-150			
2,4-D	85.4	5.00	"	98.8		86.4	20-150			
Surrogate: 2,4-DCAA	*335*		*"*	*395*		*84.8*	*35-150*			
LCS Dup (8121945-BSD1)				Prepared: 12/19/18 Analyzed: 12/21/18						
2,4,5-T	86.6	5.00	ug/kg	99.8		86.7	20-150	2.68	30	
2,4,5-TP (Silvex)	99.8	5.00	"	100		99.8	20-150	8.74	30	
2,4-D	87.6	5.00	"	100		87.6	20-150	2.63	30	
Surrogate: 2,4-DCAA	*337*		*"*	*400*		*84.2*	*35-150*			

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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Providing Quality Analytical Services Nationwide

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ACE Quality Control	Project: Brady & Vineyard Ln.	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Ed Hendrick	12/28/18 12:53

Notes and Definitions

S-03	The surrogate recovery was below acceptance criteria in the sample because of a possible matrix effect. The surrogate recovery was within acceptance criteria in the method blank and LCS.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.

Joann Marroquin

Joann Marroquin, Client Services Manager

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SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: ACE Quality Control
Address: 1830 Vernon St. Suit 7 Roseville CA
Phone: 916-742-5096 office ~~Fax~~ Cell 916-300-6754
Project Manager: Ed Hendrick

Date: 12-10-18 Page: 1 Of 2
Project Name: Brady & Vineyard Ln.
Collector: Justin F Client Project #: 10-17049E
Batch #: T183764 EDF #:

composite group #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals (lead & arsenic)	8081A	8151A			Laboratory ID #	Comments/Preservative	Total # of containers
	23 -	12-10-18	11:15	Soil	Tube														01		
5	21 -		11:20											X	X	X			02		
	22 -		11:30																03		
	20 -		11:35																04		
6	16		11:40											X	X	X			05		
	13 -		11:45																06	+ #19 from pg. 2	
7	14 -		11:50											X	X	X			07		
	15 -		11:55																08	+ 17 & 18 next pg	
4	8 -		12:00											X	X	X			09		
	7 -		12:05																10	+ 9 & 12 next pg.	
3	6 -		12:10																11		
	5 -		12:20											X	X	X			12		
	24 -		12:25																13	+ 11 next pg.	
1	26 -		12:30																14		
	25 -		1:00											X	X	X			15	+ 1 & 27 next pg.	

See next pg.
next page
next page
next pg.
See next pg.

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
[signature]	12-11-18	Ed Hendrick	12-11-18
Ed Hendrick	12-18-2018	[signature]	12/18/18 16:32
GSO	12-19-18 1000	[signature]	12-19-18 1000

Total # of containers
Chain of Custody seals? Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold 4.3°
Turn around time: std.

Notes
Composite specimens into groups noted (e.g., group 1 is 1, 25 26, & 27) (group 2 is 2, 3, 4 & 10); seven (7) composite samples to be tested

Sample disposal Instructions: Disposal @ $2.00 each ✓ Return to client ___ Pickup ___

10-17049E

SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: ACE Quality Control
Address: 1830 Vernon st. Suit 7 Roseville CA.
Phone: Fax:
Project Manager: Ed Hendrick

Date: 12-10-18 Page: 2 Of 2
Project Name: Brady 3 Vinyard Ln.
Collector: Justin F. Client Project #: 10-17049E
Batch #: T183764 EDF #:

composite group number from pg. 1	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals (lead & arsenic)	8081A	8151A			Laboratory ID #	Comments/Preservative	Total # of containers
1	1 -	12-10-18	1:10	Soil	Tube														16		
	27 -		1:20											—	—				17		
	3 -		1:30																18		
2	2 -		1:40											X	X	X			19		
	10 -		1:50																20		
	4 -		2:00											—	—				21		
3	11 -		2:10																22		
	9 -		2:20											—	—				23		
4	12 -		2:30																24		
	17 -		2:40											—	—				25		
7	18 -		2:50																26		
6	19 -	12-11-18	2:00											—	—				27		

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
[signature]	12-11-18	[signature]	12/11/18
—	—	Ed Hendrick	12-18-18
Ed Hendrick	12-18-18	[signature]	12/18/18 16:32

Total # of containers
Chain of Custody seals? Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold 4.3°

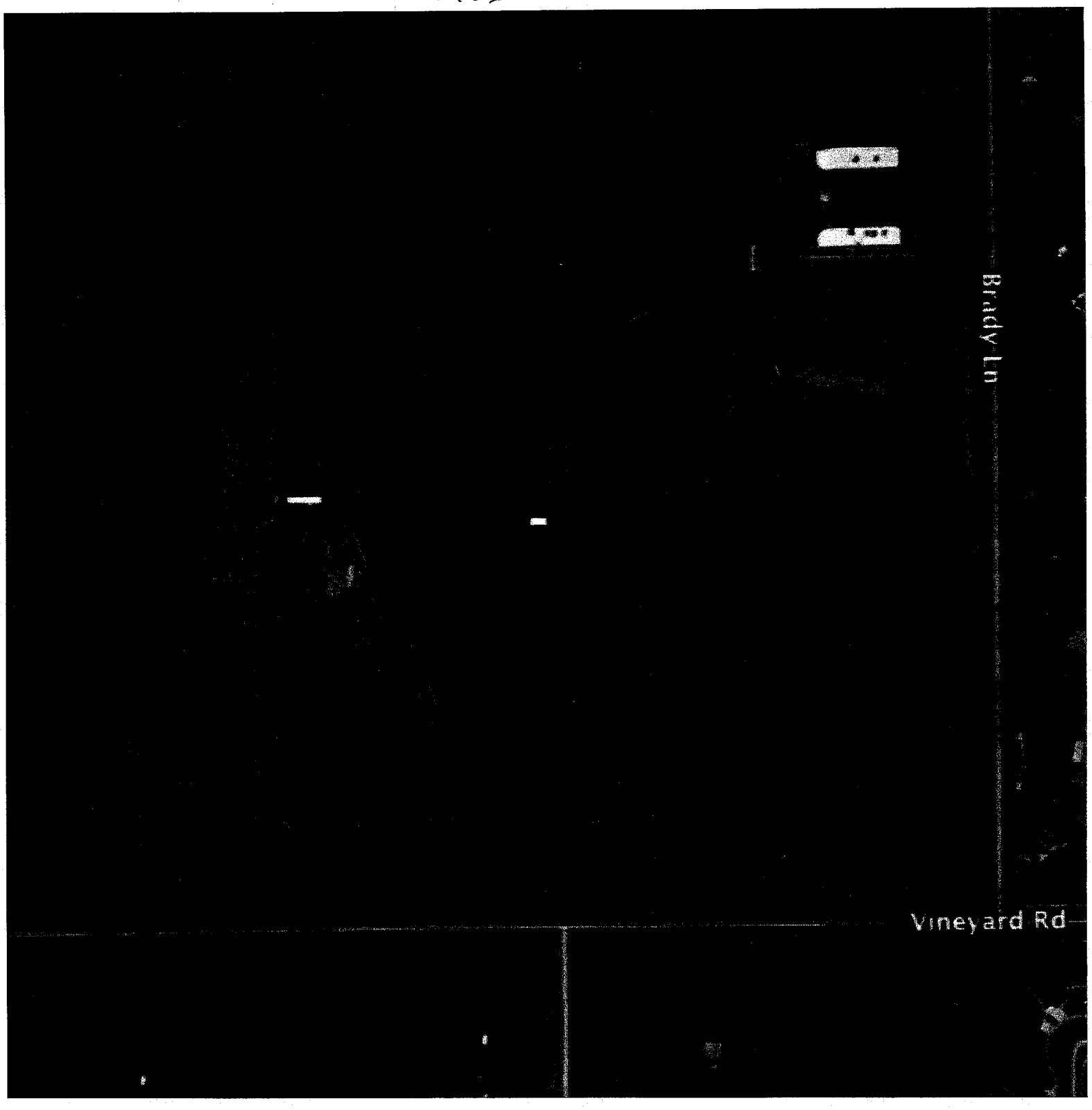
Turn around time:

Notes: composite into groups noted on both pages

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

GSO 12-19-18 1000 [signature] 12-19-18 1000

T183764



SunStar Laboratories — Celebrating 20 Years!

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T183764

Client Name: ACE Quality Control Project: Brady & Vineyard Ln.

Delivered by: ☐ Client ☐ SunStar Courier ☒ GSO ☐ FedEx ☐ Other

If Courier, Received by: _____ Date/Time Courier Received: _____

Lab Received by: Dan Date/Time Lab Received: 12-18-18 10:00

Total number of coolers received: 1

Temperature:	Cooler #1	3.1	°C +/- the CF (1.2°C) =	4.3	°C	corrected temperature
Temperature:	Cooler #2		°C +/- the CF (1.2°C) =		°C	corrected temperature
Temperature:	Cooler #3		°C +/- the CF (1.2°C) =		°C	corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers) Within criteria? ☒ **Yes** ☐ **No**

If NO:

Samples received on ice? ☐ Yes ☐ **No → Complete Non-Conformance Sheet**

If on ice, samples received same day collected? ☐ Yes → Acceptable ☐ **No → Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☒ Yes	☐ No*	☐ N/A
Sample containers intact	☒ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☒ Yes	☐ No*	
Total number of containers received match COC	☐ Yes	☒ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☐ **Yes**	☒ **No***	

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: DM 12-19-18

Comments:

SunStar Laboratories

Celebrating 20 Years!

SAMPLE NON-CONFORMANCE SHEET

Batch/Work Order # _____T183764_____

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking/Damaged
  - ☐ Other:
- **CUSTODY SEALS**
  - ☐ None
  - ☐ Not Intact
- **TEMPERATURE (Temp criteria = ≤ 6°C)**
  - ☐ Cooler/Sample Temp(s)
  - ☐ Temperature Blank(s)
- **CHAIN OF CUSTODY (COC)**
  - ☐ Not relinquished by client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ COC not received – notify PM
- **CONTAINERS**
  - ☐ Leaking ☐ Broken
  - ☐ Extra ☐ Missing
- **LABELS**
  - ☐ Not the same sample ID / info as on the COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
- **SAMPLES**
  - ☒ Samples **NOT RECEIVED** but listed on COC
  - ☐ Samples received but **NOT LISTED** on COC
  - ☐ Logged based on Label Information and not COC
  - ☐ Logged according to Work Plan and not COC
  - ☐ Logged in, **ON HOLD** until further notice
  - ☐ Insufficient quantities for analysis
  - ☐ Improper container used
  - ☐ Mislabeled as to tests, preservatives, etc.
  - ☐ Holding time expired – list sample ID and test
  - ☐ Not preserved/Improper preservative used
  - ☐ Without Labels, no information on containers
  - ☐ Other

Comments:

Did not receive sample 05 on COC (16).

Sample fractioning only if broken container compromises other samples or if out of temp reading impacts more than one cooler

Fraction													Preser.
VOA													

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

Printed: 12/19/2018 4:28:50PM

WORK ORDER

T183764

Client: **ACE Quality Control** **Project Manager:** **Joann Marroquin**
Project: **Brady & Vineyard Ln.** **Project Number:** **10-17049E**

Report To:
ACE Quality Control
Ed Hendrick
1830 Vernon Street, Suite 7
Roseville, CA 95678

Date Due: 12/28/18 17:00 (5 day TAT)
Received By: Dan Marteski Date Received: 12/19/18 10:00
Logged In By: Dan Marteski Date Logged In: 12/19/18 11:09

Samples Received at: **4.3°C**
Custody Seals Yes Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confir No

Analysis	Due	TAT	Expires	Comments
T183764-01 23 [Soil] Sampled 12/10/18 11:15 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-02 21 [Soil] Sampled 12/10/18 11:20 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-03 22 [Soil] Sampled 12/10/18 11:30 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-04 20 [Soil] Sampled 12/10/18 11:35 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-05 16 [Soil] Sampled 12/10/18 11:40 (GMT-08:00) Pacific Time (US &				**DID NOT RECEIVE SAMPLE**
[NO ANALYSES]				
T183764-06 13 [Soil] Sampled 12/10/18 11:45 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-07 14 [Soil] Sampled 12/10/18 11:50 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-08 15 [Soil] Sampled 12/10/18 11:55 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-09 8 [Soil] Sampled 12/10/18 12:00 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T183764

Client:	**ACE Quality Control**	**Project Manager:**	**Joann Marroquin**
Project:	**Brady & Vineyard Ln.**	**Project Number:**	**10-17049E**

Analysis	Due	TAT	Expires	Comments
T183764-10 7 [Soil] Sampled 12/10/18 12:05 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-11 6 [Soil] Sampled 12/10/18 12:10 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-12 5 [Soil] Sampled 12/10/18 12:20 (GMT-08:00) Pacific Time (US &				**Was not received**
[NO ANALYSES]				
T183764-13 24 [Soil] Sampled 12/10/18 12:25 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-14 26 [Soil] Sampled 12/10/18 12:30 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-15 25 [Soil] Sampled 12/10/18 13:00 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-16 1 [Soil] Sampled 12/10/18 13:10 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-17 27 [Soil] Sampled 12/10/18 13:20 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-18 3 [Soil] Sampled 12/10/18 13:30 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-19 2 [Soil] Sampled 12/10/18 13:40 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-20 10 [Soil] Sampled 12/10/18 13:50 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-21 4 [Soil] Sampled 12/10/18 14:00 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-22 11 [Soil] Sampled 12/10/18 14:10 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-23 9 [Soil] Sampled 12/10/18 14:20 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T183764

Client: ACE Quality Control
Project: Brady & Vineyard Ln.
Project Manager: Joann Marroquin
Project Number: 10-17049E

Analysis	Due	TAT	Expires	Comments
T183764-24 12 [Soil] Sampled 12/10/18 14:30 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-25 17 [Soil] Sampled 12/10/18 14:40 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-26 18 [Soil] Sampled 12/10/18 14:50 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-27 19 [Soil] Sampled 12/11/18 14:00 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T183764-28 COMPOSITE 1 [Soil] Sampled 12/18/18 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1 (SAMPLES 14, 15, 16, 17)**
6010 Individual Metals	12/28/18 15:00	5	06/16/19 00:00	As & Pb
8081 Pesticides	12/28/18 15:00	5	01/01/19 00:00	
8151 Herbicides	12/28/18 15:00	5	01/01/19 00:00	
T183764-29 COMPOSITE 2 [Soil] Sampled 12/18/18 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1 (SAMPLES 18, 19, 20, 21)**
6010 Individual Metals	12/28/18 15:00	5	06/16/19 00:00	As & Pb
8081 Pesticides	12/28/18 15:00	5	01/01/19 00:00	
8151 Herbicides	12/28/18 15:00	5	01/01/19 00:00	
T183764-30 COMPOSITE 3 [Soil] Sampled 12/18/18 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1 (SAMPLES 11, 12, 13, 22)**
6010 Individual Metals	12/28/18 15:00	5	06/16/19 00:00	As & Pb
8081 Pesticides	12/28/18 15:00	5	01/01/19 00:00	
8151 Herbicides	12/28/18 15:00	5	01/01/19 00:00	
T183764-31 COMPOSITE 4 [Soil] Sampled 12/18/18 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1 (SAMPLES 09, 10, 23, 24)**
6010 Individual Metals	12/28/18 15:00	5	06/16/19 00:00	As & Pb
8081 Pesticides	12/28/18 15:00	5	01/01/19 00:00	
8151 Herbicides	12/28/18 15:00	5	01/01/19 00:00	
T183764-32 COMPOSITE 5 [Soil] Sampled 12/18/18 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1 (SAMPLES 01, 02, 03, 04)**
6010 Individual Metals	12/28/18 15:00	5	06/16/19 00:00	As & Pb
8081 Pesticides	12/28/18 15:00	5	01/01/19 00:00	
8151 Herbicides	12/28/18 15:00	5	01/01/19 00:00	

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WORK ORDER

T183764

Client:	**ACE Quality Control**	**Project Manager:**	**Joann Marroquin**
Project:	**Brady & Vineyard Ln.**	**Project Number:**	**10-17049E**

Analysis	Due	TAT	Expires	Comments
T183764-33 COMPOSITE 6 [Soil] Sampled 12/18/18 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1 (SAMPLES 05, 06, 27)-DID NOT RECEIVE SAMPLE 05**
6010 Individual Metals	12/28/18 15:00	5	06/16/19 00:00	As & Pb
8081 Pesticides	12/28/18 15:00	5	01/01/19 00:00	
8151 Herbicides	12/28/18 15:00	5	01/01/19 00:00	
T183764-34 COMPOSITE 7 [Soil] Sampled 12/18/18 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1 (SAMPLES 07, 08, 25. 26)**
6010 Individual Metals	12/28/18 15:00	5	06/16/19 00:00	As & Pb
8081 Pesticides	12/28/18 15:00	5	01/01/19 00:00	
8151 Herbicides	12/28/18 15:00	5	01/01/19 00:00	

Reviewed By

Date

SunStar Laboratories, Inc.

PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

22 March 2019

Dillon Stemberger
ACE Quality Control
1830 Vernon Street, Suite 7
Roseville, CA 95678

RE: Brady - Vineyard Subdivision

Enclosed are the results of analyses for samples received by the laboratory on 03/15/19 09:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeff Lee
Project Manager

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
28	T190643-01	Soil	03/13/19 13:25	03/15/19 09:21
29	T190643-02	Soil	03/13/19 13:15	03/15/19 09:21
30	T190643-03	Soil	03/13/19 13:40	03/15/19 09:21
31	T190643-04	Soil	03/13/19 13:50	03/15/19 09:21
32	T190643-05	Soil	03/13/19 15:30	03/15/19 09:21
33	T190643-06	Soil	03/13/19 15:10	03/15/19 09:21
34	T190643-07	Soil	03/13/19 14:00	03/15/19 09:21
35	T190643-08	Soil	03/13/19 15:05	03/15/19 09:21
36	T190643-09	Soil	03/13/19 14:25	03/15/19 09:21
37	T190643-10	Soil	03/13/19 13:30	03/15/19 09:21
13	T190643-11	Soil	03/13/19 15:10	03/15/19 09:21
16	T190643-12	Soil	03/13/19 15:00	03/15/19 09:21
19	T190643-13	Soil	03/13/19 14:45	03/15/19 09:21
20	T190643-14	Soil	03/13/19 14:15	03/15/19 09:21
21	T190643-15	Soil	03/13/19 15:35	03/15/19 09:21
22	T190643-16	Soil	03/13/19 14:35	03/15/19 09:21
23	T190643-17	Soil	03/13/19 15:30	03/15/19 09:21
COMP: 28, 29, 30, 31	T190643-18	Soil	03/13/19 00:00	03/15/19 09:21
COMP: 33, 34, 35, 36	T190643-19	Soil	03/13/19 00:00	03/15/19 09:21

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

DETECTIONS SUMMARY

Sample ID: 28 **Laboratory ID:** T190643-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**7.6**	3.0	mg/kg	EPA 6010b	

Sample ID: 29 **Laboratory ID:** T190643-02

No Results Detected

Sample ID: 30 **Laboratory ID:** T190643-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**9.4**	3.0	mg/kg	EPA 6010b	

Sample ID: 31 **Laboratory ID:** T190643-04

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**7.7**	3.0	mg/kg	EPA 6010b	

Sample ID: 32 **Laboratory ID:** T190643-05

No Results Detected

Sample ID: 33 **Laboratory ID:** T190643-06

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**6.0**	3.0	mg/kg	EPA 6010b	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
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Sample ID: 34 **Laboratory ID:** T190643-07

No Results Detected

Sample ID: 35 **Laboratory ID:** T190643-08

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**6.8**	3.0	mg/kg	EPA 6010b	

Sample ID: 36 **Laboratory ID:** T190643-09

No Results Detected

Sample ID: 37 **Laboratory ID:** T190643-10

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**60**	3.0	mg/kg	EPA 6010b	

Sample ID: 13 **Laboratory ID:** T190643-11

No Results Detected

Sample ID: 16 **Laboratory ID:** T190643-12

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**7.3**	3.0	mg/kg	EPA 6010b	

Sample ID: 19 **Laboratory ID:** T190643-13

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**8.7**	3.0	mg/kg	EPA 6010b	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

Sample ID: 20 **Laboratory ID:** T190643-14

No Results Detected

Sample ID: 21 **Laboratory ID:** T190643-15

No Results Detected

Sample ID: 22 **Laboratory ID:** T190643-16

No Results Detected

Sample ID: 23 **Laboratory ID:** T190643-17

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**7.3**	3.0	mg/kg	EPA 6010b	

Sample ID: COMP: 28, 29, 30, 31 **Laboratory ID:** T190643-18

No Results Detected

Sample ID: COMP: 33, 34, 35, 36 **Laboratory ID:** T190643-19

No Results Detected

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Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

28

T190643-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**7.6**	3.0	"	"	"	"	"	"	

SunStar Laboratories, Inc.

Jeff Lee, Project Manager

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Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

29

T190643-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	

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Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

30

T190643-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**9.4**	3.0	"	"	"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

31

T190643-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**7.7**	3.0	"	"	"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

32

T190643-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	0.0050	mg/kg	1	9031530	03/15/19	03/22/19	EPA 8081A	
gamma-BHC (Lindane)	ND	0.0050	"	"	"	"	"	"	
beta-BHC	ND	0.0050	"	"	"	"	"	"	
delta-BHC	ND	0.0050	"	"	"	"	"	"	
Heptachlor	ND	0.0050	"	"	"	"	"	"	
Aldrin	ND	0.0050	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.0050	"	"	"	"	"	"	
gamma-Chlordane	ND	0.0050	"	"	"	"	"	"	
alpha-Chlordane	ND	0.0050	"	"	"	"	"	"	
Endosulfan I	ND	0.0050	"	"	"	"	"	"	
4,4´-DDE	ND	0.0050	"	"	"	"	"	"	
Dieldrin	ND	0.0050	"	"	"	"	"	"	
Endrin	ND	0.0050	"	"	"	"	"	"	
4,4´-DDD	ND	0.0050	"	"	"	"	"	"	
Endosulfan II	ND	0.0050	"	"	"	"	"	"	
4,4´-DDT	ND	0.0050	"	"	"	"	"	"	
Endrin aldehyde	ND	0.0050	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.0050	"	"	"	"	"	"	
Methoxychlor	ND	0.0050	"	"	"	"	"	"	
Endrin ketone	ND	0.0050	"	"	"	"	"	"	
Toxaphene	ND	0.020	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*109 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*113 %*	*35-140*		"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

32

T190643-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	0.00500	mg/kg	1	9031529	03/15/19	03/22/19	8151	
2,4,5-TP (Silvex)	ND	0.00500	"	"	"	"	"	"	
2,4-D	ND	0.00500	"	"	"	"	"	"	
2,4-DB	ND	0.00500	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	0.00500	"	"	"	"	"	"	
4-Nitrophenol	ND	0.00500	"	"	"	"	"	"	
Acifluorfen	ND	0.00500	"	"	"	"	"	"	
Bentazon	ND	0.00500	"	"	"	"	"	"	
Chloramben	ND	0.00500	"	"	"	"	"	"	
Dalapon	ND	0.0300	"	"	"	"	"	"	
DCPA diacid	ND	0.00500	"	"	"	"	"	"	
Dicamba	ND	0.00500	"	"	"	"	"	"	
Dichloroprop	ND	0.00500	"	"	"	"	"	"	
Dinoseb	ND	0.00500	"	"	"	"	"	"	
Pentachlorophenol	ND	0.00500	"	"	"	"	"	"	
Picloram	ND	0.00500	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*79.6 %*	*35-150*		"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

33

T190643-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**6.0**	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
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Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

34

T190643-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

35

T190643-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**6.8**	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

36

T190643-09 (Soil)

SunStar Laboratories, Inc.

Metals by EPA 6010B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

37

T190643-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**60**	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

13

T190643-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

16

T190643-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**7.3**	3.0	"	"	"	"	"	"	

SunStar Laboratories, Inc.

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

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T190643-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**8.7**	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
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Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

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T190643-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

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T190643-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
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T190643-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	

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T190643-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	9031808	03/18/19	03/20/19	EPA 6010b	
Lead	**7.3**	3.0	"	"	"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

COMP: 28, 29, 30, 31

T190643-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	0.0050	mg/kg	1	9031530	03/15/19	03/22/19	EPA 8081A	
gamma-BHC (Lindane)	ND	0.0050	"	"	"	"	"	"	
beta-BHC	ND	0.0050	"	"	"	"	"	"	
delta-BHC	ND	0.0050	"	"	"	"	"	"	
Heptachlor	ND	0.0050	"	"	"	"	"	"	
Aldrin	ND	0.0050	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.0050	"	"	"	"	"	"	
gamma-Chlordane	ND	0.0050	"	"	"	"	"	"	
alpha-Chlordane	ND	0.0050	"	"	"	"	"	"	
Endosulfan I	ND	0.0050	"	"	"	"	"	"	
4,4′-DDE	ND	0.0050	"	"	"	"	"	"	
Dieldrin	ND	0.0050	"	"	"	"	"	"	
Endrin	ND	0.0050	"	"	"	"	"	"	
4,4′-DDD	ND	0.0050	"	"	"	"	"	"	
Endosulfan II	ND	0.0050	"	"	"	"	"	"	
4,4′-DDT	ND	0.0050	"	"	"	"	"	"	
Endrin aldehyde	ND	0.0050	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.0050	"	"	"	"	"	"	
Methoxychlor	ND	0.0050	"	"	"	"	"	"	
Endrin ketone	ND	0.0050	"	"	"	"	"	"	
Toxaphene	ND	0.020	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*114 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*109 %*	*35-140*		"	"	"	"	
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	0.00500	mg/kg	1	9031529	03/15/19	03/22/19	8151	
2,4,5-TP (Silvex)	ND	0.00500	"	"	"	"	"	"	
2,4-D	ND	0.00500	"	"	"	"	"	"	
2,4-DB	ND	0.00500	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	0.00500	"	"	"	"	"	"	
4-Nitrophenol	ND	0.00500	"	"	"	"	"	"	
Acifluorfen	ND	0.00500	"	"	"	"	"	"	

SunStar Laboratories, Inc.

Jeff Lee, Project Manager

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

COMP: 28, 29, 30, 31

T190643-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
Bentazon	ND	0.00500	mg/kg	1	9031529	03/15/19	03/22/19	8151	
Chloramben	ND	0.00500	"	"	"	"	"	"	
Dalapon	ND	0.0300	"	"	"	"	"	"	
DCPA diacid	ND	0.00500	"	"	"	"	"	"	
Dicamba	ND	0.00500	"	"	"	"	"	"	
Dichloroprop	ND	0.00500	"	"	"	"	"	"	
Dinoseb	ND	0.00500	"	"	"	"	"	"	
Pentachlorophenol	ND	0.00500	"	"	"	"	"	"	
Picloram	ND	0.00500	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*76.6 %*	*35-150*		"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

COMP: 33, 34, 35, 36

T190643-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	0.0050	mg/kg	1	9031530	03/15/19	03/22/19	EPA 8081A	
gamma-BHC (Lindane)	ND	0.0050	"	"	"	"	"	"	
beta-BHC	ND	0.0050	"	"	"	"	"	"	
delta-BHC	ND	0.0050	"	"	"	"	"	"	
Heptachlor	ND	0.0050	"	"	"	"	"	"	
Aldrin	ND	0.0050	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.0050	"	"	"	"	"	"	
gamma-Chlordane	ND	0.0050	"	"	"	"	"	"	
alpha-Chlordane	ND	0.0050	"	"	"	"	"	"	
Endosulfan I	ND	0.0050	"	"	"	"	"	"	
4,4′-DDE	ND	0.0050	"	"	"	"	"	"	
Dieldrin	ND	0.0050	"	"	"	"	"	"	
Endrin	ND	0.0050	"	"	"	"	"	"	
4,4′-DDD	ND	0.0050	"	"	"	"	"	"	
Endosulfan II	ND	0.0050	"	"	"	"	"	"	
4,4′-DDT	ND	0.0050	"	"	"	"	"	"	
Endrin aldehyde	ND	0.0050	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.0050	"	"	"	"	"	"	
Methoxychlor	ND	0.0050	"	"	"	"	"	"	
Endrin ketone	ND	0.0050	"	"	"	"	"	"	
Toxaphene	ND	0.020	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*111 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*115 %*	*35-140*		"	"	"	"	
Chlorinated Herbicides by EPA Method 8151A									
2,4,5-T	ND	0.00500	mg/kg	1	9031529	03/15/19	03/22/19	8151	
2,4,5-TP (Silvex)	ND	0.00500	"	"	"	"	"	"	
2,4-D	ND	0.00500	"	"	"	"	"	"	
2,4-DB	ND	0.00500	"	"	"	"	"	"	
3,5-Dichlorobenzoic acid	ND	0.00500	"	"	"	"	"	"	
4-Nitrophenol	ND	0.00500	"	"	"	"	"	"	
Acifluorfen	ND	0.00500	"	"	"	"	"	"	

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1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

COMP: 33, 34, 35, 36

T190643-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Chlorinated Herbicides by EPA Method 8151A									
Bentazon	ND	0.00500	mg/kg	1	9031529	03/15/19	03/22/19	8151	
Chloramben	ND	0.00500	"	"	"	"	"	"	
Dalapon	ND	0.0300	"	"	"	"	"	"	
DCPA diacid	ND	0.00500	"	"	"	"	"	"	
Dicamba	ND	0.00500	"	"	"	"	"	"	
Dichloroprop	ND	0.00500	"	"	"	"	"	"	
Dinoseb	ND	0.00500	"	"	"	"	"	"	
Pentachlorophenol	ND	0.00500	"	"	"	"	"	"	
Picloram	ND	0.00500	"	"	"	"	"	"	
Surrogate: 2,4-DCAA		*75.8 %*	*35-150*		"	"	"	"	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9031808 - EPA 3050B										
Blank (9031808-BLK1)				Prepared: 03/18/19 Analyzed: 03/20/19						
Arsenic	ND	5.0	mg/kg							
Lead	ND	3.0	"							
LCS (9031808-BS1)				Prepared: 03/18/19 Analyzed: 03/20/19						
Arsenic	117	5.0	mg/kg	100		117	75-125			
Lead	117	3.0	"	100		117	75-125			
Matrix Spike (9031808-MS1)		**Source: T190655-01**		Prepared: 03/18/19 Analyzed: 03/20/19						
Arsenic	111	5.0	mg/kg	96.2	6.05	109	75-125			
Lead	119	3.0	"	96.2	14.7	108	75-125			
Matrix Spike Dup (9031808-MSD1)		**Source: T190655-01**		Prepared: 03/18/19 Analyzed: 03/20/19						
Arsenic	124	5.0	mg/kg	96.2	6.05	123	75-125	11.2	20	
Lead	110	3.0	"	96.2	14.7	98.8	75-125	7.74	20	

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

Organochlorine Pesticides by EPA Method 8081A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9031530 - EPA 3550m/8141										
Blank (9031530-BLK1)				Prepared: 03/15/19 Analyzed: 03/22/19						
alpha-BHC	ND	0.0050	mg/kg							
gamma-BHC (Lindane)	ND	0.0050	"							
beta-BHC	ND	0.0050	"							
delta-BHC	ND	0.0050	"							
Heptachlor	ND	0.0050	"							
Aldrin	ND	0.0050	"							
Heptachlor epoxide	ND	0.0050	"							
gamma-Chlordane	ND	0.0050	"							
alpha-Chlordane	ND	0.0050	"							
Endosulfan I	ND	0.0050	"							
4,4´-DDE	ND	0.0050	"							
Dieldrin	ND	0.0050	"							
Endrin	ND	0.0050	"							
4,4´-DDD	ND	0.0050	"							
Endosulfan II	ND	0.0050	"							
4,4´-DDT	ND	0.0050	"							
Endrin aldehyde	ND	0.0050	"							
Endosulfan sulfate	ND	0.0050	"							
Methoxychlor	ND	0.0050	"							
Endrin ketone	ND	0.0050	"							
Toxaphene	ND	0.020	"							
Surrogate: Tetrachloro-meta-xylene	*0.0116*		*"*	*0.0101*		*115*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.0126*		*"*	*0.0101*		*125*	*35-140*			
LCS (9031530-BS1)				Prepared: 03/15/19 Analyzed: 03/22/19						
gamma-BHC (Lindane)	0.0312	0.0050	mg/kg	0.0408		76.4	40-120			
Heptachlor	0.0328	0.0050	"	0.0408		80.5	40-120			
Aldrin	0.0297	0.0050	"	0.0408		72.8	40-120			
Dieldrin	0.0319	0.0050	"	0.0408		78.2	40-120			
Endrin	0.0330	0.0050	"	0.0408		80.8	40-120			
4,4´-DDT	0.0328	0.0050	"	0.0408		80.4	33-147			
Surrogate: Tetrachloro-meta-xylene	*0.0113*		*"*	*0.0102*		*110*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.0119*		*"*	*0.0102*		*117*	*35-140*			

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

Organochlorine Pesticides by EPA Method 8081A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9031530 - EPA 3550m/8141										
Matrix Spike (9031530-MS1)		**Source: T190643-05**		Prepared: 03/15/19 Analyzed: 03/21/19						
gamma-BHC (Lindane)	0.0312	0.0050	mg/kg	0.0408	ND	76.4	30-120			
Heptachlor	0.0328	0.0050	"	0.0408	ND	80.3	30-120			
Aldrin	0.0293	0.0050	"	0.0408	ND	71.7	30-120			
Dieldrin	0.0320	0.0050	"	0.0408	ND	78.3	30-120			
Endrin	0.0343	0.0050	"	0.0408	ND	84.1	30-120			
4,4´-DDT	0.0395	0.0050	"	0.0408	ND	96.8	30-120			
Surrogate: Tetrachloro-meta-xylene	*0.0107*		*"*	*0.0102*		*105*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.0110*		*"*	*0.0102*		*108*	*35-140*			
Matrix Spike Dup (9031530-MSD1)		**Source: T190643-05**		Prepared: 03/15/19 Analyzed: 03/21/19						
gamma-BHC (Lindane)	0.0291	0.0050	mg/kg	0.0396	ND	73.6	30-120	3.75	30	
Heptachlor	0.0313	0.0050	"	0.0396	ND	79.0	30-120	1.65	30	
Aldrin	0.0278	0.0050	"	0.0396	ND	70.3	30-120	1.92	30	
Dieldrin	0.0307	0.0050	"	0.0396	ND	77.5	30-120	1.01	30	
Endrin	0.0323	0.0050	"	0.0396	ND	81.6	30-120	3.03	30	
4,4´-DDT	0.0380	0.0050	"	0.0396	ND	95.9	30-120	0.940	30	
Surrogate: Tetrachloro-meta-xylene	*0.0104*		*"*	*0.00990*		*105*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.0110*		*"*	*0.00990*		*111*	*35-140*			

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ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

Chlorinated Herbicides by EPA Method 8151A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9031529 - 8151 Prep										
Blank (9031529-BLK1)				Prepared: 03/15/19 Analyzed: 03/21/19						
2,4,5-T	ND	0.00500	mg/kg							
2,4,5-TP (Silvex)	ND	0.00500	"							
2,4-D	ND	0.00500	"							
2,4-DB	ND	0.00500	"							
3,5-Dichlorobenzoic acid	ND	0.00500	"							
4-Nitrophenol	ND	0.00500	"							
Acifluorfen	ND	0.00500	"							
Bentazon	ND	0.00500	"							
Chloramben	ND	0.00500	"							
Dalapon	ND	0.0300	"							
DCPA diacid	ND	0.00500	"							
Dicamba	ND	0.00500	"							
Dichloroprop	ND	0.00500	"							
Dinoseb	ND	0.00500	"							
Pentachlorophenol	ND	0.00500	"							
Picloram	ND	0.00500	"							
Surrogate: 2,4-DCAA	*0.279*		*"*	*0.400*		*69.8*	*35-150*			
LCS (9031529-BS1)				Prepared: 03/15/19 Analyzed: 03/21/19						
2,4,5-T	0.0974	0.00500	mg/kg	0.0984		99.0	20-150			
2,4,5-TP (Silvex)	0.104	0.00500	"	0.0986		106	20-150			
2,4-D	0.0943	0.00500	"	0.0986		95.6	20-150			
Surrogate: 2,4-DCAA	*0.289*		*"*	*0.394*		*73.4*	*35-150*			
LCS Dup (9031529-BSD1)				Prepared: 03/15/19 Analyzed: 03/21/19						
2,4,5-T	0.0804	0.00500	mg/kg	0.0994		80.9	20-150	19.1	30	
2,4,5-TP (Silvex)	0.0854	0.00500	"	0.0996		85.8	20-150	19.7	30	
2,4-D	0.0788	0.00500	"	0.0996		79.2	20-150	17.8	30	
Surrogate: 2,4-DCAA	*0.282*		*"*	*0.398*		*70.7*	*35-150*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Lee, Project Manager

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

ACE Quality Control	Project: Brady - Vineyard Subdivision	
1830 Vernon Street, Suite 7	Project Number: 10-17049E	**Reported:**
Roseville CA, 95678	Project Manager: Dillon Stemberger	03/22/19 17:05

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.

Jeff Lee, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: ACE Quality Control
Address: 1830 Vernon St., Ste. 7, Roseville, CA 95678
Phone: 916-742-5096 Fax:
Project Manager: Dillon Stemberger

Date: March 13, 2019 Page: 1 Of 2
Project Name: Brady Vineyard Subdivision
Collector: Dillon Stemberger Client Project #: 10-17049E
Batch #: 7190693 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals Pb & As	EPA 8081A & 8151A				Laboratory ID #	Comments/Preservative	Total # of containers
28	3/13/19	1:25	soil										✓		Composite			01		
29		1:15											✓					02		
30		1:40											✓					03		
31		1:50											✓					04		
32		3:30											✓	✓				05		
33		3:10											✓		Composite			06		
34		2:00											✓					07		
35		3:05											✓					08		
36		2:25											✓					09		
37		1:30											✓					10		
13		3:10											✓					11		
16		3:00											✓					12		
19		2:45											✓					13		
20		2:15											✓					14		
21		3:35											✓					15		

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
[signature]	3-14-19 1008	Ed Stevens	3/14/19 1008
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
GSO	3-15-19 921	[signature]	3-15-19 921
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold 3.5

Turn around time: STD

Notes
Pb & As on all samples
Composite samples 28-31, 33-36 for 8081A & 8151A

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 132060

SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ace Quality Control
Address: 1830 Vernon St., Ste. 7, Roseville, CA 95678
Phone: (916) 742-5096 Fax:
Project Manager: Dillon Stemberger

Date: March 13, 2019 Page: 2 Of 2
Project Name: Brady Vineyard Subdivision
Collector: Dillon Stemberger Client Project #: 10-17049E
Batch #: T190643 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals Pb & As					Laboratory ID #	Comments/Preservative	Total # of containers
22	3/13/19	2:35	soil										✓					16		
23	3/13/19	3:30	"										✓					17		

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
[signature]	3-14-19 1008	[signature]	3/14/19 1008
GSO	3-15-19 9:21	[signature]	3-15-19 9:21

Total # of containers
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold 3.5

Notes

Turn around time: STD

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 132060

SunStar Laboratories — Celebrating 20 Years!

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T190643

Client Name: AGE QUALITY CONTROL

Project: BRADY - VINEYARD SUBDIVISION

Delivered by: ☐ Client ☐ SunStar Courier ☒ GSO ☐ FedEx ☐ Other

If Courier, Received by:

Date/Time Courier Received:

Lab Received by: SUNNY

Date/Time Lab Received: 3.15.19 / 9:21

Total number of coolers received: 1

Temperature:	Cooler #1 2.3	°C +/- the CF (1.2°C) = 3.5	°C corrected temperature	
Temperature:	Cooler #2	°C +/- the CF (1.2°C) =	°C corrected temperature	
Temperature:	Cooler #3	°C +/- the CF (1.2°C) =	°C corrected temperature	
Temperature criteria = ≤ 6°C (no frozen containers)		Within criteria?	☒ **Yes** ☐ **No**	
If NO:				
Samples received on ice?		☐ Yes	☐ **No → Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?		☐ Yes → Acceptable	☐ **No → Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☒ Yes	☐ No*	☐ N/A
Sample containers intact	☒ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☒ Yes	☐ No*	
Total number of containers received match COC	☒ Yes	☐ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☒ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: SL 3.15.19

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

Printed: 3/15/2019 11:45:22AM

WORK ORDER

T190643

Client: ACE Quality Control
Project: Brady - Vineyard Subdivision
Project Manager: Jeff Lee
Project Number: 10-17049E

Report To:
ACE Quality Control
Dillon Stemberger
1830 Vernon Street, Suite 7
Roseville, CA 95678

Date Due: 03/22/19 17:00 (5 day TAT)
Received By: Sunny Lounethone
Date Received: 03/15/19 09:21
Logged In By: Sunny Lounethone
Date Logged In: 03/15/19 10:15

Samples Received at: **3.5°C**
Custody Seals Yes
Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirm No

Analysis	Due	TAT	Expires	Comments
T190643-01 28 [Soil] Sampled 03/13/19 13:25 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 13:25	As, Pb only
T190643-02 29 [Soil] Sampled 03/13/19 13:15 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 13:15	As, Pb only
T190643-03 30 [Soil] Sampled 03/13/19 13:40 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 13:40	As, Pb only
T190643-04 31 [Soil] Sampled 03/13/19 13:50 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 13:50	As, Pb only
T190643-05 32 [Soil] Sampled 03/13/19 15:30 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 15:30	As, Pb only
8081 Pesticides	03/22/19 15:00	5	03/27/19 15:30	
8151 Herbicides	03/22/19 15:00	5	03/27/19 15:30	
T190643-06 33 [Soil] Sampled 03/13/19 15:10 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 15:10	As, Pb only
T190643-07 34 [Soil] Sampled 03/13/19 14:00 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 14:00	As, Pb only
T190643-08 35 [Soil] Sampled 03/13/19 15:05 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 15:05	As, Pb only

SunStar Laboratories, Inc.
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Printed: 3/15/2019 11:45:22AM

WORK ORDER

T190643

Client: ACE Quality Control
Project: Brady - Vineyard Subdivision
Project Manager: Jeff Lee
Project Number: 10-17049E

Analysis	Due	TAT	Expires	Comments
T190643-09 36 [Soil] Sampled 03/13/19 14:25 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 14:25	As, Pb only
T190643-10 37 [Soil] Sampled 03/13/19 13:30 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 13:30	As, Pb only
T190643-11 13 [Soil] Sampled 03/13/19 15:10 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 15:10	As, Pb only
T190643-12 16 [Soil] Sampled 03/13/19 15:00 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 15:00	As, Pb only
T190643-13 19 [Soil] Sampled 03/13/19 14:45 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 14:45	As, Pb only
T190643-14 20 [Soil] Sampled 03/13/19 14:15 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 14:15	As, Pb only
T190643-15 21 [Soil] Sampled 03/13/19 15:35 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 15:35	As, Pb only
T190643-16 22 [Soil] Sampled 03/13/19 14:35 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 14:35	As, Pb only
T190643-17 23 [Soil] Sampled 03/13/19 15:30 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	03/22/19 15:00	5	09/09/19 15:30	As, Pb only
T190643-18 COMP: 28, 29, 30, 31 [Soil] Sampled 03/13/19 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1**
8081 Pesticides	03/22/19 15:00	5	03/27/19 00:00	
8151 Herbicides	03/22/19 15:00	5	03/27/19 00:00	
T190643-19 COMP: 33, 34, 35, 36 [Soil] Sampled 03/13/19 00:00 (GMT-08:00) Pacific Time (US &				**COMPOSITE 4:1**
8081 Pesticides	03/22/19 15:00	5	03/27/19 00:00	
8151 Herbicides	03/22/19 15:00	5	03/27/19 00:00	

Reviewed By

Date

APPENDIX I

RFE ENGINEERING, INC

Preliminary Drainage Study & Stormwater Quality Plan

FOR

BRADY-VINEYARD SUBDIVISION

Brady Lane and Vineyard Road
Roseville, CA 95747
APNs: 473-020-002, 013

April 2, 2019

REGISTERED PROFESSIONAL ENGINEER
SHAWN B. SOMERS
No. C 80625
Exp. 3/31/21
4/2/2019
CIVIL
STATE OF CALIFORNIA

Prepared by,
RFE Engineering, Inc.
2260 Douglas Blvd., Suite 160
Roseville, CA 95661
Ph 916-772-7800

RFE Project No. 17059

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APPENDIX E .....RUNOFF PEAK FLOW & FLOOD PLAIN CALCULATIONS

APPENDIX F ..... STORMWATER QUALITY & HYDROMODIFICATION CALCULATIONS

A. PROJECT LOCATION

The proposed project site is located at the northwest corner of the Brady Lane and Vineyard Road intersection on the eastern edge of the Dry Creek/West Placer Community Plan area of Placer County, California 95747. The total site encompasses about 35.08 acres with APNs: 473-020-002, and 013. The approximate coordinates of the project site are latitude 38.746° north and longitude 121.316° west. The project's location is also shown on the Vicinity Map below and in Appendix A.

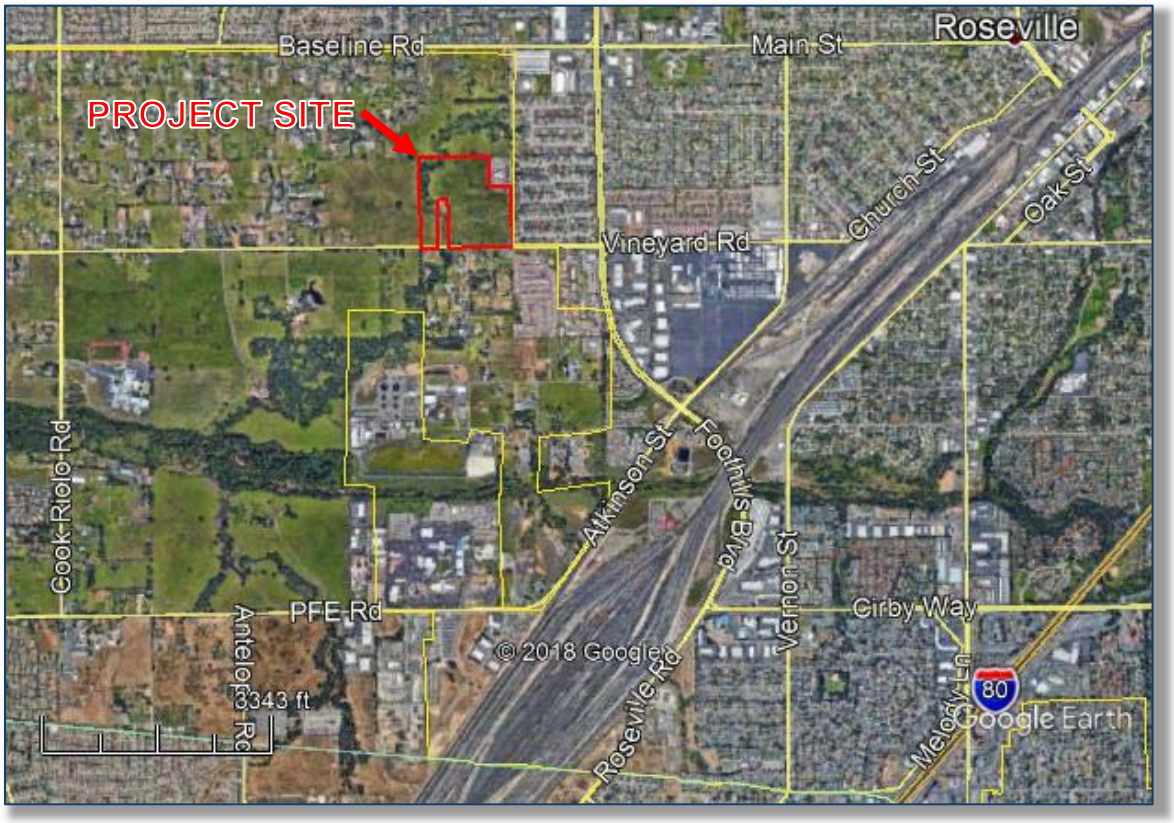


Figure 1: Vicinity Map (not to scale)

B. EXISTING SITE CONDITIONS

In its existing condition, the site is vacant and mainly consists of meadow grasses and weeds. There is a creek that runs north to south along the western property line which contains a 100-yr flood plain mapped by FEMA. This flood plain includes a riparian corridor with dense vegetation including numerous oak trees. In addition to areas within the riparian corridor, there are several other areas on the site which contain small wetlands – both pools and swales. There is also a drainage ditch in the southern portion of the site that conveys urban runoff from the subdivision to the east toward the creek.

The entirety of the site is pervious and there is no underground storm drainage infrastructure on or around the site except for the outfall from the aforementioned subdivision to the east. Existing slopes vary on the site's hilly terrain between less than 1% in the flatter areas and up to 15% in some steeper areas. Though this terrain has several low spots and ponding areas, runoff generally tends to flow toward the creek on the west side of the site. The property is located on the eastern edge of a rural area of western Placer County (within the West Placer Community Plan area) with 2+ acre lots and vacant land surrounding it to the north, west, and south, and small lot residential development (7,000 sf +/-) to the east. Table 1 below specifically summarizes the surrounding properties.

Table 1: Site Description (Surrounding Areas)

North	Vacant property (zoned RS-AG-B-20)
South	Vineyard Road; 2+ acre single-family residential beyond (zoned RS-AG-B-20)
West	Vacant property (zoned F-DR)
East	Brady Lane; small lot single-family residential beyond – City of Roseville jurisdiction (zoned RS/DS)

Figure 2: Existing Conditions of Site

The site geotechnical report performed by ACE Quality Control dated July 25, 2017 found the following geologic conditions at the site:

> *… the subsurface earth material conditions varied slightly throughout the site and with depth. The soil encountered in the exploratory borings was mainly medium dense to very dense, brown and brown with red and gray discolorations, moist, silty SAND with variable gravel (Unified Soil Classification: SM) and well graded SAND (SW) to maximum depths explored of approximately 21-1/2 feet below existing ground surface (egs). Some lenses of dense, brown, moist, SILT (Unified Soil Classification: ML) were encountered at variable depths and thicknesses in some of the explorations.*
>
> *Groundwater:*
>
> *Observations of groundwater conditions were made during the excavation of our exploratory borings at the time of field exploration. Free groundwater was not observed in borings B3 and B7. Free groundwater was encountered in the other borings during our exploration at approximate depths below estimated ground surface ranging from 13 to 21 feet.*

For additional information, see the site Geotechnical study boring logs in Appendix C.

C. PROPOSED PROJECT DESCRIPTION

The project involves the subdivision of the existing 35-acre parcel into 119 residential lots within a gated community. In addition, there will be common area lots which contain private improvements to be maintained by the HOA. These private improvements in common lots include roadways, landscaping and parkways, a decorative gated entrance, multi-purpose trails, recreation areas, and the open space riparian corridor surrounding the creek. The project only proposes to develop to the east of the existing creek. The southwestern corner of the parcel that is southwest of the creek will be split off and will not be a part of this development.

Underground infrastructure improvements for this development will include new public water and sewer mains within the site and along the project's Vineyard Road frontage, as well as on-site storm drain collection systems. The on-site sanitary sewer system will connect to a new regional pump station on the project site. The on-site storm drain system will outfall into the flood plain of the creek near the culvert at Vineyard Road. Off-site road improvements include widening on Brady Lane with a bike lane, curb and gutter, and sidewalk, and widening on Vineyard Road with a bike lane and AC dike. This project will also include construction of new water mains in Vineyard Road and Brady Lane as well as a larger off-site sewer force main expansion.

This project is a "*Regulated Project with Hydromodification*" and is subject to the requirements of the West Placer Storm Water Quality Design Manual. Bioretention planters located along either side of the proposed roads will treat stormwater runoff prior to discharging into the underground storm drain system. Sections E and F of this report further describe the existing and proposed drainage patterns respectively. Section G further describes stormwater runoff quantity and flood plain modeling and Section H further describes stormwater quality design considerations.

The total area disturbed by this project is approximately 30.2 acres including on-site and off-site frontage improvements. The Site Plan in Appendix A provides an overview of proposed project improvements.

D. PURPOSE OF REPORT

The purpose of this report is to present the design of the storm drainage system for the project and to demonstrate that the design complies with Placer County drainage and water quality requirements. This report is structured to present stormwater runoff peak flow calculations in accordance with the Placer County Stormwater Management Manual (PCSWMM) and Placer County Land Development Manual and stormwater quality measures to be implemented as Best Management Practices (BMPs) in accordance with the West Placer Storm Water Quality Design Manual (WPSWQDM), which are the governing design documents for stormwater management for Placer County. In July of 2015, Placer County began requiring the submittal of a Stormwater Quality Plan (SWQP) with improvement plans. The SWQP includes stormwater quality BMP calculations and is intended to aid in project compliance to the Placer County Phase II MS4 General Permit. See Appendix F for the completed SWQP.

The report is divided into four (4) main parts:

A. Description of existing drainage conditions.

B. Description of the proposed storm drainage system and evaluation of proposed stormwater runoff quantity, flood plain elevations, and stormwater quality treatment.

C. Conclusions.

D. Recommendations.

E. EXISTING STORM DRAINAGE CONDITIONS

The existing drainage and field conditions are based on an aerial topographic survey completed by American Aerial Mapping, Inc. dated 5/23/2017 as well as LiDAR surface data obtained from Placer County on 10/12/2017. The project site generally slopes toward the creek that runs southward along the western edge of the property. This creek is located within a FEMA-mapped zone AE floodplain called out on FEMA's maps as "Dry Creek Vineyard Road Tributary" (Note that a Pending FEMA Flood Insurance Study (FIS) and revised floodplain mapping dated 11/2/18 for the Dry Creek Vineyard Road Tributary contains the most current FEMA analysis for this tributary). In order to more accurately model the entirety of this tributary, RFE acquired Placer County's Dry Creek HEC model and extracted the applicable sheds that contribute to this tributary. In all, there are twelve drainage sheds that ultimately drain to this Dry Creek tributary. For analysis purposes, we split three of these drainage sheds into multiple sheds in order to separate the off-site and on-site areas for calculating post-construction peak flows. A summary of the drainage sheds draining

to the Dry Creek Vineyard Road Tributary is below in Table 2 below (sheds are generally arranged upstream to downstream). The Dry Creek Vineyard Road Tributary Drainage Shed Map in Appendix B shows these sheds.

Table 2: Dry Creek Vineyard Road Tributary Drainage Sheds

Drainage Shed ID	Drainage Area (sf)	Drainage Area (sq. mi)
DC25B	388.605	0.6072
DC25E	16.075	0.0251
DC25C	47.798	0.0747
DC25D	35.247	0.0551
DC25F-offsite	12.388	0.0194
DC25F-onsite	5.544	0.0087
DC25G	41.825	0.0654
DC25L-offsite north	7.065	0.0110
DC25L-offsite south	8.722	0.0136
DC25L-onsite	29.253	0.0457
DC25N-onsite	2.820	0.0044
DC25N-offsite	31.386	0.0490
DC25I	110.582	0.1728
DC25H	43.582	0.0681
DC25M	88.585	0.1384
DC25K	195.828	0.3060

At the point where the creek intersects the northern property line of the project site, it has approximately 500 acres of drainage shed tributary to it. In all, the Dry Creek Vineyard Road Tributary carries runoff from more than 1,000 acres of land before it discharges into Dry Creek. Numerous residential parcels contain this creek downstream of the project site, and several residential structures lie within 200 feet of the creek flowline. In addition, the Dry Creek Wastewater Treatment Plant owned and operated by the City of Roseville sits Approximately 1/3 mile south of the project site directly bordering the creek.

As for on-site drainage patterns, the majority of the project site either sheet flows directly to the creek or flows to several small, shallow valleys on the project site that collect stormwater runoff and convey it southwest toward the creek. The southwest corner of the project site is separated from the rest of the site by the creek and runoff generally sheet flows from here to the northeast to the creek.

The valleys within the project site contain several of the sites seasonal wetlands. One of these valleys contains a drainage ditch that conveys runoff from a portion of the existing Vineyard Estates residential subdivision directly across Brady Lane. Runoff from this subdivision is piped underground across Brady Lane and outfalls into the open drainage ditch on the east side of the

project site. A portion of Brady lane adjacent to the project site also conveys runoff via curb and gutter to drainage inlets that drain to the same pipe system that outlets on the project site. Shed *DC25L-offsite south* represents the portion of this subdivision draining onto the project site. There is also a portion of the vacant parcel to the north of the project site which, when combined with "The Father's House" church parcel to the northeast of the project site, make up shed *DC25L-offsite north* that also drains onto the site.

Besides the two DC25L drainage sheds, there does not appear to be any other off-site run-on except that which flows through the creek. Vineyard Road is crowned and drains north and south to roadside ditches that convey runoff toward the creek. Shed *DC25N-onsite* contains the portion of Vineyard Road that drains along these roadside ditches to the creek. Since on-site runoff flows to the creek within the project site, it does not appear that any significant amount of runoff leaves the project site except for within the creek.

At the southern property line of the project site, there is a 6'x15' box culvert that runs underneath Vineyard Road. Other than a bridge upstream at Brady Lane (the beginning of this tributary), the Vineyard Road culvert appears to be the only structure within the creek. Once through the Vineyard Road culvert, runoff flows unobstructed within the Dry Creek Vineyard Road tributary to the point where it meets Dry Creek approximately 1 mile to the southwest of the project. The total flow length of this creek from it's beginning at Brady Lane to its terminus at Dry Creek is approximately 2 miles. The Flood Model Exhibit in Appendix B shows the creek lengths and cross section locations for HEC-RAS modeling in greater detail.

F. POST-CONSTRUCTION STORM DRAINAGE CONDITIONS

This project proposes to disturb approximately 30.2 acres for road construction, pad grading, off-site improvements, and other subdivision amenities. Due to the site's existing pervious condition, there will be a large increase in impervious area in the post-construction condition. RFE assumed the residential lots will be approximately 65% impervious in addition to the impervious roads after construction is completed. This impervious area increase places the project into the category of "*Regulated Project with Hydromodification."* Therefore, this project is required to provide adequate stormwater treatment for the proposed runoff, and to implement water quality related peak flow mitigation measures (hydromodification).

The grading design of the site divides the site into several drainage sheds which convey stormwater runoff overland (from the rear of each lot to its frontage) to the curb and gutter lining all the on-site streets. The curb and gutter system will convey runoff to bio-retention planters located adjacent to the road at the low point of each drainage shed – typically at the intersections. Runoff from larger storms will be conveyed to the underground storm drainage system on the site through overflow drainage inlets within each bioretention planter. The underground storm drain system will convey runoff to the southwest corner of the subdivision where it will discharge into the wetlands which flow to the creek.

Vineyard Road will collect runoff along the proposed AC dike and convey it to a bioretention planter near Lot 'A' (lift station lot). A portion of the runoff from Brady Lane already flows via curb and gutter into an underground pipe system that discharges onto the project site. The curb and gutter will be extended in the post-construction condition to include the rest of Brady Lane to its intersection with Vineyard Road. Runoff from the east side of Brady Lane will continue to be captured in the underground storm drain system that will be rerouted to connect to the proposed underground storm drain system that will run through the project site. Runoff from the west side of Brady lane will be collected in new bioretention planters behind the sidewalk near Vineyard Road and near the project entrance. Stormwater treated by these bioretention planters that does not infiltrate into the native soil or that ponds into the overflow inlet will be conveyed within the underground storm drain system to the outlet near the creek.

See Appendix B for the Post-Construction Shed Map which shows storm drainage patterns and stormwater quality BMP locations in the project's finished condition.

G. STORMWATER RUNOFF QUANTITY

Placer County has identified this project as being in an area that does not require on-site detention for flood control due to its location within the Dry Creek drainage shed. Since the project contributes stormwater runoff directly to a FEMA-mapped waterway (Dry Creek Vineyard Road Tributary), RFE determined it would be important to model the flows in the tributary before and after project construction in order to determine if the project would have any downstream impacts. In addition, per correspondence from the County, we compared our calculated flood plain limits with the limits found in the Pending FEMA Flood Insurance Study (FIS) and revised floodplain mapping dated 11/2/18 to determine which limits were more conservative.

In order to evaluate runoff quantity for the Brady-Vineyard project, RFE utilized a combination of HEC-HMS and HEC-RAS software. We used HEC-HMS to come up with individual drainage shed peak flows for the pre-construction and post-construction conditions. Then, using peak flows for each shed area, we created a HEC-RAS model of the Dry Creek Vineyard Road Tributary and added the HEC-HMS hydrographs to the model as lateral inflows. Some specifics and output for each model are detailed below.

<u>HEC-HMS</u>

The existing Placer County HEC-1 model of the Dry Creek drainage sheds provided the basis for our model. We modified drainage shed areas in order to separate on-site and off-site shed areas for sheds that crossed the project property lines. This allowed for easier direct calculation of the project impacts on each shed. The existing drainage shed parameters were modified accordingly (basin planes were shortened as needed), but the majority of the existing information remained the same for the pre-construction condition.

For the post-construction condition, we did not modify the shed areas as they will remain roughly the same in terms of tributary area and location after the project is constructed. However, we adjusted the impervious area percentages assuming approximately 65% of the developed area will be impervious (including lot and road construction). We based this percentage on similar existing medium-density residential lots in the surrounding area. We also adjusted the area of each plane to reflect the differences in impervious area.

We did not make any adjustments to the shed areas or parameters upstream or downstream of our project site. Table 3 below presents a summary of the pre-construction and post-construction peak flows for the on-site drainage sheds for comparison purposes. See Appendix E for additional HEC-HMS calculation results.

Table 3: On-site Drainage Shed Peak Flows from HEC-HMS

Storm Event	Drainage Shed	10-year peak flow (cfs)	25-year peak flow (cfs)	50-year peak flow (cfs)	100-year peak flow (cfs)	500-year peak flow (cfs)
Pre-Construction	DC25F-onsite	2.1	2.8	3.5	4.0	5.9
	DC25L-onsite	7.2	10.3	12.9	14.8	22.5
	DC25N-onsite	0.8	1.1	1.4	1.8	2.6
Post-Construction	DC25F-onsite	4.6	6.2	7.6	9.0	12.6
	DC25L-onsite	28.6	37.8	44.8	51.8	72.4
	DC25N-onsite	3.1	4.2	5.1	5.9	8.4

HEC-RAS

Since the runoff developed throughout the Dry Creek Vineyard Road Tributary drainage sheds contributes to the flows in that tributary, we created a HEC-RAS model of the tributary to evaluate drainage impacts of our project on downstream and upstream properties. In order to build an accurate model of the entire tributary, we utilized LiDAR data provided by the County to cut cross sections through the tributary approximately every 100-feet. The most downstream cross section represents approximately where the tributary drains into Dry Creek. The tributary was modeled upstream to the beginning of the open channel east of Brady Lane (east of the open channel, there is a double 54" pipe system that conveys runoff from upstream through the existing Elk Hills subdivision).

Once the HEC-RAS model was created, we used the hydrographs developed from the HEC-HMS model to add lateral inflows to the tributary at the closest cross section(s) to the actual discharge point for each drainage shed. We input hydrographs for drainage sheds that discharge into the tributary at a single point as lateral flows at a single cross section, whereas we input hydrographs for drainage sheds that discharge into the tributary across an area (such as sheet flow conditions) as uniform lateral inflow over several cross sections. Drainage Shed DC25B – which represents

over 380-acres to the east of the model – became the upstream boundary condition at the most upstream cross section. We set the downstream boundary condition to normal depth based on a very flat 0.001 slope to represent the existing conditions. Based on comments from the County, we also created duplicate unsteady flow data with the downstream boundary condition set to a constant-elevation stage hydrograph, where the elevation was set to 114-feet to represent the approximate Dry Creek Base Flood Elevation (BFE) at the confluence of the tributary and Dry Creek according to the FEMA FIS.

Using HEC-RAS to model flows through the tributary with lateral inflows allowed for a more accurate analysis of how the runoff peak flows from each shed flow through the tributary at different times. The timing of each shed's peak flow affects the maximum peak flow through the tributary as they combine at different times. Due to this behavior, it is beneficial for peak flow increases from the lower portions of the overall drainage shed to be released to the tributary without any detention in order to prevent those peak flows from adding to the larger peak flows from upstream drainage sheds.

We should note that since RFE did not do a full analysis of the entirety of Dry Creek, the water surface elevations (WSEs) near the confluence of the tributary and Dry Creek may be less accurate because the relationship between the Vineyard Road Tributary peak flow timing and the Dry Creek peak flow timing is not considered in our calculations. However, our analysis which uses the Dry Creek BFE as a constant downstream boundary condition represents a worst-case scenario for the BFE in Dry Creek. Therefore, our downstream WSE results for this boundary condition should be conservative compared to the actual downstream WSEs in the tributary one could expect during a realistic 100-yr storm event.

For the Brady-Vineyard project, we found that project construction will cause approximately 7 cfs increase in the overall peak flow for the Dry Creek Vineyard Road Tributary just downstream of the Vineyard Road Culvert during the 100-yr storm event regardless of the downstream boundary conditions. This peak flow increase jumps to approximately 14 cfs downstream at cross section 5553.77 due to converging peak flows from sheds DC25H and DC25I. Considering the project's on-site peak flow increase in the post-construction condition is over 45 cfs (see Table 3), adding a total of 7 cfs or 14 cfs to the tributary downstream is a relatively small increase due to the timing of the peak flows in the tributary. This relatively small increase shows that the project peak flow leaves the site before the much larger upstream peak flow arrives.

We should note that when examining the entire tributary run, we found that the greatest peak flow increase occurs near the very end of the tributary and varies depending on the downstream boundary condition. For the downstream normal depth boundary condition, we found the maximum peak flow increase was at station 1316.1 at 18.33 cfs for the 100-yr storm event, which is still relatively small considering the large watershed and upstream peak flows (2.7% increase). This 18.33 cfs increase appears to be caused by the convergence of peak flows from the tributary and from drainage shed DC25K reaching that point of the tributary closer in time. For the Dry Creek

BFE downstream boundary condition, we found the maximum peak flow increase was at station 655.85 at 45.08 cfs for the 100-year storm event. This increase is much larger, but we believe this is caused by the tributary channel being much wider at the higher elevation of the Dry Creek BFE. Since the channel is much wider and the WSE is relatively constant in the tributary, very small changes in velocity have much larger changes in peak flow.

Table 4 shows a summary of pre-construction and post-construction peak flow and WSE data for the normal depth downstream boundary condition for select cross sections in the tributary.

Table 4: Selected Flows and WSE from HEC-RAS - Normal Depth Boundary Condition

Tributary Station	100-yr Pre-Construction Peak Flow (cfs)	100-yr Post-Construction Peak Flow (cfs)	100-yr Pre-Construction WSE (ft)	100-yr Post-Construction WSE (ft)
9764.85	428.81	428.78	132.89	132.89
9161.5	436.34	436.12	131.77	131.77
8292.18	439.46	439.94	127.68	127.68
7877.8	464.91	465.93	126.89	126.89
7588.69	464.20	465.02	125.27	125.31
7492.13*	490.22	496.96	124.96	125.00
7446.46**	490.19	496.90	124.04	124.06
7346.34	490.17	496.88	123.92	123.94
6748.04	495.31	502.04	121.18	121.20
5618.96	502.49	508.38	117.65	117.71
5553.77	577.76	591.65	117.52	117.57
4081.21†	585.69	598.89	113.23	113.28
2833.94††	592.64	605.40	109.79	109.83
1316.1	684.5	702.83	106.49	106.54

*Just upstream of Vineyard Road culvert
**Just downstream of Vineyard Road culvert
††North end of Roseville Wastewater Treatment Plant
††Southern end of Roseville Wastewater Treatment Plant

Based on our calculations, the peak flow from just the project's on-site development would occur approximately 15 minutes after the storm peak, whereas the peak flow for the tributary as it passes through the Vineyard Road culvert would occur near the 1-hour mark after the storm peak. Therefore, detaining our peak flow could cause an overall more detrimental condition as our on-site detained flow would further increase the overall tributary peak flow. This analysis shows that not detaining the projects peak flows will better mitigate downstream impacts by not raising the overall peak flow even higher.

More importantly, our model shows the peak flow increase during the 100-yr storm will raise the peak Water Surface Elevation (WSE) by only 0.06 feet immediately downstream of our site. Based

on the topographic data downstream of the site, the 0.06 foot increase in WSE will not subject any downstream structures to flooding (all downstream buildings are more than 1' above the post-construction WSE). Furthermore, we found that the Vineyard Road culvert has capacity to pass even the flows from the 500-yr storm without the WSE reaching the top of the culvert. Therefore, we believe that on-site detention should not be required based on this project's location in an area of the Dry Creek watershed where the County recommends no detention for new development (unless there are "downstream impacts").

Table 5 shows a summary of pre-construction and post-construction peak flow and WSE data for the Dry Creek BFE downstream boundary condition for select cross sections in the tributary.

Table 5: Selected Flows and WSE from HEC-RAS – Dry Creek BFE Boundary Condition

Tributary Station	100-yr Pre-Construction Peak Flow (cfs)	100-yr Post-Construction Peak Flow (cfs)	100-yr Pre-Construction WSE (ft)	100-yr Post-Construction WSE (ft)
9764.85	428.75	428.77	132.89	132.89
9161.5	436.25	436.15	131.77	131.77
8292.18	439.37	439.96	127.68	127.68
7877.8	464.81	465.93	126.89	126.89
7588.69	464.09	465.03	125.27	125.31
7492.13*	490.10	496.99	124.95	125.00
7446.46**	490.07	496.92	124.04	124.06
7346.34	490.05	496.91	123.92	123.94
6748.04	495.19	502.07	121.18	121.20
5618.96	502.29	509.41	117.66	117.72
5553.77	577.56	591.71	117.53	117.58
4081.21†	587.63	601.68	114.44	114.46
2833.94††	585.67	594.15	114.06	114.06
1316.1	655.98	697.52	114.01	114.01

*Just upstream of Vineyard Road culvert
**Just downstream of Vineyard Road culvert
††North end of Roseville Wastewater Treatment Plant
††Southern end of Roseville Wastewater Treatment Plant

In order to verify if the downstream boundary conditions had a drastic effect on the WSEs in the tributary, RFE also compared the post-construction 100-yr WSEs from the normal depth boundary condition to those from the Dry Creek BFE boundary condition. We found that, while the WSEs near the confluence of the tributary and Dry Creek are predictably higher for the Dry Creek BFE boundary condition than for the normal depth boundary condition, upstream of station 6352 there is no difference in post-construction WSE between the two boundary conditions and less than 0.10-feet difference above station 5000. Notably, station 6352 is well downstream of the Vineyard Road

culvert. Therefore, we believe the boundary condition does not affect the WSE increases caused by our project.

Since the greatest peak flow increases occur much closer to the confluence of the tributary and Dry Creek, and because the WSE within the tributary in this downstream stretch is unaffected by the increased peak flows, we do not consider these downstream peak flow increases to indicate that the project will have an impact on the flood plain limits of the tributary. Based on our WSE comparisons throughout the tributary and the potentially increased impacts of detaining on-site flows, we do not believe that the 0.06-foot maximum increase in the WSE warrants a requirement for detention.

One final analysis RFE performed was to compare the worst-case post-construction flood plain limits as calculated by our HEC-RAS model with the flood plain limits from the aforementioned Pending FEMA FIS. In order to accomplish this, we first obtained the shape files available from the FEMA FIS from FEMA's website. Since the topography used in the FEMA FIS was different from what we had available (we believe our topography is probably more accurate), we could not directly use the FEMA flood limits as a comparison. Instead, we used the shapefile from FEMA which represented the centerline of the tributary and which varied in elevation throughout the tributary to represent the FEMA BFEs. We daylighted this centerline perpendicular to the channel to catch the topography from our modeling. Therefore, we essentially transposed the FEMA BFEs onto our available topography.

We found that, except for in a few places, the FEMA BFEs appeared to be slightly higher than our calculated WSEs and therefore the FEMA flood plain limits are slightly larger than our calculated limits. Notably, our model had higher WSEs crossing Brady Lane – presumably because the FEMA study appears to have its upper limit just west of Brady Lane, whereas our calculations considered the flows through the Brady Lane culverts. Due to the difference in flood plain limits, we have mapped the worst-case flood plain limits at each point along the tributary. For the majority of the tributary, the flood plain limits represent the FEMA limits, but for some areas where our HEC-RAS calculations showed higher BFEs, the flood plain limits reflect our calculations.

See Appendix B for the Shed Map showing drainage patterns within the Dry Creek Vineyard Road Tributary drainage shed. Appendix A also includes a Flood Plain Model exhibit showing the extents of the 100-yr flood plain and the cross sections that we analyzed as part of this evaluation. The Flood Plain Model exhibit shows the worst-case flood plain limits from the FEMA FIS and our calculations including the downstream limits from the Dry Creek BFE boundary condition. At select cross sections – which roughly corresponded to the cross sections provided on the FEMA map – we have included numeric WSEs from both our calculations and the FEMA FIS for comparison purposes. See Appendix E for a full tabulation of the tributary's peak flows and WSE data.

Fill in the Floodplain

As part of the County-required public improvements, this project proposes to widen Vineyard Road along its frontage in order to accommodate an ultimate road section that includes 50-feet of paving. The widening on the project's frontage includes adding between 11-14-feet of new pavement on the north side of the roadway. In order to construct this widening per the County's requirements, fill will have to be placed within the regulatory floodway of the floodplain. RFE created two additional plans in the HEC-RAS model to evaluate the impacts to the BFEs in the Dry Creek Tributary based on two scenarios for adding fill in the floodplain: 1) Approximately 500 cy fill added to the west property line shared with APN: 473-020-001 – representing the Vineyard Road widening proposed with this project, and 2) Approximately 700 cy fill added including through the neighboring parcel (APN: 473-020-001), and to the west property line of the N.A.P.O.T.S. portion of the project parcel which is shared with APN: 474-070-015 – representing Vineyard Road's Ultimate Condition. Only one cross section – station 7492.13 – in the HEC-RAS model changed as a result of these two fill conditions.

After running the HEC-RAS analysis for these conditions, our calculations showed that fill from the proposed project widening (Scenario 1) had a negligible effect on the WSE beyond about 100-feet upstream of the culvert (station 7588.69). Downstream of the culvert, the change in WSE varies. There are long sections of the tributary where the WSE appears unaffected by the additional fill from Vineyard, but there are also long stretches where the WSE increases by 0.01-feet from the post-construction 100-yr flow without any fill. Our calculations showed a maximum WSE rise of 0.02-feet compared to the *post*-construction 100-yr flow without any fill approximately 2,050-feet downstream (station 5423.09). We should note that the resulting WSE represents a maximum rise of 0.07-feet from the *pre*-construction 100-yr flow (with Dry Creek BFE boundary condition).

For the ultimate Vineyard widening (scenario 2), our calculations showed slightly more dramatic results. Our calculations showed that, when compared to the WSE from the post-construction 100-yr peak flow, the WSE decreased slightly upstream of the culvert starting at station 7782. This decrease is most pronounced at station 7492.13 which represents the location just before the culvert entrance. Here the WSE drops by 0.24-feet. Downstream of the culvert, the change in WSE varies similar to scenario 1. There are long sections of the tributary where the WSE appears unaffected by the additional fill from Vineyard, but there are also long stretches where the WSE increases by 0.02-feet from the post-construction 100-yr flow without any fill. Our calculations showed a maximum WSE rise of 0.02-feet compared to the *post*-construction 100-yr flow without any fill between approximately 1,680-feet and 2,730-feet downstream (stations 5792.84 to 4744.51). The resulting WSE represents a maximum rise of 0.08-feet from the *pre*-construction 100-yr flow (with Dry Creek BFE boundary condition). Through the section with decreased WSEs upstream of the culvert, the water velocity is notably higher than the post-construction 100-yr peak flow condition. We believe that the restriction of area for water to flow leads to increased velocities and lower WSEs through the culvert.

During the construction document phase, a more detailed model of this area with additional cross sections may improve the model results calculated with these fill scenarios, but that detail is beyond the scope of this preliminary report. The most important result of this analysis is that, because this project will be adding fill to the floodplain, and because our results show a rise in WSE for the post-construction peak flows when compared to the pre-construction peak flows (regardless of the fill scenario or no fill condition), this project will require a Conditional Letter of Map Revision (CLOMR) to be filed with FEMA prior to construction. See Appendix E for exhibits showing the floodplain elevations and limits resulting from fill within the floodplain.

H. STORMWATER QUALITY DESIGN

Since this project is considered a "***Regulated Project with Hydromodification***," the stormwater quality design must be consistent with the West Placer Storm Water Quality Design Manual (April 2016). As part of these requirements, this project is required to treat stormwater runoff as well as mitigate runoff volume (hydromodification) from new and/or replaced impervious surfaces for the 2-year, 24-hour storm. The stormwater BMPs selected for this project will treat stormwater prior to discharging runoff into the on-site storm drain pipe system as well as provide stormwater detention for the 2-year storm event meeting the hydromodification requirements of Placer County.

RFE evaluated the entire on-site drainage shed to the east of the Vineyard Road Tributary for water quality (including areas on Vineyard Road and Brady Lane that will be affected by the project improvements). Areas to the west of the tributary will remain undisturbed by this project. We divided this drainage shed into Drainage Management Areas (DMAs) determined by the proposed grading and BMP locations. We designed each BMP to meet the requirements of the WPSWQDM using the Post-Construction SWQP spreadsheet provided by Placer County. The Stormwater Quality Shed Map in Appendix B shows the limits of these drainage sheds.

<u>Stormwater Treatment</u>

The project will use a combination of downspout disconnection and bio-retention to treat the project impervious surfaces (building roofs, driveways, and roads). The lot grading for this project assumes Type A drainage to the front of the lot without the use of subdrains. Therefore, downspouts from the future houses can be disconnected from the underground system, meaning runoff will flow overland through the lots before reaching street curb and gutters. Runoff from the roads and from the residential lots that does not infiltrate into the ground within the lots will flow into bioretention planters located adjacent to the roadways – in most cases, at the intersections. Stormwater that overflows the bioretention planters will enter the on-site underground storm drainage system.

RFE calculated the effective treated impervious area for downspout disconnection as a site design measure according to Form 3-4 of the SWQP spreadsheet. We estimated approximately 65% of the lot areas will consist of impervious areas, with the remaining 35% consisting of landscaping and other pervious area. We did not count the on-site roads as disconnected impervious areas

since runoff from the roads will flow to the bioretention planters via curb and gutter. Assuming that the lots are 65% impervious, we calculated the runoff reduction for disconnected downspouts using the entire impervious lot area in each DMA since 65% impervious area meets the required ratio of impervious to pervious surface area (2:1) to count as a site design measure per the WPSWQDM.

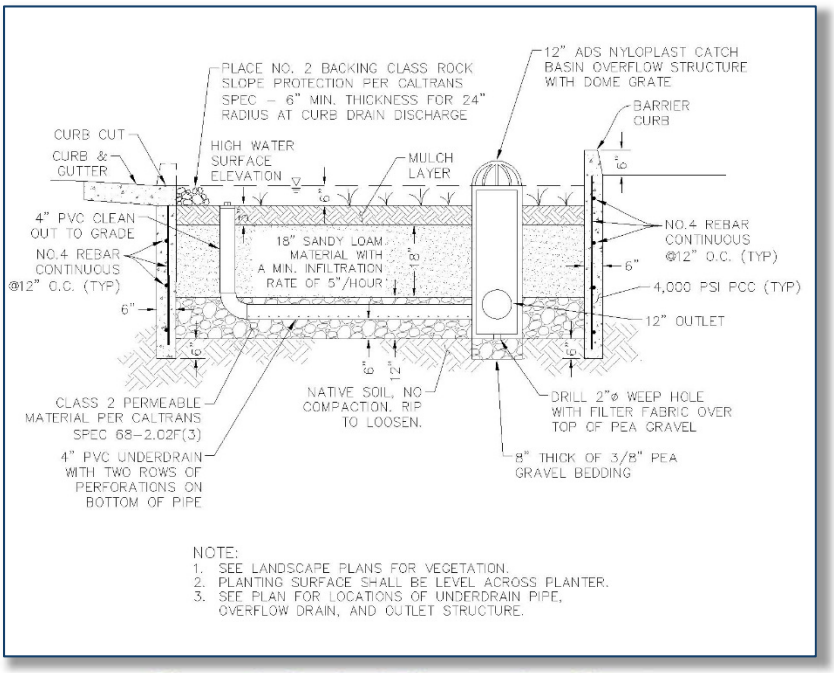


Figure 3: Typical Bioretention Planter

RFE designed volume-based infiltrating bioretention planters to be consistent with Form 3-6 of the SWQP spreadsheet. These areas will be recessed below the outlet to promote infiltration. Runoff that does not infiltrate will pond in the bio-retention areas and overflow via the BMP outlet. An underdrain at the bottom of the system will allow treated stormwater to flow into the storm drain system if the soils below are saturated to the point where infiltration ceases.

Hydromodification

RFE evaluated the hydromodification design of the site based on Forms 4-1, 4-2, and 4-3 of the SWQP spreadsheet. We evaluated the entire drainage shed as a single Drainage Management Area for this calculation with the outlet from the site being the culvert underneath Vineyard Road. According to our evaluation, the bioretention areas and downspout disconnection provide adequate detention volume to meet the requirements of the WPSWQDM.

See Appendix B for the Post-Construction Shed Map showing post-construction stormwater quality BMP locations and surface areas. Appendix F contains the Post-Construction Stormwater Quality Plan Forms from the spreadsheet as well as background materials used to calculate hydromodification.

I. CONCLUSIONS

1. The increase in impervious surface area due to construction of proposed improvements will necessitate drainage infrastructure to convey stormwater runoff safely away from improved areas.

2. The project is not required to detain runoff for flood control due to its location in the Dry Creek drainage shed. The increase in impervious surface area due to proposed improvements will cause post-construction runoff peak flows to be higher than existing conditions. Increased peak flows through the Dry Creek Vineyard Road Tributary in the post-construction condition will cause slight rises in the BFE at some points, with the maximum rise of 0.06-feet immediately downstream of the project site. However, these rises are relatively insignificant and will not impact any downstream structures.

3. Fill will be required in the regulatory floodway of the FEMA floodplain to accommodate the widening of Vineyard Road along the project frontage. This fill will cause an additional rise in WSE for the post-construction 100-yr peak flow of 0.02-feet downstream of the Vineyard Road culvert when compared to the post-construction 100-yr peak flow condition without any fill (with Dry Creek at BFE), which equates to a WSE rise of 0.07-feet compared to the *pre*-construction 100-yr peak flow (with Dry Creek at BFE).

4. Proposed development may cause additional stormwater pollution that must be mitigated for the 2-year, 24-hour storm event before runoff leaves the site per the WPSWQDM.

5. Proposed development will require hydromodification for the 2-year, 24-hour storm event before runoff leaves the site per the WPSWQDM.

6. Proposed buildings should maintain a 1-foot minimum freeboard above the overland release elevation and 1-foot above the adjacent flood plain elevation.

J. RECOMMENDATIONS

1. RFE designed the drainage improvements per the standards of the Placer County SWMM and Land Development Manual with underground storm drain pipes designed to convey peak flows expected during the design (10-year, 24-hour) storm event.

2. RFE evaluated the downstream impacts in the Dry Creek Vineyard Road Tributary from the project peak flows for the 10-year, 25-year, 50-year, 100-year, and 500-year design storm and found that there will not be any significant impacts. If the project were to incorporate on-site stormwater detention, the impacts would likely be worse downstream than as currently proposed due to the timing of peak flows. Therefore, we do not recommend any detention of stormwater runoff.

3. Because of the increase in BFE of the Dry Creek Vineyard Road Tributary in the post-

construction condition compared to the pre-construction condition, a CLOMR will be required to be submitted to FEMA prior to project construction. However, RFE does not believe a 0.07-foot rise in WSE from the pre-construction condition constitutes a significant risk to downstream properties.

4. RFE assumed the new lots would be disconnected from storm drainage infrastructure by pervious areas. We also designed bioretention planters to intercept and treat runoff prior to discharge into the Dry Creek Vineyard Road Tributary. We designed these measures to meet the requirements of the WPSWQDM.

5. The site design measures and treatment BMPs required for stormwater quality mitigation prove to be adequate to meet the hydromodification requirements of the WPSWQDM for the 2-year, 24-hour storm event.

6. RFE designed the subdivision grading to provide a minimum of 1-foot of freeboard for all building pads to each overland release point in each drainage shed as well as to provide a minimum of 1-foot above the flood plain elevation.

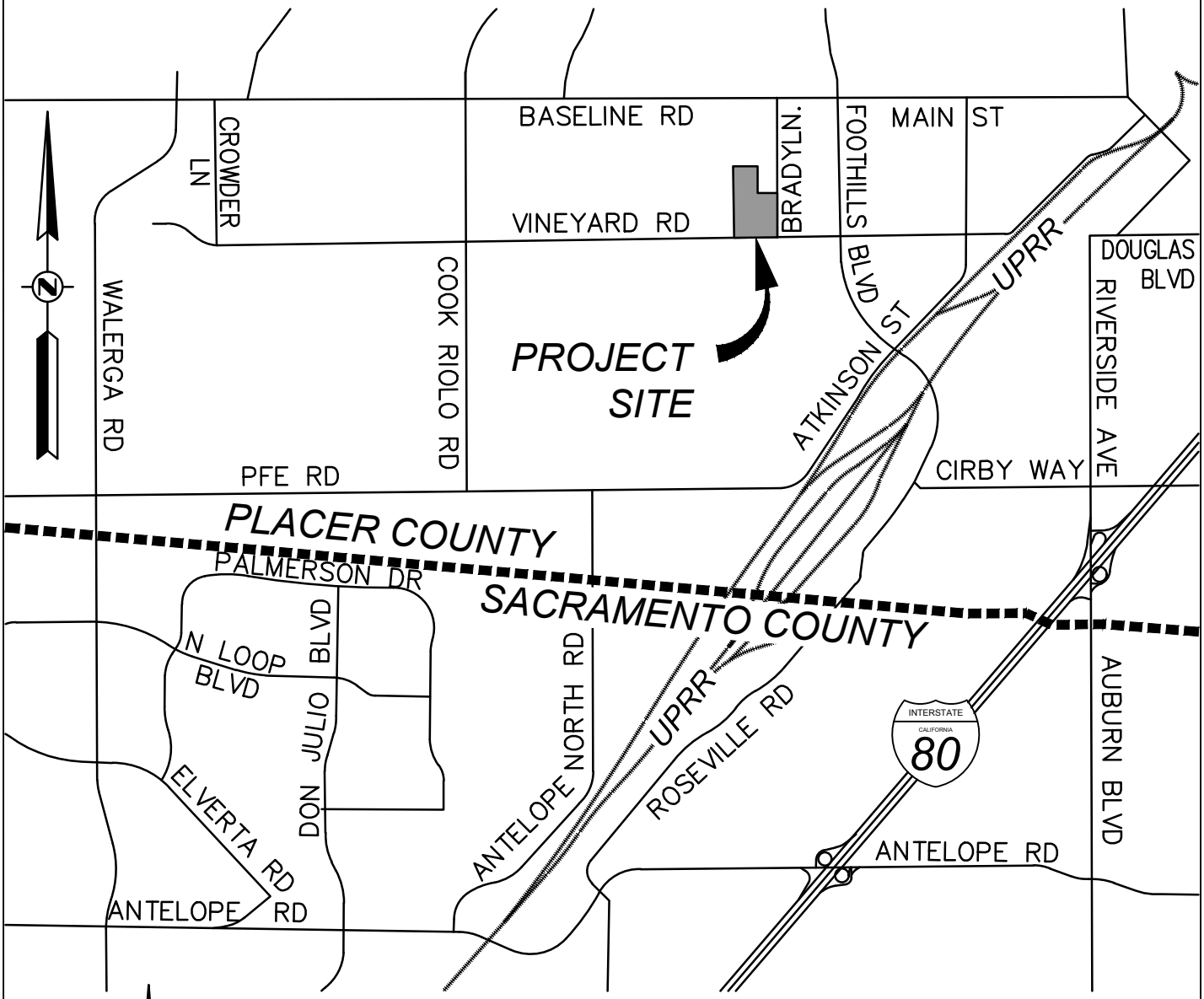
In order to collect and convey the increased runoff from proposed improvements, mitigate impacts to downstream drainage infrastructure, meet Placer County stormwater treatment and hydromodification requirements, and provide adequate overland release for the project site, RFE recommends that the final design and construction for this project include grading, storm drainage, and stormwater quality improvements consistent with the preliminary plans for the Brady Vineyard Project and recommendations outlined in this Preliminary Drainage Study & Stormwater Quality Plan.

K. REFERENCES

- Autodesk Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2018
- HEC-HMS version 4.2
- Placer County Land Development Manual, October 1996
- Placer County Stormwater Management Manual, September 1990
- Preliminary Geotechnical Engineering Study, July 25, 2017, ACE Quality Control
- USDA TR-55 *Urban Hydrology for Small Watersheds,* June 1986
- West Placer Storm Water Quality Design Manual, April 2016.

APPENDIX A

VICINITY MAP AND SITE PLAN EXHIBITS



NOT TO SCALE

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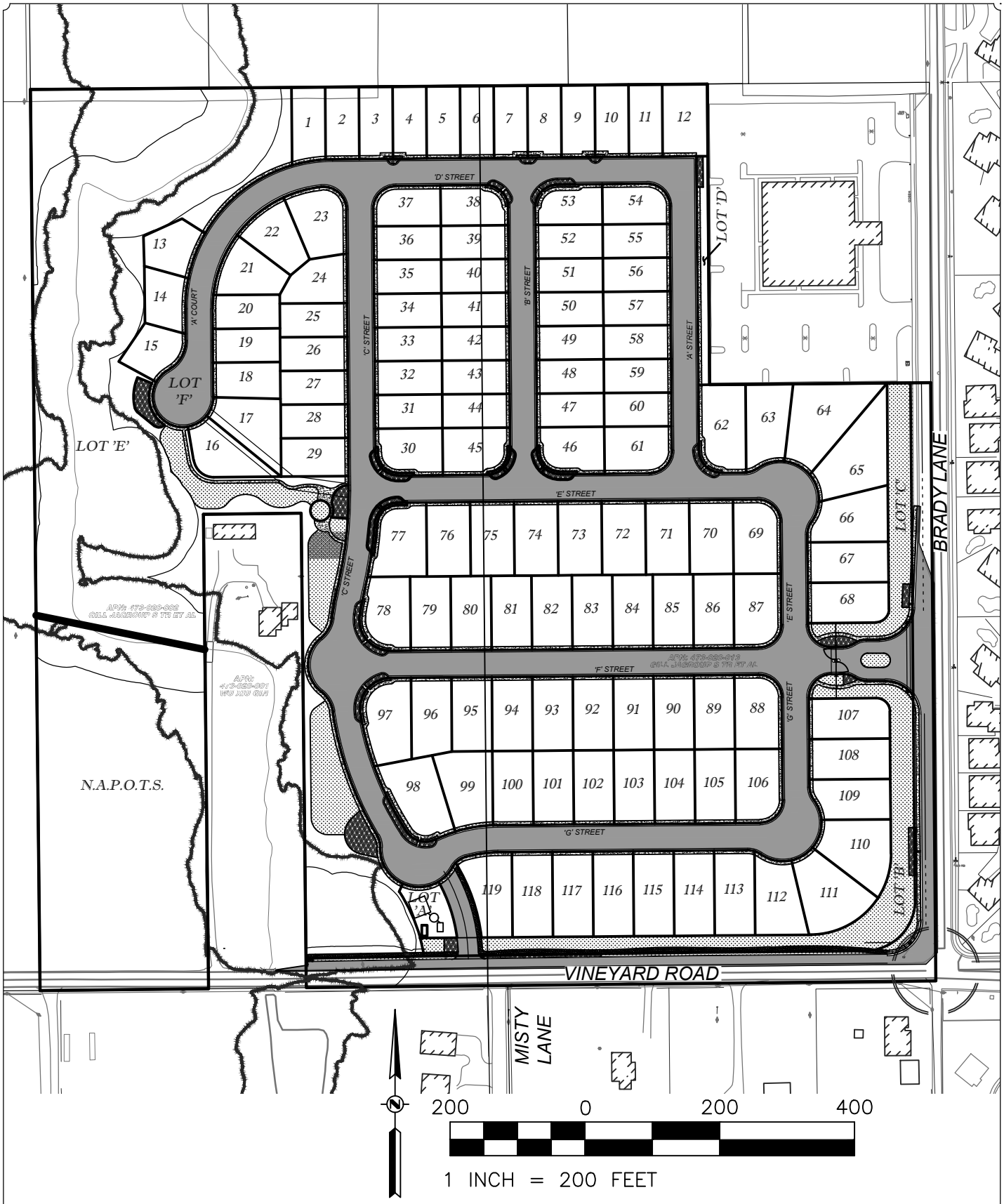
VICINITY MAP

PLN XX-XXXXX
BRADY LANE & VINEYARD RD
PLACER COUNTY, CA 95747
APN:473-020-002, 013



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SITE PLAN

BRADY LANE & VINEYARD RD
PLACER COUNTY, CA 95747
APN:473-020-002, 013

APPENDIX B

DRAINAGE SHED MAPS & FLOOD MODEL EXHIBIT

Z:\2017 Projects\17059 Brady Vineyard\WORKING CAD\EXHIBITS\Vineyard Tributary-Drainage Sheds.dwg May 25, 2018-04:09 pm

LEGEND

DRAINAGE SHED DESIGNATIONS AND AREA	DC25B 388.605 ACRES 0.6072 SQ. MILE
DRAINAGE AREA BOUNDARY	
VINEYARD ROAD TRIBUTARY REACH	
HEC-RAS REFERENCE CROSS SECTION	
EXISTING DRAINAGE FLOW	
POST-CONSTRUCTION ON-SITE DRAINAGE FLOW	

400 0 400 800

1 INCH = 400 FEET

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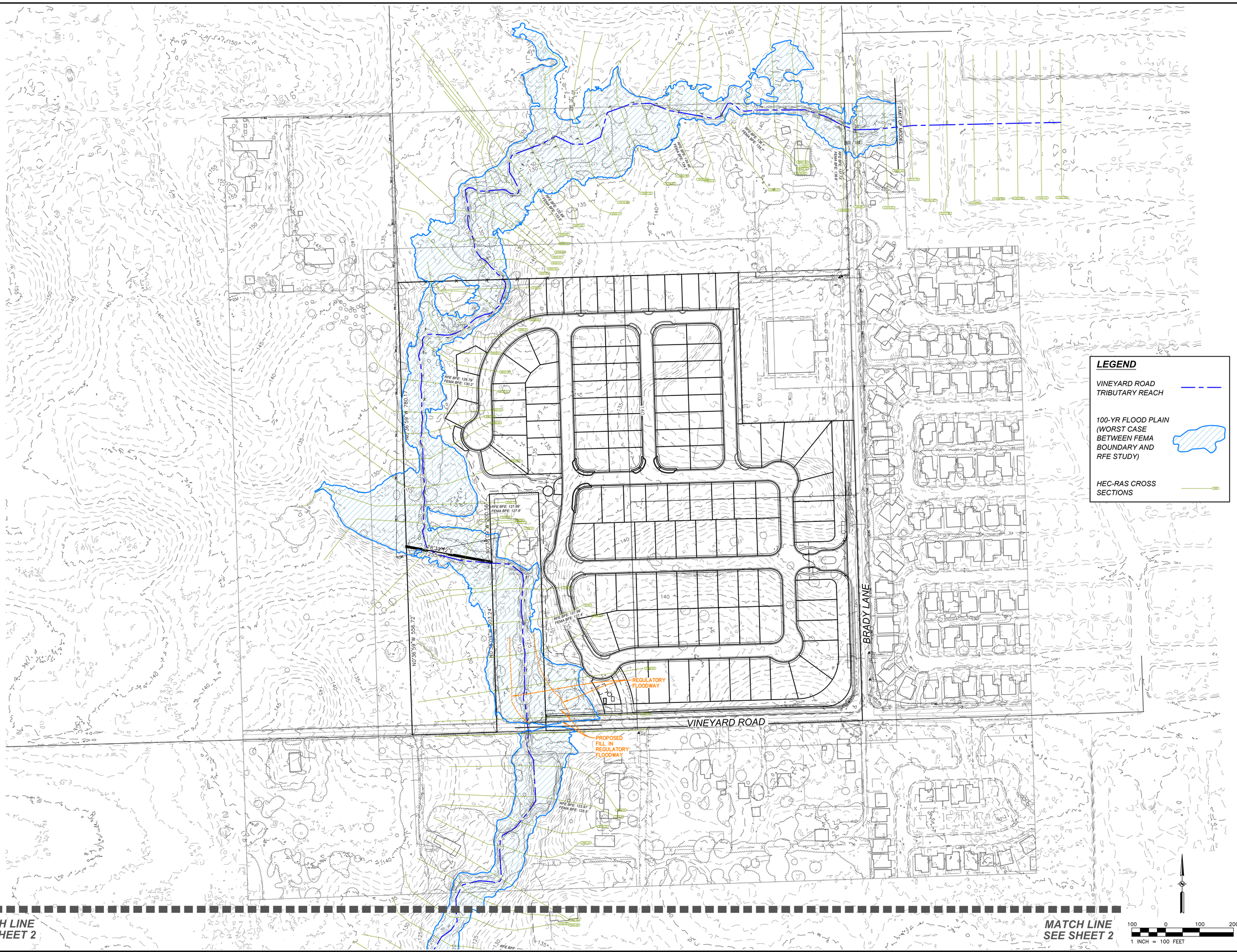
DRY CREEK VINEYARD ROAD TRIBUTARY DRAINAGE SHED MAP



REVISION	DATE	BY	APPRV'D

	BY	CHECK	NO.
DESIGN	SBS	RFE	
DRAWN	SBS	RFE	
QUANT.			

0 1 2 ORIGINAL SCALE IS IN INCHES

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FLOOD MODEL EXHIBIT

Drawing	Sheet
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of	of Total 2

4/2/2019

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

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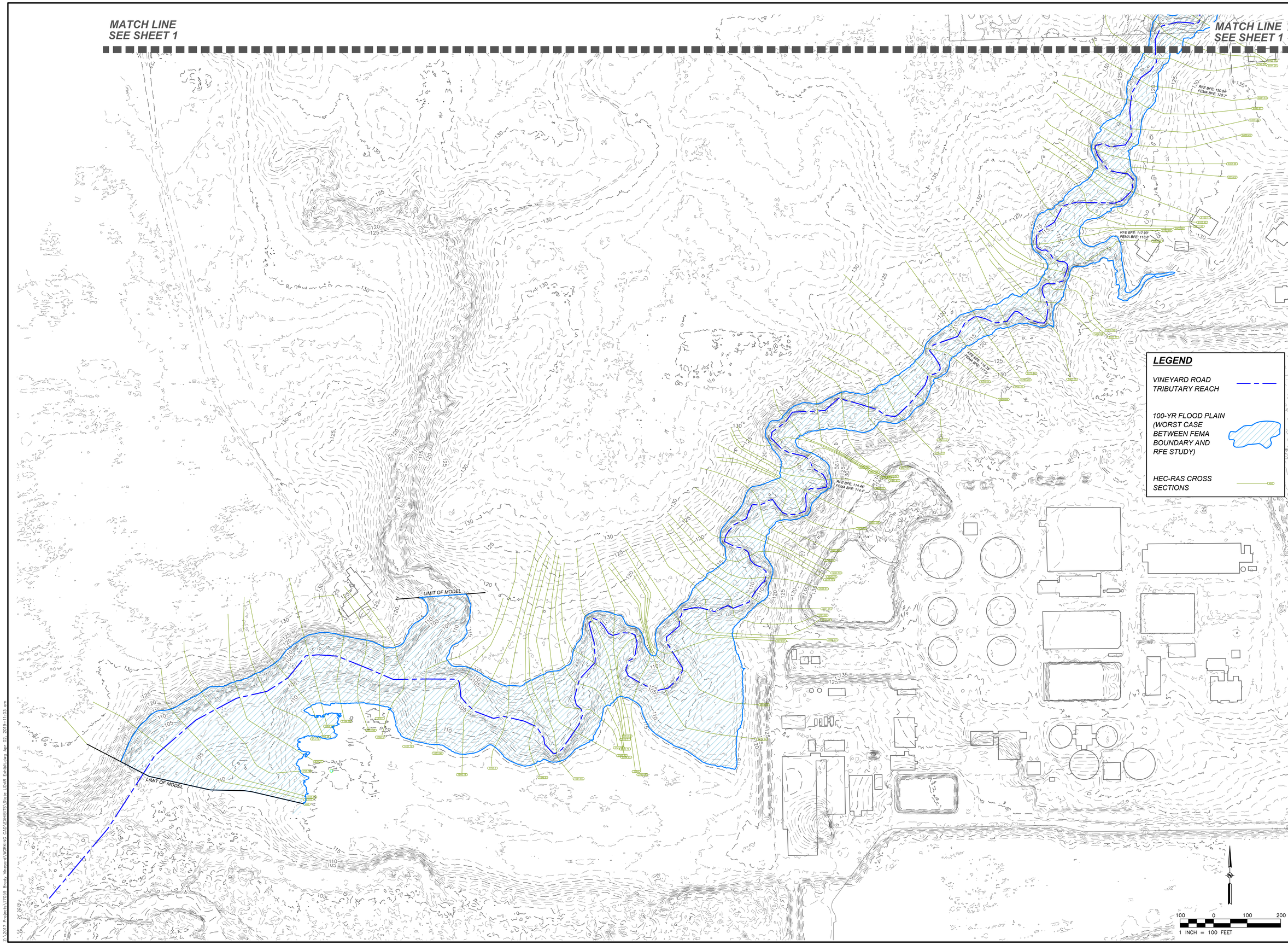

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QUANT.							

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FLOOD MODEL EXHIBIT

Drawing	Sheet
of	2 of Total 2

4/2/2019

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

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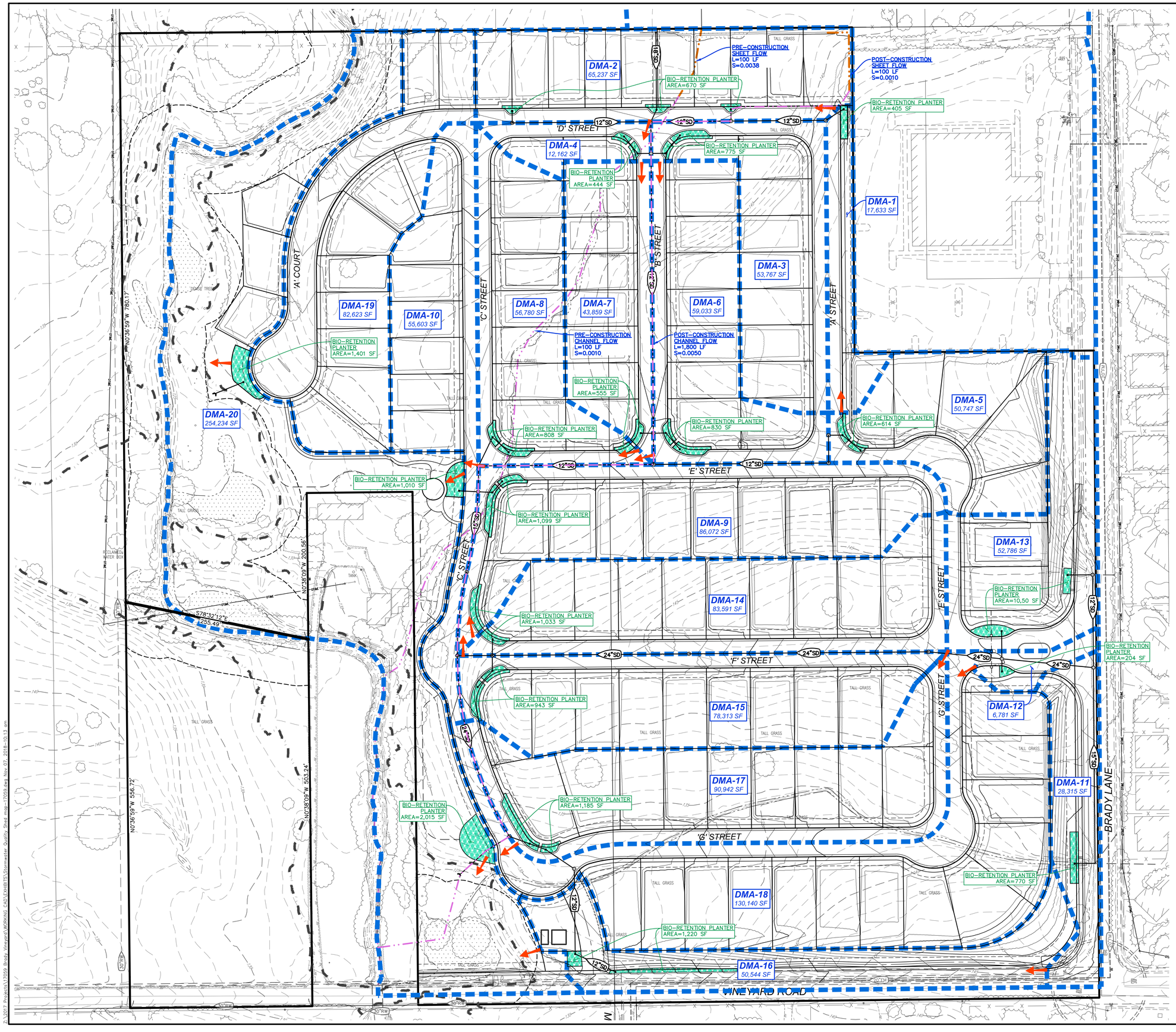

LEGEND

DRAINAGE AREA DESIGNATIONS AND AREA	DMA-3 53,767 SF
DRAINAGE AREA BOUNDARY	
SHEET FLOW	
CHANNEL FLOW	
OVERLAND RELEASE	
FLOW NODE ID	D1
PIPE ID	SD1
POND LIMITS	
BIORETENTION	
WETLAND AREA	

APPRV'D	BY	DATE	REVISION

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DESIGN SBS	RFE
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QUANT.	

0 1 2 ORIGINAL SCALE IS IN INCHES

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STORMWATER QUALITY SHED MAP

Drawing SM1 of Total 1

11/07/2018

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

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APPENDIX C

EXCERPT FROM
PROJECT GEOTECHNICAL REPORT

N

N.T.S.

NOTES:

Locations of exploratory borings (shown as ⊗ B1) are approximate. Base map from Google Earth imagery 2/28/2015.

ACE Quality Control
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Phone: 916-778-0950

EXPLORATIONS MAP

Proposed Brady Residential Subdivision
Brady Lane and Vineyard Road
Roseville, California

ACE JOB NO.	10-17049G
DATE	07/21/2017
FIGURE	2

APPENDIX B

FIELD EXPLORATION METHODS

LOGS OF SUBSURFACE EXPLORATIONS

LEGEND

FIELD EXPLORATION METHODS

Field exploration included a general geotechnical engineering reconnaissance within the study area, as well as the excavation of subsurface explorations (exploratory borings) at the approximate locations shown on the Explorations Map, Figure 2, Appendix A. Exploration locations were located in the field by estimating from the existing site features shown on an aerial photo. The exploration locations should only be considered accurate to the degree implied by the means and methods used to define them. The explorations were conducted in order to assess the geometry and geotechnical characteristics of subsurface geologic deposits at the site.

The explorations were accomplished and the soil sampling/logging performed by a Staff Engineer under the direct supervision of a Geotechnical Engineer. The borings were advanced with a 4-inch outer-diameter continuous flight helical solid stem augers powered by a CME 45 truck mounted drill rig. Relatively undisturbed soil samples were recovered from the borings at selected intervals by a 1.4-inch inner-diameter "standard penetration" sampler advanced with an automatic hammer driving a 140 lb. hammer freely falling 30 inches (standard 350-foot/lb. striking force). The number of blows of the hammer required to drive the samplers each 6-inch to 18-inch interval of each drive is denoted as the penetration resistance or "blow count" and provides a field estimate of soil consistency/relative density. Blow counts shown on the logs have not been corrected/converted. Selected undisturbed samples were retained in moisture-proof containers for laboratory testing and reference.

Samples of the subsurface soil deposits were obtained from the test borings for use in laboratory testing to determine the engineering properties and geotechnical design parameters to be used for future site improvements. The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. A bulk soil sample was recovered directly from excavation cuttings of anticipated pavement subgrade soil and placed in a plastic sample bag. Soil samples were then transported to ACE’s laboratory for further testing. Field descriptions within the test borings logs have been modified, where appropriate, to reflect laboratory test results. Upon completion of drilling the test borings were backfilled from final test boring depth up to original ground surface with excavated soils.

Soils were logged in the field by a Staff Engineer and were field classified based on the Unified Soil Classification System (ASTM D2487) by color, gradation, texture, type, etc., on the basis of visual observation of samples and auger cuttings. Groundwater observations were made in the borings during and after drilling. Exploration logs prepared for each of the test borings provide soil descriptions and field sample depths. The exploration borings logs are included in this Appendix B which also contains the Explorations Log Legend. These logs include visual classifications of the materials encountered during drilling as well as the field engineer’s interpretation of the subsurface conditions between samples. Final logs included with this report represent the engineer's interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

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EXPLORATION LOG

CLIENT	MR. SUKHBIR BRAR	BORING #	B-1
PROJECT NAME	Brady Residential Subdivision	JOB NO.	10-17049G
PROJECT LOCATION	NWC Brady Lane and Vineyard Road	DRAWN BY	DS
	Roseville, California	APPROVED BY	EH

DRILLING and SAMPLING INFO

Date Started	06/13/17	Hammer Wt. (lbs.)	140 lbs. (automatic)
Date Completed	06/13/17	Hammer Drop (in.)	30"
Driller	Cal Nev Geoexploration	Spoon Sampler ID (in.)	1.4, 2.0
Field Geologist	Stemberger		
Boring Method			

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: egs	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to dense, brown to gray-brown, dry to moist, silty fine to medium SAND SM	1		1	MC		83		18	103	4				
		5	2	MC		100		42						
		10	3	ST		100		49						
Medium dense, brown with white and gray, moist, medium to coarse SAND with gravel SP	2	15	4	ST		100	9:15 9:40	29						
		20	5	ST		100		26						
Boring completed at approximately 21-1/2' below egs. GW initially at 16', and after drilling at 17-1/2' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

SuperLog CivilTech Software, USA www.civiltech.com File: Z:\ACE Projects\ACE Projects\Geotechnical Projects\2017\10-17049G Brady Vineyard 36 Acre Development\GRAPHICS\10-17049G LOGS.log Date: 7/24/2017

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-2
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, brown to light brown, dry to moist, silty SAND with gravel and near surface root SM	1		1	MC		50		22						
		5	2	ST		100		26	110	14				
		10	3	ST		100	10:00 15	30	121	13				
Dense, brown, wet,silty SAND with gravel. SM	3	15	4	ST		100		45						
		20	5	ST		100		54						
Boring completed at approximately 21-1/2' below egs. GW initially at 13', and after drilling at 13-1/2' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT: MR. SUKHBIR BRAR
PROJECT NAME: Brady Residential Subdivision
PROJECT LOCATION: NWC Brady Lane and Vineyard Road
Roseville, California

BORING #: B-3
JOB NO.: 10-17049G
DRAWN BY: DS
APPROVED BY: EH

DRILLING and SAMPLING INFO

Date Started: 06/13/17
Date Completed: 06/13/17
Driller: Cal Nev Geoexploration
Field Geologist: Stemberger
Boring Method: 4" O.D SSA

Hammer Wt. (140 lbs.): 140# Automatic
Hammer Drop (30"): 30"
Spoon Sampler ID (in.): 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, brown with white, dry, silty SAND with gravel, micaceous SM	1		1	MC		100	GWT not encountered	39						
		5	2	ST		100		22	115	7				
Medium dense, brown with white and red, moist, well graded SAND with gravel SW	2	10	3	ST		100		23	110	5				
		15	4	ST		100		34						
Dense, light brown, moist, silty SAND with gravel. SM	3	20	5	ST		100		37						
Boring completed at approximately 21-1/2' below egs. Free GW not observed. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-4
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to dense, brown with white and red, moist, silty SAND SM	1		1	MC		83		16	95	5				
		5	2	ST		100		15	107	9				
		10	3	ST		100		43						
Dense to medium dense, light brown, moist, silt ML	2	15	4	ST		100	11:50	45						
		20	5	ST		100	11:30	16	125	13				
Boring completed at approximately 21-1/2' below egs. GW initially at 20' below egs; after drilling at 16' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-5
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Dense, light tan, moist, silty SAND with gravel SM	1		1	MC		100		78						
Dense, brown, moist, SILT ML	2	5	2	ST		100		41			64			
Medium dense to dense, brown, moist, silty fine SAND SM	3	10	3	ST		100		16	112	21				
		15	4	ST		100	12:45	32						
		20	5	ST		100		31						
Boring completed at approximately 21-1/2' below egs. GW initially and after drilling at 16-1/2'. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-6
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, moist, silty fine SAND SM	1		1	MC		83		41	142	7				
		5	2	ST		100		23						
Dense, brown with black, moist, low plasticity SILT ML	2	10	3	ST		100		34						
Medium dense to dense, brown with white and black, moist to wet, silty SAND SM	3	15	4	ST		100	1:15	45						
		20	5	ST		100		28						
Boring completed at depth of approximately 21-1/2' below egs. GW initially and after drilling at 18' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-7
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to dense, brown with gray and white, moist, silty SAND SM	1		1	MC		100	GWT not encountered	24	105	4				
		5	2	ST		100		31	126	14				
		10	3	ST		100		41						
		15	4	ST		100		29	116	18				
		20	5	ST		100		27	132	16				
Boring completed at approximately 21-1/2' below egs. Free groundwater not encountered. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-8
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense to very dense, brown with red and white, moist, silty SAND SM	1		1	MC		100		32	100	2				
		5	2	ST		100		70						
		10	3	ST		100		40						
		15	4	ST		100		31						
		20	5	ST		100	02:30	30						
Boring completed at approximately 21-1/2' below egs. Free groundwater not encountered. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

At Drilling
After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

SuperLog CivilTech Software, USA www.civiltech.com File: Z:\ACE Projects\ACE Projects\Geotechnical Projects\2017\10-17049G Brady-Vineyard 36 Acre Development\GRAPHICS\10-17049G LOGS.log Date: 7/25/2017

1830 Vernon Street, Suite 7
Roseville, California 95678
Phone: (916) 778-0950
www.ACEqc.com

EXPLORATION LOG

CLIENT MR. SUKHBIR BRAR
PROJECT NAME Brady Residential Subdivision
PROJECT LOCATION NWC Brady Lane and Vineyard Road
Roseville, California

BORING # B-9
JOB NO. 10-17049G
DRAWN BY DS
APPROVED BY EH

DRILLING and SAMPLING INFO

Date Started 06/13/17
Date Completed 06/13/17
Driller Cal Nev Geoexploration
Field Geologist Stemberger
Boring Method 4" O.D SSA

Hammer Wt. (140 lbs.) 140 Automatic
Hammer Drop (30") 30"
Spoon Sampler ID (in.) 1.4" , 2.0"

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION: EGS	Stratum	Depth Scale	Sample No.	Sample Type	Sample Graphics	Recovery (%)	Groundwater	Penetration Test (blows per foot)	Dry Density (pcf)	Moisture Content (%)	Pass No. 200 Sieve (%)	Liquid Limit (LL)	Plastic Limit (PL)	Remarks
Medium dense, brown, moist, silty SAND SM	1		1	MC		100		24						
		5	2	ST		100		11	110	11				
Dense to very dense, brown with white, moist, silty SAND with gravel SM	2	10	3	ST		50		55	107	8				
		15	4	ST		100		49						
Dense, light tan with gray, moist, fine sandy SILT with gravel ML	3	20	5	ST		100	03:30 ▼ 03:15 ▽	34						
Boring completed at approximately 21-1/2' below egs. GW initially at 20' below egs; after drilling at 19' below egs. Boring backfilled with cuttings.														

Sample Type:

ST - Standard Split Spoon
MC - Mod. Calif. SS (2.5" OD)
GS - Grab Sample
RC - Rock Core
AT - AMS Tube (2" ID)
CT - 3" OD Split Spoon

Depth of Ground Water:

▽ At Drilling
▼ After Drilling

Layer Lines:

Layer lines are approximate and in-situ the transition may be gradual

Boring Method:

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
CC - Continuous Core

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APPENDIX D

EXCERPT FROM
PLACER COUNTY SWMM

TABLE 5-3

CONSTANT INFILTRATION RATES' FOR HYDROLOGIC SOIL-COVER COMPLEXES

Cover Type	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Bare - Rockland, eroded and newly-graded areas		.10	.02	.O1	.01
Grass,Annual or Perennial	Poor	.16	.09	.06	.04
	Fair	:31	.16	.09	.07
	Good	.41	.22	.12	.09
Meadows - Areas with seasonally high water table, principal vegetation is sod-forming grass	Poor	.20	.11	.06	.05
	Fair	.30	.15	.09	.07
	Good	.50	.24	.17	.14
Chaparral,Broadleaf (Manzanita and scrub oak)	Poor	.28	.15	.09	.06
	Fair	.40	.20	.12	.08
	Good	.49	.25	.14	.10
Open Brush - Softwood shrubs, buckwheat, sage, etc.	Poor	.21	.11	.07	.05
	Fair	.34	.18	.11	.07
	Good	.39	.20	.12	.08
Woodland - Coniferous or broadleaf trees predominate. Canopy density is at least 50%)	Poor	.35	.18	.11	.07
	Fair	.44	.22	.13	.09
	Good	.53	.26	.15	.11
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50%)	Poor	.25	.13	.08	.06
	Fair	.36	.18	.11	.08
	Good	.47	.24	.14	.09
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	.48	.25	.16	.12
Open Space	Poor (grass cover < 50%)	.26	.09	.06	.04
	Fair (grass cover 50-75%)	.31	.16	.09	.07
	Good (grass cover > 75%)	.41	.22	.12	.09

1. Loss rates in inches/hour
2. Use appropriate ground cover designation

roof, lawn, driveway, and street surfaces, with the street gutter serving as collector. It is appropriate to represent these surfaces with two overland elements: a smooth one for directly connected impervious areas, such as roofs, driveways and streets, and a rough one for landscaped and unconnected impervious areas.

Equation 5-3 is used to estimate the overland flow component of response time (7)(8). Solutions for this equation may be obtained graphically in Figure 5-1.

$$t_r = \frac{.355(nL)^{0.6}}{S^{0.3}} \qquad [5\text{-}31]$$

where

t_r = response time, minutes
n = Manning's roughness coefficient (Table 5-5)
L = flow length, feet
s slope of surface, feet/feet

TABLE 5-5
ROUGHNESS PARAMETERS FOR OVERLAND FLOW [1]

Surface	n [2]
Smooth surfaces (concrete asphalt, or bare soil)	0.11
Grass:	
Short grasses	0.15
Dense grasses	0.24
Bermuda grass	0.40
Poor grass cover on moderately rough surface	0.40
Woods with Underbrush	0.40 - 0.80

1. Sources (1) and (8).
2. Both surface roughness and vegetation cover affect runoff; but only the portion less than 0.1 foot high.

i) , Collector Flow **Equ**ation 5-4 below or the Manning equation may be used for estimating velocities of concentrated flow in rivulets, swales, gutters, pipes, and channels. Equation 5-4 applies to an open, triangular channel with no inflow at its upstream end and side inflows uniformly distributed along its length.

This representation is considered adequate for approximating open channels and pipes in most situations. Equation 5-4 may be solved graphically using Figure 5-2.

$$t_r = \frac{.00735Ln^{.75}(1 + Z^2)^{.25}}{s^{.375}(A_cZ)^{.25}} \qquad [5\text{-}4]$$

where

t_r = response time, minutes
n = Manning's roughness coefficient See Table 6-3 or Table 8-1
s = slope, feet horizontal/foot vertical
L = length, feet
Z = side slope, feet horizontal/foot vertical
A_c = contributing area, acres

In natural watersheds, it may be appropriate to use higher values of Manning's n for the initial collector where the flow is shallow.

Manning's equation may be used to estimate the collector response time when it is felt that Equation 5-4 does not apply. A flow of 2 cfs per acre of contributing watershed should be used to evaluate velocities. The velocity computed for open channel flows using Mannings equation shall be increased by an adjustment factor as follows to account for celerity:

Table 5-A-1
Depth-Duration-Frequency Coefficients

150 - 3000 feet elevation
West of Sierra Nevada Crest

Depths in inches at 150 feet

HEC-HMS Inputs

Duration	2yr	5yr	10yr	25yr	50yr	100yr	200yr	500yr
5m	0.13	0.20	0.25	0.32	0.38	0.44	0.49	0.58
10m	0.19	0.29	0.36	0.46	0.54	0.62	0.70	0.82
15m	0.23	0.35	0.43	0.55	0.64	0.73	0.82	0.96
30m	0.32	0.47	0.57	0.72	0.83	0.94	1.04	1.22
1h	0.45	0.64	0.77	0.94	1.07	1.21	1.33	1.53
2h	0.64	0.88	1.04	1.26	1.42	1.59	1.76	2.00
3h	0.77	1.04	1.23	1.47	1.66	1.85	2.03	2.31
6h	1.06	1.40	1.65	1.95	2.22	2.23	2.75	3.10
12h	1.43	1.91	2.24	2.67	3.00	3.30	3.60	4.00
1d	1.90	2.50	2.98	3.46	3.85	4.25	4.60	5.20
2d	2.51	3.40	3.95	4.65	5.15	5.70	6.20	7.00
3d	3.00	4.07	4.65	5.50	6.20	6.80	7.50	8.40
5d	3.61	4.91	5.76	6.85	7.63	8.42	9.20	10.29
10d	4.73	6.44	7.54	8.96	9.97	11.01	11.95	13.45

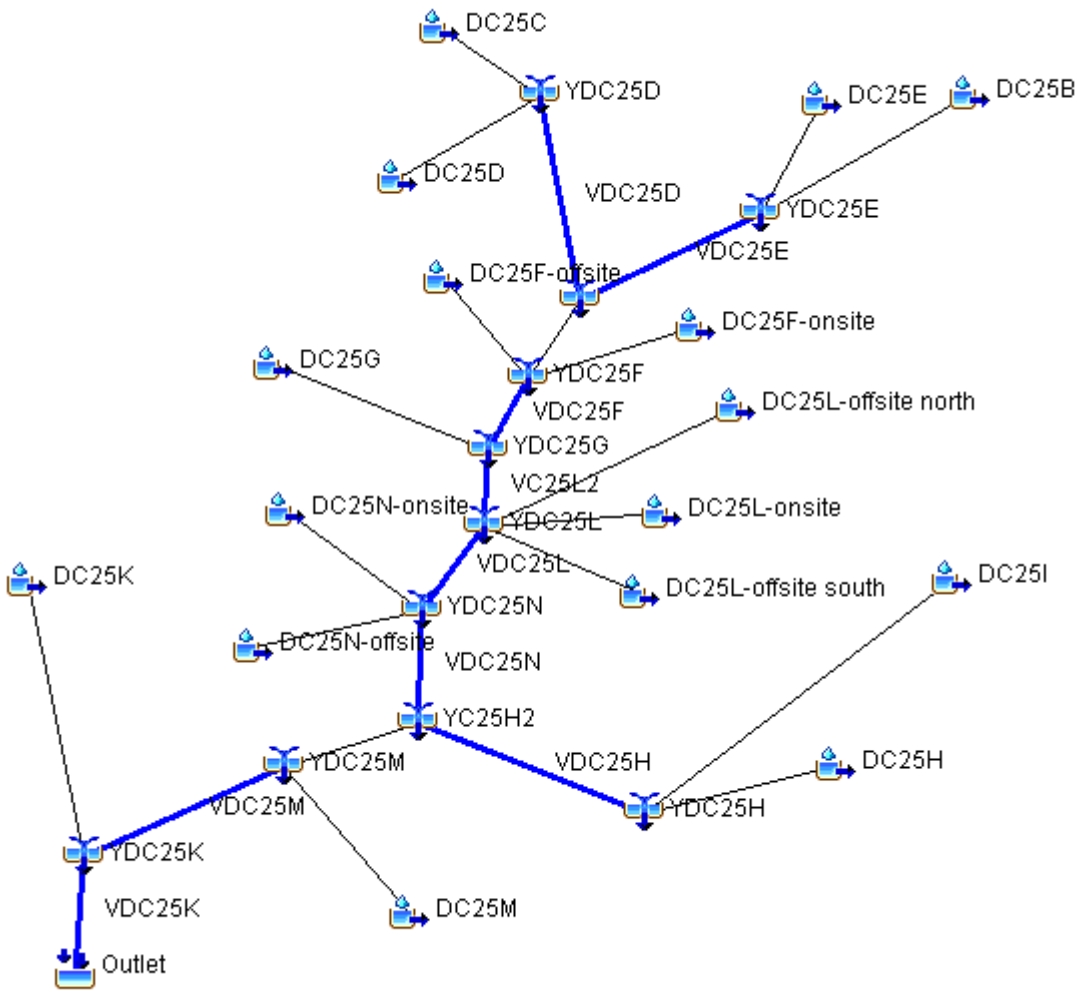
Change in depth, inches per 1000 feet

Duration	2yr	5yr	10yr	25yr	50yr	100yr	200yr	500yr
5m	0.007	0.000	-0.003	-0.007	-0.017	-0.023	-0.027	-0.037
10m	0.007	0.003	0.000	-0.010	-0.020	-0.027	-0.037	-0.050
15m	0.017	0.013	0.013	0.003	0.000	-0.007	-0.013	-0.027
30m	0.030	0.040	0.040	0.040	0.040	0.040	0.040	0.030
1h	0.063	0.087	0.100	0.120	0.133	0.137	0.157	0.173
2h	0.107	0.157	0.193	0.230	0.260	0.287	0.313	0.350
3h	0.143	0.220	0.263	0.327	0.373	0.413	0.457	0.513
6h	0.230	0.357	0.433	0.540	0.593	0.733	0.757	0.850
12h	0.453	0.663	0.820	0.977	1.127	1.250	1.400	1.600
1d	0.700	1.037	1.240	1.547	1.783	1.983	2.200	2.500
2d	1.163	1.667	2.017	2.483	2.850	3.167	3.533	4.000
3d	1.647	2.343	2.850	3.500	3.933	4.383	4.833	5.533
5d	2.287	3.230	3.913	4.717	5.390	5.960	6.600	7.570
10d	3.490	4.920	5.987	7.180	8.177	8.997	10.350	11.683

APPENDIX E

RUNOFF PEAK FLOW & FLOOD PLAIN CALCULATIONS

Brady-Vineyard HEC-HMS Selected Results



Brady-Vineyard HEC-HMS Selected Results

Global Summary Results for Run "Pre Con-100yr"

Project: Brady Vineyard Simulation Run: Pre Con-100yr

Start of Run: 13Feb2008, 00:00 Basin Model: Dry Creek Trib-Pre Con
End of Run: 14Feb2008, 00:55 Meteorologic Model: Dry Creek 100yr
Compute Time: 28Mar2018, 07:59:03 Control Specifications: 24 hr +

Show Elements: All Elements Volume Units: IN AC-FT Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
DC25B	0.6072	369.0	13Feb2008, 12:40	2.62
DC25E	0.0251	15.3	13Feb2008, 12:10	2.58
YDC25E	0.6323	379.7	13Feb2008, 12:40	2.62
VDC25E	0.6323	379.4	13Feb2008, 12:40	2.62
DC25C	0.0747	99.7	13Feb2008, 12:15	2.79
DC25D	0.0551	53.1	13Feb2008, 12:15	2.44
YDC25D	0.1298	152.8	13Feb2008, 12:15	2.64
VDC25D	0.1298	135.4	13Feb2008, 12:20	2.63
YC25D2	0.7621	480.1	13Feb2008, 12:25	2.62
DC25F-offsite	0.0194	23.6	13Feb2008, 12:10	2.20
DC25F-onsite	0.0087	4.0	13Feb2008, 12:55	2.38
YDC25F	0.7902	499.2	13Feb2008, 12:25	2.61
VDC25F	0.7902	496.7	13Feb2008, 12:30	2.61
DC25G	0.0654	37.3	13Feb2008, 12:25	2.35
YDC25G	0.8556	532.9	13Feb2008, 12:30	2.59
VC25L2	0.8556	511.6	13Feb2008, 12:35	2.58
DC25L-offsite north	0.0110	7.0	13Feb2008, 12:25	2.92
DC25L-offsite south	0.0137	13.6	13Feb2008, 12:20	3.20
DC25L-onsite	0.0457	14.8	13Feb2008, 13:05	2.17
YDC25L	0.9260	541.7	13Feb2008, 12:35	2.58
VDC25L	0.9260	540.7	13Feb2008, 12:35	2.58
DC25N-onsite	0.0044	1.8	13Feb2008, 12:25	2.36
DC25N-offsite	0.0490	25.0	13Feb2008, 12:20	2.39
YDC25N	0.9794	560.5	13Feb2008, 12:35	2.57
VDC25N	0.9794	557.3	13Feb2008, 12:40	2.56
DC25I	0.1728	171.0	13Feb2008, 12:20	3.03
DC25H	0.0681	53.4	13Feb2008, 12:10	2.26
YDC25H	0.2409	210.4	13Feb2008, 12:15	2.81
VDC25H	0.2409	189.2	13Feb2008, 12:30	2.80
YC25H2	1.2203	737.0	13Feb2008, 12:35	2.61
DC25M	0.1384	41.5	13Feb2008, 12:30	2.20
YDC25M	1.3587	777.1	13Feb2008, 12:35	2.57
VDC25M	1.3587	767.6	13Feb2008, 12:40	2.56
DC25K	0.3060	157.5	13Feb2008, 12:35	2.08
YDC25K	1.6647	921.7	13Feb2008, 12:40	2.48
VDC25K	1.6647	868.9	13Feb2008, 12:50	2.47
Outlet	1.6647	868.9	13Feb2008, 12:50	2.47

Brady-Vineyard HEC-HMS Selected Results

Global Summary Results for Run "Post Con-100yr"

Project: Brady Vineyard Simulation Run: Post Con-100yr

Start of Run: 13Feb2008, 00:00
End of Run: 14Feb2008, 00:55
Compute Time: DATA CHANGED, RECOMPUTE

Basin Model: Dry Creek Trib-Post Con
Meteorologic Model: Dry Creek 100yr
Control Specifications: 24 hr +

Show Elements: All Elements Volume Units: IN AC-FT Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
DC25B	0.6072	369.0	13Feb2008, 12:40	2.62
DC25E	0.0251	15.3	13Feb2008, 12:10	2.58
YDC25E	0.6323	379.7	13Feb2008, 12:40	2.62
VDC25E	0.6323	379.4	13Feb2008, 12:40	2.62
DC25C	0.0747	99.7	13Feb2008, 12:15	2.79
DC25D	0.0551	53.1	13Feb2008, 12:15	2.44
YDC25D	0.1298	152.8	13Feb2008, 12:15	2.64
VDC25D	0.1298	135.4	13Feb2008, 12:20	2.63
YC25D2	0.7621	480.1	13Feb2008, 12:25	2.62
DC25F-offsite	0.0194	23.4	13Feb2008, 12:10	1.91
DC25F-onsite	0.0087	9.0	13Feb2008, 12:15	2.85
YDC25F	0.7902	502.7	13Feb2008, 12:25	2.61
VDC25F	0.7902	499.5	13Feb2008, 12:30	2.61
DC25G	0.0654	37.3	13Feb2008, 12:25	2.35
YDC25G	0.8556	535.6	13Feb2008, 12:30	2.59
VC25L2	0.8556	515.4	13Feb2008, 12:35	2.58
DC25L-offsite north	0.0110	7.0	13Feb2008, 12:25	2.92
DC25L-offsite south	0.0137	13.6	13Feb2008, 12:20	3.20
DC25L-onsite	0.0457	51.8	13Feb2008, 12:15	3.49
YDC25L	0.9260	564.7	13Feb2008, 12:30	2.64
VDC25L	0.9260	562.3	13Feb2008, 12:35	2.64
DC25N-onsite	0.0044	5.9	13Feb2008, 12:10	3.51
DC25N-offsite	0.0490	25.0	13Feb2008, 12:20	2.39
YDC25N	0.9794	582.6	13Feb2008, 12:35	2.63
VDC25N	0.9794	581.0	13Feb2008, 12:35	2.63
DC25I	0.1728	171.0	13Feb2008, 12:20	3.03
DC25H	0.0681	53.4	13Feb2008, 12:10	2.26
YDC25H	0.2409	210.4	13Feb2008, 12:15	2.81
VDC25H	0.2409	189.2	13Feb2008, 12:30	2.80
YC25H2	1.2203	762.5	13Feb2008, 12:35	2.66
DC25M	0.1384	41.5	13Feb2008, 12:30	2.20
YDC25M	1.3587	802.6	13Feb2008, 12:35	2.61
VDC25M	1.3587	798.0	13Feb2008, 12:40	2.61
DC25K	0.3060	157.5	13Feb2008, 12:35	2.08
YDC25K	1.6647	952.1	13Feb2008, 12:40	2.51
VDC25K	1.6647	897.4	13Feb2008, 12:45	2.51
Outlet	1.6647	897.4	13Feb2008, 12:45	2.51

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	11061.63	Max WS	Pre100	368.52	134.22	138.66		138.68	0.000402	1.12	328.15	125.77	0.12
Dry Creek Trib	11061.63	Max WS	Post100	368.52	134.22	138.66		138.68	0.000402	1.12	328.15	125.77	0.12
Dry Creek Trib	11061.63	Max WS	Pre100-DC-BFE	368.04	134.22	138.66		138.68	0.000400	1.12	328.19	125.77	0.12
Dry Creek Trib	11061.63	Max WS	Post100-DC-BFE	368.52	134.22	138.66		138.68	0.000401	1.12	328.21	125.78	0.12
Dry Creek Trib	11061.63	Max WS	VY Wide PL	368.52	134.22	138.66		138.68	0.000401	1.12	328.21	125.78	0.12
Dry Creek Trib	11061.63	Max WS	VY Wide Ult	368.52	134.22	138.66		138.68	0.000401	1.12	328.21	125.78	0.12
Dry Creek Trib	11016.93	Max WS	Pre100	368.04	133.48	138.65		138.67	0.000209	0.93	399.52	132.67	0.09
Dry Creek Trib	11016.93	Max WS	Post100	368.41	133.48	138.65		138.67	0.000209	0.93	399.52	132.67	0.09
Dry Creek Trib	11016.93	Max WS	Pre100-DC-BFE	368.04	133.48	138.65		138.67	0.000209	0.93	399.56	132.67	0.09
Dry Creek Trib	11016.93	Max WS	Post100-DC-BFE	368.42	133.48	138.65		138.67	0.000209	0.93	399.59	132.68	0.09
Dry Creek Trib	11016.93	Max WS	VY Wide PL	368.42	133.48	138.65		138.67	0.000209	0.93	399.59	132.68	0.09
Dry Creek Trib	11016.93	Max WS	VY Wide Ult	368.42	133.48	138.65		138.67	0.000209	0.93	399.59	132.68	0.09
Dry Creek Trib	10935.1	Max WS	Pre100	368.03	133.65	138.52		138.63	0.001142	2.67	138.19	170.00	0.22
Dry Creek Trib	10935.1	Max WS	Post100	368.03	133.65	138.52		138.63	0.001142	2.67	138.19	170.00	0.22
Dry Creek Trib	10935.1	Max WS	Pre100-DC-BFE	368.02	133.65	138.52		138.63	0.001142	2.67	138.20	170.01	0.22
Dry Creek Trib	10935.1	Max WS	Post100-DC-BFE	368.17	133.65	138.52		138.63	0.001142	2.67	138.21	170.02	0.22
Dry Creek Trib	10935.1	Max WS	VY Wide PL	368.17	133.65	138.52		138.63	0.001142	2.67	138.21	170.02	0.22
Dry Creek Trib	10935.1	Max WS	VY Wide Ult	368.17	133.65	138.52		138.63	0.001142	2.67	138.21	170.02	0.22
Dry Creek Trib	10910.99			Culvert									
Dry Creek Trib	10886.88	Max WS	Pre100	367.57	132.30	137.73		137.82	0.001164	2.46	182.06	108.63	0.22
Dry Creek Trib	10886.88	Max WS	Post100	367.57	132.30	137.73		137.82	0.001164	2.46	182.06	108.63	0.22
Dry Creek Trib	10886.88	Max WS	Pre100-DC-BFE	367.30	132.30	137.73		137.82	0.001162	2.46	182.05	108.63	0.22
Dry Creek Trib	10886.88	Max WS	Post100-DC-BFE	367.32	132.30	137.73		137.82	0.001162	2.46	182.06	108.63	0.22
Dry Creek Trib	10886.88	Max WS	VY Wide PL	367.62	132.30	137.73		137.82	0.001164	2.46	182.06	108.63	0.22
Dry Creek Trib	10886.88	Max WS	VY Wide Ult	367.62	132.30	137.73		137.82	0.001164	2.46	182.06	108.63	0.22
Dry Creek Trib	10817.21	Max WS	Pre100	367.25	131.78	137.56		137.72	0.002173	3.43	134.88	72.77	0.29
Dry Creek Trib	10817.21	Max WS	Post100	367.25	131.78	137.56		137.72	0.002173	3.43	134.88	72.77	0.29
Dry Creek Trib	10817.21	Max WS	Pre100-DC-BFE	367.28	131.78	137.56		137.72	0.002174	3.43	134.87	72.76	0.29
Dry Creek Trib	10817.21	Max WS	Post100-DC-BFE	367.30	131.78	137.56		137.72	0.002174	3.43	134.87	72.76	0.29
Dry Creek Trib	10817.21	Max WS	VY Wide PL	367.30	131.78	137.56		137.72	0.002174	3.43	134.87	72.76	0.29
Dry Creek Trib	10817.21	Max WS	VY Wide Ult	367.30	131.78	137.56		137.72	0.002174	3.43	134.87	72.76	0.29
Dry Creek Trib	10749.58	Max WS	Pre100	367.75	131.83	137.30		137.52	0.003866	3.78	98.31	192.65	0.38
Dry Creek Trib	10749.58	Max WS	Post100	367.75	131.83	137.30		137.52	0.003866	3.78	98.31	192.65	0.38
Dry Creek Trib	10749.58	Max WS	Pre100-DC-BFE	367.78	131.83	137.30		137.52	0.003867	3.78	98.30	192.64	0.38
Dry Creek Trib	10749.58	Max WS	Post100-DC-BFE	367.79	131.83	137.30		137.52	0.003867	3.79	98.30	192.64	0.38
Dry Creek Trib	10749.58	Max WS	VY Wide PL	367.78	131.83	137.30		137.52	0.003867	3.79	98.30	192.64	0.38
Dry Creek Trib	10749.58	Max WS	VY Wide Ult	367.78	131.83	137.30		137.52	0.003867	3.78	98.30	192.64	0.38
Dry Creek Trib	10681.32	Max WS	Pre100	368.47	131.87	136.91		137.21	0.005430	4.48	88.30	180.31	0.44
Dry Creek Trib	10681.32	Max WS	Post100	368.47	131.87	136.91		137.21	0.005430	4.48	88.30	180.31	0.44
Dry Creek Trib	10681.32	Max WS	Pre100-DC-BFE	368.49	131.87	136.91		137.21	0.005431	4.48	88.30	180.30	0.44
Dry Creek Trib	10681.32	Max WS	Post100-DC-BFE	368.49	131.87	136.91		137.21	0.005431	4.48	88.30	180.30	0.44
Dry Creek Trib	10681.32	Max WS	VY Wide PL	368.49	131.87	136.91		137.21	0.005431	4.48	88.30	180.30	0.44
Dry Creek Trib	10681.32	Max WS	VY Wide Ult	368.49	131.87	136.91		137.21	0.005431	4.48	88.30	180.30	0.44
Dry Creek Trib	10599.74	Max WS	Pre100	369.36	132.28	136.10		136.53	0.011506	5.24	70.47	71.15	0.62
Dry Creek Trib	10599.74	Max WS	Post100	369.36	132.28	136.10		136.53	0.011506	5.24	70.47	71.15	0.62
Dry Creek Trib	10599.74	Max WS	Pre100-DC-BFE	369.37	132.28	136.10		136.53	0.011505	5.24	70.48	71.16	0.62
Dry Creek Trib	10599.74	Max WS	Post100-DC-BFE	369.38	132.28	136.10		136.53	0.011505	5.24	70.48	71.16	0.62
Dry Creek Trib	10599.74	Max WS	VY Wide PL	369.38	132.28	136.10		136.53	0.011505	5.24	70.48	71.16	0.62
Dry Creek Trib	10599.74	Max WS	VY Wide Ult	369.37	132.28	136.10		136.53	0.011505	5.24	70.48	71.16	0.62
Dry Creek Trib	10498.01	Max WS	Pre100	370.52	131.93	135.47		135.69	0.005072	3.87	103.84	90.72	0.43
Dry Creek Trib	10498.01	Max WS	Post100	370.52	131.93	135.47		135.69	0.005072	3.87	103.84	90.72	0.43
Dry Creek Trib	10498.01	Max WS	Pre100-DC-BFE	370.53	131.93	135.47		135.69	0.005073	3.87	103.84	90.72	0.43
Dry Creek Trib	10498.01	Max WS	Post100-DC-BFE	370.54	131.93	135.47		135.69	0.005073	3.87	103.84	90.72	0.43
Dry Creek Trib	10498.01	Max WS	VY Wide PL	370.54	131.93	135.47		135.69	0.005073	3.87	103.84	90.72	0.43
Dry Creek Trib	10498.01	Max WS	VY Wide Ult	370.53	131.93	135.47		135.69	0.005073	3.87	103.84	90.72	0.43
Dry Creek Trib	10420.34	Max WS	Pre100	371.38	131.97	134.97		135.24	0.007529	4.82	115.52	106.82	0.53
Dry Creek Trib	10420.34	Max WS	Post100	371.38	131.97	134.97		135.24	0.007529	4.82	115.52	106.82	0.53
Dry Creek Trib	10420.34	Max WS	Pre100-DC-BFE	371.40	131.97	134.97		135.24	0.007528	4.82	115.53	106.82	0.53
Dry Creek Trib	10420.34	Max WS	Post100-DC-BFE	371.40	131.97	134.97		135.24	0.007528	4.82	115.53	106.82	0.53
Dry Creek Trib	10420.34	Max WS	VY Wide PL	371.40	131.97	134.97		135.24	0.007528	4.82	115.53	106.82	0.53
Dry Creek Trib	10420.34	Max WS	VY Wide Ult	371.40	131.97	134.97		135.24	0.007528	4.82	115.53	106.82	0.53
Dry Creek Trib	10337.8	Max WS	Pre100	372.34	132.26	134.46		134.60	0.007136	3.67	140.54	126.82	0.49
Dry Creek Trib	10337.8	Max WS	Post100	372.34	132.26	134.46		134.60	0.007135	3.67	140.55	126.82	0.49
Dry Creek Trib	10337.8	Max WS	Pre100-DC-BFE	372.35	132.26	134.46		134.60	0.007135	3.67	140.55	126.82	0.49
Dry Creek Trib	10337.8	Max WS	Post100-DC-BFE	372.35	132.26	134.46		134.60	0.007135	3.67	140.55	126.82	0.49
Dry Creek Trib	10337.8	Max WS	VY Wide PL	372.35	132.26	134.46		134.60	0.007135	3.67	140.55	126.82	0.49
Dry Creek Trib	10337.8	Max WS	VY Wide Ult	372.35	132.26	134.46		134.60	0.007135	3.67	140.55	126.82	0.49
Dry Creek Trib	10253.75	Max WS	Pre100	373.30	131.94	133.86		133.97	0.008174	3.09	152.27	161.59	0.49
Dry Creek Trib	10253.75	Max WS	Post100	373.30	131.94	133.86		133.97	0.008174	3.09	152.27	161.59	0.49

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	10253.75	Max WS	Pre100-DC-BFE	373.31	131.94	133.86		133.97	0.008175	3.09	152.27	161.59	0.49
Dry Creek Trib	10253.75	Max WS	Post100-DC-BFE	373.32	131.94	133.86		133.97	0.008175	3.09	152.27	161.59	0.49
Dry Creek Trib	10253.75	Max WS	VY Wide PL	373.32	131.94	133.86		133.97	0.008175	3.09	152.27	161.59	0.49
Dry Creek Trib	10253.75	Max WS	VY Wide Ult	373.31	131.94	133.86		133.97	0.008175	3.09	152.27	161.59	0.49
Dry Creek Trib	10186.61	Max WS	Pre100	374.00	131.56	133.49		133.54	0.003699	2.08	216.08	212.96	0.33
Dry Creek Trib	10186.61	Max WS	Post100	374.00	131.56	133.49		133.54	0.003700	2.08	216.06	212.96	0.33
Dry Creek Trib	10186.61	Max WS	Pre100-DC-BFE	374.00	131.56	133.49		133.54	0.003700	2.08	216.06	212.96	0.33
Dry Creek Trib	10186.61	Max WS	Post100-DC-BFE	374.00	131.56	133.49		133.54	0.003700	2.08	216.06	212.96	0.33
Dry Creek Trib	10186.61	Max WS	VY Wide PL	374.00	131.56	133.49		133.54	0.003700	2.08	216.06	212.96	0.33
Dry Creek Trib	10186.61	Max WS	VY Wide Ult	374.00	131.56	133.49		133.54	0.003701	2.08	216.03	212.95	0.33
Dry Creek Trib	10087.22	Max WS	Pre100	177.51	131.60	133.42		133.43	0.000207	0.57	326.97	200.05	0.08
Dry Creek Trib	10087.22	Max WS	Post100	153.41	131.60	133.41		133.41	0.000159	0.50	323.47	199.56	0.07
Dry Creek Trib	10087.22	Max WS	Pre100-DC-BFE	153.40	131.60	133.41		133.41	0.000159	0.50	323.51	199.57	0.07
Dry Creek Trib	10087.22	Max WS	Post100-DC-BFE	153.41	131.60	133.41		133.41	0.000159	0.50	323.47	199.56	0.07
Dry Creek Trib	10087.22	Max WS	VY Wide PL	153.41	131.60	133.41		133.41	0.000159	0.50	323.47	199.56	0.07
Dry Creek Trib	10087.22	Max WS	VY Wide Ult	153.41	131.60	133.41		133.41	0.000159	0.50	323.47	199.56	0.07
Dry Creek Trib	10016.43	Max WS	Pre100	173.69	130.18	133.40		133.41	0.000183	0.75	262.58	149.08	0.08
Dry Creek Trib	10016.43	Max WS	Post100	135.20	130.18	133.39		133.40	0.000112	0.59	261.98	148.92	0.06
Dry Creek Trib	10016.43	Max WS	Pre100-DC-BFE	135.19	130.18	133.39		133.40	0.000112	0.59	262.01	148.92	0.06
Dry Creek Trib	10016.43	Max WS	Post100-DC-BFE	135.20	130.18	133.39		133.40	0.000112	0.59	261.98	148.92	0.06
Dry Creek Trib	10016.43	Max WS	VY Wide PL	135.20	130.18	133.39		133.40	0.000112	0.59	261.98	148.92	0.06
Dry Creek Trib	10016.43	Max WS	VY Wide Ult	135.20	130.18	133.39		133.40	0.000112	0.59	261.98	148.92	0.06
Dry Creek Trib	9935.11	Max WS	Pre100	105.91	129.44	133.39		133.39	0.000023	0.29	559.66	381.54	0.03
Dry Creek Trib	9935.11	Max WS	Post100	105.93	129.44	133.39		133.39	0.000023	0.29	559.58	381.49	0.03
Dry Creek Trib	9935.11	Max WS	Pre100-DC-BFE	105.91	129.44	133.39		133.39	0.000023	0.29	559.66	381.54	0.03
Dry Creek Trib	9935.11	Max WS	Post100-DC-BFE	105.93	129.44	133.39		133.39	0.000023	0.29	559.58	381.49	0.03
Dry Creek Trib	9935.11	Max WS	VY Wide PL	105.93	129.44	133.39		133.39	0.000023	0.29	559.58	381.49	0.03
Dry Creek Trib	9935.11	Max WS	VY Wide Ult	105.93	129.44	133.39		133.39	0.000023	0.29	559.58	381.49	0.03
Dry Creek Trib	9841.26	Max WS	Pre100	428.97	129.40	133.00		133.04	0.001737	1.90	276.28	166.03	0.24
Dry Creek Trib	9841.26	Max WS	Post100	428.94	129.40	133.00		133.04	0.001738	1.90	276.21	166.01	0.24
Dry Creek Trib	9841.26	Max WS	Pre100-DC-BFE	428.92	129.40	133.00		133.04	0.001738	1.90	276.23	166.02	0.24
Dry Creek Trib	9841.26	Max WS	Post100-DC-BFE	428.93	129.40	133.00		133.04	0.001738	1.90	276.21	166.01	0.24
Dry Creek Trib	9841.26	Max WS	VY Wide PL	428.93	129.40	133.00		133.04	0.001738	1.90	276.20	166.01	0.24
Dry Creek Trib	9841.26	Max WS	VY Wide Ult	428.91	129.40	133.00		133.04	0.001738	1.90	276.20	166.01	0.24
Dry Creek Trib	9764.85	Max WS	Pre100	428.81	129.40	132.89		132.94	0.001002	1.78	272.10	131.93	0.19
Dry Creek Trib	9764.85	Max WS	Post100	428.78	129.40	132.89		132.94	0.001003	1.78	272.04	131.92	0.19
Dry Creek Trib	9764.85	Max WS	Pre100-DC-BFE	428.75	129.40	132.89		132.94	0.001002	1.78	272.06	131.92	0.19
Dry Creek Trib	9764.85	Max WS	Post100-DC-BFE	428.77	129.40	132.89		132.94	0.001003	1.78	272.04	131.92	0.19
Dry Creek Trib	9764.85	Max WS	VY Wide PL	428.77	129.40	132.89		132.94	0.001003	1.78	272.04	131.92	0.19
Dry Creek Trib	9764.85	Max WS	VY Wide Ult	428.76	129.40	132.89		132.94	0.001003	1.78	272.03	131.92	0.19
Dry Creek Trib	9660.93	Max WS	Pre100	430.15	126.73	132.83		132.86	0.000532	1.92	352.28	137.05	0.15
Dry Creek Trib	9660.93	Max WS	Post100	430.07	126.73	132.83		132.86	0.000532	1.92	352.21	137.04	0.15
Dry Creek Trib	9660.93	Max WS	Pre100-DC-BFE	430.00	126.73	132.83		132.86	0.000531	1.92	352.24	137.04	0.15
Dry Creek Trib	9660.93	Max WS	Post100-DC-BFE	430.07	126.73	132.83		132.86	0.000532	1.92	352.21	137.04	0.15
Dry Creek Trib	9660.93	Max WS	VY Wide PL	430.06	126.73	132.83		132.86	0.000532	1.92	352.21	137.04	0.15
Dry Creek Trib	9660.93	Max WS	VY Wide Ult	430.05	126.73	132.83		132.86	0.000532	1.92	352.20	137.04	0.15
Dry Creek Trib	9592.92	Max WS	Pre100	431.14	126.42	132.68		132.79	0.001926	3.20	209.27	129.40	0.28
Dry Creek Trib	9592.92	Max WS	Post100	431.04	126.42	132.68		132.79	0.001926	3.20	209.21	129.34	0.28
Dry Creek Trib	9592.92	Max WS	Pre100-DC-BFE	431.07	126.42	132.68		132.79	0.001926	3.20	209.22	129.35	0.28
Dry Creek Trib	9592.92	Max WS	Post100-DC-BFE	431.04	126.42	132.68		132.79	0.001926	3.20	209.21	129.34	0.28
Dry Creek Trib	9592.92	Max WS	VY Wide PL	431.03	126.42	132.68		132.79	0.001927	3.20	209.19	129.33	0.28
Dry Creek Trib	9592.92	Max WS	VY Wide Ult	431.01	126.42	132.68		132.79	0.001926	3.20	209.19	129.33	0.28
Dry Creek Trib	9534.07	Max WS	Pre100	431.89	126.35	132.62		132.69	0.000983	2.31	263.37	135.26	0.20
Dry Creek Trib	9534.07	Max WS	Post100	431.77	126.35	132.62		132.69	0.000983	2.31	263.30	135.24	0.20
Dry Creek Trib	9534.07	Max WS	Pre100-DC-BFE	431.81	126.35	132.62		132.69	0.000983	2.31	263.32	135.25	0.20
Dry Creek Trib	9534.07	Max WS	Post100-DC-BFE	431.76	126.35	132.62		132.69	0.000983	2.31	263.30	135.24	0.20
Dry Creek Trib	9534.07	Max WS	VY Wide PL	431.75	126.35	132.62		132.69	0.000983	2.31	263.29	135.24	0.20
Dry Creek Trib	9534.07	Max WS	VY Wide Ult	431.74	126.35	132.62		132.69	0.000983	2.31	263.29	135.24	0.20
Dry Creek Trib	9429.91	Max WS	Pre100	433.14	125.97	132.36		132.50	0.003260	3.41	178.72	130.95	0.34
Dry Creek Trib	9429.91	Max WS	Post100	432.98	125.97	132.36		132.50	0.003260	3.41	178.66	130.94	0.34
Dry Creek Trib	9429.91	Max WS	Pre100-DC-BFE	433.06	125.97	132.36		132.50	0.003261	3.41	178.67	130.94	0.34
Dry Creek Trib	9429.91	Max WS	Post100-DC-BFE	432.97	125.97	132.36		132.50	0.003260	3.41	178.66	130.94	0.34
Dry Creek Trib	9429.91	Max WS	VY Wide PL	432.97	125.97	132.36		132.50	0.003260	3.41	178.66	130.94	0.34
Dry Creek Trib	9429.91	Max WS	VY Wide Ult	432.95	125.97	132.36		132.50	0.003261	3.41	178.64	130.94	0.34
Dry Creek Trib	9345.09	Max WS	Pre100	434.13	127.59	132.17		132.27	0.002185	2.63	186.52	168.59	0.28
Dry Creek Trib	9345.09	Max WS	Post100	433.96	127.59	132.17		132.27	0.002185	2.63	186.45	168.55	0.28
Dry Creek Trib	9345.09	Max WS	Pre100-DC-BFE	434.05	127.59	132.17		132.27	0.002186	2.63	186.45	168.55	0.28
Dry Creek Trib	9345.09	Max WS	Post100-DC-BFE	433.95	127.59	132.17		132.27	0.002185	2.63	186.45	168.55	0.28
Dry Creek Trib	9345.09	Max WS	VY Wide PL	433.94	127.59	132.17		132.27	0.002185	2.63	186.45	168.55	0.28
Dry Creek Trib	9345.09	Max WS	VY Wide Ult	433.92	127.59	132.17		132.27	0.002185	2.63	186.43	168.54	0.28

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	9257.01	Max WS	Pre100	435.22	126.10	131.93		132.08	0.002457	3.42	158.75	198.05	0.31
Dry Creek Trib	9257.01	Max WS	Post100	435.01	126.10	131.93		132.08	0.002455	3.42	158.74	198.04	0.31
Dry Creek Trib	9257.01	Max WS	Pre100-DC-BFE	435.12	126.10	131.93		132.08	0.002457	3.42	158.74	198.03	0.31
Dry Creek Trib	9257.01	Max WS	Post100-DC-BFE	435.01	126.10	131.93		132.08	0.002455	3.42	158.74	198.04	0.31
Dry Creek Trib	9257.01	Max WS	VY Wide PL	435.00	126.10	131.93		132.08	0.002455	3.42	158.74	198.04	0.31
Dry Creek Trib	9257.01	Max WS	VY Wide Ult	434.98	126.10	131.93		132.08	0.002455	3.42	158.74	198.03	0.31
Dry Creek Trib	9161.5	Max WS	Pre100	436.34	125.74	131.77		131.87	0.001782	2.81	195.43	97.63	0.26
Dry Creek Trib	9161.5	Max WS	Post100	436.12	125.74	131.77		131.87	0.001781	2.80	195.43	97.63	0.26
Dry Creek Trib	9161.5	Max WS	Pre100-DC-BFE	436.25	125.74	131.77		131.87	0.001782	2.81	195.41	97.63	0.26
Dry Creek Trib	9161.5	Max WS	Post100-DC-BFE	436.15	125.74	131.77		131.87	0.001781	2.80	195.43	97.63	0.26
Dry Creek Trib	9161.5	Max WS	VY Wide PL	436.14	125.74	131.77		131.87	0.001781	2.80	195.43	97.63	0.26
Dry Creek Trib	9161.5	Max WS	VY Wide Ult	436.12	125.74	131.77		131.87	0.001781	2.80	195.42	97.63	0.26
Dry Creek Trib	9090.68	Max WS	Pre100	436.65	125.67	131.56		131.72	0.003559	3.41	160.15	99.99	0.36
Dry Creek Trib	9090.68	Max WS	Post100	436.50	125.67	131.56		131.72	0.003556	3.41	160.16	99.99	0.36
Dry Creek Trib	9090.68	Max WS	Pre100-DC-BFE	436.55	125.67	131.56		131.72	0.003558	3.41	160.13	99.98	0.36
Dry Creek Trib	9090.68	Max WS	Post100-DC-BFE	436.50	125.67	131.56		131.72	0.003555	3.41	160.17	100.00	0.36
Dry Creek Trib	9090.68	Max WS	VY Wide PL	436.49	125.67	131.56		131.72	0.003555	3.41	160.17	100.00	0.36
Dry Creek Trib	9090.68	Max WS	VY Wide Ult	436.47	125.67	131.56		131.72	0.003556	3.41	160.16	99.99	0.36
Dry Creek Trib	8980.6	Max WS	Pre100	436.82	125.80	130.94		131.23	0.006393	4.58	112.31	67.50	0.48
Dry Creek Trib	8980.6	Max WS	Post100	436.89	125.80	130.94		131.23	0.006387	4.58	112.37	67.57	0.48
Dry Creek Trib	8980.6	Max WS	Pre100-DC-BFE	436.74	125.80	130.94		131.23	0.006395	4.58	112.28	67.45	0.48
Dry Creek Trib	8980.6	Max WS	Post100-DC-BFE	436.88	125.80	130.94		131.23	0.006387	4.58	112.37	67.57	0.48
Dry Creek Trib	8980.6	Max WS	VY Wide PL	436.88	125.80	130.94		131.23	0.006388	4.58	112.36	67.56	0.48
Dry Creek Trib	8980.6	Max WS	VY Wide Ult	436.86	125.80	130.94		131.23	0.006387	4.58	112.36	67.56	0.48
Dry Creek Trib	8900.41	Max WS	Pre100	437.14	125.50	130.82		130.85	0.000735	2.06	369.17	204.65	0.18
Dry Creek Trib	8900.41	Max WS	Post100	437.26	125.50	130.82		130.85	0.000734	2.06	369.38	204.78	0.18
Dry Creek Trib	8900.41	Max WS	Pre100-DC-BFE	436.99	125.50	130.82		130.85	0.000734	2.06	369.07	204.59	0.18
Dry Creek Trib	8900.41	Max WS	Post100-DC-BFE	437.25	125.50	130.82		130.85	0.000734	2.06	369.36	204.76	0.18
Dry Creek Trib	8900.41	Max WS	VY Wide PL	437.24	125.50	130.82		130.85	0.000734	2.06	369.36	204.76	0.18
Dry Creek Trib	8900.41	Max WS	VY Wide Ult	437.22	125.50	130.82		130.85	0.000734	2.06	369.34	204.75	0.18
Dry Creek Trib	8840.78	Max WS	Pre100	437.44	125.61	130.20		130.66	0.009672	5.49	79.74	61.94	0.59
Dry Creek Trib	8840.78	Max WS	Post100	437.62	125.61	130.20		130.66	0.009671	5.49	79.77	62.00	0.59
Dry Creek Trib	8840.78	Max WS	Pre100-DC-BFE	437.34	125.61	130.19		130.66	0.009671	5.49	79.73	61.91	0.59
Dry Creek Trib	8840.78	Max WS	Post100-DC-BFE	437.61	125.61	130.20		130.66	0.009671	5.49	79.77	62.00	0.59
Dry Creek Trib	8840.78	Max WS	VY Wide PL	437.61	125.61	130.20		130.66	0.009671	5.49	79.77	62.00	0.59
Dry Creek Trib	8840.78	Max WS	VY Wide Ult	437.59	125.61	130.20		130.66	0.009670	5.49	79.77	62.00	0.59
Dry Creek Trib	8719.42	Max WS	Pre100	437.96	125.78	129.79		129.89	0.002129	2.52	189.65	98.02	0.28
Dry Creek Trib	8719.42	Max WS	Post100	438.23	125.78	129.79		129.89	0.002128	2.52	189.76	98.03	0.28
Dry Creek Trib	8719.42	Max WS	Pre100-DC-BFE	437.84	125.78	129.79		129.89	0.002129	2.52	189.62	98.02	0.28
Dry Creek Trib	8719.42	Max WS	Post100-DC-BFE	438.22	125.78	129.79		129.89	0.002128	2.52	189.75	98.03	0.28
Dry Creek Trib	8719.42	Max WS	VY Wide PL	438.22	125.78	129.79		129.89	0.002128	2.52	189.75	98.03	0.28
Dry Creek Trib	8719.42	Max WS	VY Wide Ult	438.20	125.78	129.79		129.89	0.002128	2.52	189.75	98.03	0.28
Dry Creek Trib	8627.33	Max WS	Pre100	438.36	125.41	129.19		129.44	0.008389	4.77	117.44	65.90	0.54
Dry Creek Trib	8627.33	Max WS	Post100	438.70	125.41	129.19		129.45	0.008391	4.77	117.49	65.92	0.54
Dry Creek Trib	8627.33	Max WS	Pre100-DC-BFE	438.25	125.41	129.19		129.44	0.008387	4.77	117.43	65.90	0.54
Dry Creek Trib	8627.33	Max WS	Post100-DC-BFE	438.67	125.41	129.19		129.45	0.008388	4.77	117.50	65.92	0.54
Dry Creek Trib	8627.33	Max WS	VY Wide PL	438.66	125.41	129.19		129.45	0.008389	4.77	117.49	65.92	0.54
Dry Creek Trib	8627.33	Max WS	VY Wide Ult	438.64	125.41	129.19		129.45	0.008389	4.77	117.49	65.92	0.54
Dry Creek Trib	8563.46	Max WS	Pre100	438.60	124.23	128.89		129.06	0.003440	3.64	144.87	70.02	0.36
Dry Creek Trib	8563.46	Max WS	Post100	439.00	124.23	128.89		129.07	0.003444	3.65	144.92	70.03	0.36
Dry Creek Trib	8563.46	Max WS	Pre100-DC-BFE	438.53	124.23	128.89		129.06	0.003440	3.64	144.86	70.02	0.36
Dry Creek Trib	8563.46	Max WS	Post100-DC-BFE	438.94	124.23	128.89		129.07	0.003443	3.64	144.92	70.03	0.36
Dry Creek Trib	8563.46	Max WS	VY Wide PL	438.93	124.23	128.89		129.07	0.003443	3.64	144.92	70.03	0.36
Dry Creek Trib	8563.46	Max WS	VY Wide Ult	438.92	124.23	128.89		129.07	0.003442	3.64	144.92	70.03	0.36
Dry Creek Trib	8488.69	Max WS	Pre100	438.92	123.59	128.21		128.50	0.011812	5.26	118.28	92.26	0.61
Dry Creek Trib	8488.69	Max WS	Post100	439.32	123.59	128.21		128.50	0.011801	5.26	118.40	92.29	0.61
Dry Creek Trib	8488.69	Max WS	Pre100-DC-BFE	438.83	123.59	128.21		128.50	0.011811	5.26	118.27	92.26	0.61
Dry Creek Trib	8488.69	Max WS	Post100-DC-BFE	439.32	123.59	128.21		128.50	0.011800	5.26	118.40	92.29	0.61
Dry Creek Trib	8488.69	Max WS	VY Wide PL	439.36	123.59	128.21		128.50	0.011800	5.26	118.41	92.29	0.61
Dry Creek Trib	8488.69	Max WS	VY Wide Ult	439.29	123.59	128.21		128.50	0.011799	5.26	118.40	92.29	0.61
Dry Creek Trib	8405.54	Max WS	Pre100	285.82	124.66	127.97		127.98	0.000545	1.02	361.34	239.93	0.13
Dry Creek Trib	8405.54	Max WS	Post100	290.39	124.66	128.00		128.01	0.000526	1.01	369.39	240.78	0.13
Dry Creek Trib	8405.54	Max WS	Pre100-DC-BFE	286.07	124.66	127.97		127.98	0.000542	1.02	362.23	240.03	0.13
Dry Creek Trib	8405.54	Max WS	Post100-DC-BFE	290.39	124.66	128.00		128.01	0.000526	1.01	369.39	240.78	0.13
Dry Creek Trib	8405.54	Max WS	VY Wide PL	290.39	124.66	128.00		128.01	0.000526	1.01	369.39	240.78	0.13
Dry Creek Trib	8405.54	Max WS	VY Wide Ult	290.38	124.66	128.00		128.01	0.000525	1.01	369.42	240.78	0.13
Dry Creek Trib	8349.77	Max WS	Pre100	244.99	124.17	127.96		127.96	0.000064	0.43	820.05	518.33	0.05
Dry Creek Trib	8349.77	Max WS	Post100	250.38	124.17	127.99		127.99	0.000063	0.43	837.72	520.64	0.05
Dry Creek Trib	8349.77	Max WS	Pre100-DC-BFE	245.46	124.17	127.96		127.96	0.000064	0.43	822.02	518.59	0.05

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	8349.77	Max WS	Post100-DC-BFE	250.38	124.17	127.99		127.99	0.000063	0.43	837.72	520.64	0.05
Dry Creek Trib	8349.77	Max WS	VY Wide PL	250.38	124.17	127.99		127.99	0.000063	0.43	837.72	520.64	0.05
Dry Creek Trib	8349.77	Max WS	VY Wide Ult	250.42	124.17	127.99		127.99	0.000063	0.43	837.77	520.65	0.05
Dry Creek Trib	8292.18	Max WS	Pre100	439.46	124.38	127.68		127.71	0.001912	1.79	327.51	335.36	0.25
Dry Creek Trib	8292.18	Max WS	Post100	439.94	124.38	127.68		127.71	0.001904	1.79	328.19	336.15	0.24
Dry Creek Trib	8292.18	Max WS	Pre100-DC-BFE	439.37	124.38	127.68		127.71	0.001913	1.79	327.43	335.27	0.25
Dry Creek Trib	8292.18	Max WS	Post100-DC-BFE	439.96	124.38	127.68		127.71	0.001904	1.79	328.19	336.15	0.24
Dry Creek Trib	8292.18	Max WS	VY Wide PL	439.96	124.38	127.68		127.71	0.001903	1.79	328.26	336.24	0.24
Dry Creek Trib	8292.18	Max WS	VY Wide Ult	439.97	124.38	127.68		127.71	0.001904	1.79	328.19	336.15	0.24
Dry Creek Trib	8220.24	Max WS	Pre100	465.73	122.95	127.42		127.63	0.004183	3.85	139.73	181.08	0.40
Dry Creek Trib	8220.24	Max WS	Post100	466.60	122.95	127.43		127.64	0.004177	3.85	140.00	181.26	0.40
Dry Creek Trib	8220.24	Max WS	Pre100-DC-BFE	465.64	122.95	127.42		127.63	0.004183	3.85	139.70	181.06	0.40
Dry Creek Trib	8220.24	Max WS	Post100-DC-BFE	466.60	122.95	127.43		127.64	0.004177	3.85	140.00	181.26	0.40
Dry Creek Trib	8220.24	Max WS	VY Wide PL	466.61	122.95	127.43		127.64	0.004174	3.85	140.04	181.28	0.40
Dry Creek Trib	8220.24	Max WS	VY Wide Ult	466.63	122.95	127.43		127.64	0.004179	3.85	139.98	181.24	0.40
Dry Creek Trib	8102.71	Max WS	Pre100	465.49	122.75	127.26		127.31	0.000952	2.00	278.70	140.39	0.20
Dry Creek Trib	8102.71	Max WS	Post100	466.35	122.75	127.26		127.32	0.000951	2.00	279.29	140.45	0.20
Dry Creek Trib	8102.71	Max WS	Pre100-DC-BFE	465.40	122.75	127.26		127.31	0.000952	2.00	278.64	140.38	0.20
Dry Creek Trib	8102.71	Max WS	Post100-DC-BFE	466.35	122.75	127.26		127.32	0.000951	2.00	279.29	140.45	0.20
Dry Creek Trib	8102.71	Max WS	VY Wide PL	466.38	122.75	127.26		127.32	0.000950	2.00	279.37	140.46	0.19
Dry Creek Trib	8102.71	Max WS	VY Wide Ult	466.41	122.75	127.26		127.32	0.000951	2.00	279.22	140.44	0.20
Dry Creek Trib	7984.4	Max WS	Pre100	465.27	121.55	127.11		127.18	0.001486	2.64	276.89	157.08	0.24
Dry Creek Trib	7984.4	Max WS	Post100	466.13	121.55	127.12		127.19	0.001481	2.64	277.62	157.21	0.24
Dry Creek Trib	7984.4	Max WS	Pre100-DC-BFE	465.17	121.55	127.11		127.18	0.001486	2.64	276.83	157.07	0.24
Dry Creek Trib	7984.4	Max WS	Post100-DC-BFE	466.13	121.55	127.12		127.19	0.001481	2.64	277.62	157.21	0.24
Dry Creek Trib	7984.4	Max WS	VY Wide PL	466.18	121.55	127.12		127.19	0.001480	2.64	277.71	157.22	0.24
Dry Creek Trib	7984.4	Max WS	VY Wide Ult	466.37	121.55	127.12		127.18	0.001484	2.64	277.49	157.18	0.24
Dry Creek Trib	7877.8	Max WS	Pre100	464.91	121.35	126.89		126.99	0.002378	3.10	232.00	163.29	0.30
Dry Creek Trib	7877.8	Max WS	Post100	465.93	121.35	126.89		127.00	0.002364	3.10	233.00	163.44	0.30
Dry Creek Trib	7877.8	Max WS	Pre100-DC-BFE	464.81	121.35	126.89		126.99	0.002379	3.10	231.94	163.28	0.30
Dry Creek Trib	7877.8	Max WS	Post100-DC-BFE	465.93	121.35	126.89		127.00	0.002364	3.10	233.00	163.44	0.30
Dry Creek Trib	7877.8	Max WS	VY Wide PL	466.01	121.35	126.89		127.00	0.002361	3.09	233.15	163.46	0.30
Dry Creek Trib	7877.8	Max WS	VY Wide Ult	466.18	121.35	126.89		127.00	0.002373	3.10	232.75	163.40	0.30
Dry Creek Trib	7782	Max WS	Pre100	464.56	120.78	126.51		126.74	0.003915	4.20	149.69	104.08	0.38
Dry Creek Trib	7782	Max WS	Post100	465.65	120.78	126.52		126.75	0.003881	4.18	150.74	104.49	0.38
Dry Creek Trib	7782	Max WS	Pre100-DC-BFE	464.47	120.78	126.51		126.74	0.003916	4.20	149.65	104.06	0.38
Dry Creek Trib	7782	Max WS	Post100-DC-BFE	465.65	120.78	126.52		126.75	0.003881	4.18	150.74	104.49	0.38
Dry Creek Trib	7782	Max WS	VY Wide PL	465.88	120.78	126.52		126.75	0.003877	4.18	150.88	104.55	0.38
Dry Creek Trib	7782	Max WS	VY Wide Ult	465.96	120.78	126.51		126.75	0.003908	4.20	150.31	104.32	0.38
Dry Creek Trib	7684.81	Max WS	Pre100	464.36	120.67	126.21		126.41	0.003721	4.11	176.22	145.01	0.38
Dry Creek Trib	7684.81	Max WS	Post100	465.62	120.67	126.23		126.42	0.003644	4.08	178.53	145.47	0.37
Dry Creek Trib	7684.81	Max WS	Pre100-DC-BFE	464.26	120.67	126.21		126.41	0.003723	4.11	176.13	144.99	0.38
Dry Creek Trib	7684.81	Max WS	Post100-DC-BFE	465.62	120.67	126.23		126.42	0.003644	4.08	178.53	145.47	0.37
Dry Creek Trib	7684.81	Max WS	VY Wide PL	465.83	120.67	126.23		126.42	0.003634	4.07	178.83	145.53	0.37
Dry Creek Trib	7684.81	Max WS	VY Wide Ult	465.95	120.67	126.22		126.42	0.003700	4.10	177.31	145.22	0.38
Dry Creek Trib	7588.69	Max WS	Pre100	464.20	120.06	125.27		125.83	0.009777	6.02	77.94	218.26	0.60
Dry Creek Trib	7588.69	Max WS	Post100	465.02	120.06	125.31		125.86	0.009371	5.94	79.13	220.44	0.59
Dry Creek Trib	7588.69	Max WS	Pre100-DC-BFE	464.09	120.06	125.27		125.83	0.009779	6.02	77.92	218.22	0.60
Dry Creek Trib	7588.69	Max WS	Post100-DC-BFE	465.03	120.06	125.31		125.86	0.009369	5.94	79.14	220.45	0.59
Dry Creek Trib	7588.69	Max WS	VY Wide PL	464.88	120.06	125.32		125.86	0.009308	5.93	79.29	220.73	0.59
Dry Creek Trib	7588.69	Max WS	VY Wide Ult	463.96	120.06	125.27		125.83	0.009706	6.00	78.10	218.55	0.60
Dry Creek Trib	7492.13	Max WS	Pre100	490.22	119.00	124.96		125.15	0.003082	3.51	139.94	211.34	0.33
Dry Creek Trib	7492.13	Max WS	Post100	496.96	119.00	125.00		125.19	0.003045	3.52	141.65	213.21	0.32
Dry Creek Trib	7492.13	Max WS	Pre100-DC-BFE	490.10	119.00	124.95		125.15	0.003083	3.51	139.91	211.30	0.33
Dry Creek Trib	7492.13	Max WS	Post100-DC-BFE	496.99	119.00	125.00		125.19	0.003045	3.52	141.66	213.22	0.32
Dry Creek Trib	7492.13	Max WS	VY Wide PL	497.88	119.00	125.00		125.20	0.003043	3.52	141.84	67.42	0.32
Dry Creek Trib	7492.13	Max WS	VY Wide Ult	498.42	119.00	124.76		125.09	0.004316	4.63	107.67	19.56	0.35
Dry Creek Trib	7469.295			Culvert									
Dry Creek Trib	7446.46	Max WS	Pre100	490.19	119.00	124.04		124.46	0.006393	5.15	95.13	23.74	0.45
Dry Creek Trib	7446.46	Max WS	Post100	496.90	119.00	124.06		124.48	0.006495	5.20	95.63	23.87	0.46
Dry Creek Trib	7446.46	Max WS	Pre100-DC-BFE	490.07	119.00	124.04		124.45	0.006392	5.15	95.12	23.74	0.45
Dry Creek Trib	7446.46	Max WS	Post100-DC-BFE	496.92	119.00	124.06		124.48	0.006496	5.20	95.63	23.87	0.46
Dry Creek Trib	7446.46	Max WS	VY Wide PL	497.80	119.00	124.07		124.49	0.006509	5.20	95.70	23.88	0.46
Dry Creek Trib	7446.46	Max WS	VY Wide Ult	498.34	119.00	124.07		124.49	0.006517	5.21	95.74	23.89	0.46
Dry Creek Trib	7346.34	Max WS	Pre100	490.17	117.42	123.92		123.93	0.000115	0.90	541.84	111.43	0.07
Dry Creek Trib	7346.34	Max WS	Post100	496.88	117.42	123.94		123.95	0.000117	0.91	543.91	111.55	0.07
Dry Creek Trib	7346.34	Max WS	Pre100-DC-BFE	490.05	117.42	123.92		123.93	0.000115	0.90	541.80	111.42	0.07
Dry Creek Trib	7346.34	Max WS	Post100-DC-BFE	496.91	117.42	123.94		123.95	0.000117	0.91	543.92	111.55	0.07
Dry Creek Trib	7346.34	Max WS	VY Wide PL	497.79	117.42	123.94		123.95	0.000118	0.91	544.20	111.56	0.07

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	7346.34	Max WS	VY Wide Ult	498.33	117.42	123.94		123.95	0.000118	0.92	544.37	111.57	0.07
Dry Creek Trib	7255.4	Max WS	Pre100	490.97	117.51	123.90		123.92	0.000188	1.16	422.20	94.42	0.09
Dry Creek Trib	7255.4	Max WS	Post100	497.69	117.51	123.91		123.94	0.000191	1.17	423.76	94.83	0.09
Dry Creek Trib	7255.4	Max WS	Pre100-DC-BFE	490.84	117.51	123.90		123.92	0.000188	1.16	422.17	94.41	0.09
Dry Creek Trib	7255.4	Max WS	Post100-DC-BFE	497.72	117.51	123.91		123.94	0.000191	1.17	423.77	94.84	0.09
Dry Creek Trib	7255.4	Max WS	VY Wide PL	498.61	117.51	123.92		123.94	0.000192	1.18	423.98	94.89	0.09
Dry Creek Trib	7255.4	Max WS	VY Wide Ult	499.16	117.51	123.92		123.94	0.000192	1.18	424.10	94.93	0.09
Dry Creek Trib	7164.22	Max WS	Pre100	491.74	118.37	123.06		123.61	0.012909	6.01	88.79	59.99	0.67
Dry Creek Trib	7164.22	Max WS	Post100	498.44	118.37	123.08		123.63	0.012896	6.04	89.89	60.24	0.68
Dry Creek Trib	7164.22	Max WS	Pre100-DC-BFE	491.61	118.37	123.06		123.61	0.012910	6.01	88.77	59.98	0.67
Dry Creek Trib	7164.22	Max WS	Post100-DC-BFE	498.47	118.37	123.08		123.63	0.012895	6.04	89.89	60.24	0.68
Dry Creek Trib	7164.22	Max WS	VY Wide PL	499.41	118.37	123.08		123.64	0.012894	6.04	90.04	60.27	0.68
Dry Creek Trib	7164.22	Max WS	VY Wide Ult	499.90	118.37	123.08		123.64	0.012890	6.04	90.13	60.29	0.68
Dry Creek Trib	7067.14	Max WS	Pre100	492.59	117.76	122.60		122.78	0.003709	4.08	165.11	79.30	0.38
Dry Creek Trib	7067.14	Max WS	Post100	499.31	117.76	122.62		122.81	0.003705	4.09	166.86	79.57	0.38
Dry Creek Trib	7067.14	Max WS	Pre100-DC-BFE	492.43	117.76	122.60		122.78	0.003709	4.08	165.07	79.29	0.38
Dry Creek Trib	7067.14	Max WS	Post100-DC-BFE	499.33	117.76	122.62		122.81	0.003705	4.09	166.87	79.57	0.38
Dry Creek Trib	7067.14	Max WS	VY Wide PL	500.24	117.76	122.62		122.81	0.003703	4.09	167.12	79.61	0.38
Dry Creek Trib	7067.14	Max WS	VY Wide Ult	500.78	117.76	122.62		122.81	0.003703	4.09	167.26	79.63	0.38
Dry Creek Trib	6969.96	Max WS	Pre100	493.42	117.10	122.13		122.38	0.004847	4.03	122.60	44.96	0.42
Dry Creek Trib	6969.96	Max WS	Post100	500.14	117.10	122.15		122.40	0.004888	4.06	123.40	45.25	0.43
Dry Creek Trib	6969.96	Max WS	Pre100-DC-BFE	493.29	117.10	122.13		122.38	0.004847	4.03	122.58	44.95	0.42
Dry Creek Trib	6969.96	Max WS	Post100-DC-BFE	500.17	117.10	122.15		122.40	0.004888	4.06	123.41	45.25	0.43
Dry Creek Trib	6969.96	Max WS	VY Wide PL	501.07	117.10	122.15		122.41	0.004894	4.06	123.52	45.29	0.43
Dry Creek Trib	6969.96	Max WS	VY Wide Ult	501.62	117.10	122.15		122.41	0.004897	4.06	123.58	45.32	0.43
Dry Creek Trib	6844.28	Max WS	Pre100	494.53	117.22	121.84		121.96	0.002016	2.95	199.09	93.62	0.29
Dry Creek Trib	6844.28	Max WS	Post100	501.26	117.22	121.86		121.98	0.002030	2.97	200.63	93.82	0.29
Dry Creek Trib	6844.28	Max WS	Pre100-DC-BFE	494.40	117.22	121.84		121.96	0.002016	2.95	199.06	93.61	0.29
Dry Creek Trib	6844.28	Max WS	Post100-DC-BFE	501.29	117.22	121.86		121.98	0.002030	2.97	200.64	93.82	0.29
Dry Creek Trib	6844.28	Max WS	VY Wide PL	502.21	117.22	121.86		121.98	0.002032	2.97	200.85	93.85	0.29
Dry Creek Trib	6844.28	Max WS	VY Wide Ult	502.76	117.22	121.86		121.98	0.002033	2.97	200.98	93.87	0.29
Dry Creek Trib	6748.04	Max WS	Pre100	495.31	117.62	121.18		121.52	0.008412	5.57	124.01	71.96	0.57
Dry Creek Trib	6748.04	Max WS	Post100	502.04	117.62	121.20		121.54	0.008417	5.60	125.27	72.27	0.57
Dry Creek Trib	6748.04	Max WS	Pre100-DC-BFE	495.19	117.62	121.18		121.52	0.008412	5.57	123.99	71.96	0.57
Dry Creek Trib	6748.04	Max WS	Post100-DC-BFE	502.07	117.62	121.20		121.54	0.008417	5.60	125.28	72.28	0.57
Dry Creek Trib	6748.04	Max WS	VY Wide PL	503.03	117.62	121.20		121.55	0.008418	5.60	125.45	72.32	0.57
Dry Creek Trib	6748.04	Max WS	VY Wide Ult	503.52	117.62	121.20		121.55	0.008416	5.60	125.56	72.35	0.57
Dry Creek Trib	6661.51	Max WS	Pre100	496.07	116.27	120.82		120.98	0.003438	3.54	170.02	85.13	0.36
Dry Creek Trib	6661.51	Max WS	Post100	502.81	116.27	120.84		121.00	0.003445	3.56	171.59	85.47	0.36
Dry Creek Trib	6661.51	Max WS	Pre100-DC-BFE	495.94	116.27	120.82		120.98	0.003437	3.54	169.99	85.13	0.36
Dry Creek Trib	6661.51	Max WS	Post100-DC-BFE	502.84	116.27	120.84		121.00	0.003445	3.56	171.61	85.48	0.36
Dry Creek Trib	6661.51	Max WS	VY Wide PL	503.75	116.27	120.84		121.01	0.003445	3.56	171.82	85.52	0.36
Dry Creek Trib	6661.51	Max WS	VY Wide Ult	504.30	116.27	120.84		121.01	0.003446	3.56	171.95	85.55	0.36
Dry Creek Trib	6593.97	Max WS	Pre100	496.84	116.25	120.39		120.64	0.005926	4.70	140.54	73.32	0.48
Dry Creek Trib	6593.97	Max WS	Post100	503.58	116.25	120.41		120.66	0.005938	4.73	141.85	73.58	0.48
Dry Creek Trib	6593.97	Max WS	Pre100-DC-BFE	496.72	116.25	120.39		120.64	0.005926	4.70	140.52	73.32	0.48
Dry Creek Trib	6593.97	Max WS	Post100-DC-BFE	503.61	116.25	120.41		120.67	0.005937	4.73	141.87	73.58	0.48
Dry Creek Trib	6593.97	Max WS	VY Wide PL	504.52	116.25	120.41		120.67	0.005937	4.73	142.05	73.62	0.48
Dry Creek Trib	6593.97	Max WS	VY Wide Ult	505.07	116.25	120.41		120.67	0.005939	4.73	142.15	73.64	0.48
Dry Creek Trib	6509.43	Max WS	Pre100	497.53	115.84	119.93		120.18	0.005509	4.42	146.52	85.47	0.46
Dry Creek Trib	6509.43	Max WS	Post100	504.27	115.84	119.95		120.20	0.005531	4.44	147.81	85.69	0.46
Dry Creek Trib	6509.43	Max WS	Pre100-DC-BFE	497.41	115.84	119.93		120.18	0.005508	4.42	146.51	85.47	0.46
Dry Creek Trib	6509.43	Max WS	Post100-DC-BFE	504.30	115.84	119.95		120.20	0.005530	4.44	147.83	85.70	0.46
Dry Creek Trib	6509.43	Max WS	VY Wide PL	505.20	115.84	119.95		120.20	0.005532	4.44	148.01	85.73	0.46
Dry Creek Trib	6509.43	Max WS	VY Wide Ult	505.75	115.84	119.95		120.20	0.005533	4.45	148.12	85.75	0.46
Dry Creek Trib	6469.45	Max WS	Pre100	497.81	116.52	119.83		119.97	0.004685	3.70	186.31	114.05	0.41
Dry Creek Trib	6469.45	Max WS	Post100	504.55	116.52	119.85		119.98	0.004681	3.71	188.15	114.51	0.41
Dry Creek Trib	6469.45	Max WS	Pre100-DC-BFE	497.69	116.52	119.83		119.97	0.004683	3.70	186.30	114.05	0.41
Dry Creek Trib	6469.45	Max WS	Post100-DC-BFE	504.57	116.52	119.85		119.98	0.004679	3.71	188.19	114.51	0.41
Dry Creek Trib	6469.45	Max WS	VY Wide PL	505.56	116.52	119.85		119.99	0.004679	3.71	188.45	114.58	0.41
Dry Creek Trib	6469.45	Max WS	VY Wide Ult	506.11	116.52	119.85		119.99	0.004679	3.71	188.60	114.62	0.41
Dry Creek Trib	6351.96	Max WS	Pre100	498.75	114.42	119.36		119.49	0.003910	3.60	198.29	116.35	0.37
Dry Creek Trib	6351.96	Max WS	Post100	505.48	114.42	119.38		119.51	0.003887	3.61	200.51	116.52	0.37
Dry Creek Trib	6351.96	Max WS	Pre100-DC-BFE	498.63	114.42	119.36		119.49	0.003906	3.60	198.32	116.35	0.37
Dry Creek Trib	6351.96	Max WS	Post100-DC-BFE	505.51	114.42	119.38		119.51	0.003884	3.61	200.58	116.53	0.37
Dry Creek Trib	6351.96	Max WS	VY Wide PL	506.42	114.42	119.38		119.51	0.003878	3.61	200.93	116.55	0.37
Dry Creek Trib	6351.96	Max WS	VY Wide Ult	506.96	114.42	119.38		119.51	0.003876	3.61	201.12	116.57	0.37
Dry Creek Trib	6224.9	Max WS	Pre100	499.77	114.45	118.97		119.08	0.002667	3.67	227.47	122.98	0.33
Dry Creek Trib	6224.9	Max WS	Post100	506.51	114.45	118.99		119.11	0.002647	3.67	230.31	123.33	0.33

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	6224.9	Max WS	Pre100-DC-BFE	499.65	114.45	118.97		119.08	0.002662	3.67	227.58	122.99	0.33
Dry Creek Trib	6224.9	Max WS	Post100-DC-BFE	506.54	114.45	119.00		119.11	0.002642	3.67	230.47	123.35	0.33
Dry Creek Trib	6224.9	Max WS	VY Wide PL	507.46	114.45	119.00		119.11	0.002636	3.67	230.94	123.41	0.33
Dry Creek Trib	6224.9	Max WS	VY Wide Ult	508.00	114.45	119.00		119.11	0.002635	3.67	231.18	123.44	0.33
Dry Creek Trib	6159.11	Max WS	Pre100	500.33	114.34	118.84		118.92	0.002059	2.77	251.24	129.76	0.28
Dry Creek Trib	6159.11	Max WS	Post100	507.08	114.34	118.87		118.95	0.002039	2.77	254.38	129.96	0.28
Dry Creek Trib	6159.11	Max WS	Pre100-DC-BFE	500.20	114.34	118.84		118.92	0.002054	2.76	251.39	129.77	0.28
Dry Creek Trib	6159.11	Max WS	Post100-DC-BFE	507.11	114.34	118.87		118.95	0.002035	2.77	254.57	129.97	0.28
Dry Creek Trib	6159.11	Max WS	VY Wide PL	508.06	114.34	118.87		118.95	0.002029	2.76	255.12	130.01	0.28
Dry Creek Trib	6159.11	Max WS	VY Wide Ult	508.59	114.34	118.87		118.95	0.002028	2.76	255.38	130.03	0.28
Dry Creek Trib	6102.92	Max WS	Pre100	500.81	114.47	118.69		118.79	0.002986	3.29	225.51	120.16	0.33
Dry Creek Trib	6102.92	Max WS	Post100	507.57	114.47	118.72		118.81	0.002944	3.29	228.59	120.38	0.33
Dry Creek Trib	6102.92	Max WS	Pre100-DC-BFE	500.68	114.47	118.69		118.79	0.002976	3.29	225.70	120.17	0.33
Dry Creek Trib	6102.92	Max WS	Post100-DC-BFE	507.60	114.47	118.72		118.81	0.002935	3.29	228.82	120.40	0.33
Dry Creek Trib	6102.92	Max WS	VY Wide PL	508.54	114.47	118.72		118.82	0.002925	3.28	229.36	120.43	0.33
Dry Creek Trib	6102.92	Max WS	VY Wide Ult	509.09	114.47	118.73		118.82	0.002922	3.28	229.61	120.45	0.33
Dry Creek Trib	6011.93	Max WS	Pre100	501.53	113.85	118.33		118.49	0.003940	3.99	186.42	110.50	0.39
Dry Creek Trib	6011.93	Max WS	Post100	508.28	113.85	118.36		118.52	0.003856	3.97	189.90	111.00	0.39
Dry Creek Trib	6011.93	Max WS	Pre100-DC-BFE	501.39	113.85	118.33		118.50	0.003919	3.98	186.76	110.55	0.39
Dry Creek Trib	6011.93	Max WS	Post100-DC-BFE	508.31	113.85	118.36		118.53	0.003833	3.96	190.34	111.06	0.39
Dry Creek Trib	6011.93	Max WS	VY Wide PL	509.33	113.85	118.37		118.53	0.003807	3.95	191.13	111.18	0.39
Dry Creek Trib	6011.93	Max WS	VY Wide Ult	509.85	113.85	118.37		118.53	0.003798	3.95	191.45	111.22	0.39
Dry Creek Trib	5902.58	Max WS	Pre100	502.31	115.02	118.00		118.11	0.002849	2.67	197.15	104.05	0.32
Dry Creek Trib	5902.58	Max WS	Post100	509.02	115.02	118.04		118.15	0.002739	2.65	201.49	104.56	0.31
Dry Creek Trib	5902.58	Max WS	Pre100-DC-BFE	502.16	115.02	118.01		118.11	0.002821	2.66	197.75	104.13	0.32
Dry Creek Trib	5902.58	Max WS	Post100-DC-BFE	509.07	115.02	118.05		118.15	0.002710	2.64	202.22	104.65	0.31
Dry Creek Trib	5902.58	Max WS	VY Wide PL	509.88	115.02	118.06		118.16	0.002673	2.63	203.35	104.78	0.31
Dry Creek Trib	5902.58	Max WS	VY Wide Ult	510.36	115.02	118.06		118.17	0.002661	2.63	203.78	104.83	0.31
Dry Creek Trib	5792.84	Max WS	Pre100	502.88	112.78	117.87		117.91	0.000868	2.00	343.61	133.68	0.19
Dry Creek Trib	5792.84	Max WS	Post100	509.51	112.78	117.92		117.96	0.000843	1.98	350.02	134.24	0.18
Dry Creek Trib	5792.84	Max WS	Pre100-DC-BFE	502.71	112.78	117.88		117.92	0.000860	1.99	344.57	133.76	0.18
Dry Creek Trib	5792.84	Max WS	Post100-DC-BFE	509.56	112.78	117.93		117.97	0.000835	1.98	351.17	134.33	0.18
Dry Creek Trib	5792.84	Max WS	VY Wide PL	510.30	112.78	117.94		117.98	0.000825	1.97	352.86	134.48	0.18
Dry Creek Trib	5792.84	Max WS	VY Wide Ult	510.75	112.78	117.95		117.99	0.000822	1.97	353.50	134.54	0.18
Dry Creek Trib	5682.44	Max WS	Pre100	503.82	111.63	117.84		117.85	0.000181	1.01	710.91	248.43	0.09
Dry Creek Trib	5682.44	Max WS	Post100	510.44	111.63	117.89		117.90	0.000176	1.00	723.20	248.80	0.09
Dry Creek Trib	5682.44	Max WS	Pre100-DC-BFE	503.63	111.63	117.85		117.86	0.000179	1.01	712.80	248.49	0.09
Dry Creek Trib	5682.44	Max WS	Post100-DC-BFE	510.50	111.63	117.90		117.91	0.000174	1.00	725.41	248.87	0.09
Dry Creek Trib	5682.44	Max WS	VY Wide PL	511.18	111.63	117.91		117.92	0.000173	1.00	728.67	248.97	0.09
Dry Creek Trib	5682.44	Max WS	VY Wide Ult	511.61	111.63	117.92		117.93	0.000172	0.99	729.89	249.01	0.09
Dry Creek Trib	5618.96	Max WS	Pre100	502.49	110.98	117.65		117.84	0.002995	4.08	168.11	64.57	0.34
Dry Creek Trib	5618.96	Max WS	Post100	508.38	110.98	117.71		117.89	0.002895	4.04	171.62	64.84	0.33
Dry Creek Trib	5618.96	Max WS	Pre100-DC-BFE	502.29	110.98	117.66		117.84	0.002963	4.06	168.71	64.61	0.34
Dry Creek Trib	5618.96	Max WS	Post100-DC-BFE	509.41	110.98	117.72		117.90	0.002874	4.04	172.31	64.89	0.33
Dry Creek Trib	5618.96	Max WS	VY Wide PL	509.01	110.98	117.73		117.91	0.002824	4.01	173.29	64.97	0.33
Dry Creek Trib	5618.96	Max WS	VY Wide Ult	509.05	110.98	117.74		117.91	0.002808	4.00	173.66	64.99	0.33
Dry Creek Trib	5553.77	Max WS	Pre100	577.76	112.80	117.52		117.64	0.001551	2.89	224.79	74.66	0.26
Dry Creek Trib	5553.77	Max WS	Post100	591.65	112.80	117.57		117.69	0.001553	2.92	228.54	75.15	0.26
Dry Creek Trib	5553.77	Max WS	Pre100-DC-BFE	577.56	112.80	117.53		117.65	0.001534	2.88	225.60	74.77	0.25
Dry Creek Trib	5553.77	Max WS	Post100-DC-BFE	591.71	112.80	117.58		117.70	0.001536	2.91	229.45	75.27	0.25
Dry Creek Trib	5553.77	Max WS	VY Wide PL	595.50	112.80	117.59		117.71	0.001537	2.92	230.46	75.40	0.26
Dry Creek Trib	5553.77	Max WS	VY Wide Ult	596.71	112.80	117.60		117.72	0.001536	2.92	230.83	75.45	0.26
Dry Creek Trib	5479.88	Max WS	Pre100	578.30	110.81	117.36		117.50	0.002223	3.02	191.67	58.82	0.29
Dry Creek Trib	5479.88	Max WS	Post100	592.20	110.81	117.41		117.55	0.002250	3.04	194.60	59.52	0.30
Dry Creek Trib	5479.88	Max WS	Pre100-DC-BFE	577.93	110.81	117.37		117.51	0.002200	3.00	192.42	59.00	0.29
Dry Creek Trib	5479.88	Max WS	Post100-DC-BFE	592.25	110.81	117.42		117.56	0.002228	3.03	195.43	59.72	0.30
Dry Creek Trib	5479.88	Max WS	VY Wide PL	595.84	110.81	117.43		117.58	0.002234	3.04	196.23	59.90	0.30
Dry Creek Trib	5479.88	Max WS	VY Wide Ult	597.28	110.81	117.44		117.58	0.002237	3.04	196.52	59.97	0.30
Dry Creek Trib	5423.09	Max WS	Pre100	578.57	111.01	117.28		117.39	0.001705	3.44	245.81	88.48	0.27
Dry Creek Trib	5423.09	Max WS	Post100	592.42	111.01	117.33		117.45	0.001715	3.47	250.23	91.87	0.27
Dry Creek Trib	5423.09	Max WS	Pre100-DC-BFE	578.37	111.01	117.29		117.41	0.001684	3.43	247.04	89.44	0.27
Dry Creek Trib	5423.09	Max WS	Post100-DC-BFE	592.48	111.01	117.34		117.46	0.001694	3.46	251.63	92.92	0.27
Dry Creek Trib	5423.09	Max WS	VY Wide PL	596.27	111.01	117.36		117.47	0.001697	3.47	252.85	93.82	0.27
Dry Creek Trib	5423.09	Max WS	VY Wide Ult	597.71	111.01	117.36		117.48	0.001698	3.47	253.31	94.16	0.27
Dry Creek Trib	5275.52	Max WS	Pre100	579.55	110.57	116.69		116.94	0.004951	4.08	143.09	57.84	0.43
Dry Creek Trib	5275.52	Max WS	Post100	593.38	110.57	116.73		116.99	0.004939	4.11	145.72	59.65	0.43
Dry Creek Trib	5275.52	Max WS	Pre100-DC-BFE	579.34	110.57	116.71		116.97	0.004794	4.03	144.75	59.00	0.42
Dry Creek Trib	5275.52	Max WS	Post100-DC-BFE	593.43	110.57	116.76		117.02	0.004776	4.07	147.48	60.81	0.42
Dry Creek Trib	5275.52	Max WS	VY Wide PL	597.22	110.57	116.77		117.03	0.004771	4.07	148.21	61.29	0.42
Dry Creek Trib	5275.52	Max WS	VY Wide Ult	598.45	110.57	116.78		117.03	0.004766	4.08	148.48	61.46	0.42

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	5185.28	Max WS	Pre100	580.08	111.16	116.42		116.62	0.002718	3.72	182.98	72.61	0.34
Dry Creek Trib	5185.28	Max WS	Post100	593.86	111.16	116.47		116.66	0.002722	3.76	186.20	73.12	0.34
Dry Creek Trib	5185.28	Max WS	Pre100-DC-BFE	579.88	111.16	116.46		116.65	0.002612	3.67	185.76	73.05	0.33
Dry Creek Trib	5185.28	Max WS	Post100-DC-BFE	593.92	111.16	116.51		116.70	0.002621	3.71	189.05	73.92	0.33
Dry Creek Trib	5185.28	Max WS	VY Wide PL	597.72	111.16	116.52		116.71	0.002625	3.72	189.92	74.17	0.33
Dry Creek Trib	5185.28	Max WS	VY Wide Ult	599.15	111.16	116.52		116.72	0.002626	3.72	190.23	74.26	0.33
Dry Creek Trib	5105.36	Max WS	Pre100	580.69	110.83	116.26		116.44	0.001818	3.58	200.57	67.33	0.28
Dry Creek Trib	5105.36	Max WS	Post100	594.48	110.83	116.31		116.48	0.001841	3.62	203.38	67.83	0.28
Dry Creek Trib	5105.36	Max WS	Pre100-DC-BFE	580.48	110.83	116.31		116.48	0.001753	3.54	203.50	67.86	0.28
Dry Creek Trib	5105.36	Max WS	Post100-DC-BFE	594.54	110.83	116.35		116.52	0.001774	3.58	206.44	68.38	0.28
Dry Creek Trib	5105.36	Max WS	VY Wide PL	598.33	110.83	116.36		116.54	0.001780	3.59	207.22	68.52	0.28
Dry Creek Trib	5105.36	Max WS	VY Wide Ult	599.57	110.83	116.37		116.54	0.001782	3.59	207.51	68.57	0.28
Dry Creek Trib	5008.64	Max WS	Pre100	581.40	111.00	116.10		116.25	0.002146	3.37	206.57	80.01	0.30
Dry Creek Trib	5008.64	Max WS	Post100	595.20	111.00	116.14		116.29	0.002158	3.40	209.80	80.34	0.30
Dry Creek Trib	5008.64	Max WS	Pre100-DC-BFE	581.20	111.00	116.15		116.30	0.002033	3.31	210.74	80.44	0.29
Dry Creek Trib	5008.64	Max WS	Post100-DC-BFE	595.26	111.00	116.19		116.34	0.002044	3.34	214.09	80.78	0.29
Dry Creek Trib	5008.64	Max WS	VY Wide PL	598.91	111.00	116.20		116.35	0.002046	3.35	214.99	80.87	0.29
Dry Creek Trib	5008.64	Max WS	VY Wide Ult	600.32	111.00	116.20		116.36	0.002048	3.35	215.31	80.90	0.29
Dry Creek Trib	4899.84	Max WS	Pre100	581.20	110.75	115.37		115.79	0.007287	5.35	122.20	55.30	0.52
Dry Creek Trib	4899.84	Max WS	Post100	594.73	110.75	115.42		115.84	0.007270	5.39	124.59	55.80	0.52
Dry Creek Trib	4899.84	Max WS	Pre100-DC-BFE	581.77	110.75	115.56		115.92	0.005943	5.01	132.51	58.30	0.47
Dry Creek Trib	4899.84	Max WS	Post100-DC-BFE	595.75	110.75	115.59		115.96	0.005982	5.06	134.66	59.00	0.48
Dry Creek Trib	4899.84	Max WS	VY Wide PL	599.56	110.75	115.60		115.97	0.005993	5.07	135.24	59.19	0.48
Dry Creek Trib	4899.84	Max WS	VY Wide Ult	600.77	110.75	115.61		115.98	0.005994	5.08	135.46	59.26	0.48
Dry Creek Trib	4824.44	Max WS	Pre100	581.74	110.92	115.25		115.40	0.002215	3.27	209.12	96.40	0.30
Dry Creek Trib	4824.44	Max WS	Post100	594.93	110.92	115.29		115.44	0.002202	3.28	213.53	97.26	0.30
Dry Creek Trib	4824.44	Max WS	Pre100-DC-BFE	582.32	110.92	115.46		115.59	0.001748	3.02	230.42	99.62	0.27
Dry Creek Trib	4824.44	Max WS	Post100-DC-BFE	596.31	110.92	115.50		115.63	0.001757	3.04	234.32	99.99	0.27
Dry Creek Trib	4824.44	Max WS	VY Wide PL	599.92	110.92	115.51		115.64	0.001759	3.05	235.37	100.09	0.27
Dry Creek Trib	4824.44	Max WS	VY Wide Ult	601.34	110.92	115.52		115.65	0.001760	3.05	235.75	100.12	0.27
Dry Creek Trib	4744.51	Max WS	Pre100	582.05	111.08	115.08		115.21	0.002770	3.23	228.50	109.66	0.33
Dry Creek Trib	4744.51	Max WS	Post100	595.52	111.08	115.13		115.26	0.002711	3.23	233.89	110.14	0.33
Dry Creek Trib	4744.51	Max WS	Pre100-DC-BFE	582.78	111.08	115.34		115.44	0.001958	2.88	257.82	112.27	0.28
Dry Creek Trib	4744.51	Max WS	Post100-DC-BFE	596.74	111.08	115.38		115.48	0.001955	2.90	262.18	112.66	0.28
Dry Creek Trib	4744.51	Max WS	VY Wide PL	600.53	111.08	115.39		115.49	0.001954	2.90	263.36	112.76	0.28
Dry Creek Trib	4744.51	Max WS	VY Wide Ult	601.93	111.08	115.40		115.50	0.001954	2.90	263.79	112.80	0.28
Dry Creek Trib	4647.61	Max WS	Pre100	582.51	109.03	114.89		115.01	0.001400	2.89	236.53	88.58	0.25
Dry Creek Trib	4647.61	Max WS	Post100	595.93	109.03	114.94		115.06	0.001398	2.91	241.00	89.11	0.25
Dry Creek Trib	4647.61	Max WS	Pre100-DC-BFE	583.50	109.03	115.20		115.30	0.001057	2.63	264.68	91.94	0.22
Dry Creek Trib	4647.61	Max WS	Post100-DC-BFE	597.48	109.03	115.24		115.34	0.001072	2.67	268.07	92.34	0.22
Dry Creek Trib	4647.61	Max WS	VY Wide PL	601.25	109.03	115.25		115.35	0.001076	2.68	268.98	92.45	0.22
Dry Creek Trib	4647.61	Max WS	VY Wide Ult	602.62	109.03	115.25		115.35	0.001078	2.68	269.32	92.49	0.22
Dry Creek Trib	4565.34	Max WS	Pre100	583.11	109.08	114.83		114.91	0.001015	2.44	289.60	95.60	0.21
Dry Creek Trib	4565.34	Max WS	Post100	596.54	109.08	114.88		114.96	0.001015	2.46	294.46	96.27	0.21
Dry Creek Trib	4565.34	Max WS	Pre100-DC-BFE	584.11	109.08	115.16		115.22	0.000761	2.22	321.60	99.22	0.18
Dry Creek Trib	4565.34	Max WS	Post100-DC-BFE	598.10	109.08	115.20		115.26	0.000773	2.25	325.20	99.58	0.19
Dry Creek Trib	4565.34	Max WS	VY Wide PL	601.85	109.08	115.20		115.27	0.000777	2.26	326.17	99.67	0.19
Dry Creek Trib	4565.34	Max WS	VY Wide Ult	603.17	109.08	115.21		115.27	0.000778	2.26	326.52	99.71	0.19
Dry Creek Trib	4477.87	Max WS	Pre100	583.74	108.81	114.60		114.78	0.002373	3.74	190.75	67.06	0.32
Dry Creek Trib	4477.87	Max WS	Post100	597.17	108.81	114.65		114.84	0.002370	3.77	194.12	67.47	0.32
Dry Creek Trib	4477.87	Max WS	Pre100-DC-BFE	584.76	108.81	114.99		115.13	0.001682	3.34	217.49	70.83	0.27
Dry Creek Trib	4477.87	Max WS	Post100-DC-BFE	598.77	108.81	115.02		115.17	0.001716	3.39	219.76	71.17	0.28
Dry Creek Trib	4477.87	Max WS	VY Wide PL	602.50	108.81	115.03		115.18	0.001724	3.40	220.37	71.27	0.28
Dry Creek Trib	4477.87	Max WS	VY Wide Ult	603.86	108.81	115.03		115.18	0.001728	3.40	220.59	71.30	0.28
Dry Creek Trib	4378.67	Max WS	Pre100	583.98	108.62	113.92		114.29	0.008085	4.91	119.03	50.14	0.54
Dry Creek Trib	4378.67	Max WS	Post100	597.28	108.62	113.97		114.34	0.008061	4.93	121.37	51.68	0.54
Dry Creek Trib	4378.67	Max WS	Pre100-DC-BFE	585.51	108.62	114.68		114.89	0.003432	3.70	166.65	70.12	0.36
Dry Creek Trib	4378.67	Max WS	Post100-DC-BFE	599.53	108.62	114.71		114.92	0.003501	3.76	168.39	70.51	0.37
Dry Creek Trib	4378.67	Max WS	VY Wide PL	603.26	108.62	114.71		114.93	0.003518	3.77	168.86	70.61	0.37
Dry Creek Trib	4378.67	Max WS	VY Wide Ult	604.59	108.62	114.72		114.93	0.003524	3.78	169.03	70.65	0.37
Dry Creek Trib	4277.98	Max WS	Pre100	584.49	106.96	113.56		113.77	0.002515	3.69	167.47	56.44	0.32
Dry Creek Trib	4277.98	Max WS	Post100	597.74	106.96	113.60		113.82	0.002529	3.72	170.03	56.97	0.32
Dry Creek Trib	4277.98	Max WS	Pre100-DC-BFE	586.27	106.96	114.54		114.66	0.001153	2.88	230.21	73.53	0.22
Dry Creek Trib	4277.98	Max WS	Post100-DC-BFE	600.22	106.96	114.56		114.68	0.001189	2.93	231.77	73.75	0.23
Dry Creek Trib	4277.98	Max WS	VY Wide PL	604.03	106.96	114.56		114.69	0.001199	2.94	232.20	73.81	0.23
Dry Creek Trib	4277.98	Max WS	VY Wide Ult	605.36	106.96	114.57		114.69	0.001202	2.95	232.35	73.83	0.23
Dry Creek Trib	4174.26	Max WS	Pre100	585.02	106.84	113.45		113.56	0.001399	3.34	251.12	80.33	0.25
Dry Creek Trib	4174.26	Max WS	Post100	598.21	106.84	113.49		113.61	0.001423	3.39	254.90	83.66	0.25
Dry Creek Trib	4174.26	Max WS	Pre100-DC-BFE	587.06	106.84	114.50		114.56	0.000638	2.53	348.88	98.96	0.18

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	4174.26	Max WS	Post100-DC-BFE	600.99	106.84	114.52		114.58	0.000659	2.58	350.87	99.19	0.18
Dry Creek Trib	4174.26	Max WS	VY Wide PL	604.83	106.84	114.52		114.59	0.000664	2.59	351.43	99.25	0.18
Dry Creek Trib	4174.26	Max WS	VY Wide Ult	606.16	106.84	114.53		114.59	0.000666	2.60	351.63	99.28	0.18
Dry Creek Trib	4081.21	Max WS	Pre100	585.69	106.93	113.23		113.39	0.002682	3.78	227.57	116.24	0.33
Dry Creek Trib	4081.21	Max WS	Post100	598.89	106.93	113.28		113.44	0.002640	3.78	233.13	117.08	0.33
Dry Creek Trib	4081.21	Max WS	Pre100-DC-BFE	587.63	106.93	114.44		114.50	0.000735	2.35	385.45	146.79	0.18
Dry Creek Trib	4081.21	Max WS	Post100-DC-BFE	601.68	106.93	114.46		114.52	0.000756	2.39	388.22	147.13	0.18
Dry Creek Trib	4081.21	Max WS	VY Wide PL	605.55	106.93	114.47		114.52	0.000762	2.40	388.98	147.23	0.18
Dry Creek Trib	4081.21	Max WS	VY Wide Ult	606.86	106.93	114.47		114.52	0.000764	2.40	389.26	147.26	0.18
Dry Creek Trib	3997.08	Max WS	Pre100	586.13	106.77	112.99		113.17	0.002497	3.43	180.55	70.89	0.32
Dry Creek Trib	3997.08	Max WS	Post100	599.30	106.77	113.04		113.22	0.002496	3.46	183.78	71.39	0.32
Dry Creek Trib	3997.08	Max WS	Pre100-DC-BFE	588.25	106.77	114.36		114.44	0.000725	2.28	315.15	119.13	0.18
Dry Creek Trib	3997.08	Max WS	Post100-DC-BFE	602.31	106.77	114.38		114.45	0.000749	2.33	317.07	119.37	0.18
Dry Creek Trib	3997.08	Max WS	VY Wide PL	605.96	106.77	114.38		114.46	0.000756	2.34	317.61	119.44	0.18
Dry Creek Trib	3997.08	Max WS	VY Wide Ult	607.22	106.77	114.38		114.46	0.000758	2.34	317.80	119.46	0.18
Dry Creek Trib	3926.37	Max WS	Pre100	586.49	107.28	112.65		112.95	0.004459	4.65	148.88	66.10	0.42
Dry Creek Trib	3926.37	Max WS	Post100	599.61	107.28	112.69		113.00	0.004448	4.68	151.76	66.74	0.42
Dry Creek Trib	3926.37	Max WS	Pre100-DC-BFE	588.54	107.28	114.29		114.39	0.001002	2.81	295.63	126.37	0.21
Dry Creek Trib	3926.37	Max WS	Post100-DC-BFE	602.55	107.28	114.31		114.41	0.001037	2.87	297.33	126.62	0.22
Dry Creek Trib	3926.37	Max WS	VY Wide PL	606.13	107.28	114.31		114.41	0.001046	2.88	297.81	126.69	0.22
Dry Creek Trib	3926.37	Max WS	VY Wide Ult	607.34	107.28	114.31		114.41	0.001049	2.88	297.97	126.72	0.22
Dry Creek Trib	3862.49	Max WS	Pre100	586.95	106.46	112.47		112.71	0.002868	4.00	163.48	58.11	0.35
Dry Creek Trib	3862.49	Max WS	Post100	600.07	106.46	112.52		112.76	0.002887	4.04	165.93	58.73	0.35
Dry Creek Trib	3862.49	Max WS	Pre100-DC-BFE	588.68	106.46	114.25		114.33	0.000697	2.50	319.21	126.48	0.18
Dry Creek Trib	3862.49	Max WS	Post100-DC-BFE	602.62	106.46	114.26		114.35	0.000723	2.55	320.70	126.79	0.18
Dry Creek Trib	3862.49	Max WS	VY Wide PL	606.12	106.46	114.26		114.35	0.000730	2.56	321.12	126.87	0.19
Dry Creek Trib	3862.49	Max WS	VY Wide Ult	607.84	106.46	114.26		114.35	0.000733	2.57	321.27	126.90	0.19
Dry Creek Trib	3776.24	Max WS	Pre100	587.56	105.17	112.47		112.53	0.000570	2.03	336.33	108.05	0.16
Dry Creek Trib	3776.24	Max WS	Post100	600.68	105.17	112.51		112.57	0.000576	2.05	341.00	108.93	0.16
Dry Creek Trib	3776.24	Max WS	Pre100-DC-BFE	589.68	105.17	114.25		114.28	0.000163	1.33	559.71	138.00	0.09
Dry Creek Trib	3776.24	Max WS	Post100-DC-BFE	603.74	105.17	114.27		114.29	0.000169	1.36	561.35	138.12	0.09
Dry Creek Trib	3776.24	Max WS	VY Wide PL	607.31	105.17	114.27		114.29	0.000171	1.36	561.81	138.15	0.09
Dry Creek Trib	3776.24	Max WS	VY Wide Ult	608.51	105.17	114.27		114.29	0.000171	1.37	561.99	138.17	0.09
Dry Creek Trib	3690.59	Max WS	Pre100	588.05	105.83	112.22		112.42	0.002461	3.59	168.94	55.43	0.32
Dry Creek Trib	3690.59	Max WS	Post100	601.16	105.83	112.26		112.46	0.002488	3.64	171.09	56.89	0.32
Dry Creek Trib	3690.59	Max WS	Pre100-DC-BFE	589.53	105.83	114.20		114.26	0.000486	2.09	356.31	114.95	0.15
Dry Creek Trib	3690.59	Max WS	Post100-DC-BFE	603.37	105.83	114.21		114.27	0.000505	2.13	357.42	115.08	0.15
Dry Creek Trib	3690.59	Max WS	VY Wide PL	606.78	105.83	114.21		114.27	0.000510	2.14	357.73	115.11	0.15
Dry Creek Trib	3690.59	Max WS	VY Wide Ult	607.86	105.83	114.21		114.27	0.000511	2.15	357.85	115.12	0.16
Dry Creek Trib	3620.21	Max WS	Pre100	588.56	105.63	112.09		112.24	0.002673	3.05	192.90	68.43	0.32
Dry Creek Trib	3620.21	Max WS	Post100	601.67	105.63	112.13		112.28	0.002675	3.08	195.49	68.90	0.32
Dry Creek Trib	3620.21	Max WS	Pre100-DC-BFE	590.06	105.63	114.19		114.22	0.000355	1.60	432.75	135.18	0.13
Dry Creek Trib	3620.21	Max WS	Post100-DC-BFE	603.92	105.63	114.20		114.23	0.000369	1.63	433.99	135.33	0.13
Dry Creek Trib	3620.21	Max WS	VY Wide PL	607.34	105.63	114.20		114.24	0.000373	1.64	434.34	135.38	0.13
Dry Creek Trib	3620.21	Max WS	VY Wide Ult	608.41	105.63	114.20		114.24	0.000374	1.64	434.48	135.39	0.13
Dry Creek Trib	3517.19	Max WS	Pre100	589.20	104.82	111.96		112.05	0.001081	2.43	252.57	78.72	0.21
Dry Creek Trib	3517.19	Max WS	Post100	602.27	104.82	111.99		112.09	0.001095	2.47	255.42	79.34	0.21
Dry Creek Trib	3517.19	Max WS	Pre100-DC-BFE	590.30	104.82	114.16		114.19	0.000222	1.47	463.17	115.07	0.10
Dry Creek Trib	3517.19	Max WS	Post100-DC-BFE	604.02	104.82	114.17		114.20	0.000232	1.50	464.11	115.35	0.11
Dry Creek Trib	3517.19	Max WS	VY Wide PL	607.33	104.82	114.17		114.20	0.000234	1.51	464.37	115.43	0.11
Dry Creek Trib	3517.19	Max WS	VY Wide Ult	608.32	104.82	114.17		114.20	0.000235	1.51	464.46	115.45	0.11
Dry Creek Trib	3426.61	Max WS	Pre100	589.85	105.85	111.81		111.92	0.002041	2.59	232.98	110.94	0.28
Dry Creek Trib	3426.61	Max WS	Post100	602.93	105.85	111.85		111.95	0.002040	2.61	236.98	112.58	0.28
Dry Creek Trib	3426.61	Max WS	Pre100-DC-BFE	590.99	105.85	114.15		114.17	0.000201	1.21	569.48	165.78	0.10
Dry Creek Trib	3426.61	Max WS	Post100-DC-BFE	604.73	105.85	114.16		114.18	0.000209	1.24	570.74	165.86	0.10
Dry Creek Trib	3426.61	Max WS	VY Wide PL	608.05	105.85	114.16		114.18	0.000211	1.25	571.11	165.89	0.10
Dry Creek Trib	3426.61	Max WS	VY Wide Ult	609.04	105.85	114.16		114.18	0.000212	1.25	571.24	165.90	0.10
Dry Creek Trib	3351.95	Max WS	Pre100	590.17	106.47	111.21		111.57	0.009236	4.78	123.37	55.66	0.57
Dry Creek Trib	3351.95	Max WS	Post100	603.19	106.47	111.25		111.61	0.009178	4.80	125.71	56.19	0.57
Dry Creek Trib	3351.95	Max WS	Pre100-DC-BFE	590.89	106.47	114.13		114.15	0.000309	1.47	514.20	171.18	0.12
Dry Creek Trib	3351.95	Max WS	Post100-DC-BFE	603.49	106.47	114.13		114.16	0.000321	1.49	515.35	171.33	0.12
Dry Creek Trib	3351.95	Max WS	VY Wide PL	606.53	106.47	114.14		114.16	0.000324	1.50	515.68	171.37	0.12
Dry Creek Trib	3351.95	Max WS	VY Wide Ult	608.56	106.47	114.14		114.16	0.000325	1.50	515.81	171.39	0.12
Dry Creek Trib	3283.95	Max WS	Pre100	590.52	104.94	111.03		111.18	0.001995	3.12	190.61	57.11	0.28
Dry Creek Trib	3283.95	Max WS	Post100	603.68	104.94	111.08		111.23	0.002008	3.15	193.04	58.12	0.29
Dry Creek Trib	3283.95	Max WS	Pre100-DC-BFE	590.65	104.94	114.12		114.14	0.000162	1.33	597.90	172.78	0.09
Dry Creek Trib	3283.95	Max WS	Post100-DC-BFE	602.90	104.94	114.12		114.14	0.000168	1.35	598.97	172.90	0.09
Dry Creek Trib	3283.95	Max WS	VY Wide PL	607.07	104.94	114.12		114.15	0.000170	1.36	599.28	172.94	0.09
Dry Creek Trib	3283.95	Max WS	VY Wide Ult	607.86	104.94	114.12		114.15	0.000171	1.36	599.39	172.95	0.09

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

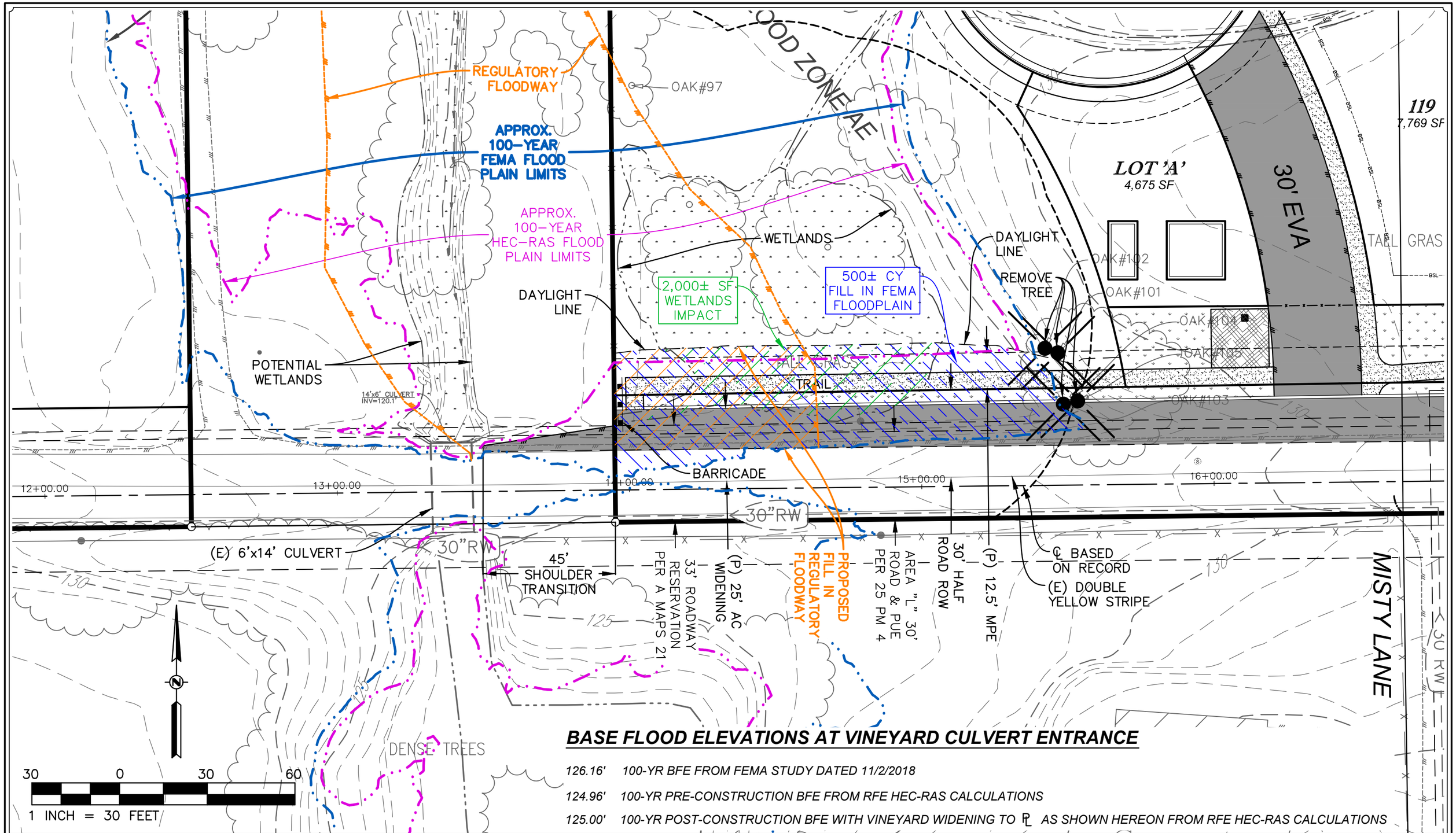
Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	3198.18	Max WS	Pre100	590.98	106.27	110.68		110.89	0.005062	3.68	160.38	68.99	0.43
Dry Creek Trib	3198.18	Max WS	Post100	603.94	106.27	110.72		110.93	0.005056	3.70	163.21	69.71	0.43
Dry Creek Trib	3198.18	Max WS	Pre100-DC-BFE	589.44	106.27	114.10		114.12	0.000227	1.18	511.68	150.21	0.10
Dry Creek Trib	3198.18	Max WS	Post100-DC-BFE	600.87	106.27	114.10		114.13	0.000234	1.20	512.51	152.58	0.10
Dry Creek Trib	3198.18	Max WS	VY Wide PL	603.33	106.27	114.10		114.13	0.000236	1.21	512.75	153.28	0.10
Dry Creek Trib	3198.18	Max WS	VY Wide Ult	605.51	106.27	114.11		114.13	0.000238	1.21	512.84	153.55	0.10
Dry Creek Trib	3093.07	Max WS	Pre100	591.33	104.29	110.12		110.44	0.004032	4.63	138.71	54.61	0.41
Dry Creek Trib	3093.07	Max WS	Post100	604.19	104.29	110.15		110.48	0.004085	4.68	140.56	55.86	0.41
Dry Creek Trib	3093.07	Max WS	Pre100-DC-BFE	580.00	104.29	114.06		114.10	0.000219	1.70	483.53	122.67	0.11
Dry Creek Trib	3093.07	Max WS	Post100-DC-BFE	586.65	104.29	114.07		114.10	0.000223	1.71	484.06	122.76	0.11
Dry Creek Trib	3093.07	Max WS	VY Wide PL	586.77	104.29	114.07		114.10	0.000223	1.71	484.22	122.79	0.11
Dry Creek Trib	3093.07	Max WS	VY Wide Ult	589.14	104.29	114.07		114.11	0.000225	1.72	484.28	122.80	0.11
Dry Creek Trib	2973.97	Max WS	Pre100	591.65	104.33	109.91		110.05	0.002221	3.05	195.84	68.02	0.30
Dry Creek Trib	2973.97	Max WS	Post100	604.41	104.33	109.94		110.09	0.002239	3.09	198.12	68.59	0.30
Dry Creek Trib	2973.97	Max WS	Pre100-DC-BFE	563.33	104.33	114.06		114.07	0.000100	1.12	630.61	159.46	0.07
Dry Creek Trib	2973.97	Max WS	Post100-DC-BFE	584.70	104.33	114.06		114.08	0.000107	1.16	631.23	159.60	0.07
Dry Creek Trib	2973.97	Max WS	VY Wide PL	584.38	104.33	114.06		114.08	0.000107	1.16	631.44	159.65	0.07
Dry Creek Trib	2973.97	Max WS	VY Wide Ult	586.76	104.33	114.06		114.08	0.000108	1.16	631.51	159.66	0.08
Dry Creek Trib	2913.07	Max WS	Pre100	592.10	104.98	109.90		109.95	0.000836	2.25	388.14	157.65	0.19
Dry Creek Trib	2913.07	Max WS	Post100	604.86	104.98	109.93		109.98	0.000840	2.26	393.63	158.26	0.19
Dry Creek Trib	2913.07	Max WS	Pre100-DC-BFE	583.32	104.98	114.06		114.07	0.000035	0.73	1329.43	304.85	0.04
Dry Creek Trib	2913.07	Max WS	Post100-DC-BFE	593.49	104.98	114.07		114.07	0.000036	0.74	1330.65	304.92	0.04
Dry Creek Trib	2913.07	Max WS	VY Wide PL	594.43	104.98	114.07		114.07	0.000036	0.74	1331.05	304.94	0.04
Dry Creek Trib	2913.07	Max WS	VY Wide Ult	596.81	104.98	114.07		114.07	0.000037	0.74	1331.17	304.94	0.05
Dry Creek Trib	2833.94	Max WS	Pre100	592.64	104.72	109.79		109.87	0.001329	2.71	307.06	179.17	0.24
Dry Creek Trib	2833.94	Max WS	Post100	605.40	104.72	109.83		109.91	0.001331	2.73	313.49	183.00	0.24
Dry Creek Trib	2833.94	Max WS	Pre100-DC-BFE	585.67	104.72	114.06		114.06	0.000023	0.58	1694.45	387.53	0.04
Dry Creek Trib	2833.94	Max WS	Post100-DC-BFE	594.15	104.72	114.06		114.07	0.000023	0.58	1695.97	387.58	0.04
Dry Creek Trib	2833.94	Max WS	VY Wide PL	595.09	104.72	114.07		114.07	0.000024	0.59	1696.43	387.60	0.04
Dry Creek Trib	2833.94	Max WS	VY Wide Ult	597.48	104.72	114.07		114.07	0.000024	0.59	1696.62	387.61	0.04
Dry Creek Trib	2749.06	Max WS	Pre100	593.07	104.29	109.57		109.73	0.002300	3.25	195.27	75.34	0.31
Dry Creek Trib	2749.06	Max WS	Post100	605.79	104.29	109.60		109.76	0.002320	3.29	197.76	75.76	0.31
Dry Creek Trib	2749.06	Max WS	Pre100-DC-BFE	550.57	104.29	114.05		114.06	0.000080	1.05	680.57	143.04	0.07
Dry Creek Trib	2749.06	Max WS	Post100-DC-BFE	583.16	104.29	114.05		114.07	0.000089	1.11	681.03	143.11	0.07
Dry Creek Trib	2749.06	Max WS	VY Wide PL	582.36	104.29	114.05		114.07	0.000089	1.11	681.19	143.13	0.07
Dry Creek Trib	2749.06	Max WS	VY Wide Ult	584.75	104.29	114.05		114.07	0.000090	1.11	681.25	143.14	0.07
Dry Creek Trib	2584	Max WS	Pre100	593.59	105.16	109.35		109.44	0.001459	2.51	264.26	100.33	0.24
Dry Creek Trib	2584	Max WS	Post100	606.28	105.16	109.38		109.47	0.001471	2.54	267.53	101.14	0.24
Dry Creek Trib	2584	Max WS	Pre100-DC-BFE	555.37	105.16	114.05		114.05	0.000035	0.70	1081.37	218.46	0.04
Dry Creek Trib	2584	Max WS	Post100-DC-BFE	583.99	105.16	114.05		114.05	0.000039	0.73	1082.07	218.49	0.05
Dry Creek Trib	2584	Max WS	VY Wide PL	586.94	105.16	114.05		114.06	0.000039	0.74	1082.31	218.50	0.05
Dry Creek Trib	2584	Max WS	VY Wide Ult	589.36	105.16	114.05		114.06	0.000039	0.74	1082.38	218.50	0.05
Dry Creek Trib	2510.2	Max WS	Pre100	594.11	103.89	109.23		109.33	0.001506	2.55	257.46	108.23	0.25
Dry Creek Trib	2510.2	Max WS	Post100	606.81	103.89	109.26		109.36	0.001517	2.57	260.85	108.86	0.25
Dry Creek Trib	2510.2	Max WS	Pre100-DC-BFE	552.03	103.89	114.04		114.05	0.000030	0.66	1161.55	242.53	0.04
Dry Creek Trib	2510.2	Max WS	Post100-DC-BFE	584.61	103.89	114.05		114.05	0.000034	0.70	1162.28	242.57	0.04
Dry Creek Trib	2510.2	Max WS	VY Wide PL	587.58	103.89	114.05		114.05	0.000034	0.70	1162.55	242.59	0.04
Dry Creek Trib	2510.2	Max WS	VY Wide Ult	586.21	103.89	114.05		114.05	0.000034	0.70	1162.62	242.59	0.04
Dry Creek Trib	2416.71	Max WS	Pre100	594.65	105.06	108.95		109.10	0.004000	3.52	216.89	131.60	0.38
Dry Creek Trib	2416.71	Max WS	Post100	607.32	105.06	108.98		109.13	0.003947	3.52	221.40	132.40	0.38
Dry Creek Trib	2416.71	Max WS	Pre100-DC-BFE	548.61	105.06	114.04		114.04	0.000030	0.63	1250.48	257.08	0.04
Dry Creek Trib	2416.71	Max WS	Post100-DC-BFE	585.40	105.06	114.04		114.05	0.000035	0.67	1251.23	257.18	0.04
Dry Creek Trib	2416.71	Max WS	VY Wide PL	588.40	105.06	114.04		114.05	0.000035	0.68	1251.49	257.22	0.04
Dry Creek Trib	2416.71	Max WS	VY Wide Ult	587.01	105.06	114.05		114.05	0.000035	0.68	1251.56	257.23	0.04
Dry Creek Trib	2283.78	Max WS	Pre100	595.36	103.67	108.39		108.61	0.003616	3.79	162.94	64.28	0.38
Dry Creek Trib	2283.78	Max WS	Post100	607.98	103.67	108.43		108.65	0.003635	3.83	165.10	65.02	0.38
Dry Creek Trib	2283.78	Max WS	Pre100-DC-BFE	530.29	103.67	114.03		114.04	0.000046	0.84	898.89	199.30	0.05
Dry Creek Trib	2283.78	Max WS	Post100-DC-BFE	571.11	103.67	114.03		114.04	0.000053	0.91	899.23	199.39	0.05
Dry Creek Trib	2283.78	Max WS	VY Wide PL	567.78	103.67	114.03		114.04	0.000052	0.90	899.41	199.44	0.05
Dry Creek Trib	2283.78	Max WS	VY Wide Ult	569.99	103.67	114.03		114.04	0.000053	0.91	899.47	199.46	0.05
Dry Creek Trib	2204.83	Max WS	Pre100	595.92	103.53	108.24		108.38	0.002312	3.10	206.56	80.20	0.30
Dry Creek Trib	2204.83	Max WS	Post100	608.56	103.53	108.27		108.42	0.002322	3.12	209.30	80.64	0.31
Dry Creek Trib	2204.83	Max WS	Pre100-DC-BFE	525.39	103.53	114.03		114.04	0.000035	0.76	911.71	171.85	0.04
Dry Creek Trib	2204.83	Max WS	Post100-DC-BFE	562.72	103.53	114.03		114.04	0.000041	0.82	911.95	171.89	0.05
Dry Creek Trib	2204.83	Max WS	VY Wide PL	563.26	103.53	114.03		114.04	0.000041	0.82	912.10	171.91	0.05
Dry Creek Trib	2204.83	Max WS	VY Wide Ult	565.41	103.53	114.03		114.04	0.000041	0.82	912.14	171.92	0.05
Dry Creek Trib	2121.19	Max WS	Pre100	596.40	103.14	108.12		108.23	0.001484	2.72	243.69	115.68	0.25
Dry Creek Trib	2121.19	Max WS	Post100	609.14	103.14	108.15		108.26	0.001494	2.74	247.61	116.44	0.25
Dry Creek Trib	2121.19	Max WS	Pre100-DC-BFE	537.03	103.14	114.03		114.03	0.000018	0.56	1340.99	229.41	0.03
Dry Creek Trib	2121.19	Max WS	Post100-DC-BFE	572.57	103.14	114.03		114.03	0.000020	0.60	1341.39	229.43	0.03

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	2121.19	Max WS	VY Wide PL	574.19	103.14	114.03		114.04	0.000020	0.60	1341.57	229.45	0.03
Dry Creek Trib	2121.19	Max WS	VY Wide Ult	576.48	103.14	114.03		114.04	0.000020	0.60	1341.61	229.45	0.03
Dry Creek Trib	2047.12	Max WS	Pre100	596.93	102.89	107.83		108.07	0.004250	3.96	160.56	94.10	0.40
Dry Creek Trib	2047.12	Max WS	Post100	609.56	102.89	107.86		108.10	0.004252	3.99	163.83	102.58	0.40
Dry Creek Trib	2047.12	Max WS	Pre100-DC-BFE	537.68	102.89	114.03		114.03	0.000017	0.53	1433.20	254.24	0.03
Dry Creek Trib	2047.12	Max WS	Post100-DC-BFE	573.22	102.89	114.03		114.03	0.000020	0.57	1433.61	254.27	0.03
Dry Creek Trib	2047.12	Max WS	VY Wide PL	574.85	102.89	114.03		114.03	0.000020	0.57	1433.81	254.29	0.03
Dry Creek Trib	2047.12	Max WS	VY Wide Ult	577.14	102.89	114.03		114.03	0.000020	0.57	1433.86	254.29	0.03
Dry Creek Trib	1961.65	Max WS	Pre100	597.45	102.88	107.47		107.71	0.004315	4.07	166.87	90.66	0.41
Dry Creek Trib	1961.65	Max WS	Post100	610.07	102.88	107.51		107.75	0.004273	4.09	170.58	92.65	0.41
Dry Creek Trib	1961.65	Max WS	Pre100-DC-BFE	538.43	102.88	114.03		114.03	0.000014	0.50	1559.54	256.49	0.03
Dry Creek Trib	1961.65	Max WS	Post100-DC-BFE	573.97	102.88	114.03		114.03	0.000016	0.53	1559.93	256.51	0.03
Dry Creek Trib	1961.65	Max WS	VY Wide PL	575.62	102.88	114.03		114.03	0.000016	0.53	1560.13	256.52	0.03
Dry Creek Trib	1961.65	Max WS	VY Wide Ult	572.87	102.88	114.03		114.03	0.000016	0.53	1560.19	256.52	0.03
Dry Creek Trib	1846.6	Max WS	Pre100	598.29	102.72	107.19		107.31	0.002393	2.80	220.87	108.99	0.30
Dry Creek Trib	1846.6	Max WS	Post100	610.91	102.72	107.23		107.35	0.002358	2.81	225.66	111.81	0.30
Dry Creek Trib	1846.6	Max WS	Pre100-DC-BFE	539.45	102.72	114.02		114.03	0.000012	0.46	1541.88	250.68	0.03
Dry Creek Trib	1846.6	Max WS	Post100-DC-BFE	570.53	102.72	114.03		114.03	0.000014	0.49	1542.24	250.70	0.03
Dry Creek Trib	1846.6	Max WS	VY Wide PL	571.67	102.72	114.03		114.03	0.000014	0.49	1542.41	250.71	0.03
Dry Creek Trib	1846.6	Max WS	VY Wide Ult	573.89	102.72	114.03		114.03	0.000014	0.49	1542.46	250.72	0.03
Dry Creek Trib	1760.2	Max WS	Pre100	598.92	102.08	106.99		107.12	0.002112	2.88	210.23	75.09	0.29
Dry Creek Trib	1760.2	Max WS	Post100	611.47	102.08	107.04		107.17	0.002106	2.89	213.54	75.75	0.29
Dry Creek Trib	1760.2	Max WS	Pre100-DC-BFE	523.26	102.08	114.02		114.03	0.000020	0.61	1094.63	183.58	0.03
Dry Creek Trib	1760.2	Max WS	Post100-DC-BFE	561.63	102.08	114.02		114.03	0.000023	0.66	1094.81	183.61	0.04
Dry Creek Trib	1760.2	Max WS	VY Wide PL	561.56	102.08	114.02		114.03	0.000023	0.66	1094.92	183.62	0.04
Dry Creek Trib	1760.2	Max WS	VY Wide Ult	563.64	102.08	114.02		114.03	0.000023	0.66	1094.96	183.62	0.04
Dry Creek Trib	1646.18	Max WS	Pre100	599.65	102.20	106.88		106.94	0.001015	2.03	295.16	93.88	0.20
Dry Creek Trib	1646.18	Max WS	Post100	612.28	102.20	106.93		106.99	0.001011	2.05	299.43	94.12	0.20
Dry Creek Trib	1646.18	Max WS	Pre100-DC-BFE	530.24	102.20	114.02		114.02	0.000010	0.44	1535.84	241.60	0.02
Dry Creek Trib	1646.18	Max WS	Post100-DC-BFE	567.63	102.20	114.02		114.02	0.000011	0.47	1536.09	241.62	0.03
Dry Creek Trib	1646.18	Max WS	VY Wide PL	573.51	102.20	114.02		114.02	0.000011	0.47	1536.23	241.63	0.03
Dry Creek Trib	1646.18	Max WS	VY Wide Ult	570.36	102.20	114.02		114.03	0.000011	0.47	1536.28	241.64	0.03
Dry Creek Trib	1553.96	Max WS	Pre100	599.60	101.85	106.81		106.87	0.000747	2.02	362.12	173.50	0.18
Dry Creek Trib	1553.96	Max WS	Post100	612.26	101.85	106.86		106.92	0.000740	2.03	370.23	174.33	0.18
Dry Creek Trib	1553.96	Max WS	Pre100-DC-BFE	535.89	101.85	114.02		114.02	0.000007	0.38	1919.26	257.79	0.02
Dry Creek Trib	1553.96	Max WS	Post100-DC-BFE	572.34	101.85	114.02		114.02	0.000008	0.41	1919.54	257.81	0.02
Dry Creek Trib	1553.96	Max WS	VY Wide PL	573.50	101.85	114.02		114.02	0.000008	0.41	1919.70	257.81	0.02
Dry Creek Trib	1553.96	Max WS	VY Wide Ult	575.74	101.85	114.02		114.02	0.000008	0.41	1919.72	257.82	0.02
Dry Creek Trib	1451.16	Max WS	Pre100	599.22	101.85	106.67		106.77	0.001360	2.67	271.10	138.51	0.24
Dry Creek Trib	1451.16	Max WS	Post100	611.86	101.85	106.72		106.82	0.001342	2.68	277.99	139.99	0.24
Dry Creek Trib	1451.16	Max WS	Pre100-DC-BFE	535.87	101.85	114.02		114.02	0.000008	0.42	1858.05	276.46	0.02
Dry Creek Trib	1451.16	Max WS	Post100-DC-BFE	567.59	101.85	114.02		114.02	0.000009	0.45	1858.33	276.47	0.02
Dry Creek Trib	1451.16	Max WS	VY Wide PL	573.49	101.85	114.02		114.02	0.000009	0.45	1858.49	276.49	0.02
Dry Creek Trib	1451.16	Max WS	VY Wide Ult	575.72	101.85	114.02		114.02	0.000009	0.45	1858.52	276.49	0.02
Dry Creek Trib	1386.3	Max WS	Pre100	599.20	101.74	106.65		106.70	0.000498	1.73	350.38	89.46	0.15
Dry Creek Trib	1386.3	Max WS	Post100	611.29	101.74	106.70		106.75	0.000499	1.75	354.75	89.85	0.15
Dry Creek Trib	1386.3	Max WS	Pre100-DC-BFE	524.16	101.74	114.02		114.02	0.000010	0.49	1314.25	189.16	0.03
Dry Creek Trib	1386.3	Max WS	Post100-DC-BFE	562.56	101.74	114.02		114.02	0.000012	0.52	1314.40	189.19	0.03
Dry Creek Trib	1386.3	Max WS	VY Wide PL	562.48	101.74	114.02		114.02	0.000012	0.52	1314.50	189.20	0.03
Dry Creek Trib	1386.3	Max WS	VY Wide Ult	564.57	101.74	114.02		114.02	0.000012	0.53	1314.52	189.20	0.03
Dry Creek Trib	1316.1	Max WS	Pre100	684.50	101.72	106.49		106.62	0.001536	2.89	256.07	82.77	0.25
Dry Creek Trib	1316.1	Max WS	Post100	702.83	101.72	106.54		106.67	0.001555	2.93	259.78	83.20	0.26
Dry Creek Trib	1316.1	Max WS	Pre100-DC-BFE	655.98	101.72	114.01		114.02	0.000025	0.74	1169.64	171.12	0.04
Dry Creek Trib	1316.1	Max WS	Post100-DC-BFE	697.52	101.72	114.01		114.02	0.000028	0.79	1169.69	171.12	0.04
Dry Creek Trib	1316.1	Max WS	VY Wide PL	697.18	101.72	114.01		114.02	0.000028	0.79	1169.76	171.13	0.04
Dry Creek Trib	1316.1	Max WS	VY Wide Ult	693.10	101.72	114.01		114.02	0.000028	0.78	1169.77	171.13	0.04
Dry Creek Trib	1251.98	Max WS	Pre100	684.49	102.21	106.37		106.51	0.002007	3.09	239.96	84.36	0.29
Dry Creek Trib	1251.98	Max WS	Post100	702.50	102.21	106.41		106.55	0.002024	3.13	243.60	84.77	0.29
Dry Creek Trib	1251.98	Max WS	Pre100-DC-BFE	643.46	102.21	114.01		114.01	0.000023	0.71	1201.24	184.46	0.04
Dry Creek Trib	1251.98	Max WS	Post100-DC-BFE	687.24	102.21	114.01		114.02	0.000026	0.76	1201.28	184.47	0.04
Dry Creek Trib	1251.98	Max WS	VY Wide PL	697.18	102.21	114.01		114.02	0.000027	0.77	1201.35	184.47	0.04
Dry Creek Trib	1251.98	Max WS	VY Wide Ult	693.07	102.21	114.01		114.02	0.000027	0.77	1201.37	184.48	0.04
Dry Creek Trib	1184.63	Max WS	Pre100	684.46	101.72	106.29		106.39	0.001429	2.59	274.31	91.94	0.24
Dry Creek Trib	1184.63	Max WS	Post100	702.49	101.72	106.33		106.44	0.001443	2.63	278.26	92.46	0.24
Dry Creek Trib	1184.63	Max WS	Pre100-DC-BFE	643.44	101.72	114.01		114.01	0.000018	0.62	1303.68	196.49	0.03
Dry Creek Trib	1184.63	Max WS	Post100-DC-BFE	687.23	101.72	114.01		114.01	0.000020	0.67	1303.72	196.49	0.03
Dry Creek Trib	1184.63	Max WS	VY Wide PL	691.39	101.72	114.01		114.01	0.000020	0.67	1303.78	196.50	0.04
Dry Creek Trib	1184.63	Max WS	VY Wide Ult	693.04	101.72	114.01		114.01	0.000021	0.67	1303.80	196.50	0.04
Dry Creek Trib	1089.34	Max WS	Pre100	684.19	102.51	106.10		106.22	0.002184	2.82	259.28	103.65	0.29

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	1089.34	Max WS	Post100	702.18	102.51	106.15		106.27	0.002182	2.84	263.79	103.96	0.29
Dry Creek Trib	1089.34	Max WS	Pre100-DC-BFE	649.82	102.51	114.01		114.01	0.000017	0.59	1377.11	194.57	0.03
Dry Creek Trib	1089.34	Max WS	Post100-DC-BFE	687.22	102.51	114.01		114.01	0.000019	0.63	1377.12	194.57	0.03
Dry Creek Trib	1089.34	Max WS	VY Wide PL	697.18	102.51	114.01		114.01	0.000019	0.64	1377.16	194.57	0.03
Dry Creek Trib	1089.34	Max WS	VY Wide Ult	693.01	102.51	114.01		114.01	0.000019	0.63	1377.18	194.57	0.03
Dry Creek Trib	995.38	Max WS	Pre100	683.65	101.68	105.80		106.00	0.002691	3.57	196.04	62.84	0.33
Dry Creek Trib	995.38	Max WS	Post100	701.56	101.68	105.84		106.04	0.002733	3.62	198.45	63.22	0.34
Dry Creek Trib	995.38	Max WS	Pre100-DC-BFE	306.33	101.68	114.00		114.00	0.000006	0.37	1077.32	158.24	0.02
Dry Creek Trib	995.38	Max WS	Post100-DC-BFE	315.70	101.68	114.00		114.00	0.000006	0.39	1077.33	158.24	0.02
Dry Creek Trib	995.38	Max WS	VY Wide PL	315.70	101.68	114.00		114.00	0.000006	0.39	1077.33	158.24	0.02
Dry Creek Trib	995.38	Max WS	VY Wide Ult	315.70	101.68	114.00		114.00	0.000006	0.39	1077.33	158.24	0.02
Dry Creek Trib	914.19	Max WS	Pre100	683.62	101.54	105.73		105.84	0.001367	2.74	282.12	96.26	0.24
Dry Creek Trib	914.19	Max WS	Post100	701.55	101.54	105.77		105.88	0.001389	2.78	285.81	96.67	0.24
Dry Creek Trib	914.19	Max WS	Pre100-DC-BFE	306.33	101.54	114.00		114.00	0.000004	0.30	1470.13	222.57	0.01
Dry Creek Trib	914.19	Max WS	Post100-DC-BFE	326.43	101.54	114.00		114.00	0.000004	0.32	1470.15	222.57	0.02
Dry Creek Trib	914.19	Max WS	VY Wide PL	315.70	101.54	114.00		114.00	0.000004	0.31	1470.15	222.57	0.02
Dry Creek Trib	914.19	Max WS	VY Wide Ult	326.44	101.54	114.00		114.00	0.000004	0.32	1470.15	222.57	0.02
Dry Creek Trib	838.37	Max WS	Pre100	683.34	101.53	105.70		105.75	0.000848	1.96	431.95	172.31	0.19
Dry Creek Trib	838.37	Max WS	Post100	701.51	101.53	105.74		105.79	0.000854	1.98	438.61	172.73	0.19
Dry Creek Trib	838.37	Max WS	Pre100-DC-BFE	643.42	101.53	114.00		114.00	0.000007	0.39	2219.54	276.21	0.02
Dry Creek Trib	838.37	Max WS	Post100-DC-BFE	681.77	101.53	114.00		114.00	0.000007	0.42	2219.54	276.21	0.02
Dry Creek Trib	838.37	Max WS	VY Wide PL	691.36	101.53	114.00		114.00	0.000008	0.42	2219.57	276.22	0.02
Dry Creek Trib	838.37	Max WS	VY Wide Ult	693.01	101.53	114.00		114.00	0.000008	0.42	2219.57	276.22	0.02
Dry Creek Trib	755.74	Max WS	Pre100	683.32	101.54	105.64		105.68	0.000776	1.98	447.27	175.37	0.18
Dry Creek Trib	755.74	Max WS	Post100	701.23	101.54	105.67		105.72	0.000783	2.01	453.93	175.91	0.18
Dry Creek Trib	755.74	Max WS	Pre100-DC-BFE	643.41	101.54	114.00		114.00	0.000005	0.34	2850.62	400.41	0.02
Dry Creek Trib	755.74	Max WS	Post100-DC-BFE	687.26	101.54	114.00		114.00	0.000006	0.37	2850.62	400.41	0.02
Dry Creek Trib	755.74	Max WS	VY Wide PL	697.23	101.54	114.00		114.00	0.000006	0.37	2850.66	400.42	0.02
Dry Creek Trib	755.74	Max WS	VY Wide Ult	692.99	101.54	114.00		114.00	0.000006	0.37	2850.66	400.42	0.02
Dry Creek Trib	655.85	Max WS	Pre100	683.28	101.67	105.54		105.60	0.000879	2.10	364.11	128.47	0.19
Dry Creek Trib	655.85	Max WS	Post100	701.21	101.67	105.58		105.64	0.000893	2.13	368.77	129.22	0.19
Dry Creek Trib	655.85	Max WS	Pre100-DC-BFE	636.66	101.67	114.00		114.00	0.000005	0.35	2841.54	483.66	0.02
Dry Creek Trib	655.85	Max WS	Post100-DC-BFE	681.74	101.67	114.00		114.00	0.000006	0.38	2841.54	483.66	0.02
Dry Creek Trib	655.85	Max WS	VY Wide PL	685.24	101.67	114.00		114.00	0.000006	0.38	2841.54	483.66	0.02
Dry Creek Trib	655.85	Max WS	VY Wide Ult	692.98	101.67	114.00		114.00	0.000006	0.39	2841.54	483.66	0.02
Dry Creek Trib	563.63	Max WS	Pre100	683.24	101.75	105.49		105.53	0.000650	1.77	464.90	182.68	0.17
Dry Creek Trib	563.63	Max WS	Post100	701.18	101.75	105.53		105.57	0.000659	1.79	471.47	183.47	0.17
Dry Creek Trib	563.63	Max WS	Pre100-DC-BFE	643.38	101.75	114.00		114.00	0.000004	0.30	3362.42	541.83	0.02
Dry Creek Trib	563.63	Max WS	Post100-DC-BFE	687.25	101.75	114.00		114.00	0.000004	0.32	3362.42	541.83	0.02
Dry Creek Trib	563.63	Max WS	VY Wide PL	697.23	101.75	114.00		114.00	0.000004	0.33	3362.42	541.83	0.02
Dry Creek Trib	563.63	Max WS	VY Wide Ult	699.01	101.75	114.00		114.00	0.000004	0.33	3362.42	541.83	0.02
Dry Creek Trib	466	Max WS	Pre100	683.17	101.78	105.41	103.64	105.45	0.001022	1.99	427.01	194.37	0.20
Dry Creek Trib	466	Max WS	Post100	701.13	101.78	105.44	103.66	105.49	0.001026	2.01	433.96	194.84	0.20
Dry Creek Trib	466	Max WS	Pre100-DC-BFE	16.72	101.78	114.00	102.06	114.00	0.000000	0.01	3336.83	550.90	0.00
Dry Creek Trib	466	Max WS	Post100-DC-BFE	18.17	101.78	114.00	102.07	114.00	0.000000	0.01	3336.83	550.90	0.00
Dry Creek Trib	466	Max WS	VY Wide PL	18.17	101.78	114.00	102.07	114.00	0.000000	0.01	3336.83	550.90	0.00
Dry Creek Trib	466	Max WS	VY Wide Ult	18.17	101.78	114.00	102.07	114.00	0.000000	0.01	3336.83	550.90	0.00



BASE FLOOD ELEVATIONS AT VINEYARD CULVERT ENTRANCE

126.16' 100-YR BFE FROM FEMA STUDY DATED 11/2/2018

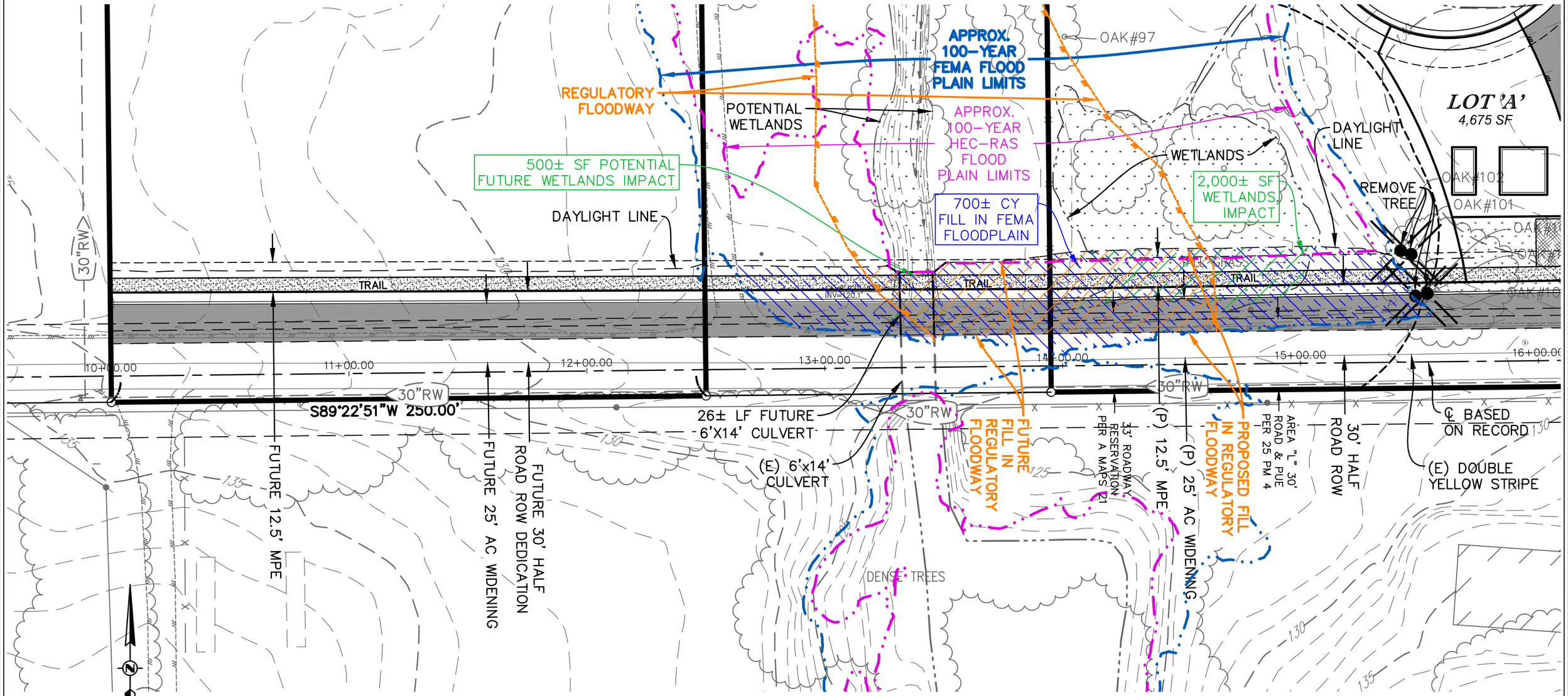
124.96' 100-YR PRE-CONSTRUCTION BFE FROM RFE HEC-RAS CALCULATIONS

125.00' 100-YR POST-CONSTRUCTION BFE WITH VINEYARD WIDENING TO ℙ AS SHOWN HEREON FROM RFE HEC-RAS CALCULATIONS

RFE ENGINEERING, INC
Civil Engineers • Planners • Surveyors
2260 Douglas Blvd, Suite 160, Roseville, CA 95661
Ph: 916-772-7800 Fax: 916-772-7804
www.RFEngineering.com

EXHIBIT 1 - BRADY VINEYARD
VINEYARD ROAD TRANSITION EXHIBIT - FULL WIDTH TO PROPERTY LINE

PLN 17-00019
BRADY VINEYARD SUBDIVISION
PLACER COUNTY, CA
APNs:473-020-002 & 013



40 0 40 80

1 INCH = 40 FEET

BASE FLOOD ELEVATIONS AT VINEYARD CULVERT ENTRANCE

126.16' 100-YR BFE FROM FEMA STUDY DATED 11/2/2018

124.96' 100-YR PRE-CONSTRUCTION BFE FROM RFE HEC-RAS CALCULATIONS

124.76' 100-YR POST-CONSTRUCTION BFE WITH VINEYARD WIDENING TO ADJACENT PARCELS SHOWN HEREON FROM RFE HEC-RAS CALCULATIONS

RFE ENGINEERING, INC
Civil Engineers • Planners • Surveyors
2260 Douglas Blvd, Suite 160, Roseville, CA 95661
Ph: 916-772-7800 Fax: 916-772-7804
www.RFEengineering.com

EXHIBIT 2 - BRADY VINEYARD FUTURE ULTIMATE
VINEYARD ROAD FRONTAGE EXHIBIT - FULL WIDTH TO ADJACENT PARCELS

PLN 17-00019
BRADY VINEYARD SUBDIVISION
PLACER COUNTY, CA
APNs:473-020-002 & 013

APPENDIX F

STORMWATER QUALITY & HYDROMODIFICATION CALCULATIONS

Post-Construction
Storm Water Quality Plan

For:

Brady at Vineyard Subdivision
Placer County

Brady Lane and Vineyard Road
APN473-020-002

Prepared for:

Sukhbir Brar

2351 Sunset Boulevard
Rocklin, CA 95765
(916) 749-0967

Prepared by:

RFE Engineering, Inc.
2260 Douglas Boulevard, Suite 160
Roseville, CA 95661
916-772-7800

Preparation Date: October 24, 2018
Approval Date:_____

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this plan, including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	Brady Lane and Vineyard Road	
Owner Name:	Sukhbir Brar	
Title		
Company		
Address	2351 Sunset Boulevard	
City, State, Zip Code	Rocklin, CA 95765	
Email		
Telephone #	(916) 749-0967	
Signature	Date	
Engineer:*	Shawn Somers	PE Stamp* (Required for all Regulated Projects)
Title	Project Engineer	
Company	RFE Engineering, Inc.	
Address	2260 Douglas Boulevard, Suite 160	
City, State, Zip Code	Roseville, CA 95661	
Email	ssomers@rfeengineering.com	
Telephone #	916-772-7800	
Signature		
Brief Description of Project: (Attach additional sheets as necessary)	The project involves the subdivision of the existing 35-acre parcel into 124 residential lots within a gated community. Improvements in common lots include roadways, landscaping and parkways, a decorative gated entrance, multi-purpose trails, recreation areas, and the open space riparian corridor surrounding the creek. The subdivision will be divided into two phases.	

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
[2]Enter total new and/or replaced impervious surface (ft^2)	
[3]**Regulated Project** – All projects that create and/or replace 5,000 ft^2 or more of impervious surface.	
[4]**Regulated Redevelopment Project** with equal to, or greater than 50 percent increase in impervious area	
[5]**Regulated Redevelopment Project** with less than 50 percent increase in impervious area	
[6]Enter total pre-project impervious surface (ft^2)	
[7]Enter total new and/or replaced impervious surface (ft^2)	
[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	X
[11]Enter total new and/or replaced impervious surface (ft^2)	800,354

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

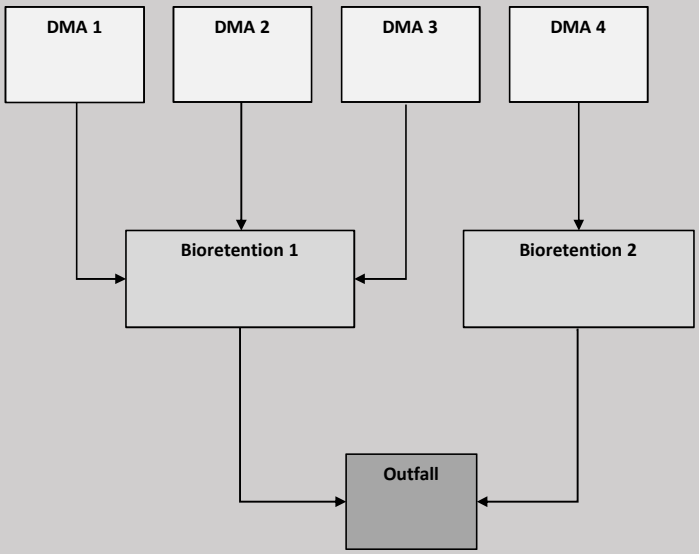
Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	38.746°	-121.316°	130	0.9

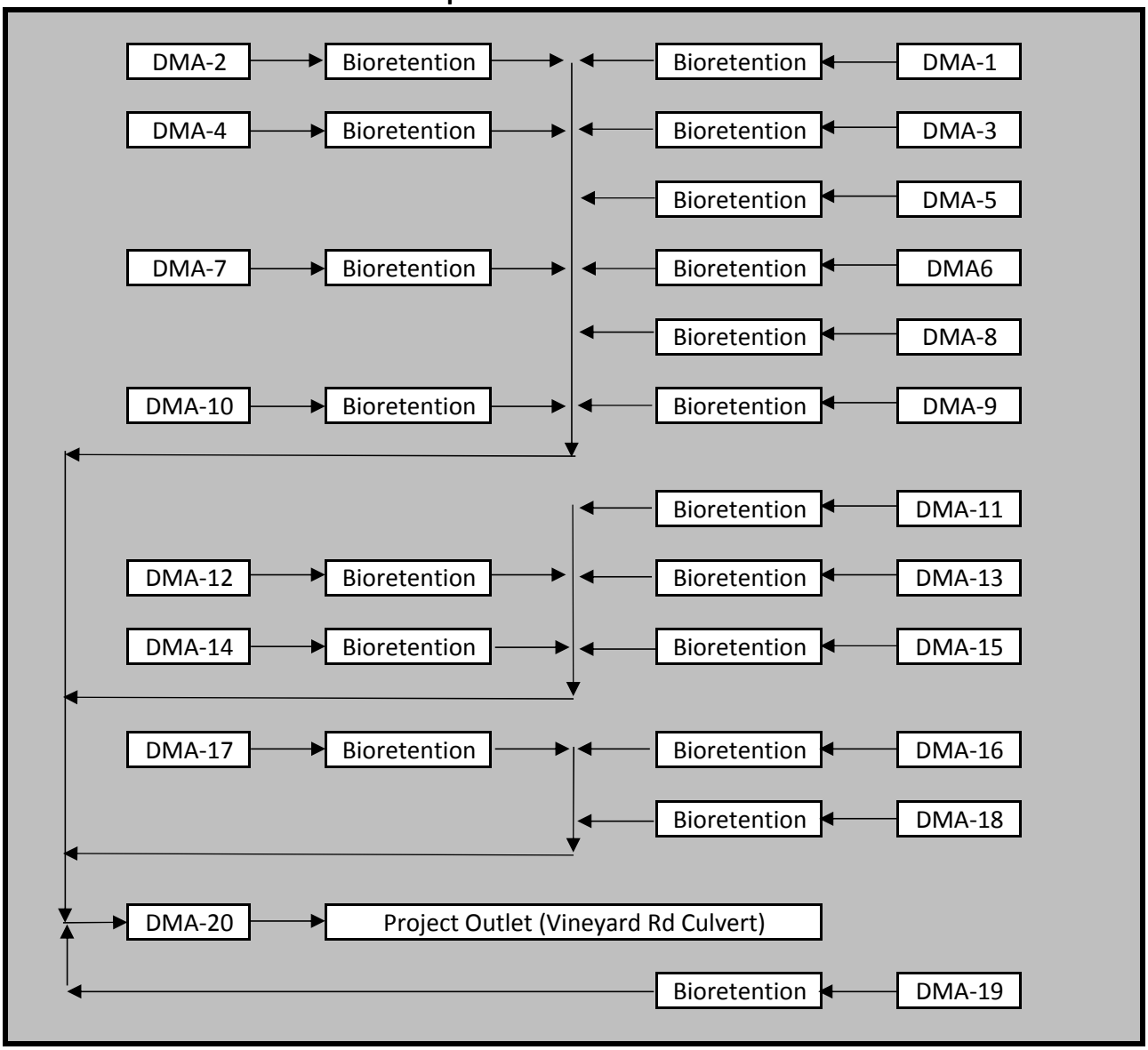
[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Dry Creek
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion*	Yes

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary



Conceptual Watershed Schematic



Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	**Not Applicable (Include brief explanation)**
Define the development envelope and protected areas, identifying areas that are most suitable for development areas to be left undisturbed.	X	
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.	X	
Limit overall impervious coverage of the site with paving and roofs.	X	
Set back development from creeks, wetlands, and riparian habitats.	X	
Preserve significant trees.	X	
Conform site layout along natural landforms.	X	
Avoid excessive grading and disturbance of vegetation and soils.	X	
Replicate the site's natural drainage patterns.	X	
Detain and retain runoff throughout the site.	X	

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Environmentally sensitive areas and areas to be preserved.
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas

Form 3-3 Source Control Measures

Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☐	☑	
Interior floor drains	☐	☑	
Parking/storage areas and maintenance	☑	☐	CASQA SC-43 - HOA-directed maintenance and cleanup of common areas.
Indoor and structural pest control	☐	☑	
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	
Landscape/outdoor pesticide use	☑	☐	CASQA SD-10 - HOA-directed maintenance and cleanup of common areas.
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☐	☑	
Industrial Processes	☐	☑	
Outdoor storage of equipment or materials	☐	☑	
Vehicle and equipment cleaning	☐	☑	
Vehicle and equipment repair and maintenance	☐	☑	
Fuel dispensing areas	☐	☑	
Loading docks	☐	☑	
Fire sprinkler test water	☐	☑	
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☐	☑	
Unauthorized non-storm water discharges	☐	☑	
Building and grounds maintenance	☑	☐	CASQA SD-10 - HOA-directed maintenance and cleanup of common areas.

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

		[1]DMA ID No.	1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*		0		0		0		0
	n_d	*number of new deciduous trees*								
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*								
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*	2,400	162	36,034	2432	26,110	1762	4,232	286
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*	0	0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					Yes	X	No			
[10] Total Volume Reduction (ft^3)			**162**		**2432**		**1762**		**286**	
[11] Effective Treated Impervious Area (ft^2)			**2160**		**32431**		**23499**		**3808**	

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

DMA ID No.	5		6		7		8		9		10		11		12	
Runoff Reduction Parameters		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
ponding area		0		0		0		0		0		0		0		0
ponding depth																
soil amendment area																
depth of amended soil																
porosity of amended soil																
number of new evergreen trees		0		0		0		0		0		0		0		0
number of new deciduous trees																
canopy area of existing trees to remain on the property																
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
impervious drainage area	27,265	1840	29,145	1967	23,149	1563	27,874	1881	43,841	2959	23,373	1578	-	0	-	0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
area of gravel storage layer		0		0		0		0		0		0		0		0
depth of gravel storage layer																
porosity of aggregate																
efficiency factor																
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
number of rain barrels and/or cisterns		0		0		0		0		0		0		0		0
volume of each rain barrel and/or cistern																
Total Volume Reduction	**1840**		**1967**		**1563**		**1881**		**2959**		**1578**		**0**		**0**	
Effective Treated Impervious Area	**24538**		**26230**		**20834**		**25087**		**39456**		**21036**		**0**		**0**	

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

DMA ID No.	13		14		15		16		17		18		19		20	
Runoff Reduction Parameters		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
ponding area		0		0		0		0		0		0		0		0
ponding depth																
soil amendment area																
depth of amended soil																
porosity of amended soil																
number of new evergreen trees		0		0		0		0		0		0		0		0
number of new deciduous trees																
canopy area of existing trees to remain on the property																
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
impervious drainage area	10,190	688	43,198	2916	40,936	2763	-	0	46,204	3119	62,641	4228	36,601	2471	14,760	996
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
area of gravel storage layer		0		0		0		0		0		0		0		0
depth of gravel storage layer																
porosity of aggregate																
efficiency factor																
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
number of rain barrels and/or cisterns		0		0		0		0		0		0		0		0
volume of each rain barrel and/or cistern																
Total Volume Reduction	**688**		**2916**		**2763**		**0**		**3119**		**4228**		**2471**		**996**	
Effective Treated Impervious Area	**9171**		**38878**		**36842**		**0**		**41584**		**56377**		**32941**		**13284**	

Form 3-5 Computation of Water Quality Design Criteria for Stormw

DMA ID No.	1	2	3	4	5	6	7	8	9
[1]Total impervious area requiring treatment	10,621	45,834	39,708	9,884	36,066	43,339	31,393	41,770	62,465
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	8461	13403	16209	6075	11527	17108	10559	16683	23008
[3]Additional pervious area draining to BMP (ft^2)	7,012	19,403	14,059	2,279	14,681	15,694	12,466	15,010	23,607
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.59	0.47	0.58	0.75	0.50	0.57	0.51	0.57	0.54
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	496	831	954	341	704	1012	639	985	1374
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.042	0.071	0.082	0.029	0.060	0.086	0.055	0.084	0.117

*w*ater Treatment and Baseline Hydromodification Measures

10	11	12	13	14	15	16	17	18	19	20	21	22
43,022	16,401	4,391	31,007	60,330	56,271	25,302	66,057	98,820	62,916	14,760	0	0
21986	16401	4391	21836	21452	19429	25302	24473	42443	29975	1476	0	0
12,581	11,914	2,390	21,779	23,261	22,042	25,242	24,885	31,321	19,707	239,474	0	0
0.67	0.62	0.68	0.55	0.53	0.52	0.55	0.55	0.62	0.64	0.11	#DIV/0!	#DIV/0!
1259	953	251	1301	1288	1172	1507	1460	2469	1730	1377	#DIV/0!	#DIV/0!
0.108	0.081	0.021	0.111	0.110	0.100	0.129	0.125	0.211	0.148	0.118	#DIV/0!	#DIV/0!

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**DMA-1**	**DMA-2**	**DMA-3**	**DMA-4**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	496	831	954	341
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	405	670	775	444
[5]Infiltration rate of underlying soils (in/hr)	0.20	0.20	0.20	0.20
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.5	0.5	0.5	0.5
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	405	670	775	444
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.30	0.30	0.30	0.30
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.0	1.0	1.0	1.0
[12]Gravel porosity	0.30	0.30	0.30	0.30
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	506.3	837.5	968.8	555.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.0469	0.0775	0.0897	0.0514
[16]Total Treated Flow Rate for Project (ft^3/s) Q_{total} *= Sum of Item 15 for all DMAs*	0.612			
[17]Is WQV for each DMA treated on-site?	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**DMA-5**	**DMA-6**	**DMA-7**	**DMA-8**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	704	1012	639	985
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	614	830	555	808
[5]Infiltration rate of underlying soils (in/hr)	0.20	0.20	0.20	0.20
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.5	0.5	0.5	0.5
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	614	830	555	808
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.30	0.30	0.30	0.30
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.0	1.0	1.0	1.0
[12]Gravel porosity	0.30	0.30	0.30	0.30
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	767.5	1,037.5	693.8	1,010.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.0711	0.0961	0.0642	0.0935

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**DMA-9**	**DMA-10**	**DMA-11**	**DMA-12**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	1374	1259	953	251
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	1099	1011	770	204
[5]Infiltration rate of underlying soils (in/hr)	0.20	0.20	0.20	0.20
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.5	0.5	0.5	0.5
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	1099	1010	770	204
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.30	0.30	0.30	0.30
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.0	1.0	1.0	1.0
[12]Gravel porosity	0.30	0.30	0.30	0.30
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	1,373.8	1,262.5	962.5	255.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.1272	0.1170	0.0891	0.0236

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**DMA-13**	**DMA-14**	**DMA-15**	**DMA-16**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	1301	1288	1172	1507
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	1050	1033	943	1219
[5]Infiltration rate of underlying soils (in/hr)	0.20	0.20	0.20	0.20
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.5	0.5	0.5	0.5
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	0.5
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	1050	1033	943	1220
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.30	0.30	0.30	0.30
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.0	1.0	1.0	1.0
[12]Gravel porosity	0.30	0.30	0.30	0.30
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	1,312.5	1,291.3	1,178.8	1,525.0
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.1215	0.1196	0.1091	0.1411

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**DMA-17**	**DMA-18**	**DMA-19**	**DMA-20**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	1460	2469	1730	1377
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	
[4]BMP Surface Area (ft^2) *Top of BMP*	1185	2009	1401	
[5]Infiltration rate of underlying soils (in/hr)	0.20	0.20	0.20	
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.5	0.5	0.5	
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	0.5	-
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	1185	2015	1401	0
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	
[10]Planting media porosity	0.30	0.30	0.30	
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.0	1.0	1.0	
[12]Gravel porosity	0.30	0.30	0.30	
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	1,481.3	2,518.8	1,751.3	-
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	1377
[15] Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.1372	0.2325	0.1622	0.0000

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**
[1]Length of longest overland flow path *Not to exceed 100 ft*	100				100			
[2]Slope of overland flow path (ft/ft)	0.0038				0.0100			
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.2400				0.2400			
[4]Overland flow response time (min) $(0.355*(\text{Item 1}*\text{Item 3})^{0.6})/(\text{Item 2}^{0.3})$	13	-	-	-	10	-	-	-
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D				D			
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	Grass				Residential Landscaping			
[7]Pervious Area Condition: *Based on the extent of vegetated cover* *Good >75%; Fair 50-75%; Poor <50%* *Attach photos of site to support rating*	Good				Good			
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.14				0.12			
[9]Length of collector flow (ft)	1359				1800			
[10]Cross-sectional area of collector flow facility (ft^2)	10.00				7.07			
[11]Wetted perimeter of collector flow facility (ft)	20.00				9.42			
[12]Manning's roughness of collector flow facility	0.0450				0.0130			
[13]Slope of collector flow facility (ft/ft)	0.0082				0.0050			
[14]Channel flow velocity (ft/sec) $V = (1.49 / \text{Item 12}) * (\text{Item 10}/\text{Item 11})^{0.67} * (\text{Item 13})^{0.5}$	1.9	-	-	-	6.7	-	-	-
[15]Collector flow facility response time (min) $T_c = \text{Item 9} / (\text{Item 14} * 60)$	12.0	-	-	-	4.5	-	-	-
[16]Total runoff response time or T_t (min) $T_t = \text{Item 4} + \text{Item 15}$	24.7	-	-	-	14.0	-	-	-

Form 4-2 Hydromodification Target for Peak Runoff

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Projec		
	1	2	3	4	1	2	3
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	1,359,158				1,359,158		
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	24,475				800,354		
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.32				0.32		
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	0.78	-	-	-	1.37	-	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.24	-	-	-	0.21	-	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	16.95	-	-	-	40.47	-	-
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	16.95						
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 12.*	**YES**						

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	Residential 1/8 acre			
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	-	-	-
[3] Drainage Area (A) (ft^2)	1,359,158	-	-	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	92			
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.9	#DIV/0!	#DIV/0!	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90			
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	130,007	#DIV/0!	#DIV/0!	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.42	#DIV/0!	#DIV/0!	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.20			
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	26001	#DIV/0!	#DIV/0!	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*	33612			
[12] Bioretention Volume (ft3): *Sum of Item 14 in Form 3-6 for all bioretention measures in this DMA.*	21283			
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*	0			
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	54,895	-	-	-
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15. If not provide additional storage capacity*	**Yes**	**X**	**No**	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Bioretention	Quarterly (or as needed after storm events)	Planters free of trash, debris and sediment
	Quarterly (or as needed after storm events)	Vegetation and soil is well maintained (trimmed, weeded)
	Quarterly, or as needed after storm events	No standing water 48 hours after storm event
	Semi-Annually (beginning and end of rainy season)	No signs of mosquito breeding
	Quarterly, or as needed after storm events	Underdrain not clogged
	Quarterly	Irrigation system functioning properly
	Annually (before the wet season begins)	Vegetation has successful root establishment
	Annually (before the wet season begins)	Planters free of erosion and damage
	Annually (before the wet season begins)	Remove and replant dead plants
	Annually, before the wet season begins	Amend soil with compost or natural soil amendments
	Ongoing	No fertilizers used in swales
	Annually at the end of the rainy season, and/or after large storm events	Planters functioning overall

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)		
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	
	Rooftop and Impervious Area Disconnection	**C3-C4**
	Porous Pavement	
	Vegetated Swales	
	Rain Barrels and Cisterns	
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	**C8**
	Flow-Through Planters, Tree Box Filters and Media Filters	
Hydromodification Management Measures	Supplemental Detention	

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

SWQP Form 4-3, Item 4

1 Average runoff condition, and $I_a = 0.2S$.
2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
4 Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Input requirements and procedures

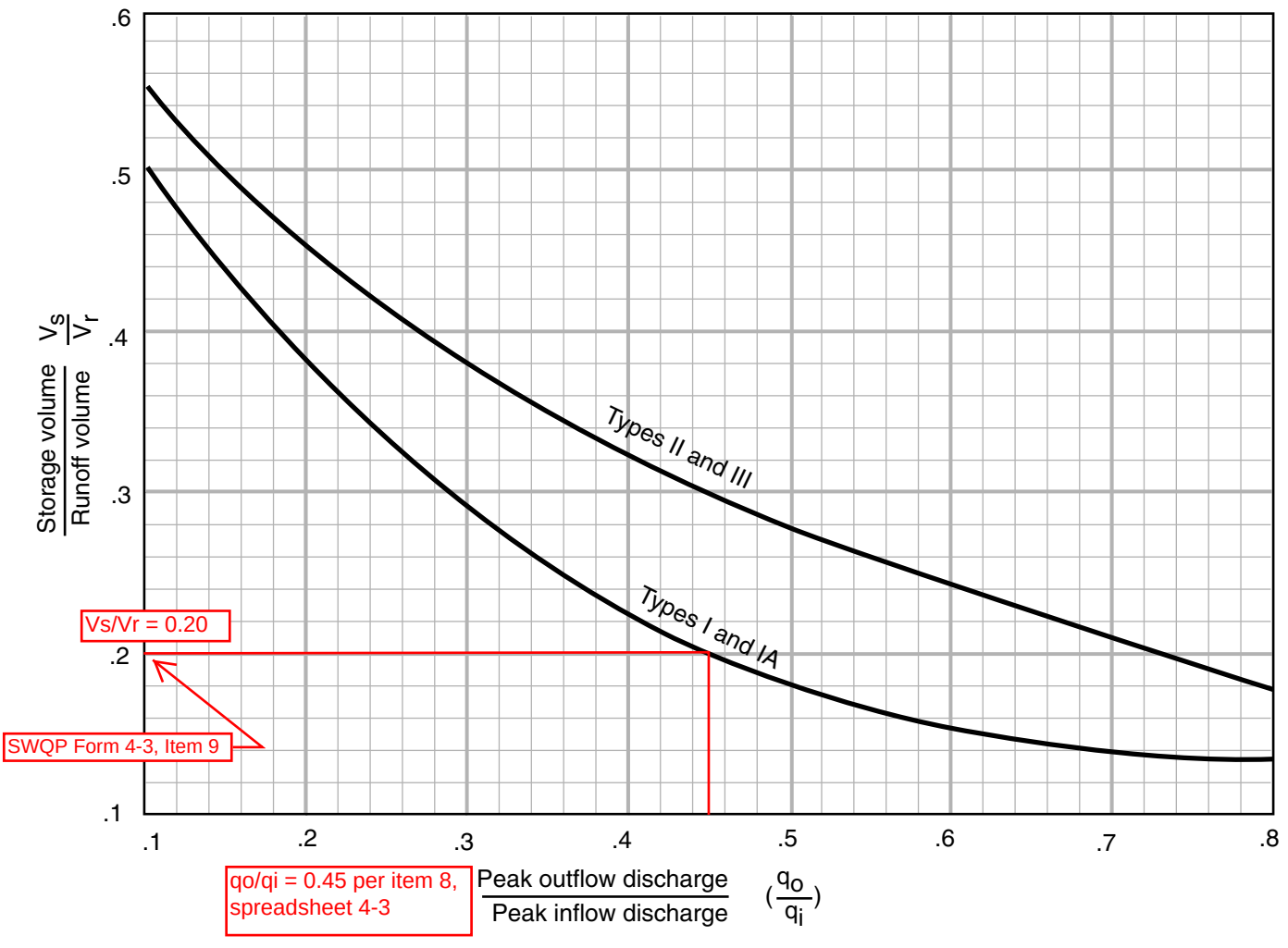
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



RFE ENGINEERING, INC

Dry Creek Vineyard Road Tributary Basin Ultimate Development Drainage Study

FOR

BRADY VINEYARD SUBDIVISION

West Placer County

October 11, 2019

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RFE Project No. 17059

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APPENDIX C ..... RUNOFF PEAK FLOW & WSE CALCULATION RESULTS

A. PURPOSE OF REPORT

As part of the Environmental Impact Report (EIR) for the Brady-Vineyard Subdivision project, RFE Engineering evaluated potential flow increases in the Dry Creek Vineyard Road Tributary as a result of the ultimate buildout of the tributary subbasins in addition to the Brady-Vineyard project. This report will evaluate the potential development of adjacent tributary subbasins to calculate a probable maximum flow increase and maximum water surface elevation (WSE) increase within the Dry Creek Vineyard Road Tributary for two conditions: one including the Brady-Vineyard project and one excluding the project. It is important to understand that this exercise is somewhat speculative as the specifics of future development are currently unknown. This report is intended to be a supplement to the previous drainage study performed for the Brady Vineyard Subdivision project, "Preliminary Drainage Study & Stormwater Quality Plan for Brady-Vineyard Subdivision". This report will take the HEC-HMS "Post-Construction" model calculated for the previous report and revise specific tributary off-site subbasins from their existing conditions to calculate the ultimate development flows and their resultant impact to the Dry Creek Vineyard Road Tributary.

B. PROJECT LOCATION

The Dry Creek Vineyard Road Tributary basin is located on the eastern edge of the Dry Creek/West Placer Community Plan area of Placer County, California 95747. The total basin encompasses about 1,066 acres (1.665 square miles). The project's location is also shown on the Vicinity Map below and the basin shed map in Appendix A.

Figure 1: Vicinity Map (not to scale)

C. REGIONAL DRAINAGE ANALYSIS

Placer County has previously performed a regional drainage analysis that includes the Dry Creek Vineyard Road Tributary basin which calculated the peak runoff flows using HEC-HMS. The previous RFE report used the HEC-HMS model provided by Placer County to calculate the individual tributary subbasin flows for both the onsite Brady Vineyard Subdivision project and unaffected offsite subbasin flows. These results were then used with HEC-RAS to calculate the change in flow in the Dry Creek Vineyard Road Tributary.

It is not the intent of this report to revisit the assumptions of the previous drainage analysis as they have been reviewed and accepted by Placer County. Instead, this analysis took the applicable subbasins and recalculated the peak flows by adjusting the variables to reflect potential new development based on the current zoning. The updated peak flows were used to evaluate combined peak flows through the Dry Creek Vineyard Road Tributary as well as increases in the WSEs throughout the tributary resulting from the higher subbasin peak flows. The subbasins that were re-analyzed include:

- D25C
- D25D
- D25E
- DC25F-offsite
- DC25G
- DC25H
- DC25K
- DC25L-offsite north
- DC25M
- DC25N-offsite

D. TRIBUTARY SUBBASIN MODIFICATIONS

As mentioned above, the applicable subbasins were modified in HEC-HMS to reflect an ultimate, fully developed condition based on current zoning. Specifically, the variables that were modified in HEC-HMS were the Plane 1 and 2 area percentages and the Loss 1 and 2 values. See Appendix A for the subbasin map and Appendix C for the existing subbasin values and the new ultimate model changes for Area %, % Impervious, and calculated peak flow results for both the 10-yr and 100-yr storm events. These values were updated to reflect the ultimate development potential which would result in a higher level of imperviousness, lower infiltration, and higher runoff flows based upon the following residential densities for the subbasins based on each area's County-specified zoning classification:

- RS-AG-B-20: ½ acre lots
- RA-B-43: 1 acre lots
- RA-B-X: 2 acre lots

D25C
This subbasin is located north of the proposed project and consists of 47.8 acres of mostly developed land. The majority of the subbasin is within the City of Roseville with a small portion (6.1 ac) in unincorporated Placer County zoned RA-B-43. The City portion of the subbasin is already fully developed and the likelihood for increased development appears negligible without a zoning change. The remaining portion of the subbasin zoned RA-B-43 already has residential development. As a result, no changes were made to this subbasin as there does not appear to be significant opportunity for increased development based on current land use and zoning, and existing development patterns.

DC25D
This subbasin is located north of the proposed project and consists of 35.2 acres of land. The subbasin has three different zoning classifications: RA-B-43 (12.0 ac), RS-AG-B-20 (19.8 ac), C1-UP-Dc (3.4 ac).

DC25E
This subbasin is located north of the proposed project and consists of 16.1 acres of land. The subbasin is zoned RS-AG-B-20.

DC25F-offsite
This subbasin is located northwest of the proposed project and consists of 12.4 acres of land. The subbasin has two different zoning classifications: RA-B-43 (10.4 ac), F-DR (2.0 ac).

DC25G
This subbasin is located west of the proposed project and consists of 41.8 acres of land. The subbasin has two different zoning classifications: RA-B-43 (12.3 ac), F-DR (29.5 ac).

DC25H
This subbasin is located south of the proposed project and consists of 43.6 acres of land. The subbasin has two different zoning classifications: RS-AG-B-20 (25.6 ac), RS-B-X (18.0 ac).

DC25K
This subbasin is located southwest of the proposed project and consists of 195.8 acres of land. The subbasin has three different zoning classifications: RA-B-X (71.2 ac), RA-B-43 (19.9 ac), F-DR (104.7 ac).

DC25L-offsite north
This subbasin is located north of the proposed project and consists of 7.1 acres of land. The subbasin is zoned RS-AG-B-20.

DC25M

This subbasin is located south of the proposed project and consists of 88.6 acres of land. The subbasin has three different zoning classifications: F-DR (30.2 ac), IN-UP-Dc (41.8 ac), City of Roseville (16.6 ac). The City land includes a portion of the City Wastewater Treatment Plant.

DC25N-offsite

This subbasin is located southwest of the proposed project and consists of 31.4 acres of land. The subbasin has two different zoning classifications: RS-AG-B-20 (11.0 ac), F-DR (20.4 ac).

E. HEC-HMS RESULTS

For the analysis presented in this report, the Post-Construction HEC-HMS model was modified to reflect the potential additional development in the ultimate buildout conditions for the applicable subbasins listed above. Scenarios were run with and without the Brady-Vineyard project. The Plane and Loss values for each subbasin were modified as shown in the table in Appendix C. This table also shows the new peak flow values for each subbasin for both the 10-yr and 100-yr events along with the increase in flow compared to the existing condition. Table 1 below provides a summary of the peak flow increases across the modified subbasins.

Table 1: HEC-HMS Affected Subbasin Peak Flows

Subbasin	Existing Condition		Ultimate Condition	
	10-year peak flow (cfs)	100-year peak flow (cfs)	10-year peak flow (cfs)	100-year peak flow (cfs)
DC25C	52	99.7	52	99.7
DC25D	29.1	55.5	38.4	74.3
DC25E	9.4	16.5	15	30.1
DC25F-offsite	10.9	23.4	11.3	23.4
DC25G	18.2	37.3	25.8	51.3
DC25H	26.2	53.4	48.9	101.5
DC25K	77.9	157.5	124.1	237.4
DC25L-offsite north	3.5	7	7.6	14.1
DC25M	20.4	41.5	83.6	152.9
DC25N-offsite	11.5	25	32.5	62.2
DC25F-onsite	2.1	4.0	4.6	9.0
DC25L-onsite	7.2	14.8	28.6	51.8
DC25N-onsite	0.8	1.8	3.1	5.9

This analysis represents a worst-case scenario and is somewhat speculative due to the specifics of any future development not being known at this time (excepting the onsite Brady Vineyard project subbasins). It is possible that future development may be more or less dense than the zoning allows. Determining multiple scenarios based on different hypothetical development densities is beyond the scope of this report. In addition, no future stormwater detention or retention was factored into this analysis, so if future projects incorporate these measures, the resulting peak flows would likely differ from those presented in this report.

While the flows shown in the HEC-HMS results offer some level of accuracy on a per-subbasin basis, combined peak flows for multiple subbasins will not be as accurate due to the inaccuracies inherent in the hydraulic routing modeling of the HEC-HMS program. The HEC-RAS analysis performed for the Dry Creek Vineyard Road Tributary more accurately models the stream hydraulics and therefore offers a more accurate representation of the combined flows from multiple subbasins as they are routed through the overall basin. See Section F below for an analysis of the HEC-RAS results.

F. HEC-RAS RESULTS

The HEC-RAS terrain model for the Dry Creek Vineyard Road Tributary was built using LiDAR data provided by the County to cut cross sections through the tributary approximately every 100-feet. The most downstream cross section represents approximately where the tributary drains into Dry Creek. The tributary was modeled upstream to the beginning of the open channel east of Brady Lane (east of the open channel, there is a double 54” pipe system that conveys runoff from upstream through the existing Elk Hills subdivision). Appendix A includes an exhibit of the terrain and cross section locations throughout the Dry Creek Vineyard Road Tributary.

Peak flow hydrographs generated for the existing flows and ultimate buildout flows from the HEC-HMS model were added to the HEC-RAS hydraulic model as lateral inflows at the closest cross section(s) to the actual discharge point for each subbasin. Subbasin DC25B – which represents over 380-acres to the east of the model – became the upstream boundary condition at the most upstream cross section. For 10-yr storm event flows, the downstream boundary condition was set to normal depth based on a very flat 0.001 slope to represent the existing conditions. For 100-yr storm event flows, the downstream boundary condition was set to a constant-elevation stage hydrograph, where the elevation was set to 114-feet to represent the approximate Dry Creek Base Flood Elevation (BFE) at the confluence of the tributary and Dry Creek according to the FEMA FIS.

Using HEC-RAS to model flows through the tributary with lateral inflows allowed for a more accurate analysis of how the runoff peak flows from each subbasin flow through the tributary at different times. The timing of each subbasin’s peak flow affects the maximum peak flow through the tributary as they combine at different times. Due to this behavior, it is beneficial for peak flow increases from the lower portions of the overall drainage basin to be released to the tributary without any detention in order to prevent those peak flows from adding to the larger peak flows from upstream drainage sheds.

Since this report does not include a full analysis of the entirety of Dry Creek, the water surface elevations (WSEs) near the confluence of the tributary and Dry Creek may be less accurate because the relationship between the Vineyard Road Tributary peak flow timing and the Dry Creek peak flow timing is not considered in our calculations. However, our analysis which uses the Dry Creek BFE as a constant downstream boundary condition represents a worst-case scenario for the BFE in Dry Creek. Therefore, our downstream WSE results for this boundary condition should be conservative compared to the expected downstream WSEs in the tributary during an actual 100-yr storm event.

For the ultimate buildout of this basin, peak flows throughout the tributary predictably increased for the 10-yr and 100-yr storm events when compared to existing conditions. 100-yr peak flows in the most upstream portions of the model increased by a modest 7-10 cfs (approx. 2% increase) at river stations 8488.69-9841.26. In contrast, peak flows at the downstream end of the tributary increased by a more notable 93 cfs to 112 cfs (approx. 20% increase) at river stations 1386.3-2416.71. Further downstream, the peak flows are affected by the Dry Creek constant downstream BFE boundary condition creating a backwater condition that skews the peak flow results in the tributary. Specific peak flow increases are shown in Table 2 below.

Table 2: HEC-RAS Flows and WSEs – Existing vs. Ultimate

Tributary Station	100-yr Existing Peak Flow (cfs)	100-yr Ultimate Peak Flow (cfs)	100-yr Existing WSE (ft)	100-yr Ultimate WSE (ft)
10016.43	135.19	126.87	133.39	133.44
9841.26	428.92	436.25	133	133.03
8488.69	438.83	448.67	128.21	128.24
7588.69	464.09	479.24	125.27	125.39
7492.13*	490.1	519.15	124.95	124.87
7446.46**	490.07	519.06	124.04	124.13
6748.04	495.19	523.59	121.18	121.25
5618.96	502.29	525.42	117.66	117.87
5008.64	581.2	635.01	116.15	116.31
4081.21†	587.63	644.53	114.44	114.52
2833.94††	585.67	643.81	114.06	114.08
2416.71	548.61	642.09	114.04	114.06
1760.2	523.26	636.01	114.02	114.03
1386.3	524.16	633.35	114.02	114.02

*Just upstream of Vineyard Road culvert
**Just downstream of Vineyard Road culvert
†North end of Roseville Wastewater Treatment Plant
††Southern end of Roseville Wastewater Treatment Plant

While peak flows are often used as a measure to determine the impacts of given projects on the surrounding areas, in this case a better measure of development impacts comes from the water surface elevation. Though peak flows in the Dry Creek Vineyard Road Tributary increased notably especially in the downstream sections of the model, the increase in WSE between existing conditions and buildout conditions was relatively minor. Upstream of the Vineyard Road culvert, the maximum WSE increase was 0.12-feet (1.5-inches) at station 7588.69 which is the first cross section upstream of the culvert. Downstream of the Vineyard Road culvert, the maximum WSE increase was 0.21-feet (2.5-inches) at station 5618.96 which is just downstream of inflows from another natural drainage channel which is unmapped by FEMA. These WSE increases do not appear to be significant and do not appear to cause any significant impacts to existing features or structures along the Dry Creek Vineyard Road Tributary. Specific WSE increases are shown in Table 2 above. Appendix C contains a more comprehensive table of flows and WSEs.

In addition to the comparison between existing and ultimate conditions, this analysis also evaluated the effect of the Brady Vineyard Project on the ultimate buildout peak flows and WSEs. This evaluation entailed substituting the peak flow hydrograph inputs for the onsite Brady Vineyard Project subbasins to those generated by the existing conditions HEC-HMS model to reflect a case where zero development occurs on the project site. Table 3 below shows the results of the HEC-RAS analysis for the 100-yr flows and WSEs in the ultimate condition *without* the Brady Vineyard Project (BV) and compares them to the ultimate condition with the Brady Vineyard Project.

Table 3: HEC-RAS Flows and WSEs – Ultimate without BV vs. Ultimate with BV

Tributary Station	100-yr Ultimate Peak Flow without BV (cfs)	100-yr Ultimate Peak Flow with BV (cfs)	100-yr Ultimate WSE without BV (ft)	100-yr Ultimate WSE with BV (ft)
10016.43	126.93	126.87	133.44	133.44
9841.26	436.24	436.25	133.03	133.03
8488.69	447.19	448.67	128.23	128.24
7588.69	478.48	479.24	125.31	125.39
7492.13*	506.68	519.15	124.80	124.87
7446.46**	506.61	519.06	124.09	124.13
6748.04	510.97	523.59	121.22	121.25
5618.96	514.32	525.42	117.78	117.87
5008.64	613.16	635.01	116.24	116.31
4081.21†	621.84	644.53	114.49	114.52
2833.94††	618.15	643.81	114.07	114.08
2416.71	612.88	642.09	114.05	114.06
1760.2	596.26	636.01	114.03	114.03
1386.3	592.89	633.35	114.02	114.02

*Just upstream of Vineyard Road culvert
**Just downstream of Vineyard Road culvert

†North end of Roseville Wastewater Treatment Plant
††Southern end of Roseville Wastewater Treatment Plant

When comparing peak flows for the ultimate buildout condition *with* the Brady Vineyard Project and the ultimate buildout condition *without* the Brady Vineyard Project, the model results indicated that the BV project increased the flows in the Tributary by a generally moderate amount. As expected, the model indicated negligible increases to the 100-yr peak flows in the most upstream portions of the model north of the project. In contrast, most peak flows downstream of the Vineyard Road culvert increased by at least 10 cfs, with the maximum increase of 40.46 cfs (approx. 7% increase) occurring at river station 1386.3. Further downstream, the peak flows are affected by the Dry Creek constant downstream BFE boundary condition creating a backwater condition that skews the peak flow results in the tributary.

Upstream of the Vineyard Road culvert, the WSE increase between the ultimate buildout condition *with* the Brady Vineyard Project and the ultimate buildout condition *without* the Brady Vineyard Project was negligible except for the 0.08-feet (1-inch) increase at station 7588.69 which is the first cross section upstream of the culvert. Downstream of the Vineyard Road culvert, the maximum WSE increase was 0.09-feet (1.08-inches) at station 5618.96 which is just downstream of inflows from another natural drainage channel which is unmapped by FEMA. These WSE increases do not appear to be significant and do not appear to cause any significant impacts to existing features or structures along the Dry Creek Vineyard Road Tributary.

G. CONCLUSIONS

Based on the assumptions and modeling inputs outlined in this report and the analysis results described in Section F, the increased 100-yr storm event flows in the Dry Creek Vineyard Road Tributary caused by future buildout within the basin do not appear to lead to significant increases in the water surface elevations (WSEs) within the tributary compared to existing conditions. Upstream of the Vineyard Road culvert, the maximum WSE increase was 0.12-feet (1.5-inches). Downstream of the Vineyard Road culvert, the maximum WSE increase was 0.21-feet (2.5-inches).

Furthermore, comparing the 100-yr storm event flows for ultimate buildout condition *with* the Brady Vineyard Project to the ultimate buildout condition *without* the Brady Vineyard Project showed that Upstream of the Vineyard Road culvert, the maximum WSE increase was 0.08-feet (1-inch). Downstream of the Vineyard Road culvert, the maximum WSE increase was 0.09-feet (1.08-inches).

These WSE increases do not appear to cause any significant impacts to existing features or structures along the Dry Creek Vineyard Road Tributary. If actual future buildout conditions vary from those assumed in this report, an updated study may be required to evaluate impacts that development will have on this tributary.

F. REFERENCES

- HEC-HMS version 4.2
- Placer County Land Development Manual, October 1996
- Placer County Stormwater Management Manual, September 1990
- Preliminary Drainage Study & Stormwater Quality Plan for Brady-Vineyard Subdivision, RFE Engineering, April 2, 2019.
- USDA TR-55 *Urban Hydrology for Small Watersheds,* June 1986

APPENDIX A

BASIN SHED MAP

&

FLOOD MODEL EXHIBIT

Z:\2017 Projects\17059 Brady Vineyard\WORKING CAD\EXHIBITS\Vineyard Tributary-Drainage Sheds.dwg May 25, 2018-04:09 pm

LEGEND

DRAINAGE SHED DESIGNATIONS AND AREA	DC25B 388.605 ACRES 0.6072 SQ. MILE
DRAINAGE AREA BOUNDARY	
VINEYARD ROAD TRIBUTARY REACH	
HEC-RAS REFERENCE CROSS SECTION	
EXISTING DRAINAGE FLOW	
POST-CONSTRUCTION ON-SITE DRAINAGE FLOW	

400 0 400 800

1 INCH = 400 FEET

RFE ENGINEERING, INC
Civil Engineers • Planners • Surveyors
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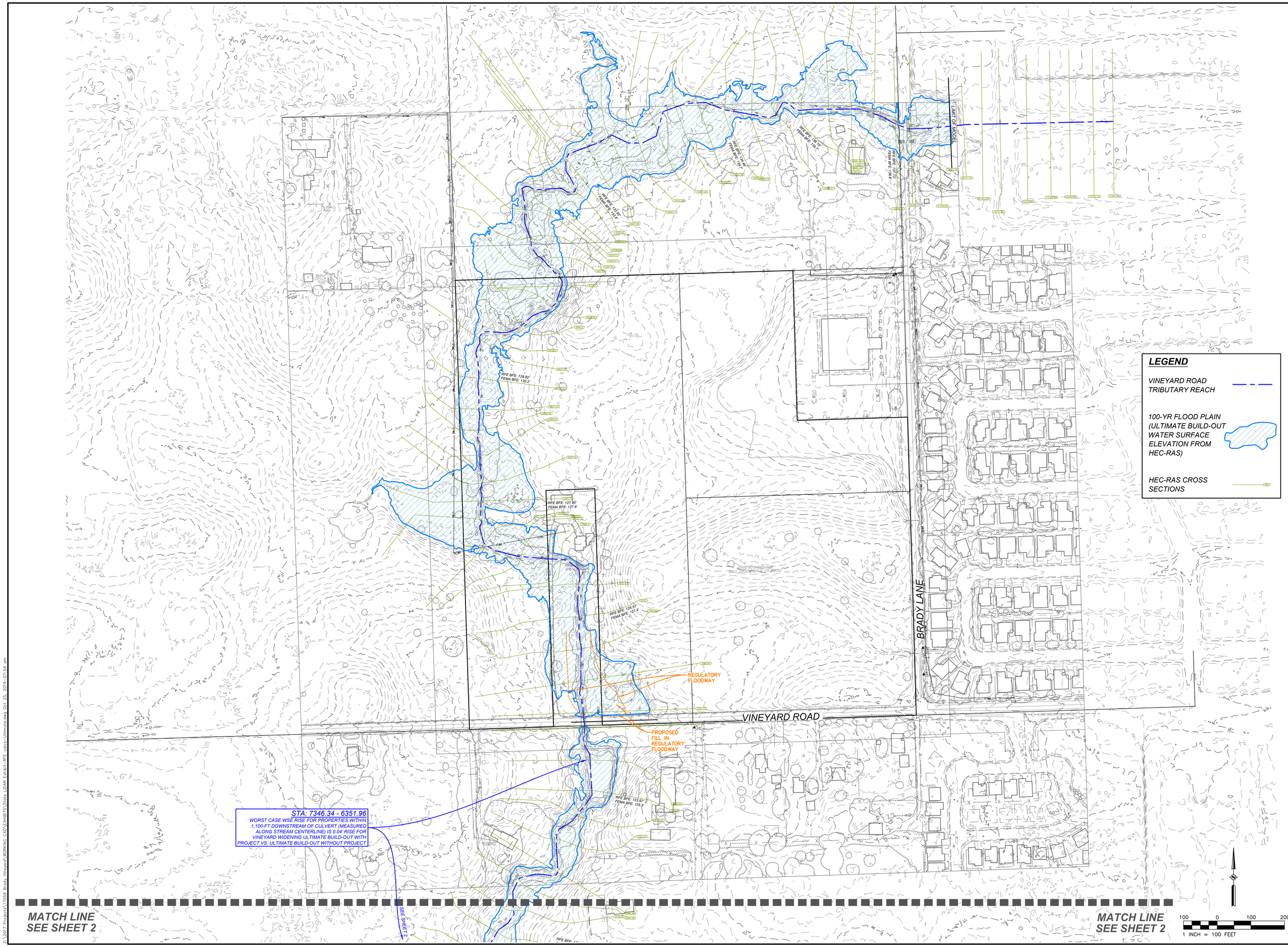
Ph: 916-772-7800 Fax: 916-772-7804
www.RFEengineering.com

DRY CREEK VINEYARD ROAD TRIBUTARY DRAINAGE SHED MAP



REVISION	DATE	BY	APPRV'D

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DESIGN SBS	RFE
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ORIGINAL SCALE IS IN INCHES 0 1 2

REGISTERED PROFESSIONAL ENGINEER No. C 80825 CIVIL STATE OF CALIFORNIA

PRELIMINARY NOT FOR CONSTRUCTION

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ROCKLIN, CA 95765
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BRADY VINEYARD SUBDIVISION
B RADY LANE AND VINEYARD ROAD,
PLACER COUNTY, CA
(APNS: 021-230-004 & 021-230-034)
FLOOD PLAIN ULTIMATE BUILD-OUT

FLOOD MODEL EXHIBIT
ULTIMATE BUILD-OUT

Drawing	Sheet
of	1 of Total 2

10/25/2019

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

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MATCH LINE
SEE SHEET 1

MATCH LINE
SEE SHEET 1

SEE SHEET 1

STA: 7346.34 - 6351.96
WORST CASE WSE RISE FOR PROPERTIES WITHIN 1,100-FT DOWNSTREAM OF CULVERT (MEASURED ALONG STREAM CENTERLINE) IS 0.04' RISE FOR VINEYARD WIDENING ULTIMATE BUILD-OUT WITH PROJECT VS. ULTIMATE BUILD-OUT WITHOUT PROJECT

RFE BFE: 120.89'
FEMA BFE: 120.7'

RFE BFE: 118.07'
FEMA BFE: 118.9'

STA: 5618.96
WORST CASE WSE FOR VINEYARD WIDENING ULTIMATE BUILD-OUT WITH PROJECT VS. ULTIMATE BUILD-OUT WITHOUT PROJECT = 0.09' RISE

RFE BFE: 116.6'
FEMA BFE: 117.9'

RFE BFE: 114.5'
FEMA BFE: 114.4'

LIMIT OF MODEL

LIMIT OF MODEL

LEGEND

VINEYARD ROAD TRIBUTARY REACH

100-YR FLOOD PLAIN (ULTIMATE BUILD-OUT WATER SURFACE ELEVATION FROM HEC-RAS)

HEC-RAS CROSS SECTIONS

100 0 100 200
1 INCH = 100 FEET

DESIGN	SBS	RFE	
DRAWN	SBS	RFE	
QUANT.			

ORIGINAL SCALE IS IN INCHES 0 1 2

			APPRV'D
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			DATE
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PRELIMINARY NOT FOR CONSTRUCTION

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BRADY VINEYARD SUBDIVISION
B RADY LANE AND VINEYARD ROAD,
PLACER COUNTY, CA
(APNS 021-090-002 & 021-090-034)

FLOOD MODEL EXHIBIT
ULTIMATE BUILD-OUT

Drawing	Sheet
of	2 of Total 2

10/25/2019

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

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APPENDIX B

EXCERPT FROM
PLACER COUNTY SWMM

TABLE 5-3

CONSTANT INFILTRATION RATES' FOR HYDROLOGIC SOIL-COVER COMPLEXES

Cover Type	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Bare - Rockland, eroded and newly-graded areas		.10	.02	.O1	.01
Grass,Annual or Perennial	Poor	.16	.09	.06	.04
	Fair	:31	.16	.09	.07
	Good	.41	.22	.12	.09
Meadows - Areas with seasonally high water table, principal vegetation is sod-forming grass	Poor	.20	.11	.06	.05
	Fair	.30	.15	.09	.07
	Good	.50	.24	.17	.14
Chaparral,Broadleaf (Manzanita and scrub oak)	Poor	.28	.15	.09	.06
	Fair	.40	.20	.12	.08
	Good	.49	.25	.14	.10
Open Brush - Softwood shrubs, buckwheat, sage, etc.	Poor	.21	.11	.07	.05
	Fair	.34	.18	.11	.07
	Good	.39	.20	.12	.08
Woodland - Coniferous or broadleaf trees predominate. Canopy density is at least 50%)	Poor	.35	.18	.11	.07
	Fair	.44	.22	.13	.09
	Good	.53	.26	.15	.11
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50%)	Poor	.25	.13	.08	.06
	Fair	.36	.18	.11	.08
	Good	.47	.24	.14	.09
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	.48	.25	.16	.12
Open Space	Poor (grass cover < 50%)	.26	.09	.06	.04
	Fair (grass cover 50-75%)	.31	.16	.09	.07
	Good (grass cover > 75%)	.41	.22	.12	.09

1. Loss rates in inches/hour
2. Use appropriate ground cover designation

roof, lawn, driveway, and street surfaces, with the street gutter serving as collector. It is appropriate to represent these surfaces with two overland elements: a smooth one for directly connected impervious areas, such as roofs, driveways and streets, and a rough one for landscaped and unconnected impervious areas.

Equation 5-3 is used to estimate the overland flow component of response time (7)(8). Solutions for this equation may be obtained graphically in Figure 5-1.

$$t_r = \frac{.355(nL)^{0.6}}{S^{0.3}} \qquad [5\text{-}31]$$

where

t_r = response time, minutes
n = Manning's roughness coefficient (Table 5-5)
L = flow length, feet
s slope of surface, feet/feet

TABLE 5-5
ROUGHNESS PARAMETERS FOR OVERLAND FLOW [1]

Surface	n [2]
Smooth surfaces (concrete asphalt, or bare soil)	0.11
Grass:	
Short grasses	0.15
Dense grasses	0.24
Bermuda grass	0.40
Poor grass cover on moderately rough surface	0.40
Woods with Underbrush	0.40 - 0.80

1. Sources (1) and (8).
2. Both surface roughness and vegetation cover affect runoff; but only the portion less than 0.1 foot high.

i) , Collector Flow **Equ**ation 5-4 below or the Manning equation may be used for estimating velocities of concentrated flow in rivulets, swales, gutters, pipes, and channels. Equation 5-4 applies to an open, triangular channel with no inflow at its upstream end and side inflows uniformly distributed along its length.

This representation is considered adequate for approximating open channels and pipes in most situations. Equation 5-4 may be solved graphically using Figure 5-2.

$$t_r = \frac{.00735Ln^{.75}(1 + Z^2)^{.25}}{s^{.375}(A_cZ)^{.25}} \qquad [5\text{-}4]$$

where

t_r = response time, minutes
n = Manning's roughness coefficient See Table 6-3 or Table 8-1
s = slope, feet horizontal/foot vertical
L = length, feet
Z = side slope, feet horizontal/foot vertical
A_c = contributing area, acres

In natural watersheds, it may be appropriate to use higher values of Manning's n for the initial collector where the flow is shallow.

Manning's equation may be used to estimate the collector response time when it is felt that Equation 5-4 does not apply. A flow of 2 cfs per acre of contributing watershed should be used to evaluate velocities. The velocity computed for open channel flows using Mannings equation shall be increased by an adjustment factor as follows to account for celerity:

Table 5-A-1
Depth-Duration-Frequency Coefficients

150 - 3000 feet elevation
West of Sierra Nevada Crest

Depths in inches at 150 feet

HEC-HMS Inputs

Duration	2yr	5yr	10yr	25yr	50yr	100yr	200yr	500yr
5m	0.13	0.20	0.25	0.32	0.38	0.44	0.49	0.58
10m	0.19	0.29	0.36	0.46	0.54	0.62	0.70	0.82
15m	0.23	0.35	0.43	0.55	0.64	0.73	0.82	0.96
30m	0.32	0.47	0.57	0.72	0.83	0.94	1.04	1.22
1h	0.45	0.64	0.77	0.94	1.07	1.21	1.33	1.53
2h	0.64	0.88	1.04	1.26	1.42	1.59	1.76	2.00
3h	0.77	1.04	1.23	1.47	1.66	1.85	2.03	2.31
6h	1.06	1.40	1.65	1.95	2.22	2.23	2.75	3.10
12h	1.43	1.91	2.24	2.67	3.00	3.30	3.60	4.00
1d	1.90	2.50	2.98	3.46	3.85	4.25	4.60	5.20
2d	2.51	3.40	3.95	4.65	5.15	5.70	6.20	7.00
3d	3.00	4.07	4.65	5.50	6.20	6.80	7.50	8.40
5d	3.61	4.91	5.76	6.85	7.63	8.42	9.20	10.29
10d	4.73	6.44	7.54	8.96	9.97	11.01	11.95	13.45

Change in depth, inches per 1000 feet

Duration	2yr	5yr	10yr	25yr	50yr	100yr	200yr	500yr
5m	0.007	0.000	-0.003	-0.007	-0.017	-0.023	-0.027	-0.037
10m	0.007	0.003	0.000	-0.010	-0.020	-0.027	-0.037	-0.050
15m	0.017	0.013	0.013	0.003	0.000	-0.007	-0.013	-0.027
30m	0.030	0.040	0.040	0.040	0.040	0.040	0.040	0.030
1h	0.063	0.087	0.100	0.120	0.133	0.137	0.157	0.173
2h	0.107	0.157	0.193	0.230	0.260	0.287	0.313	0.350
3h	0.143	0.220	0.263	0.327	0.373	0.413	0.457	0.513
6h	0.230	0.357	0.433	0.540	0.593	0.733	0.757	0.850
12h	0.453	0.663	0.820	0.977	1.127	1.250	1.400	1.600
1d	0.700	1.037	1.240	1.547	1.783	1.983	2.200	2.500
2d	1.163	1.667	2.017	2.483	2.850	3.167	3.533	4.000
3d	1.647	2.343	2.850	3.500	3.933	4.383	4.833	5.533
5d	2.287	3.230	3.913	4.717	5.390	5.960	6.600	7.570
10d	3.490	4.920	5.987	7.180	8.177	8.997	10.350	11.683

APPENDIX C

RUNOFF PEAK FLOW
&
WSE CALCULATION RESULTS

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	11061.63	Max WS	Pre10	204.62	134.22	137.14		137.17	0.001216	1.33	153.46	104.48	0.19
Dry Creek Trib	11061.63	Max WS	Pre100-DC-BFE	368.04	134.22	138.66		138.68	0.000400	1.12	328.19	125.77	0.12
Dry Creek Trib	11061.63	Max WS	DCTrib-ULT-10yr	204.62	134.22	137.14		137.17	0.001216	1.33	153.45	104.47	0.19
Dry Creek Trib	11061.63	Max WS	DCTrib-ULT-100	368.52	134.22	138.66		138.68	0.000401	1.12	328.23	125.78	0.12
Dry Creek Trib	11016.93	Max WS	Pre10	204.58	133.48	137.11		137.13	0.000549	0.99	205.80	119.83	0.13
Dry Creek Trib	11016.93	Max WS	Pre100-DC-BFE	368.04	133.48	138.65		138.67	0.000209	0.93	399.56	132.67	0.09
Dry Creek Trib	11016.93	Max WS	DCTrib-ULT-10yr	204.59	133.48	137.11		137.13	0.000550	0.99	205.80	119.83	0.13
Dry Creek Trib	11016.93	Max WS	DCTrib-ULT-100	368.44	133.48	138.65		138.67	0.000209	0.93	399.60	132.68	0.09
Dry Creek Trib	10935.1	Max WS	Pre10	204.52	133.65	136.98		137.06	0.001341	2.22	92.04	30.38	0.22
Dry Creek Trib	10935.1	Max WS	Pre100-DC-BFE	368.02	133.65	138.52		138.63	0.001142	2.67	138.20	170.01	0.22
Dry Creek Trib	10935.1	Max WS	DCTrib-ULT-10yr	204.55	133.65	136.98		137.06	0.001341	2.22	92.04	30.38	0.22
Dry Creek Trib	10935.1	Max WS	DCTrib-ULT-100	368.24	133.65	138.52		138.63	0.001143	2.67	138.21	170.02	0.22
Dry Creek Trib	10910.99			Culvert									
Dry Creek Trib	10886.88	Max WS	Pre10	204.45	132.30	136.71		136.77	0.001093	1.97	103.97	34.79	0.20
Dry Creek Trib	10886.88	Max WS	Pre100-DC-BFE	367.30	132.30	137.73		137.82	0.001162	2.46	182.05	108.63	0.22
Dry Creek Trib	10886.88	Max WS	DCTrib-ULT-10yr	204.55	132.30	136.71		136.77	0.001094	1.97	103.96	34.78	0.20
Dry Creek Trib	10886.88	Max WS	DCTrib-ULT-100	367.66	132.30	137.73		137.82	0.001165	2.46	181.99	108.62	0.22
Dry Creek Trib	10817.21	Max WS	Pre10	204.44	131.78	136.55		136.67	0.002053	2.79	74.21	27.46	0.27
Dry Creek Trib	10817.21	Max WS	Pre100-DC-BFE	367.28	131.78	137.56		137.72	0.002174	3.43	134.87	72.76	0.29
Dry Creek Trib	10817.21	Max WS	DCTrib-ULT-10yr	204.48	131.78	136.55		136.67	0.002055	2.79	74.20	27.45	0.27
Dry Creek Trib	10817.21	Max WS	DCTrib-ULT-100	367.35	131.78	137.56		137.72	0.002177	3.44	134.81	72.69	0.29
Dry Creek Trib	10749.58	Max WS	Pre10	204.76	131.83	136.35		136.49	0.003321	3.01	68.14	109.69	0.34
Dry Creek Trib	10749.58	Max WS	Pre100-DC-BFE	367.78	131.83	137.30		137.52	0.003867	3.78	98.30	192.64	0.38
Dry Creek Trib	10749.58	Max WS	DCTrib-ULT-10yr	204.84	131.83	136.35		136.49	0.003325	3.01	68.12	109.66	0.34
Dry Creek Trib	10749.58	Max WS	DCTrib-ULT-100	367.75	131.83	137.29		137.52	0.003870	3.79	98.27	192.59	0.38
Dry Creek Trib	10681.32	Max WS	Pre10	205.18	131.87	136.02		136.22	0.004712	3.55	57.78	101.81	0.40
Dry Creek Trib	10681.32	Max WS	Pre100-DC-BFE	368.49	131.87	136.91		137.21	0.005431	4.48	88.30	180.30	0.44
Dry Creek Trib	10681.32	Max WS	DCTrib-ULT-10yr	205.17	131.87	136.02		136.22	0.004714	3.55	57.77	101.77	0.40
Dry Creek Trib	10681.32	Max WS	DCTrib-ULT-100	368.39	131.87	136.91		137.21	0.005436	4.49	88.25	180.14	0.44
Dry Creek Trib	10599.74	Max WS	Pre10	205.69	132.28	135.41		135.67	0.009024	4.13	49.80	32.10	0.54
Dry Creek Trib	10599.74	Max WS	Pre100-DC-BFE	369.37	132.28	136.10		136.53	0.011505	5.24	70.48	71.16	0.62
Dry Creek Trib	10599.74	Max WS	DCTrib-ULT-10yr	205.63	132.28	135.41		135.67	0.009028	4.13	49.78	32.08	0.54
Dry Creek Trib	10599.74	Max WS	DCTrib-ULT-100	369.17	132.28	136.10		136.53	0.011512	5.24	70.43	71.03	0.62
Dry Creek Trib	10498.01	Max WS	Pre10	206.30	131.93	134.89		135.02	0.003990	2.88	72.00	52.12	0.37
Dry Creek Trib	10498.01	Max WS	Pre100-DC-BFE	370.53	131.93	135.47		135.69	0.005073	3.87	103.84	90.72	0.43
Dry Creek Trib	10498.01	Max WS	DCTrib-ULT-10yr	206.20	131.93	134.89		135.02	0.003992	2.88	71.97	52.04	0.37
Dry Creek Trib	10498.01	Max WS	DCTrib-ULT-100	370.18	131.93	135.47		135.69	0.005071	3.87	103.77	90.67	0.43
Dry Creek Trib	10420.34	Max WS	Pre10	206.76	131.97	134.50		134.68	0.005675	3.66	73.44	64.50	0.44
Dry Creek Trib	10420.34	Max WS	Pre100-DC-BFE	371.40	131.97	134.97		135.24	0.007528	4.82	115.53	106.82	0.53
Dry Creek Trib	10420.34	Max WS	DCTrib-ULT-10yr	206.63	131.97	134.50		134.68	0.005684	3.66	73.35	64.44	0.44
Dry Creek Trib	10420.34	Max WS	DCTrib-ULT-100	370.92	131.97	134.97		135.24	0.007536	4.82	115.35	106.79	0.53
Dry Creek Trib	10337.8	Max WS	Pre10	207.18	132.26	134.14		134.22	0.005439	2.80	101.16	116.66	0.41
Dry Creek Trib	10337.8	Max WS	Pre100-DC-BFE	372.35	132.26	134.46		134.60	0.007135	3.67	140.55	126.82	0.49
Dry Creek Trib	10337.8	Max WS	DCTrib-ULT-10yr	206.83	132.26	134.13		134.22	0.005511	2.81	100.54	116.48	0.41
Dry Creek Trib	10337.8	Max WS	DCTrib-ULT-100	371.69	132.26	134.46		134.60	0.007143	3.67	140.31	126.75	0.49
Dry Creek Trib	10253.75	Max WS	Pre10	205.81	131.94	133.59		133.66	0.006856	2.40	109.27	157.91	0.43
Dry Creek Trib	10253.75	Max WS	Pre100-DC-BFE	373.31	131.94	133.86		133.97	0.008175	3.09	152.27	161.59	0.49
Dry Creek Trib	10253.75	Max WS	DCTrib-ULT-10yr	168.75	131.94	133.57		133.62	0.004911	2.01	107.00	157.69	0.36
Dry Creek Trib	10253.75	Max WS	DCTrib-ULT-100	372.47	131.94	133.86		133.97	0.008119	3.08	152.38	161.60	0.49
Dry Creek Trib	10186.61	Max WS	Pre10	6.04	131.56	133.43		133.43	0.000001	0.04	203.56	206.11	0.01
Dry Creek Trib	10186.61	Max WS	Pre100-DC-BFE	374.00	131.56	133.49		133.54	0.003700	2.08	216.06	212.96	0.33
Dry Creek Trib	10186.61	Max WS	DCTrib-ULT-10yr	6.17	131.56	133.43		133.43	0.000001	0.04	203.48	206.04	0.01
Dry Creek Trib	10186.61	Max WS	DCTrib-ULT-100	371.47	131.56	133.50		133.55	0.003579	2.05	217.46	213.35	0.32
Dry Creek Trib	10087.22	Max WS	Pre10	164.01	131.60	133.34		133.34	0.000207	0.55	309.61	197.59	0.08
Dry Creek Trib	10087.22	Max WS	Pre100-DC-BFE	153.40	131.60	133.41		133.41	0.000159	0.50	323.51	199.57	0.07
Dry Creek Trib	10087.22	Max WS	DCTrib-ULT-10yr	153.90	131.60	133.35		133.35	0.000179	0.51	311.65	197.88	0.07
Dry Creek Trib	10087.22	Max WS	DCTrib-ULT-100	145.73	131.60	133.45		133.45	0.000133	0.46	332.14	200.78	0.07
Dry Creek Trib	10016.43	Max WS	Pre10	160.14	130.18	133.32		133.33	0.000176	0.72	250.80	145.77	0.08
Dry Creek Trib	10016.43	Max WS	Pre100-DC-BFE	135.19	130.18	133.39		133.40	0.000112	0.59	262.01	148.92	0.06
Dry Creek Trib	10016.43	Max WS	DCTrib-ULT-10yr	148.47	130.18	133.33		133.34	0.000148	0.67	252.74	146.32	0.07
Dry Creek Trib	10016.43	Max WS	DCTrib-ULT-100	126.87	130.18	133.44		133.44	0.000092	0.54	268.77	150.80	0.06
Dry Creek Trib	9935.11	Max WS	Pre10	154.49	129.44	133.31		133.31	0.000056	0.44	529.89	372.95	0.05
Dry Creek Trib	9935.11	Max WS	Pre100-DC-BFE	105.91	129.44	133.39		133.39	0.000023	0.29	559.66	381.54	0.03
Dry Creek Trib	9935.11	Max WS	DCTrib-ULT-10yr	139.49	129.44	133.33		133.33	0.000044	0.40	535.38	374.18	0.04
Dry Creek Trib	9935.11	Max WS	DCTrib-ULT-100	96.09	129.44	133.44		133.44	0.000017	0.25	577.30	392.95	0.03
Dry Creek Trib	9841.26	Max WS	Pre10	386.40	129.40	132.57	132.63	133.58	0.041631	8.07	47.91	144.61	1.13
Dry Creek Trib	9841.26	Max WS	Pre100-DC-BFE	428.92	129.40	133.00		133.04	0.001738	1.90	276.23	166.02	0.24

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	9841.26	Max WS	DCTrib-ULT-10yr	405.96	129.40	132.59	132.63	133.68	0.044531	8.37	48.50	145.46	1.17
Dry Creek Trib	9841.26	Max WS	DCTrib-ULT-100	436.25	129.40	133.03		133.07	0.001712	1.91	281.04	167.22	0.24
Dry Creek Trib	9764.85	Max WS	Pre10	356.00	129.40	132.39		132.44	0.001499	1.89	208.29	120.35	0.23
Dry Creek Trib	9764.85	Max WS	Pre100-DC-BFE	428.75	129.40	132.89		132.94	0.001002	1.78	272.06	131.92	0.19
Dry Creek Trib	9764.85	Max WS	DCTrib-ULT-10yr	348.56	129.40	132.41		132.46	0.001376	1.82	211.35	120.81	0.22
Dry Creek Trib	9764.85	Max WS	DCTrib-ULT-100	436.21	129.40	132.92		132.97	0.000996	1.79	276.02	132.64	0.19
Dry Creek Trib	9660.93	Max WS	Pre10	333.36	126.73	132.31		132.35	0.000565	1.84	284.55	126.64	0.15
Dry Creek Trib	9660.93	Max WS	Pre100-DC-BFE	430.00	126.73	132.83		132.86	0.000531	1.92	352.24	137.04	0.15
Dry Creek Trib	9660.93	Max WS	DCTrib-ULT-10yr	330.30	126.73	132.34		132.37	0.000539	1.81	287.65	127.17	0.15
Dry Creek Trib	9660.93	Max WS	DCTrib-ULT-100	437.68	126.73	132.86		132.89	0.000534	1.94	356.39	137.88	0.15
Dry Creek Trib	9592.92	Max WS	Pre10	318.78	126.42	132.16		132.27	0.002050	3.02	152.55	99.28	0.28
Dry Creek Trib	9592.92	Max WS	Pre100-DC-BFE	431.07	126.42	132.68		132.79	0.001926	3.20	209.22	129.35	0.28
Dry Creek Trib	9592.92	Max WS	DCTrib-ULT-10yr	318.45	126.42	132.19		132.30	0.001971	2.98	155.14	100.13	0.28
Dry Creek Trib	9592.92	Max WS	DCTrib-ULT-100	439.01	126.42	132.71		132.82	0.001930	3.22	213.04	132.40	0.28
Dry Creek Trib	9534.07	Max WS	Pre10	309.07	126.35	132.11		132.17	0.000951	2.07	199.14	117.17	0.19
Dry Creek Trib	9534.07	Max WS	Pre100-DC-BFE	431.81	126.35	132.62		132.69	0.000983	2.31	263.32	135.25	0.20
Dry Creek Trib	9534.07	Max WS	DCTrib-ULT-10yr	318.51	126.35	132.14		132.20	0.000975	2.11	202.28	118.08	0.20
Dry Creek Trib	9534.07	Max WS	DCTrib-ULT-100	439.94	126.35	132.65		132.72	0.000987	2.32	267.21	136.38	0.20
Dry Creek Trib	9429.91	Max WS	Pre10	302.85	125.97	131.77		131.94	0.004578	3.50	107.44	95.94	0.39
Dry Creek Trib	9429.91	Max WS	Pre100-DC-BFE	433.06	125.97	132.36		132.50	0.003261	3.41	178.67	130.94	0.34
Dry Creek Trib	9429.91	Max WS	DCTrib-ULT-10yr	305.99	125.97	131.79		131.96	0.004477	3.48	110.02	101.57	0.39
Dry Creek Trib	9429.91	Max WS	DCTrib-ULT-100	441.40	125.97	132.39		132.53	0.003213	3.40	182.81	131.85	0.34
Dry Creek Trib	9345.09	Max WS	Pre10	293.11	127.59	131.55		131.64	0.002323	2.37	123.85	57.23	0.28
Dry Creek Trib	9345.09	Max WS	Pre100-DC-BFE	434.05	127.59	132.17		132.27	0.002186	2.63	186.45	168.55	0.28
Dry Creek Trib	9345.09	Max WS	DCTrib-ULT-10yr	296.97	127.59	131.58		131.66	0.002308	2.37	125.38	57.59	0.28
Dry Creek Trib	9345.09	Max WS	DCTrib-ULT-100	442.55	127.59	132.20		132.30	0.002163	2.63	191.86	173.95	0.28
Dry Creek Trib	9257.01	Max WS	Pre10	289.05	126.10	131.33		131.44	0.002174	2.87	118.02	97.36	0.29
Dry Creek Trib	9257.01	Max WS	Pre100-DC-BFE	435.12	126.10	131.93		132.08	0.002457	3.42	158.74	198.03	0.31
Dry Creek Trib	9257.01	Max WS	DCTrib-ULT-10yr	293.72	126.10	131.36		131.47	0.002168	2.88	119.66	99.47	0.29
Dry Creek Trib	9257.01	Max WS	DCTrib-ULT-100	443.75	126.10	131.95		132.12	0.002471	3.45	160.95	199.34	0.31
Dry Creek Trib	9161.5	Max WS	Pre10	289.59	125.74	131.18		131.27	0.001718	2.44	141.38	84.92	0.25
Dry Creek Trib	9161.5	Max WS	Pre100-DC-BFE	436.25	125.74	131.77		131.87	0.001782	2.81	195.41	97.63	0.26
Dry Creek Trib	9161.5	Max WS	DCTrib-ULT-10yr	294.71	125.74	131.21		131.30	0.001710	2.45	143.77	85.66	0.25
Dry Creek Trib	9161.5	Max WS	DCTrib-ULT-100	445.21	125.74	131.80		131.90	0.001793	2.83	198.08	97.93	0.27
Dry Creek Trib	9090.68	Max WS	Pre10	289.24	125.67	130.94		131.08	0.004066	3.09	107.96	72.03	0.37
Dry Creek Trib	9090.68	Max WS	Pre100-DC-BFE	436.55	125.67	131.56		131.72	0.003558	3.41	160.13	99.98	0.36
Dry Creek Trib	9090.68	Max WS	DCTrib-ULT-10yr	294.67	125.67	130.97		131.10	0.004017	3.09	109.93	72.25	0.37
Dry Creek Trib	9090.68	Max WS	DCTrib-ULT-100	445.65	125.67	131.59		131.75	0.003586	3.44	162.73	102.37	0.36
Dry Creek Trib	8980.6	Max WS	Pre10	281.63	125.80	130.20		130.50	0.008211	4.38	68.82	51.52	0.52
Dry Creek Trib	8980.6	Max WS	Pre100-DC-BFE	436.74	125.80	130.94		131.23	0.006395	4.58	112.28	67.45	0.48
Dry Creek Trib	8980.6	Max WS	DCTrib-ULT-10yr	285.61	125.80	130.24		130.53	0.008051	4.36	70.67	52.57	0.52
Dry Creek Trib	8980.6	Max WS	DCTrib-ULT-100	445.84	125.80	130.97		131.27	0.006314	4.59	114.83	71.79	0.48
Dry Creek Trib	8900.41	Max WS	Pre10	278.76	125.50	130.05		130.09	0.000943	2.04	230.34	164.43	0.19
Dry Creek Trib	8900.41	Max WS	Pre100-DC-BFE	436.99	125.50	130.82		130.85	0.000734	2.06	369.07	204.59	0.18
Dry Creek Trib	8900.41	Max WS	DCTrib-ULT-10yr	285.49	125.50	130.08		130.12	0.000924	2.03	236.65	165.71	0.19
Dry Creek Trib	8900.41	Max WS	DCTrib-ULT-100	446.17	125.50	130.86		130.89	0.000732	2.07	377.48	209.55	0.18
Dry Creek Trib	8840.78	Max WS	Pre10	277.32	125.61	129.60		129.90	0.006876	4.36	63.55	35.41	0.49
Dry Creek Trib	8840.78	Max WS	Pre100-DC-BFE	437.34	125.61	130.19		130.66	0.009671	5.49	79.73	61.91	0.59
Dry Creek Trib	8840.78	Max WS	DCTrib-ULT-10yr	284.45	125.61	129.63		129.94	0.007005	4.42	64.37	37.63	0.49
Dry Creek Trib	8840.78	Max WS	DCTrib-ULT-100	446.65	125.61	130.23		130.70	0.009797	5.54	80.66	63.88	0.59
Dry Creek Trib	8719.42	Max WS	Pre10	277.14	125.78	129.27		129.33	0.002006	2.09	139.57	92.10	0.26
Dry Creek Trib	8719.42	Max WS	Pre100-DC-BFE	437.84	125.78	129.79		129.89	0.002129	2.52	189.62	98.02	0.28
Dry Creek Trib	8719.42	Max WS	DCTrib-ULT-10yr	283.67	125.78	129.30		129.37	0.001988	2.10	142.43	92.46	0.26
Dry Creek Trib	8719.42	Max WS	DCTrib-ULT-100	447.37	125.78	129.82		129.92	0.002134	2.54	192.35	98.31	0.28
Dry Creek Trib	8627.33	Max WS	Pre10	273.20	125.41	128.74		128.92	0.007526	3.95	88.82	61.80	0.49
Dry Creek Trib	8627.33	Max WS	Pre100-DC-BFE	438.25	125.41	129.19		129.44	0.008387	4.77	117.43	65.90	0.54
Dry Creek Trib	8627.33	Max WS	DCTrib-ULT-10yr	281.76	125.41	128.78		128.96	0.007441	3.97	91.00	62.11	0.49
Dry Creek Trib	8627.33	Max WS	DCTrib-ULT-100	447.91	125.41	129.21		129.47	0.008462	4.82	118.81	66.34	0.54
Dry Creek Trib	8563.46	Max WS	Pre10	271.13	124.23	128.51		128.61	0.002207	2.68	119.40	64.37	0.28
Dry Creek Trib	8563.46	Max WS	Pre100-DC-BFE	438.53	124.23	128.89		129.06	0.003440	3.64	144.86	70.02	0.36
Dry Creek Trib	8563.46	Max WS	DCTrib-ULT-10yr	280.70	124.23	128.54		128.64	0.002262	2.73	121.43	64.96	0.29
Dry Creek Trib	8563.46	Max WS	DCTrib-ULT-100	448.15	124.23	128.90		129.09	0.003518	3.70	145.99	70.24	0.37
Dry Creek Trib	8488.69	Max WS	Pre10	271.65	123.59	128.18		128.30	0.004858	3.34	115.18	91.40	0.39
Dry Creek Trib	8488.69	Max WS	Pre100-DC-BFE	438.83	123.59	128.21		128.50	0.011811	5.26	118.27	92.26	0.61
Dry Creek Trib	8488.69	Max WS	DCTrib-ULT-10yr	274.48	123.59	128.15		128.27	0.005223	3.43	112.44	89.10	0.41
Dry Creek Trib	8488.69	Max WS	DCTrib-ULT-100	448.67	123.59	128.24		128.53	0.011736	5.28	120.49	92.78	0.61
Dry Creek Trib	8405.54	Max WS	Pre10	258.85	124.66	128.03		128.04	0.000395	0.89	376.15	241.49	0.11

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	8405.54	Max WS	Pre100-DC-BFE	286.07	124.66	127.97		127.98	0.000542	1.02	362.23	240.03	0.13
Dry Creek Trib	8405.54	Max WS	DCTrib-ULT-10yr	259.34	124.66	127.99		127.99	0.000433	0.92	365.45	240.37	0.12
Dry Creek Trib	8405.54	Max WS	DCTrib-ULT-100	279.00	124.66	127.91		127.92	0.000587	1.04	347.42	238.46	0.14
Dry Creek Trib	8349.77	Max WS	Pre10	237.45	124.17	128.02		128.02	0.000054	0.40	853.57	522.71	0.04
Dry Creek Trib	8349.77	Max WS	Pre100-DC-BFE	245.46	124.17	127.96		127.96	0.000064	0.43	822.02	518.59	0.05
Dry Creek Trib	8349.77	Max WS	DCTrib-ULT-10yr	233.88	124.17	127.98		127.98	0.000057	0.41	829.97	519.63	0.04
Dry Creek Trib	8349.77	Max WS	DCTrib-ULT-100	196.95	124.17	127.90		127.90	0.000046	0.36	790.88	514.49	0.04
Dry Creek Trib	8292.18	Max WS	Pre10	447.43	124.38	127.49		127.53	0.003245	2.15	281.10	270.46	0.31
Dry Creek Trib	8292.18	Max WS	Pre100-DC-BFE	439.37	124.38	127.68		127.71	0.001913	1.79	327.43	335.27	0.25
Dry Creek Trib	8292.18	Max WS	DCTrib-ULT-10yr	433.11	124.38	127.46		127.51	0.003290	2.14	274.28	258.94	0.31
Dry Creek Trib	8292.18	Max WS	DCTrib-ULT-100	449.38	124.38	127.72		127.75	0.001801	1.76	338.32	347.96	0.24
Dry Creek Trib	8220.24	Max WS	Pre10	371.71	122.95	126.91		127.14	0.005612	3.91	105.09	111.59	0.45
Dry Creek Trib	8220.24	Max WS	Pre100-DC-BFE	465.64	122.95	127.42		127.63	0.004183	3.85	139.70	181.06	0.40
Dry Creek Trib	8220.24	Max WS	DCTrib-ULT-10yr	311.84	122.95	126.91		127.07	0.003960	3.28	104.98	111.51	0.38
Dry Creek Trib	8220.24	Max WS	DCTrib-ULT-100	482.53	122.95	127.47		127.69	0.004195	3.90	143.37	186.71	0.40
Dry Creek Trib	8102.71	Max WS	Pre10	314.92	122.75	126.72		126.76	0.000900	1.73	208.11	123.53	0.18
Dry Creek Trib	8102.71	Max WS	Pre100-DC-BFE	465.40	122.75	127.26		127.31	0.000952	2.00	278.64	140.38	0.20
Dry Creek Trib	8102.71	Max WS	DCTrib-ULT-10yr	306.24	122.75	126.73		126.77	0.000833	1.67	209.93	124.01	0.18
Dry Creek Trib	8102.71	Max WS	DCTrib-ULT-100	482.09	122.75	127.31		127.36	0.000958	2.03	285.77	141.09	0.20
Dry Creek Trib	7984.4	Max WS	Pre10	305.68	121.55	126.58		126.64	0.001546	2.43	196.11	143.63	0.24
Dry Creek Trib	7984.4	Max WS	Pre100-DC-BFE	465.17	121.55	127.11		127.18	0.001486	2.64	276.83	157.07	0.24
Dry Creek Trib	7984.4	Max WS	DCTrib-ULT-10yr	306.62	121.55	126.58		126.65	0.001539	2.42	196.96	143.81	0.24
Dry Creek Trib	7984.4	Max WS	DCTrib-ULT-100	481.71	121.55	127.16		127.23	0.001480	2.66	284.80	158.44	0.24
Dry Creek Trib	7877.8	Max WS	Pre10	289.62	121.35	126.13		126.36	0.005231	3.87	76.16	144.08	0.43
Dry Creek Trib	7877.8	Max WS	Pre100-DC-BFE	464.81	121.35	126.89		126.99	0.002379	3.10	231.94	163.28	0.30
Dry Creek Trib	7877.8	Max WS	DCTrib-ULT-10yr	294.64	121.35	126.18		126.41	0.005050	3.85	77.99	148.18	0.42
Dry Creek Trib	7877.8	Max WS	DCTrib-ULT-100	481.39	121.35	126.94		127.05	0.002317	3.10	241.26	165.08	0.30
Dry Creek Trib	7782	Max WS	Pre10	283.53	120.78	125.75		125.97	0.004140	3.72	78.23	56.37	0.38
Dry Creek Trib	7782	Max WS	Pre100-DC-BFE	464.47	120.78	126.51		126.74	0.003916	4.20	149.65	104.06	0.38
Dry Creek Trib	7782	Max WS	DCTrib-ULT-10yr	294.20	120.78	125.80		126.02	0.004211	3.79	80.03	71.42	0.38
Dry Creek Trib	7782	Max WS	DCTrib-ULT-100	480.93	120.78	126.57		126.81	0.003831	4.20	156.85	106.80	0.38
Dry Creek Trib	7684.81	Max WS	Pre10	281.98	120.67	125.33		125.57	0.005551	4.17	81.55	67.33	0.44
Dry Creek Trib	7684.81	Max WS	Pre100-DC-BFE	464.26	120.67	126.21		126.41	0.003723	4.11	176.13	144.99	0.38
Dry Creek Trib	7684.81	Max WS	DCTrib-ULT-10yr	292.52	120.67	125.37		125.62	0.005558	4.22	84.71	70.52	0.44
Dry Creek Trib	7684.81	Max WS	DCTrib-ULT-100	480.89	120.67	126.30		126.49	0.003456	4.02	189.00	147.53	0.37
Dry Creek Trib	7588.69	Max WS	Pre10	274.71	120.06	124.06		124.58	0.016197	5.79	47.47	139.20	0.72
Dry Creek Trib	7588.69	Max WS	Pre100-DC-BFE	464.09	120.06	125.27		125.83	0.009779	6.02	77.92	218.22	0.60
Dry Creek Trib	7588.69	Max WS	DCTrib-ULT-10yr	287.75	120.06	124.24		124.72	0.013842	5.55	51.93	151.87	0.67
Dry Creek Trib	7588.69	Max WS	DCTrib-ULT-100	479.24	120.06	125.39		125.94	0.009147	5.97	81.39	224.92	0.58
Dry Creek Trib	7492.13	Max WS	Pre10	284.39	119.00	123.49		123.65	0.002470	3.15	90.38	135.69	0.28
Dry Creek Trib	7492.13	Max WS	Pre100-DC-BFE	490.10	119.00	124.95		125.15	0.003083	3.51	139.91	211.30	0.33
Dry Creek Trib	7492.13	Max WS	DCTrib-ULT-10yr	314.79	119.00	123.63		123.84	0.003288	3.67	85.87	19.22	0.31
Dry Creek Trib	7492.13	Max WS	DCTrib-ULT-100	519.15	119.00	124.87		125.21	0.004430	4.73	109.80	19.59	0.35
Dry Creek Trib	7469.295			Culvert									
Dry Creek Trib	7446.46	Max WS	Pre10	282.21	119.00	123.11		123.33	0.003978	3.78	74.68	20.84	0.35
Dry Creek Trib	7446.46	Max WS	Pre100-DC-BFE	490.07	119.00	124.04		124.45	0.006392	5.15	95.12	23.74	0.45
Dry Creek Trib	7446.46	Max WS	DCTrib-ULT-10yr	313.33	119.00	123.27		123.52	0.004318	4.01	78.08	21.05	0.37
Dry Creek Trib	7446.46	Max WS	DCTrib-ULT-100	519.06	119.00	124.13		124.57	0.006830	5.34	97.28	24.30	0.47
Dry Creek Trib	7346.34	Max WS	Pre10	281.77	117.42	123.01		123.02	0.000066	0.63	445.00	102.31	0.05
Dry Creek Trib	7346.34	Max WS	Pre100-DC-BFE	490.05	117.42	123.92		123.93	0.000115	0.90	541.80	111.42	0.07
Dry Creek Trib	7346.34	Max WS	DCTrib-ULT-10yr	311.20	117.42	123.17		123.18	0.000072	0.67	461.38	103.67	0.06
Dry Creek Trib	7346.34	Max WS	DCTrib-ULT-100	519.03	117.42	124.00		124.01	0.000123	0.94	550.77	111.94	0.07
Dry Creek Trib	7255.4	Max WS	Pre10	281.48	117.51	123.00		123.01	0.000107	0.81	348.28	79.94	0.07
Dry Creek Trib	7255.4	Max WS	Pre100-DC-BFE	490.84	117.51	123.90		123.92	0.000188	1.16	422.17	94.41	0.09
Dry Creek Trib	7255.4	Max WS	DCTrib-ULT-10yr	311.44	117.51	123.16		123.17	0.000119	0.86	360.98	81.01	0.07
Dry Creek Trib	7255.4	Max WS	DCTrib-ULT-100	519.76	117.51	123.97		124.00	0.000202	1.21	428.90	96.20	0.10
Dry Creek Trib	7164.22	Max WS	Pre10	281.10	118.37	122.27		122.68	0.013098	5.10	55.14	28.91	0.65
Dry Creek Trib	7164.22	Max WS	Pre100-DC-BFE	491.61	118.37	123.06		123.61	0.012910	6.01	88.77	59.98	0.67
Dry Creek Trib	7164.22	Max WS	DCTrib-ULT-10yr	311.24	118.37	122.41		122.84	0.013374	5.27	59.03	30.38	0.66
Dry Creek Trib	7164.22	Max WS	DCTrib-ULT-100	520.39	118.37	123.14		123.70	0.012837	6.12	93.48	61.05	0.68
Dry Creek Trib	7067.14	Max WS	Pre10	280.68	117.76	121.70		121.88	0.004591	3.73	99.19	67.88	0.41
Dry Creek Trib	7067.14	Max WS	Pre100-DC-BFE	492.43	117.76	122.60		122.78	0.003709	4.08	165.07	79.29	0.38
Dry Creek Trib	7067.14	Max WS	DCTrib-ULT-10yr	310.78	117.76	121.85		122.02	0.004385	3.78	109.33	69.92	0.40
Dry Creek Trib	7067.14	Max WS	DCTrib-ULT-100	521.18	117.76	122.69		122.88	0.003690	4.14	172.54	80.44	0.38
Dry Creek Trib	6969.96	Max WS	Pre10	280.94	117.10	121.33		121.49	0.003596	3.12	89.94	37.70	0.36
Dry Creek Trib	6969.96	Max WS	Pre100-DC-BFE	493.29	117.10	122.13		122.38	0.004847	4.03	122.58	44.95	0.42
Dry Creek Trib	6969.96	Max WS	DCTrib-ULT-10yr	310.48	117.10	121.46		121.63	0.003836	3.28	94.72	38.76	0.37

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	6969.96	Max WS	DCTrib-ULT-100	521.95	117.10	122.21		122.47	0.005018	4.15	126.01	46.19	0.43
Dry Creek Trib	6844.28	Max WS	Pre10	280.93	117.22	121.08		121.16	0.001774	2.33	133.98	79.44	0.26
Dry Creek Trib	6844.28	Max WS	Pre100-DC-BFE	494.40	117.22	121.84		121.96	0.002016	2.95	199.06	93.61	0.29
Dry Creek Trib	6844.28	Max WS	DCTrib-ULT-10yr	310.93	117.22	121.19		121.28	0.001857	2.45	142.92	81.75	0.26
Dry Creek Trib	6844.28	Max WS	DCTrib-ULT-100	522.91	117.22	121.91		122.04	0.002073	3.03	205.61	94.48	0.29
Dry Creek Trib	6748.04	Max WS	Pre10	281.02	117.62	120.45		120.74	0.009556	4.92	76.13	58.74	0.58
Dry Creek Trib	6748.04	Max WS	Pre100-DC-BFE	495.19	117.62	121.18		121.52	0.008412	5.57	123.99	71.96	0.57
Dry Creek Trib	6748.04	Max WS	DCTrib-ULT-10yr	310.32	117.62	120.56		120.86	0.009401	5.04	82.73	60.49	0.58
Dry Creek Trib	6748.04	Max WS	DCTrib-ULT-100	523.59	117.62	121.25		121.61	0.008440	5.67	129.29	73.36	0.57
Dry Creek Trib	6661.51	Max WS	Pre10	281.36	116.27	120.07		120.19	0.003333	2.93	111.82	70.80	0.34
Dry Creek Trib	6661.51	Max WS	Pre100-DC-BFE	495.94	116.27	120.82		120.98	0.003437	3.54	169.99	85.13	0.36
Dry Creek Trib	6661.51	Max WS	DCTrib-ULT-10yr	310.68	116.27	120.18		120.31	0.003425	3.04	119.88	73.18	0.35
Dry Creek Trib	6661.51	Max WS	DCTrib-ULT-100	524.17	116.27	120.89		121.07	0.003467	3.61	176.55	86.54	0.37
Dry Creek Trib	6593.97	Max WS	Pre10	281.72	116.25	119.74		119.90	0.005068	3.70	97.10	61.08	0.42
Dry Creek Trib	6593.97	Max WS	Pre100-DC-BFE	496.72	116.25	120.39		120.64	0.005926	4.70	140.52	73.32	0.48
Dry Creek Trib	6593.97	Max WS	DCTrib-ULT-10yr	310.66	116.25	119.83		120.01	0.005250	3.87	102.97	62.52	0.43
Dry Creek Trib	6593.97	Max WS	DCTrib-ULT-100	524.79	116.25	120.46		120.73	0.005971	4.80	145.95	74.37	0.48
Dry Creek Trib	6509.43	Max WS	Pre10	282.03	115.84	119.39		119.55	0.004226	3.37	102.64	74.01	0.39
Dry Creek Trib	6509.43	Max WS	Pre100-DC-BFE	497.41	115.84	119.93		120.18	0.005508	4.42	146.51	85.47	0.46
Dry Creek Trib	6509.43	Max WS	DCTrib-ULT-10yr	311.00	115.84	119.47		119.65	0.004620	3.60	108.65	77.56	0.41
Dry Creek Trib	6509.43	Max WS	DCTrib-ULT-100	525.30	115.84	120.00		120.25	0.005596	4.52	151.82	86.39	0.46
Dry Creek Trib	6469.45	Max WS	Pre10	282.17	116.52	119.28		119.37	0.004408	3.03	127.60	99.51	0.38
Dry Creek Trib	6469.45	Max WS	Pre100-DC-BFE	497.69	116.52	119.83		119.97	0.004683	3.70	186.30	114.05	0.41
Dry Creek Trib	6469.45	Max WS	DCTrib-ULT-10yr	310.81	116.52	119.35		119.46	0.004560	3.16	135.05	101.48	0.39
Dry Creek Trib	6469.45	Max WS	DCTrib-ULT-100	525.61	116.52	119.90		120.04	0.004670	3.76	193.87	115.89	0.41
Dry Creek Trib	6351.96	Max WS	Pre10	282.51	114.42	118.71		118.82	0.004336	3.20	126.35	103.59	0.38
Dry Creek Trib	6351.96	Max WS	Pre100-DC-BFE	498.63	114.42	119.36		119.49	0.003906	3.60	198.32	116.35	0.37
Dry Creek Trib	6351.96	Max WS	DCTrib-ULT-10yr	309.66	114.42	118.80		118.91	0.004371	3.29	135.14	106.35	0.38
Dry Creek Trib	6351.96	Max WS	DCTrib-ULT-100	526.31	114.42	119.43		119.56	0.003830	3.63	207.18	117.04	0.37
Dry Creek Trib	6224.9	Max WS	Pre10	282.84	114.45	118.32		118.41	0.002474	3.12	151.61	107.44	0.31
Dry Creek Trib	6224.9	Max WS	Pre100-DC-BFE	499.65	114.45	118.97		119.08	0.002662	3.67	227.58	122.99	0.33
Dry Creek Trib	6224.9	Max WS	DCTrib-ULT-10yr	309.63	114.45	118.40		118.49	0.002553	3.22	160.70	109.46	0.31
Dry Creek Trib	6224.9	Max WS	DCTrib-ULT-100	527.10	114.45	119.06		119.17	0.002597	3.68	238.62	124.35	0.33
Dry Creek Trib	6159.11	Max WS	Pre10	283.08	114.34	118.19		118.25	0.002100	2.38	168.07	123.60	0.27
Dry Creek Trib	6159.11	Max WS	Pre100-DC-BFE	500.20	114.34	118.84		118.92	0.002054	2.76	251.39	129.77	0.28
Dry Creek Trib	6159.11	Max WS	DCTrib-ULT-10yr	309.55	114.34	118.27		118.33	0.002142	2.45	177.90	124.61	0.28
Dry Creek Trib	6159.11	Max WS	DCTrib-ULT-100	527.57	114.34	118.94		119.02	0.001993	2.78	263.44	130.71	0.28
Dry Creek Trib	6102.92	Max WS	Pre10	283.28	114.47	118.02		118.85	0.020651	7.35	39.30	112.34	0.84
Dry Creek Trib	6102.92	Max WS	Pre100-DC-BFE	500.68	114.47	118.69		118.79	0.002976	3.29	225.70	120.17	0.33
Dry Creek Trib	6102.92	Max WS	DCTrib-ULT-10yr	309.75	114.47	118.10		118.18	0.003459	3.07	155.52	114.38	0.34
Dry Creek Trib	6102.92	Max WS	DCTrib-ULT-100	527.97	114.47	118.79		118.88	0.002844	3.28	237.31	121.00	0.32
Dry Creek Trib	6011.93	Max WS	Pre10	283.58	113.85	117.61		117.77	0.004497	3.60	111.51	98.32	0.40
Dry Creek Trib	6011.93	Max WS	Pre100-DC-BFE	501.39	113.85	118.33		118.50	0.003919	3.98	186.76	110.55	0.39
Dry Creek Trib	6011.93	Max WS	DCTrib-ULT-10yr	309.36	113.85	117.68		117.84	0.004679	3.74	118.11	99.59	0.41
Dry Creek Trib	6011.93	Max WS	DCTrib-ULT-100	528.47	113.85	118.46		118.61	0.003604	3.91	200.67	112.54	0.38
Dry Creek Trib	5902.58	Max WS	Pre10	283.64	115.02	117.08		117.19	0.005828	2.66	108.00	90.60	0.42
Dry Creek Trib	5902.58	Max WS	Pre100-DC-BFE	502.16	115.02	118.01		118.11	0.002821	2.66	197.75	104.13	0.32
Dry Creek Trib	5902.58	Max WS	DCTrib-ULT-10yr	307.69	115.02	117.21		117.32	0.004948	2.62	119.77	92.39	0.39
Dry Creek Trib	5902.58	Max WS	DCTrib-ULT-100	528.91	115.02	118.17		118.27	0.002429	2.59	215.01	105.70	0.30
Dry Creek Trib	5792.84	Max WS	Pre10	283.67	112.78	116.79		116.82	0.001341	1.96	203.70	122.32	0.22
Dry Creek Trib	5792.84	Max WS	Pre100-DC-BFE	502.71	112.78	117.88		117.92	0.000860	1.99	344.57	133.76	0.18
Dry Creek Trib	5792.84	Max WS	DCTrib-ULT-10yr	307.63	112.78	116.98		117.01	0.001143	1.89	227.15	125.26	0.20
Dry Creek Trib	5792.84	Max WS	DCTrib-ULT-100	528.98	112.78	118.07		118.10	0.000772	1.95	369.58	135.92	0.18
Dry Creek Trib	5682.44	Max WS	Pre10	283.91	111.63	116.72		116.73	0.000232	0.93	444.14	223.69	0.09
Dry Creek Trib	5682.44	Max WS	Pre100-DC-BFE	503.63	111.63	117.85		117.86	0.000179	1.01	712.80	248.49	0.09
Dry Creek Trib	5682.44	Max WS	DCTrib-ULT-10yr	307.80	111.63	116.92		116.93	0.000206	0.91	489.14	230.54	0.09
Dry Creek Trib	5682.44	Max WS	DCTrib-ULT-100	529.76	111.63	118.04		118.05	0.000162	0.98	760.28	249.93	0.08
Dry Creek Trib	5618.96	Max WS	Pre10	284.09	110.98	116.51		116.70	0.003999	3.89	97.82	57.49	0.37
Dry Creek Trib	5618.96	Max WS	Pre100-DC-BFE	502.29	110.98	117.66		117.84	0.002963	4.06	168.71	64.61	0.34
Dry Creek Trib	5618.96	Max WS	DCTrib-ULT-10yr	307.48	110.98	116.74		116.91	0.003379	3.73	111.37	59.23	0.35
Dry Creek Trib	5618.96	Max WS	DCTrib-ULT-100	525.42	110.98	117.87		118.04	0.002616	3.93	182.20	65.65	0.32
Dry Creek Trib	5553.77	Max WS	Pre10	326.54	112.80	116.37		116.46	0.001721	2.43	144.89	64.36	0.25
Dry Creek Trib	5553.77	Max WS	Pre100-DC-BFE	577.56	112.80	117.53		117.65	0.001534	2.88	225.60	74.77	0.25
Dry Creek Trib	5553.77	Max WS	DCTrib-ULT-10yr	364.21	112.80	116.60		116.69	0.001612	2.48	160.03	66.71	0.25
Dry Creek Trib	5553.77	Max WS	DCTrib-ULT-100	629.70	112.80	117.72		117.85	0.001532	2.97	240.18	76.65	0.26
Dry Creek Trib	5479.88	Max WS	Pre10	326.79	110.81	116.24		116.33	0.001670	2.44	134.00	45.45	0.25
Dry Creek Trib	5479.88	Max WS	Pre100-DC-BFE	577.93	110.81	117.37		117.51	0.002200	3.00	192.42	59.00	0.29

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	5479.88	Max WS	DCTrib-ULT-10yr	364.70	110.81	116.47		116.57	0.001723	2.52	144.57	47.77	0.26
Dry Creek Trib	5479.88	Max WS	DCTrib-ULT-100	630.19	110.81	117.56		117.71	0.002274	3.09	203.94	61.96	0.30
Dry Creek Trib	5423.09	Max WS	Pre10	326.96	111.01	116.17		116.25	0.001557	2.80	162.56	66.70	0.25
Dry Creek Trib	5423.09	Max WS	Pre100-DC-BFE	578.37	111.01	117.29		117.41	0.001684	3.43	247.04	89.44	0.27
Dry Creek Trib	5423.09	Max WS	DCTrib-ULT-10yr	365.05	111.01	116.39		116.48	0.001529	2.88	178.11	69.76	0.25
Dry Creek Trib	5423.09	Max WS	DCTrib-ULT-100	630.86	111.01	117.48		117.61	0.001869	3.70	265.11	99.19	0.28
Dry Creek Trib	5275.52	Max WS	Pre10	327.24	110.57	115.67		115.85	0.003793	3.40	96.27	36.00	0.37
Dry Creek Trib	5275.52	Max WS	Pre100-DC-BFE	579.34	110.57	116.71		116.97	0.004794	4.03	144.75	59.00	0.42
Dry Creek Trib	5275.52	Max WS	DCTrib-ULT-10yr	365.70	110.57	115.87		116.06	0.004298	3.53	103.46	40.27	0.39
Dry Creek Trib	5275.52	Max WS	DCTrib-ULT-100	632.29	110.57	116.89		117.15	0.004675	4.14	155.52	63.51	0.42
Dry Creek Trib	5185.28	Max WS	Pre10	327.35	111.16	115.41		115.55	0.002856	3.11	115.33	61.12	0.33
Dry Creek Trib	5185.28	Max WS	Pre100-DC-BFE	579.88	111.16	116.46		116.65	0.002612	3.67	185.76	73.05	0.33
Dry Creek Trib	5185.28	Max WS	DCTrib-ULT-10yr	366.02	111.16	115.59		115.74	0.002826	3.22	126.35	62.78	0.33
Dry Creek Trib	5185.28	Max WS	DCTrib-ULT-100	633.01	111.16	116.63		116.83	0.002635	3.80	198.56	76.61	0.33
Dry Creek Trib	5105.36	Max WS	Pre10	327.62	110.83	115.28		115.38	0.001383	2.70	140.91	53.71	0.24
Dry Creek Trib	5105.36	Max WS	Pre100-DC-BFE	580.48	110.83	116.31		116.48	0.001753	3.54	203.50	67.86	0.28
Dry Creek Trib	5105.36	Max WS	DCTrib-ULT-10yr	366.50	110.83	115.45		115.57	0.001470	2.86	150.41	56.02	0.25
Dry Creek Trib	5105.36	Max WS	DCTrib-ULT-100	633.93	110.83	116.48		116.66	0.001822	3.69	215.05	69.72	0.28
Dry Creek Trib	5008.64	Max WS	Pre10	327.92	111.00	115.12		115.23	0.002012	2.70	137.27	65.49	0.28
Dry Creek Trib	5008.64	Max WS	Pre100-DC-BFE	581.20	111.00	116.15		116.30	0.002033	3.31	210.74	80.44	0.29
Dry Creek Trib	5008.64	Max WS	DCTrib-ULT-10yr	366.94	111.00	115.29		115.40	0.002041	2.82	148.33	67.10	0.28
Dry Creek Trib	5008.64	Max WS	DCTrib-ULT-100	635.01	111.00	116.31		116.47	0.002063	3.42	223.89	81.77	0.30
Dry Creek Trib	4899.84	Max WS	Pre10	327.96	110.75	114.49		114.79	0.007073	4.37	78.58	43.89	0.50
Dry Creek Trib	4899.84	Max WS	Pre100-DC-BFE	581.77	110.75	115.56		115.92	0.005943	5.01	132.51	58.30	0.47
Dry Creek Trib	4899.84	Max WS	DCTrib-ULT-10yr	366.75	110.75	114.64		114.96	0.007192	4.57	85.27	45.63	0.50
Dry Creek Trib	4899.84	Max WS	DCTrib-ULT-100	635.67	110.75	115.70		116.09	0.006035	5.19	141.28	61.11	0.48
Dry Creek Trib	4824.44	Max WS	Pre10	327.94	110.92	114.32		114.43	0.002179	2.66	130.56	66.91	0.29
Dry Creek Trib	4824.44	Max WS	Pre100-DC-BFE	582.32	110.92	115.46		115.59	0.001748	3.02	230.42	99.62	0.27
Dry Creek Trib	4824.44	Max WS	DCTrib-ULT-10yr	366.78	110.92	114.47		114.59	0.002236	2.79	141.74	78.87	0.29
Dry Creek Trib	4824.44	Max WS	DCTrib-ULT-100	636.50	110.92	115.62		115.75	0.001767	3.11	246.14	101.09	0.28
Dry Creek Trib	4744.51	Max WS	Pre10	327.84	111.08	114.02		114.17	0.005389	3.38	119.75	95.80	0.43
Dry Creek Trib	4744.51	Max WS	Pre100-DC-BFE	582.78	111.08	115.34		115.44	0.001958	2.88	257.82	112.27	0.28
Dry Creek Trib	4744.51	Max WS	DCTrib-ULT-10yr	366.34	111.08	114.21		114.35	0.004516	3.29	138.34	98.01	0.40
Dry Creek Trib	4744.51	Max WS	DCTrib-ULT-100	637.35	111.08	115.50		115.60	0.001932	2.95	275.48	113.82	0.28
Dry Creek Trib	4647.61	Max WS	Pre10	327.76	109.03	113.78		113.87	0.001391	2.36	148.88	63.85	0.23
Dry Creek Trib	4647.61	Max WS	Pre100-DC-BFE	583.50	109.03	115.20		115.30	0.001057	2.63	264.68	91.94	0.22
Dry Creek Trib	4647.61	Max WS	DCTrib-ULT-10yr	366.51	109.03	113.99		114.08	0.001381	2.46	163.48	72.44	0.24
Dry Creek Trib	4647.61	Max WS	DCTrib-ULT-100	638.36	109.03	115.35		115.46	0.001110	2.76	278.51	93.56	0.22
Dry Creek Trib	4565.34	Max WS	Pre10	327.95	109.08	113.71		113.76	0.001057	2.02	189.74	83.91	0.20
Dry Creek Trib	4565.34	Max WS	Pre100-DC-BFE	584.11	109.08	115.16		115.22	0.000761	2.22	321.60	99.22	0.18
Dry Creek Trib	4565.34	Max WS	DCTrib-ULT-10yr	367.00	109.08	113.93		113.98	0.001016	2.07	208.08	85.43	0.20
Dry Creek Trib	4565.34	Max WS	DCTrib-ULT-100	639.21	109.08	115.31		115.37	0.000805	2.33	336.26	100.71	0.19
Dry Creek Trib	4477.87	Max WS	Pre10	327.99	108.81	113.50		113.63	0.002340	3.05	124.49	54.96	0.30
Dry Creek Trib	4477.87	Max WS	Pre100-DC-BFE	584.76	108.81	114.99		115.13	0.001682	3.34	217.49	70.83	0.27
Dry Creek Trib	4477.87	Max WS	DCTrib-ULT-10yr	367.51	108.81	113.72		113.86	0.002270	3.14	136.84	56.98	0.30
Dry Creek Trib	4477.87	Max WS	DCTrib-ULT-100	640.13	108.81	115.12		115.28	0.001804	3.52	226.85	72.24	0.28
Dry Creek Trib	4378.67	Max WS	Pre10	327.81	108.62	112.86		113.15	0.008170	4.31	76.10	36.00	0.52
Dry Creek Trib	4378.67	Max WS	Pre100-DC-BFE	585.51	108.62	114.68		114.89	0.003432	3.70	166.65	70.12	0.36
Dry Creek Trib	4378.67	Max WS	DCTrib-ULT-10yr	367.61	108.62	113.07		113.37	0.007857	4.38	83.94	37.61	0.52
Dry Creek Trib	4378.67	Max WS	DCTrib-ULT-100	641.22	108.62	114.79		115.02	0.003670	3.91	174.04	71.74	0.38
Dry Creek Trib	4277.98	Max WS	Pre10	327.77	106.96	112.52		112.65	0.002049	2.80	117.58	40.89	0.28
Dry Creek Trib	4277.98	Max WS	Pre100-DC-BFE	586.27	106.96	114.54		114.66	0.001153	2.88	230.21	73.53	0.22
Dry Creek Trib	4277.98	Max WS	DCTrib-ULT-10yr	367.51	106.96	112.74		112.87	0.002097	2.94	126.53	43.60	0.28
Dry Creek Trib	4277.98	Max WS	DCTrib-ULT-100	642.34	106.96	114.63		114.77	0.001291	3.08	236.93	74.48	0.24
Dry Creek Trib	4174.26	Max WS	Pre10	328.04	106.84	112.42		112.49	0.001018	2.48	178.62	62.93	0.21
Dry Creek Trib	4174.26	Max WS	Pre100-DC-BFE	587.06	106.84	114.50		114.56	0.000638	2.53	348.88	98.96	0.18
Dry Creek Trib	4174.26	Max WS	DCTrib-ULT-10yr	368.10	106.84	112.64		112.71	0.001062	2.61	192.45	65.84	0.21
Dry Creek Trib	4174.26	Max WS	DCTrib-ULT-100	643.49	106.84	114.59		114.66	0.000721	2.72	357.54	100.43	0.19
Dry Creek Trib	4081.21	Max WS	Pre10	327.99	106.93	112.12		112.31	0.004002	3.74	114.96	86.31	0.38
Dry Creek Trib	4081.21	Max WS	Pre100-DC-BFE	587.63	106.93	114.44		114.50	0.000735	2.35	385.45	146.79	0.18
Dry Creek Trib	4081.21	Max WS	DCTrib-ULT-10yr	368.32	106.93	112.35		112.53	0.003545	3.69	135.14	92.08	0.36
Dry Creek Trib	4081.21	Max WS	DCTrib-ULT-100	644.53	106.93	114.52		114.58	0.000816	2.50	397.52	148.27	0.19
Dry Creek Trib	3997.08	Max WS	Pre10	327.97	106.77	111.92		112.03	0.002444	2.75	119.32	44.58	0.30
Dry Creek Trib	3997.08	Max WS	Pre100-DC-BFE	588.25	106.77	114.36		114.44	0.000725	2.28	315.15	119.13	0.18
Dry Creek Trib	3997.08	Max WS	DCTrib-ULT-10yr	368.53	106.77	112.14		112.26	0.002412	2.85	129.22	46.10	0.30
Dry Creek Trib	3997.08	Max WS	DCTrib-ULT-100	645.03	106.77	114.43		114.52	0.000820	2.45	323.68	120.19	0.19
Dry Creek Trib	3926.37	Max WS	Pre10	327.55	107.28	111.56		111.79	0.005085	3.94	88.84	47.07	0.43

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	3926.37	Max WS	Pre100-DC-BFE	588.54	107.28	114.29		114.39	0.001002	2.81	295.63	126.37	0.21
Dry Creek Trib	3926.37	Max WS	DCTrib-ULT-10yr	368.64	107.28	111.77		112.02	0.004829	4.05	99.15	49.23	0.42
Dry Creek Trib	3926.37	Max WS	DCTrib-ULT-100	645.17	107.28	114.35		114.47	0.001137	3.02	303.31	127.49	0.23
Dry Creek Trib	3862.49	Max WS	Pre10	327.74	106.46	111.40		111.55	0.002630	3.14	109.05	43.86	0.31
Dry Creek Trib	3862.49	Max WS	Pre100-DC-BFE	588.68	106.46	114.25		114.33	0.000697	2.50	319.21	126.48	0.18
Dry Creek Trib	3862.49	Max WS	DCTrib-ULT-10yr	368.66	106.46	111.61		111.78	0.002622	3.28	118.78	46.31	0.32
Dry Creek Trib	3862.49	Max WS	DCTrib-ULT-100	645.90	106.46	114.30		114.40	0.000803	2.70	326.06	127.86	0.19
Dry Creek Trib	3776.24	Max WS	Pre10	327.95	105.17	111.36		111.40	0.000455	1.53	233.15	85.46	0.14
Dry Creek Trib	3776.24	Max WS	Pre100-DC-BFE	589.68	105.17	114.25		114.28	0.000163	1.33	559.71	138.00	0.09
Dry Creek Trib	3776.24	Max WS	DCTrib-ULT-10yr	369.15	105.17	111.59		111.62	0.000468	1.61	252.47	88.77	0.14
Dry Creek Trib	3776.24	Max WS	DCTrib-ULT-100	646.90	105.17	114.31		114.33	0.000189	1.44	567.23	138.54	0.10
Dry Creek Trib	3690.59	Max WS	Pre10	327.95	105.83	111.19		111.31	0.002054	2.73	120.39	40.98	0.28
Dry Creek Trib	3690.59	Max WS	Pre100-DC-BFE	589.53	105.83	114.20		114.26	0.000486	2.09	356.31	114.95	0.15
Dry Creek Trib	3690.59	Max WS	DCTrib-ULT-10yr	369.61	105.83	111.40		111.53	0.002137	2.87	129.04	42.26	0.29
Dry Creek Trib	3690.59	Max WS	DCTrib-ULT-100	646.95	105.83	114.24		114.31	0.000565	2.27	361.47	115.53	0.16
Dry Creek Trib	3620.21	Max WS	Pre10	328.15	105.63	111.04		111.14	0.002621	2.57	127.66	55.90	0.30
Dry Creek Trib	3620.21	Max WS	Pre100-DC-BFE	590.06	105.63	114.19		114.22	0.000355	1.60	432.75	135.18	0.13
Dry Creek Trib	3620.21	Max WS	DCTrib-ULT-10yr	369.75	105.63	111.25		111.36	0.002599	2.65	139.76	58.25	0.30
Dry Creek Trib	3620.21	Max WS	DCTrib-ULT-100	647.78	105.63	114.23		114.27	0.000414	1.73	438.57	135.89	0.14
Dry Creek Trib	3517.19	Max WS	Pre10	328.25	104.82	110.91		110.97	0.000922	1.85	178.88	63.29	0.19
Dry Creek Trib	3517.19	Max WS	Pre100-DC-BFE	590.30	104.82	114.16		114.19	0.000222	1.47	463.17	115.07	0.10
Dry Creek Trib	3517.19	Max WS	DCTrib-ULT-10yr	370.31	104.82	111.13		111.18	0.000934	1.95	192.60	66.27	0.19
Dry Creek Trib	3517.19	Max WS	DCTrib-ULT-100	647.81	104.82	114.20		114.24	0.000262	1.60	467.58	116.38	0.11
Dry Creek Trib	3426.61	Max WS	Pre10	328.52	105.85	110.77		110.85	0.001966	2.23	147.43	65.47	0.26
Dry Creek Trib	3426.61	Max WS	Pre100-DC-BFE	590.99	105.85	114.15		114.17	0.000201	1.21	569.48	165.78	0.10
Dry Creek Trib	3426.61	Max WS	DCTrib-ULT-10yr	370.77	105.85	110.98		111.06	0.002036	2.29	161.58	70.58	0.27
Dry Creek Trib	3426.61	Max WS	DCTrib-ULT-100	648.88	105.85	114.19		114.21	0.000235	1.32	575.53	166.18	0.10
Dry Creek Trib	3351.95	Max WS	Pre10	328.62	106.47	110.18		110.48	0.009186	4.40	74.63	37.78	0.55
Dry Creek Trib	3351.95	Max WS	Pre100-DC-BFE	590.89	106.47	114.13		114.15	0.000309	1.47	514.20	171.18	0.12
Dry Creek Trib	3351.95	Max WS	DCTrib-ULT-10yr	370.91	106.47	110.38		110.70	0.009281	4.49	82.54	40.89	0.56
Dry Creek Trib	3351.95	Max WS	DCTrib-ULT-100	648.31	106.47	114.16		114.19	0.000362	1.59	519.74	171.88	0.13
Dry Creek Trib	3283.95	Max WS	Pre10	328.67	104.94	110.03		110.11	0.001396	2.34	140.54	44.39	0.23
Dry Creek Trib	3283.95	Max WS	Pre100-DC-BFE	590.65	104.94	114.12		114.14	0.000162	1.33	597.90	172.78	0.09
Dry Creek Trib	3283.95	Max WS	DCTrib-ULT-10yr	371.29	104.94	110.22		110.32	0.001532	2.49	149.40	46.20	0.24
Dry Creek Trib	3283.95	Max WS	DCTrib-ULT-100	647.42	104.94	114.15		114.17	0.000191	1.45	603.09	173.38	0.10
Dry Creek Trib	3198.18	Max WS	Pre10	328.76	106.27	109.65		109.83	0.005542	3.34	98.48	52.56	0.43
Dry Creek Trib	3198.18	Max WS	Pre100-DC-BFE	589.44	106.27	114.10		114.12	0.000227	1.18	511.68	150.21	0.10
Dry Creek Trib	3198.18	Max WS	DCTrib-ULT-10yr	371.55	106.27	109.85		110.03	0.005407	3.41	108.94	55.26	0.43
Dry Creek Trib	3198.18	Max WS	DCTrib-ULT-100	646.50	106.27	114.12		114.15	0.000267	1.29	515.84	161.91	0.11
Dry Creek Trib	3093.07	Max WS	Pre10	328.64	104.29	109.21		109.39	0.003042	3.40	98.11	37.57	0.34
Dry Creek Trib	3093.07	Max WS	Pre100-DC-BFE	580.00	104.29	114.06		114.10	0.000219	1.70	483.53	122.67	0.11
Dry Creek Trib	3093.07	Max WS	DCTrib-ULT-10yr	371.59	104.29	109.38		109.59	0.003245	3.63	104.73	40.22	0.35
Dry Creek Trib	3093.07	Max WS	DCTrib-ULT-100	640.44	104.29	114.08		114.13	0.000263	1.87	485.98	123.11	0.12
Dry Creek Trib	2973.97	Max WS	Pre10	328.73	104.33	109.03		109.11	0.001748	2.31	142.25	55.11	0.25
Dry Creek Trib	2973.97	Max WS	Pre100-DC-BFE	563.33	104.33	114.06		114.07	0.000100	1.12	630.61	159.46	0.07
Dry Creek Trib	2973.97	Max WS	DCTrib-ULT-10yr	371.49	104.33	109.19		109.29	0.001891	2.45	151.55	57.01	0.27
Dry Creek Trib	2973.97	Max WS	DCTrib-ULT-100	639.07	104.33	114.07		114.10	0.000127	1.26	633.49	160.09	0.08
Dry Creek Trib	2913.07	Max WS	Pre10	328.88	104.98	109.00		109.03	0.000781	1.85	254.73	132.53	0.18
Dry Creek Trib	2913.07	Max WS	Pre100-DC-BFE	583.32	104.98	114.06		114.07	0.000035	0.73	1329.43	304.85	0.04
Dry Creek Trib	2913.07	Max WS	DCTrib-ULT-10yr	371.81	104.98	109.17		109.21	0.000814	1.95	277.49	142.03	0.18
Dry Creek Trib	2913.07	Max WS	DCTrib-ULT-100	642.82	104.98	114.08		114.09	0.000042	0.80	1335.29	305.17	0.05
Dry Creek Trib	2833.94	Max WS	Pre10	328.90	104.72	108.90		108.96	0.001152	2.14	192.40	85.71	0.21
Dry Creek Trib	2833.94	Max WS	Pre100-DC-BFE	585.67	104.72	114.06		114.06	0.000023	0.58	1694.45	387.53	0.04
Dry Creek Trib	2833.94	Max WS	DCTrib-ULT-10yr	372.18	104.72	109.07		109.13	0.001205	2.26	206.66	89.73	0.22
Dry Creek Trib	2833.94	Max WS	DCTrib-ULT-100	643.81	104.72	114.08		114.08	0.000027	0.63	1701.78	387.81	0.04
Dry Creek Trib	2749.06	Max WS	Pre10	329.15	104.29	108.75		108.84	0.001808	2.41	139.11	61.48	0.26
Dry Creek Trib	2749.06	Max WS	Pre100-DC-BFE	550.57	104.29	114.05		114.06	0.000080	1.05	680.57	143.04	0.07
Dry Creek Trib	2749.06	Max WS	DCTrib-ULT-10yr	372.36	104.29	108.90		109.00	0.001913	2.58	148.68	64.27	0.27
Dry Creek Trib	2749.06	Max WS	DCTrib-ULT-100	638.56	104.29	114.06		114.08	0.000106	1.21	682.81	143.37	0.08
Dry Creek Trib	2584	Max WS	Pre10	329.26	105.16	108.56		108.61	0.001191	1.89	189.27	91.04	0.21
Dry Creek Trib	2584	Max WS	Pre100-DC-BFE	555.37	105.16	114.05		114.05	0.000035	0.70	1081.37	218.46	0.04
Dry Creek Trib	2584	Max WS	DCTrib-ULT-10yr	372.62	105.16	108.70		108.76	0.001246	2.01	202.67	92.35	0.22
Dry Creek Trib	2584	Max WS	DCTrib-ULT-100	643.17	105.16	114.06		114.07	0.000047	0.81	1084.74	218.61	0.05
Dry Creek Trib	2510.2	Max WS	Pre10	329.36	103.89	108.47		108.52	0.001204	1.91	180.60	92.70	0.21
Dry Creek Trib	2510.2	Max WS	Pre100-DC-BFE	552.03	103.89	114.04		114.05	0.000030	0.66	1161.55	242.53	0.04
Dry Creek Trib	2510.2	Max WS	DCTrib-ULT-10yr	373.00	103.89	108.61		108.67	0.001271	2.04	194.06	95.75	0.22
Dry Creek Trib	2510.2	Max WS	DCTrib-ULT-100	640.83	103.89	114.06		114.06	0.000041	0.76	1165.14	242.74	0.05

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	2416.71	Max WS	Pre10	329.52	105.06	108.07		108.23	0.006527	3.42	113.66	96.57	0.46
Dry Creek Trib	2416.71	Max WS	Pre100-DC-BFE	548.61	105.06	114.04		114.04	0.000030	0.63	1250.48	257.08	0.04
Dry Creek Trib	2416.71	Max WS	DCTrib-ULT-10yr	373.31	105.06	108.23		108.39	0.005809	3.43	130.12	101.75	0.44
Dry Creek Trib	2416.71	Max WS	DCTrib-ULT-100	642.09	105.06	114.06		114.06	0.000041	0.74	1254.14	257.58	0.05
Dry Creek Trib	2283.78	Max WS	Pre10	329.67	103.67	107.48		107.62	0.003549	2.99	110.60	52.13	0.35
Dry Creek Trib	2283.78	Max WS	Pre100-DC-BFE	530.29	103.67	114.03		114.04	0.000046	0.84	898.89	199.30	0.05
Dry Creek Trib	2283.78	Max WS	DCTrib-ULT-10yr	373.84	103.67	107.66		107.82	0.003503	3.13	120.34	54.12	0.35
Dry Creek Trib	2283.78	Max WS	DCTrib-ULT-100	636.57	103.67	114.04		114.05	0.000065	1.01	901.05	199.90	0.06
Dry Creek Trib	2204.83	Max WS	Pre10	329.77	103.53	107.30		107.40	0.002358	2.49	136.96	69.42	0.29
Dry Creek Trib	2204.83	Max WS	Pre100-DC-BFE	525.39	103.53	114.03		114.04	0.000035	0.76	911.71	171.85	0.04
Dry Creek Trib	2204.83	Max WS	DCTrib-ULT-10yr	374.11	103.53	107.50		107.60	0.002287	2.59	150.57	71.32	0.29
Dry Creek Trib	2204.83	Max WS	DCTrib-ULT-100	633.79	103.53	114.04		114.05	0.000051	0.92	913.39	172.11	0.05
Dry Creek Trib	2121.19	Max WS	Pre10	330.03	103.14	107.18		107.25	0.001277	2.08	160.44	64.84	0.22
Dry Creek Trib	2121.19	Max WS	Pre100-DC-BFE	537.03	103.14	114.03		114.03	0.000018	0.56	1340.99	229.41	0.03
Dry Creek Trib	2121.19	Max WS	DCTrib-ULT-10yr	374.54	103.14	107.38		107.45	0.001307	2.20	173.43	69.95	0.23
Dry Creek Trib	2121.19	Max WS	DCTrib-ULT-100	638.89	103.14	114.04		114.04	0.000025	0.66	1343.38	229.56	0.04
Dry Creek Trib	2047.12	Max WS	Pre10	330.15	102.89	106.92		107.08	0.004345	3.19	103.62	49.08	0.39
Dry Creek Trib	2047.12	Max WS	Pre100-DC-BFE	537.68	102.89	114.03		114.03	0.000017	0.53	1433.20	254.24	0.03
Dry Creek Trib	2047.12	Max WS	DCTrib-ULT-10yr	374.92	102.89	107.09		107.27	0.004339	3.34	112.35	50.26	0.39
Dry Creek Trib	2047.12	Max WS	DCTrib-ULT-100	639.95	102.89	114.04		114.04	0.000024	0.63	1435.77	254.42	0.04
Dry Creek Trib	1961.65	Max WS	Pre10	330.29	102.88	106.54		106.72	0.004887	3.42	99.11	61.39	0.41
Dry Creek Trib	1961.65	Max WS	Pre100-DC-BFE	538.43	102.88	114.03		114.03	0.000014	0.50	1559.54	256.49	0.03
Dry Creek Trib	1961.65	Max WS	DCTrib-ULT-10yr	375.35	102.88	106.73		106.92	0.004692	3.54	111.07	65.08	0.41
Dry Creek Trib	1961.65	Max WS	DCTrib-ULT-100	637.21	102.88	114.04		114.04	0.000020	0.59	1562.06	256.60	0.03
Dry Creek Trib	1846.6	Max WS	Pre10	330.51	102.72	106.18		106.28	0.002976	2.45	134.65	71.55	0.32
Dry Creek Trib	1846.6	Max WS	Pre100-DC-BFE	539.45	102.72	114.02		114.03	0.000012	0.46	1541.88	250.68	0.03
Dry Creek Trib	1846.6	Max WS	DCTrib-ULT-10yr	375.93	102.72	106.42		106.51	0.002750	2.47	151.97	75.72	0.31
Dry Creek Trib	1846.6	Max WS	DCTrib-ULT-100	638.85	102.72	114.03		114.04	0.000017	0.55	1544.19	250.84	0.03
Dry Creek Trib	1760.2	Max WS	Pre10	330.65	102.08	105.99		106.07	0.001909	2.30	143.51	59.83	0.26
Dry Creek Trib	1760.2	Max WS	Pre100-DC-BFE	523.26	102.08	114.02		114.03	0.000020	0.61	1094.63	183.58	0.03
Dry Creek Trib	1760.2	Max WS	DCTrib-ULT-10yr	376.20	102.08	106.24		106.33	0.001869	2.37	158.77	62.46	0.26
Dry Creek Trib	1760.2	Max WS	DCTrib-ULT-100	636.01	102.08	114.03		114.04	0.000029	0.74	1096.08	183.76	0.04
Dry Creek Trib	1646.18	Max WS	Pre10	330.98	102.20	105.87		105.91	0.000955	1.62	203.99	86.12	0.19
Dry Creek Trib	1646.18	Max WS	Pre100-DC-BFE	530.24	102.20	114.02		114.02	0.000010	0.44	1535.84	241.60	0.02
Dry Creek Trib	1646.18	Max WS	DCTrib-ULT-10yr	376.79	102.20	106.13		106.17	0.000909	1.66	226.49	88.73	0.18
Dry Creek Trib	1646.18	Max WS	DCTrib-ULT-100	637.68	102.20	114.03		114.03	0.000014	0.53	1537.80	241.78	0.03
Dry Creek Trib	1553.96	Max WS	Pre10	330.93	101.85	105.80		105.84	0.000725	1.64	213.48	110.79	0.17
Dry Creek Trib	1553.96	Max WS	Pre100-DC-BFE	535.89	101.85	114.02		114.02	0.000007	0.38	1919.26	257.79	0.02
Dry Creek Trib	1553.96	Max WS	DCTrib-ULT-10yr	376.38	101.85	106.06		106.11	0.000685	1.69	244.68	125.95	0.17
Dry Creek Trib	1553.96	Max WS	DCTrib-ULT-100	637.67	101.85	114.03		114.03	0.000009	0.45	1921.37	257.90	0.02
Dry Creek Trib	1451.16	Max WS	Pre10	330.88	101.85	105.67		105.74	0.001306	2.15	160.81	80.50	0.22
Dry Creek Trib	1451.16	Max WS	Pre100-DC-BFE	535.87	101.85	114.02		114.02	0.000008	0.42	1858.05	276.46	0.02
Dry Creek Trib	1451.16	Max WS	DCTrib-ULT-10yr	375.11	101.85	105.94		106.01	0.001212	2.20	185.90	99.14	0.22
Dry Creek Trib	1451.16	Max WS	DCTrib-ULT-100	633.39	101.85	114.03		114.03	0.000011	0.50	1860.24	276.60	0.03
Dry Creek Trib	1386.3	Max WS	Pre10	330.87	101.74	105.66		105.68	0.000367	1.25	265.25	82.44	0.12
Dry Creek Trib	1386.3	Max WS	Pre100-DC-BFE	524.16	101.74	114.02		114.02	0.000010	0.49	1314.25	189.16	0.03
Dry Creek Trib	1386.3	Max WS	DCTrib-ULT-10yr	375.08	101.74	105.93		105.96	0.000362	1.31	287.78	84.18	0.12
Dry Creek Trib	1386.3	Max WS	DCTrib-ULT-100	633.35	101.74	114.02		114.03	0.000015	0.59	1315.61	189.38	0.03
Dry Creek Trib	1316.1	Max WS	Pre10	376.75	101.72	105.56		105.62	0.001198	2.14	184.15	70.70	0.22
Dry Creek Trib	1316.1	Max WS	Pre100-DC-BFE	655.98	101.72	114.01		114.02	0.000025	0.74	1169.64	171.12	0.04
Dry Creek Trib	1316.1	Max WS	DCTrib-ULT-10yr	449.47	101.72	105.81		105.89	0.001297	2.35	202.20	73.60	0.23
Dry Creek Trib	1316.1	Max WS	DCTrib-ULT-100	851.23	101.72	114.01		114.02	0.000041	0.96	1170.10	171.15	0.05
Dry Creek Trib	1251.98	Max WS	Pre10	376.49	102.21	105.45		105.53	0.001753	2.37	166.74	75.16	0.26
Dry Creek Trib	1251.98	Max WS	Pre100-DC-BFE	643.46	102.21	114.01		114.01	0.000023	0.71	1201.24	184.46	0.04
Dry Creek Trib	1251.98	Max WS	DCTrib-ULT-10yr	449.46	102.21	105.69		105.79	0.001835	2.57	185.19	77.71	0.27
Dry Creek Trib	1251.98	Max WS	DCTrib-ULT-100	509.72	102.21	114.01		114.01	0.000015	0.57	1201.68	184.51	0.03
Dry Creek Trib	1184.63	Max WS	Pre10	376.47	101.72	105.38		105.44	0.001175	1.94	196.65	80.23	0.21
Dry Creek Trib	1184.63	Max WS	Pre100-DC-BFE	643.44	101.72	114.01		114.01	0.000018	0.62	1303.68	196.49	0.03
Dry Creek Trib	1184.63	Max WS	DCTrib-ULT-10yr	449.21	101.72	105.62		105.69	0.001257	2.12	215.99	82.02	0.22
Dry Creek Trib	1184.63	Max WS	DCTrib-ULT-100	622.75	101.72	114.01		114.01	0.000017	0.60	1304.08	196.53	0.03
Dry Creek Trib	1089.34	Max WS	Pre10	375.93	102.51	105.19		105.27	0.002509	2.34	167.44	96.10	0.29
Dry Creek Trib	1089.34	Max WS	Pre100-DC-BFE	649.82	102.51	114.01		114.01	0.000017	0.59	1377.11	194.57	0.03
Dry Creek Trib	1089.34	Max WS	DCTrib-ULT-10yr	448.94	102.51	105.43		105.53	0.002377	2.46	191.45	98.71	0.29
Dry Creek Trib	1089.34	Max WS	DCTrib-ULT-100	493.53	102.51	114.01		114.01	0.000010	0.45	1377.44	194.59	0.02
Dry Creek Trib	995.38	Max WS	Pre10	375.64	101.68	104.96		105.07	0.001990	2.58	146.44	55.60	0.27
Dry Creek Trib	995.38	Max WS	Pre100-DC-BFE	306.33	101.68	114.00		114.00	0.000006	0.37	1077.32	158.24	0.02
Dry Creek Trib	995.38	Max WS	DCTrib-ULT-10yr	448.66	101.68	105.19		105.32	0.002187	2.84	159.31	57.41	0.29
Dry Creek Trib	995.38	Max WS	DCTrib-ULT-100	408.62	101.68	114.00		114.01	0.000011	0.50	1077.55	158.27	0.03

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	914.19	Max WS	Pre10	375.33	101.54	104.89		104.95	0.000991	2.00	205.67	85.72	0.20
Dry Creek Trib	914.19	Max WS	Pre100-DC-BFE	306.33	101.54	114.00		114.00	0.000004	0.30	1470.13	222.57	0.01
Dry Creek Trib	914.19	Max WS	DCTrib-ULT-10yr	448.34	101.54	105.11		105.18	0.001100	2.20	225.04	88.72	0.21
Dry Creek Trib	914.19	Max WS	DCTrib-ULT-100	425.85	101.54	114.00		114.00	0.000007	0.41	1470.40	222.61	0.02
Dry Creek Trib	838.37	Max WS	Pre10	375.29	101.53	104.85		104.88	0.000821	1.60	289.28	162.28	0.18
Dry Creek Trib	838.37	Max WS	Pre100-DC-BFE	643.42	101.53	114.00		114.00	0.000007	0.39	2219.54	276.21	0.02
Dry Creek Trib	838.37	Max WS	DCTrib-ULT-10yr	448.30	101.53	105.07		105.11	0.000834	1.70	325.81	165.50	0.18
Dry Creek Trib	838.37	Max WS	DCTrib-ULT-100	477.02	101.53	114.00		114.00	0.000004	0.29	2219.76	276.25	0.02
Dry Creek Trib	755.74	Max WS	Pre10	375.02	101.54	104.79		104.82	0.000687	1.57	304.92	159.19	0.16
Dry Creek Trib	755.74	Max WS	Pre100-DC-BFE	643.41	101.54	114.00		114.00	0.000005	0.34	2850.62	400.41	0.02
Dry Creek Trib	755.74	Max WS	DCTrib-ULT-10yr	448.02	101.54	105.01		105.04	0.000727	1.70	340.25	165.36	0.17
Dry Creek Trib	755.74	Max WS	DCTrib-ULT-100	509.82	101.54	114.00		114.00	0.000003	0.27	2850.82	400.42	0.01
Dry Creek Trib	655.85	Max WS	Pre10	374.98	101.67	104.72		104.76	0.000652	1.53	265.66	114.21	0.16
Dry Creek Trib	655.85	Max WS	Pre100-DC-BFE	636.66	101.67	114.00		114.00	0.000005	0.35	2841.54	483.66	0.02
Dry Creek Trib	655.85	Max WS	DCTrib-ULT-10yr	448.00	101.67	104.93		104.97	0.000724	1.69	289.80	117.76	0.17
Dry Creek Trib	655.85	Max WS	DCTrib-ULT-100	460.11	101.67	114.00		114.00	0.000003	0.26	2841.73	483.68	0.01
Dry Creek Trib	563.63	Max WS	Pre10	374.93	101.75	104.68		104.71	0.000529	1.34	324.32	160.47	0.14
Dry Creek Trib	563.63	Max WS	Pre100-DC-BFE	643.38	101.75	114.00		114.00	0.000004	0.30	3362.42	541.83	0.02
Dry Creek Trib	563.63	Max WS	DCTrib-ULT-10yr	447.96	101.75	104.89		104.91	0.000578	1.47	358.21	168.89	0.15
Dry Creek Trib	563.63	Max WS	DCTrib-ULT-100	540.87	101.75	114.00		114.00	0.000003	0.25	3362.47	541.83	0.01
Dry Creek Trib	466	Max WS	Pre10	374.84	101.78	104.60	103.15	104.63	0.001093	1.67	274.96	181.00	0.20
Dry Creek Trib	466	Max WS	Pre100-DC-BFE	16.72	101.78	114.00	102.06	114.00	0.000000	0.01	3336.83	550.90	0.00
Dry Creek Trib	466	Max WS	DCTrib-ULT-10yr	447.90	101.78	104.80	103.28	104.84	0.001090	1.77	312.14	184.98	0.20
Dry Creek Trib	466	Max WS	DCTrib-ULT-100	23.24	101.78	114.00	102.10	114.00	0.000000	0.01	3336.83	550.90	0.00

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	11061.63	Max WS	DCTrib-ULT-woBV-10yr	204.62	134.22	137.14		137.17	0.001216	1.33	153.45	104.47	0.19
Dry Creek Trib	11061.63	Max WS	DCTrib-ULT-10yr	204.62	134.22	137.14		137.17	0.001216	1.33	153.45	104.47	0.19
Dry Creek Trib	11061.63	Max WS	DC trib-ULT-woBV-100yr-BFE	368.52	134.22	138.66		138.68	0.000401	1.12	328.21	125.78	0.12
Dry Creek Trib	11061.63	Max WS	DCTrib-ULT-100	368.52	134.22	138.66		138.68	0.000401	1.12	328.23	125.78	0.12
Dry Creek Trib	11016.93	Max WS	DCTrib-ULT-woBV-10yr	204.59	133.48	137.11		137.13	0.000550	0.99	205.79	119.83	0.13
Dry Creek Trib	11016.93	Max WS	DCTrib-ULT-10yr	204.59	133.48	137.11		137.13	0.000550	0.99	205.80	119.83	0.13
Dry Creek Trib	11016.93	Max WS	DC trib-ULT-woBV-100yr-BFE	368.43	133.48	138.65		138.67	0.000209	0.93	399.59	132.68	0.09
Dry Creek Trib	11016.93	Max WS	DCTrib-ULT-100	368.44	133.48	138.65		138.67	0.000209	0.93	399.60	132.68	0.09
Dry Creek Trib	10935.1	Max WS	DCTrib-ULT-woBV-10yr	204.55	133.65	136.98		137.06	0.001342	2.22	92.03	30.38	0.22
Dry Creek Trib	10935.1	Max WS	DCTrib-ULT-10yr	204.55	133.65	136.98		137.06	0.001341	2.22	92.04	30.38	0.22
Dry Creek Trib	10935.1	Max WS	DC trib-ULT-woBV-100yr-BFE	368.23	133.65	138.52		138.63	0.001143	2.67	138.20	170.01	0.22
Dry Creek Trib	10935.1	Max WS	DCTrib-ULT-100	368.24	133.65	138.52		138.63	0.001143	2.67	138.21	170.02	0.22
Dry Creek Trib	10910.99			Culvert									
Dry Creek Trib	10886.88	Max WS	DCTrib-ULT-woBV-10yr	204.55	132.30	136.71		136.77	0.001094	1.97	103.96	34.78	0.20
Dry Creek Trib	10886.88	Max WS	DCTrib-ULT-10yr	204.55	132.30	136.71		136.77	0.001094	1.97	103.96	34.78	0.20
Dry Creek Trib	10886.88	Max WS	DC trib-ULT-woBV-100yr-BFE	367.65	132.30	137.73		137.82	0.001165	2.46	181.99	108.62	0.22
Dry Creek Trib	10886.88	Max WS	DCTrib-ULT-100	367.66	132.30	137.73		137.82	0.001165	2.46	181.99	108.62	0.22
Dry Creek Trib	10817.21	Max WS	DCTrib-ULT-woBV-10yr	204.48	131.78	136.55		136.67	0.002055	2.79	74.20	27.45	0.27
Dry Creek Trib	10817.21	Max WS	DCTrib-ULT-10yr	204.48	131.78	136.55		136.67	0.002055	2.79	74.20	27.45	0.27
Dry Creek Trib	10817.21	Max WS	DC trib-ULT-woBV-100yr-BFE	367.35	131.78	137.56		137.72	0.002177	3.44	134.81	72.69	0.29
Dry Creek Trib	10817.21	Max WS	DCTrib-ULT-100	367.35	131.78	137.56		137.72	0.002177	3.44	134.81	72.69	0.29
Dry Creek Trib	10749.58	Max WS	DCTrib-ULT-woBV-10yr	204.84	131.83	136.35		136.49	0.003325	3.01	68.12	109.66	0.34
Dry Creek Trib	10749.58	Max WS	DCTrib-ULT-10yr	204.84	131.83	136.35		136.49	0.003325	3.01	68.12	109.66	0.34
Dry Creek Trib	10749.58	Max WS	DC trib-ULT-woBV-100yr-BFE	367.75	131.83	137.29		137.52	0.003870	3.79	98.27	192.59	0.38
Dry Creek Trib	10749.58	Max WS	DCTrib-ULT-100	367.75	131.83	137.29		137.52	0.003870	3.79	98.27	192.59	0.38
Dry Creek Trib	10681.32	Max WS	DCTrib-ULT-woBV-10yr	205.17	131.87	136.02		136.22	0.004714	3.55	57.77	101.77	0.40
Dry Creek Trib	10681.32	Max WS	DCTrib-ULT-10yr	205.17	131.87	136.02		136.22	0.004714	3.55	57.77	101.77	0.40
Dry Creek Trib	10681.32	Max WS	DC trib-ULT-woBV-100yr-BFE	368.38	131.87	136.91		137.21	0.005436	4.49	88.25	180.12	0.44
Dry Creek Trib	10681.32	Max WS	DCTrib-ULT-100	368.39	131.87	136.91		137.21	0.005436	4.49	88.25	180.14	0.44
Dry Creek Trib	10599.74	Max WS	DCTrib-ULT-woBV-10yr	205.63	132.28	135.41		135.67	0.009028	4.13	49.78	32.08	0.54
Dry Creek Trib	10599.74	Max WS	DCTrib-ULT-10yr	205.63	132.28	135.41		135.67	0.009028	4.13	49.78	32.08	0.54
Dry Creek Trib	10599.74	Max WS	DC trib-ULT-woBV-100yr-BFE	369.16	132.28	136.10		136.53	0.011512	5.24	70.43	71.03	0.62
Dry Creek Trib	10599.74	Max WS	DCTrib-ULT-100	369.17	132.28	136.10		136.53	0.011512	5.24	70.43	71.03	0.62
Dry Creek Trib	10498.01	Max WS	DCTrib-ULT-woBV-10yr	206.20	131.93	134.89		135.02	0.003992	2.88	71.97	52.04	0.37
Dry Creek Trib	10498.01	Max WS	DCTrib-ULT-10yr	206.20	131.93	134.89		135.02	0.003992	2.88	71.97	52.04	0.37
Dry Creek Trib	10498.01	Max WS	DC trib-ULT-woBV-100yr-BFE	370.17	131.93	135.47		135.69	0.005071	3.87	103.77	90.67	0.43
Dry Creek Trib	10498.01	Max WS	DCTrib-ULT-100	370.18	131.93	135.47		135.69	0.005071	3.87	103.77	90.67	0.43
Dry Creek Trib	10420.34	Max WS	DCTrib-ULT-woBV-10yr	206.62	131.97	134.50		134.68	0.005683	3.66	73.35	64.44	0.44
Dry Creek Trib	10420.34	Max WS	DCTrib-ULT-10yr	206.63	131.97	134.50		134.68	0.005684	3.66	73.35	64.44	0.44
Dry Creek Trib	10420.34	Max WS	DC trib-ULT-woBV-100yr-BFE	370.91	131.97	134.97		135.24	0.007536	4.82	115.35	106.79	0.53
Dry Creek Trib	10420.34	Max WS	DCTrib-ULT-100	370.92	131.97	134.97		135.24	0.007536	4.82	115.35	106.79	0.53
Dry Creek Trib	10337.8	Max WS	DCTrib-ULT-woBV-10yr	206.86	132.26	134.13		134.22	0.005516	2.81	100.52	116.47	0.41
Dry Creek Trib	10337.8	Max WS	DCTrib-ULT-10yr	206.83	132.26	134.13		134.22	0.005511	2.81	100.54	116.48	0.41
Dry Creek Trib	10337.8	Max WS	DC trib-ULT-woBV-100yr-BFE	371.68	132.26	134.46		134.60	0.007143	3.67	140.31	126.75	0.49
Dry Creek Trib	10337.8	Max WS	DCTrib-ULT-100	371.69	132.26	134.46		134.60	0.007143	3.67	140.31	126.75	0.49
Dry Creek Trib	10253.75	Max WS	DCTrib-ULT-woBV-10yr	168.74	131.94	133.57		133.62	0.004907	2.01	107.01	157.69	0.36
Dry Creek Trib	10253.75	Max WS	DCTrib-ULT-10yr	168.75	131.94	133.57		133.62	0.004911	2.01	107.00	157.69	0.36
Dry Creek Trib	10253.75	Max WS	DC trib-ULT-woBV-100yr-BFE	372.46	131.94	133.86		133.97	0.008121	3.08	152.36	161.59	0.49
Dry Creek Trib	10253.75	Max WS	DCTrib-ULT-100	372.47	131.94	133.86		133.97	0.008119	3.08	152.38	161.60	0.49
Dry Creek Trib	10186.61	Max WS	DCTrib-ULT-woBV-10yr	6.17	131.56	133.43		133.43	0.000001	0.04	203.48	206.04	0.01
Dry Creek Trib	10186.61	Max WS	DCTrib-ULT-10yr	6.17	131.56	133.43		133.43	0.000001	0.04	203.48	206.04	0.01
Dry Creek Trib	10186.61	Max WS	DC trib-ULT-woBV-100yr-BFE	371.46	131.56	133.50		133.55	0.003580	2.05	217.44	213.35	0.32
Dry Creek Trib	10186.61	Max WS	DCTrib-ULT-100	371.47	131.56	133.50		133.55	0.003579	2.05	217.46	213.35	0.32
Dry Creek Trib	10087.22	Max WS	DCTrib-ULT-woBV-10yr	153.89	131.60	133.35		133.35	0.000179	0.51	311.65	197.88	0.07
Dry Creek Trib	10087.22	Max WS	DCTrib-ULT-10yr	153.90	131.60	133.35		133.35	0.000179	0.51	311.65	197.88	0.07
Dry Creek Trib	10087.22	Max WS	DC trib-ULT-woBV-100yr-BFE	145.80	131.60	133.45		133.45	0.000133	0.46	332.26	200.80	0.07
Dry Creek Trib	10087.22	Max WS	DCTrib-ULT-100	145.73	131.60	133.45		133.45	0.000133	0.46	332.14	200.78	0.07
Dry Creek Trib	10016.43	Max WS	DCTrib-ULT-woBV-10yr	148.45	130.18	133.33		133.34	0.000148	0.67	252.73	146.32	0.07
Dry Creek Trib	10016.43	Max WS	DCTrib-ULT-10yr	148.47	130.18	133.33		133.34	0.000148	0.67	252.74	146.32	0.07
Dry Creek Trib	10016.43	Max WS	DC trib-ULT-woBV-100yr-BFE	126.93	130.18	133.44		133.44	0.000092	0.54	268.86	150.82	0.06
Dry Creek Trib	10016.43	Max WS	DCTrib-ULT-100	126.87	130.18	133.44		133.44	0.000092	0.54	268.77	150.80	0.06
Dry Creek Trib	9935.11	Max WS	DCTrib-ULT-woBV-10yr	139.47	129.44	133.33		133.33	0.000044	0.40	535.38	374.18	0.04
Dry Creek Trib	9935.11	Max WS	DCTrib-ULT-10yr	139.49	129.44	133.33		133.33	0.000044	0.40	535.38	374.18	0.04
Dry Creek Trib	9935.11	Max WS	DC trib-ULT-woBV-100yr-BFE	96.15	129.44	133.44		133.44	0.000017	0.25	577.54	393.15	0.03
Dry Creek Trib	9935.11	Max WS	DCTrib-ULT-100	96.09	129.44	133.44		133.44	0.000017	0.25	577.30	392.95	0.03
Dry Creek Trib	9841.26	Max WS	DCTrib-ULT-woBV-10yr	405.38	129.40	132.59	132.63	133.68	0.044478	8.36	48.46	145.41	1.17
Dry Creek Trib	9841.26	Max WS	DCTrib-ULT-10yr	405.96	129.40	132.59	132.63	133.68	0.044531	8.37	48.50	145.46	1.17
Dry Creek Trib	9841.26	Max WS	DC trib-ULT-woBV-100yr-BFE	436.24	129.40	133.03		133.07	0.001713	1.91	280.98	167.20	0.24
Dry Creek Trib	9841.26	Max WS	DCTrib-ULT-100	436.25	129.40	133.03		133.07	0.001712	1.91	281.04	167.22	0.24
Dry Creek Trib	9764.85	Max WS	DCTrib-ULT-woBV-10yr	348.15	129.40	132.41		132.46	0.001377	1.82	211.12	120.77	0.22
Dry Creek Trib	9764.85	Max WS	DCTrib-ULT-10yr	348.56	129.40	132.41		132.46	0.001376	1.82	211.35	120.81	0.22

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	9764.85	Max WS	DC trib-ULT-woBV-100yr-BFE	436.20	129.40	132.92		132.97	0.000996	1.79	275.97	132.63	0.19
Dry Creek Trib	9764.85	Max WS	DCTrib-ULT-100	436.21	129.40	132.92		132.97	0.000996	1.79	276.02	132.64	0.19
Dry Creek Trib	9660.93	Max WS	DCTrib-ULT-woBV-10yr	329.97	126.73	132.34		132.37	0.000539	1.81	287.41	127.13	0.15
Dry Creek Trib	9660.93	Max WS	DCTrib-ULT-10yr	330.30	126.73	132.34		132.37	0.000539	1.81	287.65	127.17	0.15
Dry Creek Trib	9660.93	Max WS	DC trib-ULT-woBV-100yr-BFE	437.66	126.73	132.86		132.89	0.000534	1.94	356.32	137.87	0.15
Dry Creek Trib	9660.93	Max WS	DCTrib-ULT-100	437.68	126.73	132.86		132.89	0.000534	1.94	356.39	137.88	0.15
Dry Creek Trib	9592.92	Max WS	DCTrib-ULT-woBV-10yr	318.17	126.42	132.19		132.29	0.001974	2.98	154.94	100.06	0.28
Dry Creek Trib	9592.92	Max WS	DCTrib-ULT-10yr	318.45	126.42	132.19		132.30	0.001971	2.98	155.14	100.13	0.28
Dry Creek Trib	9592.92	Max WS	DC trib-ULT-woBV-100yr-BFE	439.00	126.42	132.71		132.82	0.001931	3.22	212.98	132.34	0.28
Dry Creek Trib	9592.92	Max WS	DCTrib-ULT-100	439.01	126.42	132.71		132.82	0.001930	3.22	213.04	132.40	0.28
Dry Creek Trib	9534.07	Max WS	DCTrib-ULT-woBV-10yr	318.24	126.35	132.14		132.20	0.000976	2.11	202.03	118.01	0.20
Dry Creek Trib	9534.07	Max WS	DCTrib-ULT-10yr	318.51	126.35	132.14		132.20	0.000975	2.11	202.28	118.08	0.20
Dry Creek Trib	9534.07	Max WS	DC trib-ULT-woBV-100yr-BFE	439.92	126.35	132.65		132.72	0.000987	2.32	267.14	136.36	0.20
Dry Creek Trib	9534.07	Max WS	DCTrib-ULT-100	439.94	126.35	132.65		132.72	0.000987	2.32	267.21	136.38	0.20
Dry Creek Trib	9429.91	Max WS	DCTrib-ULT-woBV-10yr	305.73	125.97	131.79		131.96	0.004490	3.49	109.75	100.98	0.39
Dry Creek Trib	9429.91	Max WS	DCTrib-ULT-10yr	305.99	125.97	131.79		131.96	0.004477	3.48	110.02	101.57	0.39
Dry Creek Trib	9429.91	Max WS	DC trib-ULT-woBV-100yr-BFE	441.38	125.97	132.39		132.53	0.003217	3.41	182.70	131.82	0.34
Dry Creek Trib	9429.91	Max WS	DCTrib-ULT-100	441.40	125.97	132.39		132.53	0.003213	3.40	182.81	131.85	0.34
Dry Creek Trib	9345.09	Max WS	DCTrib-ULT-woBV-10yr	296.70	127.59	131.57		131.66	0.002312	2.37	125.22	57.55	0.28
Dry Creek Trib	9345.09	Max WS	DCTrib-ULT-10yr	296.97	127.59	131.58		131.66	0.002308	2.37	125.38	57.59	0.28
Dry Creek Trib	9345.09	Max WS	DC trib-ULT-woBV-100yr-BFE	442.53	127.59	132.20		132.30	0.002166	2.63	191.67	173.70	0.28
Dry Creek Trib	9345.09	Max WS	DCTrib-ULT-100	442.55	127.59	132.20		132.30	0.002163	2.63	191.86	173.95	0.28
Dry Creek Trib	9257.01	Max WS	DCTrib-ULT-woBV-10yr	293.43	126.10	131.35		131.47	0.002172	2.88	119.46	99.22	0.29
Dry Creek Trib	9257.01	Max WS	DCTrib-ULT-10yr	293.72	126.10	131.36		131.47	0.002168	2.88	119.66	99.47	0.29
Dry Creek Trib	9257.01	Max WS	DC trib-ULT-woBV-100yr-BFE	443.73	126.10	131.95		132.11	0.002474	3.45	160.85	199.30	0.31
Dry Creek Trib	9257.01	Max WS	DCTrib-ULT-100	443.75	126.10	131.95		132.12	0.002471	3.45	160.95	199.34	0.31
Dry Creek Trib	9161.5	Max WS	DCTrib-ULT-woBV-10yr	294.38	125.74	131.21		131.29	0.001715	2.45	143.45	85.56	0.25
Dry Creek Trib	9161.5	Max WS	DCTrib-ULT-10yr	294.71	125.74	131.21		131.30	0.001710	2.45	143.77	85.66	0.25
Dry Creek Trib	9161.5	Max WS	DC trib-ULT-woBV-100yr-BFE	445.17	125.74	131.80		131.90	0.001796	2.83	197.93	97.91	0.27
Dry Creek Trib	9161.5	Max WS	DCTrib-ULT-100	445.21	125.74	131.80		131.90	0.001793	2.83	198.08	97.93	0.27
Dry Creek Trib	9090.68	Max WS	DCTrib-ULT-woBV-10yr	294.16	125.67	130.96		131.10	0.004031	3.10	109.65	72.22	0.37
Dry Creek Trib	9090.68	Max WS	DCTrib-ULT-10yr	294.67	125.67	130.97		131.10	0.004017	3.09	109.93	72.25	0.37
Dry Creek Trib	9090.68	Max WS	DC trib-ULT-woBV-100yr-BFE	445.36	125.67	131.59		131.74	0.003589	3.44	162.55	102.15	0.36
Dry Creek Trib	9090.68	Max WS	DCTrib-ULT-100	445.65	125.67	131.59		131.75	0.003586	3.44	162.73	102.37	0.36
Dry Creek Trib	8980.6	Max WS	DCTrib-ULT-woBV-10yr	284.97	125.80	130.23		130.52	0.008084	4.36	70.34	52.38	0.52
Dry Creek Trib	8980.6	Max WS	DCTrib-ULT-10yr	285.61	125.80	130.24		130.53	0.008051	4.36	70.67	52.57	0.52
Dry Creek Trib	8980.6	Max WS	DC trib-ULT-woBV-100yr-BFE	445.27	125.80	130.97		131.26	0.006331	4.60	114.57	70.77	0.48
Dry Creek Trib	8980.6	Max WS	DCTrib-ULT-100	445.84	125.80	130.97		131.27	0.006314	4.59	114.83	71.79	0.48
Dry Creek Trib	8900.41	Max WS	DCTrib-ULT-woBV-10yr	284.56	125.50	130.08		130.12	0.000930	2.04	235.41	165.46	0.19
Dry Creek Trib	8900.41	Max WS	DCTrib-ULT-10yr	285.49	125.50	130.08		130.12	0.000924	2.03	236.65	165.71	0.19
Dry Creek Trib	8900.41	Max WS	DC trib-ULT-woBV-100yr-BFE	445.56	125.50	130.85		130.89	0.000733	2.07	376.60	209.03	0.18
Dry Creek Trib	8900.41	Max WS	DCTrib-ULT-100	446.17	125.50	130.86		130.89	0.000732	2.07	377.48	209.55	0.18
Dry Creek Trib	8840.78	Max WS	DCTrib-ULT-woBV-10yr	283.36	125.61	129.63		129.93	0.006999	4.41	64.19	37.16	0.49
Dry Creek Trib	8840.78	Max WS	DCTrib-ULT-10yr	284.45	125.61	129.63		129.94	0.007005	4.42	64.37	37.63	0.49
Dry Creek Trib	8840.78	Max WS	DC trib-ULT-woBV-100yr-BFE	445.82	125.61	130.22		130.70	0.009795	5.54	80.54	63.64	0.59
Dry Creek Trib	8840.78	Max WS	DCTrib-ULT-100	446.65	125.61	130.23		130.70	0.009797	5.54	80.66	63.88	0.59
Dry Creek Trib	8719.42	Max WS	DCTrib-ULT-woBV-10yr	282.41	125.78	129.29		129.36	0.001997	2.10	141.75	92.38	0.26
Dry Creek Trib	8719.42	Max WS	DCTrib-ULT-10yr	283.67	125.78	129.30		129.37	0.001988	2.10	142.43	92.46	0.26
Dry Creek Trib	8719.42	Max WS	DC trib-ULT-woBV-100yr-BFE	446.30	125.78	129.82		129.91	0.002135	2.54	191.99	98.27	0.28
Dry Creek Trib	8719.42	Max WS	DCTrib-ULT-100	447.37	125.78	129.82		129.92	0.002134	2.54	192.35	98.31	0.28
Dry Creek Trib	8627.33	Max WS	DCTrib-ULT-woBV-10yr	280.19	125.41	128.77		128.95	0.007480	3.97	90.50	62.04	0.49
Dry Creek Trib	8627.33	Max WS	DCTrib-ULT-10yr	281.76	125.41	128.78		128.96	0.007441	3.97	91.00	62.11	0.49
Dry Creek Trib	8627.33	Max WS	DC trib-ULT-woBV-100yr-BFE	446.70	125.41	129.21		129.47	0.008459	4.81	118.61	66.27	0.54
Dry Creek Trib	8627.33	Max WS	DCTrib-ULT-100	447.91	125.41	129.21		129.47	0.008462	4.82	118.81	66.34	0.54
Dry Creek Trib	8563.46	Max WS	DCTrib-ULT-woBV-10yr	278.86	124.23	128.53		128.64	0.002253	2.72	121.00	64.84	0.29
Dry Creek Trib	8563.46	Max WS	DCTrib-ULT-10yr	280.70	124.23	128.54		128.64	0.002262	2.73	121.43	64.96	0.29
Dry Creek Trib	8563.46	Max WS	DC trib-ULT-woBV-100yr-BFE	446.92	124.23	128.90		129.08	0.003510	3.69	145.82	70.21	0.37
Dry Creek Trib	8563.46	Max WS	DCTrib-ULT-100	448.15	124.23	128.90		129.09	0.003518	3.70	145.99	70.24	0.37
Dry Creek Trib	8488.69	Max WS	DCTrib-ULT-woBV-10yr	275.23	123.59	128.16		128.29	0.005119	3.41	113.79	90.24	0.40
Dry Creek Trib	8488.69	Max WS	DCTrib-ULT-10yr	274.48	123.59	128.15		128.27	0.005223	3.43	112.44	89.10	0.41
Dry Creek Trib	8488.69	Max WS	DC trib-ULT-woBV-100yr-BFE	447.19	123.59	128.23		128.52	0.011747	5.27	120.16	92.70	0.61
Dry Creek Trib	8488.69	Max WS	DCTrib-ULT-100	448.67	123.59	128.24		128.53	0.011736	5.28	120.49	92.78	0.61
Dry Creek Trib	8405.54	Max WS	DCTrib-ULT-woBV-10yr	260.73	124.66	128.01		128.01	0.000421	0.91	370.26	240.87	0.12
Dry Creek Trib	8405.54	Max WS	DCTrib-ULT-10yr	259.34	124.66	127.99		127.99	0.000433	0.92	365.45	240.37	0.12
Dry Creek Trib	8405.54	Max WS	DC trib-ULT-woBV-100yr-BFE	287.42	124.66	127.94		127.95	0.000582	1.04	355.09	239.27	0.14
Dry Creek Trib	8405.54	Max WS	DCTrib-ULT-100	279.00	124.66	127.91		127.92	0.000587	1.04	347.42	238.46	0.14
Dry Creek Trib	8349.77	Max WS	DCTrib-ULT-woBV-10yr	236.48	124.17	128.00		128.00	0.000056	0.41	840.53	521.01	0.04
Dry Creek Trib	8349.77	Max WS	DCTrib-ULT-10yr	233.88	124.17	127.98		127.98	0.000057	0.41	829.97	519.63	0.04
Dry Creek Trib	8349.77	Max WS	DC trib-ULT-woBV-100yr-BFE	244.05	124.17	127.93		127.93	0.000067	0.44	806.08	516.49	0.05
Dry Creek Trib	8349.77	Max WS	DCTrib-ULT-100	196.95	124.17	127.90		127.90	0.000046	0.36	790.88	514.49	0.04
Dry Creek Trib	8292.18	Max WS	DCTrib-ULT-woBV-10yr	439.78	124.38	127.49		127.53	0.003139	2.12	281.00	270.22	0.31

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	8292.18	Max WS	DCTrib-ULT-10yr	433.11	124.38	127.46		127.51	0.003290	2.14	274.28	258.94	0.31
Dry Creek Trib	8292.18	Max WS	DC trib-ULT-woBV-100yr-BFE	447.80	124.38	127.71		127.74	0.001817	1.77	336.68	346.05	0.24
Dry Creek Trib	8292.18	Max WS	DCTrib-ULT-100	449.38	124.38	127.72		127.75	0.001801	1.76	338.32	347.96	0.24
Dry Creek Trib	8220.24	Max WS	DCTrib-ULT-woBV-10yr	319.68	122.95	126.92		127.08	0.004111	3.35	105.47	111.85	0.38
Dry Creek Trib	8220.24	Max WS	DCTrib-ULT-10yr	311.84	122.95	126.91		127.07	0.003960	3.28	104.98	111.51	0.38
Dry Creek Trib	8220.24	Max WS	DC trib-ULT-woBV-100yr-BFE	480.57	122.95	127.47		127.68	0.004209	3.90	142.75	185.50	0.40
Dry Creek Trib	8220.24	Max WS	DCTrib-ULT-100	482.53	122.95	127.47		127.69	0.004195	3.90	143.37	186.71	0.40
Dry Creek Trib	8102.71	Max WS	DCTrib-ULT-woBV-10yr	309.59	122.75	126.74		126.78	0.000843	1.68	210.77	124.24	0.18
Dry Creek Trib	8102.71	Max WS	DCTrib-ULT-10yr	306.24	122.75	126.73		126.77	0.000833	1.67	209.93	124.01	0.18
Dry Creek Trib	8102.71	Max WS	DC trib-ULT-woBV-100yr-BFE	480.15	122.75	127.30		127.35	0.000961	2.03	284.48	140.97	0.20
Dry Creek Trib	8102.71	Max WS	DCTrib-ULT-100	482.09	122.75	127.31		127.36	0.000958	2.03	285.77	141.09	0.20
Dry Creek Trib	7984.4	Max WS	DCTrib-ULT-woBV-10yr	310.11	121.55	126.59		126.65	0.001557	2.44	197.85	143.99	0.24
Dry Creek Trib	7984.4	Max WS	DCTrib-ULT-10yr	306.62	121.55	126.58		126.65	0.001539	2.42	196.96	143.81	0.24
Dry Creek Trib	7984.4	Max WS	DC trib-ULT-woBV-100yr-BFE	479.76	121.55	127.15		127.22	0.001489	2.66	283.23	158.17	0.24
Dry Creek Trib	7984.4	Max WS	DCTrib-ULT-100	481.71	121.55	127.16		127.23	0.001480	2.66	284.80	158.44	0.24
Dry Creek Trib	7877.8	Max WS	DCTrib-ULT-woBV-10yr	295.39	121.35	126.18		126.41	0.005091	3.86	77.91	148.00	0.42
Dry Creek Trib	7877.8	Max WS	DCTrib-ULT-10yr	294.64	121.35	126.18		126.41	0.005050	3.85	77.99	148.18	0.42
Dry Creek Trib	7877.8	Max WS	DC trib-ULT-woBV-100yr-BFE	479.16	121.35	126.93		127.04	0.002344	3.11	239.18	164.41	0.30
Dry Creek Trib	7877.8	Max WS	DCTrib-ULT-100	481.39	121.35	126.94		127.05	0.002317	3.10	241.26	165.08	0.30
Dry Creek Trib	7782	Max WS	DCTrib-ULT-woBV-10yr	292.79	120.78	125.80		126.02	0.004174	3.77	80.01	71.20	0.38
Dry Creek Trib	7782	Max WS	DCTrib-ULT-10yr	294.20	120.78	125.80		126.02	0.004211	3.79	80.03	71.42	0.38
Dry Creek Trib	7782	Max WS	DC trib-ULT-woBV-100yr-BFE	478.63	120.78	126.55		126.79	0.003893	4.22	154.81	106.11	0.38
Dry Creek Trib	7782	Max WS	DCTrib-ULT-100	480.93	120.78	126.57		126.81	0.003831	4.20	156.85	106.80	0.38
Dry Creek Trib	7684.81	Max WS	DCTrib-ULT-woBV-10yr	288.71	120.67	125.39		125.63	0.005290	4.13	85.77	71.63	0.43
Dry Creek Trib	7684.81	Max WS	DCTrib-ULT-10yr	292.52	120.67	125.37		125.62	0.005558	4.22	84.71	70.52	0.44
Dry Creek Trib	7684.81	Max WS	DC trib-ULT-woBV-100yr-BFE	478.39	120.67	126.27		126.46	0.003584	4.08	184.80	146.71	0.37
Dry Creek Trib	7684.81	Max WS	DCTrib-ULT-100	480.89	120.67	126.30		126.49	0.003456	4.02	189.00	147.53	0.37
Dry Creek Trib	7588.69	Max WS	DCTrib-ULT-woBV-10yr	284.48	120.06	124.15		124.66	0.015318	5.73	49.68	144.28	0.70
Dry Creek Trib	7588.69	Max WS	DCTrib-ULT-10yr	287.75	120.06	124.24		124.72	0.013842	5.55	51.93	151.87	0.67
Dry Creek Trib	7588.69	Max WS	DC trib-ULT-woBV-100yr-BFE	478.48	120.06	125.31		125.89	0.009965	6.12	79.01	220.23	0.61
Dry Creek Trib	7588.69	Max WS	DCTrib-ULT-100	479.24	120.06	125.39		125.94	0.009147	5.97	81.39	224.92	0.58
Dry Creek Trib	7492.13	Max WS	DCTrib-ULT-woBV-10yr	299.34	119.00	123.52		123.72	0.003195	3.57	83.76	19.19	0.30
Dry Creek Trib	7492.13	Max WS	DCTrib-ULT-10yr	314.79	119.00	123.63		123.84	0.003288	3.67	85.87	19.22	0.31
Dry Creek Trib	7492.13	Max WS	DC trib-ULT-woBV-100yr-BFE	506.68	119.00	124.80		125.14	0.004361	4.67	108.53	19.57	0.35
Dry Creek Trib	7492.13	Max WS	DCTrib-ULT-100	519.15	119.00	124.87		125.21	0.004430	4.73	109.80	19.59	0.35
Dry Creek Trib	7469.295			Culvert									
Dry Creek Trib	7446.46	Max WS	DCTrib-ULT-woBV-10yr	296.38	119.00	123.19		123.42	0.004125	3.88	76.31	20.94	0.36
Dry Creek Trib	7446.46	Max WS	DCTrib-ULT-10yr	313.33	119.00	123.27		123.52	0.004318	4.01	78.08	21.05	0.37
Dry Creek Trib	7446.46	Max WS	DC trib-ULT-woBV-100yr-BFE	506.61	119.00	124.09		124.52	0.006643	5.26	96.34	24.04	0.46
Dry Creek Trib	7446.46	Max WS	DCTrib-ULT-100	519.06	119.00	124.13		124.57	0.006830	5.34	97.28	24.30	0.47
Dry Creek Trib	7346.34	Max WS	DCTrib-ULT-woBV-10yr	295.95	117.42	123.09		123.10	0.000069	0.65	452.81	102.96	0.05
Dry Creek Trib	7346.34	Max WS	DCTrib-ULT-10yr	311.20	117.42	123.17		123.18	0.000072	0.67	461.38	103.67	0.06
Dry Creek Trib	7346.34	Max WS	DC trib-ULT-woBV-100yr-BFE	506.59	117.42	123.96		123.98	0.000120	0.93	546.87	111.71	0.07
Dry Creek Trib	7346.34	Max WS	DCTrib-ULT-100	519.03	117.42	124.00		124.01	0.000123	0.94	550.77	111.94	0.07
Dry Creek Trib	7255.4	Max WS	DCTrib-ULT-woBV-10yr	295.82	117.51	123.08		123.09	0.000113	0.83	354.33	80.46	0.07
Dry Creek Trib	7255.4	Max WS	DCTrib-ULT-10yr	311.44	117.51	123.16		123.17	0.000119	0.86	360.98	81.01	0.07
Dry Creek Trib	7255.4	Max WS	DC trib-ULT-woBV-100yr-BFE	507.28	117.51	123.94		123.96	0.000196	1.19	425.98	95.43	0.09
Dry Creek Trib	7255.4	Max WS	DCTrib-ULT-100	519.76	117.51	123.97		124.00	0.000202	1.21	428.90	96.20	0.10
Dry Creek Trib	7164.22	Max WS	DCTrib-ULT-woBV-10yr	295.10	118.37	122.34		122.75	0.013234	5.18	56.96	29.38	0.66
Dry Creek Trib	7164.22	Max WS	DCTrib-ULT-10yr	311.24	118.37	122.41		122.84	0.013374	5.27	59.03	30.38	0.66
Dry Creek Trib	7164.22	Max WS	DC trib-ULT-woBV-100yr-BFE	507.90	118.37	123.10		123.66	0.012887	6.08	91.39	60.58	0.68
Dry Creek Trib	7164.22	Max WS	DCTrib-ULT-100	520.39	118.37	123.14		123.70	0.012837	6.12	93.48	61.05	0.68
Dry Creek Trib	7067.14	Max WS	DCTrib-ULT-woBV-10yr	294.74	117.76	121.77		121.95	0.004488	3.75	103.98	68.85	0.40
Dry Creek Trib	7067.14	Max WS	DCTrib-ULT-10yr	310.78	117.76	121.85		122.02	0.004385	3.78	109.33	69.92	0.40
Dry Creek Trib	7067.14	Max WS	DC trib-ULT-woBV-100yr-BFE	508.65	117.76	122.65		122.84	0.003702	4.11	169.23	79.94	0.38
Dry Creek Trib	7067.14	Max WS	DCTrib-ULT-100	521.18	117.76	122.69		122.88	0.003690	4.14	172.54	80.44	0.38
Dry Creek Trib	6969.96	Max WS	DCTrib-ULT-woBV-10yr	295.14	117.10	121.39		121.55	0.003718	3.20	92.21	38.20	0.36
Dry Creek Trib	6969.96	Max WS	DCTrib-ULT-10yr	310.48	117.10	121.46		121.63	0.003836	3.28	94.72	38.76	0.37
Dry Creek Trib	6969.96	Max WS	DC trib-ULT-woBV-100yr-BFE	509.33	117.10	122.17		122.43	0.004946	4.09	124.48	45.64	0.43
Dry Creek Trib	6969.96	Max WS	DCTrib-ULT-100	521.95	117.10	122.21		122.47	0.005018	4.15	126.01	46.19	0.43
Dry Creek Trib	6844.28	Max WS	DCTrib-ULT-woBV-10yr	295.17	117.22	121.14		121.22	0.001821	2.39	138.23	81.11	0.26
Dry Creek Trib	6844.28	Max WS	DCTrib-ULT-10yr	310.93	117.22	121.19		121.28	0.001857	2.45	142.92	81.75	0.26
Dry Creek Trib	6844.28	Max WS	DC trib-ULT-woBV-100yr-BFE	510.29	117.22	121.88		122.00	0.002050	3.00	202.67	94.09	0.29
Dry Creek Trib	6844.28	Max WS	DCTrib-ULT-100	522.91	117.22	121.91		122.04	0.002073	3.03	205.61	94.48	0.29
Dry Creek Trib	6748.04	Max WS	DCTrib-ULT-woBV-10yr	294.81	117.62	120.50		120.80	0.009494	4.98	79.22	59.56	0.58
Dry Creek Trib	6748.04	Max WS	DCTrib-ULT-10yr	310.32	117.62	120.56		120.86	0.009401	5.04	82.73	60.49	0.58
Dry Creek Trib	6748.04	Max WS	DC trib-ULT-woBV-100yr-BFE	510.97	117.62	121.22		121.57	0.008434	5.63	126.89	72.69	0.57
Dry Creek Trib	6748.04	Max WS	DCTrib-ULT-100	523.59	117.62	121.25		121.61	0.008440	5.67	129.29	73.36	0.57
Dry Creek Trib	6661.51	Max WS	DCTrib-ULT-woBV-10yr	295.18	116.27	120.13		120.25	0.003382	2.99	115.60	72.03	0.35
Dry Creek Trib	6661.51	Max WS	DCTrib-ULT-10yr	310.68	116.27	120.18		120.31	0.003425	3.04	119.88	73.18	0.35
Dry Creek Trib	6661.51	Max WS	DC trib-ULT-woBV-100yr-BFE	511.54	116.27	120.86		121.03	0.003457	3.58	173.58	85.90	0.37

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	6661.51	Max WS	DCTrib-ULT-100	524.17	116.27	120.89		121.07	0.003467	3.61	176.55	86.54	0.37
Dry Creek Trib	6593.97	Max WS	DCTrib-ULT-woBV-10yr	295.33	116.25	119.78		119.96	0.005159	3.78	99.86	61.75	0.43
Dry Creek Trib	6593.97	Max WS	DCTrib-ULT-10yr	310.66	116.25	119.83		120.01	0.005250	3.87	102.97	62.52	0.43
Dry Creek Trib	6593.97	Max WS	DC trib-ULT-woBV-100yr-BFE	512.22	116.25	120.43		120.69	0.005957	4.76	143.47	73.89	0.48
Dry Creek Trib	6593.97	Max WS	DCTrib-ULT-100	524.79	116.25	120.46		120.73	0.005971	4.80	145.95	74.37	0.48
Dry Creek Trib	6509.43	Max WS	DCTrib-ULT-woBV-10yr	295.70	115.84	119.43		119.60	0.004494	3.51	105.44	76.46	0.40
Dry Creek Trib	6509.43	Max WS	DCTrib-ULT-10yr	311.00	115.84	119.47		119.65	0.004620	3.60	108.65	77.56	0.41
Dry Creek Trib	6509.43	Max WS	DC trib-ULT-woBV-100yr-BFE	512.67	115.84	119.97		120.22	0.005561	4.47	149.38	85.97	0.46
Dry Creek Trib	6509.43	Max WS	DCTrib-ULT-100	525.30	115.84	120.00		120.25	0.005596	4.52	151.82	86.39	0.46
Dry Creek Trib	6469.45	Max WS	DCTrib-ULT-woBV-10yr	295.73	116.52	119.31		119.41	0.004486	3.10	131.07	100.31	0.39
Dry Creek Trib	6469.45	Max WS	DCTrib-ULT-10yr	310.81	116.52	119.35		119.46	0.004560	3.16	135.05	101.48	0.39
Dry Creek Trib	6469.45	Max WS	DC trib-ULT-woBV-100yr-BFE	512.96	116.52	119.87		120.00	0.004681	3.73	190.38	115.05	0.41
Dry Creek Trib	6469.45	Max WS	DCTrib-ULT-100	525.61	116.52	119.90		120.04	0.004670	3.76	193.87	115.89	0.41
Dry Creek Trib	6351.96	Max WS	DCTrib-ULT-woBV-10yr	294.90	114.42	118.75		118.86	0.004351	3.24	130.44	104.96	0.38
Dry Creek Trib	6351.96	Max WS	DCTrib-ULT-10yr	309.66	114.42	118.80		118.91	0.004371	3.29	135.14	106.35	0.38
Dry Creek Trib	6351.96	Max WS	DC trib-ULT-woBV-100yr-BFE	513.68	114.42	119.40		119.53	0.003866	3.62	203.11	116.73	0.37
Dry Creek Trib	6351.96	Max WS	DCTrib-ULT-100	526.31	114.42	119.43		119.56	0.003830	3.63	207.18	117.04	0.37
Dry Creek Trib	6224.9	Max WS	DCTrib-ULT-woBV-10yr	295.23	114.45	118.36		118.45	0.002509	3.17	155.91	108.40	0.31
Dry Creek Trib	6224.9	Max WS	DCTrib-ULT-10yr	309.63	114.45	118.40		118.49	0.002553	3.22	160.70	109.46	0.31
Dry Creek Trib	6224.9	Max WS	DC trib-ULT-woBV-100yr-BFE	514.47	114.45	119.02		119.13	0.002625	3.67	233.60	123.74	0.33
Dry Creek Trib	6224.9	Max WS	DCTrib-ULT-100	527.10	114.45	119.06		119.17	0.002597	3.68	238.62	124.35	0.33
Dry Creek Trib	6159.11	Max WS	DCTrib-ULT-woBV-10yr	295.53	114.34	118.22		118.29	0.002120	2.41	172.75	124.08	0.27
Dry Creek Trib	6159.11	Max WS	DCTrib-ULT-10yr	309.55	114.34	118.27		118.33	0.002142	2.45	177.90	124.61	0.28
Dry Creek Trib	6159.11	Max WS	DC trib-ULT-woBV-100yr-BFE	514.94	114.34	118.89		118.97	0.002017	2.77	258.00	130.24	0.28
Dry Creek Trib	6159.11	Max WS	DCTrib-ULT-100	527.57	114.34	118.94		119.02	0.001993	2.78	263.44	130.71	0.28
Dry Creek Trib	6102.92	Max WS	DCTrib-ULT-woBV-10yr	295.77	114.47	118.06		118.14	0.003445	3.03	150.92	113.98	0.34
Dry Creek Trib	6102.92	Max WS	DCTrib-ULT-10yr	309.75	114.47	118.10		118.18	0.003459	3.07	155.52	114.38	0.34
Dry Creek Trib	6102.92	Max WS	DC trib-ULT-woBV-100yr-BFE	515.34	114.47	118.75		118.84	0.002897	3.28	232.12	120.63	0.33
Dry Creek Trib	6102.92	Max WS	DCTrib-ULT-100	527.97	114.47	118.79		118.88	0.002844	3.28	237.31	121.00	0.32
Dry Creek Trib	6011.93	Max WS	DCTrib-ULT-woBV-10yr	295.99	113.85	117.64		117.80	0.004611	3.68	114.46	98.89	0.41
Dry Creek Trib	6011.93	Max WS	DCTrib-ULT-10yr	309.36	113.85	117.68		117.84	0.004679	3.74	118.11	99.59	0.41
Dry Creek Trib	6011.93	Max WS	DC trib-ULT-woBV-100yr-BFE	515.65	113.85	118.40		118.56	0.003724	3.93	194.54	111.66	0.38
Dry Creek Trib	6011.93	Max WS	DCTrib-ULT-100	528.47	113.85	118.46		118.61	0.003604	3.91	200.67	112.54	0.38
Dry Creek Trib	5902.58	Max WS	DCTrib-ULT-woBV-10yr	294.67	115.02	117.15		117.26	0.005263	2.62	114.27	91.56	0.40
Dry Creek Trib	5902.58	Max WS	DCTrib-ULT-10yr	307.69	115.02	117.21		117.32	0.004948	2.62	119.77	92.39	0.39
Dry Creek Trib	5902.58	Max WS	DC trib-ULT-woBV-100yr-BFE	515.99	115.02	118.10		118.20	0.002567	2.61	207.73	105.19	0.30
Dry Creek Trib	5902.58	Max WS	DCTrib-ULT-100	528.91	115.02	118.17		118.27	0.002429	2.59	215.01	105.70	0.30
Dry Creek Trib	5792.84	Max WS	DCTrib-ULT-woBV-10yr	294.77	112.78	116.90		116.93	0.001200	1.90	217.08	124.01	0.21
Dry Creek Trib	5792.84	Max WS	DCTrib-ULT-10yr	307.63	112.78	116.98		117.01	0.001143	1.89	227.15	125.26	0.20
Dry Creek Trib	5792.84	Max WS	DC trib-ULT-woBV-100yr-BFE	515.99	112.78	117.99		118.03	0.000800	1.96	359.25	135.03	0.18
Dry Creek Trib	5792.84	Max WS	DCTrib-ULT-100	528.98	112.78	118.07		118.10	0.000772	1.95	369.58	135.92	0.18
Dry Creek Trib	5682.44	Max WS	DCTrib-ULT-woBV-10yr	295.11	111.63	116.84		116.85	0.000211	0.91	470.09	226.31	0.09
Dry Creek Trib	5682.44	Max WS	DCTrib-ULT-10yr	307.80	111.63	116.92		116.93	0.000206	0.91	489.14	230.54	0.09
Dry Creek Trib	5682.44	Max WS	DC trib-ULT-woBV-100yr-BFE	516.64	111.63	117.96		117.97	0.000167	0.99	740.81	249.34	0.08
Dry Creek Trib	5682.44	Max WS	DCTrib-ULT-100	529.76	111.63	118.04		118.05	0.000162	0.98	760.28	249.93	0.08
Dry Creek Trib	5618.96	Max WS	DCTrib-ULT-woBV-10yr	295.01	110.98	116.65		116.82	0.003521	3.75	106.07	58.55	0.35
Dry Creek Trib	5618.96	Max WS	DCTrib-ULT-10yr	307.48	110.98	116.74		116.91	0.003379	3.73	111.37	59.23	0.35
Dry Creek Trib	5618.96	Max WS	DC trib-ULT-woBV-100yr-BFE	514.32	110.98	117.78		117.96	0.002726	3.97	176.81	65.24	0.32
Dry Creek Trib	5618.96	Max WS	DCTrib-ULT-100	525.42	110.98	117.87		118.04	0.002616	3.93	182.20	65.65	0.32
Dry Creek Trib	5553.77	Max WS	DCTrib-ULT-woBV-10yr	348.82	112.80	116.51		116.60	0.001650	2.46	154.02	65.94	0.25
Dry Creek Trib	5553.77	Max WS	DCTrib-ULT-10yr	364.21	112.80	116.60		116.69	0.001612	2.48	160.03	66.71	0.25
Dry Creek Trib	5553.77	Max WS	DC trib-ULT-woBV-100yr-BFE	608.21	112.80	117.64		117.77	0.001532	2.93	234.24	75.89	0.26
Dry Creek Trib	5553.77	Max WS	DCTrib-ULT-100	629.70	112.80	117.72		117.85	0.001532	2.97	240.18	76.65	0.26
Dry Creek Trib	5479.88	Max WS	DCTrib-ULT-woBV-10yr	348.97	110.81	116.38		116.47	0.001697	2.49	140.37	46.86	0.25
Dry Creek Trib	5479.88	Max WS	DCTrib-ULT-10yr	364.70	110.81	116.47		116.57	0.001723	2.52	144.57	47.77	0.26
Dry Creek Trib	5479.88	Max WS	DC trib-ULT-woBV-100yr-BFE	608.67	110.81	117.48		117.63	0.002251	3.06	199.23	60.60	0.30
Dry Creek Trib	5479.88	Max WS	DCTrib-ULT-100	630.19	110.81	117.56		117.71	0.002274	3.09	203.94	61.96	0.30
Dry Creek Trib	5423.09	Max WS	DCTrib-ULT-woBV-10yr	349.34	111.01	116.30		116.39	0.001536	2.84	171.91	68.56	0.24
Dry Creek Trib	5423.09	Max WS	DCTrib-ULT-10yr	365.05	111.01	116.39		116.48	0.001529	2.88	178.11	69.76	0.25
Dry Creek Trib	5423.09	Max WS	DC trib-ULT-woBV-100yr-BFE	609.29	111.01	117.41		117.52	0.001700	3.49	257.60	97.26	0.27
Dry Creek Trib	5423.09	Max WS	DCTrib-ULT-100	630.86	111.01	117.48		117.61	0.001869	3.70	265.11	99.19	0.28
Dry Creek Trib	5275.52	Max WS	DCTrib-ULT-woBV-10yr	350.07	110.57	115.79		115.98	0.003941	3.48	100.56	37.39	0.37
Dry Creek Trib	5275.52	Max WS	DCTrib-ULT-10yr	365.70	110.57	115.87		116.06	0.004298	3.53	103.46	40.27	0.39
Dry Creek Trib	5275.52	Max WS	DC trib-ULT-woBV-100yr-BFE	610.62	110.57	116.82		117.08	0.004723	4.10	151.12	62.66	0.42
Dry Creek Trib	5275.52	Max WS	DCTrib-ULT-100	632.29	110.57	116.89		117.15	0.004675	4.14	155.52	63.51	0.42
Dry Creek Trib	5185.28	Max WS	DCTrib-ULT-woBV-10yr	350.42	111.16	115.52		115.67	0.002832	3.17	122.04	62.14	0.33
Dry Creek Trib	5185.28	Max WS	DCTrib-ULT-10yr	366.02	111.16	115.59		115.74	0.002826	3.22	126.35	62.78	0.33
Dry Creek Trib	5185.28	Max WS	DC trib-ULT-woBV-100yr-BFE	611.56	111.16	116.56		116.76	0.002626	3.75	193.38	75.16	0.33
Dry Creek Trib	5185.28	Max WS	DCTrib-ULT-100	633.01	111.16	116.63		116.83	0.002635	3.80	198.56	76.61	0.33
Dry Creek Trib	5105.36	Max WS	DCTrib-ULT-woBV-10yr	350.91	110.83	115.39		115.50	0.001436	2.80	146.65	55.12	0.24
Dry Creek Trib	5105.36	Max WS	DCTrib-ULT-10yr	366.50	110.83	115.45		115.57	0.001470	2.86	150.41	56.02	0.25

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	5105.36	Max WS	DC trib-ULT-woBV-100yr-BFE	612.15	110.83	116.41		116.58	0.001795	3.63	210.39	69.08	0.28
Dry Creek Trib	5105.36	Max WS	DCTrib-ULT-100	633.93	110.83	116.48		116.66	0.001822	3.69	215.05	69.72	0.28
Dry Creek Trib	5008.64	Max WS	DCTrib-ULT-woBV-10yr	351.34	111.00	115.22		115.33	0.002030	2.77	143.97	66.49	0.28
Dry Creek Trib	5008.64	Max WS	DCTrib-ULT-10yr	366.94	111.00	115.29		115.40	0.002041	2.82	148.33	67.10	0.28
Dry Creek Trib	5008.64	Max WS	DC trib-ULT-woBV-100yr-BFE	613.16	111.00	116.24		116.40	0.002051	3.38	218.61	81.24	0.29
Dry Creek Trib	5008.64	Max WS	DCTrib-ULT-100	635.01	111.00	116.31		116.47	0.002063	3.42	223.89	81.77	0.30
Dry Creek Trib	4899.84	Max WS	DCTrib-ULT-woBV-10yr	351.31	110.75	114.59		114.89	0.007132	4.49	82.70	44.97	0.50
Dry Creek Trib	4899.84	Max WS	DCTrib-ULT-10yr	366.75	110.75	114.64		114.96	0.007192	4.57	85.27	45.63	0.50
Dry Creek Trib	4899.84	Max WS	DC trib-ULT-woBV-100yr-BFE	613.84	110.75	115.65		116.02	0.005994	5.11	137.78	60.00	0.48
Dry Creek Trib	4899.84	Max WS	DCTrib-ULT-100	635.67	110.75	115.70		116.09	0.006035	5.19	141.28	61.11	0.48
Dry Creek Trib	4824.44	Max WS	DCTrib-ULT-woBV-10yr	351.43	110.92	114.41		114.53	0.002216	2.74	137.03	71.78	0.29
Dry Creek Trib	4824.44	Max WS	DCTrib-ULT-10yr	366.78	110.92	114.47		114.59	0.002236	2.79	141.74	78.87	0.29
Dry Creek Trib	4824.44	Max WS	DC trib-ULT-woBV-100yr-BFE	614.61	110.92	115.56		115.69	0.001758	3.07	239.93	100.51	0.27
Dry Creek Trib	4824.44	Max WS	DCTrib-ULT-100	636.50	110.92	115.62		115.75	0.001767	3.11	246.14	101.09	0.28
Dry Creek Trib	4744.51	Max WS	DCTrib-ULT-woBV-10yr	351.13	111.08	114.14		114.28	0.004819	3.32	131.08	97.15	0.41
Dry Creek Trib	4744.51	Max WS	DCTrib-ULT-10yr	366.34	111.08	114.21		114.35	0.004516	3.29	138.34	98.01	0.40
Dry Creek Trib	4744.51	Max WS	DC trib-ULT-woBV-100yr-BFE	615.40	111.08	115.44		115.54	0.001940	2.92	268.53	113.22	0.28
Dry Creek Trib	4744.51	Max WS	DCTrib-ULT-100	637.35	111.08	115.50		115.60	0.001932	2.95	275.48	113.82	0.28
Dry Creek Trib	4647.61	Max WS	DCTrib-ULT-woBV-10yr	351.66	109.03	113.91		114.00	0.001391	2.42	157.71	70.86	0.24
Dry Creek Trib	4647.61	Max WS	DCTrib-ULT-10yr	366.51	109.03	113.99		114.08	0.001381	2.46	163.48	72.44	0.24
Dry Creek Trib	4647.61	Max WS	DC trib-ULT-woBV-100yr-BFE	616.35	109.03	115.29		115.40	0.001088	2.71	273.07	92.93	0.22
Dry Creek Trib	4647.61	Max WS	DCTrib-ULT-100	638.36	109.03	115.35		115.46	0.001110	2.76	278.51	93.56	0.22
Dry Creek Trib	4565.34	Max WS	DCTrib-ULT-woBV-10yr	351.82	109.08	113.84		113.90	0.001030	2.05	201.07	84.85	0.20
Dry Creek Trib	4565.34	Max WS	DCTrib-ULT-10yr	367.00	109.08	113.93		113.98	0.001016	2.07	208.08	85.43	0.20
Dry Creek Trib	4565.34	Max WS	DC trib-ULT-woBV-100yr-BFE	617.16	109.08	115.25		115.31	0.000787	2.29	330.51	100.11	0.19
Dry Creek Trib	4565.34	Max WS	DCTrib-ULT-100	639.21	109.08	115.31		115.37	0.000805	2.33	336.26	100.71	0.19
Dry Creek Trib	4477.87	Max WS	DCTrib-ULT-woBV-10yr	352.32	108.81	113.64		113.77	0.002295	3.10	132.12	56.25	0.30
Dry Creek Trib	4477.87	Max WS	DCTrib-ULT-10yr	367.51	108.81	113.72		113.86	0.002270	3.14	136.84	56.98	0.30
Dry Creek Trib	4477.87	Max WS	DC trib-ULT-woBV-100yr-BFE	618.02	108.81	115.07		115.22	0.001755	3.45	223.19	71.69	0.28
Dry Creek Trib	4477.87	Max WS	DCTrib-ULT-100	640.13	108.81	115.12		115.28	0.001804	3.52	226.85	72.24	0.28
Dry Creek Trib	4378.67	Max WS	DCTrib-ULT-woBV-10yr	352.42	108.62	112.99		113.29	0.007964	4.35	80.99	37.01	0.52
Dry Creek Trib	4378.67	Max WS	DCTrib-ULT-10yr	367.61	108.62	113.07		113.37	0.007857	4.38	83.94	37.61	0.52
Dry Creek Trib	4378.67	Max WS	DC trib-ULT-woBV-100yr-BFE	619.04	108.62	114.75		114.97	0.003574	3.83	171.18	71.12	0.37
Dry Creek Trib	4378.67	Max WS	DCTrib-ULT-100	641.22	108.62	114.79		115.02	0.003670	3.91	174.04	71.74	0.38
Dry Creek Trib	4277.98	Max WS	DCTrib-ULT-woBV-10yr	352.29	106.96	112.66		112.79	0.002075	2.89	123.17	42.39	0.28
Dry Creek Trib	4277.98	Max WS	DCTrib-ULT-10yr	367.51	106.96	112.74		112.87	0.002097	2.94	126.53	43.60	0.28
Dry Creek Trib	4277.98	Max WS	DC trib-ULT-woBV-100yr-BFE	620.10	106.96	114.59		114.73	0.001235	3.00	234.35	74.12	0.23
Dry Creek Trib	4277.98	Max WS	DCTrib-ULT-100	642.34	106.96	114.63		114.77	0.001291	3.08	236.93	74.48	0.24
Dry Creek Trib	4174.26	Max WS	DCTrib-ULT-woBV-10yr	352.85	106.84	112.56		112.63	0.001040	2.56	187.32	64.44	0.21
Dry Creek Trib	4174.26	Max WS	DCTrib-ULT-10yr	368.10	106.84	112.64		112.71	0.001062	2.61	192.45	65.84	0.21
Dry Creek Trib	4174.26	Max WS	DC trib-ULT-woBV-100yr-BFE	621.20	106.84	114.55		114.62	0.000687	2.64	354.21	99.71	0.18
Dry Creek Trib	4174.26	Max WS	DCTrib-ULT-100	643.49	106.84	114.59		114.66	0.000721	2.72	357.54	100.43	0.19
Dry Creek Trib	4081.21	Max WS	DCTrib-ULT-woBV-10yr	353.03	106.93	112.27		112.45	0.003691	3.71	127.78	90.34	0.37
Dry Creek Trib	4081.21	Max WS	DCTrib-ULT-10yr	368.32	106.93	112.35		112.53	0.003545	3.69	135.14	92.08	0.36
Dry Creek Trib	4081.21	Max WS	DC trib-ULT-woBV-100yr-BFE	621.84	106.93	114.49		114.55	0.000783	2.44	392.91	147.70	0.19
Dry Creek Trib	4081.21	Max WS	DCTrib-ULT-100	644.53	106.93	114.52		114.58	0.000816	2.50	397.52	148.27	0.19
Dry Creek Trib	3997.08	Max WS	DCTrib-ULT-woBV-10yr	353.20	106.77	112.06		112.18	0.002413	2.81	125.67	45.06	0.30
Dry Creek Trib	3997.08	Max WS	DCTrib-ULT-10yr	368.53	106.77	112.14		112.26	0.002412	2.85	129.22	46.10	0.30
Dry Creek Trib	3997.08	Max WS	DC trib-ULT-woBV-100yr-BFE	622.70	106.77	114.41		114.49	0.000782	2.38	320.44	119.79	0.19
Dry Creek Trib	3997.08	Max WS	DCTrib-ULT-100	645.03	106.77	114.43		114.52	0.000820	2.45	323.68	120.19	0.19
Dry Creek Trib	3926.37	Max WS	DCTrib-ULT-woBV-10yr	353.28	107.28	111.70		111.94	0.004883	4.00	95.58	48.49	0.42
Dry Creek Trib	3926.37	Max WS	DCTrib-ULT-10yr	368.64	107.28	111.77		112.02	0.004829	4.05	99.15	49.23	0.42
Dry Creek Trib	3926.37	Max WS	DC trib-ULT-woBV-100yr-BFE	622.89	107.28	114.33		114.44	0.001083	2.94	300.42	127.07	0.22
Dry Creek Trib	3926.37	Max WS	DCTrib-ULT-100	645.17	107.28	114.35		114.47	0.001137	3.02	303.31	127.49	0.23
Dry Creek Trib	3862.49	Max WS	DCTrib-ULT-woBV-10yr	353.26	106.46	111.54		111.70	0.002603	3.22	115.47	45.44	0.32
Dry Creek Trib	3862.49	Max WS	DCTrib-ULT-10yr	368.66	106.46	111.61		111.78	0.002622	3.28	118.78	46.31	0.32
Dry Creek Trib	3862.49	Max WS	DC trib-ULT-woBV-100yr-BFE	622.83	106.46	114.28		114.37	0.000759	2.62	323.51	127.35	0.19
Dry Creek Trib	3862.49	Max WS	DCTrib-ULT-100	645.90	106.46	114.30		114.40	0.000803	2.70	326.06	127.86	0.19
Dry Creek Trib	3776.24	Max WS	DCTrib-ULT-woBV-10yr	353.72	105.17	111.51		111.55	0.000461	1.58	245.97	87.78	0.14
Dry Creek Trib	3776.24	Max WS	DCTrib-ULT-10yr	369.15	105.17	111.59		111.62	0.000468	1.61	252.47	88.77	0.14
Dry Creek Trib	3776.24	Max WS	DC trib-ULT-woBV-100yr-BFE	623.75	105.17	114.29		114.31	0.000178	1.40	564.42	138.34	0.09
Dry Creek Trib	3776.24	Max WS	DCTrib-ULT-100	646.90	105.17	114.31		114.33	0.000189	1.44	567.23	138.54	0.10
Dry Creek Trib	3690.59	Max WS	DCTrib-ULT-woBV-10yr	354.16	105.83	111.33		111.45	0.002097	2.82	126.08	41.83	0.28
Dry Creek Trib	3690.59	Max WS	DCTrib-ULT-10yr	369.61	105.83	111.40		111.53	0.002137	2.87	129.04	42.26	0.29
Dry Creek Trib	3690.59	Max WS	DC trib-ULT-woBV-100yr-BFE	623.70	105.83	114.23		114.29	0.000532	2.20	359.58	115.32	0.16
Dry Creek Trib	3690.59	Max WS	DCTrib-ULT-100	646.95	105.83	114.24		114.31	0.000565	2.27	361.47	115.53	0.16
Dry Creek Trib	3620.21	Max WS	DCTrib-ULT-woBV-10yr	354.28	105.63	111.18		111.29	0.002597	2.61	135.48	57.43	0.30
Dry Creek Trib	3620.21	Max WS	DCTrib-ULT-10yr	369.75	105.63	111.25		111.36	0.002599	2.65	139.76	58.25	0.30
Dry Creek Trib	3620.21	Max WS	DC trib-ULT-woBV-100yr-BFE	624.48	105.63	114.21		114.25	0.000389	1.68	436.46	135.63	0.13
Dry Creek Trib	3620.21	Max WS	DCTrib-ULT-100	647.78	105.63	114.23		114.27	0.000414	1.73	438.57	135.89	0.14
Dry Creek Trib	3517.19	Max WS	DCTrib-ULT-woBV-10yr	354.80	104.82	111.05		111.11	0.000928	1.91	187.69	65.21	0.19

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	3517.19	Max WS	DCTrib-ULT-10yr	370.31	104.82	111.13		111.18	0.000934	1.95	192.60	66.27	0.19
Dry Creek Trib	3517.19	Max WS	DC trib-ULT-woBV-100yr-BFE	624.43	104.82	114.18		114.22	0.000245	1.55	465.99	115.91	0.11
Dry Creek Trib	3517.19	Max WS	DCTrib-ULT-100	647.81	104.82	114.20		114.24	0.000262	1.60	467.58	116.38	0.11
Dry Creek Trib	3426.61	Max WS	DCTrib-ULT-woBV-10yr	355.23	105.85	110.91		110.99	0.002014	2.27	156.51	68.88	0.27
Dry Creek Trib	3426.61	Max WS	DCTrib-ULT-10yr	370.77	105.85	110.98		111.06	0.002036	2.29	161.58	70.58	0.27
Dry Creek Trib	3426.61	Max WS	DC trib-ULT-woBV-100yr-BFE	625.45	105.85	114.17		114.20	0.000221	1.28	573.35	166.04	0.10
Dry Creek Trib	3426.61	Max WS	DCTrib-ULT-100	648.88	105.85	114.19		114.21	0.000235	1.32	575.53	166.18	0.10
Dry Creek Trib	3351.95	Max WS	DCTrib-ULT-woBV-10yr	355.38	106.47	110.32		110.63	0.009186	4.45	79.91	39.88	0.55
Dry Creek Trib	3351.95	Max WS	DCTrib-ULT-10yr	370.91	106.47	110.38		110.70	0.009281	4.49	82.54	40.89	0.56
Dry Creek Trib	3351.95	Max WS	DC trib-ULT-woBV-100yr-BFE	623.24	106.47	114.15		114.18	0.000338	1.54	517.79	171.63	0.12
Dry Creek Trib	3351.95	Max WS	DCTrib-ULT-100	648.31	106.47	114.16		114.19	0.000362	1.59	519.74	171.88	0.13
Dry Creek Trib	3283.95	Max WS	DCTrib-ULT-woBV-10yr	355.75	104.94	110.16		110.25	0.001474	2.43	146.57	45.63	0.24
Dry Creek Trib	3283.95	Max WS	DCTrib-ULT-10yr	371.29	104.94	110.22		110.32	0.001532	2.49	149.40	46.20	0.24
Dry Creek Trib	3283.95	Max WS	DC trib-ULT-woBV-100yr-BFE	624.02	104.94	114.13		114.16	0.000179	1.40	601.27	173.17	0.09
Dry Creek Trib	3283.95	Max WS	DCTrib-ULT-100	647.42	104.94	114.15		114.17	0.000191	1.45	603.09	173.38	0.10
Dry Creek Trib	3198.18	Max WS	DCTrib-ULT-woBV-10yr	356.00	106.27	109.78		109.96	0.005431	3.38	105.32	54.34	0.43
Dry Creek Trib	3198.18	Max WS	DCTrib-ULT-10yr	371.55	106.27	109.85		110.03	0.005407	3.41	108.94	55.26	0.43
Dry Creek Trib	3198.18	Max WS	DC trib-ULT-woBV-100yr-BFE	623.17	106.27	114.12		114.14	0.000250	1.24	514.39	157.91	0.11
Dry Creek Trib	3198.18	Max WS	DCTrib-ULT-100	646.50	106.27	114.12		114.15	0.000267	1.29	515.84	161.91	0.11
Dry Creek Trib	3093.07	Max WS	DCTrib-ULT-woBV-10yr	356.04	104.29	109.32		109.52	0.003173	3.55	102.34	39.28	0.35
Dry Creek Trib	3093.07	Max WS	DCTrib-ULT-10yr	371.59	104.29	109.38		109.59	0.003245	3.63	104.73	40.22	0.35
Dry Creek Trib	3093.07	Max WS	DC trib-ULT-woBV-100yr-BFE	611.89	104.29	114.08		114.12	0.000241	1.78	485.23	122.98	0.11
Dry Creek Trib	3093.07	Max WS	DCTrib-ULT-100	640.44	104.29	114.08		114.13	0.000263	1.87	485.98	123.11	0.12
Dry Creek Trib	2973.97	Max WS	DCTrib-ULT-woBV-10yr	355.93	104.33	109.13		109.22	0.001840	2.40	148.22	56.34	0.26
Dry Creek Trib	2973.97	Max WS	DCTrib-ULT-10yr	371.49	104.33	109.19		109.29	0.001891	2.45	151.55	57.01	0.27
Dry Creek Trib	2973.97	Max WS	DC trib-ULT-woBV-100yr-BFE	610.20	104.33	114.07		114.09	0.000116	1.21	632.64	159.91	0.08
Dry Creek Trib	2973.97	Max WS	DCTrib-ULT-100	639.07	104.33	114.07		114.10	0.000127	1.26	633.49	160.09	0.08
Dry Creek Trib	2913.07	Max WS	DCTrib-ULT-woBV-10yr	356.24	104.98	109.11		109.14	0.000790	1.90	269.32	135.08	0.18
Dry Creek Trib	2913.07	Max WS	DCTrib-ULT-10yr	371.81	104.98	109.17		109.21	0.000814	1.95	277.49	142.03	0.18
Dry Creek Trib	2913.07	Max WS	DC trib-ULT-woBV-100yr-BFE	617.17	104.98	114.08		114.08	0.000039	0.77	1333.48	305.07	0.05
Dry Creek Trib	2913.07	Max WS	DCTrib-ULT-100	642.82	104.98	114.08		114.09	0.000042	0.80	1335.29	305.17	0.05
Dry Creek Trib	2833.94	Max WS	DCTrib-ULT-woBV-10yr	356.60	104.72	109.01		109.07	0.001188	2.22	201.52	86.95	0.22
Dry Creek Trib	2833.94	Max WS	DCTrib-ULT-10yr	372.18	104.72	109.07		109.13	0.001205	2.26	206.66	89.73	0.22
Dry Creek Trib	2833.94	Max WS	DC trib-ULT-woBV-100yr-BFE	618.15	104.72	114.07		114.08	0.000025	0.61	1699.49	387.72	0.04
Dry Creek Trib	2833.94	Max WS	DCTrib-ULT-100	643.81	104.72	114.08		114.08	0.000027	0.63	1701.78	387.81	0.04
Dry Creek Trib	2749.06	Max WS	DCTrib-ULT-woBV-10yr	356.78	104.29	108.85		108.94	0.001878	2.52	145.20	63.30	0.27
Dry Creek Trib	2749.06	Max WS	DCTrib-ULT-10yr	372.36	104.29	108.90		109.00	0.001913	2.58	148.68	64.27	0.27
Dry Creek Trib	2749.06	Max WS	DC trib-ULT-woBV-100yr-BFE	609.41	104.29	114.06		114.08	0.000097	1.16	682.16	143.27	0.07
Dry Creek Trib	2749.06	Max WS	DCTrib-ULT-100	638.56	104.29	114.06		114.08	0.000106	1.21	682.81	143.37	0.08
Dry Creek Trib	2584	Max WS	DCTrib-ULT-woBV-10yr	357.04	105.16	108.65		108.71	0.001229	1.97	197.82	91.88	0.21
Dry Creek Trib	2584	Max WS	DCTrib-ULT-10yr	372.62	105.16	108.70		108.76	0.001246	2.01	202.67	92.35	0.22
Dry Creek Trib	2584	Max WS	DC trib-ULT-woBV-100yr-BFE	610.68	105.16	114.06		114.06	0.000042	0.77	1083.78	218.56	0.05
Dry Creek Trib	2584	Max WS	DCTrib-ULT-100	643.17	105.16	114.06		114.07	0.000047	0.81	1084.74	218.61	0.05
Dry Creek Trib	2510.2	Max WS	DCTrib-ULT-woBV-10yr	357.40	103.89	108.56		108.62	0.001251	2.00	189.15	94.81	0.22
Dry Creek Trib	2510.2	Max WS	DCTrib-ULT-10yr	373.00	103.89	108.61		108.67	0.001271	2.04	194.06	95.75	0.22
Dry Creek Trib	2510.2	Max WS	DC trib-ULT-woBV-100yr-BFE	611.65	103.89	114.05		114.06	0.000037	0.73	1164.12	242.68	0.05
Dry Creek Trib	2510.2	Max WS	DCTrib-ULT-100	640.83	103.89	114.06		114.06	0.000041	0.76	1165.14	242.74	0.05
Dry Creek Trib	2416.71	Max WS	DCTrib-ULT-woBV-10yr	357.71	105.06	108.17		108.33	0.006054	3.42	124.22	99.10	0.45
Dry Creek Trib	2416.71	Max WS	DCTrib-ULT-10yr	373.31	105.06	108.23		108.39	0.005809	3.43	130.12	101.75	0.44
Dry Creek Trib	2416.71	Max WS	DC trib-ULT-woBV-100yr-BFE	612.88	105.06	114.05		114.06	0.000038	0.71	1253.11	257.44	0.04
Dry Creek Trib	2416.71	Max WS	DCTrib-ULT-100	642.09	105.06	114.06		114.06	0.000041	0.74	1254.14	257.58	0.05
Dry Creek Trib	2283.78	Max WS	DCTrib-ULT-woBV-10yr	358.22	103.67	107.60		107.75	0.003516	3.08	116.94	53.42	0.35
Dry Creek Trib	2283.78	Max WS	DCTrib-ULT-10yr	373.84	103.67	107.66		107.82	0.003503	3.13	120.34	54.12	0.35
Dry Creek Trib	2283.78	Max WS	DC trib-ULT-woBV-100yr-BFE	602.66	103.67	114.04		114.05	0.000059	0.96	900.49	199.74	0.06
Dry Creek Trib	2283.78	Max WS	DCTrib-ULT-100	636.57	103.67	114.04		114.05	0.000065	1.01	901.05	199.90	0.06
Dry Creek Trib	2204.83	Max WS	DCTrib-ULT-woBV-10yr	358.47	103.53	107.43		107.53	0.002307	2.55	145.89	70.67	0.29
Dry Creek Trib	2204.83	Max WS	DCTrib-ULT-10yr	374.11	103.53	107.50		107.60	0.002287	2.59	150.57	71.32	0.29
Dry Creek Trib	2204.83	Max WS	DC trib-ULT-woBV-100yr-BFE	599.35	103.53	114.04		114.05	0.000046	0.87	912.96	172.04	0.05
Dry Creek Trib	2204.83	Max WS	DCTrib-ULT-100	633.79	103.53	114.04		114.05	0.000051	0.92	913.39	172.11	0.05
Dry Creek Trib	2121.19	Max WS	DCTrib-ULT-woBV-10yr	358.88	103.14	107.31		107.38	0.001295	2.16	168.92	67.82	0.22
Dry Creek Trib	2121.19	Max WS	DCTrib-ULT-10yr	374.54	103.14	107.38		107.45	0.001307	2.20	173.43	69.95	0.23
Dry Creek Trib	2121.19	Max WS	DC trib-ULT-woBV-100yr-BFE	604.94	103.14	114.04		114.04	0.000022	0.63	1342.76	229.52	0.04
Dry Creek Trib	2121.19	Max WS	DCTrib-ULT-100	638.89	103.14	114.04		114.04	0.000025	0.66	1343.38	229.56	0.04
Dry Creek Trib	2047.12	Max WS	DCTrib-ULT-woBV-10yr	359.23	102.89	107.04		107.20	0.004330	3.28	109.41	49.47	0.39
Dry Creek Trib	2047.12	Max WS	DCTrib-ULT-10yr	374.92	102.89	107.09		107.27	0.004339	3.34	112.35	50.26	0.39
Dry Creek Trib	2047.12	Max WS	DC trib-ULT-woBV-100yr-BFE	605.98	102.89	114.04		114.04	0.000022	0.60	1435.11	254.38	0.03
Dry Creek Trib	2047.12	Max WS	DCTrib-ULT-100	639.95	102.89	114.04		114.04	0.000024	0.63	1435.77	254.42	0.04
Dry Creek Trib	1961.65	Max WS	DCTrib-ULT-woBV-10yr	359.60	102.88	106.67		106.86	0.004720	3.50	107.22	63.87	0.41
Dry Creek Trib	1961.65	Max WS	DCTrib-ULT-10yr	375.35	102.88	106.73		106.92	0.004692	3.54	111.07	65.08	0.41
Dry Creek Trib	1961.65	Max WS	DC trib-ULT-woBV-100yr-BFE	602.74	102.88	114.03		114.04	0.000018	0.56	1561.42	256.57	0.03
Dry Creek Trib	1961.65	Max WS	DCTrib-ULT-100	637.21	102.88	114.04		114.04	0.000020	0.59	1562.06	256.60	0.03

HEC-RAS River: Dry Creek Trib Reach: Dry Creek Trib Profile: Max WS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dry Creek Trib	1846.6	Max WS	DCTrib-ULT-woBV-10yr	360.18	102.72	106.35		106.44	0.002789	2.45	146.74	74.25	0.31
Dry Creek Trib	1846.6	Max WS	DCTrib-ULT-10yr	375.93	102.72	106.42		106.51	0.002750	2.47	151.97	75.72	0.31
Dry Creek Trib	1846.6	Max WS	DC trib-ULT-woBV-100yr-BFE	604.37	102.72	114.03		114.03	0.000015	0.52	1543.64	250.80	0.03
Dry Creek Trib	1846.6	Max WS	DCTrib-ULT-100	638.85	102.72	114.03		114.04	0.000017	0.55	1544.19	250.84	0.03
Dry Creek Trib	1760.2	Max WS	DCTrib-ULT-woBV-10yr	360.52	102.08	106.17		106.25	0.001856	2.34	154.34	61.70	0.26
Dry Creek Trib	1760.2	Max WS	DCTrib-ULT-10yr	376.20	102.08	106.24		106.33	0.001869	2.37	158.77	62.46	0.26
Dry Creek Trib	1760.2	Max WS	DC trib-ULT-woBV-100yr-BFE	596.26	102.08	114.03		114.03	0.000026	0.70	1095.75	183.72	0.04
Dry Creek Trib	1760.2	Max WS	DCTrib-ULT-100	636.01	102.08	114.03		114.04	0.000029	0.74	1096.08	183.76	0.04
Dry Creek Trib	1646.18	Max WS	DCTrib-ULT-woBV-10yr	361.07	102.20	106.06		106.10	0.000907	1.64	220.18	88.00	0.18
Dry Creek Trib	1646.18	Max WS	DCTrib-ULT-10yr	376.79	102.20	106.13		106.17	0.000909	1.66	226.49	88.73	0.18
Dry Creek Trib	1646.18	Max WS	DC trib-ULT-woBV-100yr-BFE	597.90	102.20	114.03		114.03	0.000012	0.49	1537.34	241.73	0.03
Dry Creek Trib	1646.18	Max WS	DCTrib-ULT-100	637.68	102.20	114.03		114.03	0.000014	0.53	1537.80	241.78	0.03
Dry Creek Trib	1553.96	Max WS	DCTrib-ULT-woBV-10yr	360.72	101.85	105.99		106.03	0.000685	1.66	235.80	123.17	0.16
Dry Creek Trib	1553.96	Max WS	DCTrib-ULT-10yr	376.38	101.85	106.06		106.11	0.000685	1.69	244.68	125.95	0.17
Dry Creek Trib	1553.96	Max WS	DC trib-ULT-woBV-100yr-BFE	597.86	101.85	114.03		114.03	0.000008	0.42	1920.88	257.87	0.02
Dry Creek Trib	1553.96	Max WS	DCTrib-ULT-100	637.67	101.85	114.03		114.03	0.000009	0.45	1921.37	257.90	0.02
Dry Creek Trib	1451.16	Max WS	DCTrib-ULT-woBV-10yr	360.17	101.85	105.87		105.94	0.001221	2.17	178.78	97.34	0.22
Dry Creek Trib	1451.16	Max WS	DCTrib-ULT-10yr	375.11	101.85	105.94		106.01	0.001212	2.20	185.90	99.14	0.22
Dry Creek Trib	1451.16	Max WS	DC trib-ULT-woBV-100yr-BFE	597.83	101.85	114.02		114.03	0.000010	0.47	1859.74	276.57	0.02
Dry Creek Trib	1451.16	Max WS	DCTrib-ULT-100	633.39	101.85	114.03		114.03	0.000011	0.50	1860.24	276.60	0.03
Dry Creek Trib	1386.3	Max WS	DCTrib-ULT-woBV-10yr	360.15	101.74	105.86		105.88	0.000358	1.28	281.69	83.77	0.12
Dry Creek Trib	1386.3	Max WS	DCTrib-ULT-10yr	375.08	101.74	105.93		105.96	0.000362	1.31	287.78	84.18	0.12
Dry Creek Trib	1386.3	Max WS	DC trib-ULT-woBV-100yr-BFE	592.89	101.74	114.02		114.03	0.000013	0.55	1315.33	189.34	0.03
Dry Creek Trib	1386.3	Max WS	DCTrib-ULT-100	633.35	101.74	114.02		114.03	0.000015	0.59	1315.61	189.38	0.03
Dry Creek Trib	1316.1	Max WS	DCTrib-ULT-woBV-10yr	429.48	101.72	105.74		105.82	0.001273	2.29	197.24	72.63	0.22
Dry Creek Trib	1316.1	Max WS	DCTrib-ULT-10yr	449.47	101.72	105.81		105.89	0.001297	2.35	202.20	73.60	0.23
Dry Creek Trib	1316.1	Max WS	DC trib-ULT-woBV-100yr-BFE	606.89	101.72	114.01		114.02	0.000021	0.68	1169.98	171.14	0.04
Dry Creek Trib	1316.1	Max WS	DCTrib-ULT-100	851.23	101.72	114.01		114.02	0.000041	0.96	1170.10	171.15	0.05
Dry Creek Trib	1251.98	Max WS	DCTrib-ULT-woBV-10yr	429.23	102.21	105.63		105.72	0.001815	2.52	180.13	77.07	0.26
Dry Creek Trib	1251.98	Max WS	DCTrib-ULT-10yr	449.46	102.21	105.69		105.79	0.001835	2.57	185.19	77.71	0.27
Dry Creek Trib	1251.98	Max WS	DC trib-ULT-woBV-100yr-BFE	482.29	102.21	114.01		114.01	0.000013	0.53	1201.61	184.50	0.03
Dry Creek Trib	1251.98	Max WS	DCTrib-ULT-100	509.72	102.21	114.01		114.01	0.000015	0.57	1201.68	184.51	0.03
Dry Creek Trib	1184.63	Max WS	DCTrib-ULT-woBV-10yr	429.20	101.72	105.55		105.62	0.001237	2.07	210.71	81.54	0.22
Dry Creek Trib	1184.63	Max WS	DCTrib-ULT-10yr	449.21	101.72	105.62		105.69	0.001257	2.12	215.99	82.02	0.22
Dry Creek Trib	1184.63	Max WS	DC trib-ULT-woBV-100yr-BFE	497.99	101.72	114.01		114.01	0.000011	0.48	1304.02	196.52	0.03
Dry Creek Trib	1184.63	Max WS	DCTrib-ULT-100	622.75	101.72	114.01		114.01	0.000017	0.60	1304.08	196.53	0.03
Dry Creek Trib	1089.34	Max WS	DCTrib-ULT-woBV-10yr	428.92	102.51	105.37		105.46	0.002409	2.43	184.97	98.01	0.29
Dry Creek Trib	1089.34	Max WS	DCTrib-ULT-10yr	448.94	102.51	105.43		105.53	0.002377	2.46	191.45	98.71	0.29
Dry Creek Trib	1089.34	Max WS	DC trib-ULT-woBV-100yr-BFE	482.23	102.51	114.01		114.01	0.000009	0.44	1377.38	194.59	0.02
Dry Creek Trib	1089.34	Max WS	DCTrib-ULT-100	493.53	102.51	114.01		114.01	0.000010	0.45	1377.44	194.59	0.02
Dry Creek Trib	995.38	Max WS	DCTrib-ULT-woBV-10yr	428.35	101.68	105.13		105.25	0.002136	2.77	155.87	56.91	0.29
Dry Creek Trib	995.38	Max WS	DCTrib-ULT-10yr	448.66	101.68	105.19		105.32	0.002187	2.84	159.31	57.41	0.29
Dry Creek Trib	995.38	Max WS	DC trib-ULT-woBV-100yr-BFE	399.59	101.68	114.00		114.01	0.000010	0.49	1077.54	158.27	0.03
Dry Creek Trib	995.38	Max WS	DCTrib-ULT-100	408.62	101.68	114.00		114.01	0.000011	0.50	1077.55	158.27	0.03
Dry Creek Trib	914.19	Max WS	DCTrib-ULT-woBV-10yr	428.32	101.54	105.05		105.12	0.001073	2.15	219.76	87.91	0.21
Dry Creek Trib	914.19	Max WS	DCTrib-ULT-10yr	448.34	101.54	105.11		105.18	0.001100	2.20	225.04	88.72	0.21
Dry Creek Trib	914.19	Max WS	DC trib-ULT-woBV-100yr-BFE	416.31	101.54	114.00		114.00	0.000007	0.40	1470.38	222.60	0.02
Dry Creek Trib	914.19	Max WS	DCTrib-ULT-100	425.85	101.54	114.00		114.00	0.000007	0.41	1470.40	222.61	0.02
Dry Creek Trib	838.37	Max WS	DCTrib-ULT-woBV-10yr	427.99	101.53	105.01		105.05	0.000832	1.67	315.74	164.71	0.18
Dry Creek Trib	838.37	Max WS	DCTrib-ULT-10yr	448.30	101.53	105.07		105.11	0.000834	1.70	325.81	165.50	0.18
Dry Creek Trib	838.37	Max WS	DC trib-ULT-woBV-100yr-BFE	482.29	101.53	114.00		114.00	0.000004	0.29	2219.74	276.24	0.02
Dry Creek Trib	838.37	Max WS	DCTrib-ULT-100	477.02	101.53	114.00		114.00	0.000004	0.29	2219.76	276.25	0.02
Dry Creek Trib	755.74	Max WS	DCTrib-ULT-woBV-10yr	427.94	101.54	104.95		104.98	0.000719	1.67	330.38	163.66	0.17
Dry Creek Trib	755.74	Max WS	DCTrib-ULT-10yr	448.02	101.54	105.01		105.04	0.000727	1.70	340.25	165.36	0.17
Dry Creek Trib	755.74	Max WS	DC trib-ULT-woBV-100yr-BFE	498.11	101.54	114.00		114.00	0.000003	0.27	2850.78	400.42	0.01
Dry Creek Trib	755.74	Max WS	DCTrib-ULT-100	509.82	101.54	114.00		114.00	0.000003	0.27	2850.82	400.42	0.01
Dry Creek Trib	655.85	Max WS	DCTrib-ULT-woBV-10yr	427.71	101.67	104.87		104.91	0.000706	1.65	283.05	116.78	0.17
Dry Creek Trib	655.85	Max WS	DCTrib-ULT-10yr	448.00	101.67	104.93		104.97	0.000724	1.69	289.80	117.76	0.17
Dry Creek Trib	655.85	Max WS	DC trib-ULT-woBV-100yr-BFE	466.08	101.67	114.00		114.00	0.000003	0.26	2841.73	483.68	0.01
Dry Creek Trib	655.85	Max WS	DCTrib-ULT-100	460.11	101.67	114.00		114.00	0.000003	0.26	2841.73	483.68	0.01
Dry Creek Trib	563.63	Max WS	DCTrib-ULT-woBV-10yr	427.70	101.75	104.83		104.86	0.000568	1.44	348.69	167.57	0.15
Dry Creek Trib	563.63	Max WS	DCTrib-ULT-10yr	447.96	101.75	104.89		104.91	0.000578	1.47	358.21	168.89	0.15
Dry Creek Trib	563.63	Max WS	DC trib-ULT-woBV-100yr-BFE	482.27	101.75	114.00		114.00	0.000002	0.23	3362.47	541.83	0.01
Dry Creek Trib	563.63	Max WS	DCTrib-ULT-100	540.87	101.75	114.00		114.00	0.000003	0.25	3362.47	541.83	0.01
Dry Creek Trib	466	Max WS	DCTrib-ULT-woBV-10yr	427.68	101.78	104.74	103.24	104.78	0.001094	1.75	301.76	183.88	0.20
Dry Creek Trib	466	Max WS	DCTrib-ULT-10yr	447.90	101.78	104.80	103.28	104.84	0.001090	1.77	312.14	184.98	0.20
Dry Creek Trib	466	Max WS	DC trib-ULT-woBV-100yr-BFE	21.59	101.78	114.00	102.09	114.00	0.000000	0.01	3336.83	550.90	0.00
Dry Creek Trib	466	Max WS	DCTrib-ULT-100	23.24	101.78	114.00	102.10	114.00	0.000000	0.01	3336.83	550.90	0.00

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Memorandum

Date: October 25, 2019

To: Nick Papani
Raney Planning & Management, Inc.
1501 Sports Drive, Suite A
Sacramento, CA 95834

From: Shawn Somers, P.E.

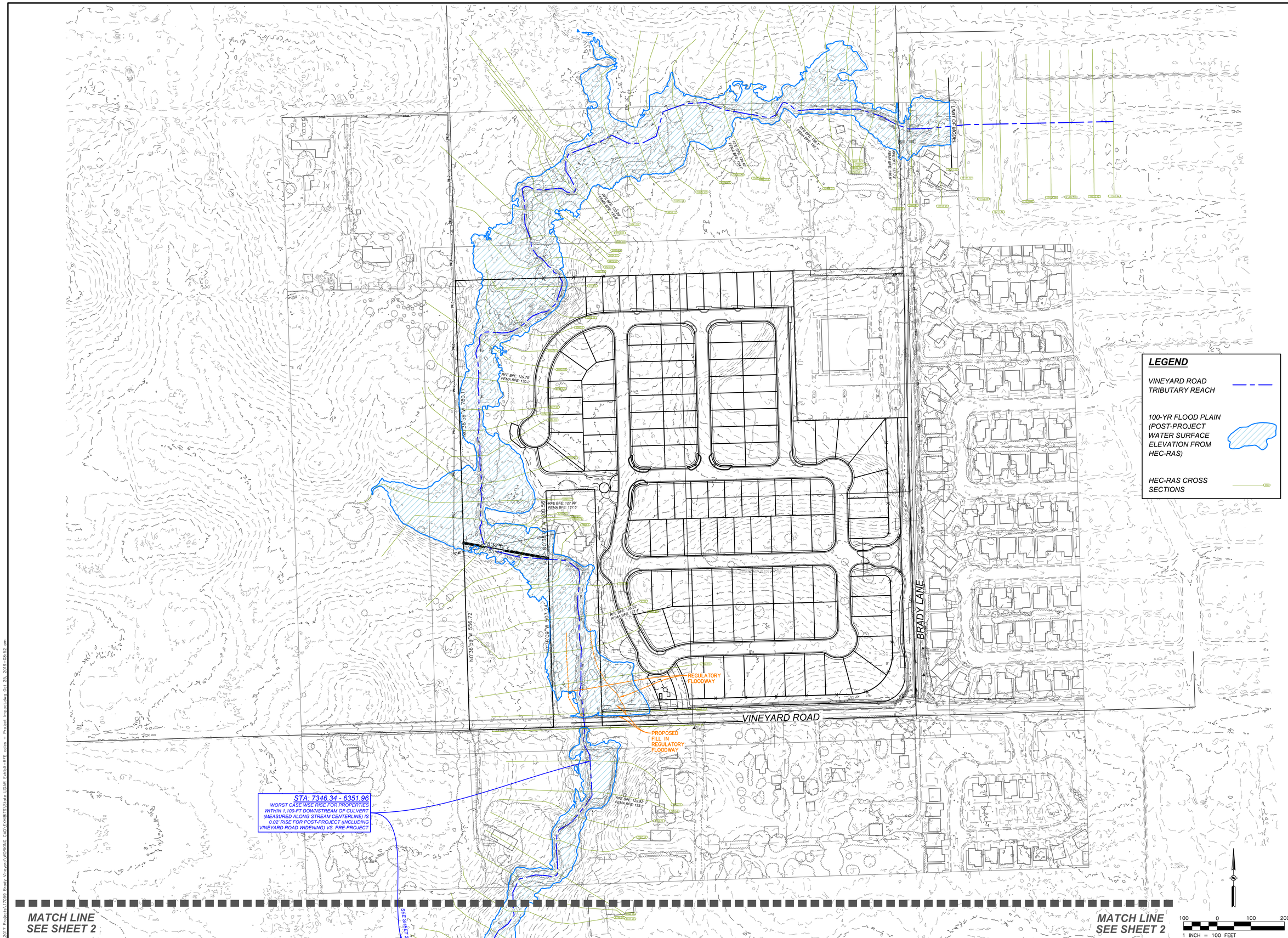
Subject: Brady Vineyard Post-Project vs. Pre-Project Drainage Addendum
RFE Project No. 17059

This memorandum addresses the post-project vs. pre-project 100-year flood boundary for the Brady Vineyard project. The *Preliminary Drainage Study & Stormwater Quality Plan for Brady-Vineyard Subdivision* included an exhibit showing the worst-case 100-year flood boundary for the Dry Creek Vineyard Road Tributary. This exhibit examined both the calculated 100-year water surface elevation (WSE) values from the HEC-RAS model completed by RFE Engineering, Inc. as well as the FEMA mapped water surface elevations and combined them into a worst-case exhibit. Wherever the FEMA WSEs were higher, the exhibit used the FEMA WSEs, and wherever the calculated RFE WSEs were higher, the exhibit showed the calculated RFE WSEs.

In the process of reviewing the EIR for the associated project, we determined that this exhibit was more conservative than required for our analysis, and it would be better for comparison purposes to use only the calculated RFE WSEs. We believe the WSEs calculated using the RFE HEC-RAS model are more accurate than the FEMA WSEs because of the higher accuracy model (including more detailed terrain and more frequent cross-sections along the channel) than what we believe FEMA used. This is reflected in the fact that FEMA WSEs were only published on the FEMA map to the nearest 0.1-foot, whereas we are confident using the nearest 0.01-foot for the calculated WSEs.

The attached exhibit shows the floodplain boundary for the 100-year storm as calculated from the RFE HEC-RAS model in the post-project condition including the improvements to Vineyard Road which will add fill to the floodplain. Importantly, this exhibit shows that the post-project floodplain of the Dry Creek Vineyard Road Tributary will not overtop the culvert in Vineyard Road, nor will it encroach into Vineyard Road at any point.

Attachment: Flood Model Exhibit – Post-Project



REVISION	DATE	BY	APPRV'D

	BY	CHECK NO.
DESIGN	SBS	RFE
DRAWN	SBS	RFE
QUANT.		

ORIGINAL SCALE IS IN INCHES 0 1 2

PROFESSIONAL ENGINEER — CALIFORNIA — No. C 80825 — REGISTERED — RICHARD FE ENGINEER

PRELIMINARY NOT FOR CONSTRUCTION

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BRADY VINEYARD SUBDIVISION
BRADY LANE AND VINEYARD ROAD,
ROCKLIN, PLACER COUNTY, CA
(APNS: 472-020-002 & 017 & 472-020-034)

FLOOD MODEL EXHIBIT
POST-PROJECT

Drawing	Sheet
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10/24/2019

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

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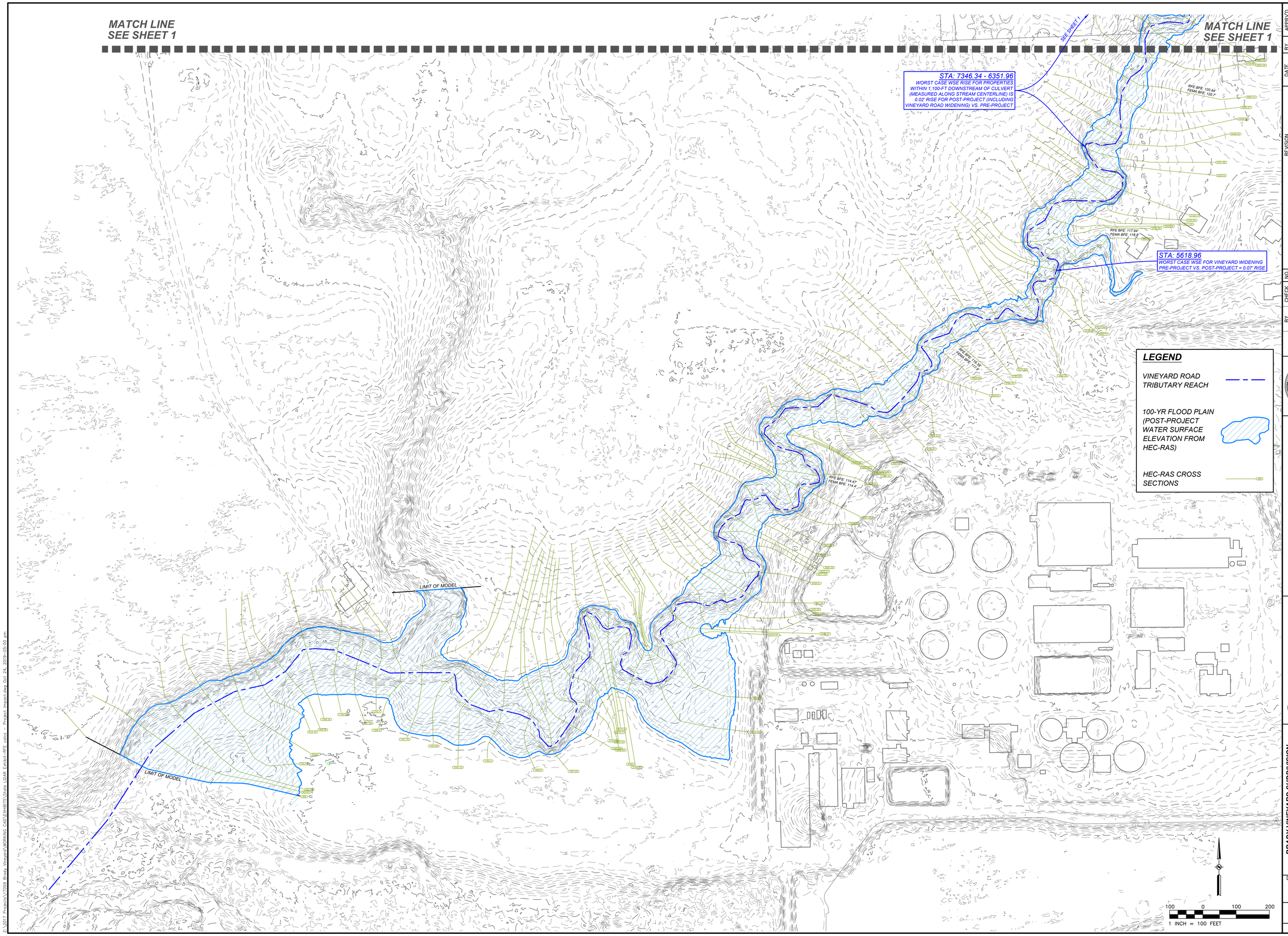

	BY	DATE	REVISION	CHECK. NO.	BY	APPRV'D
DESIGN	SBS			RFE		
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QUANT.						

ORIGINAL SCALE IS IN INCHES 0 1 2

PROFESSIONAL ENGINEER CALIFORNIA No. C 80825 REGISTERED

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BRADY VINEYARD SUBDIVISION
BRADY LANE AND VINEYARD ROAD,
PLACER COUNTY, CA
(APNS 021-090-006 & 021-090-034)

FLOOD MODEL EXHIBIT
POST-PROJECT

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10/24/2019

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

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APPENDIX J

TECHNICAL NOISE ANALYSIS

Brady Vineyard Subdivision

Brady Lane and Vineyard Road
Placer County, California

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NOISE APPENDIX

Executive Summary

This report analyzes the existing noise levels and potential noise impacts of the proposed Brady Vineyard Subdivision (the "project"). The project would consist of the construction and operation of a 119-unit single family residential housing development including parks, trails, landscaping and utility improvements on a 35-acre project site. In addition, the project would include the widening of Brady Lane and Vineyard Road along project frontages, and off-site sewer improvements. The project site is located at the northwest corner of Vineyard Road and Brady Lane in an unincorporated area of Placer County, CA. The project site is located adjacent to the City of Roseville limits, within the Dry Creek-West Placer Community Plan (DCWPCP) area. The project site is identified by Assessor's Parcel Numbers (APNs) 473-020-002 & -013.

The major source of noise on the project site is traffic noise from Brady Lane and Vineyard Road. To quantify existing ambient noise levels in the immediate project vicinity, RCH conducted short-term (10-minute) noise measurements at six locations and two long-term (72-hour) measurements of existing noise levels at the project site. RCH also conducted one short-term noise measurement east of the project site at the northwest corner of Vineyard Road and Riesling Drive where off-site sewer improvements would be constructed. The short-term noise measurements were conducted near Brady Lane and Vineyard Road to measure peak-hour morning traffic noise and at other locations on the project site to measure ambient noise levels farther from roadways. The long-term noise measurement locations were selected as close as possible to the locations of future building envelopes nearest to Brady Lane and Vineyard Road to capture the existing noise levels that would affect the proposed residences.

Future cumulative traffic scenario noise modeling predicted that the closest outdoor activity areas fronting Brady Lane would have a noise level of approximately 67-68 dB Ldn/CNEL. The closest outdoor activity areas fronting Vineyard Road would have a noise level of approximately 67 dB Ldn/CNEL. Therefore, noise from transportation sources under the future cumulative traffic scenario would potentially exceed the Placer County standard of 60 dB Ldn/CNEL at the outdoor activity areas of the residences fronting Brady Lane and Vineyard Road. The Placer County General Plan indicates a noise level up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with the 45 dB Ldn/CNEL standard. Construction of a 5-foot noise barrier along the project frontages on Vineyard Road and Brady Lane would reduce future cumulative traffic noise to less than 65 dB Ldn/CNEL at all proposed outdoor activity areas (Mitigation Measure N-1).

Typical residential construction consistent with the Uniform Building Code will provide an exterior-to interior noise level reduction of no less than 25 dB provided that exterior windows/doors are closed. With a 25 dB reduction, interior noise levels at residences closest to Brady Lane and Vineyard Road with future cumulative traffic would be approximately 43 and 42 dB Ldn/CNEL, respectively, well below the 45 dB Ldn interior noise level standard. Interior noise levels with the project would comply with the Placer County transportation noise source standards, and no mitigation for interior noise levels would be required.

Project construction is required to comply with the construction hours specified in the Planning Commission revisions to the Placer County Board of Supervisors Minute Order 90-08. Compliance with the required construction hours would result in a less than significant impact.

Construction activities associated with the proposed off-site sewer improvements in the City of Roseville is required to comply with the City of Roseville Municipal Code, which includes construction hours that are less restrictive than the Placer County and DCWPCP. Compliance with the City of Roseville Municipal Code would result in a less than significant impact.

Based on the construction equipment to be used and the distance from construction to the nearest structures, vibration from the project would not be a concern and impacts would be less than significant.

The analysis identified no impacts from airport noise, as there are no airports near the project site.

Introduction

RCH Group (RCH) has conducted this noise assessment for the Brady Vineyard Subdivision (the "project"). The project would consist of the construction and operation of a 119-unit single family residential housing development including parks, trails, landscaping and utility improvements on a 35-acre project site. In addition, the project would include the widening of Brady Lane and Vineyard Road along project frontages, and off-site sewer improvements. The project site is located at the northwest corner of Vineyard Road and Brady Lane in an unincorporated area of Placer County, CA. The project site is located adjacent to the City of Roseville limits, within the Dry Creek-West Placer Community Plan (DCWPCP) area. The project site is identified by Assessor's Parcel Numbers (APNs) 473-020-002 and -013.

The project site is currently undeveloped. **Figure 2** shows the project location and boundary. Vacant land and a church fronting Brady Lane is immediately north of the project site. The nearest home to the west of the project site is approximately 1,000 feet from the site boundary with vacant land in between. A single-family residential subdivision is to the east of the project site across Brady Lane and is screened by a sound barrier and landscaping. Four residential properties are south of the project site across Vineyard Road. There is also a single-family home and associated outbuilding on a two-acre rectangular-shaped parcel fronting Vineyard Road that extends approximately 700 feet north (roughly halfway) into the project site (See **Figure 2**).

This report analyzes the noise impacts from the project and is prepared in a format to answer the noise questions in the Initial Study Environmental Checklist Form in Appendix G of the State *CEQA Guidelines (Revised in 2019)*. This report provides an overview of existing noise levels measured at the project site, local noise regulatory framework, and an analysis of potential noise and vibration impacts that would result from construction and operation of the project.

Noise Analysis

XI. NOISE -- Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Background:

Noise Descriptors

To describe noise environments and to assess impacts on noise–sensitive areas, a frequency weighting measure, which simulates human perception, is commonly used. It has been found that A–weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dB)[1] is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **Table 1** identifies decibel levels for common sounds heard in the environment.

Table 1: Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80–90	Diesel truck at 50 feet	Loud television at 3 feet
70–80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60–70	Commercial area	Normal speech at 3 feet
40–60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: (modified from Caltrans Technical Noise Supplement, 1998)

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A-weighted sound level over a given time period (Leq);[2] average day-night 24-hour average sound level (Ldn)[3] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL),[4] also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

[1] A decibel (dB) is a unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level") measured in dB. An A-weighted decibel (dB) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels.

[2] The Equivalent Sound Level (L_{eq}) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

[3] L_{dn} is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10–decibel penalty applied to night between 10:00 P.M. and 7:00 A.M.

[4] CNEL is the average A–weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 P.M., and an addition of a 10–decibel penalty in the night between 10:00 P.M. and 7:00 A.M.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

Noise Standards

Placer County General Plan

The Noise Section of the Placer County General Plan establishes goals and policies for both transportation and non-transportation noise sources. Allowable noise levels within specified zone districts applicable to new projects affected by or including non-transportation noise sources are shown in **Table 2**. The maximum allowable noise exposure at residential land uses from transportation noise sources is shown in **Table 3**. As shown in **Table 3**, the maximum allowable exposure to transportation noise sources for residential land uses is 60 dB Ldn at outdoor activity areas and 45 dB Ldn in interior spaces.

Table 2: Exterior Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	Property Line of Receiving Land Use Ldn, dB	Interior Spaces Ldn, dB
Residential Adjacent to Industrial	60	45
Other Residential	50	45
Professional Office	70	45
Neighborhood Commercial	70	45
General Commercial	70	45
Shopping Center	70	45
Farm/Agriculture	See footnote	-

Source: Placer County General Plan, 2013

Notes: Normally, agricultural uses are noise insensitive and will be treated this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within or adjacent to agricultural zone districts. Therefore where effects of agricultural noise upon residences located in these areas is a concern, an Ldn of 70 dBA will be considered acceptable outdoor exposure at a residence.

Table 3: Maximum Allowable Noise Exposure to Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] Ldn/CNEL, dB	Interior Spaces Ldn/CNEL, dB
Residential	60[2]	45

Source: Placer County General Plan, 2013

Notes:

[1]Where the location of the outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2]Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Placer County Noise Ordinance

The Placer County Noise Ordinance sets limits for sensitive receptors and makes it unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied or otherwise controlled by such person that:

1. Causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five dBA; or
2. Exceeds the sound level standards as set forth in **Table 4**, whichever is the greater

Table 4: Placer County Noise Ordinance Sound Level Standards (On-site)

Sound Level Descriptor	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
Hourly Leq, dB	55	45
Maximum level, (Lmax) dB	70	65

Source: Placer County Noise Ordinance

The Placer County Noise Ordinance exempts construction between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. Saturday and Sunday, provided that all construction equipment is fitted with factory installed muffling devices and that all construction equipment is maintained in good working order. However, the hours of construction were modified in the Planning Commission revisions to the Placer County Board of Supervisors Minute Order 90-08 and the following is applicable to the project:

> Construction noise emanating from any construction activities for which a Grading or Building Permit is required is prohibited on Sundays and Federal Holidays, and shall only occur: a) Monday through Friday, 6:00 a.m. to 8:00 p.m. (during daylight savings) b) Monday through Friday, 7:00 a.m. to 8:00 p.m. (during standard time) c) Saturdays, 8:00 a.m. to 6:00 p.m.
>
> In addition, temporary signs shall be located throughout the project, as determined by the Development Review Committee, at key intersections depicting the above construction hour limitations.

Dry Creek-West Placer Community Plan

Policy 7 of the Noise Section of the Dry Creek-West Placer Community Plan (DCWCP) (Placer County 1990) limits construction activities to daytime hours (7:00 a.m. to 7:00 p.m. Monday through Friday).

City of Roseville Noise Ordinance

Roseville Municipal Code Section 9.24.030 (G): Construction, alteration or repair activities shall not be permitted at any time other than between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday and 8:00 a.m. and 8:00 p.m. Saturdays, Sundays, and State and Federal Legal Holidays. Provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.

Significance Criteria

Based on these criteria, operational noise impacts of the residential development would be significant if they result in exceedance of noise standards contained in the Placer County Noise Ordinance at nearby residential land uses. A significant impact would also occur if residents at the project site are exposed to transportation noise sources in excess of the Placer County maximum allowable noise exposure from transportation noise sources contained in the Placer County General Plan. Future cumulative traffic noise increases attributable to the project would be significant if the noise level increase is 3 dB, Ldn or greater (FICON, 2000). Temporary construction noise impacts would be significant if construction conflicts with the construction hours in the Placer County Planning Commission revisions to the Placer County Board of Supervisors Minute Order 90-08 or the City of Roseville Noise Ordinance (for proposed off-site sewer improvements).

Existing Noise Sources and Levels

To quantify existing ambient noise levels in the immediate project vicinity, RCH conducted short-term (10-minute) noise measurements at six locations and two long-term (72-hour) measurements of existing noise levels at the project site. RCH also conducted one short-term noise measurement east of the project site at the northwest corner of Vineyard Road and Riesling Drive, near the proposed off-site sewer improvements alignment. The short-term noise measurements were conducted near Brady Lane and Vineyard Road to measure peak-hour morning traffic noise and at other locations on the project site to measure ambient noise levels farther from roadways. The long-term noise measurement locations were selected as close as possible to the locations of future building envelopes nearest to Brady Lane and Vineyard Road to capture the existing noise levels that would affect the proposed residences. The noise measurement sites are shown in **Figure 1**. The noise measurements are summarized in **Table 5** below and 24-hour noise plots and sound level data are provided in the Noise Appendix. The dominant source of noise during the measurements was traffic from Brady Lane and Vineyard Road. Other than that there were birds, and distant train movements and train horns from the Roseville Rail Yard.

As indicated in **Table 5**, short-term noise measurements at the site were conducted on Friday March 29, 2019. The average noise level (Leq) for the 5-minute periods measured near Brady Lane during peak-hour morning traffic was 60 dB approximately 50 feet from the centerline (Site 3). The average noise level (Leq) for the 5-minute periods measured near Vineyard Road during peak-hour morning traffic was 54-56 dB approximately 55 feet from the centerline (Site 5) and 54-55 dB approximately 60 feet from the centerline (Site 6). The long-term sound level measurements were conducted from Friday March 29 through Sunday March 31, 2019 at Site 1 and from April 7, 2019 through April 9, 2019 at Site 2. The 24-hour noise level (Ldn/CNEL) was 57-60 dB at Site 1 and 59-60 dB at Site 2.

Existing Sensitive Receptors

Noise sensitive land uses typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes and recreation areas. The project site is currently undeveloped. **Figure 2** shows the project location and boundary. Vacant land and a church fronting Brady Lane is immediately north of the project site. The nearest home to the west of the project site is approximately 1,000 feet from the site boundary with vacant land in between. A neighboring single-family residential subdivision is to the east of the project site across Brady Lane and is screened by a sound barrier and landscaping. Four residential properties are south of the project site across Vineyard Road. There is also a single-family home and associated outbuilding on a two-acre rectangular-shaped parcel fronting Vineyard Road that extends approximately 700 feet north (roughly halfway) into the project site (See **Figure 2**).

Figure 1
Noise Measurement Locations

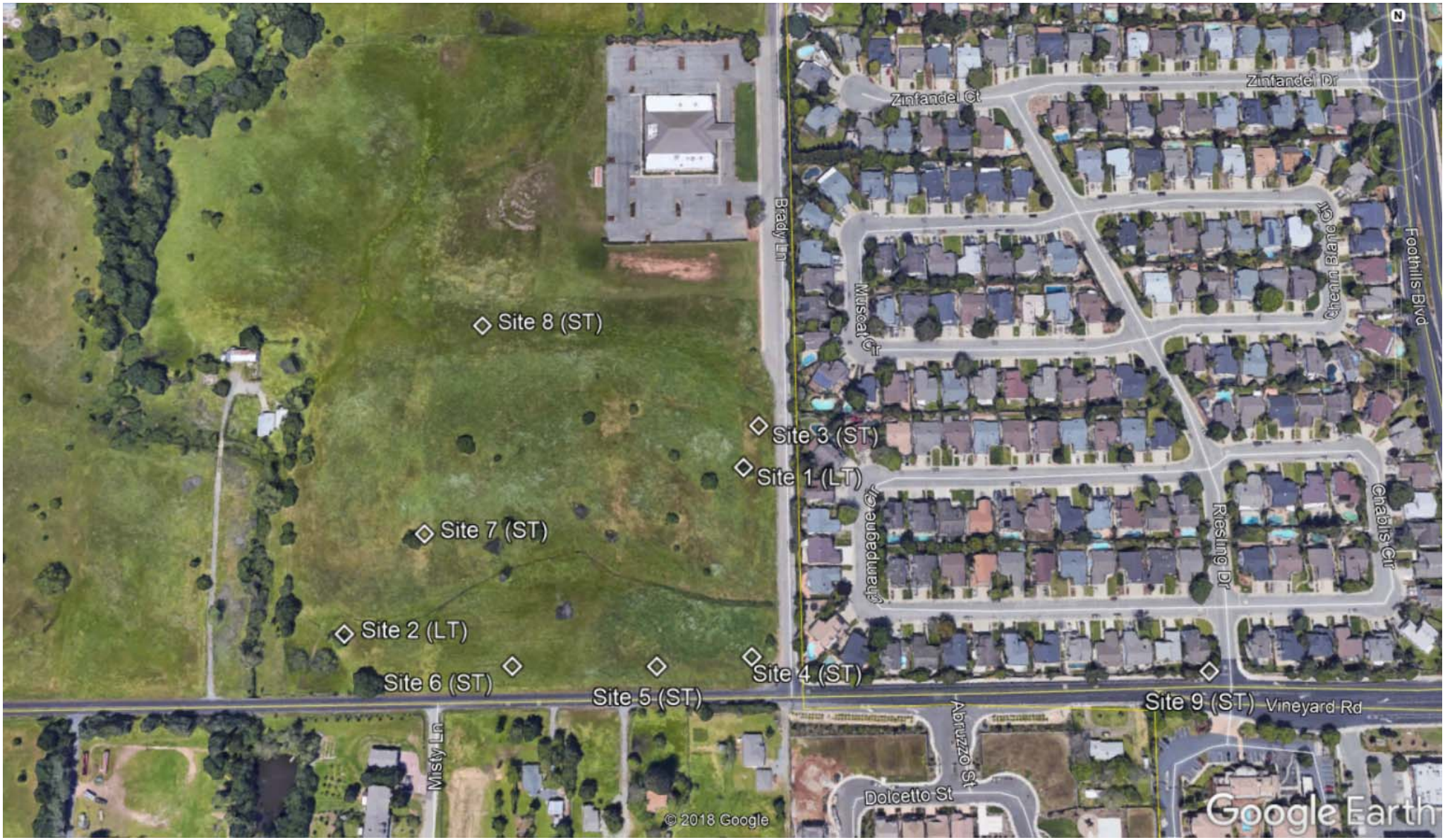


Figure 2
Project Location

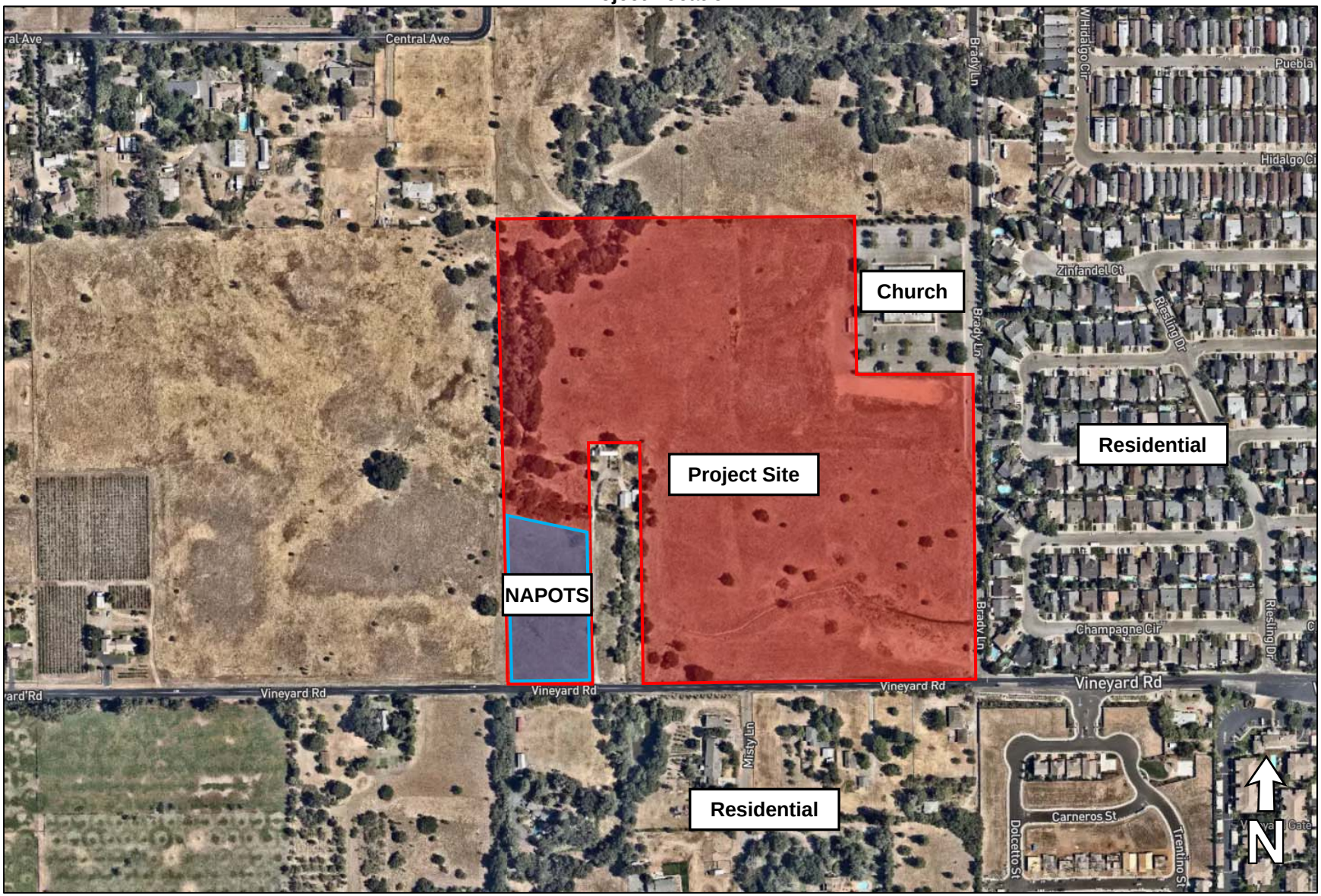


Table 5: Existing Noise Measurements

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1. Eastern edge of project site, 75 feet west of the centerline of Brady Lane.	Friday, March 29, 12:00 a.m. through Sunday, March 31, 11:59 p.m., 2019 72-hour measurement	24-hour Ldns: 60, 58, 57 Hourly Leqs ranged from: 47-63	Unattended noise measurements do not specifically identify noise sources. See data graphs in Noise Appendix.
Site 2. Southern edge of project site, 120 feet north of the centerline of Vineyard Road.	Sunday, April 7, 12:00 a.m. through Tuesday, April 9, 11:59 p.m., 2019 72-hour measurement	24-hour Ldns: 60, 59, 60 Hourly Leqs ranged from: 46-61	Unattended noise measurements do not specifically identify noise sources. See data graphs in Noise Appendix.
Site 3. 50 feet west of the centerline of Brady Lane.	Friday March 29, 2019 7:48 – 7:58 a.m.	5-Min Leqs: 60, 60 5-Min Lmaxs: 74, 69	Cars on Brady Lane 74, 67, 68, 68, 69, 64, & 68 dB. Train noise (no horn) ~60 dB. Train horn ~67 dB and ~53 dB.
Site 4. Northwest corner of Brady Lane and Vineyard Road. 70 feet west of Brady Lane centerline and 70 feet north of Vineyard Road centerline.	Friday March 29, 2019 8:04 – 8:14 a.m.	5-Min Leqs: 54, 55 5-Min Lmaxs: 64, 66	Bird noise ~48 dB, lots of bird noise, constant bird noise. Cars generally 55-66 dB approaching stop sign. Sirens (below ambient noise level). Plane overhead ~56 dB.
Site 5. Southern edge of project site, 55 feet north of Vineyard Road.	Friday March 29, 2019 8:18 – 8:28 a.m.	5-Min Leqs: 54, 56 5-Mine Lmaxs: 64, 69	Cars generally 56-65 dB. Bird noise ~48 dB. Train horn noise 49-54 dB. Leaf blower noise ~50 dB. Plane flyover ~55 dB.
Site 6. Southern edge of project site, 60 feet north of Vineyard Road.	Friday March 29, 2019 8:30 – 8:40 a.m.	5-Min Leqs: 55, 54 5-Min Lmaxs: 63, 64	Cars generally 55-64 dB. Rooster noise ~50-52 dB. Leaf blower noise ~49-53 dB. Garbage truck on Misty Lane 62 dB. Birds chirping ~52 dB. Background noise is affected by constant bird noise.
Site 7. South central portion of project site, 300 feet north of Vineyard Road centerline.	Friday March 29, 2019 8:44 – 8:54 a.m.	5-Min Leqs: 49, 47 5-Min Lmaxs: 57, 63	Garbage truck noise on Vineyard 52-56 dB. Dog barking ~47 dB. Birds chirping, ambient down to 43-44 dB with no bird noise. Train horns < 50 dB. Cars on Vineyard generally 45-50 dB.
Site 8. Middle of project site, 700 feet north of	Friday	5-Min Leqs: 42, 42	Cars generally 55-64 dB. Rooster noise ~50-52 dB. Leaf

Vineyard Road centerline and 550 feet west of Brady Lane centerline.	March 29, 2019 8:58 – 9:08 a.m.	5-Min Lmaxs: 48, 55	blower noise ~49-53 dB. Garbage truck on Misty Lane 62 dB. Birds chirping ~52 dB. Background noise is affected by constant bird noise.
Site 9. Northwest corner of Vineyard Road and Riesling Drive.	Friday March 29, 2019 9:34 – 9:44 a.m.	5-Min Leqs: 63, 66 5-Min Lmaxs: 76, 76	Cars and trucks 67-76 dB. Backup beeper at AMPM. Garbage noise at Vineyard Gate Apartments ~60 dB.

Source: RCH Group, 2019

Impacts

Potential noise impacts associated with the project would be related to noise from the construction of the residences and/or long-term noise from the residences. After construction, the impacts would include the effect of the environmental noise (including traffic) on the residences and any noise generated by the residences that would affect surrounding land uses. In general, residences are one of the quietest land uses (other than open space), and noise from the residences would be considered compatible with the surrounding residences. This analysis will not further assess impacts from noise generated by the residences.

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? **Less than Significant with Mitigation.**

Potential Traffic Noise Impacts on Project Residences

Exterior Noise Levels

The closest outdoor activity areas to roadways would be the backyards of the closest proposed homes to Vineyard Road and Brady Lane (approximately 60 feet from the centerline of Vineyard Road and 75 feet from the centerline of Brady Lane). See **Table 5** for existing 24-hour noise levels at the project site.

RCH conducted traffic noise modeling using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) to analyze the potential impact on proposed residences from existing plus project traffic and future cumulative traffic scenarios (See Noise Appendix for detailed modeling results and assumptions) (Barry and Reagan, 1978). The existing plus project traffic and future cumulative traffic predicted noise levels were based on a conservative estimate of 10 percent of all average daily traffic (ADT) in the peak hour. Trip generation data was provided by KD Anderson & Associates to be consistent with the project-specific traffic study. The peak hour was then used as an estimate of the 24-hour future Ldn/CNEL. It is a fairly typical case, that Ldn/CNEL is approximately equal to the peak hour Leq. The rule of thumb is that Ldn or CNEL is within +/- 2 dB of the peak hour Leq under normal conditions. For the two weekday long-term measurements conducted at Sites 1 and 2, the Ldn/CNEL was equal to the peak hour Leq at Site 1 and the Ldn/CNEL was +1 dB from the peak hour Leq at Site 2 (*Technical Noise Supplement*, Caltrans, 1998). Therefore, this analysis assumes the modelled peak hour Leq is equal to the estimated future cumulative Ldn or CNEL at the project site. **Table 6** displays the predicted noise level estimates at project outdoor activity areas at the closest proposed residences fronting Brady Lane and Vineyard Road for the modelled project scenarios.

Table 6: Estimated Transportation Noise Levels at Project Outdoor Activity Areas (dB, Ldn/CNEL)

Roadway Segment / Scenario	Existing	Existing Plus Project	Project Increase from Existing	Future Cumulative Traffic No Project	Future Cumulative Traffic Plus Project	Project Increase from Future Cumulative
Brady Ln (S)	59.2	61.5	+2.3	67.8	68.2	+0.4
Brady Ln (N)	59.2	60.6	+1.4	66.8	67.1	+0.3
Vineyard Rd	62.0	62.1	+0.1	66.4	66.5	+0.1

Source: RCH Group, 2019

Notes: 1. See Noise Appendix for detailed modeling results and assumptions.
2. Modelling results are for project outdoor activity areas closest to the roadway segments.
3. Brady Ln (S) is Project to Vineyard Rd Segment. Brady Ln (N) is Project to Baseline Rd Segment.

The future cumulative traffic scenario noise modeling analysis showed that the closest outdoor activity areas fronting Brady Lane would have a noise level of approximately 67-68 dB Ldn/CNEL. The closest outdoor activity areas fronting Vineyard Road would have a noise level of approximately 67 dB Ldn/CNEL. Therefore, noise from transportation sources under the future cumulative traffic scenario would potentially exceed the Placer County standard of 60 dB Ldn/CNEL at the outdoor activity areas of the residences fronting Brady Lane and Vineyard Road. The Placer County General Plan indicates a noise level up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with the 45 dB Ldn/CNEL standard. **Table 7** displays the predicted noise level estimates at project outdoor activity areas at the closest proposed residences fronting Brady Lane and Vineyard Road with different noise barrier heights under the future cumulative traffic scenario.

Table 7: Estimated Future Cumulative Transportation Noise Levels at Project Outdoor Activity Areas by Noise Barrier Height (dB, Ldn/CNEL)

Roadway Segment / Scenario	Future Cumulative Traffic Plus Project (No Barrier)	5- Foot Barrier	6- Foot Barrier	7- Foot Barrier	8- Foot Barrier
Brady Ln (S)	68	63	62	61	60
Brady Ln (N)	67	62	61	60	59
Vineyard Rd	67	62	60	59	58

Source: RCH Group, 2019

Notes: 1. Brady Ln (S) is Project to Vineyard Rd Segment. Brady Ln (N) is Project to Baseline Rd Segment.
2. The modeled noise barriers assume flat site conditions where elevations, base of wall elevations and building pad elevations are approximately equivalent.
3. Outdoor activity area noise levels with noise barrier are modeled 20 feet behind noise barrier. Outdoor activity area with no noise barrier are modeled at the property line.
4. Noise barriers less than 5 feet tall were not estimated because they would not break the line of sight.
5. Noise levels rounded to the nearest dB.

As shown in **Table 7**, Construction of a five-foot noise barrier along the project frontages on Vineyard Road and Brady Lane would reduce future cumulative traffic noise to less than 65 dB Ldn/CNEL at all proposed outdoor activity areas. **Table 7** also displays the noise barrier heights that would reduce noise levels at outdoor activity areas to the Placer County standard of 60 dB Ldn/CNEL. **Figure 3** displays the recommended noise barrier locations. With implementation of **Mitigation Measure N-1**, exterior noise level impacts would be less than significant.

> **Mitigation Measure N-1**: Construct an approximate five-foot sound barrier along the project frontages on Vineyard Road and Brady Lane. The barrier could include an earthen berm to achieve some or all of the necessary height of the barrier.

It is worth noting that the DCWPCP states that "where noise levels have a potential to be in excess of normally acceptable CNEL levels, landscaped setbacks should be considered versus sound walls for noise mitigation." However, this may not be feasible for the project because the site plan is currently designed to preserve wetlands and open space, and setting proposed lots back farther from roadways would require other lots to encroach into these preservation areas.

Interior Noise Levels

Typical residential construction consistent with the Uniform Building Code (UBC) will provide an exterior-to interior noise level reduction of no less than 25 dB provided that exterior windows and doors are closed (Bollard, 2005, Burn, 1994). As discussed above and shown in **Table 6**, under the future cumulative traffic scenario without mitigation, noise levels at residences fronting Brady Lane would be approximately 68 dB Ldn/CNEL, and with a 25 dB reduction interior noise levels would be approximately 43 dB Ldn/CNEL. Under the future cumulative traffic scenario without mitigation, noise levels at residences fronting Vineyard Road would be approximately 67 dB Ldn/CNEL, and with a 25 dB reduction interior noise levels would be approximately 42 dB Ldn/CNEL. Interior noise levels at the second story of the two-story homes proposed would be approximately equal to the noise levels stated above (or slightly lower than the values stated above due to increased distance from the roadway). Therefore, interior noise levels would not exceed the Placer County interior standard of 45 dB Ldn/CNEL and would result in a less-than-significant impact.

Potential Traffic Noise Impacts on Existing Residences

RCH conducted traffic noise modeling using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) to analyze the potential impacts on existing residences from project traffic increases (See Noise Appendix) (Barry and Reagan, 1978). **Table 8** displays the predicted noise level estimates at the outdoor activity areas at the closest existing residents for modelled project scenarios.

Table 8: Estimated Transportation Noise Levels at Existing Residences (dB, Ldn/CNEL)

Roadway Segment / Scenario	Existing	Existing Plus Project	Project Increase from Existing	Future Cumulative Traffic No Project	Future Cumulative Traffic Plus Project	Project Increase from Future Cum.
1. PFE Rd. (Walerga to Cook Riolo)	65.9	65.9	0.0	67.6	67.6	0.0
2. PFE Rd. (Cook Riolo to N. Antelope)	66.9	66.9	0.0	71.3	71.3	0.0
3. Cook-Riolo Rd. (Baseline to Vineyard)	61.8	61.8	0.0	65.9	65.9	0.0
4. Cook-Riolo Rd. (Vineyard to Creekview School)	60.0	60.1	+0.1	64.3	64.3	0.0
5. Cook-Riolo Rd. (Creekview School to PFE)	62.6	62.7	+0.1	66.9	67.0	+0.1
6. N. Antelope Rd. (PFE to Great Valley)	67.5	67.6	+0.1	73.8	73.8	0.0

7. Vineyard Rd. (Crowder to Cook-Riolo)	57.3	57.4	+0.1	62.6	62.6	0.0
8. Vineyard Rd. (Cook-Riolo to Brady)	62.0	62.1	+0.1	66.4	66.5	+0.1
9. Vineyard Rd. (Brady to Foothills)	54.7	55.1	+0.4	59.8	59.9	+0.1
10. Brady Ln. (Baseline to Project)	59.2	60.6	+1.4	66.8	67.1	+0.3
11. Brady Ln. (Project to Vineyard)	59.2	61.5	+2.3	67.8	68.2	+0.4

Source: RCH Group, 2019. Note: See Noise Appendix for detailed modeling results and assumptions.

Predicted noise levels in **Table 8** indicate that existing residences would experience a 0.1 dB increase or less from project traffic on all traffic segments modeled except for Vineyard Road (from Brady Lane to Foothills Boulevard) and along Brady Lane (From Vineyard Road to Project and from Project to PFE Road). For the Vineyard Road segment (Brady Lane to Foothills Boulevard), the project would increase traffic noise by approximately 0.4 dB above existing levels and the closest residences (north of Vineyard Road) are shielded by an existing sound barrier. For the Brady Lane segments, residences fronting Brady Lane would experience a 1.4-2.3 dB increase from project traffic above existing levels and the closest residences (east of Brady Lane) are shielded by an existing sound barrier. The project's traffic noise increase on existing receptors would be imperceptible and would not be considered annoying.[5] Project-related traffic would increase noise levels with future cumulative traffic by 0.4 dB or less. Therefore, traffic noise impacts on existing receptors along project roadways would be less than significant.

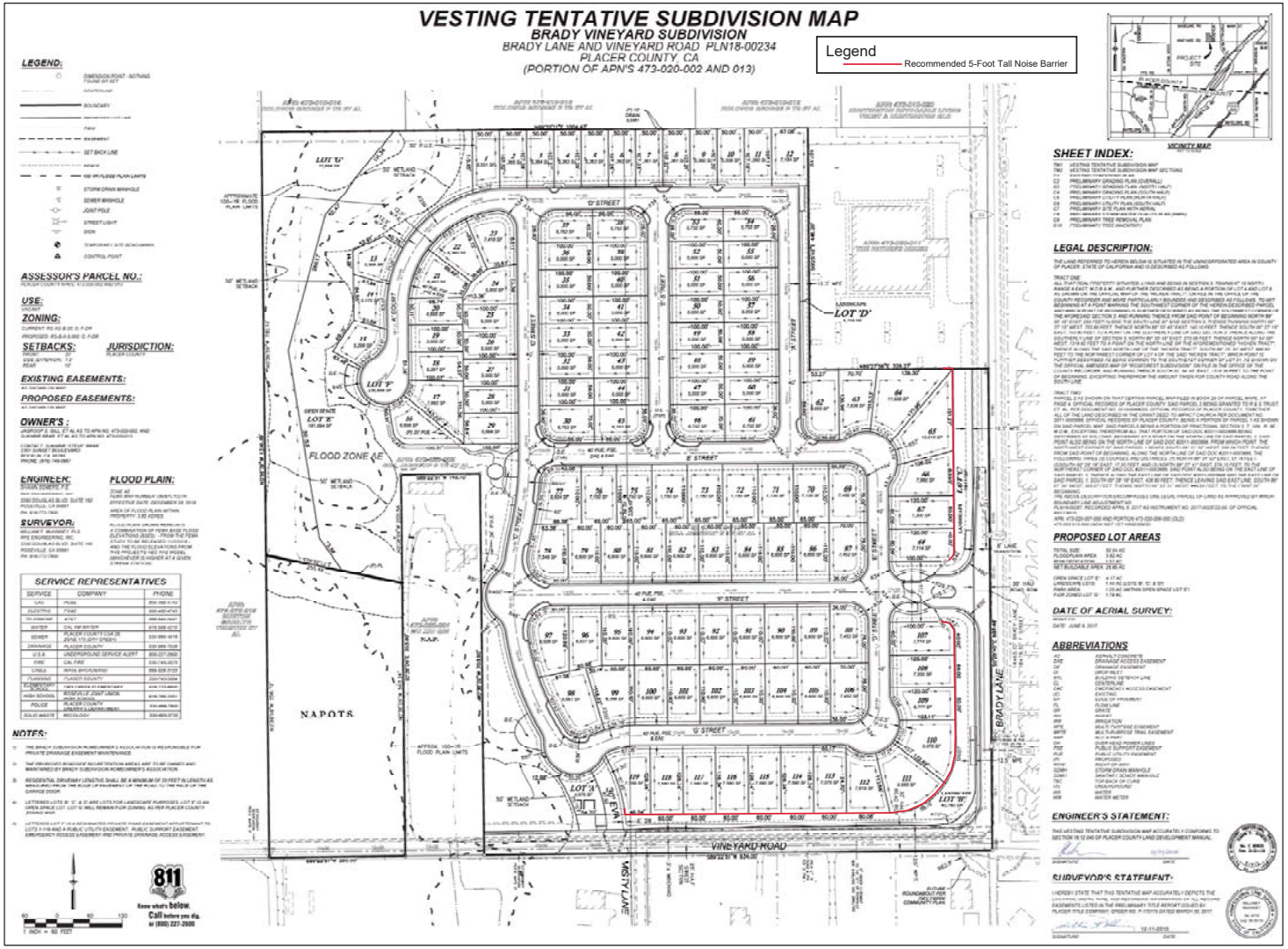
Potential Operational Noise Impacts on Existing Residence within Adjacent Two-Acre Parcel

The existing single-family home (and associated outbuilding) within the adjacent two-acre parcel is greater than 500 feet north of the centerline of Vineyard Road. As shown in **Table 8**, the project would only increase future cumulative traffic noise by 0.1 dB on the Vineyard Road segment adjacent to the adjacent two-acre parcel (Segment 8. Vineyard Rd. [Cook-Riolo to Brady]). The traffic noise increase attributable to the project would not be perceptible at the existing residence. Therefore, traffic noise impacts on the existing single-family home within the adjacent two-acre parcel would be less than significant.

Long-term noise from the residences of the proposed project and users of the proposed tot-lot park would take place upon completion of the project. In general, residences are one of the quietest land uses and noise from the residences would be considered compatible with the adjacent residence within the adjacent two-acre parcel. The proposed tot-lot park would be located just east of the adjacent two-acre parcel, but small neighborhood parks like the proposed tot-lot park are generally very quiet and are only used during daylight hours. The proposed tot-lot park would be considered compatible with the adjacent residence within the adjacent two-acre parcel. Any permanent increase in ambient noise levels from operation of the project would not be substantially greater than existing noise levels without the project. Therefore, operational noise impacts associated with the proposed residences and parks would be less than significant.

[5] The Federal Interagency Committee on Noise (FICON) developed noise guidance to be used for the assessment of project-generated increases in noise levels that take into account the ambient noise level. An increase of 5 dB, Ldn or greater would typically be considered to result in increased levels of annoyance where existing noise levels are less than 60 dB, Ldn. Within areas where the ambient noise level ranges from 60 to 65 dB, Ldn, increased levels of annoyance would be anticipated at increases of 3 dB, Ldn or greater (FICON, 2000).

Figure 3
Recommended Noise Barrier Locations



Temporary Construction Noise

Construction activities would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, bulldozers, excavators, front loaders, etc.) and other construction equipment (e.g., compactors, scrapers, graders, etc.). Construction worker traffic and construction-related material haul trips would raise ambient noise levels along local haul routes, depending on the number of haul trips made and types of vehicles used. Construction activities and associated traffic would occur primarily during the daytime.

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction. As shown in **Table 9**, maximum noise levels generated by various types of construction equipment can range from 76 to 89 dB at 50 feet. The highest noise levels associated with construction activities typically occur during ground excavation and finishing (See **Table 10**). **Table 10** gives average typical construction activities noise levels at 50 feet.

Table 9: Typical Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Dump Truck	76
Air Compressor	78
Concrete Mixer (Truck)	79
Jackhammers	89
Scraper	84
Dozer	82
Paver	77
Generator	81
Auger Drill Rig	84
Front End Loader	79
Grader	85
Backhoe	78

Source: Federal Highway Administration (FHWA) *Roadway Construction Noise Model User's Guide*, 2006.

Table 10: Typical Construction Activities Noise Levels

Construction Phase	Noise Level (dB Leq at 50 feet)
Ground Clearing	83
Excavation	88
Foundations	81
Erection	81
Finishing	88

Notes: Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.
Leq = equivalent sound level
Source: U.S. Environmental Protection Agency, *Legal Compilation*, 1973

Noise levels from project construction at sensitive receptors would usually be much lower than the reference levels in **Tables 9** and **10** because construction activities would move around the project site and would be much farther than 50 feet from construction equipment for the majority of construction. Furthermore, noise levels from project construction at sensitive receptors would be generally in the same range as measured existing ambient noise levels and would only occur during daytime hours. The existing residence within the adjacent two-acre parcel would experience noise levels above existing ambient noise levels when construction activities are occurring nearby, but these activities would be temporary and would only occur during daytime hours. Project construction is required to comply with the constructions hours in the Placer County Planning Commission revisions to the Placer County Board of Supervisors Minute Order 90-08. Compliance with the aforementioned construction hours would result in a less than significant impact.

Construction activities associated with the proposed off-site sewer construction would be typical of other minor roadway linear construction projects. The existing sensitive receptors to the north (single-family residential subdivision) of the proposed off-site sewer improvements are shielded by a noise barrier and the sensitive receptors to the south are approximately 100 feet south of the centerline of Vineyard Road. Noise levels from off-site sewer construction along Vineyard Road would be generally in the same range as measured existing ambient noise levels and would only occur during daytime hours. Construction activities associated with the proposed off-site sewer improvements in the City of Roseville shall be required to only occur between 7:00 a.m. and 7:00 p.m. Monday through Friday and between 8:00 a.m. and 8:00 p.m. on weekends and state and federal holidays (City of Roseville, 2013). Compliance with the City of Roseville Municipal Code would result in a less than significant impact.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels? **Less-than-Significant Impact.**

Construction operations have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. In most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures (Caltrans, 2013). Project construction would utilize typical construction equipment and would not require significant sources of vibration such as pile driving or blasting. Vibrational effects from typical construction activities are only a concern within 25 feet of existing structures (Caltrans, *Transportation Related Earthborne Vibrations,* 2002). Based on the construction equipment to be used and the distance from construction activities to the nearest structures, vibration from the project would not be a concern. Therefore, the project would result in a less-than-significant impact.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? **No Impact.**

The project site is not located within the vicinity of a private airstrip or an area covered by an airport land use plan. The project site is not within two miles of a public airport or public use airport. Therefore, the project would not expose project construction workers or future project residents to excessive aircraft noise levels. Therefore, the project would result in no impact.

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Noise Appendix

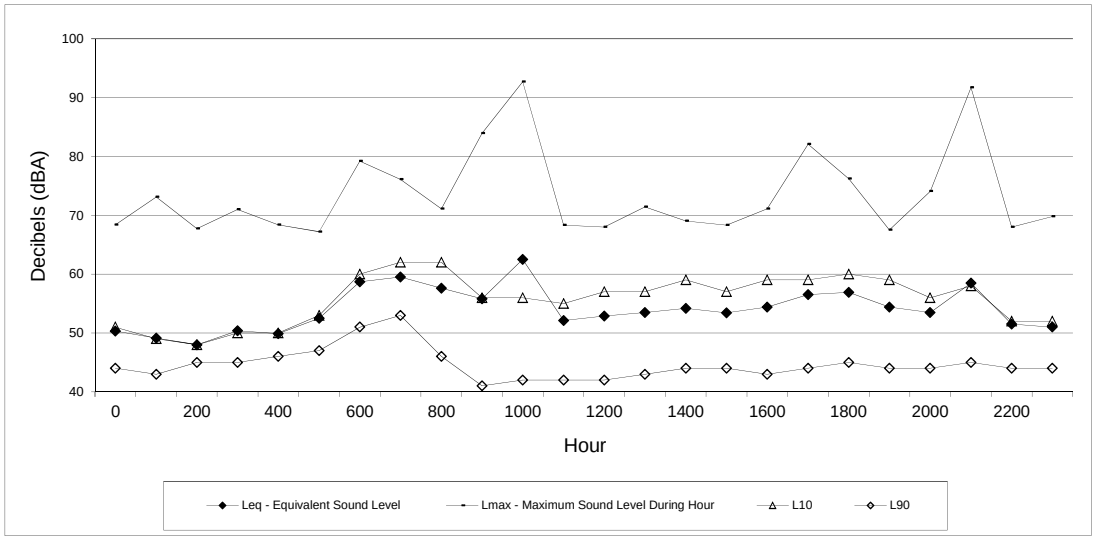
Brady Vineyard Subdivision

Site 1: 24-Hour Noise Plots and Hourly Noise Data (3 Pages)

Site 2: 24-Hour Noise Plots and Hourly Noise Data (3 Pages)

Table A-1: Inputs to and Results of Traffic Noise Prediction Model

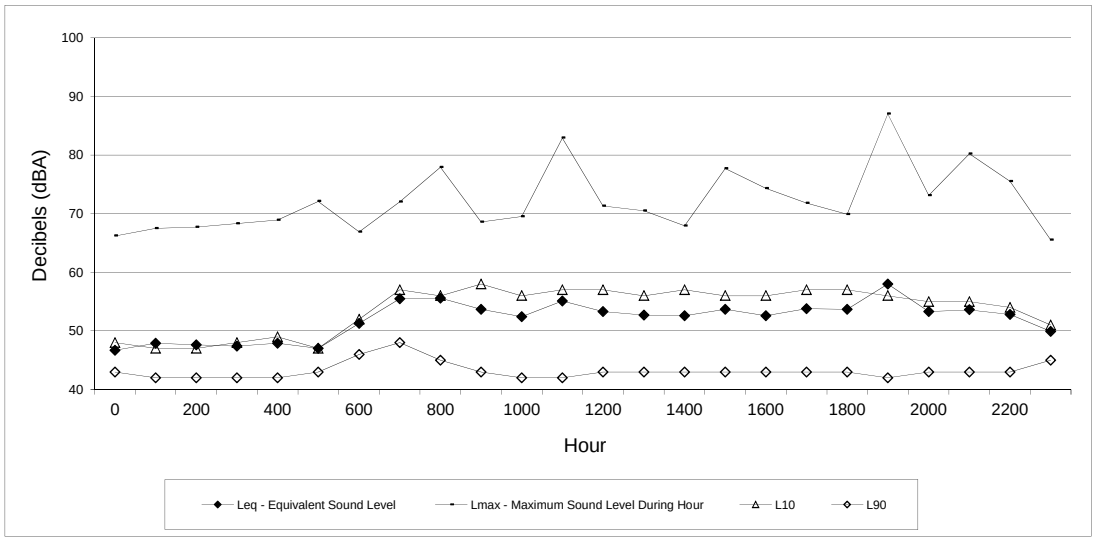
Table A-2: Peak Hour Traffic Volumes



Site 1: 75 Feet west of Brady Lane Centerline
Friday, March 29, 2019

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	50	68	51	44
100	49	73	49	43
200	48	68	48	45
300	50	71	50	45
400	50	68	50	46
500	53	67	53	47
600	59	79	60	51
700	60	76	62	53
800	58	71	62	46
900	56	84	56	41
1000	63	93	56	42
1100	52	68	55	42
1200	53	68	57	42
1300	54	71	57	43
1400	54	69	59	44
1500	53	68	57	44
1600	54	71	59	43
1700	57	82	59	44
1800	57	76	60	45
1900	54	68	59	44
2000	54	74	56	44
2100	59	92	58	45
2200	52	68	52	44
2300	51	70	52	44

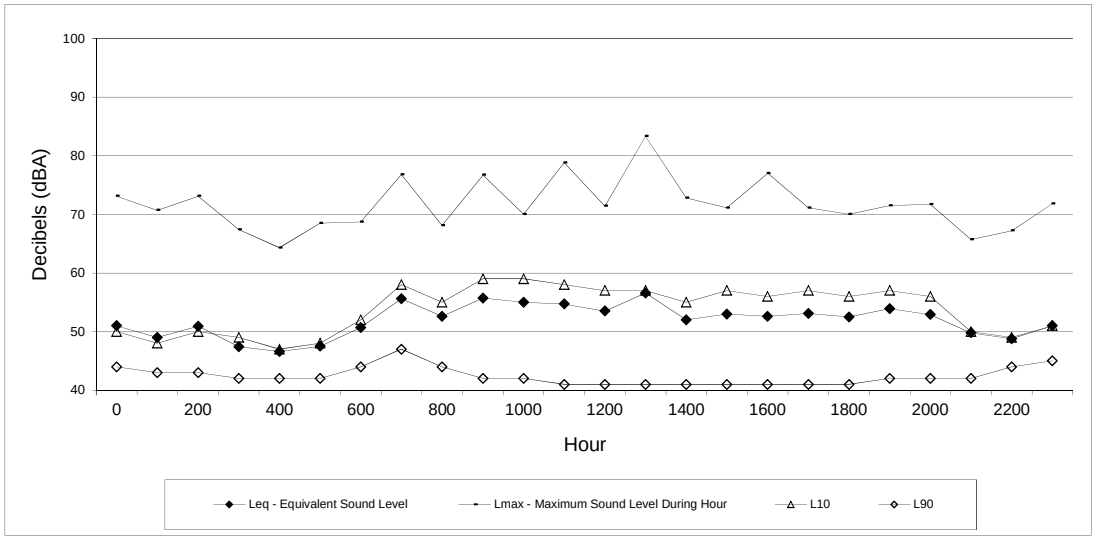
CNEL 60



Site 1: 75 Feet west of Brady Lane Centerline
Saturday, March 30, 2019

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	47	66	48	43
100	48	68	47	42
200	48	68	47	42
300	47	68	48	42
400	48	69	49	42
500	47	72	47	43
600	51	67	52	46
700	56	72	57	48
800	56	78	56	45
900	54	69	58	43
1000	52	70	56	42
1100	55	83	57	42
1200	53	71	57	43
1300	53	71	56	43
1400	53	68	57	43
1500	54	78	56	43
1600	53	74	56	43
1700	54	72	57	43
1800	54	70	57	43
1900	58	87	56	42
2000	53	73	55	43
2100	54	80	55	43
2200	53	76	54	43
2300	50	66	51	45

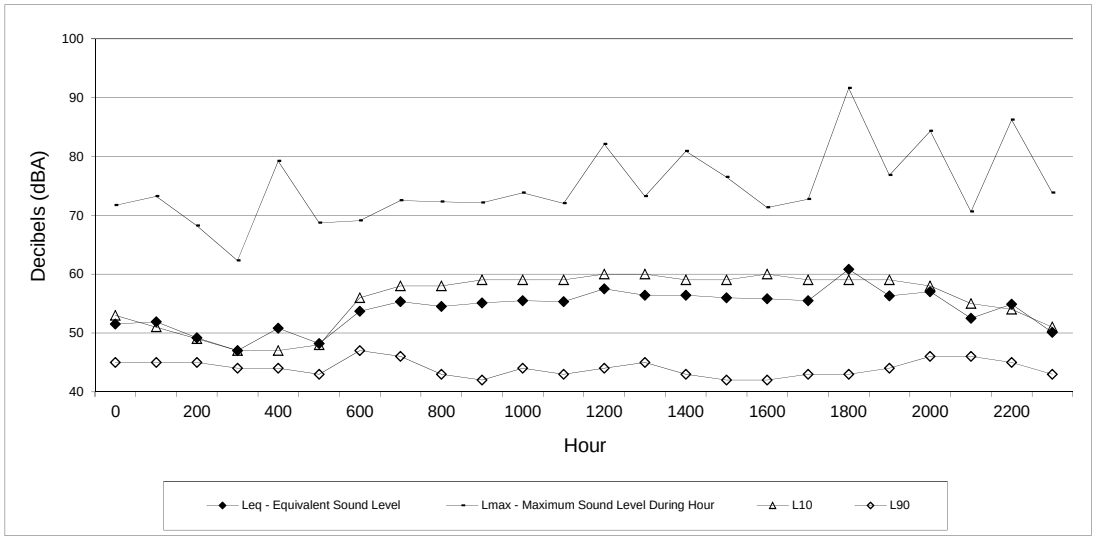
CNEL: 58



Site 1: 75 Feet west of Brady Lane Centerline
Sunday, March 31, 2019

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	51	73	50	44
100	49	71	48	43
200	51	73	50	43
300	47	67	49	42
400	47	64	47	42
500	48	69	48	42
600	51	69	52	44
700	56	77	58	47
800	53	68	55	44
900	56	77	59	42
1000	55	70	59	42
1100	55	79	58	41
1200	54	71	57	41
1300	57	83	57	41
1400	52	73	55	41
1500	53	71	57	41
1600	53	77	56	41
1700	53	71	57	41
1800	53	70	56	41
1900	54	72	57	42
2000	53	72	56	42
2100	50	66	50	42
2200	49	67	49	44
2300	51	72	51	45

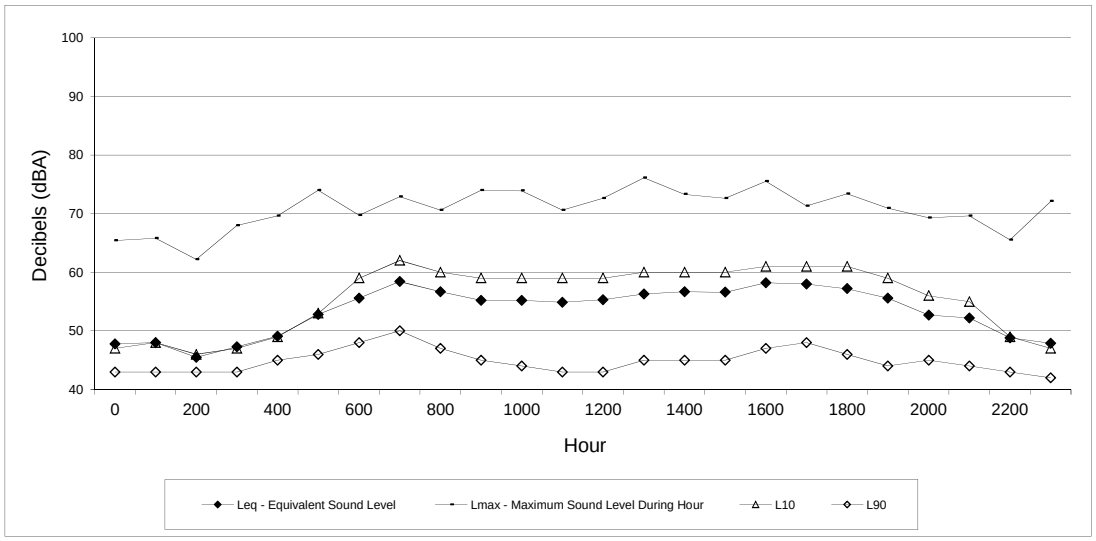
CNEL: 57



Site 2: 120 Feet North of Vineyard Road Centerline
Sunday, April 7, 2019

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	52	72	53	45
100	52	73	51	45
200	49	68	49	45
300	47	62	47	44
400	51	79	47	44
500	48	69	48	43
600	54	69	56	47
700	55	73	58	46
800	55	72	58	43
900	55	72	59	42
1000	56	74	59	44
1100	55	72	59	43
1200	58	82	60	44
1300	56	73	60	45
1400	56	81	59	43
1500	56	77	59	42
1600	56	71	60	42
1700	56	73	59	43
1800	61	92	59	43
1900	56	77	59	44
2000	57	84	58	46
2100	53	71	55	46
2200	55	86	54	45
2300	50	74	51	43

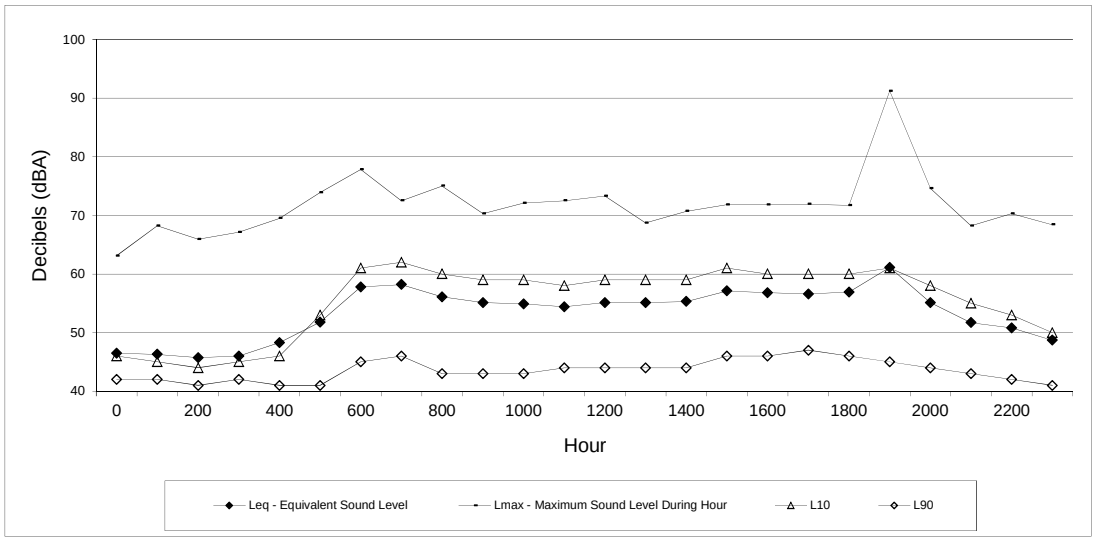
CNEL 60



Site 2: 120 Feet North of Vineyard Road Centerline
Monday, April 8, 2019

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	48	65	47	43
100	48	66	48	43
200	46	62	46	43
300	47	68	47	43
400	49	70	49	45
500	53	74	53	46
600	56	70	59	48
700	58	73	62	50
800	57	71	60	47
900	55	74	59	45
1000	55	74	59	44
1100	55	71	59	43
1200	55	73	59	43
1300	56	76	60	45
1400	57	73	60	45
1500	57	73	60	45
1600	58	76	61	47
1700	58	71	61	48
1800	57	73	61	46
1900	56	71	59	44
2000	53	69	56	45
2100	52	70	55	44
2200	49	66	49	43
2300	48	72	47	42

CNEL: 59



Site 2: 120 Feet North of Vineyard Road Centerline
Tuesday, April 9, 2019

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	47	63	46	42
100	46	68	45	42
200	46	66	44	41
300	46	67	45	42
400	48	70	46	41
500	52	74	53	41
600	58	78	61	45
700	58	73	62	46
800	56	75	60	43
900	55	70	59	43
1000	55	72	59	43
1100	54	73	58	44
1200	55	73	59	44
1300	55	69	59	44
1400	55	71	59	44
1500	57	72	61	46
1600	57	72	60	46
1700	57	72	60	47
1800	57	72	60	46
1900	61	91	61	45
2000	55	75	58	44
2100	52	68	55	43
2200	51	70	53	42
2300	49	68	50	41

CNEL: 60

Table A-1. Inputs to and Results of Traffic Noise Prediction Model

** See bottom of table for notes.

ROAD SEGMENT #1:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto	Medium Truck %	Medium Truck MT	Heavy Truck %	Heavy Truck HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten
Existing Conditions	530	98	519	1	5	1	5	45	72	45	72	45	72	64.6	53.0	59.0	65.9	15	65.9
Existing Plus Project	534	98	523	1	5	1	5	45	72	45	72	45	72	64.6	53.0	59.0	65.9	15	65.9
Cumulative No Project	790	98	774	1	8	1	8	45	72	45	72	45	72	66.3	54.7	60.7	67.6	15	67.6
Cumulative Plus Project	794	98	778	1	8	1	8	45	72	45	72	45	72	66.4	54.7	60.7	67.6	15	67.6

ROAD SEGMENT #2:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto	Medium Truck %	Medium Truck MT	Heavy Truck %	Heavy Truck HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten
Existing Conditions	671	98	658	1	7	1	7	45	72	45	72	45	72	65.6	54.0	60.0	66.9	15	66.9
Existing Plus Project	672	98	659	1	7	1	7	45	72	45	72	45	72	65.6	54.0	60.0	66.9	15	66.9
Cumulative No Project	1,830	98	1,793	1	18	1	18	45	72	45	72	45	72	70.0	58.4	64.4	71.3	15	71.3
Cumulative Plus Project	1,831	98	1,794	1	18	1	18	45	72	45	72	45	72	70.0	58.4	64.4	71.3	15	71.3

ROAD SEGMENT #3:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto	Medium Truck %	Medium Truck MT	Heavy Truck %	Heavy Truck HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten
Existing Conditions	371	98	364	1	4	1	4	35	56	35	56	35	56	59.9	49.7	56.4	61.8	15	61.8
Existing Plus Project	372	98	365	1	4	1	4	35	56	35	56	35	56	59.9	49.7	56.4	61.8	15	61.8
Cumulative No Project	960	98	941	1	10	1	10	35	56	35	56	35	56	64.0	53.9	60.6	65.9	15	65.9
Cumulative Plus Project	962	98	943	1	10	1	10	35	56	35	56	35	56	64.1	53.9	60.6	65.9	15	65.9

ROAD SEGMENT #4:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto	Medium Truck %	Medium Truck MT	Heavy Truck %	Heavy Truck HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten
Existing Conditions	497	98	487	1	5	1	5	25	40	25	40	25	40	57.0	48.7	56.4	60.0	15	60.0
Existing Plus Project	509	98	499	1	5	1	5	25	40	25	40	25	40	57.1	48.8	56.5	60.1	15	60.1
Cumulative No Project	1,330	98	1,303	1	13	1	13	25	40	25	40	25	40	61.3	53.0	60.6	64.3	15	64.3
Cumulative Plus Project	1,342	98	1,315	1	13	1	13	25	40	25	40	25	40	61.3	53.0	60.7	64.3	15	64.3

ROAD SEGMENT #5:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto	Medium Truck %	Medium Truck MT	Heavy Truck %	Heavy Truck HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten
Existing Conditions	448	98	439	1	4	1	4	35	56	35	56	35	56	60.7	50.5	57.3	62.6	15	62.6
Existing Plus Project	453	98	444	1	5	1	5	35	56	35	56	35	56	60.8	50.6	57.3	62.7	15	62.7
Cumulative No Project	1,210	98	1,186	1	12	1	12	35	56	35	56	35	56	65.0	54.9	61.6	66.9	15	66.9
Cumulative Plus Project	1,215	98	1,191	1	12	1	12	35	56	35	56	35	56	65.1	54.9	61.6	67.0	15	67.0

ROAD SEGMENT #6:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Medium Truck Auto	Medium Truck %	Medium Truck MT	Heavy Truck %	Heavy Truck HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten
Existing Conditions	776	98	760	1	8	1	8	45	72	45	72	45	72	66.3	54.6	60.6	67.5	15	67.5
Existing Plus Project	779	98	763	1	8	1	8	45	72	45	72	45	72	66.3	54.7	60.7	67.6	15	67.6
Cumulative No Project	3,255	98	3,190	1	33	1	33	45	72	45	72	45	72	72.5	60.9	66.9	73.8	15	73.8
Cumulative Plus Project	3,258	98	3,193	1	33	1	33	45	72	45	72	45	72	72.5	60.9	66.9	73.8	15	73.8

Table A-1. Inputs to and Results of Traffic Noise Prediction Model

ROAD SEGMENT #7:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten
Existing Conditions	263	98	258	1	3	1	3	45	72	45	72	45	72	61.6	49.9	55.9	62.8	15	57.3
Existing Plus Project	265	98	260	1	3	1	3	45	72	45	72	45	72	61.6	50.0	56.0	62.9	15	57.4
Cumulative No Project	890	98	872	1	9	1	9	45	72	45	72	45	72	66.9	55.2	61.2	68.1	15	62.6
Cumulative Plus Project	892	98	874	1	9	1	9	45	72	45	72	45	72	66.9	55.2	61.3	68.1	15	62.6

ROAD SEGMENT #8:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten with calibration
Existing Conditions	431	98	422	1	4	1	4	45	72	45	72	45	72	63.7	52.1	58.1	65.0	15	62.0
Existing Plus Project	445	98	436	1	4	1	4	45	72	45	72	45	72	63.8	52.2	58.2	65.1	15	62.1
Cumulative No Project	1,190	98	1,166	1	12	1	12	45	72	45	72	45	72	68.1	56.5	62.5	69.4	15	66.4
Cumulative Plus Project	1,204	98	1,180	1	12	1	12	45	72	45	72	45	72	68.2	56.5	62.6	69.5	15	66.5

ROAD SEGMENT #9:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten - 6 dBA for Wall
Existing Conditions	563	98	552	1	6	1	6	45	72	45	72	45	72	64.9	53.2	59.3	66.2	15	54.7
Existing Plus Project	625	98	613	1	6	1	6	45	72	45	72	45	72	65.3	53.7	59.7	66.6	15	55.1
Cumulative No Project	1,825	98	1,789	1	18	1	18	45	72	45	72	45	72	70.0	58.3	64.4	71.3	15	59.8
Cumulative Plus Project	1,888	98	1,850	1	19	1	19	45	72	45	72	45	72	70.1	58.5	64.5	71.4	15	59.9

ROAD SEGMENT #10:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten with calibration
Existing Conditions	101	98	99	1	1	1	1	45	72	45	72	45	72	57.4	45.8	51.8	58.7	23	59.2
Existing Plus Project	141	98	138	1	1	1	1	45	72	45	72	45	72	58.9	47.2	53.2	60.1	23	60.6
Cumulative No Project	590	98	578	1	6	1	6	45	72	45	72	45	72	65.1	53.4	59.5	66.4	23	66.8
Cumulative Plus Project	630	98	617	1	6	1	6	45	72	45	72	45	72	65.4	53.7	59.7	66.6	23	67.1

ROAD SEGMENT #11:	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	calveno factors Auto	MT	HT	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten with calibration
Existing Conditions	101	98	99	1	1	1	1	45	72	45	72	45	72	57.4	45.8	51.8	58.7	23	59.2
Existing Plus Project	174	98	171	1	2	1	2	45	72	45	72	45	72	59.8	48.1	54.2	61.1	23	61.5
Cumulative No Project	735	98	720	1	7	1	7	45	72	45	72	45	72	66.0	54.4	60.4	67.3	23	67.8
Cumulative Plus Project	808	98	792	1	8	1	8	45	72	45	72	45	72	66.4	54.8	60.8	67.7	23	68.2

* Notes: 1. Highlighted segments front the project site -- See Table A-2 for details regarding segments and corresponding traffic volumes.

2. Predicted noise levels are in terms of peak hour Leq.

3. The existing plus project and future cumulative values were based on a conservative estimate of 10 percent of all ADT in the peak hour. The peak hour was then used as an estimate of the 24-hour future Ldn. It is a fairly typical case, that Ldn is approximately equal to the peak hour Leq. The rule of thumb is that Ldn is within +/- 2 dB of the peak hour Leq under normal conditions. For the two weekday long-term measurements conducted at Sites 1 and 2, the Ldn was equal to the peak hour Leq at Site 1 and the Ldn was +1 dB from the peak hour Leq at Site 2 (Technical Noise Supplement, Caltrans, 1998). Therefore, this analysis assumes the peak hour Leq is equal to the Ldn at the project site.

Table A-2 Peak Hour Traffic Volumes

SEGMENT #	STREET	LOCATION	COUNT 2018	2018 WITH PROJECT	CUM NO PROJECT ROUNDED	PROJECT ROUNDED ONLY	CUM WITH PROJECT
1	PFE Rd	Walerga Rd to Cook Riolo Rd	530	534	790	4	794
2	PFE Rd	Cook Riolo Rd to N. Antelope Rd	671	672	1830	1	1831
3	Cook Riolo Rd	Baseline Rd to Vineyard Rd	371	372	960	2	962
4	Cook riolo Rd	Vineyard Rd to Creekview School	497	509	1330	12	1342
5	Cook Riolo Rd	Creekview Ranch School to PFE Rd	448	453	1210	5	1215
6	N. Antelope Rd	PFE Rd to Great Valley Dr	776	779	3255	3	3258
7	Vineyard Road	Crowder Lane to Cook Riolo Rd	263	265	890	2	892
8	Vineyard Road	Cook Riolo Road to Brady Lane	431	445	1190	14	1204
9	Vineyard Road	Brady Lane to Foothills Blvd	563	625	1825	63	1888
10	Brady lane	Baseline Road to Project	101	141	590	40	630
11	Brady lane	Project to PFE Rd	101	174	735	73	808

APPENDIX K

TRAFFIC IMPACT ANALYSIS

FOR

BRADY VINEYARD SUBDIVISION

Placer County, California

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October 16, 2019

Job No. 5765-22

Brady Vineyard Subdivision.rpt

KD Anderson & Associates, Inc.

Transportation Engineers

TRAFFIC IMPACT ANALYSIS FOR
BRADY VINEYARD SUBDIVISION
Placer County

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October 16, 2019

KDA

TRAFFIC IMPACT ANALYSIS FOR
BRADY VINEYARD SUBDIVISION
Placer County, CA

INTRODUCTION

This report documents **KD Anderson & Associates'** analysis of the traffic impacts associated with developing the **Brady Vineyard Subdivision** project in the Dry Creek / West Placer Community Plan (DCWPCP) area of Placer County. The proposed project will rezone about 37 acres located in western Placer County within the Dry Creek / West Placer Community Plan area between the City of Roseville and Sacramento County. The project proposes construction of 119 single family residential lots. The project will take access via Brady Lane, which connects the site to Baseline Road and Vineyard Road.

Scope of Analysis

This analysis is intended to describe the traffic impacts of the project and to identify any circulation / roadway improvements needed to reduce project impacts to a level of insignificance. Toward this end, existing traffic conditions have been evaluated through observation of current weekday a.m. and p.m. peak hour traffic volumes and through review of daily traffic volume information. Future background cumulative traffic conditions have been quantified using data developed for the Placer Vineyards Traffic Model to address the combined effect of long-term circulation system improvements, area wide growth and other pending projects in the vicinity.

Based on direction from Placer County staff, this analysis focuses on traffic operations at intersections on roadways within Placer County and the City of Roseville. Project impacts have been evaluated at the following existing intersections and at the project access on Brady Lane:

1. PFE Road / Walerga Road
2. PFE Road / Cook Riolo Road
3. PFE Road / N. Antelope Road
4. Cook Riolo Road / Vineyard Road
5. Cook Riolo Road / Creekview Ranch School Access
6. Vineyard Road / Crowder Lane
7. Vineyard Road / Brady Lane
8. Vineyard Road / Foothills Blvd (Roseville)
9. Baseline Road / Walerga Road
10. Baseline Road / Cook Riolo Road
11. Baseline Road / Brady Lane (Roseville)
12. Baseline Road / Foothills Blvd (Roseville)

This analysis also addresses impacts to roadway segments in the study area based on daily traffic volume. Because the City of Roseville does not consider roadway segment Level of Service to be a significance criteria, the analysis does not address Roseville Arterial streets quantitatively. The analysis focuses on the following roadway segments:

1. PFE Road from Walerga Road to Cook Riolo Road
2. PFE Road from Cook Riolo Road to N. Antelope Road
3. Cook Riolo Road from Baseline Road to Vineyard Road
4. Cook Riolo Road from Vineyard Road to Creekview Ranch School
5. Cook Riolo Road from Creekview Ranch School to PFE Road
6. N. Antelope Road from PFE Road to Great Valley Drive
7. Vineyard Road from Crowder Lane to Cook Riolo Road
8. Vineyard Road from Cook Riolo Road to Brady Lane
9. Vineyard Road from Brady Lane to Foothills Blvd
10. Brady Lane from Baseline Road to PFE Road

In response to the Notice of Preparation Caltrans District 3 expressed initial concern regarding the project's potential impact to state highways, particularly with regards to interchanges on SR 65 and I-80. To address these concerns the volume of project traffic added to regional facilities was estimated using the "select link" function of the regional travel demand forecasting model employed for this analysis. That function isolated trips generated by residential uses in the project area and determined the share of project traffic at interchanges on I-80 and on SR 65. This information was shared with Caltrans District 3 who subsequently withdrew request for analysis of conditions / impacts to state facilities.

Project impacts have been quantified and assessed in a manner that is consistent with Placer County guidelines / policy. Probable project trip generation has been estimated by applying appropriate trip generation rates to the project's land use inventory, and comparable estimates have been made of site development under the current zoning. The distribution of project trips was based on the projected traffic volumes obtained from the most recent Placer Vineyards Regional Travel Demand Forecasting Model. Utilizing the expected distribution, project trips were assigned to the study area street system via the site access. Roadway and intersection Levels of Service were re-calculated for "plus project" conditions and compared to Placer County significance criteria to determine the anticipated impacts of the proposed development on both existing and future traffic conditions. Project VMT has been estimated, and project impacts to alternative transportation modes have been evaluated.

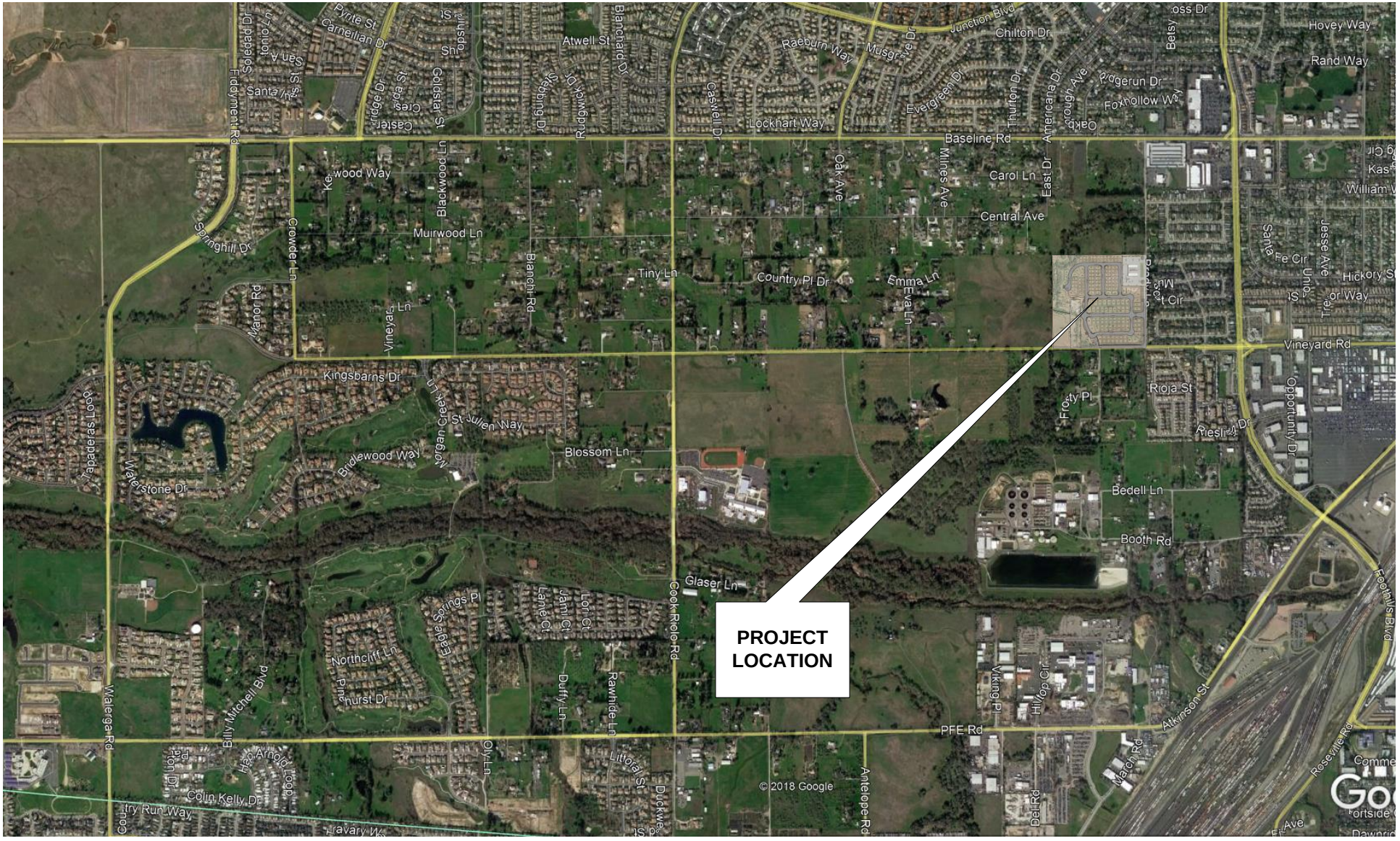
While the proposed project lies within Placer County and will be processed through the County, portions of study area roads such as Baseline Road, Vineyard Road, Brady Lane and PFE Road are under the jurisdiction of the City of Roseville. Thus, the scope of this study also includes Level of Service standards of significance / evaluation methodologies accepted by the City of Roseville.

Project Description

The Brady Vineyard Subdivision project is a single family residential development that is located in the Dry Creek / West Placer Community Plan (DCWPCP) area as shown in Figure 1. The proposed project would create 119 single family residential lots on a 37 acre site.

The site lies on the west side of Brady Lane in the area between Baseline Road and Vineyard Road. One point of access is proposed to Brady Lane, and emergency vehicle access is proposed to Vineyard Road as shown in Figure 2.

The project would be accompanied by frontage improvements to Vineyard Road typically required under the Placer County General Plan and DCWP Community Plan, as well as Brady Lane improvements required by the City of Roseville. Improvements would include access improvements at the Brady Lane connection that are consistent with City of Roseville requirements.



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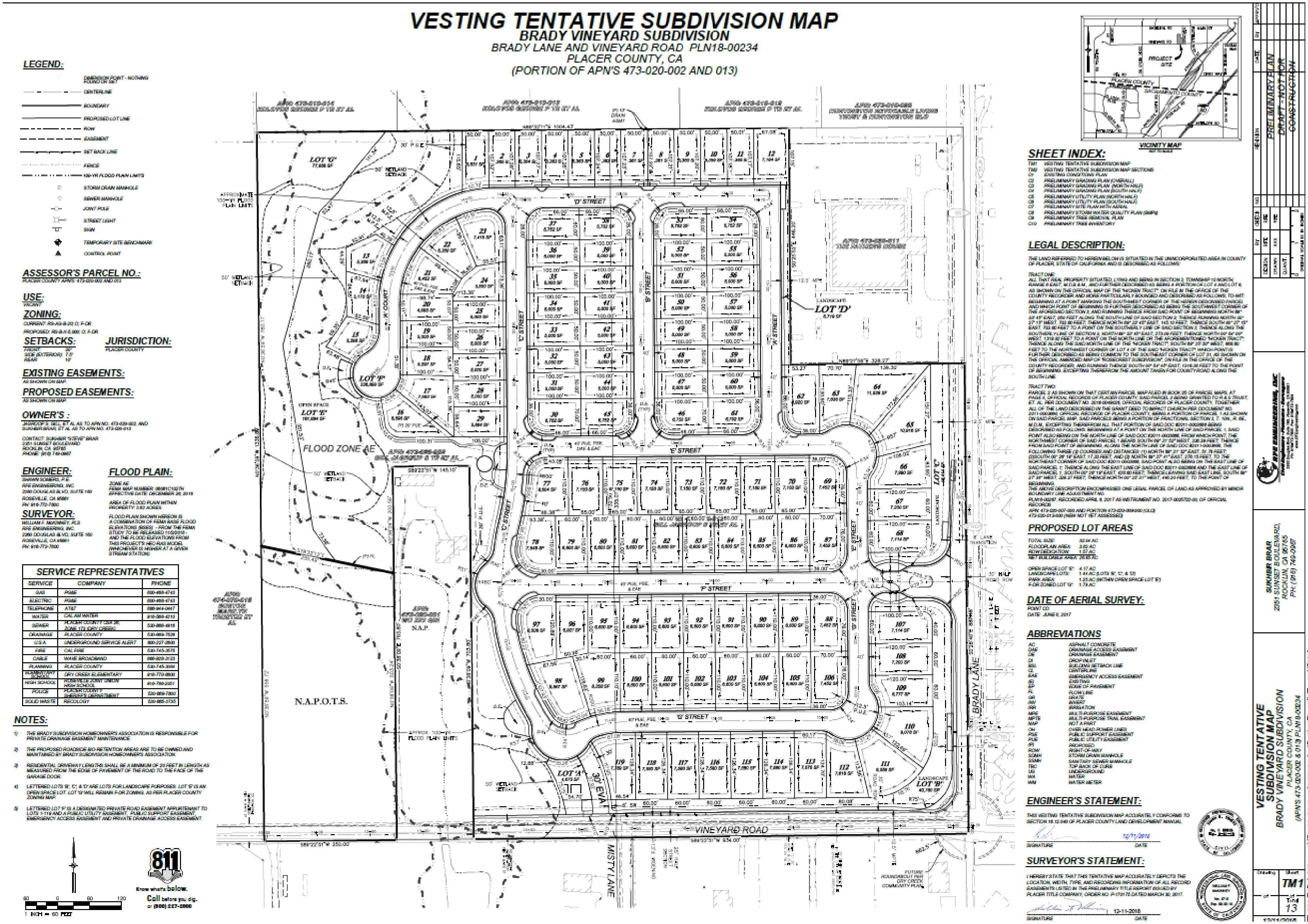
5765-17 RA 10/16/2019

VICINITY MAP

figure 1



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SITE PLAN

5765-17 RA 10/16/2019

figure 2

EXISTING SETTING

Roadways / Intersections

Existing roadways serving this portion of Placer County, Sacramento County and the City of Roseville are discussed below.

Baseline Road is a major east-west arterial that connects the City of Roseville with State Route (SR) 70/99 in Sutter County. Within Sutter County, this roadway becomes Riego Road, while east of Foothills Boulevard this roadway becomes Main Street. This road has two lanes from SR 70/99 to Walerga Road, three lanes (two westbound and one eastbound) from Walerga Road to Brady Lane and four lanes from Brady Lane to Foothills Boulevard. The posted speed limit on Baseline Road is 45 mph west of Foothills Blvd.

Vineyard Road is an east-west, two-lane minor collector that connects Crowder Lane to the City of Roseville. In the City of Roseville, Vineyard Road transitions to a four-lane roadway. The posted speed limit on Vineyard Road is 45 mph in Placer County and 40 mph east of Brady Lane in Roseville.

PFE Road is an east-west rural collector links Atkinson Street in the City of Roseville with the Watt Avenue intersection in Placer County. The posted speed limit on PFE Road is 45 mph.

Walerga Road is a north-south, two-lane minor arterial (with some four-lane sections) that connects Baseline Road at Fiddyment Road to Sacramento County. The posted speed limit is 45 mph on Walerga Road.

Crowder Lane is a north-south, two-lane minor collector that connects Vineyard Road and Baseline Road. The posted speed limit on Crowder Lane is 35 mph.

Cook Riolo Road is a north-south two-lane rural collector that connects PFE Road and Baseline Road. North of Baseline Road, in the City of Roseville, this roadway becomes Woodcreek Oaks Boulevard. The posted speed limit on Cook Riolo Road is 35 mph.

Brady Lane is a two-lane local road that links Vineyard Road and Baseline Road near the easterly limits of the DCWPSP. The posted speed limit on Brady Lane is 40 mph.

N. Antelope Road is a north-south, two-lane rural collector that connects PFE Road to Sacramento County. Between PFE Road and Poker Lane in the DCWPCP N. Antelope Road is a two-lane roadway, and the roadway transitions to a four-lane roadway in Sacramento County. There is no posted speed limit in Placer County, and therefore the speed limit is 55 mph under the maximum speed law in the California Vehicle Code.

Foothills Blvd is a major arterial street through the City of Roseville and Placer County. Foothills Blvd originates at the Roseville Rd/Cirby Way intersection and continues northerly through the study area to Blue Oaks Blvd. The posted speed limit on Foothills Blvd is 45 mph in the study area.

The analysis considers seven existing intersections in Placer County and five intersections on the border of Placer County and City of Roseville or within the City of Roseville.

The **Baseline Road / Walerga Road – Fiddyment Road intersection** is in Roseville and is controlled by an actuated traffic signal that operates with protected left turn movements on all approaches. The north, south and westbound approaches include a left turn lane, two through lanes and a right turn lane. The eastbound approach includes a left turn lane, a through lane and a shared through-right lane. Crosswalks are striped across each leg of the intersection.

The **Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersection** is a Roseville intersection controlled by an actuated traffic signal that operates with protected left turn movements along the east and west approaches. The northbound and southbound approaches operate under a split phase configuration. The north and southbound approaches include a shared through-left lane and a right turn lane. The eastbound approach includes a left turn lane and a shared through-right lane while the westbound approach includes a left turn lane, two through lanes and a right turn lane. Crosswalks are striped across the south, east and north legs of the intersection.

The **Baseline Road / Brady Lane intersection** is a Roseville intersection and a "tee" controlled by a stop sign on the northbound Brady Lane approach. A continuous Two-Way Left-Turn (TWLT) lane exists on Baseline Road. The westbound Baseline Road approach has two through travel lanes, the other approaches are single lanes.

The **Baseline Road / Foothills Blvd intersection** is in Roseville and is controlled by an actuated traffic signal. Each Foothills Blvd approach has three through travel lanes, dual left turn lanes and separate right turn lanes. The Baseline Road approaches have two through lanes, single left turn lanes and separate right turn lanes.

The **Vineyard Road / Crowder Lane intersection** is a "tee" controlled by an all-way stop. Each approach is a single travel lane.

The **Cook Riolo Road / Vineyard Road intersection** is currently controlled by stop signs on all approaches. The intersection is a four-way way intersection. All approaches to the intersection are single lanes and there are no crosswalks at this intersection.

The **Vineyard Road / Brady Lane intersection** is controlled by an all-way stop. Each approach has a single travel lane, and the south leg is private access to two residences.

The **Vineyard Road / Foothills Blvd intersection** is a Roseville intersection controlled by an actuated traffic signal. Each Foothills Blvd approach has three through travel lanes and separate left turn lanes. A separate right turn lane exists on the northbound approach. The eastbound Baseline Road approach has two through lanes, a single left turn lane and separate right turn lane. The westbound approach has dual left turn lanes, and single through and right turn lanes.

The **Cook Riolo Road / Creekview Ranch School (CRS) intersection** is controlled by an actuated traffic signal that operates with protected left turn movements on the north and south approaches and split phase movements along the east and west approaches. The northbound approach includes separate left, through and right turn lanes while the southbound approach includes a left turn lane and a through-right lane. The eastbound approach includes a single lane driveway while the westbound approach includes a through-left lane and a right turn lane. The northbound right turn lane includes an overlap phase with the westbound green phase, and a similar overlap exists on the westbound approach. Crosswalks are striped across the north, east and west legs of the intersection.

The **PFE Road / Walerga Road intersection** is controlled by an actuated traffic signal that operates with protected left turn movements on all approaches. Today each approach to the intersection includes a left turn lane and a through-right lane. Placer County is currently in the process of completing an intersection improvement project that will add a through lane in each direction on Walerga Road. In addition, separate right turn lanes will be constructed on the southbound and eastbound approaches and the two-lane westbound approach will be reconfigured to allow left turns from the through+right turn lane under split phase operation. Crosswalks are striped across each leg of the intersection. These improvements have been assumed to be in place under cumulative conditions.

The **PFE Road / Cook Riolo Road intersection** is currently controlled by stop signs on all approaches. The intersection is a four-way intersection. All approaches to the intersection are single lanes and there are crosswalks across the south, east and west legs. A multi-use pathway is also present along the west side of Cook Riolo Road, from PFE Road to the CRS intersection.

The **PFE Road / N. Antelope Road intersection** is a "tee" intersection and is currently controlled by stop signs on all approaches. The northbound approach to the intersection is a single lane while the westbound approach includes a left turn lane and a through lane; the eastbound approach includes a right turn lane and a through lane. There are no crosswalks at this intersection.

Planned Improvements / Funding Sources

Placer County Traffic Impact Fee Program and CIP. In April 1996, the Placer County Board of Supervisors adopted the Countywide Traffic Impact Fee Program, requiring new development within the County to mitigate impacts to the roadway system by paying traffic impact fees. The fees collected through this program, in addition to other funding sources, make it possible for the County to construct roads and other transportation facilities and improvements needed to accommodate new development. The fee was updated by Placer County in August 2017. The County's fee program and Capital Improvement Program is divided into eleven districts, and the Brady Vineyard Subdivision is included in the Dry Creek – West Placer Benefit District. Current study area improvements included in the fee program are noted in Table 1.

TABLE 1 DRY CREEK / WEST PLACER CIP IMPROVEMENTS		
Street	**Location**	**Description**
Cook Riolo Road	PFE Road to Baseline Road	Traffic Calming / Safety Measures
North Antelope Road	Sacramento County line to PFE Road	Widen to 4-lanes
	At PFE Road	Traffic Signal
PFE Road	North Antelope Road to City of Roseville	Widen to 4-lanes
	Walerga Road to Cook-Riolo Road	Traffic Calming / Control
	Watt Avenue to Walerga Road	Construct 4-lanes
Vineyard Road	Crowder Lane to Foothills Blvd	Safety Measures
Walerga Road	Baseline Road to Sacramento County	Widen to 6-lanes
	At PFE Road	Traffic Signal / Intersection Improvements

Other fee programs deal with specific areas of the County or are linked to particular development. For example Placer County and Roseville have adopted a specific City-County Baseline Road Fee. The South Placer Regional Transportation Authority (SPRTA) SR 65 GPA Fee addresses improvements to that highway and a Tier 2 Placer Parkway fee.

The City of Roseville administers a separate CIP Program linked to future development. The current City of Roseville CIP addresses Year 2035 conditions and includes improvements to several study area intersections.

Standards of Significance: Levels of Service - Methodology

To assess the quality of existing traffic conditions and provide a basis for analyzing project impacts, Levels of Service were calculated at study area intersections and project driveways. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade "A" through "F", corresponding to progressively worsening operating conditions, is assigned to an intersection or roadway segment. Table 2 presents general characteristics associated with each LOS grade.

TABLE 2 LEVEL OF SERVICE DEFINITIONS			
Level of Service	**Signalized Intersection**	**Unsignalized Intersection**	**Roadway (Daily)**
"A"	Uncongested operations, all queues clear in a single-signal cycle. Average Delay ≤ 10 sec/veh	Little or no delay. Average Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cy Delay > 10 sec/veh and ≤ 25 sec/vehicle.	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 25 sec/veh and ≤ 35 sec/veh	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35 sec/veh and ≤ 55 sec/veh	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55 sec/veh and ≤ 80 sec/veh	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 50 sec/veh	Intersection often blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.
Sources: Highway Capacity Manual, 6th Edition, and Transportation Research Board (TRB) Special Report 209. Transportation Research Board Circular No. 212, Interim Materials on Highway Capacity.			

Standards of Significance and Levels of Service. Agencies adopt their own minimum LOS standards and standards of significance.

Placer County

Analysis Methodology at Signalized Intersections. The Level of Service at signalized intersections has been calculated using the methodology presented in the Highway Capacity Manual, 6th Edition (HCM) using SYNCHRO 10.0 software. Level of Service is based on the length of average delay at the intersection, as noted in Table 2.

Analysis Methodology at Un-signalized Intersections. At un-signalized intersections the number of gaps in through traffic, gap acceptance time and corresponding length of delays for motorists waiting to turn are used for Level of Service analysis. Procedures used for calculating un-signalized intersection Level of Service are also presented in the HCM.

At un-signalized intersections controlled by side street stop signs the HCM methodology identifies the delay and Level of Service for all movements that must yield the right of way. Typically the "worst case" Level of Service is associated with side street traffic waiting to turn onto the major street. For environmental analysis Placer County also identifies the "overall average delay" experienced by those motorists who yield the right of way, and the Level of Service associated with this overall measure is used to determine the significance of impacts to un-signalized intersections in Placer County.

Analysis Methodology at Roundabouts. For intersections that have roundabouts identified as a future condition or as a mitigation, *SIDRA 7.0* was used to analyze the operating characteristics of the roundabout.

Analysis Methodology for Roadway Segments. The Placer County General Plan and DCWP present daily traffic volume levels that are to be indicative of Levels of Service on arterial streets. These volume thresholds are shown in Table 3.

TABLE 3
EVALUATION CRITERIA FOR ROADWAY SEGMENT LEVEL OF SERVICE

	Maximum Daily Traffic Volume Per Lane Level of Service				
Roadway Capacity Class	**A**	**B**	**C**	**D**	**E**
Freeway – Level Terrain	6,300	10,620	13,680	17,740	18,000
Freeway – Rolling Terrain	5,290	8,920	11,650	14,070	15,120
Freeway – Mountainous Terrain	3,400	5,740	7,490	9,040	9,720
Arterial – High Access Control	6,000	7,000	8,000	9,000	10,000
Arterial – Moderate Access Control	5,400	6,300	7,200	8,100	9,000
Arterial – Low Access Control	4,500	5,250	6,000	6,870	7,500
Rural 2-lane Highway – Level Terrain	1,500	2,950	4,800	7,750	12,500
Rural 2-lane highway – Rolling Terrain	800	2,100	3,800	5,700	10,500
Rural 2-lane highway – Mountainous Terrain	400	1,200	2,100	3,400	7,000

Placer County / Dry Creek – West Placer Community Plan Standards of Significance. Minimum acceptable Level of Service standards within this area of Placer County are defined by the Dry Creek – West Placer Community Plan (DCWPCP). The Placer County General Plan notes that the Level of Service (LOS) on major roadways (i.e., arterial and collector routes) and

intersections shall be at Level of Service C or better during the a.m. and/or p.m. peak hour except at locations within ½ mile of a state highway. Policy in the DCWPCP identifies LOS D as the minimum in the community plan area but notes the following exceptions when the area street system is fully built out:

Roadway Segments

- Watt Avenue from Sacramento County Line to Baseline Road: LOS F
- PFE Road from Cook Riolo Road to N. Antelope Road: LOS F
- Cook Riolo Road from Vineyard Road to Baseline Road: LOS E
- Cook Riolo Road from PFE Road to Vineyard Road: LOS F
- Vineyard Road from Cook Riolo Road to Foothills Blvd: LOS F
- North Antelope Road from PFE Road to Sacramento County Line: LOS E

Intersections

- Baseline Road / Walerga Road / Fiddyment Road: LOS F
- PFE Road / Walerga Road: LOS F
- PFE Road / Cook-Riolo Road: LOS F
- PFE Road / North Antelope Road: LOS F

Placer County has adopted methodologies for determining the significance of traffic impacts within the context of the Level of Service goals established by the General Plan and local community plans. These methodologies are noted below.

Signalized Intersections Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

1) *An intersection operating at or above the established Placer County policies without the project will decrease to an unacceptable LOS with the project; or*
2) *An intersection currently operating below the acceptable LOS established policy will experience an increase in V/C (volume to capacity) ratio of **0.05** (5%) or greater; or (Note: the DCWPCP Circulation Element Goal No. 6 accepts a 0.05 V/C ratio increase under cumulative conditions)*

3) *An intersection currently operating below the established acceptable LOS policy will experience an increase in overall average intersection delay of **4.0** seconds or greater.*

Un-signalized Intersection Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

1) *An all-way stop or side street controlled intersection which currently operates at or above the established Placer County policies without the project will deteriorate to an unacceptable LOS with the project and cause the intersection to meet MUTCD traffic signal warrant(s); or*

2) *An all-way stop or side street controlled intersection which currently operates below the established acceptable LOS policy <u>and</u> meets MUTCD signal warrant(s) will experience an overall increase of **2.5** seconds or more with the project. (Note: the DCWPCP Circulation Element Goal No. 6 accepts a 5.0 second increase under cumulative conditions)*

<u>Roadway Segment Assessment Methodology</u>:

A project may be considered to exceed the minimum LOS policies if;

1) *A roadway segment operating at or above the established Placer County policy without the project will decrease to an unacceptable LOS with the project; or*
2) *A roadway segment currently operating below the applicable established policy will experience an increase in V/C (volume to capacity) ratio of **0.05** or greater; or*
3) *A roadway segment currently operating below the established acceptable LOS Policy experiences an increase in **ADT of 100** or more project generated trips, per lane.*

Further consideration will be given in situations where the existing level of service is just above or at the approved minimum level of service and any increase in vehicle trips, or even daily fluctuations in traffic, will deteriorate the level of service to an unacceptable level. In such cases, it may be determined by the County that part (2) or (3) of the above exceptions is more applicable and should be used to analyze a proposed project's impacts.

<u>City of Roseville</u>

Analysis Methodology for Signalized Intersections. The HCM methodology was also used to address intersections within the City of Roseville Sphere of Influence based on the City's Traffic Impact Analysis guidelines.

Standards of Significance. The City of Roseville standards were updated in 2016, and the following thresholds of significance have been used to determine whether implementing the proposed project would result in a significant transportation impact. These thresholds of significance are derived from questions posed in Appendix G of the CEQA Guidelines, thresholds of significance adopted by the City in applicable planning documents and previous environmental documents, and professional judgment. This analysis assumes LOS C is the City's minimum LOS goal. For purposes of this study, a significant impact would occur if the project would cause conditions as follows:

Intersections

1. Cause a signalized intersection in Roseville to be degraded as follows under existing conditions during the a.m. and p.m. peak hours:

   * For intersections currently operating at LOS C or better: worsen operations to LOS D or worse.

* For intersections that currently operate at LOS D or E: cause operations to further worsen by one or more service levels.
* For intersections that currently operate at LOS F: cause intersection delay to worsen by 12.5 seconds or greater.

2. Cause the overall percentage of signalized intersections throughout the City of Roseville operating at LOS C or better during the a.m. and p.m. peak hours to fall below 70 percent.

The City of Roseville has determined that some intersections will operate with Level of Service that exceeds LOS C under Year 2035 conditions (refer to Circulation Element Table III-3). Within the study area these include:

- ***Baseline Road / Fiddyment Road*** (LOS D AM / LOS D PM)
- ***Baseline Road / Woodcreek Oaks Blvd*** (LOS E AM / LOS D PM)
- ***Foothills Blvd / Baseline Road*** (LOS E AM / LOS D PM)

The City of Roseville does not typically consider Level of Service at un-signalized intersections or roadway segments to be a significance criteria under CEQA. For this analysis the criteria employed by Placer County in the Placer County Sports and Event Complex Project DEIR was employed. Consistent with other studies that have analyzed unsignalized City of Roseville intersections, impacts are determined based on delay / LOS and whether or not the peak hour signal warrant would be met.

For purposes of this study, a significant impact would occur if the project would result in any of the following at a study intersection:

1. Cause an unsignalized intersection in Roseville outside of the Pedestrian Overlay District to be degraded as follows under existing or cumulative conditions:

- For intersections currently (or projected to be) operating at LOS C or better, worsen operations to LOS D or worse and meet the MUTCD peak hour signal warrant.
- For intersections currently (or projected to be) operating at less than LOS C, cause operations to further worsen by one or more service levels and meet the MUTCD peak hour signal warrant.
- For intersections currently (or projected to be) operating at LOS F, cause intersection delay to worsen by 12.5 seconds or greater and meet the MUTCD peak hour signal warrant.

The City of Roseville does not typically consider daily traffic volume on roadway segments to be a significance criteria. Level of Service based on Placer County thresholds has been presented on selected City of Roseville facilities for illustrative purposes.

Other Evaluation Criteria

Traffic Signal Warrants. The extent to which a traffic signal may be justified is determined based on many factors. From the standpoint of traffic impact analysis, signal warrant criteria contained in the *California Manual of Uniform Traffic Control Devices (CMUTCD)* are employed in order to assess the relative impact of the additional traffic accompanying a development proposal. Warrant 3 (Peak Hour Traffic Volume) has been employed for this analysis.

Traffic signal warrant thresholds have been adopted for *urban* and *rural* conditions. The two are differentiated based on travel speed (i.e., 40 mph or less is urban) and population (i.e., 10,000 or more is urban). Based on the speeds along the roadways the rural criteria were used for this analysis.

Existing Levels of Service – Roadway Segments

Traffic Volumes. New roadway 24-hr traffic counts were conducted for this analysis on October 18, 2018 when area schools were in session.

Existing Levels of Service based on Daily Traffic Volumes. Table 4 summarizes Levels of Service based on the current daily traffic volumes on study area roads with the existing roadway configuration. Applicable Level of Service thresholds and roadway classifications are presented. For this analysis, Level of Service D is the minimum acceptable condition. All segments currently operate within accepted Placer County DCWPCP minimum thresholds.

TABLE 4
EXISTING ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Number of lanes - Facility Classification	Standard		Daily Volume / Level of Service		
					Existing		
			LOS	Volume Threshold Per Lane (veh/ln)	Daily Volume	v/c	LOS
1. PFE Road	Walerga Rd to Cook Riolo Rd	2-lane Level Terrain Rural Highway	D	7,750	5,300	0.21	B
2. PFE Road	Cook Riolo Rd to N. Antelope Rd	2-lane Rolling Terrain Rural Highway	D	5,700	6,705	0.32	C
3. Cook Riolo Road	Baseline Rd to Vineyard Rd		D	5,700	3,705	0.18	B
4. Cook Riolo Road	Vineyard Rd to Creekview Ranch School		D	5,700	4,970	0.24	C
5. Cook Riolo Road	Creekview Ranch School to PFE Rd		D	5,700	4,475	0.21	C
6. N. Antelope Road	from PFE Rd to Great Valley Dr		D	5,700	7,760	0.37	D
7. Vineyard Road	Crowder Ln to Cook Riolo Rd		D	5,700	2,635	0.13	B
8. Vineyard Road	Cook Riolo Rd to Brady Ln		D	5,700	4,315	0.21	C
9. Vineyard Road	Brady Ln to Foothills Blvd (R)	2-lane Arterial – Low Access Control	D	6,875	5,625	0.38	A
10. Brady Lane	Baseline Rd to Project (R)	2-lane Rolling Terrain Rural Highway	D	5,700	1,010	0.05	A
11. Brady Lane	Project to Vineyard Rd (R)		D	5,700	1,010	0.05	A

Bold values exceed minimum LOS threshold **Highlighted** values are a significant impact. (R) is City of Roseville jurisdiction

Existing Level of Service - Intersections

Traffic Volumes. With one exception, new a.m. and p.m. peak hour intersection turning movement counts were conducted for this analysis on October 17, 2018 when area schools were in session. Traffic volumes were collected at the Baseline Road / Walerga Road / Fiddyment Road intersection on April 2, 2019.

Intersection Levels of Service. Figure 3 presents the existing lane configurations at the study intersections as well as the observed peak hour traffic volumes at each study intersection. Existing Levels of Service at study intersections were then calculated, and the results are summarized in Table 5 for the a.m. and p.m. peak hours.

For this analysis, Level of Service D is the minimum acceptable condition within Placer County, with exceptions noted in DCWPCP. As noted in the Standards of Significance section a minimum intersection Level of Service "C" shall be the peak hour design objective for the City of Roseville after considering any improvements already planned by the City.

The ***PFE Road / Walerga Road intersection*** operates at LOS E in the p.m. peak hour. While LOS E exceeds the minimum LOS D standard, the DCWPCP ultimately accepts LOS F at this location. Placer County has a CIP funded project to widen the intersection and deliver a four-lane Walerga Road at the intersection. The improvement has been designed but has not yet been constructed.

The ***Cook Riolo Road / Creekview Ranch School intersection*** operates at LOS B in the a.m. peak hour and LOS A in the p.m. peak hour. While conditions at the intersection would be considered acceptable based on HCM LOS calculation methods, in actuality appreciable delays occur during the peak periods of school traffic within the overall a.m. peak hour. At that time the school circulation system's internal capacity for on-site curbside drop-off is exceeded by the actual arriving vehicle demand, and traffic waiting to use the drop-off zones can create queueing that extends back onto Cook Riolo Road. The Dry Creek School District completed a project to add a new parking lot with additional on-site drop-off space, and while conditions in 2019 are better than before some queueing onto Cook Riolo Road remains during the school's morning drop-off and afternoon loading periods.

The Creekview Ranch MS access is a private roadway, and Placer County does not consider traffic conditions at private access to be a significance criteria under CEQA. The information regarding this location is presented for informational purposes only.

The City of Roseville's ***Baseline Road / Walerga Road-Fiddyment Road intersection*** operates at LOS D in the a.m. peak hour and LOS F in the p.m. peak hour, both of which exceeds the City's minimum LOS C goal.

The City of Roseville's ***Baseline Road / Foothills Blvd intersection*** operates at LOS D in the p.m. peak hour, which exceeds the City's minimum LOS C goal.

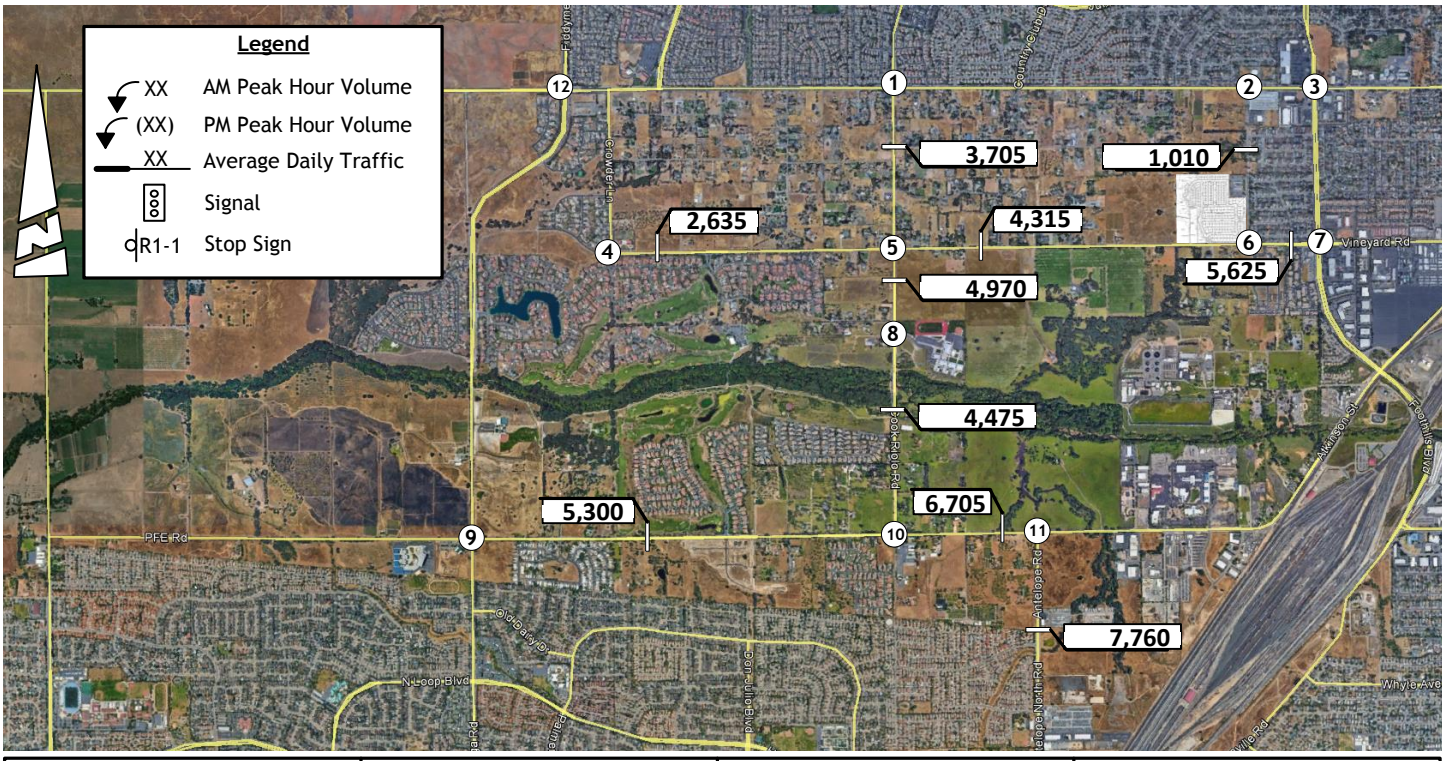
Traffic Signal Warrants. The volume of traffic at these unsignalized intersections satisfies peak hour volume warrant in the a.m. peak hour.

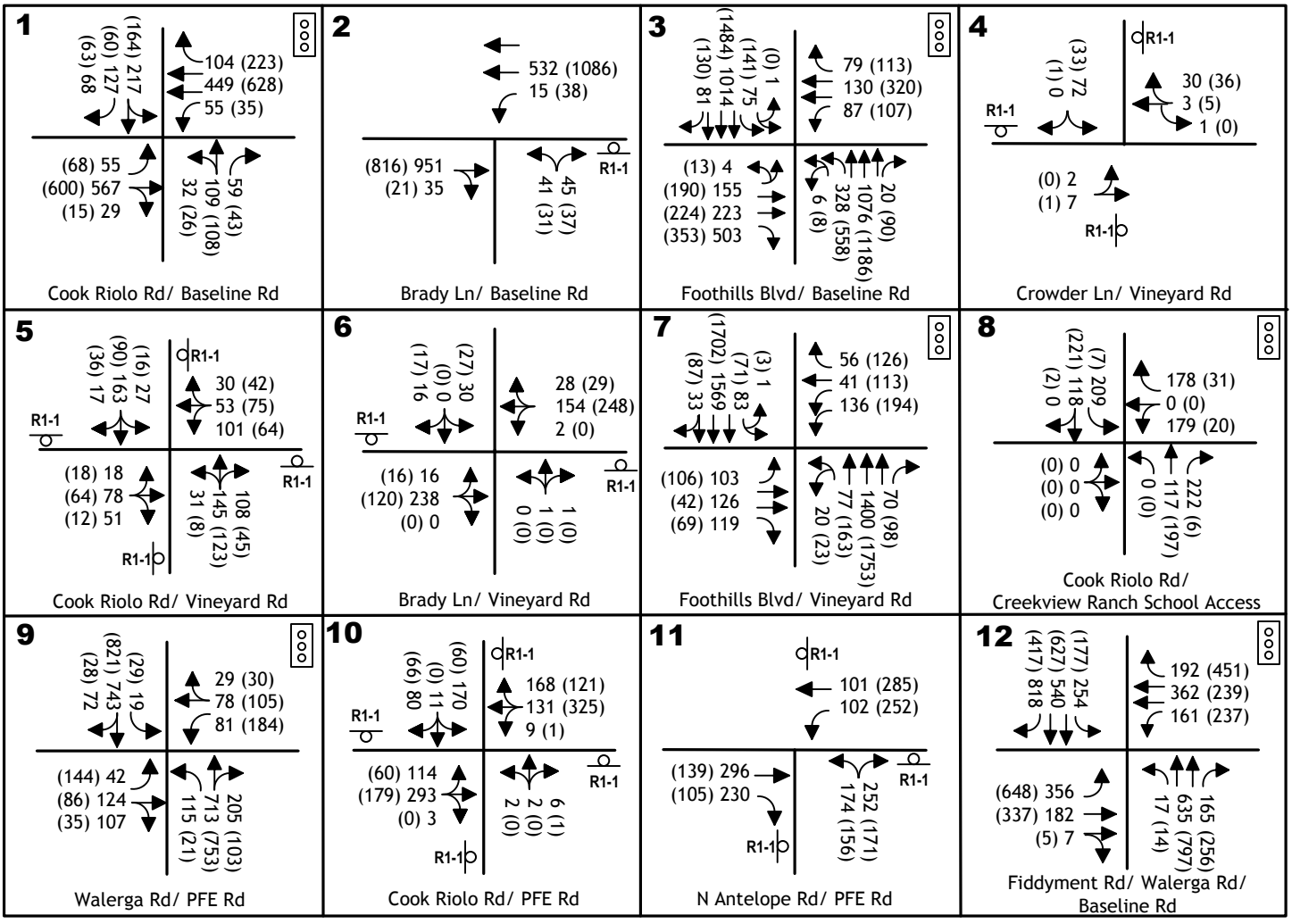
- Baseline Road / Brady Lane (AM)
- PFE Road / Cook Riolo Road
- PFE Road / N. Antelope Road

TABLE 5
EXISTING INTERSECTION LEVELS OF SERVICE

Location - Jurisdiction	Control	AM Peak Hour		PM Peak Hour		Traffic Signal Warranted?
		LOS	Average Delay (veh/sec)	LOS	Average Delay (veh/sec)	
1. Baseline Rd / Cook Riolo Rd / Woodcreek Oaks Blvd – (R)	Signal	C	32.0	C	30.5	N/A
2. Baseline Rd / Brady Lane – (R)						
Northbound approach	NB Stop	C	24.5	C	21.5	Yes (AM)
Westbound left turn		B	10.5	A	10.0	
3. Baseline Rd / Foothills Blvd - (R)	Signal	C	32.0	**D**	**40.5**	N/A
4. Vineyard Rd / Crowder Rd						
(overall*)	SB Stop	(A)	(9.0)	(A)	(9.0)	No
Southbound approach		A	9.0	A	9.0	
Eastbound left turn		A	7.5	A	0.0	
5. Cook Riolo Rd / Vineyard Rd	AWS	B	13.5	B	11.0	No
6. Vineyard Rd / Brady Ln	AWS	A	9.0	A	9.0	No
7. Vineyard Rd / Foothills Blvd – (R)	Signal	C	24.0	C	28.0	N/A
8. Cook Riolo Rd / Creekview Ranch School	Signal	B	12.0	A	6.0	N/A
9. PFE Rd / Walerga Rd	Signal	D	36.0	**E**	**71.0**	N/A
10. PFE Rd / Cook Riolo Rd	AWS	D	28.0	B	14.0	Yes
11. PFE Rd / North Antelope Rd	AWS	C	17.5	C	15.5	Yes
12. Baseline Road / Walerga Road – Fiddyment Road (R)	Signal	**D**	**40.0**	**F**	**81.0**	N/A

(R) indicates City of Roseville jurisdiction. Minimum LOS C standard applies.
Bold indicates MIN LOS threshold exceeded
* Overall Avg Delay = Σ (Delay x Volume of each delayed movement) / Σ Volume of each delayed movement





EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 3

Existing Pedestrian, Bicycle and Transit Facilities

There are limited pedestrian, bicycle and transit facilities in the local study area as described below. The facilities appear to be limited to locations where frontage roadway improvements have been completed as a result of development. Figure 4 identifies these facilities.

Sidewalks and Paths. Sidewalks exist at various locations in the vicinity of the project.

Sidewalks exists on the north side of **Baseline Road** and on the south side of the road east of Brady Lane.

Sidewalks exist on both sides of Chignahuapan Way between Brady Lane and Foothills Blvd.

Sidewalks or paths exist on **Vineyard Road** at these locations:

- west of Crowder Lane
- Separated path on south side from Crowder Ln to ½ mile west of Cook Riolo Rd
- East of Brady Lane

Along **Cook-Riolo Road** a multi-use pathway is available on the west side of the road for pedestrians and bicyclists from PFE Road to Creekview Ranch. A Placer County project to construct a multi-use trail on the east side of Cook Riolo Road from Creekview Ranch School to Baseline Road was completed in the summer of 2018. Sidewalk is also present along the school frontage.

On **Brady Lane** sidewalks exist on the east side of Brady Lane and on the west side of the street north of the project site adjoining an existing church.

Bicycles and Trails. The DCWPCP notes that no planning documents specify the location of future pedestrian facilities although subdivisions and parcels are required to provide facilities as part of the County's approval process. The *Placer County Regional Bikeway Plan* (Placer County Transportation Planning Agency, 2018) http://pctpa.net/library/BikewayPlanning/PlacerCounty_RegionalBikewayPlan_FINAL_20180629.pdf specifies future bicycle paths, lanes, and routes (Class I, II, III and IV, respectively).

Classification. Trails and bikeways are classified as follows:

- Class I Bikeway (Bike Path) provides a completely separated facility designed for the exclusive use of cycles and pedestrians.
- Class II Bikeway (Bike Lane) provides on-road striped lanes with signs and pavement markings and legends with restricted travel to motor vehicles and pedestrians. Through travel by motor vehicles or pedestrians is prohibited, but crossflows by pedestrians and motorists is permitted.
- Class III Bikeway (Bike Route) provides on-street routes designated by signs or permanent markings and shared with pedestrians and motorists.

- Class IV Bikeway (Separated Bikeway) is a bikeway for the exclusive use of bicycles similar to a Class II facility, but includes a separation between the bike facility and through vehicular traffic. Separation facilities may include flexible posts, inflexible physical barriers or on-street parking. Class IV facilities also allow for two-way bicycle traffic.

Class I trails are proposed to extend the Dry Creek Greenway west to Atkinson Street and east to Watt Avenue and between Walerga Road and Crowder Lane along a Dry Creek tributary.

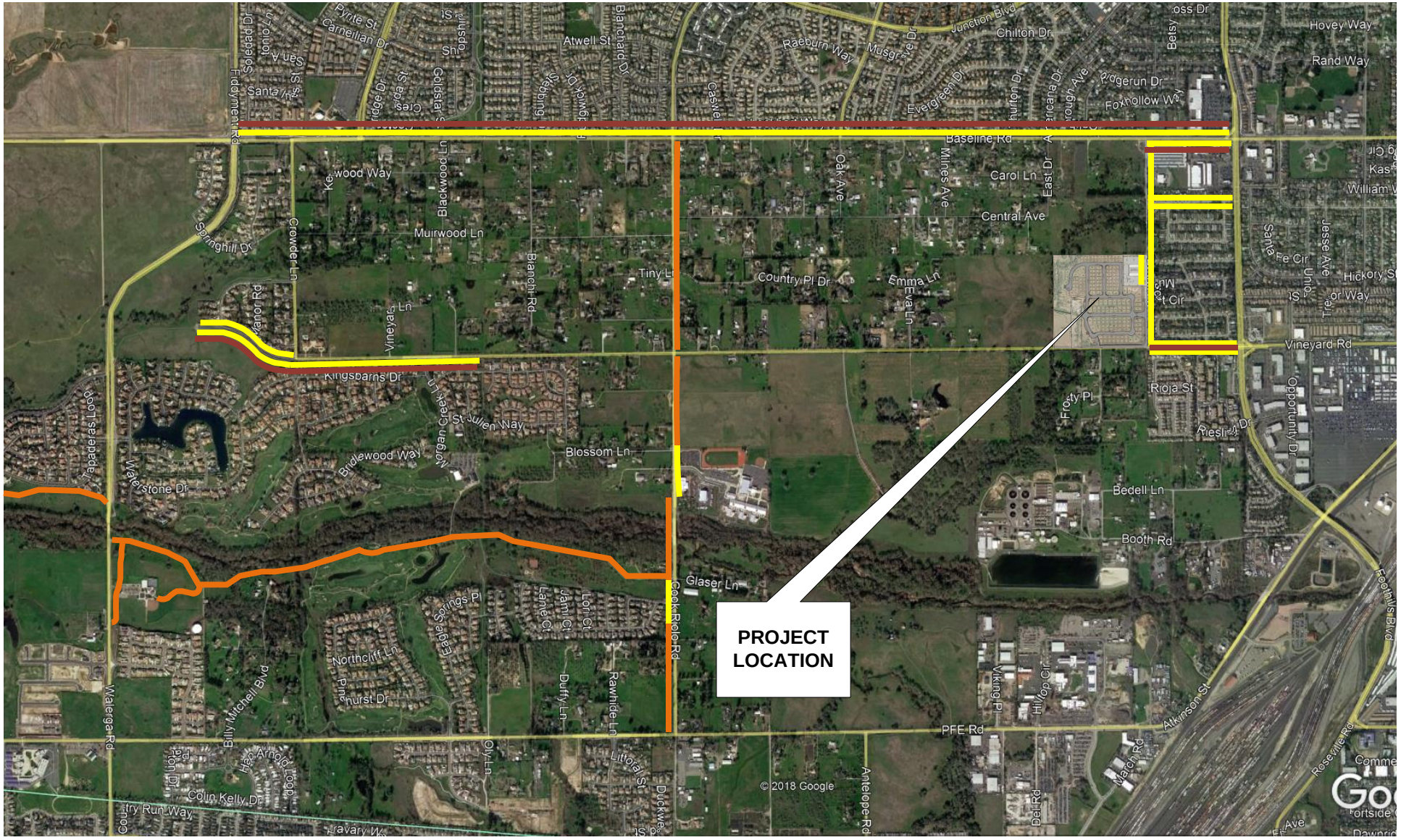
On-street bikeways (Class II or III) are planned for the following roads in the project vicinity:

- Baseline Road – Walerga Road to Foothills Boulevard
- PFE Road – Walerga Road to Atkinson Street
- Vineyard Road – Crowder Lane to Foothills Blvd
- Walerga Road – Sacramento County Line to Dry Creek

Existing Facilities. Bicycle facilities in the project area include:

On **Baseline Road** Class II bike lanes exist on the north side of the road and on the south side east of Brady Lane.

On **Vineyard Road** Class II lanes are marked west of Crowder Lane and on the south side from Crowder Lane to ¼ mile west of Cook Riolo Road. Class II bike lanes are striped east of Brady Lane.



NORTH

N.T.S.

Legend

- Sidewalk
- Multi-use Pathway
- Class II Bike Path

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

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figure 4

Transit. Transit service in the vicinity of the project is provided by ***Roseville Transit.*** The closest Roseville Transit route is their 'D' route which follows Baseline Road between Junction Blvd and Cook Riolo Road Monday thru Saturday. Route R follows Foothills Blvd and passes the Baseline Road and Vineyard Road intersections on weekdays. There are no currently identified future transit routes along Vineyard Road, however, the DCWPCP notes with planned improvements the road could accommodate transit services and routes could be extended to serve future growth in this area if demand warrants it.

PROJECT CHARACTERISTICS

The traffic impacts associated with the Brady Vineyard Subdivision project have been determined based on the projected change in operating Levels of Service accompanying the project. Project impacts have been quantified by estimating the number and directional distribution of project trips, superimposing those trips onto current traffic volumes and recalculating Levels of Service.

The development of this project will attract traffic to the project site. The amount of additional traffic on a particular section of the street network is dependent upon two factors:

- Trip Generation, the number of new trips generated by the project, and
- Trip Distribution and Assignment, the specific routes that the new traffic takes.

Trip Generation

Trip generation is determined by identifying the type and size of land use being developed. Recognized sources of trip generation data may then be used to calculate the total number of trip ends that the project creates.

The trip generation for this project was calculated using trip generation rates published in the *Trip Generation Manual* (Institute of Transportation Engineers, 10th Edition, 2018). Applicable rates are found in category 210 (Single Family Residential), as noted in Table 6. Application of these trip generation rates yields a total of 1,123 daily trips, with 88 trips expected in the a.m. peak hour and 118 new trips generated during the p.m. peak hour.

TABLE 6
TRIP GENERATION RATES / FORECASTS

Land Use	Unit / Quantity	Trip Generation						
		Daily	AM Peak Hour			PM Peak Hour		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Single Family Residential	Dwelling unit	9.44	25%	75%	0.74	63%	37%	0.99
Brady Vineyard	119 du's	1,123	22	66	88	74	64	118

Trip Distribution and Assignment

Distribution. The distribution of trips to and from the project site was determined by conducting a select zone analysis for the project site using the Placer Vineyards Regional Travel Demand Forecasting Model. Model results were reviewed with Placer County staff for reasonableness. Manual adjustments were made for the a.m. peak hour distribution due to the

probably interaction between the project and Creekview Ranch School, as some parents may drop off students before continuing on to a destination projected by the traffic model.

The share of project trips that may first visit Creekview Ranch School was determined based on these factors:

- **Availability of Bussing by the DCUSD.** Because no safe pedestrian route is available to the project site, Dry Creek Unified School District is expected to provide bussing.

- **Share of Creekview Ranch School's eligible regular students who elect to ride busses.** Today roughly 145 regular students out of a total of 731 students are bussed. Students in the Morgan Creek area south of the school are not bussed, and school wide roughly 520 students appear to be eligible to be bussed. Thus roughly 28% of eligible students elect to ride busses.

- **Number of Students in Brady Vineyard project who ride busses versus those who may be dropped off.** The DCUSD estimates a yield of 0.71 Creekview Ranch School students per residence. Thus the 119 dwellings could yield 85 students. Assuming that the school's average bussing rate continues, then 24 bus riders would be generated and 61 students would be driven to school. At a typical automobile occupancy rate for school traffic (i.e., 1.5 students per vehicle), 41 vehicles would be destined for Creekview Ranch School.

- Share of total a.m. peak hour traffic. The Brady Vineyard project generates 22 inbound and 66 outbound trips in the a.m. peak hour. Trips first made to Creekview Ranch School represent 62% of the outbound total (41/66). Assuming 62% of the project's inbound a.m. peak hour trips are also from Creekview Ranch then 14 trips of the trips to the school will return to the project site and 27 trips will continue to regional destinations (i.e., of the 41 project trips destined for Creekview Ranch School, 14 would return to the project site and the remaining 27 would continue to regional destinations).

The trip distribution assumption, which was approved by County staff, is shown in Table 7. Graphically, the project trip distribution pattern is shown in Figure 5.

TABLE 7 PROJECT TRIP DISTRIBUTION				
		Percent of Total Trips		
Direction	**Route**	**AM**	**PM**	**Daily**
North	Woodcreek Oaks	1.1%	3%	2.9%
	Americana Drive / Country Club Dr	1.1%	3%	2.9%
	Foothills Blvd	8.4%	22%	20.8%
East	Baseline Road	3.9%	10%	9.5%
	Vineyard Road	6.8%	18%	17.1%
West	Baseline Road west of Cook Riolo Rd	2.2%	6%	5.7%
	Creekside Ranch School	62.0%	0%	5%
South	Walerga Road	1.5%	4%	3.8%
	Foothills Blvd	11.4%	30%	28.5%
	Off of Atchison	0.8%	2%	1.9%
	N. Antelope	0.8%	2%	1.9%
	Total	**100%**	**100%**	**100%**

Trip Assignment. While the project has only one regular access, multiple off-site routes are available to reach most destinations. To determine the choice of routes the relative travel time along each route was estimated, and the project's trips were assigned to the local street system in response to comparative times. Resulting "project only" trips, including trips continuing from Creekside Ranch School, are illustrated in Figure 6.

NORTH

N.T.S.

Legend

← (XX%)	PM % Trip Distribution
← XX%	AM % Trip Distribution

PROJECT TRIP DISTRIBUTION PERCENTAGE

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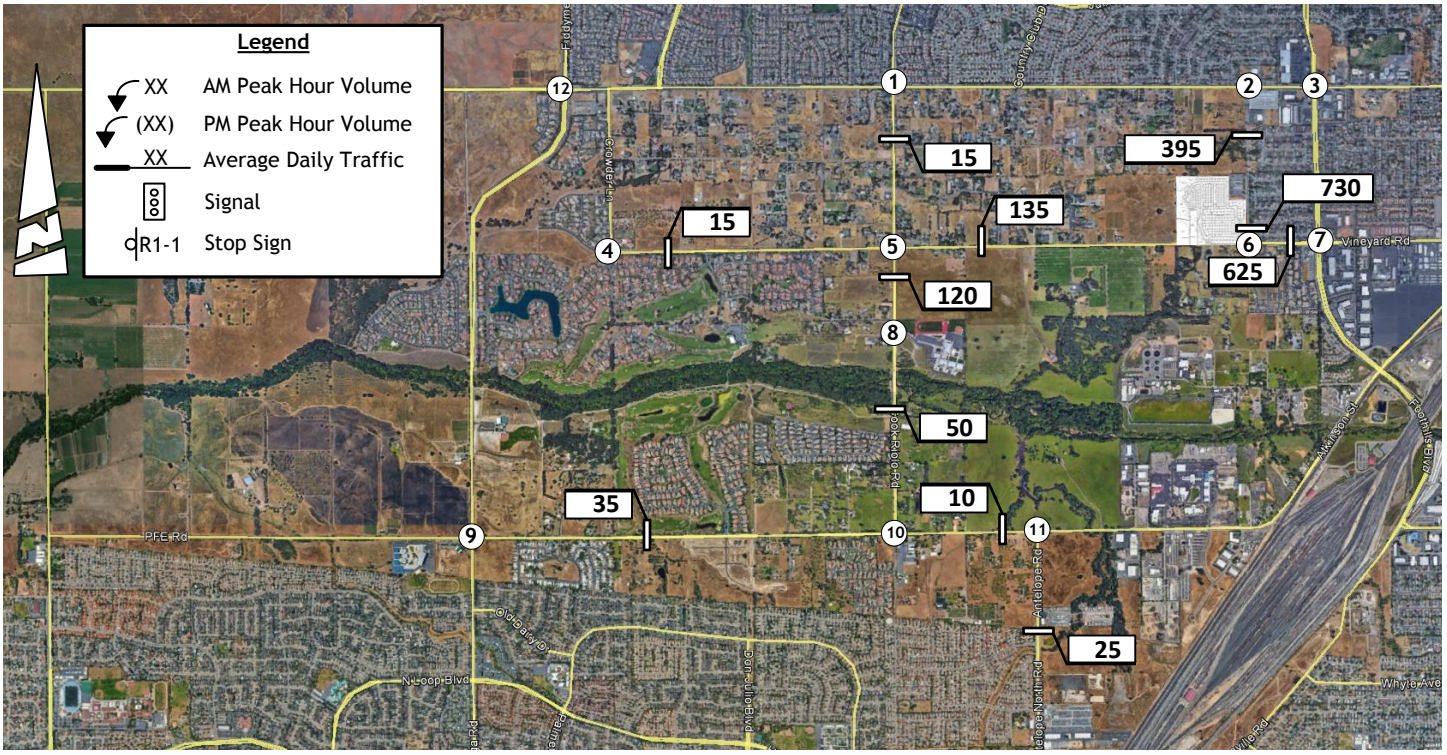
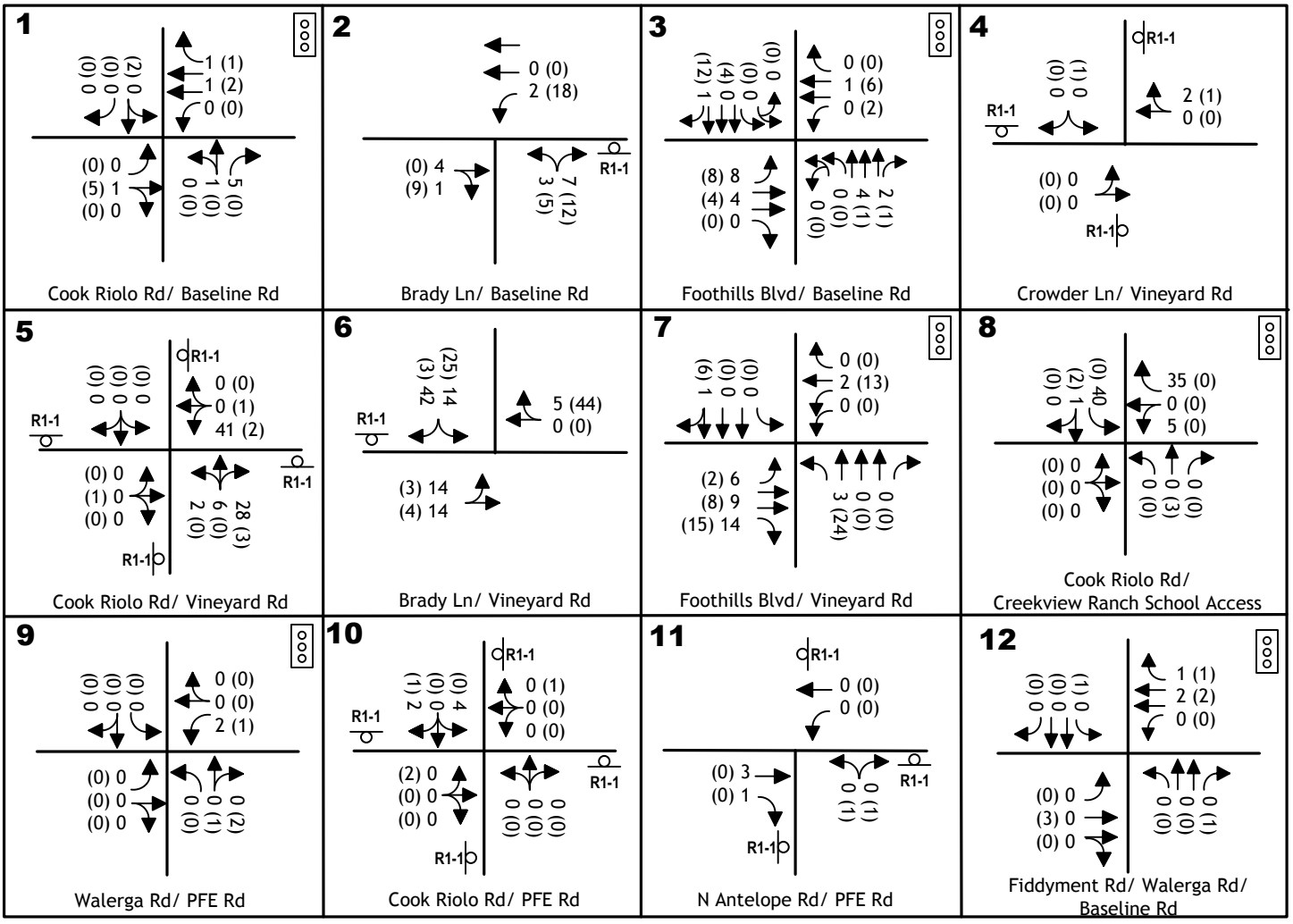
figure 5





PROJECT ONLY TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 6

Existing Plus Project Conditions

Traffic Volumes The impacts of developing the project site have been identified by superimposing project traffic onto existing background conditions and reevaluating Level of Service. Figure 7 displays the "Existing Plus Project" traffic volumes at each study intersection in both AM and PM peak hours.

Circulation System Improvements. Figure 7 also presents the intersection geometry assumed under the "plus project" condition. The project will complete frontage improvements that will widen Brady Lane and Vineyard Road. Brady Lane will be widened to its ultimate width along the project frontage, and this widening will allow a creation of a southbound left turn lane at the Vineyard Road / Brady Lane intersection. A Two-Way Left-Turn (TWLT) lane will be available at the project access intersection which will be side-street stop controlled in addition. A pending improvement project at the PFE Road / Walerga Road intersection may be completed before the Brady Vineyard project is occupied, to provide a conservative estimate of project impacts this analysis assumes that this improvement is not in place under "Existing Plus Project" conditions per County staff.

Intersection Levels of Service. Table 8 presents the Levels of Service under Existing plus Project conditions. Four intersections will operate below acceptable Level of Service thresholds. In Placer County the ***PFE Road / Walerga Road intersection*** will continue to operate at LOS E conditions in the p.m. peak hour with the project. However, the incremental change in average delay resulting from the project falls below the 5.0 second increment permitted at signalized intersections by County guidelines, and the project's impact is not significant.

In Roseville, the side street delay at the ***Brady Lane / Baseline Road intersection*** will deteriorate from LOS C to LOS D in the a.m. peak hour, and peak hour traffic signal warrants would be satisfied at that time. Based on the criteria employed herein, this is a significant impact, and mitigation would be required. To satisfy the minimum LOS standard a traffic signal could be installed or left turns could be prohibited on the northbound approach. City of Roseville City Engineer Marc Stout was consulted on this issue.

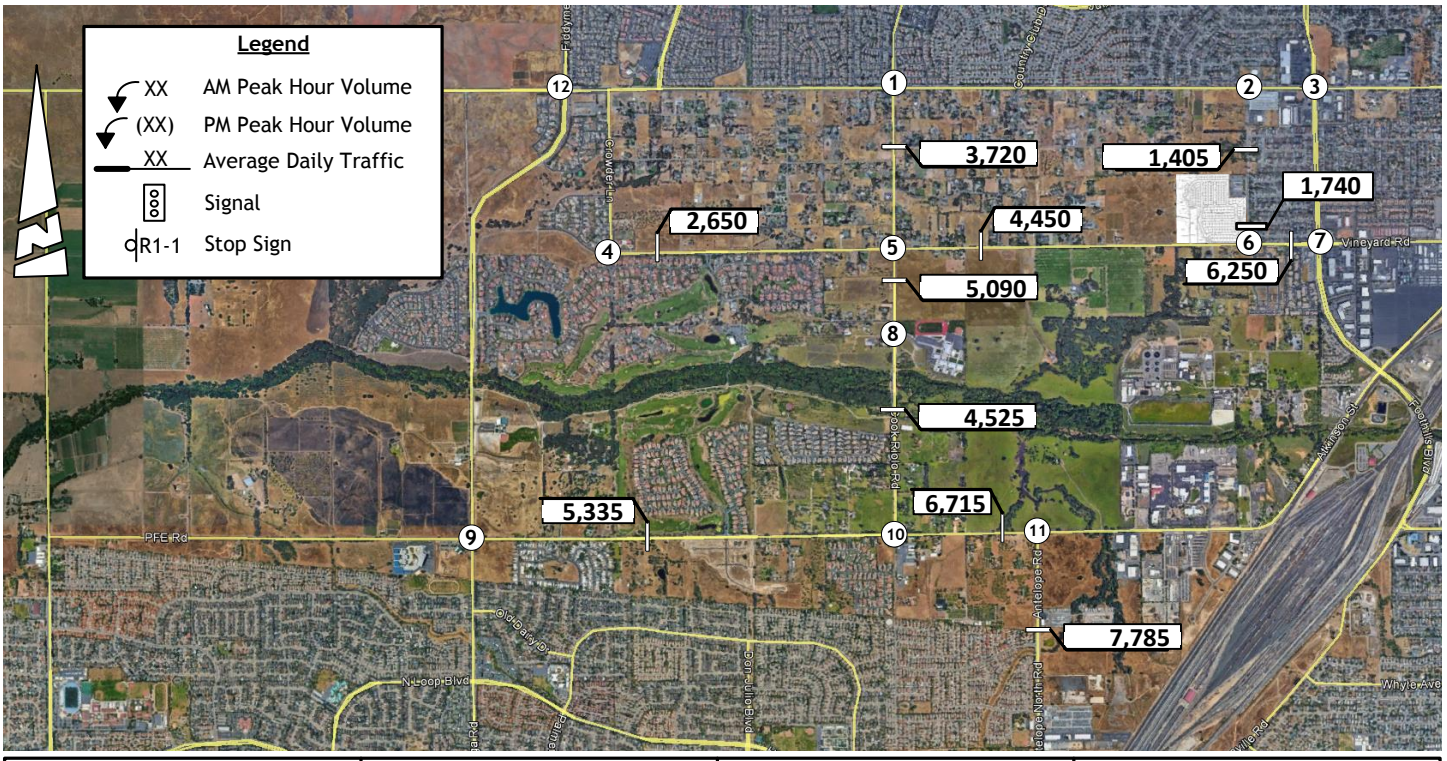
Since Baseline/Brady is not in the City's CIP as a "signalized intersection" it is not subject to the City's LOS General Plan policy. The City would not require a signal as a result of this project, and restricting lefts would not be recommended by the City at this time. If at some point in the future the northbound turn movement becomes an issue, restrictions could be evaluated at that time.

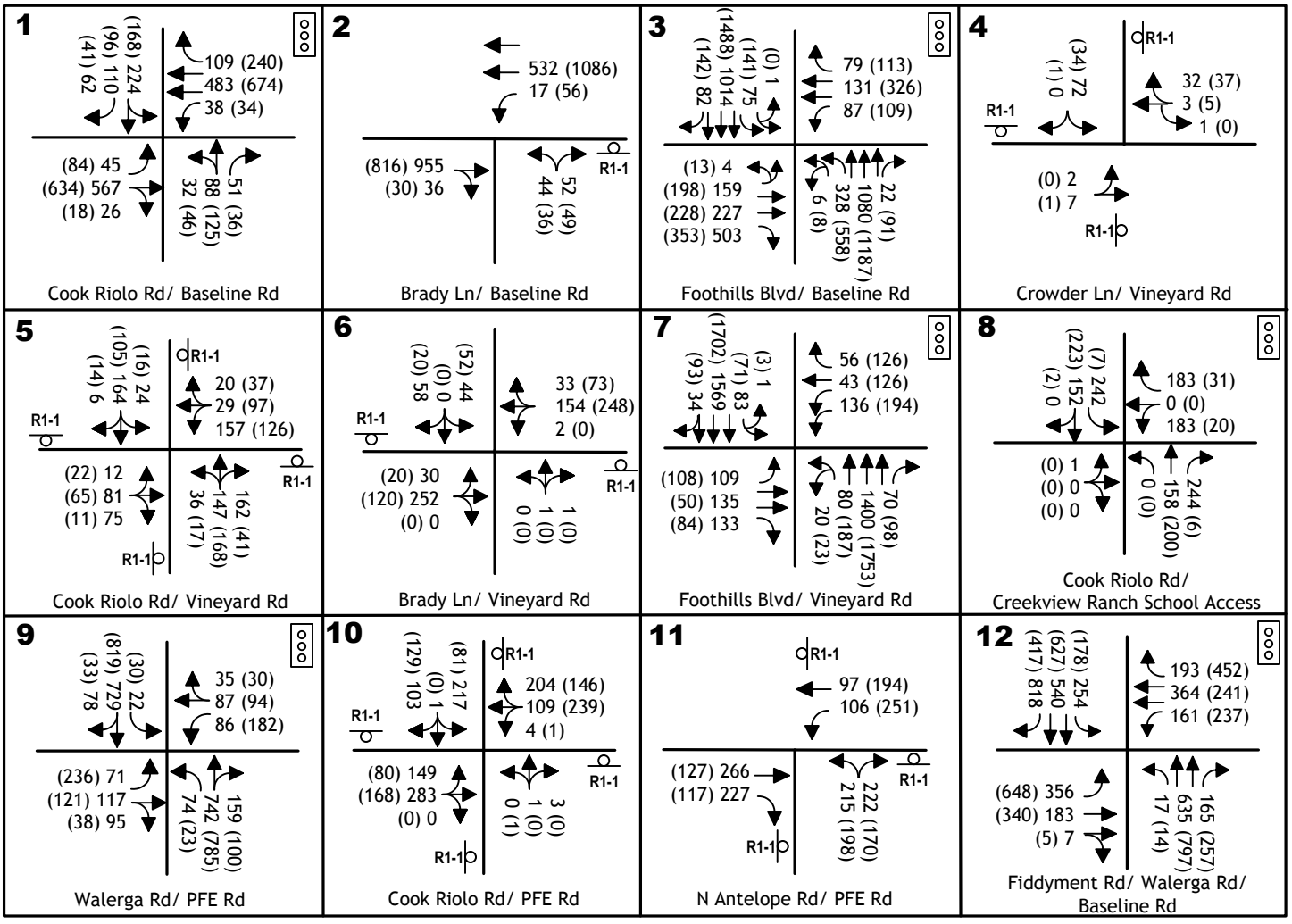
Because there is no guarantee that the City of Roseville will permit either a traffic signal or turn prohibition to be installed, this impact remains **significant and unavoidable.**

The City of Roseville's ***Foothills Blvd / Baseline Road intersection*** will continue to operate at LOS D in the p.m. peak hour as the case with current conditions. Because the project's trips do not change the Level of Service the project's impact is not significant under City of Roseville policy.

The City of Roseville's ***Baseline Road / Walerga Road / Fiddyment Road intersection*** will continue to operate at LOS D in the a.m. peak hour and LOS F in the p.m. peak hour, as the case with current conditions. Because the project's trips do not change the Level of Service and the increase in delay in the p.m. peak hour does not exceed the 12.5 second threshold, the project's impact is not significant under City of Roseville policy.

Roadway Segment Levels of Service. Table 9 compares roadway segment traffic volumes and Levels of Service with and without the proposed project. Development of the project will increase the volume of traffic along the study area roads. All roadway segments will continue to operate within accepted Placer County minimum Level of Service thresholds.





EXISTING PLUS PROJECT
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 7

TABLE 8
PEAK HOUR INTERSECTION LEVELS OF SERVICE
EXISTING PLUS PROJECT CONDITIONS

Location	Control	AM Peak Hour				PM Peak Hour				Traffic Signal Warranted?
		Existing		Ex Plus Project		Existing		Ex Plus Project		
		LOS	Average Delay (veh/sec)	LOS	Average Delay (veh/sec)	LOS	Average Delay (veh/sec)	LOS	Average Delay (veh/sec)	
1. Baseline Rd / Cook Riolo Rd / Woodcreek Oaks Blvd	Signal	C	32.0	C	32.0	C	30.5	C	30.5	N/A
2. Baseline Rd / Brady Lane	NB Stop									Yes
Northbound approach		C	25.0	**D**	**26.0**	C	21.5	C	23.0	
Westbound left turn		B	10.5	B	10.5	A	10.0	B	10.0	
3. Baseline Road / Foothills Blvd -(R)	Signal	C	32.0	C	32.0	**D**	**40.5**	**D**	**41.0**	N/A
4. Vineyard Road / Crowder Rd	SB Stop									No
(overall)		(A)	(9.0)	(A)	(9.0)	(A)	(9.0)	(A)	(9.0)	
Southbound approach		A	9.0	A	9.0	A	9.0	A	9.0	
Eastbound left turn		A	7.5	A	7.5	A	0.0	A	0.0	
5. Cook Riolo Road / Vineyard Road	AWS	B	13.5	C	16.0	B	11.0	B	11.0	No
6. Vineyard Road / Brady Lane	AWS	A	9.0	A	10.0	A	9.0	B	9.5	No
7. Vineyard Road / Foothills Blvd – (R)	Signal	C	24.0	C	25.5	C	28.0	C	30.5	N/A
8. Cook Riolo Road / Creekview Ranch School	Signal	B	12.0	B	13.4	A	6.0	A	6.0	N/A
9. PFE Road / Walerga Road	Signal	D	35.9	D	36.0	**E**	**71.0**	**E**	**72.0**	N/A
10. PFE Road / Cook Riolo Road	AWS	D	28.0	D	28.5	B	14.0	B	14.0	Yes
11. PFE Road / North Antelope Road	AWS	C	17.5	C	17.5	C	15.5	C	15.5	Yes
12. Baseline Rd / Walerga Rd – Fiddyment Rd – (R)	Signal	**D**	**40.0**	**D**	**40.5**	**F**	**81.0**	**F**	**81.0**	N/A
13. Brady Lane / Project Access	EB Stop									No
(overall)				(A)	(8.5)			(A)	(8.5)	
Eastbound approach				A	9.0			A	7.5	
Northbound left turn				A	7.5			A	9.5	

N/S* – not studied. (R) indicates City of Roseville Minimum LOS C standard applies
Bold indicates MIN LOS threshold exceeded **Highlighted** values are a significant impact
* Overall Avg Delay = Σ (Delay x Volume of each delayed movement) / Σ Volume of each delayed movement

TABLE 9
EXISTING PLUS PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Standard			Existing			Existing Plus Project				
		LOS	Volume Threshold Per Lane (veh/ln)	Max two-way volume at LOS standard[1]	Daily Volume	v/c	LOS	Daily Volume: Project Only	Daily Volume: Total	v/c	LOS	Diff in v/c
PFE Rd	Walerga Rd to Cook Riolo Rd	D	7,750	15,500	5,300	0.21	B	35	5,335	0.21	B	0.00
PFE Rd	Cook Riolo Rd to N. Antelope Rd	D	5,700	11,400	6,705	0.32	C	10	6,715	0.32	C	0.00
Cook Riolo Rd	Baseline Rd to Vineyard Rd	D	5,700	11,400	3,705	0.18	B	15	3,720	0.18	B	0.00
Cook Riolo Rd	Vineyard Rd to Creekview Ranch School	D	5,700	11,400	4,970	0.24	C	120	5,090	0.24	C	0.00
Cook Riolo Rd	Creekview Ranch School to PFE Rd	D	5,700	11,400	4,475	0.21	C	50	4,525	0.22	C	0.00
N. Antelope Rd	from PFE Rd to Great Valley Dr	D	5,700	11,400	7,760	0.37	D	25	7,785	0.37	D	0.00
Vineyard Rd	Crowder Lane to Cook Riolo Rd	D	5,700	11,400	2,635	0.13	B	15	2,650	0.13	B	0.00
Vineyard Rd	Cook Riolo Rd to Brady Lane	D	5,700	11,400	4,315	0.21	C	135	4,450	0.21	C	0.00
Vineyard Rd	Brady Lane to Foothills Blvd (R)	D	6,870	13,740	5,625	0.38	A	625	6,250	0.42	A	0.04
Brady Lane	Baseline Rd to Project (R)	D	5,700	11,400	1,010	0.05	A	395	1,405	0.07	A	0.02
Brady Lane	Project to Vineyard Rd (R)	D	5,700	11,400	1,010	0.05	A	730	1,740	0.08	B	0.03

[1] all study roadways are 2-lanes
(R) is City of Roseville jurisdiction. **Bold** values exceed minimum LOS threshold **highlighted** values are a significant impact

Evaluation of Gated Access

The project proposes gated access at the project entrances. While this feature does not normally affect the quality of traffic flow on the adjoining street system and does not alter Level of Service, safety issues could arise if traffic queued back from the gates.

Gate Operational Assumptions. Placer County has adopted a design standard for gated access to residential subdivisions (Plate 115). The gate would employ a system that will monitor the approach of residents using "proximity tags", or an in-vehicle push button key to automatically open the gate as the resident's vehicle arrives. Visitors would manually punch in a gate code.

The type of gate to be used at the entrance is a metal swing gate.

Gate Evaluation Parameters. There are five key design features that will affect the adequacy of access design.

1. Available distance for storage for resident and visitor vehicles from the new gate back to the edge of travel way along Brady Lane
2. Available storage for guest vehicles from the push button point back to the travel way
3. Length of time required for a resident to activate the gate and for the gate to open
4. Length of time required for the system to identify a visitor and to activate the gate
5. External factors that could create platoons of inbound traffic, such as adjoining signalized intersections

Storage Distance. The site plan shows that the median island where the push button for the gate actuation is located, is roughly 60 feet from Brady Lane, and the gate itself is 120 feet from Brady Lane. Assuming 25 feet per vehicle the gate could handle 4-5 waiting vehicles. The entrances appear to be wide enough to permit residents to bypass waiting visitor vehicles and travel directly to the gate.

Gate Activation and Opening Assumptions. The amount of time required for residents or visitors to activate the gate and for the gate to open has been determined from a review of available literature. A resident's proximity tag or push button can be detected by the system as a vehicle approaches the gate. From that time a metal swing gates moves at 1.2 to 2.0 feet per second and requires 11 to 18 seconds to open a 14'-16'swing gate, depending on the size of the operator mechanism. In pavement magnetic loop detectors prior to and after the gate ensure that the swing gate remains open for any following vehicles.

Visitors would input a code number to activate the gate but may be less familiar with its operation than residents. The additional time required for a visitor to activate the system but could add 5 to 10 seconds to the time expected for a resident.

Technical Approach. Vehicles arriving at Brady Vineyard are expected to arrive randomly and the number of vehicles queuing behind the proposed gate can be based on the overall inbound traffic demand, the overall capacity flow rate through the gate and the passage time for subsequent vehicles following the first vehicle. For a combination of resident vehicles and an occasional visitor vehicle (i.e., 10% visitors), the average time needed for the system to detect a vehicle and fully open the gate would be no more than 20 seconds, which implies a capacity for 180 openings per hour. The probability of a queue of any length can be determined using standard queue theory, and in this case the length of queue occurring at the 95th percentile level is the determining factor.

Probability of Queues at the Access. The worst p.m. peak hour inbound traffic forecast is 74 vehicles. Statistically, there is a 59% probability that a queue will not exist behind the gate at any time during the peak hour. There is an 83% probability of a queue of 1 vehicle or less, a 93% probability of a queue of 2 vehicles or less and a 97% probability of a queue of 3 vehicles or less. As a practical matter, there will be random occasions when multiple vehicles arrive at the same time. However, the plan indicates that a queue of 4 vehicles can be accommodated behind the gate. Therefore, the presence of the gate on the access to a project of this size does not pose an appreciable safety problem.

Impact to Alternative Transportation Modes

Pedestrians. The project may result in pedestrians who elect to walk to and from the site to destination such as Roseville's commercial areas along Foothills Blvd. The project could result in school age pedestrians who may walk to Creekview Ranch School.

As noted in the existing setting, sidewalks exist on Vineyard Road from Brady Lane to Foothills Blvd and with completion of project frontage improvements on Brady Lane and on Vineyard Road sidewalks will be available between the project and the Vineyard Road / Brady Lane intersection. To the north there is sidewalk along the east side of Brady Lane to Baseline Road and on a local street that joins Brady Lane and Foothills Blvd. Pedestrian access to commercial areas will be adequate.

There is no complete pedestrian route between the site and Creekview Ranch School. However, under current Dry Creek Unified School District's *Transportation Fee Program and Procedures, 2019-2020* http://dcjesd-ca.schoolloop.com/file/1500178971582/1545467596607/2941540787133552403.pdf bussing will be offered to Brady Vineyard students until such time as a safe pedestrian route is available.

Because students bussing is available, and the project is making standard frontage improvements that include sidewalks, its impact to pedestrians is not significant.

Bicycles. Some residents may elect to ride bicycles to reach local destinations. As noted in the existing setting, dedicated bicycle facilities exist on Baseline Road and Vineyard Road east of Brady Lane (i.e., Class II lanes) but not on the County roads to the west. Thus residents can

safely cycle to local amenities. The project's frontage improvements would provide the width needed to eventually construct Class II bike lanes on Vineyard Road, as noted in the Placer County Regional Bikeway Plan.

With planned frontage improvements the project will not result in any additional hazards for bicyclists, and the project does not interfere with any plans for future bicycle facilities. As a result, its impact is not significant.

Transit. The project could cause a minimal demand for transit services that would take advantage of Roseville Transit service on Baseline Road and Foothills Blvd roughly ¾ miles away. However, because that demand is unlikely to cause an appreciable change is system ridership, there would be no need to modify existing routes.

CUMULATIVE IMPACTS

This section addresses cumulative impacts occurring as a result of future development in the South Placer area and regional traffic growth on major roads. The cumulative analysis compares conditions with the project with conditions occurring with no site development. The analysis does not compare project impacts with those accompanying development of land uses under the current land use designation in the DCWPCP.

Background Assumptions

Regional Traffic Growth. The impacts of the project were evaluated within the context of long term cumulative traffic conditions. As directed by County staff the regional traffic model last updated for the *Placer Vineyards Specific Plan EIR* was selected as the most valid source of future background traffic volumes in the study area at locations in Placer County. According to County staff this model reflects current land use assumptions for development in the DCWPCP area.

For this analysis the traffic model was run and forecasts were made for the Cumulative No Project scenario. The Cumulative Plus Project condition was identified by manually adding the proposed project's trips to the No Project condition based on the regional distribution pattern derived from the traffic model.

Alternative assumptions were made for two locations within the City of Roseville and addressed by the City Year 2035 CIP traffic model. The Year 2035 Plus Amoruso Project traffic volume forecasts contained in the ***Amoruso Ranch DEIR*** traffic study were employed as the base Cumulative No Project conditions at the Foothills Blvd / Baseline Road and Foothills Blvd / Vineyard Road intersections.

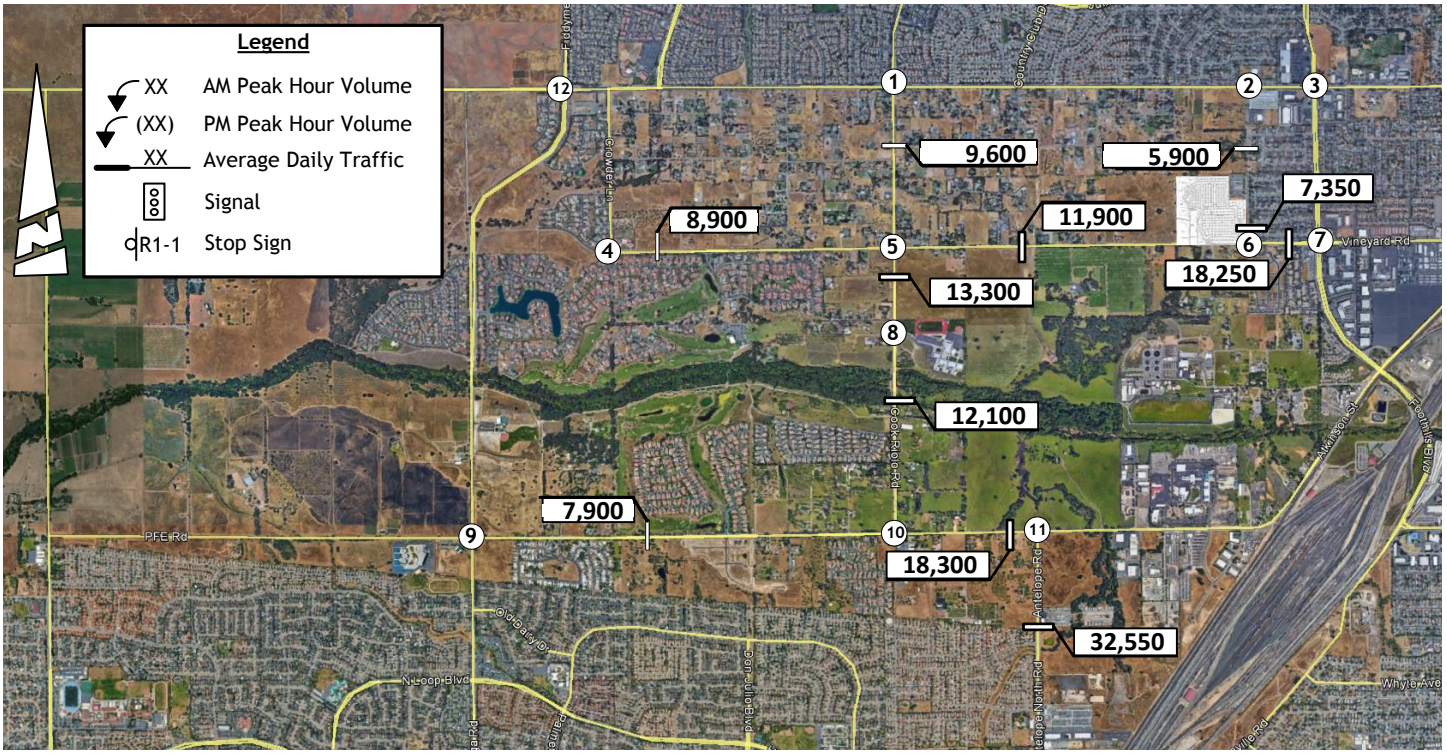
The presence of other recent development projects that would not have been addressed was considered in consultation with Placer County staff. The Placer County Sports and Events Complex project has been approved, and the traffic associated with this project was manually added to the background cumulative traffic volume forecasts. Trips associated with the Midweek Evening Volleyball Practice Scenario, as well as trips associated with the planned culinary facility were assigned to the study area street system based on the distribution assumptions made in the DEIR.

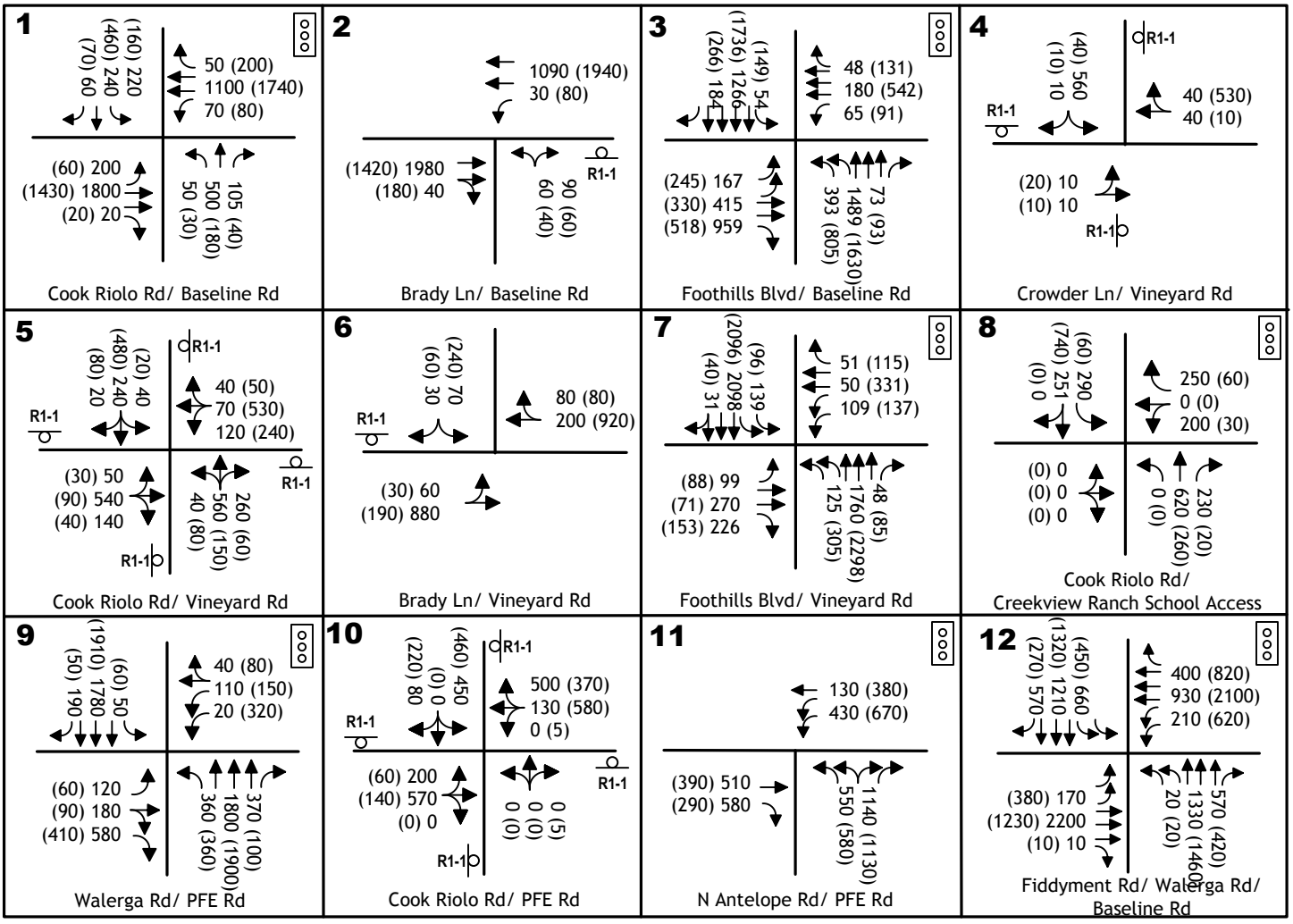
Figure 8 presents background long term Cumulative No Project traffic volumes at study intersections, while Figure 9 presents volumes with the proposed project.

Roadway Improvements. Some intersections will be improved under cumulative conditions based on work already included in the DCWP CIP or City of Roseville 2035 CIP, as noted in Table 10. The DCWP CIP includes funds for improvements to Cook Riolo Road from PFE Road to Baseline Road and for Vineyard Road from Crowder Road to Foothills Blvd, although the nature of these improvements is not defined. Roadways are to be improved or expanded in 2035 as a result of funded improvements. Table 11 identifies the classification of roadway segments based on CIP improvements.

TABLE 10 CUMULATIVE INTERSECTION GEOMETRY					
Intersection	**Control**	**Northbound**	**Southbound**	**Eastbound**	**Westbound**
Roseville 2035 CIP					
1. Baseline Rd / Cook Riolo Rd – Woodcreek Oaks Blvd	Signal	1 left turn lane 1 through lane 1 right lane	1 left turn lane 1 through lane 1 right lane	1 left turn lane 2 through lanes 1 right lane	1 left turn lane 2 through lanes 1 right lane
2. Baseline Rd / Brady Lane	NB Stop	No Change			
3. Foothills Blvd / Baseline Rd	Signal	2 left turn lanes 3 through lanes 1 right turn lane	1 left turn lane 4 through lanes 1 right turn lane	2 left turn lanes 2 through lanes 1 right lane	1 left turn lane 3 through lanes 1 right lane
DCWP CIP					
4. Crowder Lane / Vineyard Rd	All-Way Stop	No Change			
5. Vineyard Rd / Cook Riolo Rd	All-Way Stop	No Change			
6. Vineyard Rd / Brady Lane	All-Way Stop	No Change			
Roseville 2035 CIP					
7. Foothills Blvd / Vineyard Rd	Signal	2 left turns lanes 3 through lanes 1 right turn	2 left turn lanes 2 through lanes 1 through+right	1 left turn lane 2 through lanes 1 right turn	2 left turn lanes 2 through lanes 1 right turn
DCWP CIP					
8. Cook Riolo Rd / Creekview Ranch School	Signal	No Change			
9. PFE Rd / Walerga Rd	Signal	1 left lane 3 through lanes 1 right lane	1 left lane 3 through lanes 1 right lane	1 left lane 1 through-right lane 1 right turn lane	2 left lanes 1 shared through plus right lane
10. PFE Rd / Cook Riolo Rd	All-Way Stop	No Change to Existing Geometry			
11. PFE Rd / N. Antelope Rd	Signal	1 left turn lane 1 shared left-right 1 right turn lane	N/A	1 through lane 1 right turn lane	2 left turn lanes 1 through lane
Roseville 2025 CIP					
12. Baseline Rd / Walerga Rd	Signal	2 left turn lanes 3 through lanes 1 right turn	2 left turn lanes 3 through lanes 1 right turn	2 left turn lanes 3 through lanes 1 right turn	2 left turn lanes 3 through lanes 1 right lane

TABLE 11 CUMULATIVE ROADWAY GEOMETRY / CLASSIFICATION			
Roadway	**Segment**	**Classification**	**Lanes**
PFE Rd	Watt Ave to Walerga Rd	Arterial – Low Access Control	4
	Walerga Rd to Cook Riolo Rd	Arterial – Low Access Control	2
	Cook Riolo Rd to N. Antelope Rd	Arterial – Low Access Control	2
	N. Antelope Rd to Hilltop Rd	Arterial – Moderate Access Control	4
Cook Riolo Rd	Baseline Rd to Vineyard Rd	Arterial – Low Access Control	2
	Vineyard Rd to Creekview Ranch School	Arterial – Low Access Control	2
	Creekview Ranch School to PFE Rd	Arterial – Low Access Control	2
Vineyard Rd	Crowder Lane to Cook Riolo Rd	Arterial – Low access Control	2
	Cook Riolo Rd to Brady Lane	Arterial – Low Access Control	2
N. Antelope Rd	PFE Rd to Great Valley Drive	Arterial – Moderate Access Control	4



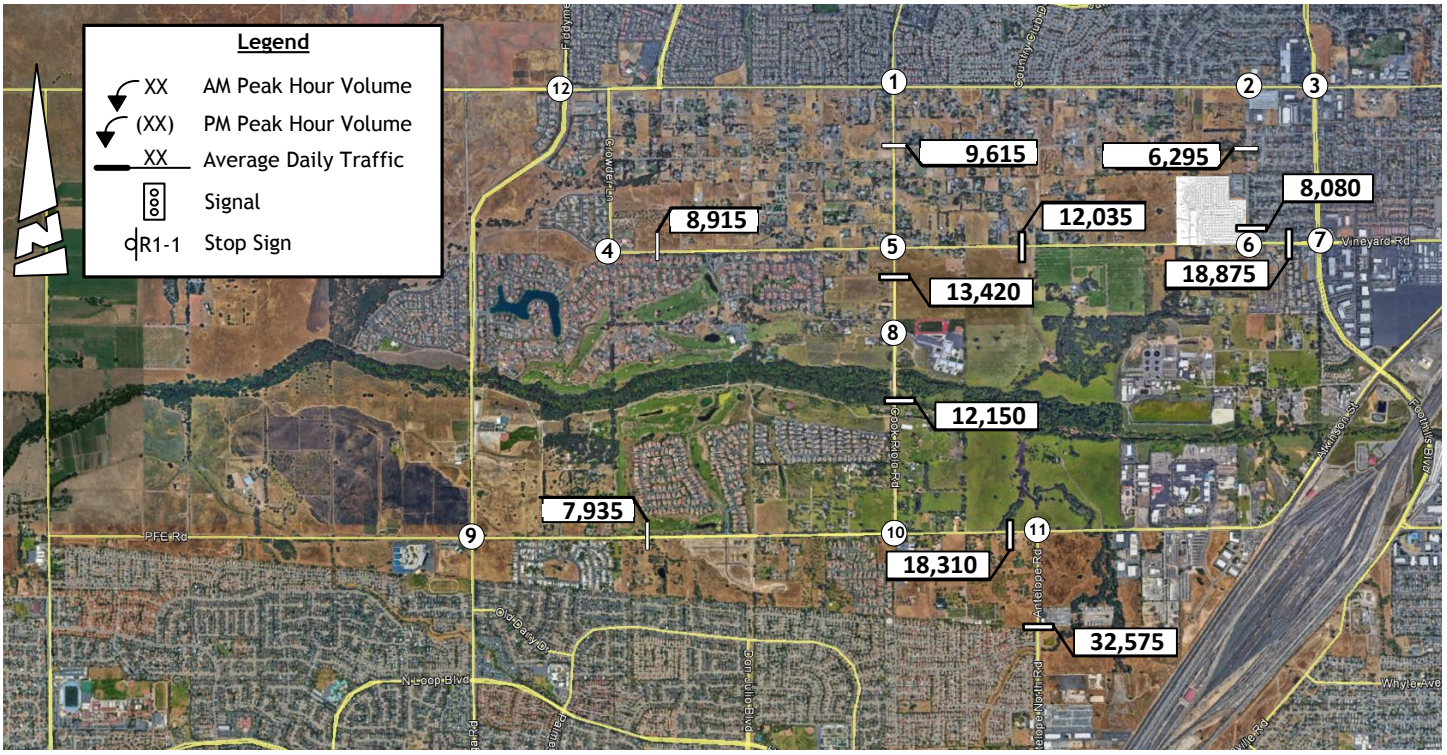


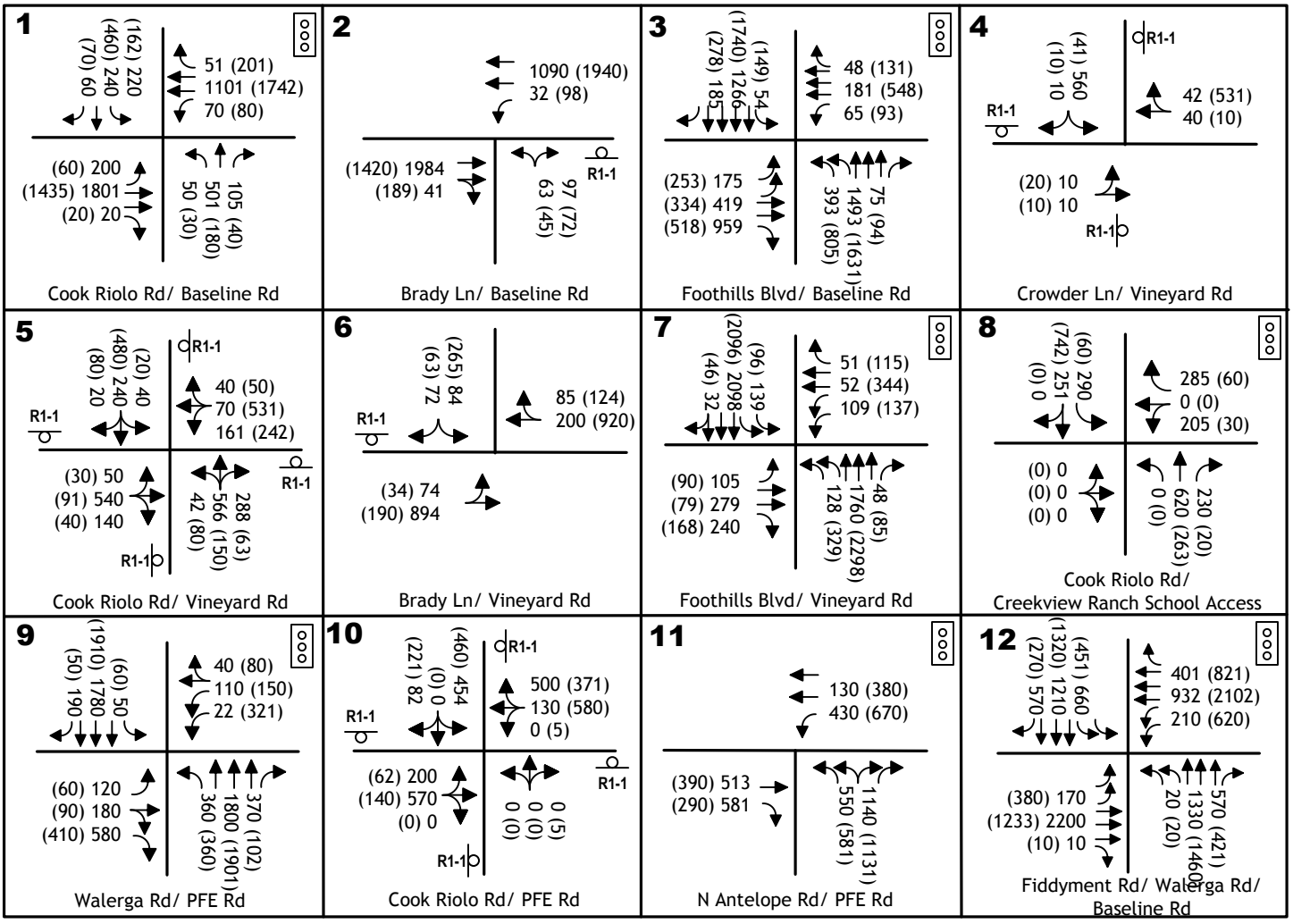
CUMULATIVE BASE TRAFFIC VOLUMES AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

5765-17 RA 10/16/2019

figure 8





CUMULATIVE PLUS PROJECT
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

5765-17 RA 10/16/2019

figure 9

Cumulative No Project Levels of Service

Intersection Level of Service. Table 12 identifies the long term cumulative Level of Service projected at study intersections under the No Project and Plus Project condition.

Without the project five intersections are projected to operate with Level of Service which exceeds the County's minimum LOS threshold, but the forecast Levels of Service are accepted at three of those locations by the DCWPCP. Four intersections are projected to operate below the City of Roseville's minimum LOS threshold, but those conditions are accepted by the City of Roseville.

The intersections in Placer County are discussed below:

The ***Cook-Riolo Road / Vineyard Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour if no improvements are made. A single-lane roundabout would yield LOS F. A two-lane roundabout would improve the Level of Service to LOS C in the a.m. peak hour and LOS B in the p.m. peak hour.

The ***Vineyard Road / Brady Lane intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour with the existing all-way stop. A single lane roundabout at this location would yield LOS B or C. Alternatively, the intersection could be signalized and widened to provide separate left turn lanes, and this level of improvement would yield LOS A in the a.m. peak hour and LOS C in the p.m. peak hour.

The ***PFE Road / Walerga Road intersection*** is projected to operate at LOS F in both a.m. and p.m. peak hours, however, this Level of Service is accepted by the DCWPCP. No additional improvements are identified at this intersection.

The ***PFE Road / Cook Riolo Road intersection*** is projected to operate at LOS F with an all-way stop, and this LOS is accepted by the DCWPCP.

The ***PFE Road / N. Antelope Road intersection*** is projected to operate at LOS F in both a.m. and p.m. peak hours, however, this Level of Service is accepted by the DCWPCP. Better Level of Service could be created by modifying the intersection geometry to provide a free NB right turn lane.

Locations in Roseville or on the boundary between City and County are discussed in the text which follows.

The City of Roseville's ***Baseline Road / Walerga Road – Fiddyment Road intersection*** will operate at LOS F with CIP improvements. LOS F is accepted at this location by the DCWPCP, and LOS D is accepted by the City of Roseville. No further improvements are feasible.

The ***Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersection*** in Roseville will operate at LOS F in the a.m. peak hour with CIP improvements. LOS E is accepted by the City of Roseville.

The ***Baseline Road / Brady Lane intersection*** is projected to operate at LOS F if the current side-street stop control is maintained. The DCWPCP indicates that a traffic signal will be needed, but the Placer County fee /CIP does not include improvements to this intersection. The City of Roseville CIP does not include intersection improvements. A traffic signal and second eastbound through lane would deliver LOS B.

The ***Foothills Blvd / Baseline Road intersection*** is projected to operate at LOS D, which exceeds the general LOS C minimum but is accepted by the City of Roseville.

Roadway Segment Levels of Service. Table 13 summarizes Levels of Service based on the projected daily traffic volumes on study area roads with the roadway configurations noted in Table 11. Three study roadway segments are projected to operate with Level of Service that exceeds the DCWPCP LOS D minimum.

PFE Road from Cook-Riolo Road to N. Antelope Road will operate at LOS F without the project if a two-lane roadway remains. The DCWPCP accepts LOS F on this roadway.

North Antelope Road south of PFE Road is projected to operate at LOS E. The DCWPCP accepts LOS E on this roadway.

The two-lane segment of ***Vineyard Road between Brady Lane and Foothills Blvd*** would operate at LOS F if Placer County's roadway segment criteria were applied. However, this segment is in Roseville and the City does not address roadway segment volume as a significance criteria.

TABLE 12
PEAK HOUR INTERSECTION LEVELS OF SERVICE CUMULATIVE PLUS PROJECT CONDITIONS

Location	Control	AM Peak Hour				PM Peak Hour				Traffic Signal Warranted?
		Cumulative		Cum Plus Project		Cumulative		Cum Plus Project		
		LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	
1. Baseline Rd / Cook Riolo Rd / Woodcreek Oaks Blvd (R)	Signal	**F**	**97.5**	**F**	**98.0**	**D**	**54.5**	**D**	**54.5**	N/A
2. Baseline Road / Brady Lane (R)	NB Stop									YES
Northbound approach		F	**>300**	F	**>300**	**F**	**>300**	**F**	**>300**	
Westbound left turn		C	22.0	C	22.0	C	17.5	**C**	18.5	
	Signal and 2nd EB thru lane	*B*	*17.0*	*B*	*18.0*	*B*	*10.0*	*B*	*12.0*	
3. Baseline Road / Foothills Blvd -(R)	Signal	**D**	**46.5**	**D**	**46.5**	**D**	**50.0**	**D**	**50.5**	N/A
4. Vineyard Road / Crowder Rd	SB Stop									No
(overall)*		(C)	(17.0)	(C)	(17.0)	(B)	(11.5)	(B)	(11.5)	
Southbound approach		C	17.0	C	17.0	B	12.0	B	12.0	
Eastbound left turn		A	7.5	A	7.5	A	9.0	A	9.0	
5. Cook Riolo Road / Vineyard Road	AWS	**F**	**>300**	**F**	**(>300)**	**F**	**294.5**	**F**	**297.5**	YES
	Roundabout (1)	***F***	***102.5***			***F***	***57.0***			
	Roundabout (2)	*C*	*15.0*	*C*	*16.0*	*B*	*11.5*	*B*	*11.5*	
6. Vineyard Road / Brady Lane	AWS	**F**	**160.5**	**F**	**191.5**	**F**	**248.5**	**F**	**292.5**	YES
	Roundabout (1)	*B*	*12.0*	*B*	*13.5*	*C*	*15.5*	*C*	*18.0*	
	Signal	*A*	*8.5*	*B*	*10.0*	*D*	*36.5*	*D*	*50.5*	
7. Vineyard Road / Foothills Blvd – (R)	Signal	C	32.5	C	34.5	C	31.5	C	33.5	N/A
8. Cook Riolo Road / Creekview Ranch School	Signal	D	36.5	D	46.0	A	7.0	A	7.0	N/A
9. PFE Road / Walerga Road	Signal	**F**	**80.0**	**F**	**80.0**	**F**	**86.5**	**F**	**86.5**	N/A
10. PFE Road / Cook Riolo Road	AWS	**F**	**281.0**	**F**	**282.0**	**F**	**>300**	**F**	**>300**	YES
	Roundabout (1)	*C*	*19.5*	*C*	*20.0*	*B*	*14.0*	*B*	*14.0*	
11. PFE Road / North Antelope Road	Signal	**F**	**176.0**	**F**	**176.0**	**F**	**170.0**	**F**	**170.0**	N/A
12.Baseline Rd / Walerga Rd – Fiddyment Rd (R)	Signal	**F**	**116.5**	**F**	**116.5**	**F**	**115.0**	**F**	**115.5**	N/A
13. Brady Lane / Project Access	EB Stop									No
(overall)*		-	-	(A)	(9.1)	-	-	(A)	(9.5)	
Eastbound approach				A	9.5			B	11.0	
Northbound left turn				A	7.5			A	8.0	

(R) indicates City of Roseville jurisdiction and Minimum LOS C standard applies
Bold indicates MIN LOS threshold exceeded **Highlighted** values are a significant impact
* Overall Avg Delay = Σ (LOS x Volume of each delayed movement) / Σ Volume of each delayed movement

KDA

TABLE 13
CUMULATIVE PLUS PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Standard			Segment Level of Service							
					Cumulative			Cumulative Plus Project				
								Daily Volume				
		LOS	Volume Threshold Per Lane (veh/ln)	Max two-way volume at LOS standard[1]	Daily Vol	v/c	LOS	Proj Only	Total	v/c	LOS	Diff in v/c
PFE Rd	Walerga Rd to Cook Riolo Rd	D	6,870	13,740	7.900	0.53	A	35	7,935	0.53	A	0.00
PFE Rd	Cook Riolo Rd to N. Antelope Rd	**F**	**6,870**	**13,740**	**18,300**	**1.22**	**F**	**10**	**18,310**	**1.22**	**F**	**0.00**
Cook Riolo Rd	Baseline Rd to Vineyard Rd	F	6,870	13,740	9,600	0.64	B	15	9,615	0.64	B	0.00
Cook Riolo Rd	Vineyard Rd to Creekview Ranch School	F	6,870	13,740	13,300	0.89	D	120	13,420	0.89	D	0.01
Cook Riolo Rd	Creekview Ranch School to PFE Rd	F	6,870	13,740	12,100	0.81	D	50	12,150	0.81	D	0.00
N. Antelope Rd	from PFE Rd to Great Valley Dr	**E**	18,000[2]	36,000	**32,550**	**0.90**	**E**	**25**	**32,575**	**0.91**	**E**	**0.01**
Vineyard Rd	Crowder Lane to Cook Riolo Rd	D	6,870	13,740	8,900	0.59	A	15	8,915	0.59	A	0.00
Vineyard Rd	Cook Riolo Rd to Brady Lane	D	6,870	13,740	11,900	0.79	C	135	12,035	0.80	D	0.01
Vineyard Rd	Brady Lane to Foothills Blvd	D	7,500	15,000	18,250	1.22	F	625	18.875	1.26	F	0.04
Brady Lane	Baseline Rd to Project	D	5,700	11,400	5,900	0.28	C	395	6,295	0.30	C	0.02
Brady Lane	Project to Vineyard Rd	D	5,700	11,400	7,360	0.35	C	730	8,090	0.39	D	0.04

[1] 2 - lane road except as noted. [2] 4-lane road. **Bold** values exceed minimum LOS threshold **highlighted** values are a significant impact

KDA

Cumulative Plus Project Conditions

Intersection Level of Service. Table 12 identifies the long term Cumulative plus Project Level of Service projected at the study intersections. The same five Placer County intersections projected to operate below the County's LOS D threshold will continue to do, and the same four intersections are projected to operate below the City of Roseville's minimum LOS threshold.

The ***Cook-Riolo Road / Vineyard Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour. Because conditions in excess of LOS D are projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment exceeds the 5.0 second standard of the DCWPCP, and the project's impact is significant.

Mitigation. A single lane roundabout would yield LOS F and a two-lane roundabout yields LOS C. However, a two-lane roundabout is not specifically identified in the County Fee / CIP. Thus, ***the impact is significant and unavoidable.***

The ***Vineyard Road / Brady Lane intersection*** is projected to operate at LOS F with and without the project. Because conditions in excess of LOS D are projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment exceeds the 5.0 second standard of the DCWPCP, and the project's impact is significant.

Mitigation. A single lane roundabout would yield LOS C or better. Since the DCWPCP suggests a roundabout be installed at this location Placer County could elect to add this improvement to the DCWP area fee program. As there is no guarantee that the improvement project will be added, ***the impact is significant and unavoidable.***

The ***PFE Road / Walerga Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour, and this condition is accepted by the DCWPCP. Because LOS F occurs with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the incremental change is less than the permissible 5.0 second standard, and the project's impact is not significant.

The ***PFE Road / Cook Riolo Road intersection*** is projected to operate at LOS F in both a.m. and p.m. peak hours, however, this condition is accepted by the DCWPCP. No improvements are identified at this intersection in the future conditions. Because LOS F is projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment does not exceed the DCWPCP's 5.0 second standard, and the project's impact is not significant.

The ***PFE Road / North Antelope Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour, although this condition is accepted by the DCWPCP. Because LOS F conditions are projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment is less than the 5.0 second standard, and the project's impact is not significant.

The City of Roseville's ***Baseline Road / Walerga Road – Fiddyment Road intersection*** will operate at LOS F with and without the project. The Roseville General Plan accepts LOS D at this location. However, because the project does not increase delay by more than 12.5 seconds, the project's impact is not significant, and no mitigation is required.

The ***Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersections*** will operate at LOS F - LOS D conditions with and without the project. Because the incremental increase in delay is less than the 12.5 second standard employed by the City the project's impact is not significant under City of Roseville policy, and no mitigation is required.

The ***Baseline Road / Brady Lane intersection*** is projected to operate at LOS F with and without the project. In this case the incremental change in side street delay caused by the project is 149 seconds which exceeds the measure applied for Roseville intersections, and traffic signal warrants are met. Thus, the project's impact is significant.

Mitigation. To satisfy the minimum LOS standard a traffic signal could be installed with a second eastbound travel lane or left turns could be prohibited on the northbound approach. City of Roseville City Engineer Marc Stout was consulted on this issue.

Since Baseline/Brady is not in the City's CIP as a signalized intersection, it is not subject to the City's LOS General Plan policy. The City would not require a signal as a result of this project, and restricting lefts would not be recommended at this time. If at some point in the future the northbound turn movement becomes an issue, restrictions could be evaluated at that time.

Because there is no guarantee that the City of Roseville will permit either a traffic signal or turn prohibition to be installed, this impact remains ***significant and unavoidable.***

The **Baseline Road / Foothills Blvd intersection** is projected to operate at LOS D with and without the project. This exceeds the general LOS C minimum, but LOS D is accepted by the City of Roseville at this location.

Roadway Segment Levels of Service. Table 13 summarizes Levels of Service based on the projected daily traffic volumes on study area roads with the roadway configurations noted in Table 11. Two study roadway segments are projected to operate at LOS E or LOS F.

PFE Road from Cook-Riolo Road to N. Antelope Road will operate at LOS F with and without the project. While the DCWPCP accepts LOS F on this roadway, because the incremental change in v/c does not exceed the 0.05 significance threshold and the incremental increase in volume is less than the 100 daily vehicles per lane threshold allowed under County guidelines, the project's impact is not significant and no improvement is required.

North Antelope Road south of PFE Road is projected to operate at LOS E. The DCWPCP accepts LOS E on this roadway. Because the incremental change in v/c does not exceed the 0.05 significance threshold and the incremental increase in volume is less than the 100 daily vehicles

per lane threshold allowed under County guidelines, the project's impact is not significant and no improvement is required.

Vehicle Miles of Travel (VMT)

This section discusses the effect of the project on "per capita" VMT in comparison to published regional averages. KDA estimated project-related VMT using the Placer Vineyards traffic model while isolating travel by land uses on the project site. The Placer Vineyards model addresses travel across the six county SACOG area, and as a result inter-jurisdictional travel has been considered. The model results indicate that the project will generate 6,879 VMT under Existing Plus Project conditions and 6,640 VMT under 2030 conditions. The "per capita" VMT was determined by dividing the total VMT by the anticipated 367 residents (based on a rate of 3.08 persons per household in the DCWPCP area). The per capita VMT for the project is 18.7 to 18.1 vehicle miles traveled per person over these time periods.

IMPACTS / MITIGATIONS

Improvements required to mitigate identified deficiencies and reduce project impacts to a less than significant level are summarized in this section.

The Placer County Road Network Traffic Fee Program identifies intersection and roadway improvements needed within various districts in the County. Improvements are intended to be funded in part by the development fee, with State funding, local programs and developer frontage improvements intended to fund the balance of the improvement costs. The project site is located within the Dry Creek – West Placer Benefit District.

Existing Conditions

Intersections. One intersection in Placer County operates with Levels of Service that exceed the LOS D standard, and two intersections in Roseville operate at a Level of Service that exceeds the minimum LOS.

The ***PFE / Walerga Road intersection*** operates at LOS E in the a.m. and p.m. peak hour. Placer County is pursuing an improvement project at this intersection that will add lanes and is expected to be installed shortly.

In Roseville the ***Baseline Road / Walerga Road – Fiddyment Road intersection*** operates at LOS D in the a.m. peak hour and LOS E in the p.m. peak hour, while the ***Baseline Rd / Foothills Blvd intersection*** operates at LOS D in the p.m. peak hour. Both intersections will be widened in the future.

Roadways. All roadway segments operate at acceptable Levels of Service.

Existing Plus Project Conditions

Intersections. Development of the proposed project will not result in any additional Placer County intersection operating below Placer County LOS thresholds, but the project will add traffic to intersections in Placer County that are already between standards and to three intersections that are operating below City of Roseville thresholds.

The ***PFE Road / Walerga Road intersection*** will continue to operate at LOS E. Because the incremental change in delay caused by the project is less than the permitted threshold, the project's impact is not significant and no mitigation is required.

The ***Baseline Road / Walerga Road – Fiddyment Road intersection*** will continue to operate at LOS D in the a.m. peak hour and LOS E in the p.m. peak hour. Because the project will not alter the existing LOS, the project's impact is not significant under City of Roseville policy, and no mitigation is required.

In Roseville, the side street delay at the ***Brady Lane / Baseline Road intersection*** will deteriorate from LOS C to LOS D in the a.m. peak hour, and peak hour traffic signal warrants would be satisfied at that time. Based on the criteria employed herein, this is a significant impact, and mitigation would be required. To satisfy the minimum LOS standard a traffic signal could be installed, or left turns could be prohibited on the northbound approach. City of Roseville City Engineer Marc Stout was consulted on this issue.

Since Baseline/Brady is not in the City's CIP as a "signalized intersection", it is not subject to the City's LOS General Plan policy. The City would not require a signal as a result of this project, and restricting lefts would not be recommended by the City at this time. If at some point in the future the northbound turn movement becomes an issue, restrictions could be evaluated at that time.

Because there is no guarantee that the City of Roseville will permit either a traffic signal or turn prohibition to be installed, this impact remains ***significant and unavoidable.***

The ***Baseline Road / Foothills Blvd intersection*** will continue to operate at LOS D. Because the project will not alter the existing LOS, the project's impact is not significant under City of Roseville policy, and no mitigation is required.

Roadway Segments. All roadway segments will continue to operate at acceptable Levels of Service. The project's impact is not significant, and no mitigation is required.

<u>Cumulative Year 2035 No Project Conditions</u>

Intersections. Background traffic volumes forecast for the Year 2035 indicate that the following intersections will operate at LOS E or LOS F conditions.

The ***Cook Riolo Road / Vineyard Road intersection*** will decline to LOS F conditions in the a.m. peak hour with an all-way stop. A one-lane roundabout would deliver LOS F. A two-lane roundabout would improve operations to LOS C or B.

The ***Vineyard Road / Brady Lane intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour with the existing all-way stop. A single lane roundabout at this location would yield LOS B or C. Alternatively, the intersection could be signalized and widened to provide separate left turn lanes, and this level of improvement would yield LOS A in the a.m. peak hour and LOS C in the p.m. peak hour.

The ***PFE Road / Walerga Road intersection*** will operate at LOS F in the a.m. and p.m. peak hours. LOS F is accepted by the DCWPCP.

The ***PFE Road / Cook Riolo Road intersection*** will decline to LOS F conditions in the a.m. and p.m. peak hours with the assumed all-way stop. LOS F is accepted by the DCWPCP.

The ***PFE Road / N. Antelope Road*** will operate at LOS F in the a.m. and p.m. peak hour. LOS F is accepted by the DCWPCP.

In Roseville the ***Baseline Road / Walerga Road – Fiddyment Road intersection*** will operate at LOS F conditions. The improvements identified under Cumulative Intersection Geometry are the maximum feasible roadway improvements for the intersection.

The ***Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersection*** will operate at LOS E conditions in the a.m. peak hour, and there are no additional improvements identified.

The ***Baseline Road / Brady Lane intersection*** is projected to operate at LOS F and traffic signal warrants are satisfied. A traffic signal and second eastbound travel lane are needed, but no improvements are included in an adopted fee program.

Roadway Segments. Background traffic volumes forecast for the Year 2035 indicate that the following segment will operate at LOS F.

PFE Road, between Cook Riolo Road and N. Antelope Road will decline to LOS F conditions. This is within the DCWPCP significance thresholds which allow LOS F conditions along the segment.

North Antelope Road south of PFE Road is projected to operate at LOS E, and this condition is accepted by the DCWPCP.

<u>Cumulative Year 2035 Plus Project Conditions</u>

Intersections. These intersections will operate at LOS F conditions.

The ***Cook Riolo Road / Vineyard Road intersection*** will operate with LOS F conditions in the a.m. and p.m. peak hours with and without the project, and traffic signal warrants are satisfied. The significance of the project's impact is based on the incremental change in delay. Because the change caused by the project exceeds the DCWPCP's permissible increment of 5.0 seconds, the project's impact is significant.

Mitigation. A two lane roundabout would deliver satisfactory LOS but is not included in the County Fee / CIP , and ***the impact is significant and unavoidable.***

The ***Vineyard Road / Brady Lane intersection*** is projected to operate at LOS F with and without the project and traffic signal warrants are satisfied. Because conditions in excess of LOS D are projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment exceeds the 5.0 second standard of the DCWPCP, and the project's impact is significant.

Mitigation. The DCWPCP suggests a roundabout be installed at this location, but that improvement is not yet included in the County Fee / CIP. A single lane roundabout would yield LOS C or better. Placer County could elect to add this improvement to the DCWPCP area fee program, but as there is no guarantee that the project will be added, ***the impact is significant and unavoidable.***

Th***e PFE Road / Cook Riolo Road intersection*** will operate at LOS F conditions in the a.m. and p.m. peak hours with and without the project. However, the DCWPCP accepts LOS F. In this case the significance of the project's impact is based on the incremental change in delay. Because the change caused by the project does not exceeds the DCWPCP's permissible increment of 5.0 seconds the project's impact is not significant.

The ***PFE Road / Walerga Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour with and without the project, although this condition is accepted by the DCWPCP. Because the incremental change in delay caused by the project is less than the adopted standard, and the project's impact is not significant.

The ***PFE Road / North Antelope Road intersection*** will operate at LOS F in the p.m. peak hour, but the incremental change is delay caused by the project is less than the adopted standard. Thus, the project's impact is not significant.

The City of Roseville's ***Baseline Road / Walerga Road – Fiddyment Road intersection*** will operate at LOS F with and without the project. However, because the incremental change in overall delay caused by the project does not change the Level of Service, under City of Roseville policy the project's impact is not significant, and no mitigation is required.

The ***Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersections*** will operate at LOS D – LOS E conditions with and without the project. Because the project's trips do not change the Level of Service, the project's impact is not significant under City of Roseville policy, and no mitigation is required.

The ***Baseline Road / Brady Lane intersection*** is projected to operate at LOS F with and without the project. In this case the incremental change in side street delay caused by the project is 149 seconds which exceeds the measure applied for Roseville intersections, and traffic signal warrants are met. Thus, the project's impact is significant.

To satisfy the minimum LOS standard a traffic signal with second eastbound travel lane could be installed or left turns could be prohibited on the northbound approach. City of Roseville City Engineer Marc Stout was consulted on this issue.

Since Baseline/Brady is not in the City's CIP as a signalized intersection, it is not subject to the City's LOS General Plan policy. The City would not require a signal as a result of this project, and restricting lefts would not be recommended by the City at this time. If at some point in the future the northbound turn movement becomes an issue, restrictions could be evaluated at that time.

Because there is no guarantee that the City of Roseville will permit either a traffic signal or turn prohibition to be installed, this impact remains **significant and unavoidable.**

Roadway Segment Levels of Service. Table 13 summarizes Levels of Service based on the projected daily traffic volumes on study area roads with the roadway configurations noted in Table 11. Two study roadway segments are projected to operate at LOS F.

Roadway Segments. Traffic volumes forecast for the Year 2035 indicate that the following roadway segment will operate at LOS F under Cumulative plus Project conditions.

PFE Road from Cook-Riolo Road to N. Antelope Road will operate at LOS F with and without the project. While the DCWPCP accepts LOS F on this roadway, the incremental change in v/c does not exceed the 0.05 threshold and incremental increase in volume does not exceed the "100 daily vehicles per lane" threshold allowed under County guidelines. The project's impact is not significant.

North Antelope Road south of PFE Road will operate at LOS E with and without the project. The DCWPCP accepts LOS E on this roadway. Because the incremental change in v/c does not exceed the 0.05 threshold and incremental increase in volume does not exceed the "100 daily vehicles per lane" threshold allowed under County guidelines. The project's impact is not significant.

REFERENCES

1. *North Roseville Specific Plan*, City of Roseville, August 1997, Amended, March 2008
2. *Amoruso Road Specific Plan,* City of Roseville, May 2016
3. *Dry Creek/West Placer Community Plan,* Placer County, July 2011
4. *Placer Vineyards Specific Plan,* Placer County, Amended, January 2015
5. *Placer County Sports and Event Center EIR,* Placer County 2018
6. City of Roseville *Traffic Impact Analysis* guidelines, January 2016
7. Transportation Research Board, *Highway Capacity Manual*, 2010
8. Caltrans *Highway Design Manual*, 2016
9. California *Manual of Uniform Traffic Control Devices*, 2014
10. Institute of Transportation Engineers. 2012. *Trip Generation*, 9th Edition. Washington, D.C.
11. National Cooperative Highway Research Program (NCHRP) Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design,* December 1982

TECHNICAL APPENDIX

FOR

BRADY VINEYARD SUBDIVISION

Placer County, California

Prepared For:

Raney Planning & Management
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Prepared By:

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Loomis, CA 95650
(916) 660-1555

October 16, 2019

Job No. 5765-22

KD Anderson & Associates, Inc.
Transportation Engineers

Walerga Rd & Baseline Rd

Date: 4/2/2019

Day: Tuesday

Project #: Walerga Rd & Baseline Rd

5765-22

AM Peak Hour	07:00 - 08:00
NOON Peak Hour	12:00 - 13:00
PM Peak Hour	17:00 - 18:00

Peak Hour Summary

Walerga Road

Southbound Approach

AM	818	540	254	0	1183	AM
NOON	0	0	0	0	0	NOON
PM	417	627	177	0	1896	PM

Baseline Road

Eastbound Approach

AM	NOON	PM	
1197	0	670	
0	0	0	
356	0	648	
182	0	337	
7	0	5	
AM	NOON	PM	

CONTROL

Westbound Approach

AM	NOON	PM	
192	0	451	
362	0	239	
161	0	237	
0	0	0	
601	0	770	
AM	NOON	PM	

Northbound Approach

AM	708	0	17	635	165	AM
NOON	0	0	0	0	0	NOON
PM	869	0	14	797	256	PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	12:00 PM	1:00 PM
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

1612	1183	AM
0	0	NOON
1221	1896	PM

East Leg

AM	NOON	PM
715	0	927
601	0	770

West Leg

AM	NOON	PM
1197	0	670
545	0	990

South Leg

708	817	AM
0	0	NOON
869	1067	PM

Total Volume Per Leg

North Leg

2795 AM
0 NOON
3117 PM

East Leg

AM	NOON	PM
1316	0	1697

West Leg

AM	NOON	PM
1742	0	1660

South Leg

1525 AM
0 NOON
1936 PM

KD ANDERSON & ASSOCIATES, INC.

5765-22

(916) 660-1555

Placer County
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Nothing On Bank 2

File Name : Walerga Rd & Baseline Rd
Date : 4/2/2019

Unshifted Count = All Vehicles & Uturns

	Walerga Road Southbound					Baseline Road Westbound					Walerga Road Northbound					Baseline Road Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	98	159	213	0	470	27	119	31	0	177	2	127	46	0	175	77	33	3	0	113	935	0
7:15	54	141	211	0	406	49	101	43	0	193	4	154	46	0	204	81	34	0	0	115	918	0
7:30	46	130	212	0	388	41	95	71	0	207	6	187	46	0	239	106	57	4	0	167	1001	0
7:45	56	110	182	0	348	44	47	47	0	138	5	167	27	0	199	92	58	0	0	150	835	0
Total	254	540	818	0	1612	161	362	192	0	715	17	635	165	0	817	356	182	7	0	545	3689	0
8:00	82	122	172	0	376	30	98	79	0	207	3	133	54	0	190	84	32	6	0	122	895	0
8:15	74	122	127	0	323	33	71	72	0	176	5	155	42	0	202	109	31	2	0	142	843	0
8:30	82	121	144	0	347	36	50	64	0	150	4	155	54	0	213	88	44	2	0	134	844	0
8:45	66	124	101	0	291	35	53	58	0	146	4	151	36	0	191	62	36	1	0	99	727	0
Total	304	489	544	0	1337	134	272	273	0	679	16	594	186	0	796	343	143	11	0	497	3309	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	60	137	99	0	296	53	50	106	0	209	3	133	45	0	181	167	92	5	0	264	950	0
16:15	39	162	134	0	335	46	35	87	0	168	1	148	41	0	190	159	102	0	0	261	954	0
16:30	46	156	76	0	278	40	73	81	0	194	2	181	51	0	234	129	94	3	0	226	932	0
16:45	37	111	100	0	248	59	71	92	0	222	3	172	84	0	259	161	89	3	0	253	982	0
Total	182	566	409	0	1157	198	229	366	0	793	9	634	221	0	864	616	377	11	0	1004	3818	0
17:00	56	161	108	0	325	54	43	128	0	225	3	142	63	0	208	191	91	2	0	284	1042	0
17:15	46	180	111	0	337	66	89	112	0	267	4	208	70	0	282	111	60	1	0	172	1058	0
17:30	36	130	97	0	263	70	35	109	0	214	3	251	58	0	312	166	85	1	0	252	1041	0
17:45	39	156	101	0	296	47	72	102	0	221	4	196	65	0	265	180	101	1	0	282	1064	0
Total	177	627	417	0	1221	237	239	451	0	927	14	797	256	0	1067	648	337	5	0	990	4205	0
Grand Total	917	2222	2188	0	5327	730	1102	1282	0	3114	56	2660	828	0	3544	1963	1039	34	0	3036	15021	0
Apprch %	17.2%	41.7%	41.1%	0.0%		23.4%	35.4%	41.2%	0.0%		1.6%	75.1%	23.4%	0.0%		64.7%	34.2%	1.1%	0.0%			
Total %	6.1%	14.8%	14.6%	0.0%	35.5%	4.9%	7.3%	8.5%	0.0%	20.7%	0.4%	17.7%	5.5%	0.0%	23.6%	13.1%	6.9%	0.2%	0.0%	20.2%	100.0%	

AM PEAK HOUR	Walerga Road Southbound					Baseline Road Westbound					Walerga Road Northbound					Baseline Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	98	159	213	0	470	27	119	31	0	177	2	127	46	0	175	77	33	3	0	113	935
7:15	54	141	211	0	406	49	101	43	0	193	4	154	46	0	204	81	34	0	0	115	918
7:30	46	130	212	0	388	41	95	71	0	207	6	187	46	0	239	106	57	4	0	167	1001
7:45	56	110	182	0	348	44	47	47	0	138	5	167	27	0	199	92	58	0	0	150	835
Total Volume	254	540	818	0	1612	161	362	192	0	715	17	635	165	0	817	356	182	7	0	545	3689
% App Total	15.8%	33.5%	50.7%	0.0%		22.5%	50.6%	26.9%	0.0%		2.1%	77.7%	20.2%	0.0%		65.3%	33.4%	1.3%	0.0%		
PHF	.648	.849	.960	.000	.857	.821	.761	.676	.000	.864	.708	.849	.897	.000	.855	.840	.784	.438	.000	.816	.921

NOON PEAK	Walerga Road Southbound					Baseline Road Westbound					Walerga Road Northbound					Baseline Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 12:00 to 13:00																					
Peak Hour For Entire Intersection Begins at 12:00																					
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

PM PEAK HOUR	Walerga Road Southbound					Baseline Road Westbound					Walerga Road Northbound					Baseline Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	56	161	108	0	325	54	43	128	0	225	3	142	63	0	208	191	91	2	0	284	1042
17:15	46	180	111	0	337	66	89	112	0	267	4	208	70	0	282	111	60	1	0	172	1058
17:30	36	130	97	0	263	70	35	109	0	214	3	251	58	0	312	166	85	1	0	252	1041
17:45	39	156	101	0	296	47	72	102	0	221	4	196	65	0	265	180	101	1	0	282	1064
Total Volume	177	627	417	0	1221	237	239	451	0	927	14	797	256	0	1067	648	337	5	0	990	4205
% App Total	14.5%	51.4%	34.2%	0.0%		25.6%	25.8%	48.7%	0.0%		1.3%	74.7%	24.0%	0.0%		65.5%	34.0%	0.5%	0.0%		
PHF	.790	.871	.939	.000	.906	.846	.671	.881	.000	.868	.875	.794	.914	.000	.855	.848	.834	.625	.000	.871	.988

Prepared by National Data & Surveying Services

Watt Ave & PFE Rd

Peak Hour Turning Movement Count

ID: 18-07372-001
City: Roseville

Day: Wednesday
Date: 10/17/2018

Period	PEAK HOURS	COUNT PERIODS
AM	07:00 AM - 08:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Watt Ave – SOUTHBOUND

	Right	Through	Left	U-Turn	Out
AM	0	497	17	0	326
NOON	0	0	0	0	0
PM	0	384	45	0	356
(red)	0	0	0	0	

PFE Rd – EASTBOUND

	AM	NOON	PM	(red)
Out	0	0	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Through	0	0	0	0
Right	0	0	0	0

PFE Rd – WESTBOUND

	(red)	PM	NOON	AM
Right	0	18	0	21
Through	0	0	0	0
Left	0	140	0	227
U-Turn	0	0	0	0
Out		373	0	353

Watt Ave – NORTHBOUND

	Out	U-Turn	Left	Through	Right
(red)		0	0	0	0
PM	524	0	0	338	328
NOON	0	0	0	0	0
AM	724	0	0	305	336

CONTROL

0

	AM	NOON	PM
TEV	1403	0	1253
PHF	0.84		0.94

Total Vehicles (AM)

Approach	U-Turn	Left	Through	Right
Southbound	0	17	497	0
Westbound		227	0	21
Northbound	0		305	336
Eastbound		0	0	0

Total Vehicles (Noon)

All movements: N/A

Total Vehicles (PM)

Approach	U-Turn	Left	Through	Right
Southbound	0	45	384	0
Westbound		140	0	18
Northbound	0		338	328
Eastbound		0	0	0

Pedestrians (Crosswalks)

All crosswalk counts (AM, NOON, PM): 0

Bikes (AM)

All movements: 0

Bikes (NOON)

All movements: N/A

Bikes (PM)

Approach	U-Turn	Left	Through	Right
Southbound	0	0	0	
Westbound		2	0	0
Northbound	0		0	0
Eastbound		0	0	0

National Data & Surveying Services

Intersection Turning Movement Count

Location: Watt Ave & PFE Rd
City: Roseville
Control:

Project ID: 18-07372-001
Date: 10/17/2018

Total

NS/EW Streets:	Watt Ave				Watt Ave				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	69	46	0	3	138	0	0	0	0	0	0	34	0	3	0	293
7:15 AM	0	72	91	0	2	118	0	0	0	0	0	0	50	0	5	0	338
7:30 AM	0	78	130	0	8	113	0	0	0	0	0	0	79	0	11	0	419
7:45 AM	0	86	69	0	4	128	0	0	0	0	0	0	64	0	2	0	353
8:00 AM	1	71	31	0	5	108	0	0	0	0	1	0	28	0	7	0	252
8:15 AM	0	73	34	0	0	65	0	0	0	0	0	0	25	0	3	0	200
8:30 AM	0	57	21	0	3	69	0	0	0	0	0	0	16	0	2	0	168
8:45 AM	0	50	15	0	2	76	0	0	0	0	0	0	17	0	1	0	161
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	556	437	0	27	815	0	0	0	0	1	0	313	0	34	0	2184
APPROACH %'s :	0.10%	55.94%	43.96%	0.00%	3.21%	96.79%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	90.20%	0.00%	9.80%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	305	336	0	17	497	0	0	0	0	0	0	227	0	21	0	1403
PEAK HR FACTOR :	0.000	0.887	0.646	0.000	0.531	0.900	0.000	0.000	0.000	0.000	0.000	0.000	0.718	0.000	0.477	0.000	0.837
		0.770				0.911								0.689			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	72	63	0	11	89	0	0	0	0	0	0	30	0	5	0	270
4:15 PM	1	87	48	0	3	99	0	0	0	0	0	0	40	0	6	0	284
4:30 PM	0	84	54	0	8	88	0	0	0	0	0	0	36	0	4	0	274
4:45 PM	0	89	54	0	7	93	0	0	0	0	0	0	39	0	5	0	287
5:00 PM	0	93	98	0	8	90	0	0	0	0	0	0	36	0	7	0	332
5:15 PM	0	75	89	0	7	105	0	0	0	0	0	0	30	0	2	0	308
5:30 PM	0	81	87	0	23	96	0	0	0	0	0	0	35	0	4	0	326
5:45 PM	0	66	74	0	16	101	0	0	0	0	0	0	29	0	1	0	287
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	647	567	0	83	761	0	0	0	0	0	0	275	0	34	0	2368
APPROACH %'s :	0.08%	53.25%	46.67%	0.00%	9.83%	90.17%	0.00%	0.00%					89.00%	0.00%	11.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	338	328	0	45	384	0	0	0	0	0	0	140	0	18	0	1253
PEAK HR FACTOR :	0.000	0.909	0.837	0.000	0.489	0.914	0.000	0.000	0.000	0.000	0.000	0.000	0.897	0.000	0.643	0.000	0.944
		0.872				0.901								0.898			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Watt Ave & PFE Rd
City: Roseville
Control: 0

Project ID: 18-07372-001
Date: 10/17/2018

Bikes

NS/EW Streets:	Watt Ave				Watt Ave				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%									
PEAK HR :	**07:00 AM - 08:00 AM**																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3
APPROACH %'s :													66.67%	0.00%	33.33%	0.00%	
PEAK HR :	**04:45 PM - 05:45 PM**																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250
														0.250			

Prepared by National Data & Surveying Services

Walerga Rd & PFE Rd

Peak Hour Turning Movement Count

ID: 18-07372-002
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Walerga Rd — SOUTHBOUND

AM	78	725	22	0	848	AM
NOON	0	0	0	0	0	NOON
PM	33	819	29	1	1051	PM

PFE Rd — EASTBOUND

AM	NOON	PM	
239	0	149	
0	0	0	0
71	0	236	0
117	0	121	0
95	0	38	0
AM	NOON	PM	

PFE Rd — WESTBOUND

	PM	NOON	AM
0	30	0	35
0	94	0	87
0	181	0	84
0	0	0	0
	248	0	298
	PM	NOON	AM

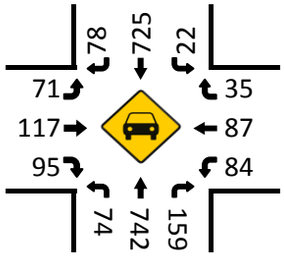
Walerga Rd — NORTHBOUND

PM	1039	1	22	784	98	PM
NOON	0	0	0	0	0	NOON
AM	904	0	74	742	159	AM

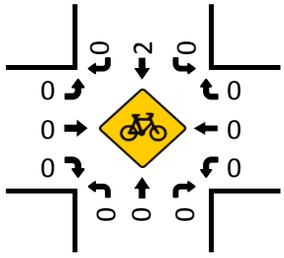
CONTROL

	0		
TEV	2289	0	2487
	AM	NOON	PM
PHF	0.94		0.96

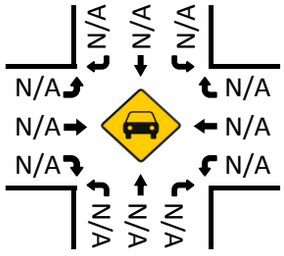
Total Vehicles (AM)



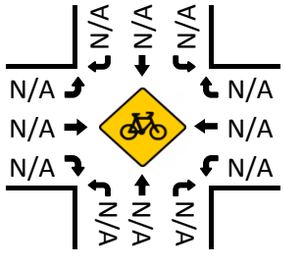
Bikes (AM)



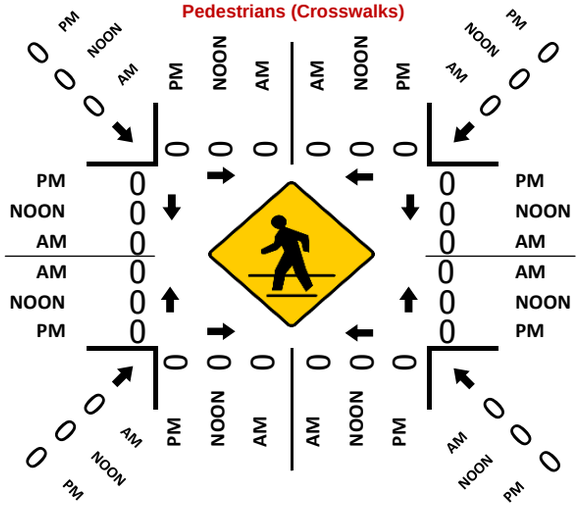
Total Vehicles (Noon)



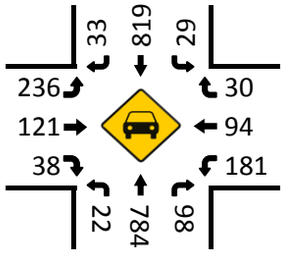
Bikes (NOON)



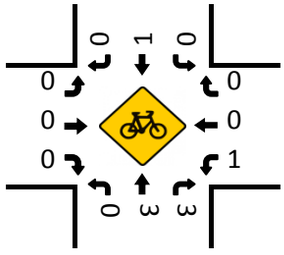
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Walerga Rd & PFE Rd
City: Roseville
Control:

Project ID: 18-07372-002
Date: 10/17/2018

Total

NS/EW Streets:	Walerga Rd				Walerga Rd				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	13	159	26	0	8	215	16	0	11	19	13	0	20	14	14	0	528
7:15 AM	20	221	38	0	3	194	19	0	12	30	18	0	21	25	6	0	607
7:30 AM	25	180	44	0	3	165	29	0	28	35	29	0	24	32	7	0	601
7:45 AM	16	182	51	0	8	151	14	0	20	33	35	0	19	16	8	0	553
8:00 AM	8	143	36	0	7	151	7	0	5	24	8	0	32	21	15	0	457
8:15 AM	5	207	27	0	6	163	7	0	13	20	4	0	22	14	9	0	497
8:30 AM	5	183	29	0	9	159	4	0	10	12	3	0	9	12	9	0	444
8:45 AM	4	163	27	0	9	141	4	1	5	11	4	0	19	11	9	0	408
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	96	1438	278	0	53	1339	100	1	104	184	114	0	166	145	77	0	4095
APPROACH %'s :	5.30%	79.36%	15.34%	0.00%	3.55%	89.69%	6.70%	0.07%	25.87%	45.77%	28.36%	0.00%	42.78%	37.37%	19.85%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	74	742	159	0	22	725	78	0	71	117	95	0	84	87	35	0	2289
PEAK HR FACTOR :	0.740	0.839	0.779	0.000	0.688	0.843	0.672	0.000	0.634	0.836	0.679	0.000	0.875	0.680	0.625	0.000	0.943
	0.874				0.863				0.769				0.817				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	188	28	0	1	185	9	0	37	24	19	0	30	26	4	0	559
4:15 PM	14	170	29	0	7	208	13	0	29	19	8	0	29	22	4	0	552
4:30 PM	6	162	27	0	9	169	12	0	35	26	9	0	38	29	11	0	533
4:45 PM	4	187	22	0	5	207	10	0	38	18	16	0	40	24	6	0	577
5:00 PM	4	198	32	0	5	210	8	0	58	34	13	0	44	29	7	0	642
5:15 PM	6	203	28	0	11	218	11	1	50	33	6	0	58	18	7	0	650
5:30 PM	3	202	18	1	4	194	8	0	71	28	10	0	37	26	7	0	609
5:45 PM	9	181	20	0	9	197	6	0	57	26	9	0	42	21	9	0	586
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	54	1491	204	1	51	1588	77	1	375	208	90	0	318	195	55	0	4708
APPROACH %'s :	3.09%	85.20%	11.66%	0.06%	2.97%	92.49%	4.48%	0.06%	55.72%	30.91%	13.37%	0.00%	55.99%	34.33%	9.68%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	22	784	98	1	29	819	33	1	236	121	38	0	181	94	30	0	2487
PEAK HR FACTOR :	0.611	0.966	0.766	0.250	0.659	0.939	0.750	0.250	0.831	0.890	0.731	0.000	0.780	0.810	0.833	0.000	0.957
	0.955				0.915				0.906				0.919				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Walerga Rd & PFE Rd
City: Roseville
Control: 0

Project ID: 18-07372-002
Date: 10/17/2018

Bikes

NS/EW Streets:	Walerga Rd				Walerga Rd				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	5
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	3	0	0	2	1	0	0	0	0	0	1	1	0	0	12
APPROACH %'s :	0.00%	57.14%	42.86%	0.00%	0.00%	66.67%	33.33%	0.00%					50.00%	50.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	3	3	0	0	1	0	0	0	0	0	0	1	0	0	0	8
PEAK HR FACTOR :	0.00	0.375	0.375	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.400
		0.375				0.250								0.250			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Walerga Rd & PFE Rd
City: Roseville

Project ID: 18-07372-002
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Walerga Rd		Walerga Rd		PFE Rd		PFE Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	07:00 AM - 08:00 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	1	1
APPROACH %'s :							0.00%	100.00%	
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Cook Riolo Rd & PFE Rd

Peak Hour Turning Movement Count

ID: 18-07372-003
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Cook Riolo Rd — SOUTHBOUND

AM	101	1	213	0	354	AM
NOON	0	0	0	0	0	NOON
PM	128	0	81	0	223	PM

PFE Rd — EASTBOUND

AM	NOON	PM	
210	0	368	⇦
0	0	0	↶ 0
149	0	78	↱ 0
283	0	168	→ 0
0	0	0	↴ 0
AM	NOON	PM	

PFE Rd — WESTBOUND

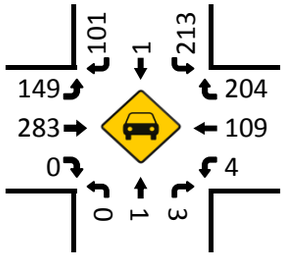
PM	NOON	AM	
145	0	204	0 ↰
239	0	109	0 ←
1	0	4	0 ↶
0	0	0	0 ↶
249	0	499	⇨
PM	NOON	AM	

Cook Riolo Rd — NORTHBOUND

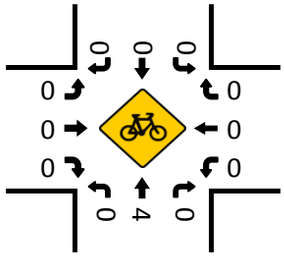
PM	1	0	1	0	0	PM
NOON	0	0	0	0	0	NOON
AM	5	0	0	1	3	AM

CONTROL			
0			
TEV	1068	0	841
	AM	NOON	PM
PHF	0.82		0.83

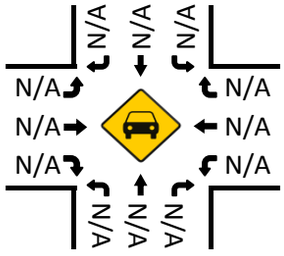
Total Vehicles (AM)



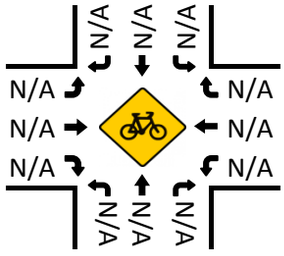
Bikes (AM)



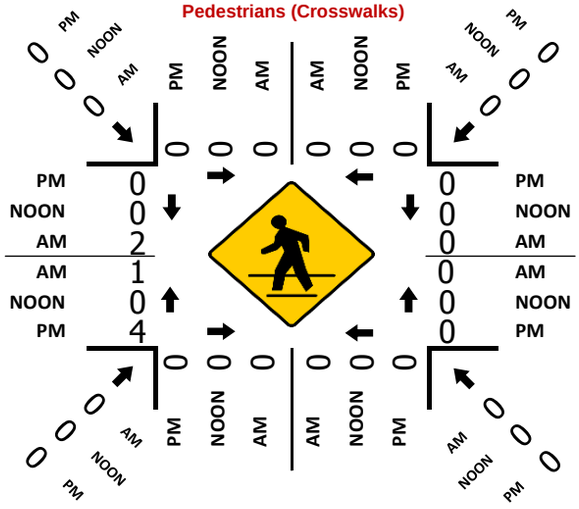
Total Vehicles (Noon)



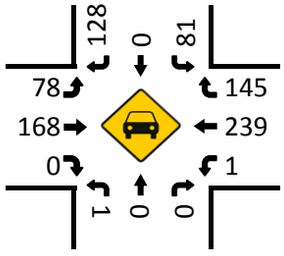
Bikes (NOON)



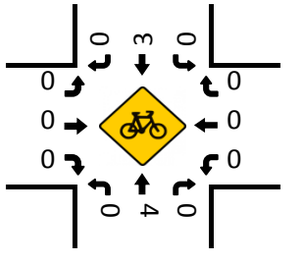
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & PFE Rd
City: Roseville
Control:

Project ID: 18-07372-003
Date: 10/17/2018

Total

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	40	0	15	0	19	56	0	0	0	25	21	0	176
7:15 AM	0	0	0	0	37	0	10	0	26	77	0	0	0	33	26	0	209
7:30 AM	0	1	1	0	33	0	21	0	31	73	0	0	2	28	35	0	225
7:45 AM	0	0	1	0	65	1	24	0	51	61	0	0	1	20	83	0	307
8:00 AM	0	0	1	0	78	0	46	0	41	72	0	0	1	28	60	0	327
8:15 AM	0	0	0	0	35	0	12	0	14	54	0	0	0	19	20	0	154
8:30 AM	0	0	0	0	20	0	12	0	8	56	0	0	1	16	23	1	137
8:45 AM	0	0	1	0	12	0	15	0	9	43	0	0	0	13	11	0	104
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	4	0	320	1	155	0	199	492	0	0	5	182	279	1	1639
APPROACH %'s :	0.00%	20.00%	80.00%	0.00%	67.23%	0.21%	32.56%	0.00%	28.80%	71.20%	0.00%	0.00%	1.07%	38.97%	59.74%	0.21%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1	3	0	213	1	101	0	149	283	0	0	4	109	204	0	1068
PEAK HR FACTOR :	0.000	0.250	0.750	0.000	0.683	0.250	0.549	0.000	0.730	0.919	0.000	0.000	0.500	0.826	0.614	0.000	0.817
		0.500				0.635				0.956				0.762			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	21	0	29	0	16	42	0	0	0	41	34	0	183
4:15 PM	0	0	0	0	8	0	24	0	18	37	1	0	0	49	19	0	156
4:30 PM	0	0	0	0	18	0	33	0	18	34	0	0	0	44	33	0	180
4:45 PM	0	0	0	0	22	0	29	0	10	37	0	0	0	54	30	0	182
5:00 PM	0	0	0	0	19	0	25	0	22	42	0	0	0	57	35	0	200
5:15 PM	0	0	0	0	24	0	36	0	22	63	0	0	0	70	39	0	254
5:30 PM	0	0	0	0	17	0	34	0	16	31	0	0	0	59	38	0	195
5:45 PM	1	0	0	0	21	0	33	0	18	32	0	0	1	53	33	0	192
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	150	0	243	0	140	318	1	0	1	427	261	0	1542
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	38.17%	0.00%	61.83%	0.00%	30.50%	69.28%	0.22%	0.00%	0.15%	61.97%	37.88%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	0	0	0	81	0	128	0	78	168	0	0	1	239	145	0	841
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.844	0.000	0.889	0.000	0.886	0.667	0.000	0.000	0.250	0.854	0.929	0.000	0.828
		0.250				0.871				0.724				0.883			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & PFE Rd
City: Roseville
Control: 0

Project ID: 18-07372-003
Date: 10/17/2018

Bikes

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	**07:15 AM - 08:15 AM**																TOTAL
PEAK HR VOL :	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333
		0.333															

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	1	0	0	4	0	0	0	0	0	0	0	0	0	0	10
APPROACH %'s :	0.00%	83.33%	16.67%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	**05:00 PM - 06:00 PM**																TOTAL
PEAK HR VOL :	0	4	0	0	0	3	0	0	0	0	0	0	0	0	0	0	7
PEAK HR FACTOR :	0.00	0.333	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583
		0.333				0.375											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & PFE Rd
City: Roseville

Project ID: 18-07372-003
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Cook Riolo Rd		Cook Riolo Rd		PFE Rd		PFE Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	2	0	0	3	0	5
7:15 AM	0	0	0	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	1	1
7:45 AM	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	2	1	3
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	2	0	0	6	3	11
APPROACH %'s :			0.00%	100.00%			66.67%	33.33%	
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	2	3
PEAK HR FACTOR :							0.250	0.500	0.750
							0.750		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	4	0	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	5	1	6
APPROACH %'s :							83.33%	16.67%	
PEAK HR :	**05:00 PM - 06:00 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	4	0	4
PEAK HR FACTOR :							0.250		0.250
							0.250		

Prepared by National Data & Surveying Services

Antelope Rd & PFE Rd

Peak Hour Turning Movement Count

ID: 18-07372-004
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

SOUTHBOUND (Antelope Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND (PFE Rd)

AM	NOON	PM	
312	0	391	⇦
0	0	0	↶ 0
0	0	0	↱ 0
263	0	127	→ 0
226	0	117	↴ 0

WESTBOUND (PFE Rd)

	PM	NOON	AM
0 ↰	0	0	0
0 ←	194	0	97
0 ↶	250	0	106
0 ↶	1	0	0
⇨	297	0	485

NORTHBOUND (Antelope Rd)

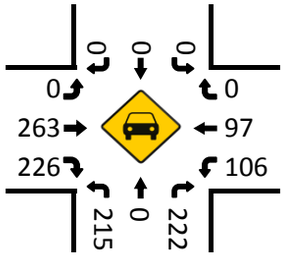
PM	367	0	197	0	169	PM
NOON	0	0	0	0	0	NOON
AM	333	1	215	0	222	AM

↲ 0	↓ 0	↳ 0	↳ 0	⇧
⇩	↰ 0	↰ 0	↑ 0	↱ 0

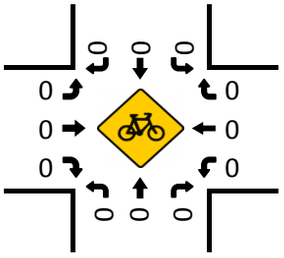
CONTROL

	0		
TEV	1130	0	1055
	AM	NOON	PM
PHF	0.91		0.89

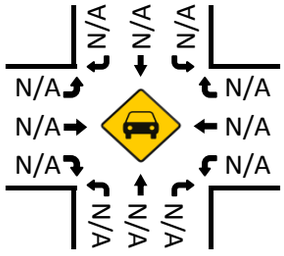
Total Vehicles (AM)



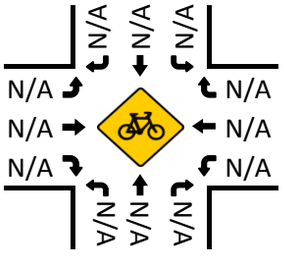
Bikes (AM)



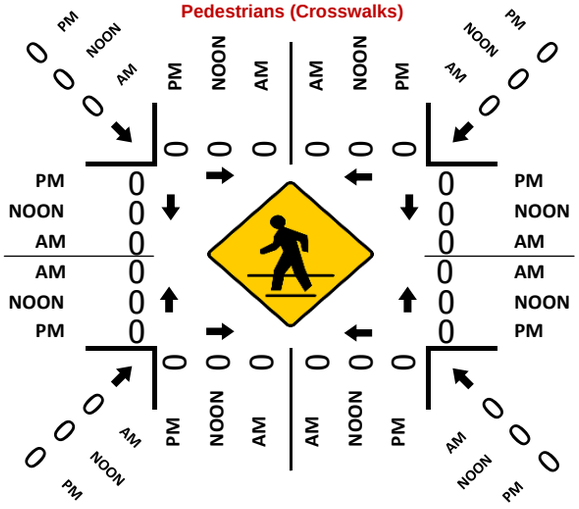
Total Vehicles (Noon)



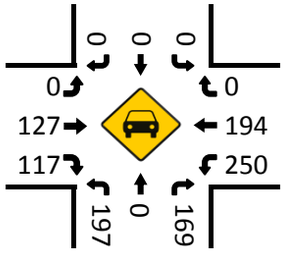
Bikes (NOON)



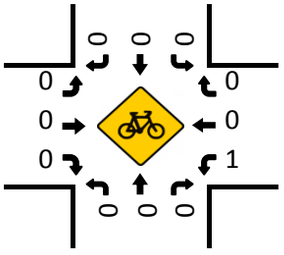
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Antelope Rd & PFE Rd
City: Roseville
Control:

Project ID: 18-07372-004
Date: 10/17/2018

Total

NS/EW Streets:	Antelope Rd				Antelope Rd				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	30	0	57	0	0	0	0	0	0	42	54	0	30	17	0	0	230
7:15 AM	36	0	46	0	0	0	0	0	0	58	51	0	34	25	0	0	250
7:30 AM	42	0	75	1	0	0	0	0	0	69	40	0	28	22	0	0	277
7:45 AM	88	0	54	0	0	0	0	0	0	57	68	0	21	23	0	0	311
8:00 AM	49	0	47	0	0	0	0	0	0	79	67	0	23	27	0	0	292
8:15 AM	15	0	42	0	0	0	0	0	0	50	43	0	16	24	0	0	190
8:30 AM	20	0	44	0	0	0	0	0	0	49	29	0	25	16	0	0	183
8:45 AM	14	0	42	0	0	0	0	0	0	30	19	0	14	8	0	0	127
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	294	0	407	1	0	0	0	0	0	434	371	0	191	162	0	0	1860
APPROACH %'s :	41.88%	0.00%	57.98%	0.14%					0.00%	53.91%	46.09%	0.00%	54.11%	45.89%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	215	0	222	1	0	0	0	0	0	263	226	0	106	97	0	0	1130
PEAK HR FACTOR :	0.611	0.000	0.740	0.250	0.000	0.000	0.000	0.000	0.000	0.832	0.831	0.000	0.779	0.898	0.000	0.000	0.908
	0.771								0.837				0.860				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	26	0	37	0	0	0	0	0	0	27	38	0	39	44	0	0	211
4:15 PM	27	0	44	0	0	0	0	0	0	29	17	0	54	50	0	0	221
4:30 PM	41	0	48	0	0	0	0	0	0	25	28	0	54	31	0	0	227
4:45 PM	39	0	38	0	0	0	0	0	0	25	34	0	47	41	0	0	224
5:00 PM	41	0	41	0	0	0	0	0	0	31	27	0	74	57	0	0	271
5:15 PM	52	0	40	0	0	0	0	0	0	47	39	0	65	54	0	0	297
5:30 PM	53	0	41	0	0	0	0	0	0	23	23	0	62	48	0	1	251
5:45 PM	51	0	47	0	0	0	0	0	0	26	28	0	49	35	0	0	236
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	330	0	336	0	0	0	0	0	0	233	234	0	444	360	0	1	1938
APPROACH %'s :	49.55%	0.00%	50.45%	0.00%					0.00%	49.89%	50.11%	0.00%	55.16%	44.72%	0.00%	0.12%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	197	0	169	0	0	0	0	0	0	127	117	0	250	194	0	1	1055
PEAK HR FACTOR :	0.929	0.000	0.899	0.000	0.000	0.000	0.000	0.000	0.000	0.676	0.750	0.000	0.845	0.851	0.000	0.250	0.888
	0.934								0.709				0.849				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Antelope Rd & PFE Rd
City: Roseville
Control: 0

Project ID: 18-07372-004
Date: 10/17/2018

Bikes

NS/EW Streets:	Antelope Rd				Antelope Rd				PFE Rd				PFE Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
APPROACH %'s :													100.00%	0.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250
														0.250			

Prepared by National Data & Surveying Services

Cook Riolo Rd & Vineyard Rd

Peak Hour Turning Movement Count

ID: 18-07372-005
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Cook Riolo Rd — SOUTHBOUND

	Right	Through	Left	U-Turn	Approach total
AM	6	164	24	0	173
NOON	0	0	0	0	0
PM	14	105	16	0	227
(red)	0	0	0	0	

Vineyard Rd — EASTBOUND

	AM	NOON	PM	(red)
Departing	69	0	127	
U-Turn	0	0	0	0
Left	12	0	22	0
Through	81	0	64	0
Right	75	0	11	0

Vineyard Rd — WESTBOUND

	(red)	PM	NOON	AM
Right	0	37	0	20
Through	0	96	0	29
Left	0	124	0	116
U-Turn	0	0	0	0
Departing		118	0	239

CONTROL

0

	AM	NOON	PM
TEV	836	0	712
PHF	0.81		0.87

Cook Riolo Rd — NORTHBOUND

	Departing	U-Turn	Left	Through	Right
(red)		0	0	0	0
PM	240	0	17	168	38
NOON	0	0	0	0	0
AM	355	0	34	141	134

Total Vehicles (AM)

- Southbound: 6, 164, 24
- Eastbound: 12, 81, 75
- Westbound: 20, 29, 116
- Northbound: 34, 141, 134

Total Vehicles (Noon)

- Southbound: N/A, N/A, N/A
- Eastbound: N/A, N/A, N/A
- Westbound: N/A, N/A, N/A
- Northbound: N/A, N/A, N/A

Total Vehicles (PM)

- Southbound: 14, 105, 16
- Eastbound: 22, 64, 11
- Westbound: 37, 96, 124
- Northbound: 17, 168, 38

Bikes (AM)

- Southbound: 0, 5, 0
- Eastbound: 0, 0, 0
- Westbound: 0, 0, 1
- Northbound: 0, 0, 0

Bikes (NOON)

- Southbound: N/A, N/A, N/A
- Eastbound: N/A, N/A, N/A
- Westbound: N/A, N/A, N/A
- Northbound: N/A, N/A, N/A

Bikes (PM)

- Southbound: 1, 2, 0
- Eastbound: 0, 0, 1
- Westbound: 0, 0, 0
- Northbound: 0, 0, 0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg	0	0	0
North leg	0	0	0
West leg	0	0	0
West leg	0	0	0
East leg	0	0	0
East leg	0	0	0
South leg	0	0	0
South leg	0	0	0
NW corner (diagonal)	0	0	0
NE corner (diagonal)	0	0	0
SW corner (diagonal)	0	0	0
SE corner (diagonal)	0	0	0

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Vineyard Rd
City: Roseville
Control:

Project ID: 18-07372-005
Date: 10/17/2018

Total

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	26	16	0	4	42	0	0	4	27	4	0	9	4	7	0	143
7:15 AM	3	27	27	0	5	37	0	0	4	30	11	0	21	8	4	0	177
7:30 AM	4	36	24	0	6	38	0	0	4	15	11	0	17	2	5	0	162
7:45 AM	8	36	39	0	8	60	4	0	3	23	31	0	35	6	5	0	258
8:00 AM	19	42	44	0	5	29	2	0	1	13	22	0	43	13	6	0	239
8:15 AM	4	37	16	0	4	19	3	0	6	18	2	0	9	10	9	0	137
8:30 AM	1	21	11	0	8	16	2	0	5	9	1	0	8	7	3	0	92
8:45 AM	1	15	11	0	3	17	4	0	2	13	5	0	11	9	3	0	94
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	40	240	188	0	43	258	15	0	29	148	87	0	153	59	42	0	1302
APPROACH %'s :	8.55%	51.28%	40.17%	0.00%	13.61%	81.65%	4.75%	0.00%	10.98%	56.06%	32.95%	0.00%	60.24%	23.23%	16.54%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	34	141	134	0	24	164	6	0	12	81	75	0	116	29	20	0	836
PEAK HR FACTOR :	0.447	0.839	0.761	0.000	0.750	0.683	0.375	0.000	0.750	0.675	0.605	0.000	0.674	0.558	0.833	0.000	0.810
	0.736				0.674				0.737				0.665				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	7	37	15	0	0	14	6	0	5	11	4	0	21	17	6	0	143
4:15 PM	3	40	12	0	4	10	7	0	2	14	5	0	34	18	4	0	153
4:30 PM	2	38	15	0	6	19	5	0	4	15	1	0	33	13	7	0	158
4:45 PM	5	35	11	0	4	15	5	0	4	14	1	0	28	15	10	0	147
5:00 PM	6	37	5	0	2	15	5	0	5	20	1	0	25	32	8	0	161
5:15 PM	5	50	7	0	6	28	4	0	7	25	2	0	41	19	10	0	204
5:30 PM	3	43	14	0	3	30	3	0	3	10	2	0	38	30	11	0	190
5:45 PM	3	38	12	0	5	32	2	0	7	9	6	0	20	15	8	0	157
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	34	318	91	0	30	163	37	0	37	118	22	0	240	159	64	0	1313
APPROACH %'s :	7.67%	71.78%	20.54%	0.00%	13.04%	70.87%	16.09%	0.00%	20.90%	66.67%	12.43%	0.00%	51.84%	34.34%	13.82%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	17	168	38	0	16	105	14	0	22	64	11	0	124	96	37	0	712
PEAK HR FACTOR :	0.708	0.840	0.679	0.000	0.667	0.820	0.700	0.000	0.786	0.640	0.458	0.000	0.756	0.750	0.841	0.000	0.873
	0.899				0.865				0.713				0.813				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Vineyard Rd
City: Roseville
Control: 0

Project ID: 18-07372-005
Date: 10/17/2018

Bikes

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	7	0	0	0	0	0	0	1	0	0	0	8
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :	**07:15 AM - 08:15 AM**																TOTAL
PEAK HR VOL :	0	0	0	0	0	5	0	0	0	0	0	0	1	0	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.313	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375
						0.313								0.250			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	4	1	0	0	0	1	0	1	0	0	0	8
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	**05:00 PM - 06:00 PM**																TOTAL
PEAK HR VOL :	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0	4
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	1.000
						0.750				0.250							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Vineyard Rd
City: Roseville

Project ID: 18-07372-005
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Cook Riolo Rd		Cook Riolo Rd		Vineyard Rd		Vineyard Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	0	0	1
APPROACH %'s :					0.00%	100.00%			
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	**05:00 PM - 06:00 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Cook Riolo Rd & Creekview Ranch School Access

Peak Hour Turning Movement Count

ID: 18-07372-006
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Cook Riolo Rd — SOUTHBOUND

	U-turn	Left	Thru	Right	Departing
AM	0	151	202	0	307
NOON	0	0	0	0	0
PM	2	221	7	0	228

(The four southbound approach columns are listed as printed, left to right; the per-column movement labels are editorial.)

Creekview Ranch School Access — EASTBOUND

	AM	NOON	PM
Departing	0	0	2
U-turn	0	0	0
Left	1	0	0
Thru	0	0	0
Right	0	0	0

Creekview Ranch School Access — WESTBOUND

	PM	NOON	AM
Right	31	0	148
Thru	0	0	0
Left	20	0	178
U-turn	0	0	0
Departing	13	0	446

Cook Riolo Rd — NORTHBOUND

	Departing	U-turn	Left	Thru	Right
PM	241	0	0	197	6
NOON	0	0	0	0	0
AM	329	0	0	158	244

The red 0 values printed beside every movement arrow in the diagram are not included in the tables above.

CONTROL

0

	AM	NOON	PM
TEV	1082	0	484
PHF	0.71		0.86

Total Vehicles (AM)

SB: U 0, L 151, T 202 (as printed: 0, 151, 202). EB: L 1, T 0, R 0. WB: R 148, T 0, L 178. NB: U 0, T 158, R 244.

Total Vehicles (Noon)

All movements N/A.

Total Vehicles (PM)

SB: 2, 221, 7. EB: 0, 0, 0. WB: 31, 0, 20. NB: 0, 197, 6.

Bikes (AM)

SB: 0, 0, 1. EB: 0, 0, 0. WB: 0, 0, 0. NB: 0, 0, 5.

Bikes (NOON)

All movements N/A.

Bikes (PM)

SB: 0, 2, 0. EB: 0, 0, 0. WB: 0, 0, 0. NB: 0, 2, 0.

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (west side)	5	0	2
North leg (east side)	1	0	0
West leg (north side)	1	0	0
West leg (south side)	5	0	2
East leg (north side)	0	0	0
East leg (south side)	0	0	0
South leg (west side)	0	0	0
South leg (east side)	0	0	0
NW corner diagonal	0	0	0
NE corner diagonal	0	0	0
SW corner diagonal	0	0	0
SE corner diagonal	0	0	0

(Labels for the crosswalk rows are editorial, not printed on the page.)

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Creekview Ranch School Access
City: Roseville
Control:

Project ID: 18-07372-006
Date: 10/17/2018

Total

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				Creekview Ranch School Access				Creekview Ranch School Access				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	45	9	0	18	36	0	0	0	0	0	0	12	0	4	0	124
7:15 AM	0	49	11	0	22	46	0	0	1	0	0	0	2	0	7	0	138
7:30 AM	0	42	32	0	31	42	0	0	0	0	0	0	16	0	20	0	183
7:45 AM	0	34	108	0	88	32	0	0	0	0	0	0	64	0	52	0	378
8:00 AM	0	33	93	0	61	31	0	0	0	0	0	0	96	0	69	0	383
8:15 AM	0	39	3	0	5	25	0	0	0	0	0	0	10	0	8	0	90
8:30 AM	0	23	6	0	4	19	0	0	0	0	0	0	6	0	5	0	63
8:45 AM	0	21	4	0	8	25	0	0	0	0	0	0	1	0	4	0	63
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	286	266	0	237	256	0	0	1	0	0	0	207	0	169	0	1422
APPROACH %'s :	0.00%	51.81%	48.19%	0.00%	48.07%	51.93%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	55.05%	0.00%	44.95%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	158	244	0	202	151	0	0	1	0	0	0	178	0	148	0	1082
PEAK HR FACTOR :	0.000	0.806	0.565	0.000	0.574	0.821	0.000	0.000	0.250	0.000	0.000	0.000	0.464	0.000	0.536	0.000	0.706
	0.708				0.735				0.250				0.494				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	44	5	0	6	43	1	0	0	0	0	0	13	0	18	0	130
4:15 PM	0	31	4	0	3	40	0	0	0	0	0	0	1	0	9	0	88
4:30 PM	0	50	2	0	4	49	0	0	0	0	0	0	9	0	5	0	119
4:45 PM	0	39	3	0	1	51	0	0	0	0	0	0	6	0	11	0	111
5:00 PM	0	48	0	0	0	45	2	0	0	0	0	0	5	0	13	0	113
5:15 PM	0	60	1	0	2	76	0	0	0	0	0	0	0	0	2	0	141
5:30 PM	0	56	0	0	2	47	0	0	0	0	0	0	2	0	2	0	109
5:45 PM	0	46	1	0	0	66	0	0	0	0	0	0	1	0	1	0	115
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	374	16	0	18	417	3	0	0	0	0	0	37	0	61	0	926
APPROACH %'s :	0.00%	95.90%	4.10%	0.00%	4.11%	95.21%	0.68%	0.00%					37.76%	0.00%	62.24%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	197	6	0	7	221	2	0	0	0	0	0	20	0	31	0	484
PEAK HR FACTOR :	0.000	0.821	0.500	0.000	0.438	0.727	0.250	0.000	0.000	0.000	0.000	0.000	0.556	0.000	0.596	0.000	0.858
	0.832				0.737								0.708				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Creekview Ranch School Access
City: Roseville
Control: 0

Project ID: 18-07372-006
Date: 10/17/2018

Bikes

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				Creekview Ranch School Access				Creekview Ranch School Access				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:45 AM	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	5	0	1	1	0	0	0	0	0	0	0	0	0	0	7
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	50.00%	50.00%	0.00%	0.00%									
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.417	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
			0.417				0.250										

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0	9
APPROACH %'s :	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
			0.250				0.250										

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Creekview Ranch School Access
City: Roseville

Project ID: 18-07372-006
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Cook Riolo Rd		Cook Riolo Rd		Creekview Ranch School Access		Creekview Ranch School Access		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	1	0	0	0	0	0	1	0	2
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	3	0	0	0	0	0	3	0	6
8:00 AM	1	1	0	0	0	0	1	1	4
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	5	1	0	0	0	0	5	1	12
APPROACH %'s :	83.33%	16.67%					83.33%	16.67%	
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	5	1	0	0	0	0	5	1	12
PEAK HR FACTOR :	0.417	0.250					0.417	0.250	0.500
	0.500						0.500		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	1	1
4:15 PM	0	1	0	0	0	0	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	0	0	1	0	2
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	0	0	0	0	1	0	2
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	1	1	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	1	0	0	0	0	3	3	9
APPROACH %'s :	66.67%	33.33%					50.00%	50.00%	
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	2	0	0	0	0	0	2	0	4
PEAK HR FACTOR :	0.500						0.500		0.500
	0.500						0.500		

Prepared by National Data & Surveying Services

Crowder Ln & Vineyard Rd

Peak Hour Turning Movement Count

ID: 18-07372-007
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS	COUNT PERIODS
07:00 AM - 08:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	04:00 PM - 06:00 PM

Crowder Ln — SOUTHBOUND

AM	0	0	72	0	32	AM
NOON	0	0	0	0	0	NOON
PM	1	0	33	0	36	PM

Vineyard Rd — EASTBOUND

AM	NOON	PM
3	0	6
0	0	0
2	0	0
7	0	1
0	0	0
AM	NOON	PM

Vineyard Rd — WESTBOUND

PM	NOON	AM
36	0	30
5	0	3
0	0	0
0	0	1
34	0	80
PM	NOON	AM

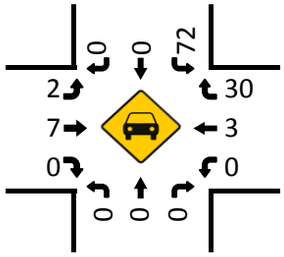
CONTROL

	0		
TEV	115	0	76
	AM	NOON	PM
PHF	0.93		0.76

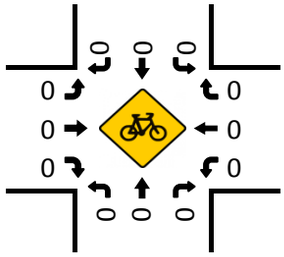
Crowder Ln — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

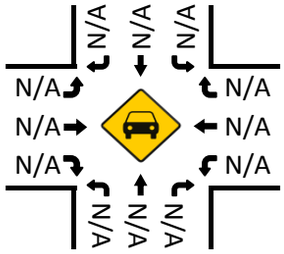
Total Vehicles (AM)



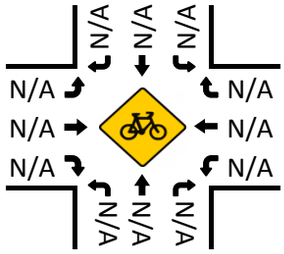
Bikes (AM)



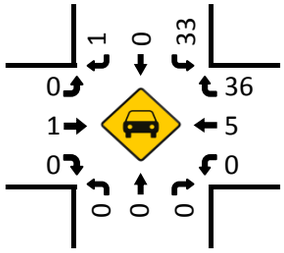
Total Vehicles (Noon)



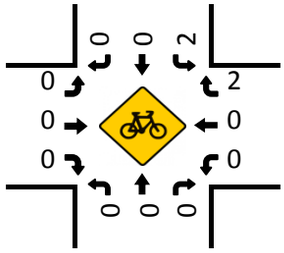
Bikes (NOON)



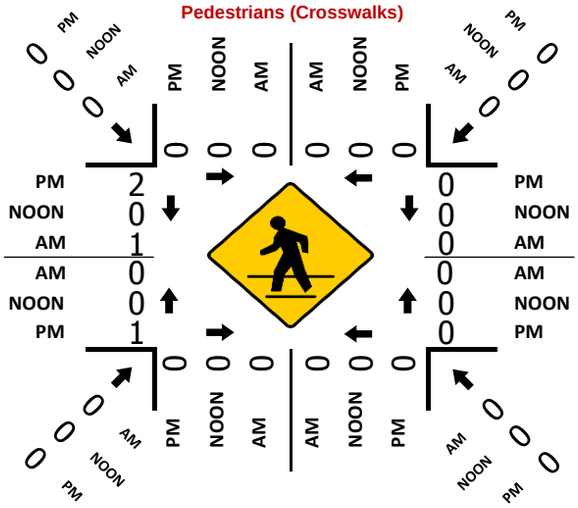
Total Vehicles (PM)



Bikes (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Crowder Ln & Vineyard Rd
City: Roseville
Control:

Project ID: 18-07372-007
Date: 10/17/2018

Total

NS/EW Streets:	Crowder Ln				Crowder Ln				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	20	0	0	0	2	3	0	0	0	0	6	0	31
7:15 AM	0	0	0	0	18	0	0	0	0	3	0	0	0	2	6	1	30
7:30 AM	0	0	0	0	13	0	0	0	0	1	0	0	0	1	10	0	25
7:45 AM	0	0	0	0	21	0	0	0	0	0	0	0	0	0	8	0	29
8:00 AM	0	0	0	0	11	0	0	0	0	1	0	0	0	0	11	0	23
8:15 AM	0	0	0	0	8	0	0	0	0	2	0	0	0	0	11	0	21
8:30 AM	0	0	0	0	16	0	1	0	0	0	0	0	0	1	9	0	27
8:45 AM	0	0	0	0	10	0	0	0	0	1	0	0	0	3	5	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	117	0	1	0	2	11	0	0	0	7	66	1	205
APPROACH %'s :					99.15%	0.00%	0.85%	0.00%	15.38%	84.62%	0.00%	0.00%	0.00%	9.46%	89.19%	1.35%	
PEAK HR :	**07:00 AM - 08:00 AM**																TOTAL
PEAK HR VOL :	0	0	0	0	72	0	0	0	2	7	0	0	0	3	30	1	115
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.857	0.000	0.000	0.000	0.250	0.583	0.000	0.000	0.000	0.375	0.750	0.250	0.927
					0.857				0.450				0.773				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	12	0	1	0	0	1	0	0	0	0	11	0	25
4:15 PM	0	0	0	0	9	0	0	0	0	0	0	0	0	1	10	0	20
4:30 PM	0	0	0	0	6	0	0	0	0	0	0	0	0	0	9	0	15
4:45 PM	0	0	0	0	6	0	0	0	0	0	0	0	0	4	6	0	16
5:00 PM	0	0	0	0	3	0	0	0	1	1	0	0	0	0	11	0	16
5:15 PM	0	0	0	0	8	0	0	0	0	1	0	0	0	0	8	0	17
5:30 PM	0	0	0	0	5	0	0	0	0	0	0	0	0	1	10	0	16
5:45 PM	0	0	0	0	13	0	0	0	0	0	0	0	0	2	8	0	23
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	62	0	1	0	1	3	0	0	0	8	73	0	148
APPROACH %'s :					98.41%	0.00%	1.59%	0.00%	25.00%	75.00%	0.00%	0.00%	0.00%	9.88%	90.12%	0.00%	
PEAK HR :	**04:00 PM - 05:00 PM**																TOTAL
PEAK HR VOL :	0	0	0	0	33	0	1	0	0	1	0	0	0	5	36	0	76
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.688	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.313	0.818	0.000	0.760
					0.654				0.250				0.932				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Crowder Ln & Vineyard Rd
City: Roseville
Control: 0

Project ID: 18-07372-007
Date: 10/17/2018

Bikes

NS/EW Streets:	Crowder Ln				Crowder Ln				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	3	0	0	0	0	1	0	0	0	0	2	0	6
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	4
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500
					0.250								0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Crowder Ln & Vineyard Rd
City: Roseville

Project ID: 18-07372-007
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Crowder Ln		Crowder Ln		Vineyard Rd		Vineyard Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	1
8:00 AM	0	0	0	0	0	0	0	1	1
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	1
8:45 AM	0	0	0	0	0	0	1	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	2	2	4
APPROACH %'s :							50.00%	50.00%	
PEAK HR :	07:00 AM - 08:00 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	1
PEAK HR FACTOR :							0.250	0.250	0.250

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	1
4:30 PM	0	0	0	0	0	0	0	2	2
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	2	2	4
APPROACH %'s :							50.00%	50.00%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	2	3
PEAK HR FACTOR :							0.250	0.250	0.375

Prepared by National Data & Surveying Services

Brady Ln & Vineyard Rd

Peak Hour Turning Movement Count

ID: 18-07372-008
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Brady Ln)

AM	16	0	30	0	45	AM
NOON	0	0	0	0	0	NOON
PM	17	0	27	0	45	PM

EASTBOUND (Vineyard Rd)

AM	NOON	PM	
170	0	265	⇦
0	0	0	↶ 0
16	0	16	↱ 0
238	0	120	→ 0
0	0	0	↴ 0
AM	NOON	PM	

WESTBOUND (Vineyard Rd)

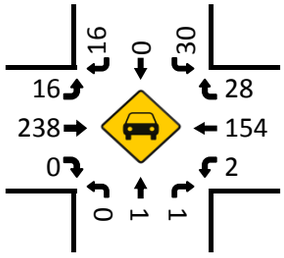
PM	NOON	AM	
29	0	28	0 ↰
248	0	154	0 ←
0	0	2	0 ↶
0	0	0	0 ↴
147	0	269	⇨
PM	NOON	AM	

NORTHBOUND (Brady Ln)

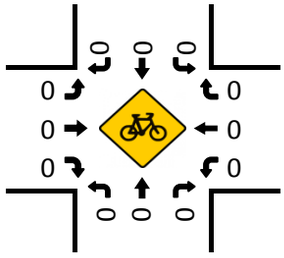
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	2	0	0	1	1	AM

CONTROL			
0			
TEV	486	0	457
	AM	NOON	PM
PHF	0.86		0.91

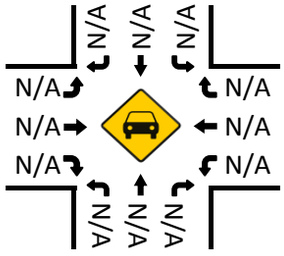
Total Vehicles (AM)



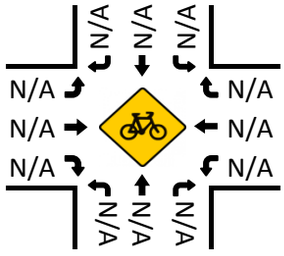
Bikes (AM)



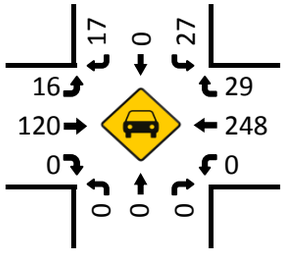
Total Vehicles (Noon)



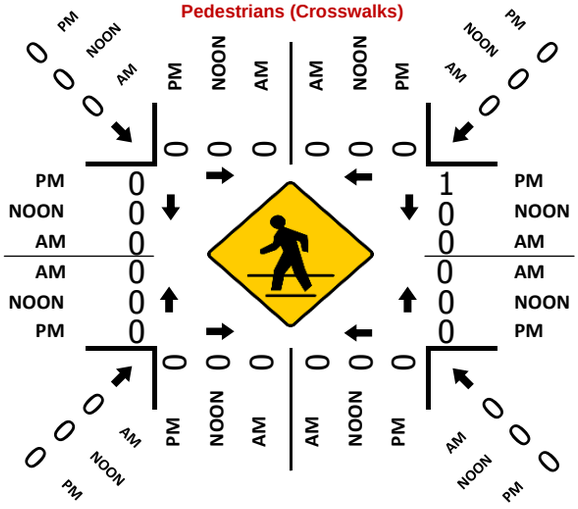
Bikes (NOON)



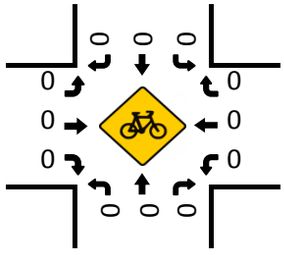
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brady Ln & Vineyard Rd
City: Roseville
Control:

Project ID: 18-07372-008
Date: 10/17/2018

Total

NS/EW Streets:	Brady Ln				Brady Ln				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	1	0	0	7	0	0	0	1	50	0	0	0	20	9	0	88
7:15 AM	0	1	1	0	12	0	2	0	1	56	0	0	0	33	10	0	116
7:30 AM	0	0	0	0	7	0	1	0	4	45	0	0	0	25	7	0	89
7:45 AM	0	0	0	0	6	0	9	0	4	71	0	0	1	47	4	0	142
8:00 AM	0	0	0	0	5	0	4	0	7	66	0	0	1	49	7	0	139
8:15 AM	0	0	0	0	8	0	1	0	6	39	0	0	0	24	6	0	84
8:30 AM	0	0	0	0	8	0	3	0	2	28	0	0	0	16	8	0	65
8:45 AM	0	0	0	0	8	0	1	0	1	26	0	0	0	25	2	1	64
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	1	0	61	0	21	0	26	381	0	0	2	239	53	1	787
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	74.39%	0.00%	25.61%	0.00%	6.39%	93.61%	0.00%	0.00%	0.68%	81.02%	17.97%	0.34%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1	1	0	30	0	16	0	16	238	0	0	2	154	28	0	486
PEAK HR FACTOR :	0.000	0.250	0.250	0.000	0.625	0.000	0.444	0.000	0.571	0.838	0.000	0.000	0.500	0.786	0.700	0.000	0.856
		0.250				0.767				0.847				0.807			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	5	0	7	0	2	27	0	0	0	39	7	0	88
4:15 PM	0	0	0	0	8	0	4	0	3	26	0	0	0	44	7	0	92
4:30 PM	0	0	0	0	6	0	3	0	5	30	0	0	0	48	5	0	97
4:45 PM	0	0	0	0	9	0	6	0	2	31	0	0	0	62	6	0	116
5:00 PM	0	0	0	0	10	0	5	0	4	31	0	0	0	52	8	0	110
5:15 PM	0	0	0	0	5	0	4	0	0	32	0	0	0	73	4	0	118
5:30 PM	0	0	0	0	4	0	3	0	4	31	0	0	0	53	8	0	103
5:45 PM	0	0	0	0	8	0	5	0	8	26	0	0	0	70	9	0	126
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	55	0	37	0	28	234	0	0	0	441	54	0	850
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	59.78%	0.00%	40.22%	0.00%	10.69%	89.31%	0.00%	0.00%	0.00%	89.09%	10.91%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	27	0	17	0	16	120	0	0	0	248	29	0	457
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.675	0.000	0.850	0.000	0.500	0.938	0.000	0.000	0.000	0.849	0.806	0.000	0.907
						0.733				0.971				0.877			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brady Ln & Vineyard Rd
City: Roseville
Control: 0

Project ID: 18-07372-008
Date: 10/17/2018

Bikes

NS/EW Streets:	Brady Ln				Brady Ln				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%									
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brady Ln & Vineyard Rd
City: Roseville

Project ID: 18-07372-008
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Brady Ln		Brady Ln		Vineyard Rd		Vineyard Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	1
APPROACH %'s :					100.00%	0.00%			
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	0	0	1
APPROACH %'s :					0.00%	100.00%			
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	1
PEAK HR FACTOR :					0.250	0.250			0.250

Prepared by National Data & Surveying Services

Foothills Blvd & Vineyard Rd

Peak Hour Turning Movement Count

ID: 18-07372-009
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Foothills Blvd)

AM	33	1569	83	1	1560	AM
NOON	0	0	0	0	0	NOON
PM	87	1702	71	3	1988	PM

EASTBOUND (Vineyard Rd)

AM	NOON	PM	
151	0	363	⇦
0	0	0	↶ 0
103	0	106	↱ 0
126	0	42	→ 0
119	0	69	↴ 0

WESTBOUND (Vineyard Rd)

	PM	NOON	AM
0 ↰	126	0	56
0 ←	113	0	41
0 ↲	194	0	136
0 ↳	0	0	0
⇨	211	0	279

NORTHBOUND (Foothills Blvd)

PM	1988	23	163	1753	98	PM
NOON	0	0	0	0	0	NOON
AM	1844	20	77	1400	70	AM

0 0 0 0 ↶ ↰ ↑ ↱

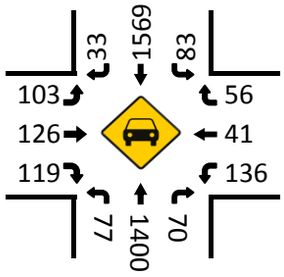
⇩

CONTROL

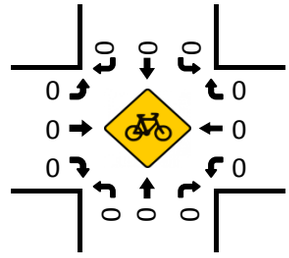
0

	AM	NOON	PM
TEV	3834	0	4550
PHF	0.89		0.96

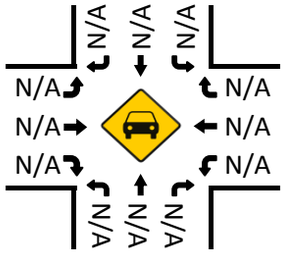
Total Vehicles (AM)



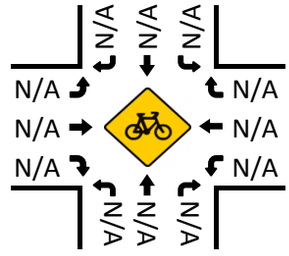
Bikes (AM)



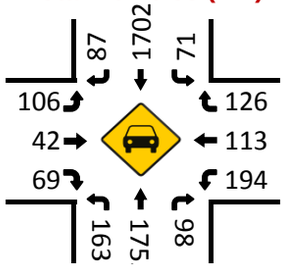
Total Vehicles (Noon)



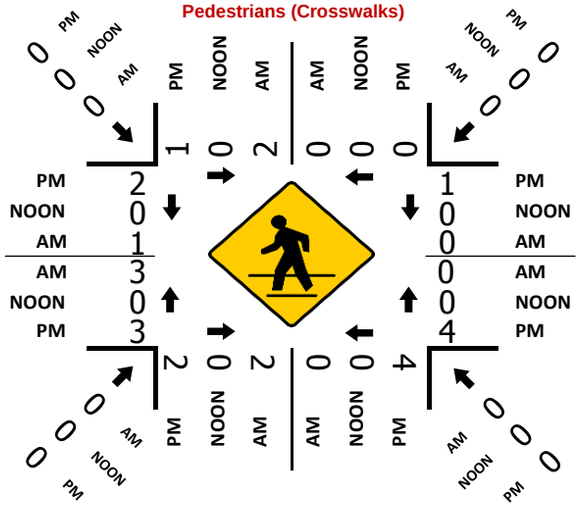
Bikes (NOON)



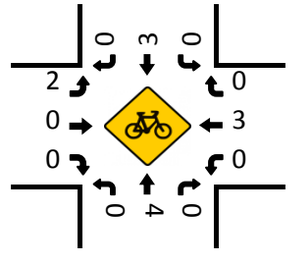
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Foothills Blvd & Vineyard Rd
City: Roseville
Control:

Project ID: 18-07372-009
Date: 10/17/2018

Total

NS/EW Streets:	Foothills Blvd				Foothills Blvd				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	12	215	6	2	10	401	5	0	17	20	34	0	46	9	7	0	784
7:15 AM	17	343	14	4	11	420	9	0	17	35	31	0	31	4	13	0	949
7:30 AM	21	329	12	5	23	359	5	0	25	31	23	0	39	16	12	0	900
7:45 AM	20	424	21	3	26	426	9	1	29	35	29	0	30	8	15	0	1076
8:00 AM	19	304	23	8	23	364	10	0	32	25	36	0	36	13	16	0	909
8:15 AM	17	364	13	1	22	354	12	1	30	17	31	0	25	10	12	0	909
8:30 AM	19	285	19	4	18	389	15	1	21	22	21	0	36	6	10	0	866
8:45 AM	10	274	17	1	21	333	6	0	13	16	16	0	19	10	8	0	744
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	135	2538	125	28	154	3046	71	3	184	201	221	0	262	76	93	0	7137
APPROACH %'s :	4.78%	89.81%	4.42%	0.99%	4.70%	93.04%	2.17%	0.09%	30.36%	33.17%	36.47%	0.00%	60.79%	17.63%	21.58%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	77	1400	70	20	83	1569	33	1	103	126	119	0	136	41	56	0	3834
PEAK HR FACTOR :	0.917	0.825	0.761	0.625	0.798	0.921	0.825	0.250	0.805	0.900	0.826	0.000	0.872	0.641	0.875	0.000	0.891
	0.837				0.912				0.935				0.869				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	24	393	19	12	19	383	13	1	15	12	16	0	51	20	17	0	995
4:15 PM	27	375	15	3	27	403	13	1	18	16	17	0	40	24	29	0	1008
4:30 PM	25	446	30	9	13	399	16	1	27	12	19	0	44	28	35	0	1104
4:45 PM	43	439	27	1	13	446	24	1	27	12	17	0	51	26	28	0	1155
5:00 PM	53	431	17	6	18	390	27	0	23	11	20	0	57	23	35	0	1111
5:15 PM	42	437	24	7	27	467	20	1	29	7	13	0	42	36	28	0	1180
5:30 PM	30	415	21	6	25	419	14	0	24	15	15	0	38	29	29	0	1080
5:45 PM	28	439	27	5	16	347	18	1	19	12	19	0	25	15	23	0	994
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	272	3375	180	49	158	3254	145	6	182	97	136	0	348	201	224	0	8627
APPROACH %'s :	7.02%	87.07%	4.64%	1.26%	4.43%	91.33%	4.07%	0.17%	43.86%	23.37%	32.77%	0.00%	45.02%	26.00%	28.98%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	163	1753	98	23	71	1702	87	3	106	42	69	0	194	113	126	0	4550
PEAK HR FACTOR :	0.769	0.983	0.817	0.639	0.657	0.911	0.806	0.750	0.914	0.875	0.863	0.000	0.851	0.785	0.900	0.000	0.964
	0.999				0.904				0.935				0.941				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Foothills Blvd & Vineyard Rd
City: Roseville
Control: 0

Project ID: 18-07372-009
Date: 10/17/2018

Bikes

NS/EW Streets:	Foothills Blvd				Foothills Blvd				Vineyard Rd				Vineyard Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
APPROACH %'s :					0.00%	0.00%	100.00%	0.00%					0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3
4:45 PM	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	4
5:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	0	0	0	4	0	0	2	0	0	0	0	3	0	0	14
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	4	0	0	0	3	0	0	2	0	0	0	0	3	0	0	12
PEAK HR FACTOR :	0.00	0.500	0.000	0.000	0.000	0.750	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.750
		0.500				0.750				0.250				0.375			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Foothills Blvd & Vineyard Rd
City: Roseville

Project ID: 18-07372-009
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Foothills Blvd		Foothills Blvd		Vineyard Rd		Vineyard Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	1
7:15 AM	1	0	0	0	0	0	1	0	2
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	1	0	0	0	0	0	1	1	3
8:00 AM	0	0	2	0	0	0	1	0	3
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	3	0	2	0	0	0	3	1	9
APPROACH %'s :	100.00%	0.00%	100.00%	0.00%			75.00%	25.00%	
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	2	0	2	0	0	0	3	1	8
PEAK HR FACTOR :	0.500		0.250				0.750	0.250	0.667
	0.500		0.250				0.500		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	3	3	0	2	0	0	8
4:15 PM	1	0	0	0	0	0	1	0	2
4:30 PM	1	0	0	1	3	1	0	1	7
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	0	1	0	1	1	4
5:15 PM	0	0	1	3	0	0	2	0	6
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	0	0	1	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	0	5	8	4	3	5	2	29
APPROACH %'s :	100.00%	0.00%	38.46%	61.54%	57.14%	42.86%	71.43%	28.57%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	1	0	2	4	4	1	3	2	17
PEAK HR FACTOR :	0.250		0.500	0.333	0.333	0.250	0.375	0.500	0.607
	0.250		0.375		0.313		0.625		

Prepared by National Data & Surveying Services

Cook Riolo Rd & Baseline Rd

Peak Hour Turning Movement Count

ID: 18-07372-010
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Cook Riolo Rd — SOUTHBOUND

AM	62	110	224	0	240	AM
NOON	0	0	0	0	0	NOON
PM	41	96	166	0	448	PM

Baseline Rd — EASTBOUND

AM	NOON	PM	
576	0	759	⇦
0	0	0	↶ 0
45	0	84	↱ 0
566	0	629	→ 0
26	0	18	↳ 0
AM	NOON	PM	

Baseline Rd — WESTBOUND

PM	NOON	AM	
239	0	108	0 ↰
672	0	482	0 ←
34	0	38	0 ↲
0	0	0	0 ↺
831	0	836	⇨
PM	NOON	AM	

Cook Riolo Rd — NORTHBOUND

PM	148	0	46	125	36	PM
NOON	0	0	0	0	0	NOON
AM	174	0	32	87	46	AM

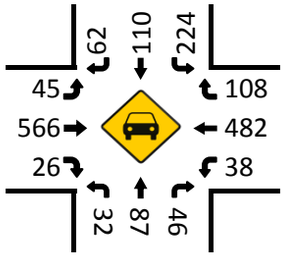
Cook Riolo Rd

				0 ↶
				0 ↰
				0 ↑
				0 ↱
				⇩

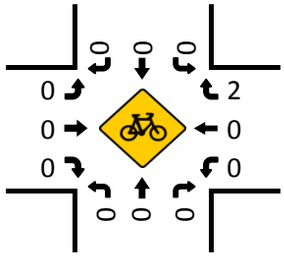
CONTROL: 0

TEV	1826	0	2186
	AM	NOON	PM
PHF	0.91		0.97

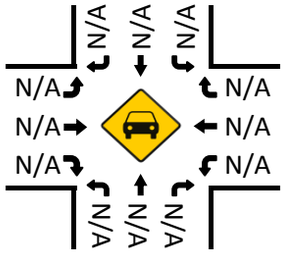
Total Vehicles (AM)



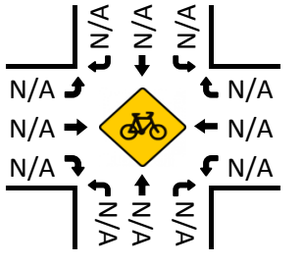
Bikes (AM)



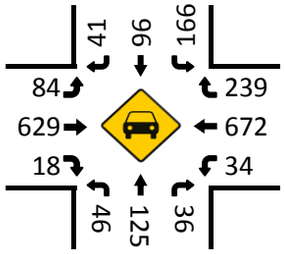
Total Vehicles (Noon)



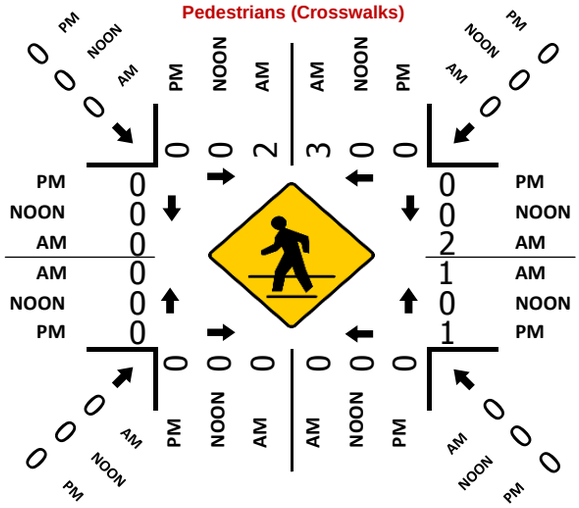
Bikes (NOON)



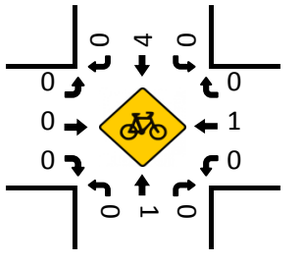
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Baseline Rd
City: Roseville
Control:

Project ID: 18-07372-010
Date: 10/17/2018

Total

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	5	19	13	0	47	23	6	0	6	137	8	0	4	97	18	0	383
7:15 AM	7	23	5	0	53	26	16	0	14	148	7	0	7	100	40	0	446
7:30 AM	5	19	17	0	59	20	16	0	13	151	10	0	14	146	31	0	501
7:45 AM	9	16	12	0	64	42	20	0	8	136	4	0	12	128	13	0	464
8:00 AM	11	29	12	0	48	22	10	0	10	131	5	0	5	108	24	0	415
8:15 AM	13	24	14	0	36	12	11	0	10	132	8	0	6	105	35	0	406
8:30 AM	6	17	5	0	52	11	11	0	9	136	8	0	6	71	36	0	368
8:45 AM	3	16	11	0	67	28	10	0	11	140	6	0	3	83	20	0	398
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	59	163	89	0	426	184	100	0	81	1111	56	0	57	838	217	0	3381
APPROACH %'s :	18.97%	52.41%	28.62%	0.00%	60.00%	25.92%	14.08%	0.00%	6.49%	89.02%	4.49%	0.00%	5.13%	75.36%	19.51%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	32	87	46	0	224	110	62	0	45	566	26	0	38	482	108	0	1826
PEAK HR FACTOR :	0.727	0.750	0.676	0.000	0.875	0.655	0.775	0.000	0.804	0.937	0.650	0.000	0.679	0.825	0.675	0.000	0.911
	0.793				0.786				0.915				0.822				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	9	31	11	0	46	17	13	0	5	134	1	0	10	152	51	0	480
4:15 PM	9	23	5	0	33	23	9	0	8	139	3	0	8	171	48	0	479
4:30 PM	11	25	13	0	30	18	8	0	12	152	3	0	13	165	47	0	497
4:45 PM	11	35	14	0	38	18	15	0	25	143	5	0	12	175	50	0	541
5:00 PM	13	25	6	0	51	18	13	0	21	156	6	0	7	169	53	0	538
5:15 PM	13	41	8	0	40	30	9	0	18	149	5	0	13	181	57	0	564
5:30 PM	12	30	10	0	39	21	9	0	22	162	1	0	7	153	74	0	540
5:45 PM	8	29	12	0	36	27	10	0	23	162	6	0	7	169	55	0	544
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	86	239	79	0	313	172	86	0	134	1197	30	0	77	1335	435	0	4183
APPROACH %'s :	21.29%	59.16%	19.55%	0.00%	54.82%	30.12%	15.06%	0.00%	9.85%	87.95%	2.20%	0.00%	4.17%	72.28%	23.55%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	46	125	36	0	166	96	41	0	84	629	18	0	34	672	239	0	2186
PEAK HR FACTOR :	0.885	0.762	0.750	0.000	0.814	0.800	0.788	0.000	0.913	0.971	0.750	0.000	0.654	0.928	0.807	0.000	0.969
	0.835				0.924				0.957				0.941				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Baseline Rd
City: Roseville
Control: 0

Project ID: 18-07372-010
Date: 10/17/2018

Bikes

NS/EW Streets:	Cook Riolo Rd				Cook Riolo Rd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	2	0	0	2	1	0	0	1	0	2	0	8
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250
														0.250			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	4	2	0	0	0	0	0	0	1	0	0	9
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%					0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	4	0	0	0	0	0	0	0	1	0	0	6
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.375
		0.250				0.500								0.250			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Cook Riolo Rd & Baseline Rd
City: Roseville

Project ID: 18-07372-010
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Cook Riolo Rd		Cook Riolo Rd		Baseline Rd		Baseline Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	1	2	0	0	1	2	0	0	6
7:45 AM	1	1	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	1	0	0	1	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	5	0	0	2	2	0	0	11
APPROACH %'s :	28.57%	71.43%			50.00%	50.00%			
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	2	3	0	0	1	2	0	0	8
PEAK HR FACTOR :	0.500	0.375			0.250	0.250			0.333
	0.417				0.250				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	1
APPROACH %'s :					100.00%	0.00%			
PEAK HR :	**05:00 PM - 06:00 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	1
PEAK HR FACTOR :					0.250				0.250
					0.250				

Prepared by National Data & Surveying Services

Brady Ln & Baseline Rd

Peak Hour Turning Movement Count

ID: 18-07372-011
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Brady Ln)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Baseline Rd)

AM	NOON	PM	
573	0	1117	⇦
0	0	0	↶ 0
0	0	0	↱ 0
951	0	816	→ 0
35	0	21	↳ 0
AM	NOON	PM	

WESTBOUND (Baseline Rd)

PM	NOON	AM	
0	0	0	0 ↰
1086	0	532	0 ←
38	0	15	0 ↲
0	0	0	0 ↳
853	0	996	⇨
PM	NOON	AM	

NORTHBOUND (Brady Ln)

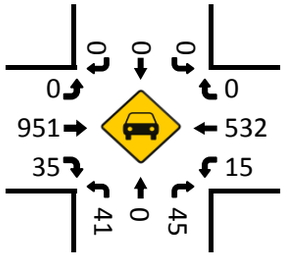
PM	59	0	31	0	37	PM
NOON	0	0	0	0	0	NOON
AM	50	0	41	0	45	AM

0 0 0 0 ⇧ 0 0 0 0

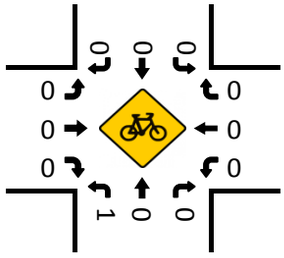
CONTROL

	0		
TEV	1619	0	2029
	AM	NOON	PM
PHF	0.94		0.97

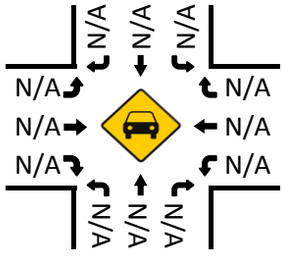
Total Vehicles (AM)



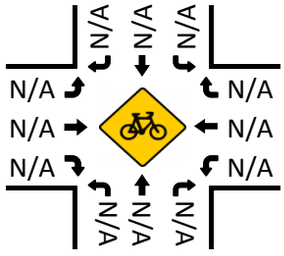
Bikes (AM)



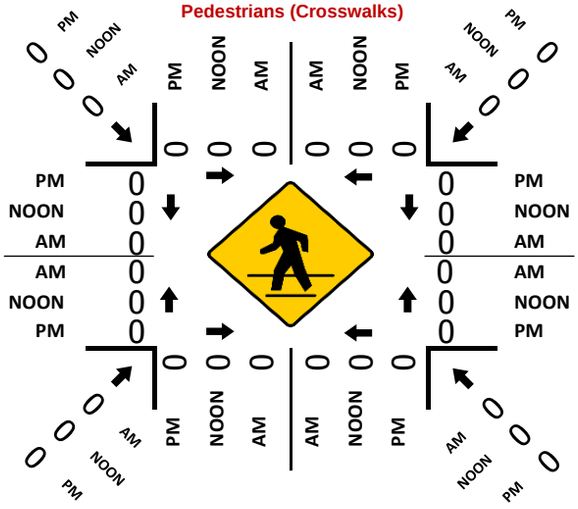
Total Vehicles (Noon)



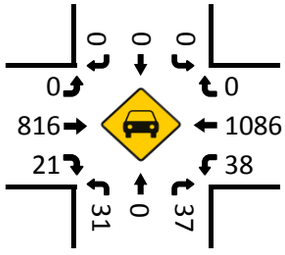
Bikes (NOON)



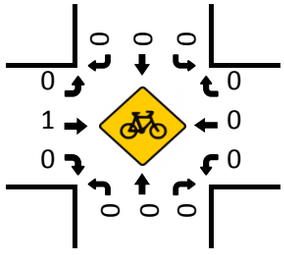
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brady Ln & Baseline Rd
City: Roseville
Control:

Project ID: 18-07372-011
Date: 10/17/2018

Total

NS/EW Streets:	Brady Ln				Brady Ln				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	9	0	6	0	0	0	0	0	0	231	7	0	1	101	0	0	355
7:15 AM	16	0	5	0	0	0	0	0	0	235	12	0	4	118	0	0	390
7:30 AM	12	0	14	0	0	0	0	0	0	254	7	0	1	141	0	0	429
7:45 AM	4	0	14	0	0	0	0	0	0	242	10	0	6	147	0	0	423
8:00 AM	9	0	12	0	0	0	0	0	0	220	6	0	4	126	0	0	377
8:15 AM	14	0	4	0	0	0	0	0	0	216	6	0	3	123	0	0	366
8:30 AM	6	0	9	0	0	0	0	0	0	227	12	0	5	124	0	0	383
8:45 AM	3	0	7	0	0	0	0	0	0	228	7	0	2	99	0	0	346
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	73	0	71	0	0	0	0	0	0	1853	67	0	26	979	0	0	3069
APPROACH %'s :	50.69%	0.00%	49.31%	0.00%					0.00%	96.51%	3.49%	0.00%	2.59%	97.41%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	41	0	45	0	0	0	0	0	0	951	35	0	15	532	0	0	1619
PEAK HR FACTOR :	0.641	0.000	0.804	0.000	0.000	0.000	0.000	0.000	0.000	0.936	0.729	0.000	0.625	0.905	0.000	0.000	0.943
	0.827								0.944				0.894				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	5	0	5	0	0	0	0	0	0	182	4	0	12	241	0	0	449
4:15 PM	2	0	9	0	0	0	0	0	0	191	4	0	8	263	0	0	477
4:30 PM	2	0	10	0	0	0	0	0	0	167	4	0	6	258	0	0	447
4:45 PM	6	0	6	0	0	0	0	0	0	197	6	0	10	270	0	0	495
5:00 PM	6	0	9	0	0	0	0	0	0	195	8	0	6	260	0	0	484
5:15 PM	6	0	8	0	0	0	0	0	0	192	6	0	6	282	0	0	500
5:30 PM	10	0	5	0	0	0	0	0	0	210	2	0	11	286	0	0	524
5:45 PM	9	0	15	0	0	0	0	0	0	219	5	0	15	258	0	0	521
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	46	0	67	0	0	0	0	0	0	1553	39	0	74	2118	0	0	3897
APPROACH %'s :	40.71%	0.00%	59.29%	0.00%					0.00%	97.55%	2.45%	0.00%	3.38%	96.62%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	31	0	37	0	0	0	0	0	0	816	21	0	38	1086	0	0	2029
PEAK HR FACTOR :	0.775	0.000	0.617	0.000	0.000	0.000	0.000	0.000	0.000	0.932	0.656	0.000	0.633	0.949	0.000	0.000	0.968
	0.708								0.934				0.946				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brady Ln & Baseline Rd
City: Roseville
Control: 0

Project ID: 18-07372-011
Date: 10/17/2018

Bikes

NS/EW Streets:	Brady Ln				Brady Ln				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	3
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%					0.00%	50.00%	50.00%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
		0.250															

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
										0.250							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brady Ln & Baseline Rd
City: Roseville

Project ID: 18-07372-011
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Brady Ln		Brady Ln		Baseline Rd		Baseline Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	0	0	1
APPROACH %'s :					0.00%	100.00%			
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	**05:00 PM - 06:00 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Foothills Blvd & Baseline Rd

Peak Hour Turning Movement Count

ID: 18-07372-012
City: Roseville

Day: Wednesday
Date: 10/17/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Foothills Blvd — SOUTHBOUND

AM	81	1014	75	1	1311	AM
NOON	0	0	0	0	0	NOON
PM	130	1484	141	0	1489	PM

Baseline Rd — EASTBOUND

AM	NOON	PM	
543	0	1021	⇦
4	0	13	↶ 0
155	0	190	↱ 0
223	0	224	→ 0
503	0	353	↳ 0

Baseline Rd — WESTBOUND

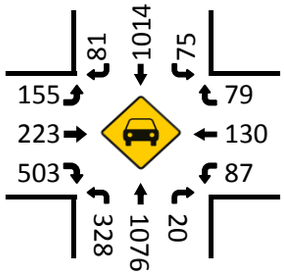
	PM	NOON	AM
0 ↰	113	0	79
0 ←	320	0	130
0 ↲	107	0	87
0 ↺	0	0	0
⇨	455	0	318

Foothills Blvd — NORTHBOUND

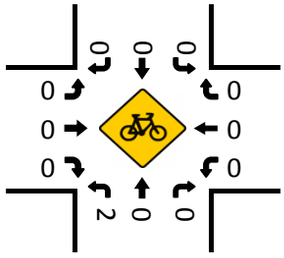
PM	1952	8	558	1186	90	PM
NOON	0	0	0	0	0	NOON
AM	1610	6	328	1076	20	AM

CONTROL			
0			
TEV	3782	0	4917
	AM	NOON	PM
PHF	0.91		0.99

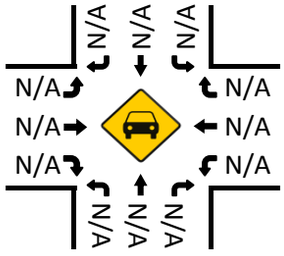
Total Vehicles (AM)



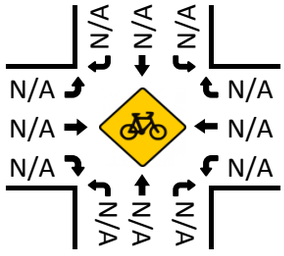
Bikes (AM)



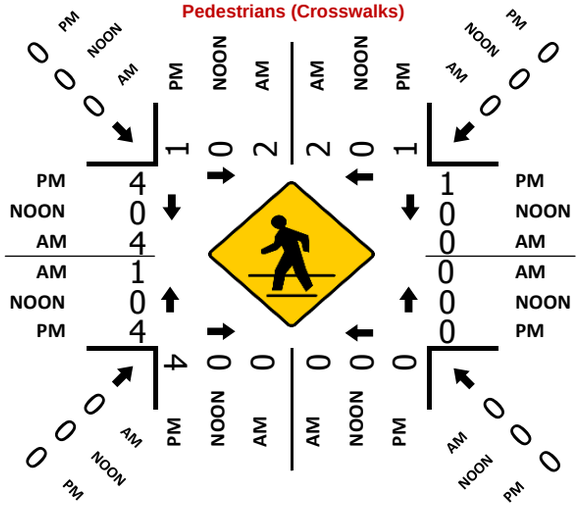
Total Vehicles (Noon)



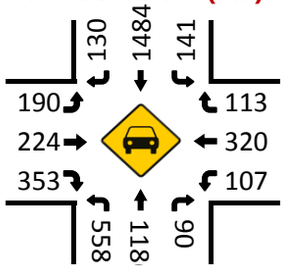
Bikes (NOON)



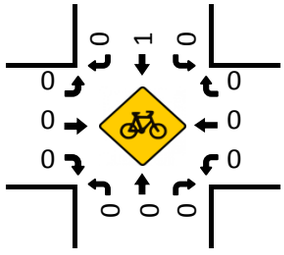
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Foothills Blvd & Baseline Rd
City: Roseville
Control:

Project ID: 18-07372-012
Date: 10/17/2018

Total

NS/EW Streets:	Foothills Blvd				Foothills Blvd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	59	187	8	1	8	255	19	0	18	35	152	0	28	19	11	0	800
7:15 AM	60	219	11	0	7	202	24	0	34	60	143	0	24	31	14	0	829
7:30 AM	88	280	0	1	13	267	26	1	41	55	124	1	28	29	18	0	972
7:45 AM	86	295	2	0	17	278	20	0	50	72	132	2	28	40	22	0	1044
8:00 AM	85	245	7	3	25	244	20	0	38	42	131	1	11	28	11	0	891
8:15 AM	69	256	11	2	20	225	15	0	26	54	116	0	20	33	28	0	875
8:30 AM	65	233	13	3	25	242	15	0	26	56	118	0	39	35	41	0	911
8:45 AM	53	184	5	0	18	181	18	0	44	46	138	1	30	39	22	0	779
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	565	1899	57	10	133	1894	157	1	277	420	1054	5	208	254	167	0	7101
APPROACH %'s :	22.32%	75.03%	2.25%	0.40%	6.09%	86.68%	7.19%	0.05%	15.77%	23.92%	60.02%	0.28%	33.07%	40.38%	26.55%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	328	1076	20	6	75	1014	81	1	155	223	503	4	87	130	79	0	3782
PEAK HR FACTOR :	0.932	0.912	0.455	0.500	0.750	0.912	0.779	0.250	0.775	0.774	0.953	0.500	0.777	0.813	0.705	0.000	0.906
	0.933				0.929				0.864				0.822				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	129	213	11	3	25	299	34	0	39	51	95	0	31	65	22	0	1017
4:15 PM	129	248	14	1	33	393	44	0	45	52	109	2	31	72	24	0	1197
4:30 PM	149	279	22	0	35	325	36	0	45	28	85	3	29	67	24	0	1127
4:45 PM	133	280	22	2	37	371	37	0	51	63	83	2	30	83	28	0	1222
5:00 PM	134	301	32	3	43	376	26	0	42	58	82	2	26	72	30	0	1227
5:15 PM	137	279	17	1	29	384	41	0	46	62	94	6	29	77	26	0	1228
5:30 PM	154	326	19	2	32	353	26	0	51	41	94	3	22	88	29	0	1240
5:45 PM	128	259	12	0	42	268	36	0	60	63	109	4	28	80	31	0	1120
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1093	2185	149	12	276	2769	280	0	379	418	751	22	226	604	214	0	9378
APPROACH %'s :	31.78%	63.54%	4.33%	0.35%	8.30%	83.28%	8.42%	0.00%	24.14%	26.62%	47.83%	1.40%	21.65%	57.85%	20.50%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	558	1186	90	8	141	1484	130	0	190	224	353	13	107	320	113	0	4917
PEAK HR FACTOR :	0.906	0.910	0.703	0.667	0.820	0.966	0.793	0.000	0.931	0.889	0.939	0.542	0.892	0.909	0.942	0.000	0.991
	0.919				0.966				0.938				0.957				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Foothills Blvd & Baseline Rd
City: Roseville
Control: 0

Project ID: 18-07372-012
Date: 10/17/2018

Bikes

NS/EW Streets:	Foothills Blvd				Foothills Blvd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	4
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.500																

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
4:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	1	0	0	0	1	0	0	0	2	0	0	0	1	0	0	7
APPROACH %'s :	66.67%	33.33%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
					0.250												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Foothills Blvd & Baseline Rd
City: Roseville

Project ID: 18-07372-012
Date: 10/17/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Foothills Blvd		Foothills Blvd		Baseline Rd		Baseline Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	1	0	0	0	0	0	0	1
7:15 AM	0	1	1	0	0	0	3	1	6
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	2	0	0	0	0	0	1	3
8:00 AM	2	0	0	0	0	0	1	3	6
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	1
8:45 AM	0	1	0	0	0	0	1	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	5	1	0	0	1	5	5	19
APPROACH %'s :	28.57%	71.43%	100.00%	0.00%	0.00%	100.00%	50.00%	50.00%	
PEAK HR :	**07:30 AM - 08:30 AM**								TOTAL
PEAK HR VOL :	2	2	0	0	0	0	1	4	9
PEAK HR FACTOR :	0.250	0.250					0.250	0.333	0.375
	0.500						0.313		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	1	0	1	0	0	1	0	3
4:15 PM	2	1	2	0	0	0	2	1	8
4:30 PM	0	0	0	1	1	0	0	2	4
4:45 PM	0	0	1	0	0	0	1	0	2
5:00 PM	0	0	0	0	0	0	0	1	1
5:15 PM	1	0	0	0	0	0	3	3	7
5:30 PM	0	1	3	0	0	1	0	0	5
5:45 PM	1	0	0	0	0	0	2	2	5
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	4	3	6	2	1	1	9	9	35
APPROACH %'s :	57.14%	42.86%	75.00%	25.00%	50.00%	50.00%	50.00%	50.00%	
PEAK HR :	**04:45 PM - 05:45 PM**								TOTAL
PEAK HR VOL :	1	1	4	0	0	1	4	4	15
PEAK HR FACTOR :	0.250	0.250	0.333			0.250	0.333	0.333	0.536
	0.500		0.333		0.250		0.333		

Prepared by NDS/ATD

VOLUME

PFE Rd Bet. Walerga Rd & Cook Riolo Rd

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,667	2,633	5,300

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		1		2		12:00			28		19		47	
00:15			2		2		4		12:15			30		39		69	
00:30			1		2		3		12:30			43		26		69	
00:45			6	10	3	8	9	18	12:45			40	141	27	111	67	252
01:00			1		4		5		13:00			40		39		79	
01:15			5		3		8		13:15			34		42		76	
01:30			4		1		5		13:30			40		31		71	
01:45			1	11	1	9	2	20	13:45			35	149	29	141	64	290
02:00			3		0		3		14:00			41		27		68	
02:15			0		2		2		14:15			43		43		86	
02:30			3		2		5		14:30			51		72		123	
02:45			1	7	2	6	3	13	14:45			39	174	66	208	105	382
03:00			1		1		2		15:00			43		65		108	
03:15			1		0		1		15:15			50		48		98	
03:30			1		1		2		15:30			53		66		119	
03:45			2	5	2	4	4	9	15:45			49	195	62	241	111	436
04:00			5		2		7		16:00			46		75		121	
04:15			3		1		4		16:15			54		62		116	
04:30			8		3		11		16:30			31		57		88	
04:45			10	26	4	10	14	36	16:45			53	184	79	273	132	457
05:00			7		4		11		17:00			40		71		111	
05:15			9		9		18		17:15			43		87		130	
05:30			14		9		23		17:30			54		85		139	
05:45			22	52	15	37	37	89	17:45			43	180	52	295	95	475
06:00			27		9		36		18:00			52		58		110	
06:15			36		17		53		18:15			47		52		99	
06:30			37		13		50		18:30			44		52		96	
06:45			48	148	21	60	69	208	18:45			31	174	38	200	69	374
07:00			58		39		97		19:00			31		32		63	
07:15			76		47		123		19:15			23		42		65	
07:30			93		53		146		19:30			27		26		53	
07:45			100	327	33	172	133	499	19:45			23	104	30	130	53	234
08:00			61		43		104		20:00			17		22		39	
08:15			42		41		83		20:15			26		17		43	
08:30			43		24		67		20:30			18		21		39	
08:45			37	183	34	142	71	325	20:45			11	72	25	85	36	157
09:00			40		27		67		21:00			14		18		32	
09:15			36		22		58		21:15			22		29		51	
09:30			33		18		51		21:30			15		30		45	
09:45			37	146	31	98	68	244	21:45			8	59	8	85	16	144
10:00			42		23		65		22:00			9		17		26	
10:15			27		26		53		22:15			3		14		17	
10:30			38		21		59		22:30			6		9		15	
10:45			36	143	34	104	70	247	22:45			12	30	8	48	20	78
11:00			25		32		57		23:00			9		14		23	
11:15			37		39		76		23:15			5		5		10	
11:30			28		36		64		23:30			3		2		5	
11:45			33	123	36	143	69	266	23:45			7	24	2	23	9	47
TOTALS				1181		793		1974	TOTALS				1486		1840		3326
SPLIT %				59.8%		40.2%		37.2%	SPLIT %				44.7%		55.3%		62.8%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,667	2,633	5,300

AM Peak Hour			07:15	07:15	07:15	PM Peak Hour			15:30	16:45	16:45
AM Pk Volume			330	176	506	PM Pk Volume			202	322	512
Pk Hr Factor			0.825	0.830	0.866	Pk Hr Factor			0.935	0.925	0.921
7 - 9 Volume	0	0	510	314	824	4 - 6 Volume	0	0	364	568	932
7 - 9 Peak Hour			07:15	07:15	07:15	4 - 6 Peak Hour			16:45	16:45	16:45
7 - 9 Pk Volume	0	0	330	176	506	4 - 6 Pk Volume	0	0	190	322	512
Pk Hr Factor	0.000	0.000	0.825	0.830	0.866	Pk Hr Factor	0.000	0.000	0.880	0.925	0.921

Prepared by NDS/ATD

VOLUME

PFE Rd Bet. Cook Riolo Rd & Antelope Rd

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,543	3,162	6,705

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		1		4		12:00			30		37		67	
00:15			0		2		2		12:15			29		25		54	
00:30			1		1		2		12:30			50		40		90	
00:45			2	6	2	6	4	12	12:45			31	140	49	151	80	291
01:00			1		3		4		13:00			60		45		105	
01:15			6		3		9		13:15			51		43		94	
01:30			3		2		5		13:30			46		31		77	
01:45			1	11	0	8	1	19	13:45			42	199	52	171	94	370
02:00			1		2		3		14:00			48		43		91	
02:15			0		3		3		14:15			61		70		131	
02:30			3		1		4		14:30			110		69		179	
02:45			2	6	2	8	4	14	14:45			69	288	73	255	142	543
03:00			2		2		4		15:00			55		66		121	
03:15			2		0		2		15:15			66		70		136	
03:30			1		1		2		15:30			81		81		162	
03:45			3	8	1	4	4	12	15:45			52	254	66	283	118	537
04:00			6		2		8		16:00			49		87		136	
04:15			4		2		6		16:15			62		66		128	
04:30			9		1		10		16:30			49		69		118	
04:45			20	39	1	6	21	45	16:45			49	209	81	303	130	512
05:00			15		2		17		17:00			54		103		157	
05:15			20		6		26		17:15			59		104		163	
05:30			23		10		33		17:30			50		88		138	
05:45			40	98	14	32	54	130	17:45			75	238	75	370	150	608
06:00			36		8		44		18:00			57		72		129	
06:15			55		24		79		18:15			51		68		119	
06:30			53		15		68		18:30			40		57		97	
06:45			80	224	36	83	116	307	18:45			45	193	42	239	87	432
07:00			93		31		124		19:00			32		40		72	
07:15			104		62		166		19:15			24		36		60	
07:30			119		62		181		19:30			26		23		49	
07:45			128	444	93	248	221	692	19:45			39	121	26	125	65	246
08:00			143		78		221		20:00			21		54		75	
08:15			73		35		108		20:15			19		28		47	
08:30			65		37		102		20:30			16		21		37	
08:45			58	339	35	185	93	524	20:45			13	69	29	132	42	201
09:00			52		28		80		21:00			11		32		43	
09:15			56		27		83		21:15			18		26		44	
09:30			48		22		70		21:30			16		26		42	
09:45			52	208	32	109	84	317	21:45			12	57	19	103	31	160
10:00			40		24		64		22:00			16		19		35	
10:15			43		21		64		22:15			5		16		21	
10:30			45		24		69		22:30			10		14		24	
10:45			41	169	31	100	72	269	22:45			10	41	11	60	21	101
11:00			45		36		81		23:00			10		11		21	
11:15			43		43		86		23:15			8		8		16	
11:30			36		36		72		23:30			3		6		9	
11:45			27	151	36	151	63	302	23:45			10	31	5	30	15	61
TOTALS				1703		940		2643	TOTALS				1840		2222		4062
SPLIT %				64.4%		35.6%		39.4%	SPLIT %				45.3%		54.7%		60.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,543	3,162	6,705

AM Peak Hour			07:15	07:15	07:15	PM Peak Hour			14:30	16:45	17:00
AM Pk Volume			494	295	789	PM Pk Volume			300	376	608
Pk Hr Factor			0.864	0.793	0.893	Pk Hr Factor			0.682	0.904	0.933
7 - 9 Volume	0	0	783	433	1216	4 - 6 Volume	0	0	447	673	1120
7 - 9 Peak Hour			07:15	07:15	07:15	4 - 6 Peak Hour			17:00	16:45	17:00
7 - 9 Pk Volume	0	0	494	295	789	4 - 6 Pk Volume	0	0	238	376	608
Pk Hr Factor	0.000	0.000	0.864	0.793	0.893	Pk Hr Factor	0.000	0.000	0.793	0.904	0.933

Prepared by NDS/ATD

VOLUME

Cook Riolo Rd Bet. Baseline Rd & Vineyard Rd

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_003

DAILY TOTALS	NB	SB	EB	WB	Total
	1,885	1,821	0	0	3,706

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	0		0						0		12:00	20		19						39	
00:15	2		3						5		12:15	19		22						41	
00:30	3		0						3		12:30	15		30						45	
00:45	0	5	1	4					1	9	12:45	20	74	24	95					44	169
01:00	0		2						2		13:00	22		35						57	
01:15	1		2						3		13:15	21		22						43	
01:30	0		0						0		13:30	16		18						34	
01:45	1	2	0	4					1	6	13:45	30	89	19	94					49	183
02:00	1		0						1		14:00	26		52						78	
02:15	0		1						1		14:15	44		36						80	
02:30	1		1						2		14:30	60		40						100	
02:45	0	2	1	3					1	5	14:45	52	182	48	176					100	358
03:00	2		0						2		15:00	51		47						98	
03:15	1		0						1		15:15	24		50						74	
03:30	0		0						0		15:30	43		31						74	
03:45	0	3	0						0	3	15:45	32	150	29	157					61	307
04:00	0		1						1		16:00	45		29						74	
04:15	1		1						2		16:15	53		34						87	
04:30	3		4						7		16:30	41		31						72	
04:45	1	5	4	10					5	15	16:45	45	184	28	122					73	306
05:00	2		5						7		17:00	53		29						82	
05:15	1		5						6		17:15	59		25						84	
05:30	8		4						12		17:30	55		39						94	
05:45	8	19	7	21					15	40	17:45	41	208	62	155					103	363
06:00	10		9						19		18:00	42		32						74	
06:15	13		12						25		18:15	36		29						65	
06:30	8		23						31		18:30	28		24						52	
06:45	13	44	25	69					38	113	18:45	24	130	40	125					64	255
07:00	27		40						67		19:00	22		35						57	
07:15	42		41						83		19:15	19		28						47	
07:30	37		46						83		19:30	10		26						36	
07:45	36	142	68	195					104	337	19:45	20	71	37	126					57	197
08:00	58		37						95		20:00	24		17						41	
08:15	39		28						67		20:15	21		13						34	
08:30	23		25						48		20:30	15		11						26	
08:45	23	143	27	117					50	260	20:45	25	85	9	50					34	135
09:00	21		23						44		21:00	11		16						27	
09:15	17		13						30		21:15	15		11						26	
09:30	18		16						34		21:30	8		13						21	
09:45	23	79	23	75					46	154	21:45	12	46	9	49					21	95
10:00	31		21						52		22:00	5		6						11	
10:15	22		13						35		22:15	0		3						3	
10:30	16		17						33		22:30	9		8						17	
10:45	20	89	22	73					42	162	22:45	5	19	4	21					9	40
11:00	22		14						36		23:00	2		3						5	
11:15	30		16						46		23:15	1		4						5	
11:30	26		21						47		23:30	2		1						3	
11:45	29	107	18	69					47	176	23:45	2	7	3	11					5	18
TOTALS		640		640						1280	TOTALS		1245		1181						2426
SPLIT %		50.0%		50.0%						34.5%	SPLIT %		51.3%		48.7%						65.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,885	1,821	0	0	3,706

AM Peak Hour	07:15	07:00			07:15	PM Peak Hour	16:45	14:30			14:15
AM Pk Volume	173	195			365	PM Pk Volume	212	185			378
Pk Hr Factor	0.746	0.717			0.877	Pk Hr Factor	0.898	0.925			0.945
7 - 9 Volume	285	312	0	0	597	4 - 6 Volume	392	277	0	0	669
7 - 9 Peak Hour	07:15	07:00			07:15	4 - 6 Peak Hour	16:45	17:00			17:00
7 - 9 Pk Volume	173	195	0	0	365	4 - 6 Pk Volume	212	155	0	0	363
Pk Hr Factor	0.746	0.717	0.000	0.000	0.877	Pk Hr Factor	0.898	0.625	0.000	0.000	0.881

Prepared by NDS/ATD

VOLUME

Cook Riolo Rd Bet. Vineyard Rd & Creekview Ranch Middle School

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_004

DAILY TOTALS	NB	SB	EB	WB	Total
	2,304	2,663	0	0	4,967

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	2		3						5		12:00	23		20						43	
00:15	2		2						4		12:15	22		37						59	
00:30	2		3						5		12:30	19		28						47	
00:45	0	6	2	10					2	16	12:45	33	97	33	118					66	215
01:00	0		2						2		13:00	34		41						75	
01:15	0		3						3		13:15	32		33						65	
01:30	2		0						2		13:30	18		31						49	
01:45	0	2	1	6					1	8	13:45	30	114	38	143					68	257
02:00	3		0						3		14:00	27		64						91	
02:15	0		1						1		14:15	57		68						125	
02:30	0		0						0		14:30	119		72						191	
02:45	0	3	1	2					1	5	14:45	63	266	52	256					115	522
03:00	1		1						2		15:00	41		49						90	
03:15	0		0						0		15:15	36		67						103	
03:30	0		0						0		15:30	61		50						111	
03:45	1	2	0	1					1	3	15:45	42	180	52	218					94	398
04:00	0		1						1		16:00	52		42						94	
04:15	1		1						2		16:15	55		68						123	
04:30	3		4						7		16:30	44		61						105	
04:45	1	5	4	10					5	15	16:45	47	198	53	224					100	422
05:00	4		5						9		17:00	54		54						108	
05:15	3		5						8		17:15	56		65						121	
05:30	7		5						12		17:30	53		66						119	
05:45	8	22	11	26					19	48	17:45	35	198	75	260					110	458
06:00	17		9						26		18:00	46		38						84	
06:15	14		18						32		18:15	46		45						91	
06:30	24		20						44		18:30	32		37						69	
06:45	22	77	40	87					62	164	18:45	17	141	44	164					61	305
07:00	43		52						95		19:00	22		42						64	
07:15	67		68						135		19:15	10		36						46	
07:30	53		66						119		19:30	15		33						48	
07:45	74	237	113	299					187	536	19:45	21	68	50	161					71	229
08:00	123		98						221		20:00	23		15						38	
08:15	45		38						83		20:15	22		18						40	
08:30	31		34						65		20:30	9		18						27	
08:45	26	225	41	211					67	436	20:45	17	71	15	66					32	137
09:00	22		31						53		21:00	12		21						33	
09:15	25		19						44		21:15	13		22						35	
09:30	18		12						30		21:30	5		18						23	
09:45	28	93	27	89					55	182	21:45	11	41	10	71					21	112
10:00	32		19						51		22:00	5		12						17	
10:15	26		20						46		22:15	3		10						13	
10:30	23		28						51		22:30	8		9						17	
10:45	22	103	25	92					47	195	22:45	7	23	8	39					15	62
11:00	31		24						55		23:00	1		6						7	
11:15	42		21						63		23:15	5		2						7	
11:30	23		30						53		23:30	1		3						4	
11:45	27	123	22	97					49	220	23:45	2	9	2	13					4	22
TOTALS		898		930						1828	TOTALS		1406		1733						3139
SPLIT %		49.1%		50.9%						36.8%	SPLIT %		44.8%		55.2%						63.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	2,304	2,663	0	0	4,967

AM Peak Hour	07:15	07:15			07:15	PM Peak Hour	14:15	17:00			14:00
AM Pk Volume	317	345			662	PM Pk Volume	280	260			522
Pk Hr Factor	0.644	0.763			0.749	Pk Hr Factor	0.588	0.867			0.683
7 - 9 Volume	462	510	0	0	972	4 - 6 Volume	396	484	0	0	880
7 - 9 Peak Hour	07:15	07:15			07:15	4 - 6 Peak Hour	16:45	17:00			17:00
7 - 9 Pk Volume	317	345	0	0	662	4 - 6 Pk Volume	210	260	0	0	458
Pk Hr Factor	0.644	0.763	0.000	0.000	0.749	Pk Hr Factor	0.938	0.867	0.000	0.000	0.946

Prepared by NDS/ATD

VOLUME

Cook Riolo Rd Bet. Creekview Ranch Middle School & PFE Rd

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_005

DAILY TOTALS	NB	SB	EB	WB	Total
	2,087	2,389	0	0	4,476

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	0		1						1		12:00	19		12						31	
00:15	3		1						4		12:15	13		27						40	
00:30	2		1						3		12:30	20		21						41	
00:45	0	5	0	3					0	8	12:45	46	98	24	84					70	182
01:00	0		1						1		13:00	30		39						69	
01:15	0		3						3		13:15	24		32						56	
01:30	2		0						2		13:30	24		28						52	
01:45	0	2	1	5					1	7	13:45	46	124	24	123					70	247
02:00	3		0						3		14:00	32		33						65	
02:15	0		0						0		14:15	67		48						115	
02:30	0		0						0		14:30	57		115						172	
02:45	0	3	1	1					1	4	14:45	38	194	58	254					96	448
03:00	1		1						2		15:00	40		46						86	
03:15	0		0						0		15:15	37		47						84	
03:30	0		0						0		15:30	50		69						119	
03:45	1	2	1	2					2	4	15:45	44	171	35	197					79	368
04:00	0		1						1		16:00	51		43						94	
04:15	1		2						3		16:15	46		58						104	
04:30	2		3						5		16:30	35		48						83	
04:45	2	5	10	16					12	21	16:45	48	180	48	197					96	377
05:00	0		5						5		17:00	54		53						107	
05:15	1		7						8		17:15	44		56						100	
05:30	6		10						16		17:30	47		65						112	
05:45	7	14	13	35					20	49	17:45	40	185	65	239					105	424
06:00	14		9						23		18:00	41		39						80	
06:15	17		15						32		18:15	47		40						87	
06:30	17		22						39		18:30	24		33						57	
06:45	27	75	31	77					58	152	18:45	24	136	41	153					65	289
07:00	33		50						83		19:00	19		32						51	
07:15	52		48						100		19:15	13		24						37	
07:30	71		54						125		19:30	17		26						43	
07:45	112	268	90	242					202	510	19:45	17	66	43	125					60	191
08:00	90		116						206		20:00	29		10						39	
08:15	29		40						69		20:15	13		16						29	
08:30	26		25						51		20:30	11		12						23	
08:45	21	166	28	209					49	375	20:45	14	67	14	52					28	119
09:00	20		27						47		21:00	16		13						29	
09:15	21		24						45		21:15	15		22						37	
09:30	18		15						33		21:30	9		14						23	
09:45	20	79	22	88					42	167	21:45	8	48	9	58					17	106
10:00	24		17						41		22:00	6		10						16	
10:15	19		25						44		22:15	1		11						12	
10:30	12		24						36		22:30	5		8						13	
10:45	13	68	23	89					36	157	22:45	9	21	5	34					14	55
11:00	24		30						54		23:00	4		7						11	
11:15	28		22						50		23:15	4		2						6	
11:30	23		19						42		23:30	3		2						5	
11:45	22	97	20	91					42	188	23:45	2	13	4	15					6	28
TOTALS		784		858						1642	TOTALS		1303		1531						2834
SPLIT %		47.7%		52.3%						36.7%	SPLIT %		46.0%		54.0%						63.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	2,087	2,389	0	0	4,476

AM Peak Hour	07:15	07:15			07:15	PM Peak Hour	13:45	14:15			14:15
AM Pk Volume	325	308			633	PM Pk Volume	202	267			469
Pk Hr Factor	0.725	0.664			0.768	Pk Hr Factor	0.754	0.580			0.682
7 - 9 Volume	434	451	0	0	885	4 - 6 Volume	365	436	0	0	801
7 - 9 Peak Hour	07:15	07:15			07:15	4 - 6 Peak Hour	16:45	17:00			17:00
7 - 9 Pk Volume	325	308	0	0	633	4 - 6 Pk Volume	193	239	0	0	424
Pk Hr Factor	0.725	0.664	0.000	0.000	0.768	Pk Hr Factor	0.894	0.919	0.000	0.000	0.946

Prepared by NDS/ATD

VOLUME

Antelope Rd Bet. PFE Rd & Great Valley Dr

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_006

DAILY TOTALS	NB	SB	EB	WB	Total
	3,932	3,828	0	0	7,760

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	4		3						7		12:00	39		49						88	
00:15	4		3						7		12:15	40		44						84	
00:30	2		1						3		12:30	54		37						91	
00:45	1	11	1	8					2	19	12:45	62	195	42	172					104	367
01:00	2		6						8		13:00	48		42						90	
01:15	0		2						2		13:15	43		53						96	
01:30	1		3						4		13:30	52		50						102	
01:45	2	5	1	12					3	17	13:45	63	206	46	191					109	397
02:00	0		1						1		14:00	60		56						116	
02:15	3		0						3		14:15	80		61						141	
02:30	0		1						1		14:30	79		130						209	
02:45	3	6	0	2					3	8	14:45	86	305	75	322					161	627
03:00	4		3						7		15:00	63		93						156	
03:15	8		1						9		15:15	70		73						143	
03:30	8		2						10		15:30	65		121						186	
03:45	4	24	3	9					7	33	15:45	58	256	78	365					136	621
04:00	3		13						16		16:00	70		79						149	
04:15	5		2						7		16:15	77		85						162	
04:30	8		7						15		16:30	62		78						140	
04:45	16	32	18	40					34	72	16:45	83	292	61	303					144	595
05:00	17		12						29		17:00	84		114						198	
05:15	21		13						34		17:15	83		89						172	
05:30	41		11						52		17:30	65		72						137	
05:45	70	149	24	60					94	209	17:45	83	315	103	378					186	693
06:00	39		23						62		18:00	79		69						148	
06:15	69		32						101		18:15	81		66						147	
06:30	74		44						118		18:30	53		60						113	
06:45	72	254	66	165					138	419	18:45	43	256	59	254					102	510
07:00	65		76						141		19:00	41		42						83	
07:15	89		74						163		19:15	27		42						69	
07:30	113		72						185		19:30	29		47						76	
07:45	136	403	78	300					214	703	19:45	33	130	54	185					87	315
08:00	85		89						174		20:00	55		42						97	
08:15	65		61						126		20:15	25		28						53	
08:30	69		50						119		20:30	15		25						40	
08:45	45	264	52	252					97	516	20:45	30	125	28	123					58	248
09:00	32		34						66		21:00	22		39						61	
09:15	40		37						77		21:15	16		27						43	
09:30	57		36						93		21:30	24		33						57	
09:45	47	176	41	148					88	324	21:45	20	82	17	116					37	198
10:00	49		34						83		22:00	15		19						34	
10:15	34		47						81		22:15	12		18						30	
10:30	38		35						73		22:30	15		13						28	
10:45	42	163	36	152					78	315	22:45	13	55	14	64					27	119
11:00	47		41						88		23:00	7		18						25	
11:15	53		34						87		23:15	7		8						15	
11:30	54		46						100		23:30	4		10						14	
11:45	49	203	44	165					93	368	23:45	7	25	6	42					13	67
TOTALS		1690		1313						3003	TOTALS		2242		2515						4757
SPLIT %		56.3%		43.7%						38.7%	SPLIT %		47.1%		52.9%						61.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	3,932	3,828	0	0	7,760

AM Peak Hour	07:15	07:15			07:15	PM Peak Hour	16:45	17:00			17:00
AM Pk Volume	423	313			736	PM Pk Volume	315	378			693
Pk Hr Factor	0.778	0.879			0.860	Pk Hr Factor	0.938	0.829			0.875
7 - 9 Volume	667	552	0	0	1219	4 - 6 Volume	607	681	0	0	1288
7 - 9 Peak Hour	07:15	07:15			07:15	4 - 6 Peak Hour	16:45	17:00			17:00
7 - 9 Pk Volume	423	313	0	0	736	4 - 6 Pk Volume	315	378	0	0	693
Pk Hr Factor	0.778	0.879	0.000	0.000	0.860	Pk Hr Factor	0.938	0.829	0.000	0.000	0.875

Prepared by NDS/ATD

VOLUME

Vineyard Rd Bet. Crowder Ln & Cook Riolo Rd

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_007

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,336	1,297	2,633

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		1		2		12:00			15		18		33	
00:15			2		2		4		12:15			20		22		42	
00:30			1		0		1		12:30			21		29		50	
00:45			1	5	0	3	1	8	12:45			20	76	17	86	37	162
01:00			0		2		2		13:00			15		25		40	
01:15			1		0		1		13:15			17		26		43	
01:30			0		1		1		13:30			20		16		36	
01:45			0	1	0	3	0	4	13:45			19	71	20	87	39	158
02:00			0		0		0		14:00			28		25		53	
02:15			1		1		2		14:15			39		19		58	
02:30			0		0		0		14:30			27		37		64	
02:45			0	1	1	2	1	3	14:45			18	112	25	106	43	218
03:00			0		0		0		15:00			22		29		51	
03:15			1		0		1		15:15			16		29		45	
03:30			1		2		3		15:30			23		30		53	
03:45			1	3	0	2	1	5	15:45			21	82	29	117	50	199
04:00			1		2		3		16:00			26		31		57	
04:15			1		1		2		16:15			22		18		40	
04:30			2		0		2		16:30			22		20		42	
04:45			0	4	2	5	2	9	16:45			26	96	33	102	59	198
05:00			0		1		1		17:00			24		28		52	
05:15			3		0		3		17:15			17		29		46	
05:30			4		1		5		17:30			34		37		71	
05:45			12	19	2	4	14	23	17:45			23	98	36	130	59	228
06:00			8		4		12		18:00			17		24		41	
06:15			13		3		16		18:15			15		40		55	
06:30			12		9		21		18:30			16		23		39	
06:45			26	59	10	26	36	85	18:45			18	66	23	110	41	176
07:00			47		5		52		19:00			11		20		31	
07:15			46		12		58		19:15			14		12		26	
07:30			35		7		42		19:30			8		19		27	
07:45			40	168	17	41	57	209	19:45			9	42	19	70	28	112
08:00			38		38		76		20:00			3		19		22	
08:15			20		20		40		20:15			6		12		18	
08:30			27		19		46		20:30			6		10		16	
08:45			21	106	7	84	28	190	20:45			14	29	10	51	24	80
09:00			22		19		41		21:00			7		13		20	
09:15			25		13		38		21:15			9		9		18	
09:30			20		11		31		21:30			5		5		10	
09:45			17	84	12	55	29	139	21:45			8	29	7	34	15	63
10:00			16		22		38		22:00			3		4		7	
10:15			19		23		42		22:15			1		6		7	
10:30			23		14		37		22:30			2		5		7	
10:45			15	73	19	78	34	151	22:45			9	15	4	19	13	34
11:00			21		9		30		23:00			1		5		6	
11:15			22		18		40		23:15			1		3		4	
11:30			20		20		40		23:30			5		5		10	
11:45			26	89	20	67	46	156	23:45			1	8	2	15	3	23
TOTALS				612		370		982	TOTALS				724		927		1651
SPLIT %				62.3%		37.7%		37.3%	SPLIT %				43.9%		56.1%		62.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,336	1,297	2,633

AM Peak Hour			07:00	07:45	07:15	PM Peak Hour			13:45	17:30	16:45
AM Pk Volume			168	94	233	PM Pk Volume			113	137	228
Pk Hr Factor			0.894	0.618	0.766	Pk Hr Factor			0.724	0.856	0.803
7 - 9 Volume	0	0	274	125	399	4 - 6 Volume	0	0	194	232	426
7 - 9 Peak Hour			07:00	07:45	07:15	4 - 6 Peak Hour			16:45	17:00	16:45
7 - 9 Pk Volume	0	0	168	94	233	4 - 6 Pk Volume	0	0	101	130	228
Pk Hr Factor	0.000	0.000	0.894	0.618	0.766	Pk Hr Factor	0.000	0.000	0.743	0.878	0.803

Prepared by NDS/ATD

VOLUME

Vineyard Rd Bet. Cook Riolo Rd & Brady Ln

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_008

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,964	2,350	4,314

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		3		4		12:00			23		21		44	
00:15			5		3		8		12:15			28		35		63	
00:30			1		4		5		12:30			30		29		59	
00:45			1	8	2	12	3	20	12:45			28	109	27	112	55	221
01:00			0		3		3		13:00			24		31		55	
01:15			0		0		0		13:15			28		37		65	
01:30			1		0		1		13:30			23		26		49	
01:45			0	1	2	5	2	6	13:45			21	96	44	138	65	234
02:00			2		0		2		14:00			32		37		69	
02:15			1		2		3		14:15			42		53		95	
02:30			1		0		1		14:30			76		50		126	
02:45			0	4	1	3	1	7	14:45			42	192	52	192	94	384
03:00			0		1		1		15:00			32		50		82	
03:15			1		2		3		15:15			33		53		86	
03:30			1		1		2		15:30			40		46		86	
03:45			2	4	0	4	2	8	15:45			42	147	64	213	106	360
04:00			2		2		4		16:00			42		51		93	
04:15			1		2		3		16:15			34		52		86	
04:30			3		0		3		16:30			27		65		92	
04:45			3	9	2	6	5	15	16:45			31	134	53	221	84	355
05:00			2		2		4		17:00			31		65		96	
05:15			6		1		7		17:15			24		74		98	
05:30			5		5		10		17:30			42		74		116	
05:45			12	25	3	11	15	36	17:45			23	120	49	262	72	382
06:00			21		8		29		18:00			31		38		69	
06:15			16		10		26		18:15			26		57		83	
06:30			28		13		41		18:30			29		48		77	
06:45			32	97	27	58	59	155	18:45			16	102	37	180	53	282
07:00			56		22		78		19:00			20		34		54	
07:15			59		24		83		19:15			11		24		35	
07:30			46		35		81		19:30			11		29		40	
07:45			59	220	44	125	103	345	19:45			15	57	34	121	49	178
08:00			80		65		145		20:00			5		21		26	
08:15			37		34		71		20:15			9		20		29	
08:30			34		30		64		20:30			8		25		33	
08:45			28	179	31	160	59	339	20:45			12	34	19	85	31	119
09:00			33		27		60		21:00			12		24		36	
09:15			31		19		50		21:15			14		23		37	
09:30			30		17		47		21:30			3		12		15	
09:45			19	113	19	82	38	195	21:45			5	34	6	65	11	99
10:00			30		31		61		22:00			4		8		12	
10:15			24		25		49		22:15			4		13		17	
10:30			39		31		70		22:30			5		13		18	
10:45			20	113	26	113	46	226	22:45			10	23	4	38	14	61
11:00			31		19		50		23:00			3		9		12	
11:15			38		29		67		23:15			6		4		10	
11:30			29		34		63		23:30			4		8		12	
11:45			29	127	36	118	65	245	23:45			3	16	5	26	8	42
TOTALS				900		697		1597	TOTALS				1064		1653		2717
SPLIT %				56.4%		43.6%		37.0%	SPLIT %				39.2%		60.8%		63.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,964	2,350	4,314

AM Peak Hour			07:15	07:30	07:15	PM Peak Hour			14:00	16:45	14:15
AM Pk Volume			244	178	412	PM Pk Volume			192	266	397
Pk Hr Factor			0.763	0.685	0.710	Pk Hr Factor			0.632	0.899	0.788
7 - 9 Volume	0	0	399	285	684	4 - 6 Volume	0	0	254	483	737
7 - 9 Peak Hour			07:15	07:30	07:15	4 - 6 Peak Hour			16:00	16:45	16:45
7 - 9 Pk Volume	0	0	244	178	412	4 - 6 Pk Volume	0	0	134	266	394
Pk Hr Factor	0.000	0.000	0.763	0.685	0.710	Pk Hr Factor	0.000	0.000	0.798	0.899	0.849

Prepared by NDS/ATD

VOLUME

Vineyard Rd Bet. Brady Ln & Foothills Blvd

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_009

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,648	2,978	5,626

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		5		6		12:00			36		33		69	
00:15			5		5		10		12:15			29		39		68	
00:30			1		3		4		12:30			43		40		83	
00:45			1	8	2	15	3	23	12:45			41	149	44	156	85	305
01:00			0		2		2		13:00			28		37		65	
01:15			2		2		4		13:15			36		43		79	
01:30			0		1		1		13:30			27		30		57	
01:45			0	2	2	7	2	9	13:45			28	119	47	157	75	276
02:00			1		0		1		14:00			48		52		100	
02:15			2		3		5		14:15			45		64		109	
02:30			0		1		1		14:30			82		64		146	
02:45			2	5	2	6	4	11	14:45			61	236	61	241	122	477
03:00			1		1		2		15:00			44		61		105	
03:15			1		2		3		15:15			41		53		94	
03:30			1		2		3		15:30			48		64		112	
03:45			4	7	1	6	5	13	15:45			57	190	83	261	140	451
04:00			2		2		4		16:00			50		59		109	
04:15			4		3		7		16:15			38		59		97	
04:30			8		1		9		16:30			36		82		118	
04:45			4	18	4	10	8	28	16:45			36	160	65	265	101	425
05:00			6		1		7		17:00			44		88		132	
05:15			8		2		10		17:15			40		98		138	
05:30			11		5		16		17:30			54		85		139	
05:45			20	45	4	12	24	57	17:45			33	171	66	337	99	508
06:00			32		9		41		18:00			34		62		96	
06:15			25		16		41		18:15			31		71		102	
06:30			41		21		62		18:30			38		59		97	
06:45			56	154	24	70	80	224	18:45			25	128	54	246	79	374
07:00			75		25		100		19:00			21		43		64	
07:15			86		34		120		19:15			18		34		52	
07:30			79		50		129		19:30			18		42		60	
07:45			61	301	43	152	104	453	19:45			21	78	33	152	54	230
08:00			100		65		165		20:00			13		28		41	
08:15			49		40		89		20:15			20		34		54	
08:30			51		41		92		20:30			15		37		52	
08:45			42	242	41	187	83	429	20:45			12	60	21	120	33	180
09:00			47		32		79		21:00			21		33		54	
09:15			36		25		61		21:15			16		25		41	
09:30			39		23		62		21:30			10		22		32	
09:45			29	151	36	116	65	267	21:45			7	54	10	90	17	144
10:00			40		35		75		22:00			9		11		20	
10:15			39		31		70		22:15			4		14		18	
10:30			34		36		70		22:30			12		18		30	
10:45			38	151	32	134	70	285	22:45			9	34	7	50	16	84
11:00			43		32		75		23:00			4		9		13	
11:15			47		43		90		23:15			7		10		17	
11:30			42		40		82		23:30			2		10		12	
11:45			34	166	39	154	73	320	23:45			6	19	5	34	11	53
TOTALS				1250		869		2119	TOTALS				1398		2109		3507
SPLIT %				59.0%		41.0%		37.7%	SPLIT %				39.9%		60.1%		62.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,648	2,978	5,626

AM Peak Hour			07:15	07:30	07:15	PM Peak Hour			14:00	17:00	16:45
AM Pk Volume			326	198	518	PM Pk Volume			236	337	510
Pk Hr Factor			0.815	0.762	0.785	Pk Hr Factor			0.720	0.860	0.917
7 - 9 Volume	0	0	543	339	882	4 - 6 Volume	0	0	331	602	933
7 - 9 Peak Hour			07:15	07:30	07:15	4 - 6 Peak Hour			16:45	17:00	16:45
7 - 9 Pk Volume	0	0	326	198	518	4 - 6 Pk Volume	0	0	174	337	510
Pk Hr Factor	0.000	0.000	0.815	0.762	0.785	Pk Hr Factor	0.000	0.000	0.806	0.860	0.917

Prepared by NDS/ATD

VOLUME

Brady Ln Bet. Baseline Rd & Vineyard Rd

Day: Thursday
Date: 10/18/2018

City: Roseville
Project #: CA18_7373_010

DAILY TOTALS	NB	SB	EB	WB	Total
	492	519	0	0	1,011

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	2		0						2		12:00	2		10						12	
00:15	0		0						0		12:15	9		7						16	
00:30	1		0						1		12:30	11		8						19	
00:45	0	3	1	1					1	4	12:45	5	27	11	36					16	63
01:00	0		1						1		13:00	9		8						17	
01:15	0		0						0		13:15	7		7						14	
01:30	2		0						2		13:30	6		9						15	
01:45	0	2	0	1					0	3	13:45	5	27	9	33					14	60
02:00	0		0						0		14:00	10		7						17	
02:15	1		0						1		14:15	8		7						15	
02:30	1		2						3		14:30	14		5						19	
02:45	0	2	1	3					1	5	14:45	7	39	13	32					20	71
03:00	0		0						0		15:00	7		9						16	
03:15	0		0						0		15:15	4		13						17	
03:30	0		0						0		15:30	14		12						26	
03:45	0		1	1					1	1	15:45	6	31	12	46					18	77
04:00	0		1						1		16:00	5		11						16	
04:15	0		0						0		16:15	8		8						16	
04:30	0		1						1		16:30	8		6						14	
04:45	0		0	2					0	2	16:45	4	25	11	36					15	61
05:00	3		1						4		17:00	10		14						24	
05:15	1		0						1		17:15	20		13						33	
05:30	0		3						3		17:30	15		8						23	
05:45	0	4	3	7					3	11	17:45	16	61	12	47					28	108
06:00	3		4						7		18:00	7		5						12	
06:15	5		5						10		18:15	12		6						18	
06:30	6		6						12		18:30	7		12						19	
06:45	2	16	14	29					16	45	18:45	8	34	8	31					16	65
07:00	10		3						13		19:00	7		8						15	
07:15	11		10						21		19:15	7		6						13	
07:30	10		13						23		19:30	6		6						12	
07:45	11	42	6	32					17	74	19:45	6	26	12	32					18	58
08:00	10		11						21		20:00	2		6						8	
08:15	14		7						21		20:15	4		5						9	
08:30	6		11						17		20:30	4		5						9	
08:45	8	38	9	38					17	76	20:45	3	13	3	19					6	32
09:00	5		7						12		21:00	1		6						7	
09:15	7		1						8		21:15	2		2						4	
09:30	2		5						7		21:30	7		2						9	
09:45	8	22	6	19					14	41	21:45	2	12	2	12					4	24
10:00	7		4						11		22:00	3		6						9	
10:15	7		6						13		22:15	1		4						5	
10:30	6		4						10		22:30	1		3						4	
10:45	7	27	8	22					15	49	22:45	0	5	0	13					0	18
11:00	7		6						13		23:00	1		1						2	
11:15	9		4						13		23:15	0		2						2	
11:30	11		5						16		23:30	2		0						2	
11:45	5	32	7	22					12	54	23:45	1	4	2	5					3	9
TOTALS		188		177						365	TOTALS		304		342						646
SPLIT %		51.5%		48.5%						36.1%	SPLIT %		47.1%		52.9%						63.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	492	519	0	0	1,011

AM Peak Hour	07:30	06:45			07:15	PM Peak Hour	17:00	15:15			17:00
AM Pk Volume	45	40			82	PM Pk Volume	61	48			108
Pk Hr Factor	0.804	0.714			0.891	Pk Hr Factor	0.763	0.923			0.818
7 - 9 Volume	80	70	0	0	150	4 - 6 Volume	86	83	0	0	169
7 - 9 Peak Hour	07:30	07:15			07:15	4 - 6 Peak Hour	17:00	17:00			17:00
7 - 9 Pk Volume	45	40	0	0	82	4 - 6 Pk Volume	61	47	0	0	108
Pk Hr Factor	0.804	0.769	0.000	0.000	0.891	Pk Hr Factor	0.763	0.839	0.000	0.000	0.818

KDA

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	49	651	42	530	119	131	51	367	68
v/c Ratio	0.37	0.86	0.33	0.37	0.08	0.60	0.19	0.82	0.15
Control Delay	66.6	47.8	66.2	28.0	0.1	65.7	1.5	61.2	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	47.8	66.2	28.0	0.1	65.7	1.5	61.2	5.5
Queue Length 50th (ft)	40	494	35	163	0	107	0	290	0
Queue Length 95th (ft)	86	#810	77	238	0	180	2	#483	26
Internal Link Dist (ft)		877		2983		1392		1822	
Turn Bay Length (ft)	500		500		280		75		415
Base Capacity (vph)	245	852	245	1627	1583	357	386	532	528
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.76	0.17	0.33	0.08	0.37	0.13	0.69	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	566	26	38	482	108	32	87	46	224	110	62
Future Volume (veh/h)	45	566	26	38	482	108	32	87	46	224	110	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	622	29	42	530	0	35	96	51	246	121	68
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	699	33	77	1387		48	131	154	289	142	377
Arrive On Green	0.05	0.39	0.39	0.04	0.39	0.00	0.10	0.10	0.10	0.24	0.24	0.24
Sat Flow, veh/h	1781	1773	83	1781	3554	1585	493	1353	1585	1213	597	1585
Grp Volume(v), veh/h	49	0	651	42	530	0	131	0	51	367	0	68
Grp Sat Flow(s),veh/h/ln	1781	0	1855	1781	1777	1585	1846	0	1585	1810	0	1585
Q Serve(g_s), s	2.4	0.0	29.6	2.1	9.7	0.0	6.2	0.0	2.7	17.5	0.0	3.1
Cycle Q Clear(g_c), s	2.4	0.0	29.6	2.1	9.7	0.0	6.2	0.0	2.7	17.5	0.0	3.1
Prop In Lane	1.00		0.04	1.00		1.00	0.27		1.00	0.67		1.00
Lane Grp Cap(c), veh/h	84	0	731	77	1387		179	0	154	430	0	377
V/C Ratio(X)	0.59	0.00	0.89	0.55	0.38		0.73	0.00	0.33	0.85	0.00	0.18
Avail Cap(c_a), veh/h	315	0	1087	315	2081		457	0	392	680	0	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.3	0.0	25.6	42.4	19.8	0.0	39.7	0.0	38.1	33.0	0.0	27.5
Incr Delay (d2), s/veh	6.4	0.0	6.6	5.9	0.2	0.0	5.6	0.0	1.2	6.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	13.0	1.0	3.7	0.0	3.0	0.0	1.1	8.0	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	0.0	32.1	48.3	19.9	0.0	45.3	0.0	39.3	39.1	0.0	27.7
LnGrp LOS	D	A	C	D	B		D	A	D	D	A	C
Approach Vol, veh/h		700			572	A		182			435	
Approach Delay, s/veh		33.3			22.0			43.6			37.3	
Approach LOS		C			C			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		13.4	8.2	41.3		27.5	7.9	41.7				
Change Period (Y+Rc), s		4.6	4.0	6.0		6.0	4.0	6.0				
Max Green Setting (Gmax), s		22.4	16.0	53.0		34.0	16.0	53.0				
Max Q Clear Time (g_c+I1), s		8.2	4.4	11.7		19.5	4.1	31.6				
Green Ext Time (p_c), s		0.6	0.1	3.5		2.0	0.0	4.0				

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	951	35	15	532	41	45
Future Vol, veh/h	951	35	15	532	41	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1012	37	16	566	44	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1049	0	1346	1031
Stage 1	-	-	-	-	1031	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	661	-	154	282
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	714	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	661	-	150	282
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	24.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	275	-	-	661	-
HCM Lane V/C Ratio	0.333	-	-	0.024	-
HCM Control Delay (s)	24.5	-	-	10.6	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	177	248	559	97	144	88	371	1196	22	84	1127	90
v/c Ratio	0.64	0.38	0.94	0.46	0.36	0.29	0.62	0.54	0.03	0.28	0.69	0.06
Control Delay	48.9	38.0	40.1	46.5	41.5	4.6	40.1	20.3	0.1	43.9	28.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	38.0	40.1	46.5	41.5	4.6	40.1	20.3	0.1	43.9	28.9	0.1
Queue Length 50th (ft)	91	66	111	51	40	0	99	183	0	22	197	0
Queue Length 95th (ft)	#208	128	#400	115	80	15	170	256	0	53	287	0
Internal Link Dist (ft)		293			630			691			1477	
Turn Bay Length (ft)	360		360	230		120	210		250	250		170
Base Capacity (vph)	331	646	594	455	828	474	844	2868	952	642	2559	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.38	0.94	0.21	0.17	0.19	0.44	0.42	0.02	0.13	0.44	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	223	503	87	130	79	334	1076	20	76	1014	81
Future Volume (veh/h)	159	223	503	87	130	79	334	1076	20	76	1014	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	248	337	97	144	88	371	1196	22	84	1127	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	669	298	128	484	216	494	2184	678	150	1675	
Arrive On Green	0.12	0.19	0.19	0.07	0.14	0.14	0.14	0.43	0.43	0.04	0.33	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	177	248	337	97	144	88	371	1196	22	84	1127	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.2	4.5	14.0	4.0	2.7	3.8	7.7	13.0	0.6	1.8	14.2	0.0
Cycle Q Clear(g_c), s	7.2	4.5	14.0	4.0	2.7	3.8	7.7	13.0	0.6	1.8	14.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	669	298	128	484	216	494	2184	678	150	1675	
V/C Ratio(X)	0.80	0.37	1.13	0.76	0.30	0.41	0.75	0.55	0.03	0.56	0.67	
Avail Cap(c_a), veh/h	383	669	298	527	956	426	976	3296	1023	743	2952	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.7	26.3	30.2	33.9	28.9	29.4	30.6	15.9	12.3	34.9	21.5	0.0
Incr Delay (d2), s/veh	6.7	0.3	91.7	8.9	0.3	1.2	2.3	0.2	0.0	3.3	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	1.9	12.7	2.0	1.1	1.5	3.1	4.3	0.2	0.8	5.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.4	26.7	121.8	42.8	29.2	30.6	32.9	16.1	12.4	38.1	22.0	0.0
LnGrp LOS	D	C	F	D	C	C	C	B	B	D	C	
Approach Vol, veh/h		762			329			1589			1211	A
Approach Delay, s/veh		71.5			33.6			20.0			23.1	
Approach LOS		E			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	37.8	13.2	16.1	14.6	30.4	9.3	20.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	48.0	16.0	20.0	21.0	43.0	22.0	14.0
Max Q Clear Time (g_c+I1), s	3.8	15.0	9.2	5.8	9.7	16.2	6.0	16.0
Green Ext Time (p_c), s	0.1	9.5	0.3	0.9	1.0	8.2	0.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	7	3	30	72	0
Future Vol, veh/h	2	7	3	30	72	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	8	3	32	77	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	35	0	-	0	31	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	12	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1576	-	-	-	983	1059
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	1011	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1576	-	-	-	982	1059
Mov Cap-2 Maneuver	-	-	-	-	982	-
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	1011	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1576	-	-	-	982
HCM Lane V/C Ratio	0.001	-	-	-	0.079
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	81	75	116	29	20	34	141	134	24	164	6
Future Vol, veh/h	12	81	75	116	29	20	34	141	134	24	164	6
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	100	93	143	36	25	42	174	165	30	202	7
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.8	12.5	15.3	12.6
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	7%	70%	12%
Vol Thru, %	46%	48%	18%	85%
Vol Right, %	43%	45%	12%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	309	168	165	194
LT Vol	34	12	116	24
Through Vol	141	81	29	164
RT Vol	134	75	20	6
Lane Flow Rate	381	207	204	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.567	0.335	0.346	0.387
Departure Headway (Hd)	5.355	5.813	6.123	5.817
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	668	614	583	613
Service Time	3.427	3.899	4.211	3.899
HCM Lane V/C Ratio	0.57	0.337	0.35	0.392
HCM Control Delay	15.3	11.8	12.5	12.6
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	3.6	1.5	1.5	1.8

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	238	0	2	154	28	0	1	1	30	0	16
Future Vol, veh/h	16	238	0	2	154	28	0	1	1	30	0	16
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	277	0	2	179	33	0	1	1	35	0	19
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.8	7.9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	6%	1%	65%
Vol Thru, %	50%	94%	84%	0%
Vol Right, %	50%	0%	15%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	254	184	46
LT Vol	0	16	2	30
Through Vol	1	238	154	0
RT Vol	1	0	28	16
Lane Flow Rate	2	295	214	53
Geometry Grp	1	1	1	1
Degree of Util (X)	0.003	0.354	0.255	0.074
Departure Headway (Hd)	4.816	4.318	4.286	4.962
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	742	839	841	722
Service Time	2.85	2.318	2.302	2.99
HCM Lane V/C Ratio	0.003	0.352	0.254	0.073
HCM Control Delay	7.9	9.7	8.8	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	1.6	1	0.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	114	140	132	151	46	62	108	1556	78	93	1780
v/c Ratio	0.51	0.44	0.51	0.50	0.35	0.04	0.58	0.55	0.05	0.54	0.63
Control Delay	58.2	55.7	15.4	57.5	59.8	0.1	63.1	18.7	0.1	62.8	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	55.7	15.4	57.5	59.8	0.1	63.1	18.7	0.1	62.8	21.0
Queue Length 50th (ft)	85	55	0	58	35	0	81	265	0	70	331
Queue Length 95th (ft)	144	86	59	91	72	0	136	378	0	121	468
Internal Link Dist (ft)		650			673			2611			626
Turn Bay Length (ft)	160		180	290		220	250			180	
Base Capacity (vph)	250	421	304	457	222	1583	240	2853	1583	236	2804
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.33	0.43	0.33	0.21	0.04	0.45	0.55	0.05	0.39	0.63

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	126	119	136	41	56	97	1400	70	84	1569	33
Future Volume (veh/h)	103	126	119	136	41	56	97	1400	70	84	1569	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	140	132	151	46	0	108	1556	0	93	1743	37
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	141	358	160	212	156		134	3102		117	3078	65
Arrive On Green	0.08	0.10	0.10	0.06	0.08	0.00	0.08	0.61	0.00	0.07	0.60	0.60
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	5106	1585	1781	5146	109
Grp Volume(v), veh/h	114	140	132	151	46	0	108	1556	0	93	1153	627
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1702	1585	1781	1702	1851
Q Serve(g_s), s	7.6	4.4	9.8	5.1	2.8	0.0	7.2	20.6	0.0	6.2	24.7	24.7
Cycle Q Clear(g_c), s	7.6	4.4	9.8	5.1	2.8	0.0	7.2	20.6	0.0	6.2	24.7	24.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	141	358	160	212	156		134	3102		117	2036	1107
V/C Ratio(X)	0.81	0.39	0.83	0.71	0.29		0.81	0.50		0.79	0.57	0.57
Avail Cap(c_a), veh/h	238	423	189	461	223		238	3102		238	2036	1107
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	50.5	52.9	55.3	51.7	0.0	54.6	13.3	0.0	55.2	14.6	14.7
Incr Delay (d2), s/veh	10.6	0.7	22.0	4.3	1.0	0.0	10.7	0.6	0.0	11.3	1.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	2.0	4.9	2.4	1.3	0.0	3.6	7.8	0.0	3.1	9.5	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.0	51.2	74.9	59.6	52.7	0.0	65.3	13.9	0.0	66.5	15.8	16.8
LnGrp LOS	E	D	E	E	D		E	B		E	B	B
Approach Vol, veh/h		386			197	A		1664	A		1873	
Approach Delay, s/veh		63.4			58.0			17.2			18.6	
Approach LOS		E			E			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	17.8	11.9	78.9	13.5	15.7	13.0	77.8
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	7.1	11.8	8.2	22.6	9.6	4.8	9.2	26.7
Green Ext Time (p_c), s	0.3	0.3	0.1	15.0	0.1	0.1	0.1	15.6

Intersection Summary	
HCM 6th Ctrl Delay	24.1
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	251	208	223	344	285	213
v/c Ratio	0.54	0.20	0.54	0.33	0.60	0.20
Control Delay	22.5	1.5	25.3	1.5	27.7	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	1.5	25.3	1.5	27.7	7.3
Queue Length 50th (ft)	70	0	64	0	80	29
Queue Length 95th (ft)	104	9	104	7	141	57
Internal Link Dist (ft)	1176		1098			805
Turn Bay Length (ft)				290	550	
Base Capacity (vph)	749	1050	908	1245	472	1236
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.20	0.25	0.28	0.60	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	178	0	148	0	158	244	202	151	0
Future Volume (veh/h)	0	0	0	178	0	148	0	158	244	202	151	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	251	0	208	0	223	344	285	213	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	4	0	396	0	674	4	471	751	361	1052	0
Arrive On Green	0.00	0.00	0.00	0.22	0.00	0.22	0.00	0.25	0.25	0.20	0.56	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	251	0	208	0	223	344	285	213	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	5.3	0.0	3.6	0.0	4.2	6.1	6.3	2.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.3	0.0	3.6	0.0	4.2	6.1	6.3	2.3	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	4	0	396	0	674	4	471	751	361	1052	0
V/C Ratio(X)	0.00	0.00	0.00	0.63	0.00	0.31	0.00	0.47	0.46	0.79	0.20	0.00
Avail Cap(c_a), veh/h	0	807	0	982	0	1195	213	1187	1358	619	1613	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	14.7	0.0	7.9	0.0	13.3	7.4	15.8	4.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.7	0.0	0.3	0.0	0.7	0.4	3.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.0	0.0	0.9	0.0	1.6	2.6	2.5	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	16.4	0.0	8.2	0.0	14.0	7.8	19.6	4.6	0.0
LnGrp LOS	A	A	A	B	A	A	A	B	A	B	A	A
Approach Vol, veh/h		0			459			567			498	
Approach Delay, s/veh		0.0			12.7			10.3			13.2	
Approach LOS					B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	15.0		0.0	0.0	28.0		13.8
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	14.5	26.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	8.3	8.1		0.0	0.0	4.3		7.3
Green Ext Time (p_c), s	0.5	2.4		0.0	0.0	1.3		2.0

Intersection Summary			
HCM 6th Ctrl Delay			12.0
HCM 6th LOS			B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	76	225	89	130	79	958	23	854
v/c Ratio	0.61	0.72	0.75	0.38	0.56	0.88	0.24	0.87
Control Delay	69.7	47.5	85.4	36.2	62.8	30.7	55.0	33.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	47.5	85.4	36.2	62.8	30.7	55.0	33.8
Queue Length 50th (ft)	49	120	59	68	51	428	15	483
Queue Length 95th (ft)	#124	201	#157	124	#116	#978	43	#851
Internal Link Dist (ft)		2563		1925		856		2332
Turn Bay Length (ft)	175		180		180		180	
Base Capacity (vph)	127	528	118	520	150	1089	97	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.43	0.75	0.25	0.53	0.88	0.24	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	117	95	84	87	35	74	742	159	22	725	78
Future Volume (veh/h)	71	117	95	84	87	35	74	742	159	22	725	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	124	101	89	93	37	79	789	169	23	771	83
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	152	124	113	214	85	102	837	179	43	875	94
Arrive On Green	0.05	0.16	0.16	0.06	0.17	0.17	0.06	0.56	0.56	0.02	0.53	0.53
Sat Flow, veh/h	1781	954	777	1781	1273	506	1781	1493	320	1781	1660	179
Grp Volume(v), veh/h	76	0	225	89	0	130	79	0	958	23	0	854
Grp Sat Flow(s),veh/h/ln	1781	0	1731	1781	0	1779	1781	0	1813	1781	0	1838
Q Serve(g_s), s	3.9	0.0	11.7	4.6	0.0	6.1	4.1	0.0	46.0	1.2	0.0	38.3
Cycle Q Clear(g_c), s	3.9	0.0	11.7	4.6	0.0	6.1	4.1	0.0	46.0	1.2	0.0	38.3
Prop In Lane	1.00		0.45	1.00		0.28	1.00		0.18	1.00		0.10
Lane Grp Cap(c), veh/h	98	0	275	113	0	299	102	0	1016	43	0	970
V/C Ratio(X)	0.78	0.00	0.82	0.78	0.00	0.44	0.78	0.00	0.94	0.54	0.00	0.88
Avail Cap(c_a), veh/h	137	0	538	128	0	543	162	0	1083	105	0	1040
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	0.0	37.9	43.1	0.0	34.9	43.4	0.0	19.1	45.0	0.0	19.5
Incr Delay (d2), s/veh	16.6	0.0	5.9	24.3	0.0	1.0	11.9	0.0	15.1	10.0	0.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	5.3	2.8	0.0	2.7	2.1	0.0	21.6	0.6	0.0	17.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.2	0.0	43.9	67.3	0.0	35.9	55.4	0.0	34.2	55.1	0.0	28.0
LnGrp LOS	E	A	D	E	A	D	E	A	C	E	A	C
Approach Vol, veh/h		301			219			1037			877	
Approach Delay, s/veh		48.0			48.7			35.8			28.7	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	56.8	10.4	19.3	9.8	53.7	9.6	20.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	3.2	48.0	6.6	13.7	6.1	40.3	5.9	8.1
Green Ext Time (p_c), s	0.0	4.3	0.0	1.1	0.0	5.2	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	35.9
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	27.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	149	283	0	4	109	204	0	1	3	213	1	101
Future Vol, veh/h	149	283	0	4	109	204	0	1	3	213	1	101
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	182	345	0	5	133	249	0	1	4	260	1	123
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	38.8	18.5	10.5	22.5
HCM LOS	E	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	34%	1%	68%
Vol Thru, %	25%	66%	34%	0%
Vol Right, %	75%	0%	64%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	432	317	315
LT Vol	0	149	4	213
Through Vol	1	283	109	1
RT Vol	3	0	204	101
Lane Flow Rate	5	527	387	384
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.885	0.631	0.687
Departure Headway (Hd)	7.365	6.049	5.873	6.442
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	483	601	615	561
Service Time	5.449	4.088	3.916	4.483
HCM Lane V/C Ratio	0.01	0.877	0.629	0.684
HCM Control Delay	10.5	38.8	18.5	22.5
HCM Lane LOS	B	E	C	C
HCM 95th-tile Q	0	10.4	4.4	5.3

Intersection	
Intersection Delay, s/veh	17.3
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	263	226	106	97	216	222
Future Vol, veh/h	263	226	106	97	216	222
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	289	248	116	107	237	244
Number of Lanes	1	1	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Righ	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	14.1	11.9	23.5
HCM LOS	B	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	49%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%
Vol Right, %	51%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	438	263	226	106	97
LT Vol	216	0	0	106	0
Through Vol	0	263	0	0	97
RT Vol	222	0	226	0	0
Lane Flow Rate	481	289	248	116	107
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.749	0.515	0.393	0.237	0.202
Departure Headway (Hd)	5.6	6.418	5.703	7.33	6.818
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	645	561	628	488	524
Service Time	3.651	4.179	3.464	5.104	4.591
HCM Lane V/C Ratio	0.746	0.515	0.395	0.238	0.204
HCM Control Delay	23.5	15.9	12.1	12.4	11.3
HCM Lane LOS	C	C	B	B	B
HCM 95th-tile Q	6.7	2.9	1.9	0.9	0.7

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	387	206	175	393	209	18	690	179	276	587	889
v/c Ratio	0.85	0.21	0.73	0.70	0.49	0.18	0.82	0.35	0.87	0.40	0.71
Control Delay	62.9	35.5	72.0	58.5	10.5	65.4	55.1	7.8	79.3	29.2	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	35.5	72.0	58.5	10.5	65.4	55.1	7.8	79.3	29.2	9.7
Queue Length 50th (ft)	316	70	149	174	0	15	298	0	241	175	161
Queue Length 95th (ft)	#484	106	232	232	71	43	383	60	#422	274	469
Internal Link Dist (ft)		1373		949			1063			1800	
Turn Bay Length (ft)	325		500		235	250		250	250		350
Base Capacity (vph)	533	1148	302	692	477	230	968	563	332	1463	1305
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.18	0.58	0.57	0.44	0.08	0.71	0.32	0.83	0.40	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	356	182	7	161	362	192	17	635	165	254	540	818
Future Volume (veh/h)	356	182	7	161	362	192	17	635	165	254	540	818
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	387	198	8	175	393	209	18	690	179	276	587	889
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	425	996	40	207	583	260	41	850	379	308	1382	994
Arrive On Green	0.24	0.29	0.29	0.12	0.16	0.16	0.02	0.24	0.24	0.17	0.39	0.39
Sat Flow, veh/h	1781	3482	140	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	387	101	105	175	393	209	18	690	179	276	587	889
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	23.3	4.7	4.8	10.6	11.4	14.0	1.1	20.2	10.7	16.7	13.3	42.8
Cycle Q Clear(g_c), s	23.3	4.7	4.8	10.6	11.4	14.0	1.1	20.2	10.7	16.7	13.3	42.8
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	425	508	528	207	583	260	41	850	379	308	1382	994
V/C Ratio(X)	0.91	0.20	0.20	0.84	0.67	0.80	0.44	0.81	0.47	0.90	0.42	0.89
Avail Cap(c_a), veh/h	599	508	528	340	775	346	259	1086	484	372	1382	994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	29.7	29.7	47.6	43.2	44.3	53.0	39.5	35.9	44.5	24.6	17.4
Incr Delay (d2), s/veh	14.3	0.2	0.2	9.8	1.4	9.7	7.2	3.8	0.9	20.8	0.2	10.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	2.0	2.1	5.2	5.1	6.1	0.6	9.2	4.2	9.1	5.6	20.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.0	29.9	29.9	57.4	44.6	53.9	60.2	43.3	36.8	65.3	24.8	27.9
LnGrp LOS	E	C	C	E	D	D	E	D	D	E	C	C
Approach Vol, veh/h		593			777			887			1752	
Approach Delay, s/veh		46.3			50.0			42.3			32.7	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	32.7	16.8	37.5	6.5	49.2	30.2	24.1
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	23.0	33.6	21.0	24.0	16.0	33.6	37.0	24.0
Max Q Clear Time (g_c+I1), s	18.7	22.2	12.6	6.8	3.1	44.8	25.3	16.0
Green Ext Time (p_c), s	0.3	4.1	0.3	1.0	0.0	0.0	1.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	40.2
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	629	18	34	672	239	46	125	36	166	96	41
Future Volume (veh/h)	84	629	18	34	672	239	46	125	36	166	96	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	88	662	19	36	707	0	48	132	38	175	101	43
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	744	21	71	1376		62	170	199	214	124	296
Arrive On Green	0.06	0.41	0.41	0.04	0.39	0.00	0.13	0.13	0.13	0.19	0.19	0.19
Sat Flow, veh/h	1781	1809	52	1781	3554	1585	492	1354	1585	1149	663	1585
Grp Volume(v), veh/h	88	0	681	36	707	0	180	0	38	276	0	43
Grp Sat Flow(s),veh/h/ln	1781	0	1861	1781	1777	1585	1846	0	1585	1813	0	1585
Q Serve(g_s), s	4.2	0.0	29.6	1.7	13.3	0.0	8.2	0.0	1.9	12.7	0.0	2.0
Cycle Q Clear(g_c), s	4.2	0.0	29.6	1.7	13.3	0.0	8.2	0.0	1.9	12.7	0.0	2.0
Prop In Lane	1.00		0.03	1.00		1.00	0.27		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	114	0	766	71	1376		232	0	199	338	0	296
V/C Ratio(X)	0.77	0.00	0.89	0.50	0.51		0.78	0.00	0.19	0.82	0.00	0.15
Avail Cap(c_a), veh/h	327	0	1131	327	2159		474	0	407	707	0	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.2	0.0	23.8	41.0	20.4	0.0	36.9	0.0	34.2	34.0	0.0	29.7
Incr Delay (d2), s/veh	10.3	0.0	6.3	5.4	0.3	0.0	5.5	0.0	0.5	4.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	12.8	0.8	5.0	0.0	4.0	0.0	0.7	5.8	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	0.0	30.1	46.5	20.7	0.0	42.4	0.0	34.6	38.9	0.0	29.9
LnGrp LOS	D	A	C	D	C		D	A	C	D	A	C
Approach Vol, veh/h		769			743	A		218			319	
Approach Delay, s/veh		32.5			22.0			41.1			37.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		15.6	9.6	39.8		22.3	7.5	41.9				
Change Period (Y+Rc), s		4.6	4.0	6.0		6.0	4.0	6.0				
Max Green Setting (Gmax), s		22.4	16.0	53.0		34.0	16.0	53.0				
Max Q Clear Time (g_c+I1), s		10.2	6.2	15.3		14.7	3.7	31.6				
Green Ext Time (p_c), s		0.8	0.1	4.9		1.5	0.0	4.3				

Intersection Summary	
HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	816	21	38	1086	31	37
Future Vol, veh/h	816	21	38	1086	31	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	859	22	40	1143	33	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	881	0	1522	870
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	652	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	765	-	119	350
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	481	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	765	-	113	350
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	481	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	-	-	765	-
HCM Lane V/C Ratio	0.247	-	-	0.052	-
HCM Control Delay (s)	21.4	-	-	10	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	224	353	107	320	113	558	1186	90	141	1484	130
Future Volume (veh/h)	203	224	353	107	320	113	558	1186	90	141	1484	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	226	249	125	119	356	70	620	1318	100	157	1649	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	646	288	148	435	194	705	2508	779	224	1797	
Arrive On Green	0.14	0.18	0.18	0.08	0.12	0.12	0.20	0.49	0.49	0.06	0.35	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	226	249	125	119	356	70	620	1318	100	157	1649	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	13.9	6.9	7.8	7.3	10.9	4.5	19.4	19.8	3.8	5.0	34.5	0.0
Cycle Q Clear(g_c), s	13.9	6.9	7.8	7.3	10.9	4.5	19.4	19.8	3.8	5.0	34.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	646	288	148	435	194	705	2508	779	224	1797	
V/C Ratio(X)	0.89	0.39	0.43	0.81	0.82	0.36	0.88	0.53	0.13	0.70	0.92	
Avail Cap(c_a), veh/h	255	646	288	287	509	227	867	2508	779	557	1830	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.0	40.2	40.6	50.3	47.8	45.0	43.1	19.5	15.4	51.1	34.6	0.0
Incr Delay (d2), s/veh	29.6	0.4	1.0	9.8	8.9	1.1	8.9	0.2	0.1	3.9	7.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	3.0	3.1	3.7	5.3	1.8	8.8	7.3	1.4	2.2	14.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.6	40.5	41.6	60.1	56.7	46.1	51.9	19.7	15.5	55.1	42.4	0.0
LnGrp LOS	E	D	D	E	E	D	D	B	B	E	D	
Approach Vol, veh/h		600			545			2038			1806	A
Approach Delay, s/veh		54.3			56.1			29.3			43.5	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	60.8	19.9	19.7	26.8	45.3	13.3	26.3
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	18.0	50.0	16.0	16.0	28.0	40.0	18.0	14.0
Max Q Clear Time (g_c+I1), s	7.0	21.8	15.9	12.9	21.4	36.5	9.3	9.8
Green Ext Time (p_c), s	0.3	10.7	0.0	0.7	1.3	2.8	0.2	0.8

Intersection Summary	
HCM 6th Ctrl Delay	40.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	5	36	33	1
Future Vol, veh/h	0	1	5	36	33	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	7	47	43	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	54	0	-	0	32	31
Stage 1	-	-	-	-	31	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1551	-	-	-	982	1043
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1551	-	-	-	982	1043
Mov Cap-2 Maneuver	-	-	-	-	982	-
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1551	-	-	-	984
HCM Lane V/C Ratio	-	-	-	-	0.045
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	64	11	124	96	37	17	168	38	16	105	14
Future Vol, veh/h	22	64	11	124	96	37	17	168	38	16	105	14
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	74	13	143	110	43	20	193	44	18	121	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	12.2	11.3	10.1
HCM LOS	A	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	23%	48%	12%
Vol Thru, %	75%	66%	37%	78%
Vol Right, %	17%	11%	14%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	223	97	257	135
LT Vol	17	22	124	16
Through Vol	168	64	96	105
RT Vol	38	11	37	14
Lane Flow Rate	256	111	295	155
Geometry Grp	1	1	1	1
Degree of Util (X)	0.371	0.17	0.43	0.233
Departure Headway (Hd)	5.212	5.505	5.24	5.417
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	690	651	688	663
Service Time	3.243	3.543	3.269	3.453
HCM Lane V/C Ratio	0.371	0.171	0.429	0.234
HCM Control Delay	11.3	9.7	12.2	10.1
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	1.7	0.6	2.2	0.9

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	120	0	0	248	29	0	0	0	27	0	17
Future Vol, veh/h	16	120	0	0	248	29	0	0	0	27	0	17
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	132	0	0	273	32	0	0	0	30	0	19
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	9.3	0	8.1
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	12%	0%	61%
Vol Thru, %	100%	88%	90%	0%
Vol Right, %	0%	0%	10%	39%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	136	277	44
LT Vol	0	16	0	27
Through Vol	0	120	248	0
RT Vol	0	0	29	17
Lane Flow Rate	0	149	304	48
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.182	0.344	0.064
Departure Headway (Hd)	4.983	4.375	4.069	4.8
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	823	871	749
Service Time	2.994	2.38	2.154	2.809
HCM Lane V/C Ratio	0	0.181	0.349	0.064
HCM Control Delay	8	8.4	9.3	8.1
HCM Lane LOS	N	A	A	A
HCM 95th-tile Q	0	0.7	1.5	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	42	69	194	113	126	186	1753	98	74	1702	87
Future Volume (veh/h)	106	42	69	194	113	126	186	1753	98	74	1702	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	47	77	216	126	0	207	1948	0	82	1891	97
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	301	134	280	158		233	3121		105	2682	137
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.00	0.13	0.61	0.00	0.06	0.54	0.54
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	5106	1585	1781	4974	255
Grp Volume(v), veh/h	118	47	77	216	126	0	207	1948	0	82	1293	695
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1702	1585	1781	1702	1825
Q Serve(g_s), s	7.8	1.5	5.6	7.4	7.9	0.0	13.7	28.8	0.0	5.5	33.9	34.0
Cycle Q Clear(g_c), s	7.8	1.5	5.6	7.4	7.9	0.0	13.7	28.8	0.0	5.5	33.9	34.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	145	301	134	280	158		233	3121		105	1835	984
V/C Ratio(X)	0.81	0.16	0.57	0.77	0.80		0.89	0.62		0.78	0.70	0.71
Avail Cap(c_a), veh/h	238	423	189	461	223		238	3121		238	1835	984
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.2	50.9	52.8	54.1	53.9	0.0	51.3	14.7	0.0	55.7	20.5	20.6
Incr Delay (d2), s/veh	10.5	0.2	3.8	4.5	12.6	0.0	30.4	1.0	0.0	11.9	2.3	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.7	2.4	3.4	4.3	0.0	8.1	10.8	0.0	2.8	13.6	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.7	51.2	56.6	58.5	66.5	0.0	81.6	15.6	0.0	67.6	22.8	24.9
LnGrp LOS	E	D	E	E	E		F	B		E	C	C
Approach Vol, veh/h		242			342	A		2155	A		2070	
Approach Delay, s/veh		59.5			61.5			22.0			25.3	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	15.9	11.1	79.4	13.8	15.8	19.7	70.7
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	9.9	7.6	7.5	30.8	9.8	9.9	15.7	36.0
Green Ext Time (p_c), s	0.4	0.2	0.1	16.2	0.1	0.2	0.0	13.2

Intersection Summary	
HCM 6th Ctrl Delay	28.1
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	20	0	31	0	197	6	7	221	2
Future Volume (veh/h)	0	0	0	20	0	31	0	197	6	7	221	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	23	0	36	0	229	7	8	257	2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	9	0	124	0	111	9	469	508	19	898	7
Arrive On Green	0.00	0.00	0.00	0.07	0.00	0.07	0.00	0.25	0.25	0.01	0.48	0.48
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1853	14
Grp Volume(v), veh/h	0	0	0	23	0	36	0	229	7	8	0	259
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	0	1868
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.4	0.0	2.1	0.1	0.1	0.0	1.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.2	0.0	0.4	0.0	2.1	0.1	0.1	0.0	1.7
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	0	9	0	124	0	111	9	469	508	19	0	905
V/C Ratio(X)	0.00	0.00	0.00	0.19	0.00	0.33	0.00	0.49	0.01	0.41	0.00	0.29
Avail Cap(c_a), veh/h	0	1668	0	2030	0	1806	441	2456	2192	1280	0	3331
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	8.8	0.0	8.9	0.0	6.5	4.7	9.9	0.0	3.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.7	0.0	1.7	0.0	0.8	0.0	13.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.4	0.0	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.6	0.0	10.6	0.0	7.2	4.7	23.4	0.0	3.3
LnGrp LOS	A	A	A	A	A	B	A	A	A	C	A	A
Approach Vol, veh/h		0			59			236			267	
Approach Delay, s/veh		0.0			10.2			7.2			3.9	
Approach LOS					B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.7	9.6		0.0	0.0	14.3		5.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	14.5	26.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	2.1	4.1		0.0	0.0	3.7		2.4
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	1.6		0.2

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	121	38	181	94	30	23	784	98	30	819	33
Future Volume (veh/h)	236	121	38	181	94	30	23	784	98	30	819	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	246	126	40	189	98	31	24	817	102	31	853	34
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	153	168	53	142	160	50	45	901	112	55	996	40
Arrive On Green	0.09	0.12	0.12	0.08	0.12	0.12	0.03	0.55	0.55	0.03	0.56	0.56
Sat Flow, veh/h	1781	1361	432	1781	1362	431	1781	1630	204	1781	1786	71
Grp Volume(v), veh/h	246	0	166	189	0	129	24	0	919	31	0	887
Grp Sat Flow(s),veh/h/ln	1781	0	1793	1781	0	1793	1781	0	1834	1781	0	1858
Q Serve(g_s), s	7.2	0.0	7.5	6.7	0.0	5.8	1.1	0.0	37.8	1.4	0.0	34.0
Cycle Q Clear(g_c), s	7.2	0.0	7.5	6.7	0.0	5.8	1.1	0.0	37.8	1.4	0.0	34.0
Prop In Lane	1.00		0.24	1.00		0.24	1.00		0.11	1.00		0.04
Lane Grp Cap(c), veh/h	153	0	221	142	0	210	45	0	1013	55	0	1036
V/C Ratio(X)	1.61	0.00	0.75	1.33	0.00	0.61	0.53	0.00	0.91	0.57	0.00	0.86
Avail Cap(c_a), veh/h	153	0	618	142	0	608	180	0	1217	117	0	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.4	0.0	35.6	38.7	0.0	35.3	40.5	0.0	16.9	40.2	0.0	15.7
Incr Delay (d2), s/veh	303.8	0.0	5.1	189.3	0.0	2.9	9.2	0.0	8.8	9.0	0.0	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	0.0	3.5	10.3	0.0	2.6	0.6	0.0	16.4	0.8	0.0	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	342.3	0.0	40.7	227.9	0.0	38.2	49.6	0.0	25.7	49.2	0.0	21.7
LnGrp LOS	F	A	D	F	A	D	D	A	C	D	A	C
Approach Vol, veh/h		412			318			943			918	
Approach Delay, s/veh		220.8			151.0			26.3			22.6	
Approach LOS		F			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	50.9	11.2	14.9	6.6	51.4	11.7	14.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	3.4	39.8	8.7	9.5	3.1	36.0	9.2	7.8
Green Ext Time (p_c), s	0.0	6.6	0.0	0.8	0.0	6.4	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	71.2
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	168	0	1	239	145	0	1	0	81	0	128
Future Vol, veh/h	78	168	0	1	239	145	0	1	0	81	0	128
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	94	202	0	1	288	175	0	1	0	98	0	154
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.6	15.8	9.5	12
HCM LOS	B	C	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	32%	0%	39%
Vol Thru, %	100%	68%	62%	0%
Vol Right, %	0%	0%	38%	61%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	246	385	209
LT Vol	0	78	1	81
Through Vol	1	168	239	0
RT Vol	0	0	145	128
Lane Flow Rate	1	296	464	252
Geometry Grp	1	1	1	1
Degree of Util (X)	0.002	0.441	0.628	0.385
Departure Headway (Hd)	6.382	5.353	4.877	5.51
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	559	673	742	652
Service Time	4.441	3.386	2.906	3.547
HCM Lane V/C Ratio	0.002	0.44	0.625	0.387
HCM Control Delay	9.5	12.6	15.8	12
HCM Lane LOS	A	B	C	B
HCM 95th-tile Q	0	2.3	4.5	1.8

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	117	251	194	197	169
Future Vol, veh/h	127	117	251	194	197	169
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	143	131	282	218	221	190
Number of Lanes	1	1	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Righ	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	11	15.1	18.7
HCM LOS	B	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	54%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%
Vol Right, %	46%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	366	127	117	251	194
LT Vol	197	0	0	251	0
Through Vol	0	127	0	0	194
RT Vol	169	0	117	0	0
Lane Flow Rate	411	143	131	282	218
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.649	0.261	0.215	0.528	0.378
Departure Headway (Hd)	5.684	6.596	5.881	6.745	6.236
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	633	542	607	533	575
Service Time	3.731	4.357	3.641	4.498	3.988
HCM Lane V/C Ratio	0.649	0.264	0.216	0.529	0.379
HCM Control Delay	18.7	11.7	10.3	16.8	12.8
HCM Lane LOS	C	B	B	C	B
HCM 95th-tile Q	4.7	1	0.8	3.1	1.8

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	661	349	242	244	460	14	813	261	181	640	426
v/c Ratio	1.42	0.35	0.85	0.39	0.91	0.13	0.99	0.46	0.73	0.49	0.35
Control Delay	231.6	33.4	72.7	42.2	41.4	54.8	71.7	7.5	63.7	30.0	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	231.6	33.4	72.7	42.2	41.4	54.8	71.7	7.5	63.7	30.0	1.7
Queue Length 50th (ft)	~684	107	177	82	140	10	~346	0	130	181	0
Queue Length 95th (ft)	#932	153	#321	123	#328	32	#484	69	208	277	39
Internal Link Dist (ft)		1373		949			1063			1800	
Turn Bay Length (ft)	325		500		235	250		250	250		350
Base Capacity (vph)	467	1095	306	773	561	258	825	569	306	1313	1228
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.32	0.79	0.32	0.82	0.05	0.99	0.46	0.59	0.49	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	648	337	5	237	239	451	14	797	256	177	627	417
Future Volume (veh/h)	648	337	5	237	239	451	14	797	256	177	627	417
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	661	344	5	242	244	307	14	813	184	181	640	426
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	1136	16	271	746	333	34	814	363	212	1170	933
Arrive On Green	0.26	0.32	0.32	0.15	0.21	0.21	0.02	0.23	0.23	0.12	0.33	0.33
Sat Flow, veh/h	1781	3586	52	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	661	170	179	242	244	307	14	813	184	181	640	426
Grp Sat Flow(s),veh/h/ln	1781	1777	1861	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	29.0	8.1	8.1	14.9	6.5	21.2	0.9	25.6	11.3	11.1	16.5	16.9
Cycle Q Clear(g_c), s	29.0	8.1	8.1	14.9	6.5	21.2	0.9	25.6	11.3	11.1	16.5	16.9
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	462	563	590	271	746	333	34	814	363	212	1170	933
V/C Ratio(X)	1.43	0.30	0.30	0.89	0.33	0.92	0.42	1.00	0.51	0.85	0.55	0.46
Avail Cap(c_a), veh/h	462	563	590	303	763	340	255	814	363	303	1170	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	28.8	28.9	46.5	37.5	43.3	54.2	43.1	37.6	48.3	30.7	12.9
Incr Delay (d2), s/veh	205.8	0.3	0.3	24.7	0.3	29.6	8.0	31.3	1.2	14.8	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	39.0	3.5	3.7	8.4	2.9	11.0	0.5	14.6	4.5	5.8	7.1	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	247.2	29.1	29.1	71.2	37.7	72.9	62.2	74.3	38.7	63.1	31.2	13.3
LnGrp LOS	F	C	C	E	D	E	E	E	D	E	C	B
Approach Vol, veh/h		1010			793			1011			1247	
Approach Delay, s/veh		171.9			61.5			67.7			29.7	
Approach LOS		F			E			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.3	32.0	21.0	41.4	6.1	43.2	33.0	29.5
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	19.0	25.6	19.0	34.0	16.0	28.6	29.0	24.0
Max Q Clear Time (g_c+I1), s	13.1	27.6	16.9	10.1	2.9	18.9	31.0	23.2
Green Ext Time (p_c), s	0.2	0.0	0.2	2.0	0.0	4.2	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	80.7
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

KDA

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	567	26	38	483	109	32	88	51	224	110	62
Future Volume (veh/h)	45	567	26	38	483	109	32	88	51	224	110	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	623	29	42	531	0	35	97	56	246	121	68
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	699	33	77	1388		48	133	155	288	142	377
Arrive On Green	0.05	0.39	0.39	0.04	0.39	0.00	0.10	0.10	0.10	0.24	0.24	0.24
Sat Flow, veh/h	1781	1773	83	1781	3554	1585	489	1356	1585	1213	597	1585
Grp Volume(v), veh/h	49	0	652	42	531	0	132	0	56	367	0	68
Grp Sat Flow(s),veh/h/ln	1781	0	1856	1781	1777	1585	1846	0	1585	1810	0	1585
Q Serve(g_s), s	2.4	0.0	29.8	2.1	9.7	0.0	6.3	0.0	3.0	17.6	0.0	3.1
Cycle Q Clear(g_c), s	2.4	0.0	29.8	2.1	9.7	0.0	6.3	0.0	3.0	17.6	0.0	3.1
Prop In Lane	1.00		0.04	1.00		1.00	0.27		1.00	0.67		1.00
Lane Grp Cap(c), veh/h	83	0	732	77	1388		181	0	155	430	0	377
V/C Ratio(X)	0.59	0.00	0.89	0.55	0.38		0.73	0.00	0.36	0.85	0.00	0.18
Avail Cap(c_a), veh/h	314	0	1083	314	2074		455	0	391	677	0	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.4	0.0	25.7	42.6	19.8	0.0	39.8	0.0	38.3	33.1	0.0	27.6
Incr Delay (d2), s/veh	6.4	0.0	6.7	5.9	0.2	0.0	5.6	0.0	1.4	6.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	13.1	1.0	3.7	0.0	3.1	0.0	1.2	8.1	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	0.0	32.3	48.5	20.0	0.0	45.4	0.0	39.7	39.4	0.0	27.8
LnGrp LOS	D	A	C	D	B		D	A	D	D	A	C
Approach Vol, veh/h		701			573	A		188			435	
Approach Delay, s/veh		33.5			22.1			43.7			37.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		13.5	8.3	41.5		27.6	7.9	41.8				
Change Period (Y+Rc), s		4.6	4.0	6.0		6.0	4.0	6.0				
Max Green Setting (Gmax), s		22.4	16.0	53.0		34.0	16.0	53.0				
Max Q Clear Time (g_c+I1), s		8.3	4.4	11.7		19.6	4.1	31.8				
Green Ext Time (p_c), s		0.7	0.1	3.5		2.0	0.0	4.0				

Intersection Summary	
HCM 6th Ctrl Delay	32.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	955	36	17	532	44	52
Future Vol, veh/h	955	36	17	532	44	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1016	38	18	566	47	55

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1054	0	1354	1035
Stage 1	-	-	-	-	1035	-
Stage 2	-	-	-	-	319	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	658	-	152	281
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	658	-	148	281
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	691	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	25.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	273	-	-	658	-
HCM Lane V/C Ratio	0.374	-	-	0.027	-
HCM Control Delay (s)	25.9	-	-	10.6	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	227	503	87	131	79	334	1080	22	76	1014	82
Future Volume (veh/h)	167	227	503	87	131	79	334	1080	22	76	1014	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	186	252	337	97	146	88	371	1200	24	84	1127	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	669	298	128	465	207	494	2184	678	150	1675	
Arrive On Green	0.13	0.19	0.19	0.07	0.13	0.13	0.14	0.43	0.43	0.04	0.33	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	186	252	337	97	146	88	371	1200	24	84	1127	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.6	4.6	14.0	4.0	2.8	3.8	7.7	13.1	0.7	1.8	14.2	0.0
Cycle Q Clear(g_c), s	7.6	4.6	14.0	4.0	2.8	3.8	7.7	13.1	0.7	1.8	14.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	669	298	128	465	207	494	2184	678	150	1675	
V/C Ratio(X)	0.81	0.38	1.13	0.76	0.31	0.42	0.75	0.55	0.04	0.56	0.67	
Avail Cap(c_a), veh/h	383	669	298	527	956	426	976	3296	1023	743	2952	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.5	26.4	30.2	33.9	29.3	29.7	30.6	15.9	12.4	34.9	21.5	0.0
Incr Delay (d2), s/veh	6.6	0.4	91.7	8.9	0.4	1.4	2.3	0.2	0.0	3.3	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	1.9	12.7	2.0	1.2	1.5	3.1	4.4	0.2	0.8	5.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.1	26.7	121.8	42.8	29.7	31.1	32.9	16.1	12.4	38.1	22.0	0.0
LnGrp LOS	D	C	F	D	C	C	C	B	B	D	C	
Approach Vol, veh/h		775			331			1595			1211	A
Approach Delay, s/veh		70.8			33.9			20.0			23.1	
Approach LOS		E			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	37.8	13.6	15.7	14.6	30.4	9.3	20.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	48.0	16.0	20.0	21.0	43.0	22.0	14.0
Max Q Clear Time (g_c+I1), s	3.8	15.1	9.6	5.8	9.7	16.2	6.0	16.0
Green Ext Time (p_c), s	0.1	9.6	0.3	0.9	1.0	8.2	0.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	7	3	32	72	0
Future Vol, veh/h	2	7	3	32	72	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	8	3	34	77	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	37	0	-	0	32	20
Stage 1	-	-	-	-	20	-
Stage 2	-	-	-	-	12	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1574	-	-	-	982	1058
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	1011	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1574	-	-	-	981	1058
Mov Cap-2 Maneuver	-	-	-	-	981	-
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	1011	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1574	-	-	-	981
HCM Lane V/C Ratio	0.001	-	-	-	0.079
HCM Control Delay (s)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	16.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	81	75	157	29	20	36	147	162	24	164	6
Future Vol, veh/h	12	81	75	157	29	20	36	147	162	24	164	6
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	100	93	194	36	25	44	181	200	30	202	7
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.9	15	19.7	13.8
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	7%	76%	12%
Vol Thru, %	43%	48%	14%	85%
Vol Right, %	47%	45%	10%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	345	168	206	194
LT Vol	36	12	157	24
Through Vol	147	81	29	164
RT Vol	162	75	20	6
Lane Flow Rate	426	207	254	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.672	0.362	0.459	0.418
Departure Headway (Hd)	5.683	6.287	6.493	6.289
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	635	570	554	570
Service Time	3.728	4.342	4.545	4.343
HCM Lane V/C Ratio	0.671	0.363	0.458	0.421
HCM Control Delay	19.7	12.9	15	13.8
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	5.1	1.6	2.4	2.1

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	252	0	2	154	33	0	1	1	44	0	58
Future Vol, veh/h	30	252	0	2	154	33	0	1	1	44	0	58
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	293	0	2	179	38	0	1	1	51	0	67
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	10.7	9.3	8.2	8.9
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	11%	1%	100%	0%
Vol Thru, %	50%	89%	81%	0%	0%
Vol Right, %	50%	0%	17%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	282	189	44	58
LT Vol	0	30	2	44	0
Through Vol	1	252	154	0	0
RT Vol	1	0	33	0	58
Lane Flow Rate	2	328	220	51	67
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.003	0.412	0.276	0.089	0.095
Departure Headway (Hd)	5.156	4.522	4.517	6.264	5.051
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	689	797	793	570	706
Service Time	3.227	2.553	2.553	4.02	2.806
HCM Lane V/C Ratio	0.003	0.412	0.277	0.089	0.095
HCM Control Delay	8.2	10.7	9.3	9.6	8.3
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0	2	1.1	0.3	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	135	133	136	43	56	100	1400	70	84	1569	34
Future Volume (veh/h)	109	135	133	136	43	56	100	1400	70	84	1569	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	121	150	148	151	48	0	111	1556	0	93	1743	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	391	174	212	165		137	3056		117	3020	66
Arrive On Green	0.08	0.11	0.11	0.06	0.09	0.00	0.08	0.60	0.00	0.07	0.59	0.59
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	5106	1585	1781	5142	112
Grp Volume(v), veh/h	121	150	148	151	48	0	111	1556	0	93	1154	627
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1702	1585	1781	1702	1850
Q Serve(g_s), s	8.0	4.7	11.0	5.1	2.9	0.0	7.4	21.1	0.0	6.2	25.4	25.4
Cycle Q Clear(g_c), s	8.0	4.7	11.0	5.1	2.9	0.0	7.4	21.1	0.0	6.2	25.4	25.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	148	391	174	212	165		137	3056		117	1999	1087
V/C Ratio(X)	0.82	0.38	0.85	0.71	0.29		0.81	0.51		0.79	0.58	0.58
Avail Cap(c_a), veh/h	238	423	189	461	223		238	3056		238	1999	1087
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	49.6	52.4	55.3	51.2	0.0	54.5	13.9	0.0	55.2	15.5	15.5
Incr Delay (d2), s/veh	11.1	0.6	27.4	4.3	1.0	0.0	10.6	0.6	0.0	11.3	1.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	2.1	5.7	2.4	1.4	0.0	3.7	8.0	0.0	3.1	9.8	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.2	50.3	79.9	59.6	52.1	0.0	65.1	14.5	0.0	66.5	16.7	17.7
LnGrp LOS	E	D	E	E	D		E	B		E	B	B
Approach Vol, veh/h		419			199	A		1667	A		1874	
Approach Delay, s/veh		65.0			57.8			17.9			19.5	
Approach LOS		E			E			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	18.9	11.9	77.8	14.0	16.3	13.3	76.5
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	7.1	13.0	8.2	23.1	10.0	4.9	9.4	27.4
Green Ext Time (p_c), s	0.3	0.2	0.1	14.9	0.1	0.1	0.1	15.4

Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	183	0	183	0	158	244	242	152	0
Future Volume (veh/h)	0	0	0	183	0	183	0	158	244	242	152	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	258	0	258	0	223	344	341	214	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	4	0	399	0	723	4	458	743	414	1079	0
Arrive On Green	0.00	0.00	0.00	0.22	0.00	0.22	0.00	0.24	0.24	0.23	0.58	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	258	0	258	0	223	344	341	214	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	5.9	0.0	4.8	0.0	4.6	6.7	8.2	2.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.9	0.0	4.8	0.0	4.6	6.7	8.2	2.5	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	4	0	399	0	723	4	458	743	414	1079	0
V/C Ratio(X)	0.00	0.00	0.00	0.65	0.00	0.36	0.00	0.49	0.46	0.82	0.20	0.00
Avail Cap(c_a), veh/h	0	746	0	907	0	1176	197	1098	1285	572	1491	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	15.9	0.0	8.0	0.0	14.6	8.1	16.4	4.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.8	0.0	0.3	0.0	0.8	0.5	6.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.3	0.0	1.3	0.0	1.8	3.0	3.6	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	17.7	0.0	8.3	0.0	15.4	8.6	23.3	4.7	0.0
LnGrp LOS	A	A	A	B	A	A	A	B	A	C	A	A
Approach Vol, veh/h		0			516			567			555	
Approach Delay, s/veh		0.0			13.0			11.3			16.1	
Approach LOS					B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	15.5		0.0	0.0	30.5		14.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	14.5	26.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	10.2	8.7		0.0	0.0	4.5		7.9
Green Ext Time (p_c), s	0.4	2.4		0.0	0.0	1.3		2.2

Intersection Summary	
HCM 6th Ctrl Delay	13.4
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	117	95	86	87	35	74	742	159	22	725	78
Future Volume (veh/h)	71	117	95	86	87	35	74	742	159	22	725	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	124	101	91	93	37	79	789	169	23	771	83
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	152	123	116	215	86	102	836	179	43	874	94
Arrive On Green	0.05	0.16	0.16	0.06	0.17	0.17	0.06	0.56	0.56	0.02	0.53	0.53
Sat Flow, veh/h	1781	954	777	1781	1273	506	1781	1493	320	1781	1660	179
Grp Volume(v), veh/h	76	0	225	91	0	130	79	0	958	23	0	854
Grp Sat Flow(s),veh/h/ln	1781	0	1731	1781	0	1779	1781	0	1813	1781	0	1838
Q Serve(g_s), s	3.9	0.0	11.8	4.7	0.0	6.1	4.1	0.0	46.2	1.2	0.0	38.5
Cycle Q Clear(g_c), s	3.9	0.0	11.8	4.7	0.0	6.1	4.1	0.0	46.2	1.2	0.0	38.5
Prop In Lane	1.00		0.45	1.00		0.28	1.00		0.18	1.00		0.10
Lane Grp Cap(c), veh/h	98	0	275	116	0	301	102	0	1015	43	0	969
V/C Ratio(X)	0.78	0.00	0.82	0.79	0.00	0.43	0.78	0.00	0.94	0.54	0.00	0.88
Avail Cap(c_a), veh/h	137	0	536	127	0	541	162	0	1080	105	0	1036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.7	0.0	38.1	43.1	0.0	34.9	43.6	0.0	19.2	45.2	0.0	19.6
Incr Delay (d2), s/veh	16.7	0.0	5.9	25.0	0.0	1.0	11.9	0.0	15.3	10.1	0.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	5.4	2.9	0.0	2.7	2.1	0.0	21.7	0.6	0.0	17.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	0.0	44.0	68.2	0.0	35.9	55.5	0.0	34.5	55.2	0.0	28.2
LnGrp LOS	E	A	D	E	A	D	E	A	C	E	A	C
Approach Vol, veh/h		301			221			1037			877	
Approach Delay, s/veh		48.2			49.2			36.1			28.9	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	56.9	10.6	19.4	9.8	53.9	9.6	20.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	3.2	48.2	6.7	13.8	6.1	40.5	5.9	8.1
Green Ext Time (p_c), s	0.0	4.2	0.0	1.1	0.0	5.1	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	36.2
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	28.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	149	283	0	4	109	204	0	1	3	217	1	103
Future Vol, veh/h	149	283	0	4	109	204	0	1	3	217	1	103
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	182	345	0	5	133	249	0	1	4	265	1	126
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	39.7	18.7	10.6	23.4
HCM LOS	E	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	34%	1%	68%
Vol Thru, %	25%	66%	34%	0%
Vol Right, %	75%	0%	64%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	432	317	321
LT Vol	0	149	4	217
Through Vol	1	283	109	1
RT Vol	3	0	204	103
Lane Flow Rate	5	527	387	391
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.89	0.635	0.702
Departure Headway (Hd)	7.413	6.085	5.911	6.455
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	480	595	611	560
Service Time	5.499	4.126	3.957	4.496
HCM Lane V/C Ratio	0.01	0.886	0.633	0.698
HCM Control Delay	10.6	39.7	18.7	23.4
HCM Lane LOS	B	E	C	C
HCM 95th-tile Q	0	10.5	4.5	5.6

Intersection	
Intersection Delay, s/veh	17.5
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	266	227	106	97	216	222
Future Vol, veh/h	266	227	106	97	216	222
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	292	249	116	107	237	244
Number of Lanes	1	1	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Righ	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	14.3	11.9	23.6
HCM LOS	B	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	49%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%
Vol Right, %	51%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	438	266	227	106	97
LT Vol	216	0	0	106	0
Through Vol	0	266	0	0	97
RT Vol	222	0	227	0	0
Lane Flow Rate	481	292	249	116	107
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.75	0.521	0.395	0.237	0.202
Departure Headway (Hd)	5.609	6.421	5.707	7.339	6.827
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	645	561	629	487	523
Service Time	3.659	4.181	3.466	5.113	4.6
HCM Lane V/C Ratio	0.746	0.52	0.396	0.238	0.205
HCM Control Delay	23.6	16	12.2	12.4	11.3
HCM Lane LOS	C	C	B	B	B
HCM 95th-tile Q	6.7	3	1.9	0.9	0.7

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	387	207	175	396	210	18	690	179	276	587	889
v/c Ratio	0.85	0.21	0.73	0.71	0.49	0.18	0.82	0.35	0.87	0.40	0.71
Control Delay	62.9	35.5	72.0	58.7	10.5	65.5	55.2	7.8	79.5	29.2	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	35.5	72.0	58.7	10.5	65.5	55.2	7.8	79.5	29.2	9.8
Queue Length 50th (ft)	317	71	149	176	0	16	299	0	241	176	163
Queue Length 95th (ft)	#484	107	232	233	72	43	383	60	#422	274	471
Internal Link Dist (ft)		1373		949			1063			1800	
Turn Bay Length (ft)	325		500		235	250		250	250		350
Base Capacity (vph)	533	1148	302	691	478	230	968	563	331	1462	1304
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.18	0.58	0.57	0.44	0.08	0.71	0.32	0.83	0.40	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	356	183	7	161	364	193	17	635	165	254	540	818
Future Volume (veh/h)	356	183	7	161	364	193	17	635	165	254	540	818
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	387	199	8	175	396	210	18	690	179	276	587	889
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	425	998	40	207	585	261	41	849	379	308	1381	994
Arrive On Green	0.24	0.29	0.29	0.12	0.16	0.16	0.02	0.24	0.24	0.17	0.39	0.39
Sat Flow, veh/h	1781	3483	139	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	387	101	106	175	396	210	18	690	179	276	587	889
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	23.3	4.7	4.8	10.6	11.5	14.1	1.1	20.2	10.7	16.7	13.3	42.8
Cycle Q Clear(g_c), s	23.3	4.7	4.8	10.6	11.5	14.1	1.1	20.2	10.7	16.7	13.3	42.8
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	425	509	529	207	585	261	41	849	379	308	1381	994
V/C Ratio(X)	0.91	0.20	0.20	0.84	0.68	0.80	0.44	0.81	0.47	0.90	0.42	0.89
Avail Cap(c_a), veh/h	598	509	529	339	774	345	259	1084	483	372	1381	994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	29.7	29.7	47.7	43.3	44.3	53.1	39.6	36.0	44.6	24.7	17.4
Incr Delay (d2), s/veh	14.3	0.2	0.2	9.9	1.5	9.8	7.2	3.8	0.9	20.9	0.2	10.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	2.1	2.2	5.3	5.2	6.2	0.6	9.2	4.2	9.1	5.6	20.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.2	29.9	29.9	57.6	44.7	54.1	60.3	43.4	36.9	65.5	24.9	27.9
LnGrp LOS	E	C	C	E	D	D	E	D	D	E	C	C
Approach Vol, veh/h		594			781			887			1752	
Approach Delay, s/veh		46.4			50.1			42.4			32.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	32.7	16.8	37.6	6.5	49.2	30.3	24.2
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	23.0	33.6	21.0	24.0	16.0	33.6	37.0	24.0
Max Q Clear Time (g_c+I1), s	18.7	22.2	12.6	6.8	3.1	44.8	25.3	16.1
Green Ext Time (p_c), s	0.3	4.1	0.3	1.0	0.0	0.0	1.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	40.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	56	19	44	46	3
Future Vol, veh/h	10	56	19	44	46	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	70	24	55	58	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	163	60	62	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	103	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	828	1005	1541	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	815	1005	1541	-	-	-
Mov Cap-2 Maneuver	798	-	-	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	921	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	2.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1541	-	967	-	-
HCM Lane V/C Ratio	0.015	-	0.085	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	634	18	34	674	240	46	125	36	168	96	41
Future Volume (veh/h)	84	634	18	34	674	240	46	125	36	168	96	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	88	667	19	36	709	0	48	132	38	177	101	43
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	748	21	71	1383		62	170	199	216	123	297
Arrive On Green	0.06	0.41	0.41	0.04	0.39	0.00	0.13	0.13	0.13	0.19	0.19	0.19
Sat Flow, veh/h	1781	1810	52	1781	3554	1585	492	1354	1585	1154	659	1585
Grp Volume(v), veh/h	88	0	686	36	709	0	180	0	38	278	0	43
Grp Sat Flow(s),veh/h/ln	1781	0	1861	1781	1777	1585	1846	0	1585	1813	0	1585
Q Serve(g_s), s	4.3	0.0	30.2	1.7	13.4	0.0	8.3	0.0	1.9	13.0	0.0	2.0
Cycle Q Clear(g_c), s	4.3	0.0	30.2	1.7	13.4	0.0	8.3	0.0	1.9	13.0	0.0	2.0
Prop In Lane	1.00		0.03	1.00		1.00	0.27		1.00	0.64		1.00
Lane Grp Cap(c), veh/h	114	0	770	71	1383		232	0	199	340	0	297
V/C Ratio(X)	0.77	0.00	0.89	0.51	0.51		0.78	0.00	0.19	0.82	0.00	0.14
Avail Cap(c_a), veh/h	323	0	1119	323	2137		469	0	403	699	0	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.6	0.0	24.0	41.5	20.5	0.0	37.3	0.0	34.5	34.4	0.0	29.9
Incr Delay (d2), s/veh	10.3	0.0	6.6	5.5	0.3	0.0	5.5	0.0	0.5	4.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	13.1	0.8	5.1	0.0	4.0	0.0	0.7	5.9	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.0	0.0	30.6	47.0	20.8	0.0	42.9	0.0	35.0	39.3	0.0	30.1
LnGrp LOS	D	A	C	D	C		D	A	C	D	A	C
Approach Vol, veh/h		774			745	A		218			321	
Approach Delay, s/veh		33.0			22.1			41.5			38.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		15.7	9.7	40.3		22.5	7.5	42.5				
Change Period (Y+Rc), s		4.6	4.0	6.0		6.0	4.0	6.0				
Max Green Setting (Gmax), s		22.4	16.0	53.0		34.0	16.0	53.0				
Max Q Clear Time (g_c+I1), s		10.3	6.3	15.4		15.0	3.7	32.2				
Green Ext Time (p_c), s		0.8	0.1	5.0		1.5	0.0	4.3				

Intersection Summary	
HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	816	30	56	1086	36	49
Future Vol, veh/h	816	30	56	1086	36	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	859	32	59	1143	38	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	891	0	1565	875
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	690	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	759	-	112	348
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	460	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	759	-	103	348
Mov Cap-2 Maneuver	-	-	-	-	237	-
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	424	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	-	-	759	-
HCM Lane V/C Ratio	0.309	-	-	0.078	-
HCM Control Delay (s)	22.9	-	-	10.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.3	-	-	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	228	353	109	326	113	558	1187	91	141	1488	142
Future Volume (veh/h)	211	228	353	109	326	113	558	1187	91	141	1488	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	234	253	125	121	362	70	620	1319	101	157	1653	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	648	289	150	439	196	704	2504	777	224	1794	
Arrive On Green	0.14	0.18	0.18	0.08	0.12	0.12	0.20	0.49	0.49	0.06	0.35	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	234	253	125	121	362	70	620	1319	101	157	1653	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	14.5	7.0	7.8	7.5	11.1	4.5	19.5	19.9	3.9	5.0	34.8	0.0
Cycle Q Clear(g_c), s	14.5	7.0	7.8	7.5	11.1	4.5	19.5	19.9	3.9	5.0	34.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	648	289	150	439	196	704	2504	777	224	1794	
V/C Ratio(X)	0.92	0.39	0.43	0.81	0.82	0.36	0.88	0.53	0.13	0.70	0.92	
Avail Cap(c_a), veh/h	254	648	289	286	507	226	863	2504	777	555	1823	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.4	40.3	40.7	50.4	47.9	45.0	43.3	19.6	15.5	51.3	34.9	0.0
Incr Delay (d2), s/veh	35.7	0.4	1.0	9.8	9.5	1.1	9.0	0.2	0.1	4.0	8.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	3.1	3.1	3.7	5.5	1.8	8.9	7.3	1.4	2.2	14.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.1	40.7	41.7	60.2	57.4	46.1	52.3	19.8	15.6	55.3	43.0	0.0
LnGrp LOS	F	D	D	E	E	D	D	B	B	E	D	
Approach Vol, veh/h		612			553			2040			1810	A
Approach Delay, s/veh		57.1			56.6			29.5			44.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	61.0	20.0	19.9	26.8	45.4	13.4	26.4
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	18.0	50.0	16.0	16.0	28.0	40.0	18.0	14.0
Max Q Clear Time (g_c+I1), s	7.0	21.9	16.5	13.1	21.5	36.8	9.5	9.8
Green Ext Time (p_c), s	0.3	10.7	0.0	0.7	1.3	2.6	0.2	0.8

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	5	37	34	1
Future Vol, veh/h	0	1	5	37	34	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	7	49	45	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	56	0	-	0	33	32
Stage 1	-	-	-	-	32	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1549	-	-	-	980	1042
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1549	-	-	-	980	1042
Mov Cap-2 Maneuver	-	-	-	-	980	-
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1549	-	-	-	982
HCM Lane V/C Ratio	-	-	-	-	0.047
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	65	11	126	97	37	17	168	41	16	105	14
Future Vol, veh/h	22	65	11	126	97	37	17	168	41	16	105	14
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	75	13	145	111	43	20	193	47	18	121	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	12.3	11.4	10.1
HCM LOS	A	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	22%	48%	12%
Vol Thru, %	74%	66%	37%	78%
Vol Right, %	18%	11%	14%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	226	98	260	135
LT Vol	17	22	126	16
Through Vol	168	65	97	105
RT Vol	41	11	37	14
Lane Flow Rate	260	113	299	155
Geometry Grp	1	1	1	1
Degree of Util (X)	0.377	0.173	0.436	0.234
Departure Headway (Hd)	5.222	5.525	5.255	5.439
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	688	649	684	659
Service Time	3.255	3.565	3.288	3.478
HCM Lane V/C Ratio	0.378	0.174	0.437	0.235
HCM Control Delay	11.4	9.7	12.3	10.1
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	1.8	0.6	2.2	0.9

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	120	0	0	248	73	0	0	0	52	0	20
Future Vol, veh/h	20	120	0	0	248	73	0	0	0	52	0	20
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	132	0	0	273	80	0	0	0	57	0	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	8.7	10.1	0	9
HCM LOS	A	B	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	14%	0%	100%	0%
Vol Thru, %	100%	86%	77%	0%	0%
Vol Right, %	0%	0%	23%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	140	321	52	20
LT Vol	0	20	0	52	0
Through Vol	0	120	248	0	0
RT Vol	0	0	73	0	20
Lane Flow Rate	0	154	353	57	22
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0	0.194	0.411	0.097	0.03
Departure Headway (Hd)	5.275	4.549	4.197	6.134	4.923
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	0	791	861	584	726
Service Time	3.319	2.57	2.211	3.872	2.66
HCM Lane V/C Ratio	0	0.195	0.41	0.098	0.03
HCM Control Delay	8.3	8.7	10.1	9.5	7.8
HCM Lane LOS	N	A	B	A	A
HCM 95th-tile Q	0	0.7	2	0.3	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	50	84	194	126	126	210	1753	98	74	1702	93
Future Volume (veh/h)	108	50	84	194	126	126	210	1753	98	74	1702	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	56	93	216	140	0	233	1948	0	82	1891	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	331	148	280	172		238	3078		105	2619	142
Arrive On Green	0.08	0.09	0.09	0.08	0.09	0.00	0.13	0.60	0.00	0.06	0.53	0.53
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	5106	1585	1781	4957	269
Grp Volume(v), veh/h	120	56	93	216	140	0	233	1948	0	82	1297	697
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1702	1585	1781	1702	1822
Q Serve(g_s), s	8.0	1.7	6.8	7.4	8.8	0.0	15.7	29.4	0.0	5.5	34.9	35.1
Cycle Q Clear(g_c), s	8.0	1.7	6.8	7.4	8.8	0.0	15.7	29.4	0.0	5.5	34.9	35.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	147	331	148	280	172		238	3078		105	1798	962
V/C Ratio(X)	0.82	0.17	0.63	0.77	0.82		0.98	0.63		0.78	0.72	0.72
Avail Cap(c_a), veh/h	238	423	189	461	223		238	3078		238	1798	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.2	50.1	52.4	54.1	53.5	0.0	51.8	15.3	0.0	55.7	21.6	21.6
Incr Delay (d2), s/veh	10.8	0.2	4.4	4.5	16.2	0.0	52.9	1.0	0.0	11.9	2.5	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.8	2.9	3.4	4.9	0.0	10.5	11.2	0.0	2.8	14.1	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.0	50.4	56.8	58.5	69.7	0.0	104.7	16.3	0.0	67.6	24.1	26.3
LnGrp LOS	E	D	E	E	E		F	B		E	C	C
Approach Vol, veh/h		269			356	A		2181	A		2076	
Approach Delay, s/veh		59.1			62.9			25.7			26.6	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	16.9	11.1	78.3	13.9	16.7	20.0	69.4
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	10.4	8.8	7.5	31.4	10.0	10.8	17.7	37.1
Green Ext Time (p_c), s	0.4	0.2	0.1	15.8	0.1	0.2	0.0	12.6

Intersection Summary	
HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	20	0	31	0	200	6	7	223	2
Future Volume (veh/h)	0	0	0	20	0	31	0	200	6	7	223	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	23	0	36	0	233	7	8	259	2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	9	0	124	0	128	9	474	512	19	901	7
Arrive On Green	0.00	0.00	0.00	0.07	0.00	0.07	0.00	0.25	0.25	0.01	0.49	0.49
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1853	14
Grp Volume(v), veh/h	0	0	0	23	0	36	0	233	7	8	0	261
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	0	1868
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.4	0.0	2.2	0.1	0.1	0.0	1.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.2	0.0	0.4	0.0	2.2	0.1	0.1	0.0	1.7
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	0	9	0	124	0	128	9	474	512	19	0	908
V/C Ratio(X)	0.00	0.00	0.00	0.19	0.00	0.28	0.00	0.49	0.01	0.41	0.00	0.29
Avail Cap(c_a), veh/h	0	1661	0	2021	0	1816	439	2445	2183	1274	0	3317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	8.9	0.0	8.8	0.0	6.5	4.7	10.0	0.0	3.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.7	0.0	1.2	0.0	0.8	0.0	13.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.5	0.0	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.6	0.0	10.0	0.0	7.2	4.7	23.4	0.0	3.3
LnGrp LOS	A	A	A	A	A	A	A	A	A	C	A	A
Approach Vol, veh/h		0			59			240			269	
Approach Delay, s/veh		0.0			9.8			7.2			3.9	
Approach LOS					A			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.7	9.6		0.0	0.0	14.4		5.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	14.5	26.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	2.1	4.2		0.0	0.0	3.7		2.4
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	1.6		0.2

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	121	38	182	94	30	23	785	100	30	819	33
Future Volume (veh/h)	236	121	38	182	94	30	23	785	100	30	819	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	246	126	40	190	98	31	24	818	104	31	853	34
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	167	53	141	159	50	45	900	114	55	998	40
Arrive On Green	0.09	0.12	0.12	0.08	0.12	0.12	0.03	0.55	0.55	0.03	0.56	0.56
Sat Flow, veh/h	1781	1361	432	1781	1362	431	1781	1626	207	1781	1786	71
Grp Volume(v), veh/h	246	0	166	190	0	129	24	0	922	31	0	887
Grp Sat Flow(s),veh/h/ln	1781	0	1793	1781	0	1793	1781	0	1833	1781	0	1858
Q Serve(g_s), s	7.2	0.0	7.6	6.7	0.0	5.8	1.1	0.0	38.1	1.4	0.0	34.0
Cycle Q Clear(g_c), s	7.2	0.0	7.6	6.7	0.0	5.8	1.1	0.0	38.1	1.4	0.0	34.0
Prop In Lane	1.00		0.24	1.00		0.24	1.00		0.11	1.00		0.04
Lane Grp Cap(c), veh/h	152	0	221	141	0	210	45	0	1015	55	0	1038
V/C Ratio(X)	1.62	0.00	0.75	1.34	0.00	0.61	0.53	0.00	0.91	0.57	0.00	0.85
Avail Cap(c_a), veh/h	152	0	616	141	0	606	179	0	1212	116	0	1162
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	35.8	38.8	0.0	35.4	40.6	0.0	16.9	40.3	0.0	15.7
Incr Delay (d2), s/veh	306.4	0.0	5.1	194.1	0.0	2.9	9.2	0.0	9.0	9.0	0.0	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	0.0	3.5	10.5	0.0	2.6	0.6	0.0	16.6	0.8	0.0	14.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	345.0	0.0	40.9	232.9	0.0	38.3	49.8	0.0	25.9	49.3	0.0	21.6
LnGrp LOS	F	A	D	F	A	D	D	A	C	D	A	C
Approach Vol, veh/h		412			319			946			918	
Approach Delay, s/veh		222.4			154.2			26.5			22.5	
Approach LOS		F			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	51.2	11.2	14.9	6.7	51.6	11.7	14.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	3.4	40.1	8.7	9.6	3.1	36.0	9.2	7.8
Green Ext Time (p_c), s	0.0	6.6	0.0	0.8	0.0	6.4	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	71.9
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	168	0	1	239	146	1	0	0	81	0	129
Future Vol, veh/h	80	168	0	1	239	146	1	0	0	81	0	129
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	96	202	0	1	288	176	1	0	0	98	0	155
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.7	15.9	9.7	12
HCM LOS	B	C	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	32%	0%	39%
Vol Thru, %	0%	68%	62%	0%
Vol Right, %	0%	0%	38%	61%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	248	386	210
LT Vol	1	80	1	81
Through Vol	0	168	239	0
RT Vol	0	0	146	129
Lane Flow Rate	1	299	465	253
Geometry Grp	1	1	1	1
Degree of Util (X)	0.002	0.445	0.631	0.388
Departure Headway (Hd)	6.602	5.361	4.884	5.518
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	540	672	739	653
Service Time	4.664	3.397	2.916	3.556
HCM Lane V/C Ratio	0.002	0.445	0.629	0.387
HCM Control Delay	9.7	12.7	15.9	12
HCM Lane LOS	A	B	C	B
HCM 95th-tile Q	0	2.3	4.5	1.8

Intersection	
Intersection Delay, s/veh	15.5
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	117	251	194	198	170
Future Vol, veh/h	127	117	251	194	198	170
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	143	131	282	218	222	191
Number of Lanes	1	1	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Righ	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	11	15.1	18.9
HCM LOS	B	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	54%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%
Vol Right, %	46%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	368	127	117	251	194
LT Vol	198	0	0	251	0
Through Vol	0	127	0	0	194
RT Vol	170	0	117	0	0
Lane Flow Rate	413	143	131	282	218
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.653	0.262	0.215	0.529	0.378
Departure Headway (Hd)	5.685	6.606	5.89	6.755	6.246
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	633	542	607	533	575
Service Time	3.734	4.367	3.651	4.508	3.998
HCM Lane V/C Ratio	0.652	0.264	0.216	0.529	0.379
HCM Control Delay	18.9	11.7	10.3	16.9	12.8
HCM Lane LOS	C	B	B	C	B
HCM 95th-tile Q	4.8	1	0.8	3.1	1.8

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	661	352	242	246	461	14	813	262	182	640	426
v/c Ratio	1.42	0.36	0.85	0.39	0.91	0.13	0.99	0.46	0.73	0.49	0.35
Control Delay	232.1	33.5	72.7	42.2	41.5	54.9	71.9	7.5	63.9	30.0	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	232.1	33.5	72.7	42.2	41.5	54.9	71.9	7.5	63.9	30.0	1.7
Queue Length 50th (ft)	~685	108	177	83	141	10	~346	0	131	181	0
Queue Length 95th (ft)	#932	154	#321	125	#328	32	#484	69	210	277	39
Internal Link Dist (ft)		1373		949			1063			1800	
Turn Bay Length (ft)	325		500		235	250		250	250		350
Base Capacity (vph)	467	1094	306	773	560	258	824	569	306	1312	1228
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.32	0.79	0.32	0.82	0.05	0.99	0.46	0.59	0.49	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	648	340	5	237	241	452	14	797	257	178	627	417
Future Volume (veh/h)	648	340	5	237	241	452	14	797	257	178	627	417
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	661	347	5	242	246	308	14	813	185	182	640	426
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	1137	16	271	747	333	34	813	363	213	1171	933
Arrive On Green	0.26	0.32	0.32	0.15	0.21	0.21	0.02	0.23	0.23	0.12	0.33	0.33
Sat Flow, veh/h	1781	3586	52	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	661	172	180	242	246	308	14	813	185	182	640	426
Grp Sat Flow(s),veh/h/ln	1781	1777	1861	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	29.0	8.2	8.2	14.9	6.6	21.3	0.9	25.6	11.4	11.2	16.5	16.9
Cycle Q Clear(g_c), s	29.0	8.2	8.2	14.9	6.6	21.3	0.9	25.6	11.4	11.2	16.5	16.9
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	462	563	590	271	747	333	34	813	363	213	1171	933
V/C Ratio(X)	1.43	0.30	0.31	0.89	0.33	0.92	0.42	1.00	0.51	0.85	0.55	0.46
Avail Cap(c_a), veh/h	462	563	590	302	762	340	255	813	363	302	1171	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	28.9	28.9	46.5	37.5	43.3	54.3	43.2	37.7	48.3	30.7	13.0
Incr Delay (d2), s/veh	206.7	0.3	0.3	24.8	0.3	29.9	8.0	31.6	1.2	15.1	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	39.0	3.5	3.7	8.4	2.9	11.1	0.5	14.7	4.5	5.9	7.1	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	248.1	29.2	29.2	71.4	37.8	73.3	62.3	74.8	38.9	63.4	31.2	13.3
LnGrp LOS	F	C	C	E	D	E	E	F	D	E	C	B
Approach Vol, veh/h		1013			796			1012			1248	
Approach Delay, s/veh		172.1			61.7			68.1			29.8	
Approach LOS		F			E			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	32.0	21.1	41.5	6.1	43.3	33.0	29.5
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	19.0	25.6	19.0	34.0	16.0	28.6	29.0	24.0
Max Q Clear Time (g_c+I1), s	13.2	27.6	16.9	10.2	2.9	18.9	31.0	23.3
Green Ext Time (p_c), s	0.2	0.0	0.1	2.0	0.0	4.2	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	81.0
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	27	48	44	45	26
Future Vol, veh/h	17	27	48	44	45	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	29	52	48	49	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	215	63	77	0	-	0
Stage 1	63	-	-	-	-	-
Stage 2	152	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	773	1002	1522	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	746	1002	1522	-	-	-
Mov Cap-2 Maneuver	750	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	3.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1522	-	887	-	-
HCM Lane V/C Ratio	0.034	-	0.054	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

KDA

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	1800	20	70	1100	50	50	500	100	120	240	60
Future Volume (veh/h)	200	1800	20	70	1100	50	50	500	100	120	240	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	220	1978	22	77	1209	0	55	549	110	132	264	66
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	1690	754	94	1395		78	499	423	106	546	462
Arrive On Green	0.14	0.48	0.48	0.05	0.39	0.00	0.04	0.27	0.27	0.06	0.29	0.29
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	220	1978	22	77	1209	0	55	549	110	132	264	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	18.4	72.0	1.1	6.5	47.4	0.0	4.6	40.4	8.3	9.0	17.6	4.7
Cycle Q Clear(g_c), s	18.4	72.0	1.1	6.5	47.4	0.0	4.6	40.4	8.3	9.0	17.6	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	242	1690	754	94	1395		78	499	423	106	546	462
V/C Ratio(X)	0.91	1.17	0.03	0.82	0.87		0.70	1.10	0.26	1.25	0.48	0.14
Avail Cap(c_a), veh/h	271	1690	754	94	1395		111	499	423	106	546	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.5	39.7	21.1	71.0	42.3	0.0	71.4	55.5	43.7	71.2	44.2	39.6
Incr Delay (d2), s/veh	30.1	83.4	0.0	41.0	6.0	0.0	11.0	70.4	0.3	167.8	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	49.3	0.4	4.0	21.3	0.0	2.3	28.6	3.3	9.0	8.2	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.6	123.1	21.1	111.9	48.4	0.0	82.4	125.9	44.0	239.0	44.9	39.8
LnGrp LOS	F	F	C	F	D		F	F	D	F	D	D
Approach Vol, veh/h		2220			1286	A		714			462	
Approach Delay, s/veh		119.3			52.2			109.9			99.6	
Approach LOS		F			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	46.4	24.6	65.4	11.2	50.2	12.0	78.0
Change Period (Y+Rc), s	6.0	* 6	4.0	6.0	4.6	6.0	4.0	6.0
Max Green Setting (Gmax), s	9.0	* 40	23.0	57.0	9.4	40.0	8.0	72.0
Max Q Clear Time (g_c+I1), s	11.0	42.4	20.4	49.4	6.6	19.6	8.5	74.0
Green Ext Time (p_c), s	0.0	0.0	0.1	4.4	0.0	1.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	97.5
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	104.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1980	40	30	1090	60	90
Future Vol, veh/h	1980	40	30	1090	60	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2106	43	32	1160	64	96

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2149	0	2772	2128
Stage 1	-	-	-	-	2128	-
Stage 2	-	-	-	-	644	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	249	-	~ 18	~ 62
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	486	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	249	-	~ 16	~ 62
Mov Cap-2 Maneuver	-	-	-	-	~ 16	-
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	423	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	$ 2297.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	29	-	-	249	-
HCM Lane V/C Ratio	5.503	-	-	0.128	-
HCM Control Delay (s)	$ 2297.1	-	-	21.6	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	19.4	-	-	0.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1980	40	30	1090	60	90
Future Volume (veh/h)	1980	40	30	1090	60	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	2106	43	32	1160	64	96
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	2368	48	56	2719	74	110
Arrive On Green	0.66	0.66	0.03	0.76	0.11	0.11
Sat Flow, veh/h	3655	72	1781	3647	660	989
Grp Volume(v), veh/h	1047	1102	32	1160	161	0
Grp Sat Flow(s),veh/h/ln	1777	1857	1781	1777	1659	0
Q Serve(g_s), s	40.5	41.2	1.5	9.6	8.0	0.0
Cycle Q Clear(g_c), s	40.5	41.2	1.5	9.6	8.0	0.0
Prop In Lane		0.04	1.00		0.40	0.60
Lane Grp Cap(c), veh/h	1181	1235	56	2719	185	0
V/C Ratio(X)	0.89	0.89	0.57	0.43	0.87	0.00
Avail Cap(c_a), veh/h	1227	1283	131	2961	185	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.5	11.6	40.3	3.5	36.8	0.0
Incr Delay (d2), s/veh	7.9	8.1	9.0	0.1	33.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.2	16.2	0.8	2.3	4.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.4	19.7	49.2	3.6	69.8	0.0
LnGrp LOS	B	B	D	A	E	A
Approach Vol, veh/h	2149			1192	161	
Approach Delay, s/veh	19.6			4.8	69.8	
Approach LOS	B			A	E	

Timer - Assigned Phs		2	3	4			8
Phs Duration (G+Y+Rc), s		14.0	8.4	61.8			70.3
Change Period (Y+Rc), s		4.6	5.8	5.8			5.8
Max Green Setting (Gmax), s		9.4	6.2	58.2			70.2
Max Q Clear Time (g_c+I1), s		10.0	3.5	43.2			11.6
Green Ext Time (p_c), s		0.0	0.0	12.8			12.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	415	959	65	180	48	393	1489	73	54	1266	184
Future Volume (veh/h)	167	415	959	65	180	48	393	1489	73	54	1266	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	176	437	641	68	189	51	414	1567	77	57	1333	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	1329	593	88	1788	555	494	1777	552	74	1586	
Arrive On Green	0.07	0.37	0.37	0.05	0.35	0.35	0.14	0.35	0.35	0.04	0.25	0.00
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	5106	1585	1781	6434	1585
Grp Volume(v), veh/h	176	437	641	68	189	51	414	1567	77	57	1333	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	1702	1585	1781	1609	1585
Q Serve(g_s), s	5.3	9.4	40.0	4.0	2.7	2.3	12.5	30.9	3.6	3.4	21.1	0.0
Cycle Q Clear(g_c), s	5.3	9.4	40.0	4.0	2.7	2.3	12.5	30.9	3.6	3.4	21.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	1329	593	88	1788	555	494	1777	552	74	1586	
V/C Ratio(X)	0.70	0.33	1.08	0.77	0.11	0.09	0.84	0.88	0.14	0.77	0.84	
Avail Cap(c_a), veh/h	1002	1329	593	183	1788	555	679	1777	552	267	1685	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.4	23.9	33.5	50.2	23.5	23.3	44.6	32.8	23.9	50.7	38.3	0.0
Incr Delay (d2), s/veh	3.4	0.1	60.8	13.4	0.0	0.1	6.7	5.6	0.1	15.3	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	3.9	24.9	2.1	1.1	0.9	5.6	12.8	1.3	1.8	8.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.8	24.0	94.3	63.6	23.5	23.4	51.3	38.4	24.0	66.0	42.1	0.0
LnGrp LOS	D	C	F	E	C	C	D	D	C	E	D	
Approach Vol, veh/h		1254			308			2058			1390	A
Approach Delay, s/veh		63.8			32.3			40.4			43.1	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	43.2	11.8	43.4	19.3	32.4	9.3	46.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	33.0	31.0	20.0	21.0	28.0	11.0	40.0
Max Q Clear Time (g_c+I1), s	5.4	32.9	7.3	4.7	14.5	23.1	6.0	42.0
Green Ext Time (p_c), s	0.1	0.1	0.6	1.1	0.8	3.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	14.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	40	40	560	10
Future Vol, veh/h	10	10	40	40	560	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	11	43	43	602	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	86	0	-	0	98	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1510	-	-	-	901	999
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1510	-	-	-	895	999
Mov Cap-2 Maneuver	-	-	-	-	895	-
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	989	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1510	-	-	-	897
HCM Lane V/C Ratio	0.007	-	-	-	0.683
HCM Control Delay (s)	7.4	0	-	-	17.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	5.6

Intersection	
Intersection Delay, s/veh	505.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	540	140	120	70	40	40	560	260	40	240	20
Future Vol, veh/h	50	540	140	120	70	40	40	560	260	40	240	20
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	667	173	148	86	49	49	691	321	49	296	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	562	61.5	721.9	88.1
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	7%	52%	13%
Vol Thru, %	65%	74%	30%	80%
Vol Right, %	30%	19%	17%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	860	730	230	300
LT Vol	40	50	120	40
Through Vol	560	540	70	240
RT Vol	260	140	40	20
Lane Flow Rate	1062	901	284	370
Geometry Grp	1	1	1	1
Degree of Util (X)	2.53	2.166	0.736	0.911
Departure Headway (Hd)	11.642	12.321	18.916	17.676
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	329	306	196	207
Service Time	9.642	10.321	16.916	15.676
HCM Lane V/C Ratio	3.228	2.944	1.449	1.787
HCM Control Delay	721.9	562	61.5	88.1
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	63.7	47.6	4.8	7.3

MOVEMENT SUMMARY

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative AM
Site Category: -
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	43	3.0	1.422	217.2	LOS F	103.6	2652.0	1.00	5.08	12.00	8.1
8	T1	609	3.0	1.422	217.2	LOS F	103.6	2652.0	1.00	5.08	12.00	8.0
18	R2	283	3.0	1.422	217.2	LOS F	103.6	2652.0	1.00	5.08	12.00	8.1
Approach		935	3.0	1.422	217.2	LOS F	103.6	2652.0	1.00	5.08	12.00	8.0
East: Vineyard Rd												
1	L2	130	3.0	0.322	8.4	LOS A	1.5	37.5	0.63	0.61	0.63	32.0
6	T1	76	3.0	0.322	8.4	LOS A	1.5	37.5	0.63	0.61	0.63	34.0
16	R2	43	3.0	0.322	8.4	LOS A	1.5	37.5	0.63	0.61	0.63	30.9
Approach		250	3.0	0.322	8.4	LOS A	1.5	37.5	0.63	0.61	0.63	32.4
North: Cook Riolo Rd												
7	L2	43	3.0	0.311	6.5	LOS A	1.6	40.8	0.46	0.34	0.46	33.2
4	T1	261	3.0	0.311	6.5	LOS A	1.6	40.8	0.46	0.34	0.46	31.2
14	R2	22	3.0	0.311	6.5	LOS A	1.6	40.8	0.46	0.34	0.46	32.4
Approach		326	3.0	0.311	6.5	LOS A	1.6	40.8	0.46	0.34	0.46	31.5
West: Vineyard Rd												
5	L2	54	3.0	0.919	35.9	LOS E	25.5	652.7	1.00	1.73	3.03	23.7
2	T1	587	3.0	0.919	35.9	LOS E	25.5	652.7	1.00	1.73	3.03	24.7
12	R2	152	3.0	0.919	35.9	LOS E	25.5	652.7	1.00	1.73	3.03	23.1
Approach		793	3.0	0.919	35.9	LOS E	25.5	652.7	1.00	1.73	3.03	24.3
All Vehicles		2304	3.0	1.422	102.3	LOS F	103.6	2652.0	0.88	2.77	6.04	13.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative AM
2 LANE ROUNDABOUT
Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	43	3.0	0.860	30.8	LOS D	13.5	345.2	0.94	1.57	2.64	24.6
8	T1	609	3.0	0.860	30.8	LOS D	13.5	345.2	0.94	1.57	2.63	23.5
18	R2	283	3.0	0.414	11.0	LOS B	2.1	53.4	0.67	0.75	0.88	30.4
Approach		935	3.0	0.860	24.8	LOS C	13.5	345.2	0.86	1.32	2.10	25.3
East: Vineyard Rd												
1	L2	130	3.0	0.235	7.5	LOS A	0.9	22.4	0.59	0.59	0.59	31.9
6	T1	76	3.0	0.235	7.1	LOS A	0.9	22.4	0.58	0.57	0.58	34.9
16	R2	43	3.0	0.113	6.6	LOS A	0.4	10.2	0.57	0.56	0.57	32.8
Approach		250	3.0	0.235	7.2	LOS A	0.9	22.4	0.58	0.58	0.58	32.9
North: Cook Riolo Rd												
7	L2	43	3.0	0.203	5.1	LOS A	0.8	21.2	0.37	0.27	0.37	33.7
4	T1	261	3.0	0.203	4.9	LOS A	0.8	21.2	0.37	0.26	0.37	31.9
14	R2	22	3.0	0.098	4.3	LOS A	0.4	9.5	0.36	0.24	0.36	33.7
Approach		326	3.0	0.203	4.9	LOS A	0.8	21.2	0.37	0.26	0.37	32.2
West: Vineyard Rd												
5	L2	54	3.0	0.582	11.9	LOS B	5.1	129.7	0.68	0.79	1.06	31.5
2	T1	587	3.0	0.582	11.2	LOS B	5.1	129.7	0.65	0.75	0.98	33.8
12	R2	152	3.0	0.280	7.2	LOS A	1.2	30.1	0.53	0.49	0.53	32.6
Approach		793	3.0	0.582	10.4	LOS B	5.1	129.7	0.63	0.70	0.90	33.4
All Vehicles		2304	3.0	0.860	15.1	LOS C	13.5	345.2	0.68	0.88	1.28	29.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	160.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	880	0	0	200	80	0	0	0	70	0	30
Future Vol, veh/h	60	880	0	0	200	80	0	0	0	70	0	30
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	1023	0	0	233	93	0	0	0	81	0	35
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	219.9	13	0	12
HCM LOS	F	B	-	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	6%	0%	70%
Vol Thru, %	100%	94%	71%	0%
Vol Right, %	0%	0%	29%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	940	280	100
LT Vol	0	60	0	70
Through Vol	0	880	200	0
RT Vol	0	0	80	30
Lane Flow Rate	0	1093	326	116
Geometry Grp	1	1	1	1
Degree of Util (X)	0	1.439	0.454	0.204
Departure Headway (Hd)	7.661	4.74	5.486	7.144
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	776	661	506
Service Time	5.661	2.767	3.486	5.144
HCM Lane V/C Ratio	0	1.409	0.493	0.229
HCM Control Delay	10.7	219.9	13	12
HCM Lane LOS	N	F	B	B
HCM 95th-tile Q	0	49.6	2.4	0.8

MOVEMENT SUMMARY

Site: 6 [Vineyard Rd / Brady Lane]

Cumulative AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
East: Vineyard Rd												
6	T1	217	3.0	0.234	4.8	LOS A	1.2	30.7	0.22	0.09	0.22	37.7
16	R2	87	3.0	0.234	4.8	LOS A	1.2	30.7	0.22	0.09	0.22	29.0
Approach		304	3.0	0.234	4.8	LOS A	1.2	30.7	0.22	0.09	0.22	34.7
North: Brady Lane												
7	L2	76	3.0	0.102	4.3	LOS A	0.4	11.2	0.37	0.24	0.37	28.3
14	R2	33	3.0	0.102	4.3	LOS A	0.4	11.2	0.37	0.24	0.37	27.7
Approach		109	3.0	0.102	4.3	LOS A	0.4	11.2	0.37	0.24	0.37	28.1
West: Vineyard Rd												
5	L2	65	3.0	0.771	15.0	LOS C	10.2	260.6	0.60	0.31	0.60	26.9
2	T1	957	3.0	0.771	15.0	LOS C	10.2	260.6	0.60	0.31	0.60	32.1
Approach		1022	3.0	0.771	15.0	LOS C	10.2	260.6	0.60	0.31	0.60	31.7
All Vehicles		1435	3.0	0.771	12.0	LOS B	10.2	260.6	0.50	0.26	0.50	32.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	880	0	0	200	80	0	0	0	70	0	30
Future Volume (veh/h)	60	880	0	0	200	80	0	0	0	70	0	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	1023	0	0	233	93	0	0	0	81	0	35
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	1257	0	4	600	239	0	163	0	322	0	138
Arrive On Green	0.07	0.67	0.00	0.00	0.47	0.47	0.00	0.00	0.00	0.09	0.00	0.09
Sat Flow, veh/h	1781	1870	0	1781	1271	508	0	1870	0	1781	0	1585
Grp Volume(v), veh/h	70	1023	0	0	0	326	0	0	0	81	0	35
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1779	0	1870	0	1781	0	1585
Q Serve(g_s), s	1.6	17.1	0.0	0.0	0.0	5.1	0.0	0.0	0.0	1.9	0.0	0.9
Cycle Q Clear(g_c), s	1.6	17.1	0.0	0.0	0.0	5.1	0.0	0.0	0.0	1.9	0.0	0.9
Prop In Lane	1.00		0.00	1.00		0.29	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	1257	0	4	0	839	0	163	0	322	0	138
V/C Ratio(X)	0.60	0.81	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.25	0.00	0.25
Avail Cap(c_a), veh/h	297	1960	0	256	0	1823	0	321	0	472	0	272
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.6	5.1	0.0	0.0	0.0	7.4	0.0	0.0	0.0	18.8	0.0	18.4
Incr Delay (d2), s/veh	4.8	1.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.4	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.9	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	6.7	0.0	0.0	0.0	7.7	0.0	0.0	0.0	19.2	0.0	19.3
LnGrp LOS	C	A	A	A	A	A	A	A	A	B	A	B
Approach Vol, veh/h		1093			326			0			116	
Approach Delay, s/veh		7.8			7.7			0.0			19.3	
Approach LOS		A			A						B	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	8.4	0.0	34.8	8.4	8.6	26.1
Change Period (Y+Rc), s	4.6	5.8	5.8	4.6	5.8	5.8
Max Green Setting (Gmax), s	7.4	6.2	45.2	7.4	7.2	44.2
Max Q Clear Time (g_c+I1), s	0.0	0.0	19.1	3.9	3.6	7.1
Green Ext Time (p_c), s	0.0	0.0	9.9	0.1	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	270	226	109	50	51	125	1760	48	139	2098	31
Future Volume (veh/h)	99	270	226	109	50	51	125	1760	48	139	2098	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	284	238	115	53	0	132	1853	0	146	2208	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	423	189	173	342		192	3098		207	3168	47
Arrive On Green	0.07	0.12	0.12	0.05	0.10	0.00	0.06	0.61	0.00	0.06	0.61	0.61
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5183	77
Grp Volume(v), veh/h	104	284	238	115	53	0	132	1853	0	146	1449	792
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1856
Q Serve(g_s), s	6.9	9.2	14.3	3.9	1.6	0.0	4.5	26.9	0.0	5.0	34.6	34.7
Cycle Q Clear(g_c), s	6.9	9.2	14.3	3.9	1.6	0.0	4.5	26.9	0.0	5.0	34.6	34.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	130	423	189	173	342		192	3098		207	2080	1135
V/C Ratio(X)	0.80	0.67	1.26	0.67	0.15		0.69	0.60		0.70	0.70	0.70
Avail Cap(c_a), veh/h	238	423	189	461	423		461	3098		461	2080	1135
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	50.6	52.9	56.0	49.7	0.0	55.6	14.6	0.0	55.4	15.8	15.8
Incr Delay (d2), s/veh	10.8	4.1	152.5	4.3	0.2	0.0	4.3	0.9	0.0	4.3	2.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	4.3	13.7	1.8	0.7	0.0	2.1	10.1	0.0	2.3	13.3	15.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.6	54.7	205.3	60.4	49.9	0.0	60.0	15.4	0.0	59.7	17.8	19.4
LnGrp LOS	E	D	F	E	D		E	B		E	B	B
Approach Vol, veh/h		626			168	A		1985	A		2387	
Approach Delay, s/veh		113.8			57.1			18.4			20.9	
Approach LOS		F			E			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	20.0	11.2	78.8	12.7	17.3	10.7	79.3
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	5.9	16.3	7.0	28.9	8.9	3.6	6.5	36.7
Green Ext Time (p_c), s	0.2	0.0	0.3	16.2	0.1	0.1	0.2	14.0

Intersection Summary	
HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	200	0	250	0	620	230	250	250	0
Future Volume (veh/h)	0	0	0	200	0	250	0	620	230	250	250	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	282	0	352	0	775	324	352	352	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.80	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	2	0	376	0	683	2	752	972	392	1267	0
Arrive On Green	0.00	0.00	0.00	0.21	0.00	0.21	0.00	0.40	0.40	0.22	0.68	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	282	0	352	0	775	324	352	352	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	12.0	0.0	13.1	0.0	32.5	8.0	15.5	6.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	12.0	0.0	13.1	0.0	32.5	8.0	15.5	6.0	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	2	0	376	0	683	2	752	972	392	1267	0
V/C Ratio(X)	0.00	0.00	0.00	0.75	0.00	0.52	0.00	1.03	0.33	0.90	0.28	0.00
Avail Cap(c_a), veh/h	0	416	0	507	0	799	110	752	972	430	1267	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	29.9	0.0	16.8	0.0	24.2	7.6	30.7	5.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.2	0.0	0.6	0.0	41.0	0.2	20.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	5.4	0.0	4.6	0.0	21.8	4.3	8.6	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	34.1	0.0	17.4	0.0	65.1	7.8	50.9	5.3	0.0
LnGrp LOS	A	A	A	C	A	B	A	F	A	D	A	A
Approach Vol, veh/h		0			634			1099			704	
Approach Delay, s/veh		0.0			24.8			48.2			28.1	
Approach LOS					C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.3	37.0		0.0	0.0	59.3		21.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	19.5	32.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	17.5	34.5		0.0	0.0	8.0		15.1
Green Ext Time (p_c), s	0.2	0.0		0.0	0.0	2.2		1.9

Intersection Summary	
HCM 6th Ctrl Delay	36.3
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	180	580	20	110	40	360	1800	370	50	1780	180
Future Volume (veh/h)	120	180	580	20	110	40	360	1800	370	50	1780	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	431	351	21	117	43	383	1915	394	53	1894	191
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	480	407	76	273	100	146	2601	807	68	2377	738
Arrive On Green	0.07	0.26	0.26	0.02	0.21	0.21	0.08	0.51	0.51	0.04	0.47	0.47
Sat Flow, veh/h	1781	1870	1585	3456	1305	479	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	128	431	351	21	0	160	383	1915	394	53	1894	191
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1784	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	7.2	23.1	21.9	0.6	0.0	8.1	8.5	30.5	16.8	3.1	32.6	7.6
Cycle Q Clear(g_c), s	7.2	23.1	21.9	0.6	0.0	8.1	8.5	30.5	16.8	3.1	32.6	7.6
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	480	407	76	0	373	146	2601	807	68	2377	738
V/C Ratio(X)	1.03	0.90	0.86	0.28	0.00	0.43	2.62	0.74	0.49	0.78	0.80	0.26
Avail Cap(c_a), veh/h	124	524	444	224	0	491	146	2750	854	95	2603	808
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	37.2	36.8	49.9	0.0	35.6	47.5	19.9	16.6	49.4	23.5	16.8
Incr Delay (d2), s/veh	90.2	17.3	15.0	2.0	0.0	0.8	748.6	1.0	0.5	23.4	1.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	12.7	10.0	0.3	0.0	3.6	34.1	11.7	6.0	1.8	12.9	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	138.4	54.5	51.8	51.8	0.0	36.4	796.1	20.9	17.0	72.8	25.2	17.0
LnGrp LOS	F	D	D	D	A	D	F	C	B	E	C	B
Approach Vol, veh/h		910			181			2692			2138	
Approach Delay, s/veh		65.2			38.2			130.7			25.6	
Approach LOS		E			D			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	57.3	6.8	31.1	13.0	52.7	11.7	26.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	5.1	32.5	2.6	25.1	10.5	34.6	9.2	10.1
Green Ext Time (p_c), s	0.0	17.3	0.0	1.5	0.0	13.6	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	79.9
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	280.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	200	570	0	0	130	500	0	0	0	450	0	80
Future Vol, veh/h	200	570	0	0	130	500	0	0	0	450	0	80
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	244	695	0	0	159	610	0	0	0	549	0	98
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	410.6	217.1	0	167.8
HCM LOS	F	F	-	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	26%	0%	85%
Vol Thru, %	100%	74%	21%	0%
Vol Right, %	0%	0%	79%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	770	630	530
LT Vol	0	200	0	450
Through Vol	0	570	130	0
RT Vol	0	0	500	80
Lane Flow Rate	0	939	768	646
Geometry Grp	1	1	1	1
Degree of Util (X)	0	1.848	1.399	1.277
Departure Headway (Hd)	14.542	8.436	8.499	8.593
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	441	438	427
Service Time	12.542	6.436	6.499	6.593
HCM Lane V/C Ratio	0	2.129	1.753	1.513
HCM Control Delay	17.5	410.6	217.1	167.8
HCM Lane LOS	N	F	F	F
HCM 95th-tile Q	0	51	28.8	23.2

MOVEMENT SUMMARY

Site: 10 [Cook Riolo Rd / PFE Rd]

Cumulative AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	1	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	26.8
8	T1	1	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	25.5
18	R2	1	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	26.2
Approach		3	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	26.1
East: PFE Rd												
1	L2	1	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	28.2
6	T1	141	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	34.0
16	R2	543	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	30.9
Approach		686	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	31.5
North: Cook Riolo Rd												
7	L2	489	3.0	0.395	6.7	LOS A	2.2	56.1	0.37	0.23	0.37	30.9
4	T1	1	3.0	0.395	6.7	LOS A	2.2	56.1	0.37	0.23	0.37	25.8
14	R2	87	3.0	0.072	3.6	LOS A	0.3	7.2	0.26	0.14	0.26	33.9
Approach		577	3.0	0.395	6.3	LOS A	2.2	56.1	0.35	0.21	0.35	31.3
West: PFE Rd												
5	L2	217	3.0	0.922	35.2	LOS E	24.6	629.7	1.00	1.75	3.18	23.7
2	T1	620	3.0	0.922	35.2	LOS E	24.6	629.7	1.00	1.75	3.18	24.6
12	R2	1	3.0	0.922	35.2	LOS E	24.6	629.7	1.00	1.75	3.18	20.7
Approach		838	3.0	0.922	35.2	LOS E	24.6	629.7	1.00	1.75	3.18	24.4
All Vehicles		2104	3.0	0.922	19.6	LOS C	24.6	629.7	0.71	0.94	1.62	28.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	510	580	430	130	550	1140
Future Volume (veh/h)	510	580	430	130	550	1140
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	560	637	473	143	604	1253
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	689	584	565	1141	424	755
Arrive On Green	0.37	0.37	0.16	0.61	0.24	0.24
Sat Flow, veh/h	1870	1585	3456	1870	1781	3170
Grp Volume(v), veh/h	560	637	473	143	604	1253
Grp Sat Flow(s),veh/h/ln	1870	1585	1728	1870	1781	1585
Q Serve(g_s), s	19.9	27.2	9.8	2.4	17.6	17.6
Cycle Q Clear(g_c), s	19.9	27.2	9.8	2.4	17.6	17.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	689	584	565	1141	424	755
V/C Ratio(X)	0.81	1.09	0.84	0.13	1.42	1.66
Avail Cap(c_a), veh/h	689	584	617	1170	424	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	23.3	29.9	6.1	28.1	28.1
Incr Delay (d2), s/veh	7.4	64.7	9.2	0.0	203.8	302.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	19.2	4.4	0.7	30.8	37.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.4	88.0	39.2	6.1	232.0	330.7
LnGrp LOS	C	F	D	A	F	F
Approach Vol, veh/h	1197			616	1857	
Approach Delay, s/veh	60.1			31.5	298.6	
Approach LOS	E			C	F	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		23.0	17.9	33.0		50.9
Change Period (Y+Rc), s		5.4	5.8	5.8		5.8
Max Green Setting (Gmax), s		17.6	13.2	27.2		46.2
Max Q Clear Time (g_c+I1), s		19.6	11.8	29.2		4.4
Green Ext Time (p_c), s		0.0	0.3	0.0		0.7

Intersection Summary	
HCM 6th Ctrl Delay	176.0
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	2200	10	210	930	400	20	1330	570	660	1210	570
Future Volume (veh/h)	170	2200	10	210	930	400	20	1330	570	660	1210	570
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	2391	11	228	1011	435	22	1446	620	717	1315	620
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	1887	586	200	1823	566	86	1317	409	576	2042	746
Arrive On Green	0.07	0.37	0.37	0.06	0.36	0.36	0.02	0.26	0.26	0.17	0.40	0.40
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	185	2391	11	228	1011	435	22	1446	620	717	1315	620
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.3	51.0	0.6	8.0	21.9	33.6	0.9	35.6	35.6	23.0	28.7	46.9
Cycle Q Clear(g_c), s	7.3	51.0	0.6	8.0	21.9	33.6	0.9	35.6	35.6	23.0	28.7	46.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	244	1887	586	200	1823	566	86	1317	409	576	2042	746
V/C Ratio(X)	0.76	1.27	0.02	1.14	0.55	0.77	0.26	1.10	1.52	1.24	0.64	0.83
Avail Cap(c_a), veh/h	601	1887	586	200	1823	566	200	1317	409	576	2042	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	43.5	27.6	65.0	35.6	39.3	66.0	51.2	51.2	57.5	33.5	31.8
Incr Delay (d2), s/veh	4.8	124.5	0.0	105.7	0.4	6.4	1.6	56.0	244.6	124.3	0.7	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	43.0	0.2	6.5	9.2	14.0	0.4	21.9	41.9	20.0	12.0	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.8	168.0	27.6	170.7	35.9	45.7	67.6	107.2	295.8	181.8	34.2	39.7
LnGrp LOS	E	F	C	F	D	D	E	F	F	F	C	D
Approach Vol, veh/h		2587			1674			2088			2652	
Approach Delay, s/veh		160.3			56.8			162.8			75.4	
Approach LOS		F			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	42.0	12.0	57.0	7.4	61.6	13.7	55.3
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	23.0	35.6	8.0	51.0	8.0	50.6	24.0	35.0
Max Q Clear Time (g_c+I1), s	25.0	37.6	10.0	53.0	2.9	48.9	9.3	35.6
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.4	0.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	116.6
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1430	20	80	1740	200	30	180	40	160	460	70
Future Volume (veh/h)	60	1430	20	80	1740	200	30	180	40	160	460	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	1505	21	84	1832	0	32	189	42	168	484	74
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1793	800	107	1843		85	279	236	198	418	354
Arrive On Green	0.05	0.50	0.50	0.06	0.52	0.00	0.05	0.15	0.15	0.11	0.22	0.22
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	63	1505	21	84	1832	0	32	189	42	168	484	74
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.4	45.6	0.8	5.8	64.2	0.0	2.2	12.0	2.9	11.6	28.0	4.8
Cycle Q Clear(g_c), s	4.4	45.6	0.8	5.8	64.2	0.0	2.2	12.0	2.9	11.6	28.0	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	1793	800	107	1843		85	279	236	198	418	354
V/C Ratio(X)	0.77	0.84	0.03	0.79	0.99		0.38	0.68	0.18	0.85	1.16	0.21
Avail Cap(c_a), veh/h	284	1928	860	242	1843		176	279	236	369	418	354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	26.7	15.6	58.1	30.0	0.0	57.9	50.5	46.6	54.7	48.7	39.7
Incr Delay (d2), s/veh	14.1	3.3	0.0	12.0	19.5	0.0	2.7	6.5	0.4	9.7	95.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	18.7	0.3	2.9	30.0	0.0	1.0	6.1	1.1	5.7	23.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.3	30.0	15.6	70.1	49.5	0.0	60.6	57.0	47.0	64.3	143.6	39.9
LnGrp LOS	E	C	B	E	D		E	E	D	E	F	D
Approach Vol, veh/h		1589			1916	A		263			726	
Approach Delay, s/veh		31.5			50.4			55.8			114.7	
Approach LOS		C			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	24.7	9.7	71.0	10.6	34.0	11.5	69.2
Change Period (Y+Rc), s	6.0	* 6	4.0	6.0	4.6	6.0	4.0	6.0
Max Green Setting (Gmax), s	26.0	* 14	20.0	65.0	12.4	28.0	17.0	68.0
Max Q Clear Time (g_c+I1), s	13.6	14.0	6.4	66.2	4.2	30.0	7.8	47.6
Green Ext Time (p_c), s	0.3	0.0	0.1	0.0	0.0	0.0	0.1	10.9

Intersection Summary	
HCM 6th Ctrl Delay	54.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	38.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1420	180	80	1940	40	60
Future Vol, veh/h	1420	180	80	1940	40	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1495	189	84	2042	42	63

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1684	0	2779	1590
Stage 1	-	-	-	-	1590	-
Stage 2	-	-	-	-	1189	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	378	-	~ 18	132
Stage 1	-	-	-	-	183	-
Stage 2	-	-	-	-	252	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	378	-	~ 14	132
Mov Cap-2 Maneuver	-	-	-	-	~ 14	-
Stage 1	-	-	-	-	183	-
Stage 2	-	-	-	-	196	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	$ 1402.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	30	-	-	378	-
HCM Lane V/C Ratio	3.509	-	-	0.223	-
HCM Control Delay (s)	$ 1402.3	-	-	17.2	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	12.6	-	-	0.8	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1420	180	80	1940	40	60
Future Volume (veh/h)	1420	180	80	1940	40	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	1495	189	84	2042	42	63
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1885	236	111	2664	53	80
Arrive On Green	0.59	0.59	0.06	0.75	0.08	0.08
Sat Flow, veh/h	3272	397	1781	3647	658	987
Grp Volume(v), veh/h	828	856	84	2042	106	0
Grp Sat Flow(s),veh/h/ln	1777	1799	1781	1777	1660	0
Q Serve(g_s), s	21.8	22.6	2.8	20.7	3.8	0.0
Cycle Q Clear(g_c), s	21.8	22.6	2.8	20.7	3.8	0.0
Prop In Lane		0.22	1.00		0.40	0.59
Lane Grp Cap(c), veh/h	1054	1067	111	2664	134	0
V/C Ratio(X)	0.79	0.80	0.76	0.77	0.79	0.00
Avail Cap(c_a), veh/h	1223	1238	209	3200	255	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.5	9.7	28.3	4.5	27.7	0.0
Incr Delay (d2), s/veh	3.0	3.4	10.2	1.0	10.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	7.6	1.5	3.7	1.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.5	13.1	38.5	5.5	37.6	0.0
LnGrp LOS	B	B	D	A	D	A
Approach Vol, veh/h	1684			2126	106	
Approach Delay, s/veh	12.8			6.8	37.6	
Approach LOS	B			A	D	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		9.5	9.6	42.2		51.8
Change Period (Y+Rc), s		4.6	5.8	5.8		5.8
Max Green Setting (Gmax), s		9.4	7.2	42.2		55.2
Max Q Clear Time (g_c+I1), s		5.8	4.8	24.6		22.7
Green Ext Time (p_c), s		0.1	0.0	11.7		22.9

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	330	518	91	542	131	805	1654	93	149	1756	266
Future Volume (veh/h)	245	330	518	91	542	131	805	1654	93	149	1756	266
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	258	347	334	96	571	138	847	1741	98	157	1848	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	570	254	122	685	213	866	2487	772	187	2196	
Arrive On Green	0.09	0.16	0.16	0.07	0.13	0.13	0.25	0.49	0.49	0.10	0.34	0.00
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	5106	1585	1781	6434	1585
Grp Volume(v), veh/h	258	347	334	96	571	138	847	1741	98	157	1848	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	1702	1585	1781	1609	1585
Q Serve(g_s), s	8.2	10.1	17.9	5.9	12.2	9.2	27.2	29.6	3.8	9.7	29.6	0.0
Cycle Q Clear(g_c), s	8.2	10.1	17.9	5.9	12.2	9.2	27.2	29.6	3.8	9.7	29.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	570	254	122	685	213	866	2487	772	187	2196	
V/C Ratio(X)	0.79	0.61	1.31	0.79	0.83	0.65	0.98	0.70	0.13	0.84	0.84	
Avail Cap(c_a), veh/h	495	570	254	287	731	227	866	2487	772	255	2304	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.5	43.6	46.9	51.2	47.1	45.9	41.5	22.3	15.7	49.1	34.0	0.0
Incr Delay (d2), s/veh	4.8	1.9	166.2	10.6	7.8	5.8	25.1	0.9	0.1	16.4	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	4.6	18.8	3.0	5.6	4.0	14.1	11.1	1.4	5.0	11.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.3	45.5	213.1	61.8	55.0	51.7	66.7	23.2	15.7	65.5	36.9	0.0
LnGrp LOS	D	D	F	E	D	D	E	C	B	E	D	
Approach Vol, veh/h		939			805			2686			2005	A
Approach Delay, s/veh		107.5			55.2			36.6			39.1	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	60.4	14.6	21.0	32.0	44.1	11.7	23.9
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	50.0	16.0	16.0	28.0	40.0	18.0	14.0
Max Q Clear Time (g_c+I1), s	11.7	31.6	10.2	14.2	29.2	31.6	7.9	19.9
Green Ext Time (p_c), s	0.1	11.6	0.4	0.8	0.0	6.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	10	10	530	40	10
Future Vol, veh/h	20	10	10	530	40	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	13	13	697	53	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	710	0	-	0	427	362
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	889	-	-	-	584	683
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	958	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	889	-	-	-	567	683
Mov Cap-2 Maneuver	-	-	-	-	567	-
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	SB
HCM Control Delay, s	6.1	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	889	-	-	-	587
HCM Lane V/C Ratio	0.03	-	-	-	0.112
HCM Control Delay (s)	9.2	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	294.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	90	40	240	530	50	80	150	60	20	480	80
Future Vol, veh/h	30	90	40	240	530	50	80	150	60	20	480	80
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	103	46	276	609	57	92	172	69	23	552	92
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.1	484.2	43.5	226
HCM LOS	D	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	19%	29%	3%
Vol Thru, %	52%	56%	65%	83%
Vol Right, %	21%	25%	6%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	290	160	820	580
LT Vol	80	30	240	20
Through Vol	150	90	530	480
RT Vol	60	40	50	80
Lane Flow Rate	333	184	943	667
Geometry Grp	1	1	1	1
Degree of Util (X)	0.749	0.45	2.013	1.406
Departure Headway (Hd)	11.966	12.909	8.706	10.136
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	307	281	424	367
Service Time	9.966	10.909	6.706	8.136
HCM Lane V/C Ratio	1.085	0.655	2.224	1.817
HCM Control Delay	43.5	26.1	484.2	226
HCM Lane LOS	E	D	F	F
HCM 95th-tile Q	5.6	2.2	57.8	25.4

MOVEMENT SUMMARY

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative PM
Site Category: -
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	87	3.0	0.260	5.3	LOS A	1.3	33.9	0.34	0.21	0.34	33.4
8	T1	163	3.0	0.260	5.3	LOS A	1.3	33.9	0.34	0.21	0.34	31.3
18	R2	65	3.0	0.260	5.3	LOS A	1.3	33.9	0.34	0.21	0.34	32.6
Approach		315	3.0	0.260	5.3	LOS A	1.3	33.9	0.34	0.21	0.34	32.1
East: Vineyard Rd												
1	L2	261	3.0	0.806	19.2	LOS C	19.7	503.6	0.92	1.16	1.81	28.3
6	T1	576	3.0	0.806	19.2	LOS C	19.7	503.6	0.92	1.16	1.81	29.8
16	R2	54	3.0	0.806	19.2	LOS C	19.7	503.6	0.92	1.16	1.81	27.4
Approach		891	3.0	0.806	19.2	LOS C	19.7	503.6	0.92	1.16	1.81	29.2
North: Cook Riolo Rd												
7	L2	22	3.0	1.242	149.8	LOS F	51.6	1320.0	1.00	3.60	8.77	10.7
4	T1	522	3.0	1.242	149.8	LOS F	51.6	1320.0	1.00	3.60	8.77	10.5
14	R2	87	3.0	1.242	149.8	LOS F	51.6	1320.0	1.00	3.60	8.77	10.7
Approach		630	3.0	1.242	149.8	LOS F	51.6	1320.0	1.00	3.60	8.77	10.5
West: Vineyard Rd												
5	L2	33	3.0	0.272	9.1	LOS A	1.1	28.8	0.66	0.66	0.66	32.6
2	T1	98	3.0	0.272	9.1	LOS A	1.1	28.8	0.66	0.66	0.66	34.6
12	R2	43	3.0	0.272	9.1	LOS A	1.1	28.8	0.66	0.66	0.66	31.4
Approach		174	3.0	0.272	9.1	LOS A	1.1	28.8	0.66	0.66	0.66	33.4
All Vehicles		2011	3.0	1.242	57.1	LOS F	51.6	1320.0	0.83	1.73	3.66	19.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

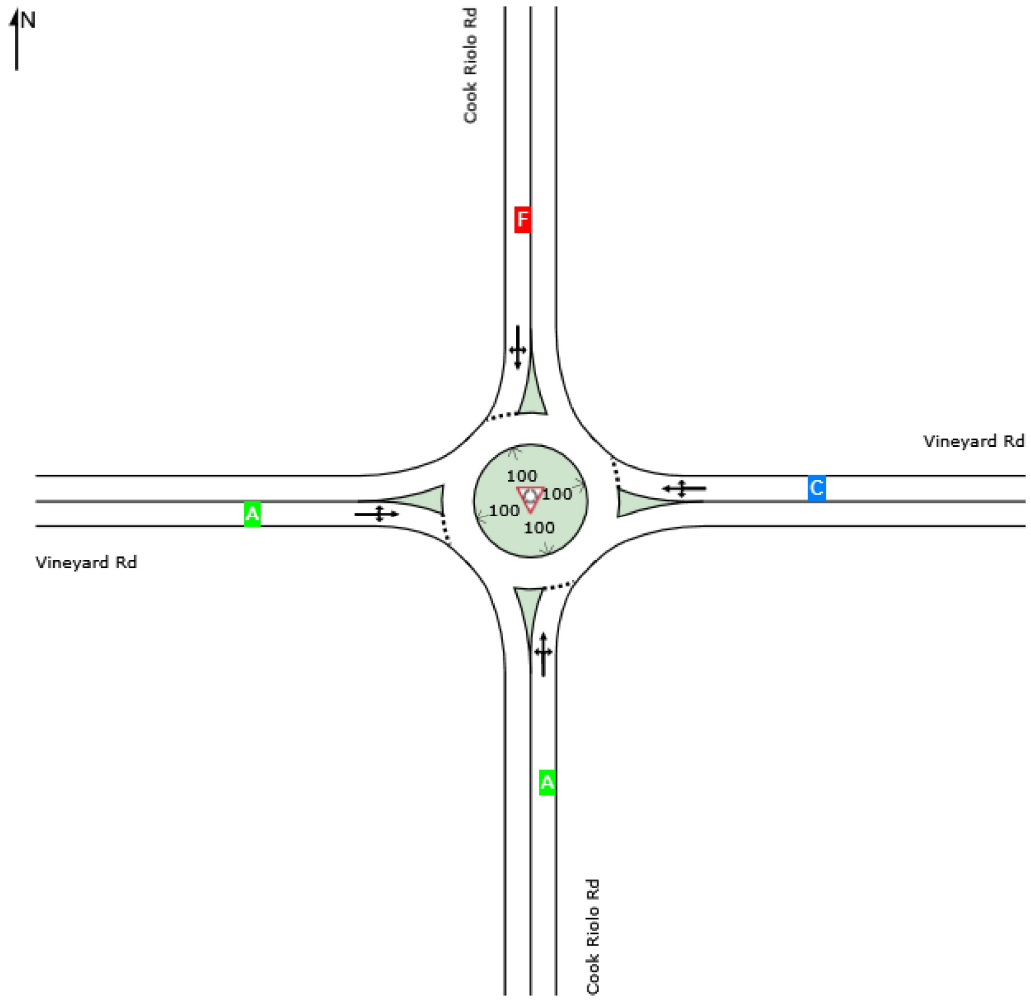
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative PM
Site Category: -
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	C	F	A	F



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative PM
2 LANE ROUNDABOUT
Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	87	3.0	0.178	4.5	LOS A	0.7	18.5	0.28	0.16	0.28	33.5
8	T1	163	3.0	0.178	4.3	LOS A	0.7	18.5	0.28	0.16	0.28	31.6
18	R2	65	3.0	0.086	3.9	LOS A	0.3	8.4	0.27	0.15	0.27	33.8
Approach		315	3.0	0.178	4.3	LOS A	0.7	18.5	0.28	0.16	0.28	32.5
East: Vineyard Rd												
1	L2	261	3.0	0.548	9.7	LOS A	3.9	100.9	0.56	0.50	0.65	31.8
6	T1	576	3.0	0.548	8.4	LOS A	3.9	100.9	0.52	0.44	0.57	34.7
16	R2	54	3.0	0.264	6.2	LOS A	1.1	29.4	0.44	0.34	0.44	33.1
Approach		891	3.0	0.548	8.6	LOS A	3.9	100.9	0.53	0.45	0.59	33.7
North: Cook Riolo Rd												
7	L2	22	3.0	0.719	23.0	LOS C	5.8	149.1	0.83	1.15	1.78	26.9
4	T1	522	3.0	0.719	20.8	LOS C	5.8	149.1	0.80	1.07	1.60	26.2
14	R2	87	3.0	0.346	11.8	LOS B	1.4	36.9	0.69	0.74	0.85	30.3
Approach		630	3.0	0.719	19.6	LOS C	5.8	149.1	0.78	1.03	1.50	26.7
West: Vineyard Rd												
5	L2	33	3.0	0.178	7.3	LOS A	0.6	16.2	0.59	0.59	0.59	33.2
2	T1	98	3.0	0.178	7.3	LOS A	0.6	16.2	0.59	0.59	0.59	35.4
12	R2	43	3.0	0.086	6.9	LOS A	0.3	7.5	0.59	0.58	0.59	32.6
Approach		174	3.0	0.178	7.2	LOS A	0.6	16.2	0.59	0.59	0.59	34.3
All Vehicles		2011	3.0	0.719	11.3	LOS B	5.8	149.1	0.57	0.60	0.83	31.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

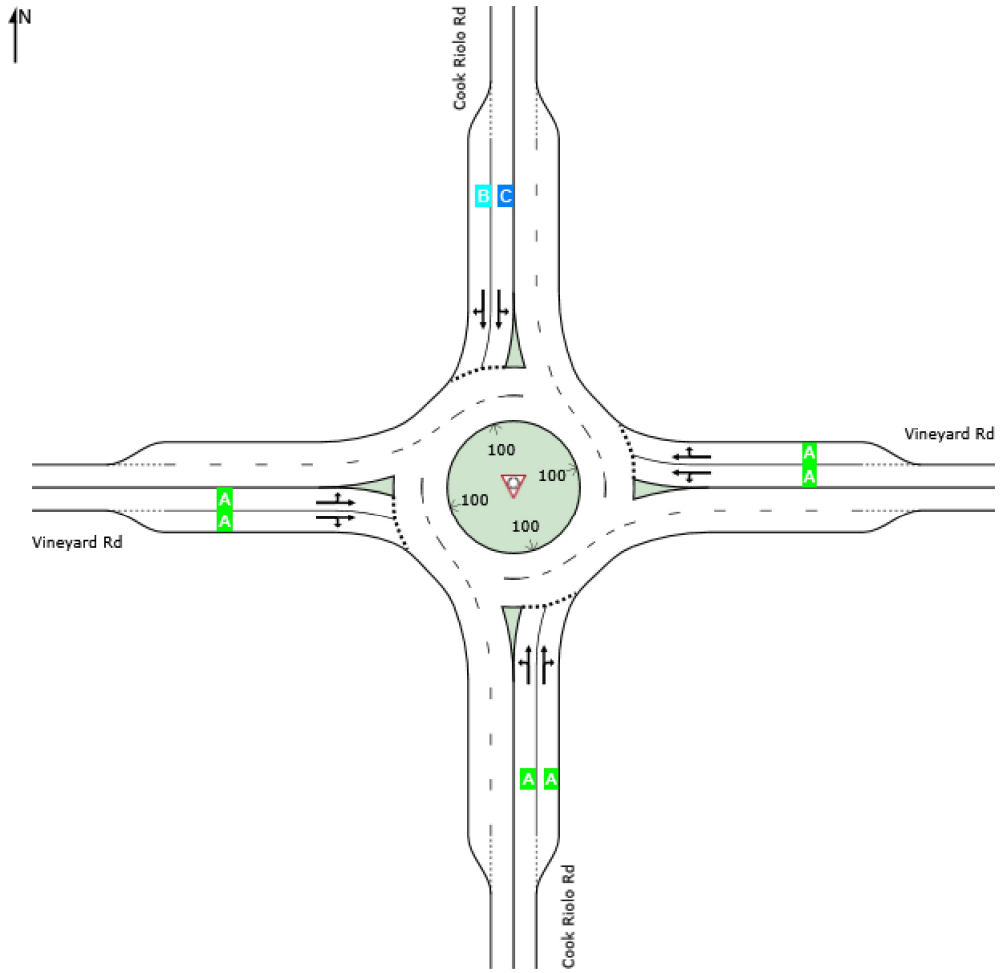
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative PM
2 LANE ROUNDABOUT
Site Category: -
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	C	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Intersection	
Intersection Delay, s/veh	248.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	190	0	0	920	80	0	0	0	240	0	60
Future Vol, veh/h	30	190	0	0	920	80	0	0	0	240	0	60
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	221	0	0	1070	93	0	0	0	279	0	70
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.5	367.9	0	22.3
HCM LOS	C	F	-	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	14%	0%	80%
Vol Thru, %	100%	86%	92%	0%
Vol Right, %	0%	0%	8%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	220	1000	300
LT Vol	0	30	0	240
Through Vol	0	190	920	0
RT Vol	0	0	80	60
Lane Flow Rate	0	256	1163	349
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.436	1.771	0.614
Departure Headway (Hd)	9.285	7.113	5.482	7.759
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	509	663	471
Service Time	7.285	5.113	3.574	5.759
HCM Lane V/C Ratio	0	0.503	1.754	0.741
HCM Control Delay	12.3	15.5	367.9	22.3
HCM Lane LOS	N	C	F	C
HCM 95th-tile Q	0	2.2	68.5	4

MOVEMENT SUMMARY

Site: 6 [Vineyard Rd / Brady Lane]

Cumulative PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
East: Vineyard Rd												
6	T1	1000	3.0	0.769	14.3	LOS B	11.3	289.4	0.40	0.15	0.40	32.5
16	R2	87	3.0	0.769	14.3	LOS B	11.3	289.4	0.40	0.15	0.40	25.9
Approach		1087	3.0	0.769	14.3	LOS B	11.3	289.4	0.40	0.15	0.40	31.9
North: Brady Lane												
7	L2	261	3.0	0.696	26.9	LOS D	5.0	127.1	0.85	1.23	1.73	22.0
14	R2	65	3.0	0.696	26.9	LOS D	5.0	127.1	0.85	1.23	1.73	21.7
Approach		326	3.0	0.696	26.9	LOS D	5.0	127.1	0.85	1.23	1.73	22.0
West: Vineyard Rd												
5	L2	33	3.0	0.235	5.8	LOS A	1.1	28.4	0.45	0.34	0.45	30.1
2	T1	207	3.0	0.235	5.8	LOS A	1.1	28.4	0.45	0.34	0.45	36.6
Approach		239	3.0	0.235	5.8	LOS A	1.1	28.4	0.45	0.34	0.45	35.6
All Vehicles		1652	3.0	0.769	15.6	LOS C	11.3	289.4	0.50	0.39	0.67	29.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

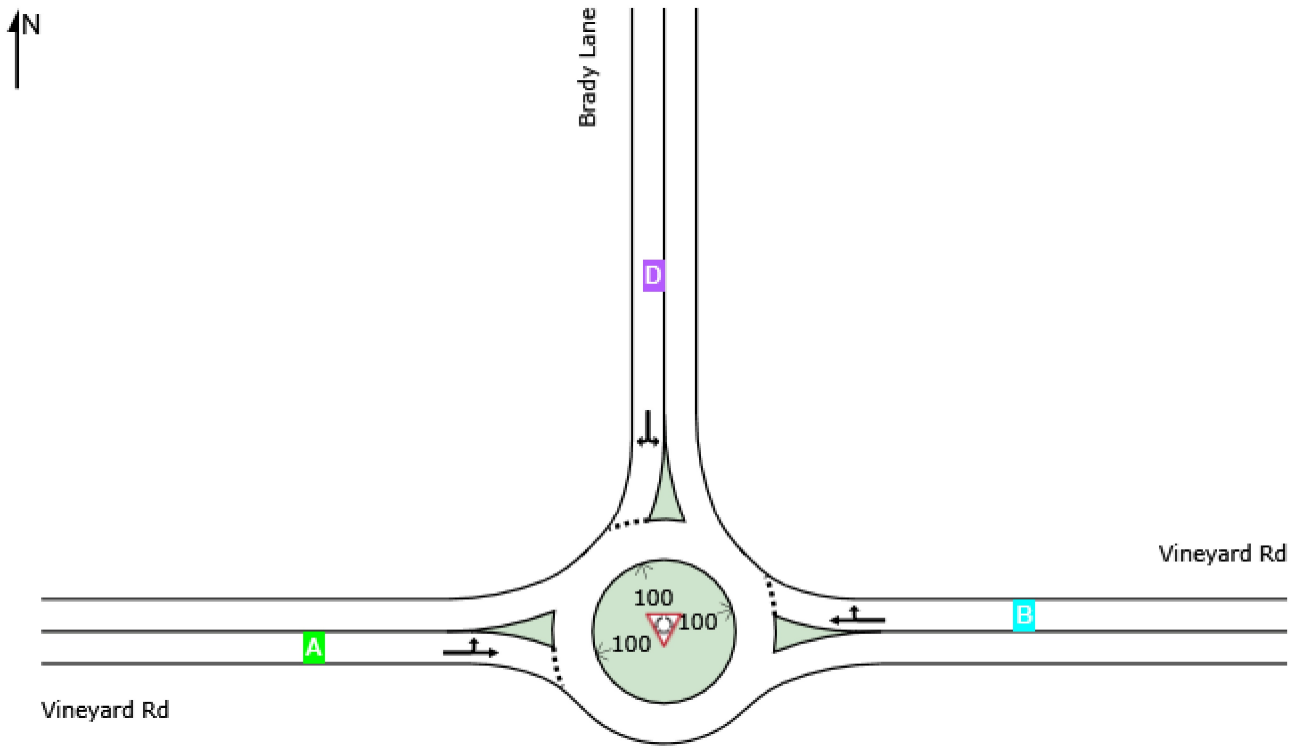
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 6 [Vineyard Rd / Brady Lane]

Cumulative PM
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	B	D	A	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	190	0	0	920	80	0	0	0	240	0	60
Future Volume (veh/h)	30	190	0	0	920	80	0	0	0	240	0	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	221	0	0	1070	93	0	0	0	279	0	70
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	53	1366	0	2	1100	96	0	330	0	379	0	280
Arrive On Green	0.03	0.73	0.00	0.00	0.65	0.65	0.00	0.00	0.00	0.18	0.00	0.18
Sat Flow, veh/h	1781	1870	0	1781	1696	147	0	1870	0	1781	0	1585
Grp Volume(v), veh/h	35	221	0	0	0	1163	0	0	0	279	0	70
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1844	0	1870	0	1781	0	1585
Q Serve(g_s), s	2.2	4.0	0.0	0.0	0.0	66.8	0.0	0.0	0.0	17.0	0.0	4.2
Cycle Q Clear(g_c), s	2.2	4.0	0.0	0.0	0.0	66.8	0.0	0.0	0.0	17.0	0.0	4.2
Prop In Lane	1.00		0.00	1.00		0.08	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	53	1366	0	2	0	1195	0	330	0	379	0	280
V/C Ratio(X)	0.66	0.16	0.00	0.00	0.00	0.97	0.00	0.00	0.00	0.74	0.00	0.25
Avail Cap(c_a), veh/h	99	1366	0	99	0	1214	0	411	0	456	0	348
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.4	4.6	0.0	0.0	0.0	18.6	0.0	0.0	0.0	44.7	0.0	39.4
Incr Delay (d2), s/veh	13.2	0.1	0.0	0.0	0.0	19.5	0.0	0.0	0.0	5.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.4	0.0	0.0	0.0	31.6	0.0	0.0	0.0	8.0	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	4.6	0.0	0.0	0.0	38.1	0.0	0.0	0.0	49.7	0.0	39.9
LnGrp LOS	E	A	A	A	A	D	A	A	A	D	A	D
Approach Vol, veh/h		256			1163			0			349	
Approach Delay, s/veh		13.1			38.1			0.0			47.7	
Approach LOS		B			D						D	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.2	0.0	87.0		24.2	9.1	77.9
Change Period (Y+Rc), s		4.6	5.8	5.8		4.6	5.8	5.8
Max Green Setting (Gmax), s		24.4	6.2	73.2		24.4	6.2	73.2
Max Q Clear Time (g_c+I1), s		0.0	0.0	6.0		19.0	4.2	68.8
Green Ext Time (p_c), s		0.0	0.0	1.4		0.6	0.0	3.3

Intersection Summary	
HCM 6th Ctrl Delay	36.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	71	153	137	331	115	305	2322	85	96	2116	40
Future Volume (veh/h)	88	71	153	137	331	115	305	2322	85	96	2116	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	93	75	161	144	348	0	321	2444	0	101	2227	42
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	430	192	205	406		382	3117		157	2812	53
Arrive On Green	0.07	0.12	0.12	0.06	0.11	0.00	0.11	0.61	0.00	0.05	0.54	0.54
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5160	97
Grp Volume(v), veh/h	93	75	161	144	348	0	321	2444	0	101	1468	801
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1853
Q Serve(g_s), s	6.2	2.3	11.9	4.9	11.5	0.0	10.9	42.9	0.0	3.4	41.4	41.6
Cycle Q Clear(g_c), s	6.2	2.3	11.9	4.9	11.5	0.0	10.9	42.9	0.0	3.4	41.4	41.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	117	430	192	205	406		382	3117		157	1855	1010
V/C Ratio(X)	0.79	0.17	0.84	0.70	0.86		0.84	0.78		0.65	0.79	0.79
Avail Cap(c_a), veh/h	238	430	192	461	423		461	3117		461	1855	1010
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	47.4	51.6	55.4	52.2	0.0	52.3	17.5	0.0	56.3	21.8	21.9
Incr Delay (d2), s/veh	11.3	0.2	27.0	4.3	15.4	0.0	11.2	2.1	0.0	4.4	3.5	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	1.0	6.2	2.3	6.0	0.0	5.3	16.4	0.0	1.6	16.8	19.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.5	47.6	78.6	59.7	67.6	0.0	63.5	19.5	0.0	60.7	25.4	28.3
LnGrp LOS	E	D	E	E	E		E	B		E	C	C
Approach Vol, veh/h		329			492	A		2765	A		2370	
Approach Delay, s/veh		68.1			65.3			24.6			27.9	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	20.2	9.4	79.2	11.9	19.4	17.3	71.4
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	10.9	13.9	5.4	44.9	8.2	13.5	12.9	43.6
Green Ext Time (p_c), s	0.3	0.0	0.2	8.3	0.1	0.2	0.4	9.0

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	30	0	60	0	260	20	60	740	0
Future Volume (veh/h)	0	0	0	30	0	60	0	260	20	60	740	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	35	0	70	0	302	23	70	860	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	6	0	170	0	267	6	750	787	130	1155	0
Arrive On Green	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.40	0.40	0.07	0.62	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	35	0	70	0	302	23	70	860	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	1.2	0.0	3.6	0.2	1.2	10.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.6	0.0	1.2	0.0	3.6	0.2	1.2	10.2	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	6	0	170	0	267	6	750	787	130	1155	0
V/C Ratio(X)	0.00	0.00	0.00	0.21	0.00	0.26	0.00	0.40	0.03	0.54	0.74	0.00
Avail Cap(c_a), veh/h	0	1074	0	1307	0	1278	284	1939	1795	1108	2148	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	13.1	0.0	11.3	0.0	6.7	4.0	14.0	4.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.5	0.0	0.3	0.0	3.5	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.4	0.0	0.9	0.1	0.5	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	13.7	0.0	11.9	0.0	7.1	4.0	17.5	5.2	0.0
LnGrp LOS	A	A	A	B	A	B	A	A	A	B	A	A
Approach Vol, veh/h		0			105			325			930	
Approach Delay, s/veh		0.0			12.5			6.8			6.1	
Approach LOS					B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.8	17.1		0.0	0.0	23.9		7.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	19.5	32.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	3.2	5.6		0.0	0.0	12.2		3.2
Green Ext Time (p_c), s	0.1	1.9		0.0	0.0	7.1		0.3

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	410	320	150	80	360	1900	100	60	1910	50
Future Volume (veh/h)	60	90	410	320	150	80	360	1900	100	60	1910	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	0	490	333	156	83	375	1979	104	62	1990	52
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	0	587	231	238	127	151	2675	830	80	2471	767
Arrive On Green	0.04	0.00	0.19	0.07	0.21	0.21	0.08	0.52	0.52	0.04	0.48	0.48
Sat Flow, veh/h	1781	0	3170	3456	1149	611	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	62	0	490	333	0	239	375	1979	104	62	1990	52
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1728	0	1760	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	3.5	0.0	15.0	6.7	0.0	12.5	8.5	30.2	3.4	3.5	33.1	1.8
Cycle Q Clear(g_c), s	3.5	0.0	15.0	6.7	0.0	12.5	8.5	30.2	3.4	3.5	33.1	1.8
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	80	0	587	231	0	365	151	2675	830	80	2471	767
V/C Ratio(X)	0.78	0.00	0.83	1.44	0.00	0.66	2.49	0.74	0.13	0.78	0.81	0.07
Avail Cap(c_a), veh/h	128	0	916	231	0	500	151	2838	881	98	2685	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	39.4	46.8	0.0	36.5	45.9	18.6	12.2	47.5	21.9	13.8
Incr Delay (d2), s/veh	14.7	0.0	4.0	222.6	0.0	2.0	688.3	1.0	0.1	26.8	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	6.1	10.0	0.0	5.5	32.6	11.4	1.2	2.1	12.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	0.0	43.4	269.4	0.0	38.5	734.3	19.6	12.2	74.2	23.7	13.9
LnGrp LOS	E	A	D	F	A	D	F	B	B	E	C	B
Approach Vol, veh/h		552			572			2458			2104	
Approach Delay, s/veh		45.5			172.9			128.3			24.9	
Approach LOS		D			F			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	57.1	11.2	23.1	13.0	53.1	9.0	25.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	5.5	32.2	8.7	17.0	10.5	35.1	5.5	14.5
Green Ext Time (p_c), s	0.0	16.9	0.0	1.6	0.0	13.5	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	86.5
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	324.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	140	0	5	580	370	0	0	5	460	0	220
Future Vol, veh/h	60	140	0	5	580	370	0	0	5	460	0	220
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	169	0	6	699	446	0	0	6	554	0	265
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	21.3	457	14.6	230.9
HCM LOS	C	F	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	30%	1%	68%
Vol Thru, %	0%	70%	61%	0%
Vol Right, %	100%	0%	39%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	200	955	680
LT Vol	0	60	5	460
Through Vol	0	140	580	0
RT Vol	5	0	370	220
Lane Flow Rate	6	241	1151	819
Geometry Grp	1	1	1	1
Degree of Util (X)	0.013	0.477	1.961	1.436
Departure Headway (Hd)	11.438	9.738	7.231	8.044
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	315	373	518	459
Service Time	9.438	7.738	5.231	6.044
HCM Lane V/C Ratio	0.019	0.646	2.222	1.784
HCM Control Delay	14.6	21.3	457	230.9
HCM Lane LOS	B	C	F	F
HCM 95th-tile Q	0	2.5	65.4	31.9

MOVEMENT SUMMARY

Site: 10 [Cook Riolo Rd / PFE Rd]

Cumulative PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	1	3.0	0.012	5.8	LOS A	0.0	1.1	0.59	0.46	0.59	28.8
8	T1	1	3.0	0.012	5.8	LOS A	0.0	1.1	0.59	0.46	0.59	27.2
18	R2	5	3.0	0.012	5.8	LOS A	0.0	1.1	0.59	0.46	0.59	28.1
Approach		8	3.0	0.012	5.8	LOS A	0.0	1.1	0.59	0.46	0.59	28.1
East: PFE Rd												
1	L2	5	3.0	0.774	15.0	LOS C	10.5	269.5	0.58	0.28	0.58	27.1
6	T1	630	3.0	0.774	15.0	LOS C	10.5	269.5	0.58	0.28	0.58	32.4
16	R2	402	3.0	0.774	15.0	LOS C	10.5	269.5	0.58	0.28	0.58	29.6
Approach		1038	3.0	0.774	15.0	LOS C	10.5	269.5	0.58	0.28	0.58	31.2
North: Cook Riolo Rd												
7	L2	500	3.0	0.660	16.8	LOS C	6.0	154.1	0.80	1.07	1.49	27.3
4	T1	1	3.0	0.660	16.8	LOS C	6.0	154.1	0.80	1.07	1.49	23.2
14	R2	239	3.0	0.315	8.5	LOS A	1.3	33.6	0.62	0.62	0.62	31.5
Approach		740	3.0	0.660	14.1	LOS B	6.0	154.1	0.74	0.92	1.21	28.5
West: PFE Rd												
5	L2	65	3.0	0.247	6.6	LOS A	1.0	25.0	0.53	0.49	0.53	33.4
2	T1	152	3.0	0.247	6.6	LOS A	1.0	25.0	0.53	0.49	0.53	35.4
12	R2	1	3.0	0.247	6.6	LOS A	1.0	25.0	0.53	0.49	0.53	27.9
Approach		218	3.0	0.247	6.6	LOS A	1.0	25.0	0.53	0.49	0.53	34.7
All Vehicles		2004	3.0	0.774	13.7	LOS B	10.5	269.5	0.63	0.54	0.81	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

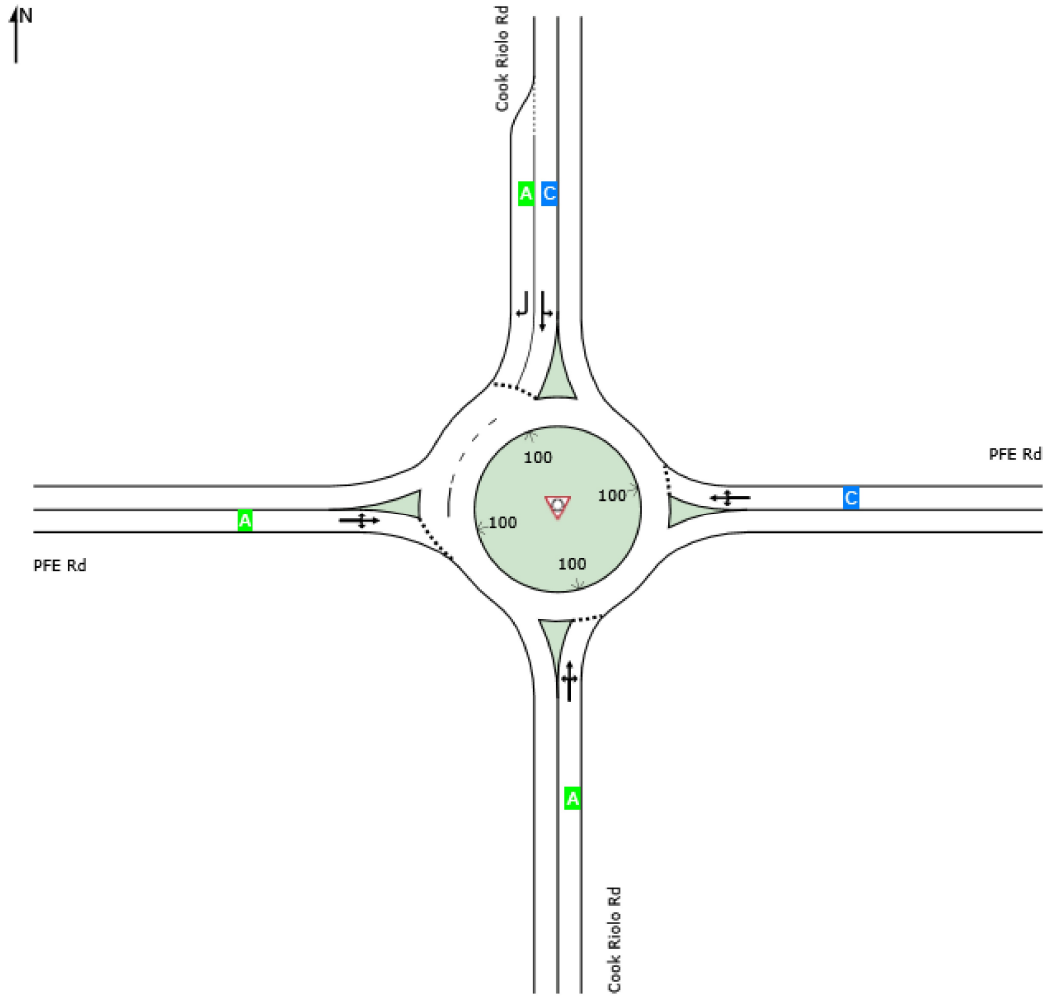
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 10 [Cook Riolo Rd / PFE Rd]

Cumulative AM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	C	B	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	390	290	670	380	580	1130
Future Volume (veh/h)	390	290	670	380	580	1130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	438	326	753	427	641	1282
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	488	414	812	1095	430	765
Arrive On Green	0.26	0.26	0.23	0.59	0.24	0.24
Sat Flow, veh/h	1870	1585	3456	1870	1781	3170
Grp Volume(v), veh/h	438	326	753	427	641	1282
Grp Sat Flow(s),veh/h/ln	1870	1585	1728	1870	1781	1585
Q Serve(g_s), s	14.6	12.4	13.8	7.9	15.6	15.6
Cycle Q Clear(g_c), s	14.6	12.4	13.8	7.9	15.6	15.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	488	414	812	1095	430	765
V/C Ratio(X)	0.90	0.79	0.93	0.39	1.49	1.68
Avail Cap(c_a), veh/h	497	421	812	1105	430	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.1	22.2	24.2	7.2	24.5	24.5
Incr Delay (d2), s/veh	18.6	9.5	16.6	0.2	233.5	310.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	5.4	7.1	2.6	33.9	38.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.7	31.7	40.8	7.4	258.0	334.8
LnGrp LOS	D	C	D	A	F	F
Approach Vol, veh/h	764			1180	1923	
Approach Delay, s/veh	37.4			28.7	309.2	
Approach LOS	D			C	F	

Timer - Assigned Phs		2	3	4			8
Phs Duration (G+Y+Rc), s		21.0	21.0	22.7			43.7
Change Period (Y+Rc), s		5.4	5.8	5.8			5.8
Max Green Setting (Gmax), s		15.6	15.2	17.2			38.2
Max Q Clear Time (g_c+I1), s		17.6	15.8	16.6			9.9
Green Ext Time (p_c), s		0.0	0.0	0.3			2.8

Intersection Summary	
HCM 6th Ctrl Delay	169.9
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	1230	10	620	2100	820	20	1460	420	450	1320	270
Future Volume (veh/h)	380	1230	10	620	2100	820	20	1460	420	450	1320	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	388	1255	10	633	2143	837	20	1490	429	459	1347	276
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	1471	457	556	1861	578	84	1194	371	498	1805	695
Arrive On Green	0.08	0.29	0.29	0.16	0.36	0.36	0.02	0.23	0.23	0.14	0.35	0.35
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	388	1255	10	633	2143	837	20	1490	429	459	1347	276
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	10.0	27.4	0.5	19.0	43.0	43.0	0.7	27.6	27.6	15.5	27.3	14.0
Cycle Q Clear(g_c), s	10.0	27.4	0.5	19.0	43.0	43.0	0.7	27.6	27.6	15.5	27.3	14.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	1471	457	556	1861	578	84	1194	371	498	1805	695
V/C Ratio(X)	1.32	0.85	0.02	1.14	1.15	1.45	0.24	1.25	1.16	0.92	0.75	0.40
Avail Cap(c_a), veh/h	293	1471	457	556	1861	578	469	1194	371	498	1805	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	39.6	30.1	49.5	37.5	37.5	56.5	45.2	45.2	49.8	33.5	22.5
Incr Delay (d2), s/veh	168.0	5.1	0.0	82.1	75.0	211.7	1.4	118.6	96.8	22.7	1.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	12.0	0.2	14.5	30.4	50.3	0.3	24.7	20.7	8.2	11.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	222.0	44.7	30.1	131.6	112.5	249.2	57.9	163.8	142.0	72.6	35.2	22.9
LnGrp LOS	F	D	C	F	F	F	E	F	F	E	D	C
Approach Vol, veh/h		1653			3613			1939			2082	
Approach Delay, s/veh		86.2			147.5			157.9			41.8	
Approach LOS		F			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	34.0	23.0	40.0	6.9	48.1	14.0	49.0
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	17.0	27.6	19.0	34.0	16.0	28.6	10.0	43.0
Max Q Clear Time (g_c+I1), s	17.5	29.6	21.0	29.4	2.7	29.3	12.0	45.0
Green Ext Time (p_c), s	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	115.1
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

KDA

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	1801	20	70	1101	51	50	501	100	120	240	60
Future Volume (veh/h)	200	1801	20	70	1101	51	50	501	100	120	240	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	220	1979	22	77	1210	0	55	551	110	132	264	66
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	1690	754	94	1395		78	499	423	106	546	462
Arrive On Green	0.14	0.48	0.48	0.05	0.39	0.00	0.04	0.27	0.27	0.06	0.29	0.29
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	220	1979	22	77	1210	0	55	551	110	132	264	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	18.4	72.0	1.1	6.5	47.5	0.0	4.6	40.4	8.3	9.0	17.6	4.7
Cycle Q Clear(g_c), s	18.4	72.0	1.1	6.5	47.5	0.0	4.6	40.4	8.3	9.0	17.6	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	242	1690	754	94	1395		78	499	423	106	546	462
V/C Ratio(X)	0.91	1.17	0.03	0.82	0.87		0.70	1.10	0.26	1.25	0.48	0.14
Avail Cap(c_a), veh/h	271	1690	754	94	1395		111	499	423	106	546	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.5	39.7	21.1	71.0	42.4	0.0	71.4	55.5	43.7	71.2	44.2	39.6
Incr Delay (d2), s/veh	30.1	83.7	0.0	41.0	6.1	0.0	11.0	71.8	0.3	167.8	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	49.4	0.4	4.0	21.3	0.0	2.3	28.8	3.3	9.0	8.2	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.6	123.4	21.1	111.9	48.4	0.0	82.4	127.3	44.0	239.0	44.9	39.8
LnGrp LOS	F	F	C	F	D		F	F	D	F	D	D
Approach Vol, veh/h		2221			1287	A		716			462	
Approach Delay, s/veh		119.5			52.2			111.0			99.6	
Approach LOS		F			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	46.4	24.6	65.4	11.2	50.2	12.0	78.0
Change Period (Y+Rc), s	6.0	* 6	4.0	6.0	4.6	6.0	4.0	6.0
Max Green Setting (Gmax), s	9.0	* 40	23.0	57.0	9.4	40.0	8.0	72.0
Max Q Clear Time (g_c+I1), s	11.0	42.4	20.4	49.5	6.6	19.6	8.5	74.0
Green Ext Time (p_c), s	0.0	0.0	0.1	4.4	0.0	1.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	97.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	119.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1984	41	32	1090	63	97
Future Vol, veh/h	1984	41	32	1090	63	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2111	44	34	1160	67	103

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2155	0	2781	2133
Stage 1	-	-	-	-	2133	-
Stage 2	-	-	-	-	648	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	247	-	~ 18	~ 62
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	247	-	~ 16	~ 62
Mov Cap-2 Maneuver	-	-	-	-	~ 16	-
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	$ 2461
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	29	-	-	247	-
HCM Lane V/C Ratio	5.869	-	-	0.138	-
HCM Control Delay (s)	$ 2461	-	-	21.9	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	20.7	-	-	0.5	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1984	41	32	1090	63	97
Future Volume (veh/h)	1984	41	32	1090	63	97
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	2111	44	34	1160	67	103
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	2366	49	58	2721	72	111
Arrive On Green	0.66	0.66	0.03	0.77	0.11	0.11
Sat Flow, veh/h	3653	74	1781	3647	650	999
Grp Volume(v), veh/h	1050	1105	34	1160	171	0
Grp Sat Flow(s),veh/h/ln	1777	1857	1781	1777	1658	0
Q Serve(g_s), s	40.9	41.7	1.6	9.6	8.6	0.0
Cycle Q Clear(g_c), s	40.9	41.7	1.6	9.6	8.6	0.0
Prop In Lane		0.04	1.00		0.39	0.60
Lane Grp Cap(c), veh/h	1181	1234	58	2721	184	0
V/C Ratio(X)	0.89	0.90	0.59	0.43	0.93	0.00
Avail Cap(c_a), veh/h	1224	1279	131	2952	184	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.6	11.7	40.3	3.4	37.2	0.0
Incr Delay (d2), s/veh	8.2	8.4	9.1	0.1	45.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	16.5	0.8	2.3	5.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.8	20.1	49.4	3.6	83.1	0.0
LnGrp LOS	B	C	D	A	F	A
Approach Vol, veh/h	2155			1194	171	
Approach Delay, s/veh	19.9			4.9	83.1	
Approach LOS	B			A	F	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		14.0	8.5	62.0		70.5
Change Period (Y+Rc), s		4.6	5.8	5.8		5.8
Max Green Setting (Gmax), s		9.4	6.2	58.2		70.2
Max Q Clear Time (g_c+I1), s		10.6	3.6	43.7		11.6
Green Ext Time (p_c), s		0.0	0.0	12.5		12.0

Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	419	959	65	181	48	393	1493	75	54	1266	185
Future Volume (veh/h)	175	419	959	65	181	48	393	1493	75	54	1266	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	441	641	68	191	51	414	1572	79	57	1333	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	1329	593	88	1775	551	494	1777	552	74	1586	
Arrive On Green	0.08	0.37	0.37	0.05	0.35	0.35	0.14	0.35	0.35	0.04	0.25	0.00
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	5106	1585	1781	6434	1585
Grp Volume(v), veh/h	184	441	641	68	191	51	414	1572	79	57	1333	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	1702	1585	1781	1609	1585
Q Serve(g_s), s	5.6	9.5	40.0	4.0	2.7	2.3	12.5	31.0	3.7	3.4	21.1	0.0
Cycle Q Clear(g_c), s	5.6	9.5	40.0	4.0	2.7	2.3	12.5	31.0	3.7	3.4	21.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	262	1329	593	88	1775	551	494	1777	552	74	1586	
V/C Ratio(X)	0.70	0.33	1.08	0.77	0.11	0.09	0.84	0.88	0.14	0.77	0.84	
Avail Cap(c_a), veh/h	1002	1329	593	183	1775	551	679	1777	552	267	1685	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.2	23.9	33.5	50.2	23.6	23.5	44.6	32.8	23.9	50.7	38.3	0.0
Incr Delay (d2), s/veh	3.4	0.1	60.8	13.4	0.0	0.1	6.7	5.7	0.1	15.3	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	4.0	24.9	2.1	1.1	0.9	5.6	12.9	1.4	1.8	8.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.6	24.1	94.3	63.6	23.7	23.6	51.3	38.6	24.0	66.0	42.1	0.0
LnGrp LOS	D	C	F	E	C	C	D	D	C	E	D	
Approach Vol, veh/h		1266			310			2065			1390	A
Approach Delay, s/veh		63.6			32.4			40.6			43.1	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	43.2	12.1	43.2	19.3	32.4	9.3	46.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	33.0	31.0	20.0	21.0	28.0	11.0	40.0
Max Q Clear Time (g_c+I1), s	5.4	33.0	7.6	4.7	14.5	23.1	6.0	42.0
Green Ext Time (p_c), s	0.1	0.0	0.6	1.2	0.8	3.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	14.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	40	42	560	10
Future Vol, veh/h	10	10	40	42	560	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	11	43	45	602	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	88	0	-	0	99	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1508	-	-	-	900	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1508	-	-	-	894	998
Mov Cap-2 Maneuver	-	-	-	-	894	-
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	989	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1508	-	-	-	896
HCM Lane V/C Ratio	0.007	-	-	-	0.684
HCM Control Delay (s)	7.4	0	-	-	17.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	5.6

Intersection	
Intersection Delay, s/veh	566.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	540	140	161	70	40	40	566	288	40	240	20
Future Vol, veh/h	50	540	140	161	70	40	40	566	288	40	240	20
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	667	173	199	86	49	49	699	356	49	296	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	613.8	90.5	826.9	104.4
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	7%	59%	13%
Vol Thru, %	63%	74%	26%	80%
Vol Right, %	32%	19%	15%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	894	730	271	300
LT Vol	40	50	161	40
Through Vol	566	540	70	240
RT Vol	288	140	40	20
Lane Flow Rate	1104	901	335	370
Geometry Grp	1	1	1	1
Degree of Util (X)	2.761	2.275	0.877	0.947
Departure Headway (Hd)	12.438	13.631	20.691	20.083
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	309	279	181	185
Service Time	10.438	11.631	18.691	18.083
HCM Lane V/C Ratio	3.573	3.229	1.851	2
HCM Control Delay	826.9	613.8	90.5	104.4
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	68.1	46.9	6.3	7.4

MOVEMENT SUMMARY

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative plus Project AM
2 LANE ROUNDABOUT
Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	46	3.0	0.873	32.4	LOS D	14.4	368.0	0.95	1.63	2.76	24.2
8	T1	615	3.0	0.873	32.4	LOS D	14.4	368.0	0.95	1.63	2.76	23.1
18	R2	313	3.0	0.457	11.9	LOS B	2.5	64.4	0.69	0.79	0.97	30.0
Approach		974	3.0	0.873	25.8	LOS D	14.4	368.0	0.87	1.36	2.19	25.0
East: Vineyard Rd												
1	L2	175	3.0	0.279	8.2	LOS A	1.1	27.3	0.61	0.61	0.61	31.4
6	T1	76	3.0	0.279	7.4	LOS A	1.1	27.3	0.59	0.59	0.59	35.0
16	R2	43	3.0	0.134	6.9	LOS A	0.5	12.2	0.58	0.58	0.58	32.7
Approach		295	3.0	0.279	7.8	LOS A	1.1	27.3	0.60	0.60	0.60	32.4
North: Cook Riolo Rd												
7	L2	43	3.0	0.212	5.4	LOS A	0.9	22.0	0.41	0.31	0.41	33.6
4	T1	261	3.0	0.212	5.1	LOS A	0.9	22.0	0.40	0.30	0.40	31.8
14	R2	22	3.0	0.102	4.6	LOS A	0.4	9.8	0.39	0.28	0.39	33.6
Approach		326	3.0	0.212	5.1	LOS A	0.9	22.0	0.40	0.30	0.40	32.1
West: Vineyard Rd												
5	L2	54	3.0	0.607	12.9	LOS B	5.5	140.6	0.71	0.87	1.18	31.1
2	T1	587	3.0	0.607	12.1	LOS B	5.5	140.6	0.69	0.82	1.09	33.4
12	R2	152	3.0	0.292	7.6	LOS A	1.2	31.2	0.56	0.53	0.56	32.4
Approach		793	3.0	0.607	11.3	LOS B	5.5	140.6	0.66	0.77	0.99	33.0
All Vehicles		2388	3.0	0.873	15.9	LOS C	14.4	368.0	0.70	0.92	1.35	29.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	190.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	894	0	0	200	85	0	0	0	84	0	72
Future Vol, veh/h	74	894	0	0	200	85	0	0	0	84	0	72
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	1040	0	0	233	99	0	0	0	98	0	84
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	270.1	15.9	0	12.5
HCM LOS	F	C	-	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%	100%	0%
Vol Thru, %	100%	0%	100%	100%	70%	0%	0%
Vol Right, %	0%	0%	0%	0%	30%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	74	894	0	285	84	72
LT Vol	0	74	0	0	0	84	0
Through Vol	0	0	894	0	200	0	0
RT Vol	0	0	0	0	85	0	72
Lane Flow Rate	0	86	1040	0	331	98	84
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0	0.144	1.598	0	0.53	0.205	0.148
Departure Headway (Hd)	8.823	6.04	5.535	6.543	6.33	8.61	7.374
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	591	655	0	573	420	490
Service Time	6.823	3.801	3.295	4.243	4.03	6.31	5.074
HCM Lane V/C Ratio	0	0.146	1.588	0	0.578	0.233	0.171
HCM Control Delay	11.8	9.8	291.6	9.2	15.9	13.5	11.4
HCM Lane LOS	N	A	F	N	C	B	B
HCM 95th-tile Q	0	0.5	55.1	0	3.1	0.8	0.5

MOVEMENT SUMMARY

Site: 6 [Vineyard Rd / Brady Lane]

Cumulative plus Project AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
East: Vineyard Rd												
6	T1	217	3.0	0.243	4.9	LOS A	1.3	32.0	0.25	0.12	0.25	37.6
16	R2	92	3.0	0.243	4.9	LOS A	1.3	32.0	0.25	0.12	0.25	29.0
Approach		310	3.0	0.243	4.9	LOS A	1.3	32.0	0.25	0.12	0.25	34.5
North: Brady Lane												
7	L2	91	3.0	0.159	4.8	LOS A	0.7	18.3	0.39	0.26	0.39	28.4
14	R2	78	3.0	0.159	4.8	LOS A	0.7	18.3	0.39	0.26	0.39	27.8
Approach		170	3.0	0.159	4.8	LOS A	0.7	18.3	0.39	0.26	0.39	28.1
West: Vineyard Rd												
5	L2	80	3.0	0.810	17.3	LOS C	11.5	295.6	0.73	0.40	0.73	26.2
2	T1	972	3.0	0.810	17.3	LOS C	11.5	295.6	0.73	0.40	0.73	31.0
Approach		1052	3.0	0.810	17.3	LOS C	11.5	295.6	0.73	0.40	0.73	30.6
All Vehicles		1532	3.0	0.810	13.4	LOS B	11.5	295.6	0.59	0.33	0.59	31.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	894	0	0	200	85	0	0	0	84	0	72
Future Volume (veh/h)	74	894	0	0	200	85	0	0	0	84	0	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	1040	0	0	233	99	0	0	0	98	0	84
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	1257	0	4	588	250	0	185	0	335	0	157
Arrive On Green	0.07	0.67	0.00	0.00	0.47	0.47	0.00	0.00	0.00	0.10	0.00	0.10
Sat Flow, veh/h	1781	1870	0	1781	1246	529	0	1870	0	1781	0	1585
Grp Volume(v), veh/h	86	1040	0	0	0	332	0	0	0	98	0	84
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1775	0	1870	0	1781	0	1585
Q Serve(g_s), s	2.1	18.7	0.0	0.0	0.0	5.5	0.0	0.0	0.0	2.4	0.0	2.3
Cycle Q Clear(g_c), s	2.1	18.7	0.0	0.0	0.0	5.5	0.0	0.0	0.0	2.4	0.0	2.3
Prop In Lane	1.00		0.00	1.00		0.30	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	130	1257	0	4	0	838	0	185	0	335	0	157
V/C Ratio(X)	0.66	0.83	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.29	0.00	0.54
Avail Cap(c_a), veh/h	282	1860	0	243	0	1726	0	304	0	448	0	258
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.5	5.5	0.0	0.0	0.0	7.8	0.0	0.0	0.0	19.5	0.0	19.5
Incr Delay (d2), s/veh	5.7	2.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.9	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.2	7.6	0.0	0.0	0.0	8.1	0.0	0.0	0.0	20.0	0.0	22.3
LnGrp LOS	C	A	A	A	A	A	A	A	A	C	A	C
Approach Vol, veh/h		1126			332			0			182	
Approach Delay, s/veh		9.0			8.1			0.0			21.1	
Approach LOS		A			A						C	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.1	0.0	36.4		9.1	9.1	27.3
Change Period (Y+Rc), s		4.6	5.8	5.8		4.6	5.8	5.8
Max Green Setting (Gmax), s		7.4	6.2	45.2		7.4	7.2	44.2
Max Q Clear Time (g_c+I1), s		0.0	0.0	20.7		4.4	4.1	7.5
Green Ext Time (p_c), s		0.0	0.0	9.9		0.2	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	279	240	109	52	51	128	1760	48	139	2098	32
Future Volume (veh/h)	105	279	240	109	52	51	128	1760	48	139	2098	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	111	294	253	115	55	0	135	1853	0	146	2208	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	423	189	173	327		195	3098		207	3161	49
Arrive On Green	0.08	0.12	0.12	0.05	0.09	0.00	0.06	0.61	0.00	0.06	0.61	0.61
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5180	80
Grp Volume(v), veh/h	111	294	253	115	55	0	135	1853	0	146	1450	792
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1856
Q Serve(g_s), s	7.4	9.5	14.3	3.9	1.7	0.0	4.6	26.9	0.0	5.0	34.7	34.8
Cycle Q Clear(g_c), s	7.4	9.5	14.3	3.9	1.7	0.0	4.6	26.9	0.0	5.0	34.7	34.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	137	423	189	173	327		195	3098		207	2077	1132
V/C Ratio(X)	0.81	0.69	1.34	0.67	0.17		0.69	0.60		0.70	0.70	0.70
Avail Cap(c_a), veh/h	238	423	189	461	423		461	3098		461	2077	1132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	50.8	52.9	56.0	50.2	0.0	55.6	14.6	0.0	55.4	15.9	15.9
Incr Delay (d2), s/veh	10.6	4.9	184.0	4.3	0.2	0.0	4.3	0.9	0.0	4.3	2.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	4.5	15.3	1.8	0.8	0.0	2.1	10.1	0.0	2.3	13.3	15.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	55.6	236.8	60.4	50.5	0.0	59.9	15.4	0.0	59.7	17.9	19.5
LnGrp LOS	E	E	F	E	D		E	B		E	B	B
Approach Vol, veh/h		658			170	A		1988	A		2388	
Approach Delay, s/veh		126.9			57.2			18.4			21.0	
Approach LOS		F			E			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	20.0	11.2	78.8	13.3	16.8	10.8	79.2
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	5.9	16.3	7.0	28.9	9.4	3.7	6.6	36.8
Green Ext Time (p_c), s	0.2	0.0	0.3	16.2	0.1	0.1	0.3	13.9

Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	205	0	285	0	620	230	290	251	0
Future Volume (veh/h)	0	0	0	205	0	285	0	620	230	290	251	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	289	0	401	0	775	324	408	354	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.80	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	2	0	404	0	724	2	717	968	410	1247	0
Arrive On Green	0.00	0.00	0.00	0.23	0.00	0.23	0.00	0.38	0.38	0.23	0.67	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	289	0	401	0	775	324	408	354	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	12.7	0.0	15.6	0.0	32.5	8.5	19.4	6.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	12.7	0.0	15.6	0.0	32.5	8.5	19.4	6.6	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	2	0	404	0	724	2	717	968	410	1247	0
V/C Ratio(X)	0.00	0.00	0.00	0.72	0.00	0.55	0.00	1.08	0.33	1.00	0.28	0.00
Avail Cap(c_a), veh/h	0	397	0	484	0	795	105	717	968	410	1247	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	30.2	0.0	16.7	0.0	26.1	8.1	32.6	5.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.0	0.0	0.7	0.0	57.4	0.2	43.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	5.7	0.0	5.4	0.0	25.0	4.8	13.0	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	34.2	0.0	17.4	0.0	83.5	8.3	75.7	5.9	0.0
LnGrp LOS	A	A	A	C	A	B	A	F	A	E	A	A
Approach Vol, veh/h		0			690			1099			762	
Approach Delay, s/veh		0.0			24.4			61.3			43.3	
Approach LOS					C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.0	37.0		0.0	0.0	61.0		23.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	19.5	32.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	21.4	34.5		0.0	0.0	8.6		17.6
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	2.2		1.6

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	180	580	22	110	40	360	1800	370	50	1780	180
Future Volume (veh/h)	120	180	580	22	110	40	360	1800	370	50	1780	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	431	351	23	117	43	383	1915	394	53	1894	191
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	480	407	81	275	101	146	2597	806	68	2374	737
Arrive On Green	0.07	0.26	0.26	0.02	0.21	0.21	0.08	0.51	0.51	0.04	0.46	0.46
Sat Flow, veh/h	1781	1870	1585	3456	1305	479	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	128	431	351	23	0	160	383	1915	394	53	1894	191
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	0	1784	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	7.2	23.1	22.0	0.7	0.0	8.1	8.5	30.6	16.9	3.1	32.8	7.6
Cycle Q Clear(g_c), s	7.2	23.1	22.0	0.7	0.0	8.1	8.5	30.6	16.9	3.1	32.8	7.6
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	480	407	81	0	376	146	2597	806	68	2374	737
V/C Ratio(X)	1.04	0.90	0.86	0.29	0.00	0.43	2.63	0.74	0.49	0.78	0.80	0.26
Avail Cap(c_a), veh/h	124	522	443	223	0	490	146	2744	852	94	2596	806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	37.3	36.9	49.9	0.0	35.5	47.7	20.1	16.7	49.5	23.6	16.9
Incr Delay (d2), s/veh	91.0	17.4	15.1	1.9	0.0	0.8	751.4	1.0	0.5	23.6	1.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	12.7	10.1	0.3	0.0	3.6	34.2	11.8	6.0	1.8	13.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	139.3	54.7	52.0	51.8	0.0	36.3	799.1	21.1	17.1	73.1	25.3	17.1
LnGrp LOS	F	D	D	D	A	D	F	C	B	E	C	B
Approach Vol, veh/h		910			183			2692			2138	
Approach Delay, s/veh		65.6			38.3			131.2			25.8	
Approach LOS		E			D			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	57.3	6.9	31.1	13.0	52.8	11.7	26.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	5.1	32.6	2.7	25.1	10.5	34.8	9.2	10.1
Green Ext Time (p_c), s	0.0	17.3	0.0	1.5	0.0	13.5	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	80.2
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	282
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	200	570	0	0	130	500	0	0	0	454	0	82
Future Vol, veh/h	200	570	0	0	130	500	0	0	0	454	0	82
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	244	695	0	0	159	610	0	0	0	554	0	100
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	410.7	217.2	0	173.4
HCM LOS	F	F	-	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	26%	0%	85%
Vol Thru, %	100%	74%	21%	0%
Vol Right, %	0%	0%	79%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	770	630	536
LT Vol	0	200	0	454
Through Vol	0	570	130	0
RT Vol	0	0	500	82
Lane Flow Rate	0	939	768	654
Geometry Grp	1	1	1	1
Degree of Util (X)	0	1.848	1.399	1.291
Departure Headway (Hd)	14.608	8.472	8.538	8.591
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	441	430	431
Service Time	12.608	6.472	6.538	6.591
HCM Lane V/C Ratio	0	2.129	1.786	1.517
HCM Control Delay	17.6	410.7	217.2	173.4
HCM Lane LOS	N	F	F	F
HCM 95th-tile Q	0	50.8	28.7	23.8

MOVEMENT SUMMARY

Site: 10 [Cook Riolo Rd / PFE Rd]

Cumulative plus Project AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	1	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	26.8
8	T1	1	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	25.4
18	R2	1	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	26.2
Approach		3	3.0	0.010	11.0	LOS B	0.0	0.8	0.75	0.69	0.75	26.1
East: PFE Rd												
1	L2	1	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	28.2
6	T1	141	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	34.0
16	R2	543	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	30.9
Approach		686	3.0	0.624	11.7	LOS B	6.4	164.0	0.65	0.56	0.79	31.5
North: Cook Riolo Rd												
7	L2	493	3.0	0.398	6.8	LOS A	2.2	56.8	0.37	0.23	0.37	30.9
4	T1	1	3.0	0.398	6.8	LOS A	2.2	56.8	0.37	0.23	0.37	25.8
14	R2	89	3.0	0.074	3.6	LOS A	0.3	7.4	0.26	0.14	0.26	33.9
Approach		584	3.0	0.398	6.3	LOS A	2.2	56.8	0.35	0.21	0.35	31.3
West: PFE Rd												
5	L2	217	3.0	0.926	35.9	LOS E	24.9	638.1	1.00	1.77	3.23	23.5
2	T1	620	3.0	0.926	35.9	LOS E	24.9	638.1	1.00	1.77	3.23	24.5
12	R2	1	3.0	0.926	35.9	LOS E	24.9	638.1	1.00	1.77	3.23	20.6
Approach		838	3.0	0.926	35.9	LOS E	24.9	638.1	1.00	1.77	3.23	24.2
All Vehicles		2111	3.0	0.926	19.8	LOS C	24.9	638.1	0.71	0.94	1.64	28.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	513	581	430	130	550	1140
Future Volume (veh/h)	513	581	430	130	550	1140
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	564	638	473	143	604	1253
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	689	584	565	1141	424	755
Arrive On Green	0.37	0.37	0.16	0.61	0.24	0.24
Sat Flow, veh/h	1870	1585	3456	1870	1781	3170
Grp Volume(v), veh/h	564	638	473	143	604	1253
Grp Sat Flow(s),veh/h/ln	1870	1585	1728	1870	1781	1585
Q Serve(g_s), s	20.2	27.2	9.8	2.4	17.6	17.6
Cycle Q Clear(g_c), s	20.2	27.2	9.8	2.4	17.6	17.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	689	584	565	1141	424	755
V/C Ratio(X)	0.82	1.09	0.84	0.13	1.42	1.66
Avail Cap(c_a), veh/h	689	584	617	1170	424	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	23.3	29.9	6.1	28.1	28.1
Incr Delay (d2), s/veh	7.7	65.2	9.2	0.0	203.8	302.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	19.3	4.4	0.7	30.8	37.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.9	88.6	39.2	6.1	232.0	330.7
LnGrp LOS	C	F	D	A	F	F
Approach Vol, veh/h	1202			616	1857	
Approach Delay, s/veh	60.6			31.5	298.6	
Approach LOS	E			C	F	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		23.0	17.9	33.0		50.9
Change Period (Y+Rc), s		5.4	5.8	5.8		5.8
Max Green Setting (Gmax), s		17.6	13.2	27.2		46.2
Max Q Clear Time (g_c+I1), s		19.6	11.8	29.2		4.4
Green Ext Time (p_c), s		0.0	0.3	0.0		0.7

Intersection Summary	
HCM 6th Ctrl Delay	176.0
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	2200	10	210	932	401	20	1330	570	660	1210	570
Future Volume (veh/h)	170	2200	10	210	932	401	20	1330	570	660	1210	570
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	2391	11	228	1013	436	22	1446	620	717	1315	620
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	1887	586	200	1823	566	86	1317	409	576	2042	746
Arrive On Green	0.07	0.37	0.37	0.06	0.36	0.36	0.02	0.26	0.26	0.17	0.40	0.40
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	185	2391	11	228	1013	436	22	1446	620	717	1315	620
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.3	51.0	0.6	8.0	22.0	33.7	0.9	35.6	35.6	23.0	28.7	46.9
Cycle Q Clear(g_c), s	7.3	51.0	0.6	8.0	22.0	33.7	0.9	35.6	35.6	23.0	28.7	46.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	244	1887	586	200	1823	566	86	1317	409	576	2042	746
V/C Ratio(X)	0.76	1.27	0.02	1.14	0.56	0.77	0.26	1.10	1.52	1.24	0.64	0.83
Avail Cap(c_a), veh/h	601	1887	586	200	1823	566	200	1317	409	576	2042	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	43.5	27.6	65.0	35.6	39.4	66.0	51.2	51.2	57.5	33.5	31.8
Incr Delay (d2), s/veh	4.8	124.5	0.0	105.7	0.4	6.4	1.6	56.0	244.6	124.3	0.7	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	43.0	0.2	6.5	9.2	14.1	0.4	21.9	41.9	20.0	12.0	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.8	168.0	27.6	170.7	36.0	45.8	67.6	107.2	295.8	181.8	34.2	39.7
LnGrp LOS	E	F	C	F	D	D	E	F	F	F	C	D
Approach Vol, veh/h		2587			1677			2088			2652	
Approach Delay, s/veh		160.3			56.8			162.8			75.4	
Approach LOS		F			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	42.0	12.0	57.0	7.4	61.6	13.7	55.3
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	23.0	35.6	8.0	51.0	8.0	50.6	24.0	35.0
Max Q Clear Time (g_c+I1), s	25.0	37.6	10.0	53.0	2.9	48.9	9.3	35.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.4	0.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	116.6
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	56	19	140	100	3
Future Vol, veh/h	10	56	19	140	100	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	61	21	152	109	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	305	111	112	0	-	0
Stage 1	111	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	687	942	1478	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	676	942	1478	-	-	-
Mov Cap-2 Maneuver	676	-	-	-	-	-
Stage 1	899	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	889	-	-
HCM Lane V/C Ratio	0.014	-	0.081	-	-
HCM Control Delay (s)	7.5	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1435	20	80	1742	201	30	180	40	162	460	70
Future Volume (veh/h)	60	1435	20	80	1742	201	30	180	40	162	460	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	1511	21	84	1834	0	32	189	42	171	484	74
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1793	800	107	1843		85	275	233	201	418	354
Arrive On Green	0.05	0.50	0.50	0.06	0.52	0.00	0.05	0.15	0.15	0.11	0.22	0.22
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	63	1511	21	84	1834	0	32	189	42	171	484	74
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.4	45.9	0.8	5.8	64.4	0.0	2.2	12.0	2.9	11.8	28.0	4.8
Cycle Q Clear(g_c), s	4.4	45.9	0.8	5.8	64.4	0.0	2.2	12.0	2.9	11.8	28.0	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	1793	800	107	1843		85	275	233	201	418	354
V/C Ratio(X)	0.77	0.84	0.03	0.79	1.00		0.38	0.69	0.18	0.85	1.16	0.21
Avail Cap(c_a), veh/h	284	1928	860	242	1843		176	275	233	369	418	354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	26.8	15.6	58.1	30.0	0.0	57.9	50.7	46.8	54.6	48.7	39.7
Incr Delay (d2), s/veh	14.1	3.4	0.0	12.0	19.8	0.0	2.7	6.9	0.4	9.7	95.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	18.9	0.3	2.9	30.1	0.0	1.0	6.1	1.1	5.7	23.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.3	30.2	15.6	70.1	49.8	0.0	60.6	57.6	47.2	64.2	143.6	39.9
LnGrp LOS	E	C	B	E	D		E	E	D	E	F	D
Approach Vol, veh/h		1595			1918	A		263			729	
Approach Delay, s/veh		31.7			50.7			56.3			114.5	
Approach LOS		C			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	24.5	9.7	71.0	10.6	34.0	11.5	69.2
Change Period (Y+Rc), s	6.0	* 6	4.0	6.0	4.6	6.0	4.0	6.0
Max Green Setting (Gmax), s	26.0	* 14	20.0	65.0	12.4	28.0	17.0	68.0
Max Q Clear Time (g_c+I1), s	13.8	14.0	6.4	66.4	4.2	30.0	7.8	47.9
Green Ext Time (p_c), s	0.3	0.0	0.1	0.0	0.0	0.0	0.1	10.8

Intersection Summary	
HCM 6th Ctrl Delay	54.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	59.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1420	189	98	1940	45	72
Future Vol, veh/h	1420	189	98	1940	45	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1495	199	103	2042	47	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1694	0	2822	1595
Stage 1	-	-	-	-	1595	-
Stage 2	-	-	-	-	1227	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	374	-	~ 17	131
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	241	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	374	-	~ 12	131
Mov Cap-2 Maneuver	-	-	-	-	~ 12	-
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	175	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	$ 1896.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	27	-	-	374	-
HCM Lane V/C Ratio	4.561	-	-	0.276	-
HCM Control Delay (s)	$ 1896.6	-	-	18.3	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	15.1	-	-	1.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1694	103	2042	123
v/c Ratio	0.74	0.52	0.72	0.46
Control Delay	14.3	43.1	7.0	20.7
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	14.3	43.1	7.0	20.7
Queue Length 50th (ft)	294	45	211	20
Queue Length 95th (ft)	425	#111	332	67
Internal Link Dist (ft)	2983		257	1000
Turn Bay Length (ft)		200		
Base Capacity (vph)	2301	212	2832	327
Starvation Cap Reductn	0	0	79	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.49	0.74	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1420	189	98	1940	45	72
Future Volume (veh/h)	1420	189	98	1940	45	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	1495	199	103	2042	47	76
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1835	241	132	2648	59	95
Arrive On Green	0.58	0.58	0.07	0.75	0.09	0.09
Sat Flow, veh/h	3251	415	1781	3647	628	1015
Grp Volume(v), veh/h	833	861	103	2042	124	0
Grp Sat Flow(s),veh/h/ln	1777	1796	1781	1777	1656	0
Q Serve(g_s), s	23.9	24.9	3.7	22.3	4.7	0.0
Cycle Q Clear(g_c), s	23.9	24.9	3.7	22.3	4.7	0.0
Prop In Lane		0.23	1.00		0.38	0.61
Lane Grp Cap(c), veh/h	1032	1043	132	2648	156	0
V/C Ratio(X)	0.81	0.83	0.78	0.77	0.80	0.00
Avail Cap(c_a), veh/h	1160	1172	198	3034	241	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.7	10.9	29.4	4.9	28.7	0.0
Incr Delay (d2), s/veh	3.9	4.5	10.6	1.1	9.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	9.0	1.9	4.5	2.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.6	15.4	40.0	6.0	38.5	0.0
LnGrp LOS	B	B	D	A	D	A
Approach Vol, veh/h	1694			2145	124	
Approach Delay, s/veh	15.0			7.7	38.5	
Approach LOS	B			A	D	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		10.7	10.6	43.4		54.0
Change Period (Y+Rc), s		4.6	5.8	5.8		5.8
Max Green Setting (Gmax), s		9.4	7.2	42.2		55.2
Max Q Clear Time (g_c+I1), s		6.7	5.7	26.9		24.3
Green Ext Time (p_c), s		0.1	0.0	10.6		22.1

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	253	334	518	93	548	131	805	1658	94	149	1760	278
Future Volume (veh/h)	253	334	518	93	548	131	805	1658	94	149	1760	278
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	266	352	334	98	577	138	847	1745	99	157	1853	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	335	575	257	124	687	213	862	2478	769	187	2192	
Arrive On Green	0.10	0.16	0.16	0.07	0.13	0.13	0.25	0.49	0.49	0.10	0.34	0.00
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	5106	1585	1781	6434	1585
Grp Volume(v), veh/h	266	352	334	98	577	138	847	1745	99	157	1853	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	1702	1585	1781	1609	1585
Q Serve(g_s), s	8.5	10.3	18.2	6.1	12.4	9.3	27.3	30.0	3.8	9.7	29.9	0.0
Cycle Q Clear(g_c), s	8.5	10.3	18.2	6.1	12.4	9.3	27.3	30.0	3.8	9.7	29.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	335	575	257	124	687	213	862	2478	769	187	2192	
V/C Ratio(X)	0.79	0.61	1.30	0.79	0.84	0.65	0.98	0.70	0.13	0.84	0.85	
Avail Cap(c_a), veh/h	493	575	257	286	728	226	862	2478	769	254	2293	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.6	43.8	47.0	51.4	47.4	46.0	41.9	22.6	15.9	49.3	34.3	0.0
Incr Delay (d2), s/veh	5.4	1.9	161.4	10.5	8.3	5.8	26.2	0.9	0.1	16.6	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	4.7	18.6	3.1	5.8	4.0	14.3	11.2	1.4	5.0	11.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.0	45.7	208.4	61.9	55.7	51.8	68.1	23.5	15.9	65.9	37.3	0.0
LnGrp LOS	D	D	F	E	E	D	E	C	B	E	D	
Approach Vol, veh/h		952			813			2691			2010	A
Approach Delay, s/veh		105.4			55.8			37.3			39.5	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	60.5	14.9	21.1	32.0	44.2	11.8	24.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	50.0	16.0	16.0	28.0	40.0	18.0	14.0
Max Q Clear Time (g_c+I1), s	11.7	32.0	10.5	14.4	29.3	31.9	8.1	20.2
Green Ext Time (p_c), s	0.1	11.5	0.4	0.7	0.0	6.3	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	10	10	531	41	10
Future Vol, veh/h	20	10	10	531	41	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	13	13	699	54	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	712	0	-	0	428	363
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	888	-	-	-	584	682
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	958	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	888	-	-	-	567	682
Mov Cap-2 Maneuver	-	-	-	-	567	-
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	SB
HCM Control Delay, s	6.1	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	888	-	-	-	586
HCM Lane V/C Ratio	0.03	-	-	-	0.115
HCM Control Delay (s)	9.2	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	297.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	91	40	242	531	50	80	150	63	20	480	80
Future Vol, veh/h	30	91	40	242	531	50	80	150	63	20	480	80
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	105	46	278	610	57	92	172	72	23	552	92
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.4	490.1	44.5	227.8
HCM LOS	D	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	19%	29%	3%
Vol Thru, %	51%	57%	65%	83%
Vol Right, %	22%	25%	6%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	293	161	823	580
LT Vol	80	30	242	20
Through Vol	150	91	531	480
RT Vol	63	40	50	80
Lane Flow Rate	337	185	946	667
Geometry Grp	1	1	1	1
Degree of Util (X)	0.757	0.454	2.026	1.41
Departure Headway (Hd)	12.024	12.998	8.74	10.198
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	303	279	426	360
Service Time	10.024	10.998	6.74	8.198
HCM Lane V/C Ratio	1.112	0.663	2.221	1.853
HCM Control Delay	44.5	26.4	490.1	227.8
HCM Lane LOS	E	D	F	F
HCM 95th-tile Q	5.7	2.2	58.2	25.4

MOVEMENT SUMMARY

Site: 5 [Vineyard Rd/ Cook Riolo Rd]

Cumulative plus Project PM
2 LANE ROUNDABOUT
Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	87	3.0	0.180	4.5	LOS A	0.7	18.7	0.28	0.16	0.28	33.5
8	T1	163	3.0	0.180	4.4	LOS A	0.7	18.7	0.28	0.16	0.28	31.6
18	R2	68	3.0	0.087	3.9	LOS A	0.3	8.5	0.27	0.15	0.27	33.8
Approach		318	3.0	0.180	4.3	LOS A	0.7	18.7	0.28	0.16	0.28	32.5
East: Vineyard Rd												
1	L2	263	3.0	0.550	9.7	LOS A	4.0	102.3	0.56	0.50	0.66	31.7
6	T1	577	3.0	0.550	8.4	LOS A	4.0	102.3	0.52	0.44	0.58	34.7
16	R2	54	3.0	0.265	6.2	LOS A	1.2	29.5	0.44	0.34	0.44	33.1
Approach		895	3.0	0.550	8.7	LOS A	4.0	102.3	0.53	0.45	0.59	33.7
North: Cook Riolo Rd												
7	L2	22	3.0	0.721	23.2	LOS C	5.9	149.8	0.83	1.15	1.79	26.9
4	T1	522	3.0	0.721	21.0	LOS C	5.9	149.8	0.80	1.07	1.60	26.2
14	R2	87	3.0	0.347	11.8	LOS B	1.4	37.0	0.69	0.74	0.85	30.2
Approach		630	3.0	0.721	19.8	LOS C	5.9	149.8	0.79	1.03	1.51	26.7
West: Vineyard Rd												
5	L2	33	3.0	0.180	7.3	LOS A	0.6	16.3	0.59	0.59	0.59	33.2
2	T1	99	3.0	0.180	7.3	LOS A	0.6	16.3	0.59	0.59	0.59	35.4
12	R2	43	3.0	0.086	6.9	LOS A	0.3	7.6	0.59	0.58	0.59	32.6
Approach		175	3.0	0.180	7.2	LOS A	0.6	16.3	0.59	0.59	0.59	34.3
All Vehicles		2018	3.0	0.721	11.3	LOS B	5.9	149.8	0.57	0.60	0.83	31.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	292.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	190	0	0	920	124	0	0	0	265	0	63
Future Vol, veh/h	34	190	0	0	920	124	0	0	0	265	0	63
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	221	0	0	1070	144	0	0	0	308	0	73
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	16.6	436.1	0	23.5
HCM LOS	C	F	-	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	15%	0%	100%	0%
Vol Thru, %	100%	85%	88%	0%	0%
Vol Right, %	0%	0%	12%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	224	1044	265	63
LT Vol	0	34	0	265	0
Through Vol	0	190	920	0	0
RT Vol	0	0	124	0	63
Lane Flow Rate	0	260	1214	308	73
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0	0.455	1.924	0.634	0.126
Departure Headway (Hd)	9.983	7.488	5.706	9.124	7.879
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	0	484	643	401	458
Service Time	7.983	5.488	3.706	6.824	5.579
HCM Lane V/C Ratio	0	0.537	1.888	0.768	0.159
HCM Control Delay	13	16.6	436.1	26.3	11.7
HCM Lane LOS	N	C	F	D	B
HCM 95th-tile Q	0	2.3	78.7	4.2	0.4

MOVEMENT SUMMARY

Site: 6 [Vineyard Rd / Brady Lane]

Cumulative plus Project PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
East: Vineyard Rd												
6	T1	1000	3.0	0.808	16.3	LOS C	13.5	345.0	0.49	0.19	0.49	31.6
16	R2	135	3.0	0.808	16.3	LOS C	13.5	345.0	0.49	0.19	0.49	25.3
Approach		1135	3.0	0.808	16.3	LOS C	13.5	345.0	0.49	0.19	0.49	30.7
North: Brady Lane												
7	L2	288	3.0	0.761	32.0	LOS D	6.2	158.7	0.88	1.36	2.00	21.0
14	R2	68	3.0	0.761	32.0	LOS D	6.2	158.7	0.88	1.36	2.00	20.7
Approach		357	3.0	0.761	32.0	LOS D	6.2	158.7	0.88	1.36	2.00	21.0
West: Vineyard Rd												
5	L2	37	3.0	0.246	6.0	LOS A	1.2	29.8	0.48	0.37	0.48	29.9
2	T1	207	3.0	0.246	6.0	LOS A	1.2	29.8	0.48	0.37	0.48	36.4
Approach		243	3.0	0.246	6.0	LOS A	1.2	29.8	0.48	0.37	0.48	35.3
All Vehicles		1735	3.0	0.808	18.1	LOS C	13.5	345.0	0.57	0.45	0.80	28.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Lane Group	EBL	EBT	WBT	SBL	SBT
Lane Group Flow (vph)	40	221	1214	308	73
v/c Ratio	0.44	0.17	1.06	1.05	0.15
Control Delay	70.6	6.1	68.3	113.1	0.7
Queue Delay	0.0	0.0	16.0	0.0	0.0
Total Delay	70.6	6.1	84.2	113.1	0.7
Queue Length 50th (ft)	31	50	~1054	~265	0
Queue Length 95th (ft)	65	73	#1218	#415	0
Internal Link Dist (ft)		3020	650		315
Turn Bay Length (ft)	200				
Base Capacity (vph)	93	1310	1144	292	474
Starvation Cap Reductn	0	0	98	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.17	1.16	1.05	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	190	0	0	920	124	0	0	0	265	0	63
Future Volume (veh/h)	34	190	0	0	920	124	0	0	0	265	0	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	40	221	0	0	1070	144	0	0	0	308	0	73
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	1345	0	2	1029	138	0	356	0	402	0	302
Arrive On Green	0.03	0.72	0.00	0.00	0.64	0.64	0.00	0.00	0.00	0.19	0.00	0.19
Sat Flow, veh/h	1781	1870	0	1781	1614	217	0	1870	0	1781	0	1585
Grp Volume(v), veh/h	40	221	0	0	0	1214	0	0	0	308	0	73
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1831	0	1870	0	1781	0	1585
Q Serve(g_s), s	2.6	4.3	0.0	0.0	0.0	73.2	0.0	0.0	0.0	19.4	0.0	4.5
Cycle Q Clear(g_c), s	2.6	4.3	0.0	0.0	0.0	73.2	0.0	0.0	0.0	19.4	0.0	4.5
Prop In Lane	1.00		0.00	1.00		0.12	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1345	0	2	0	1167	0	356	0	402	0	302
V/C Ratio(X)	0.72	0.16	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.77	0.00	0.24
Avail Cap(c_a), veh/h	96	1345	0	96	0	1167	0	397	0	441	0	337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.1	5.1	0.0	0.0	0.0	20.8	0.0	0.0	0.0	45.5	0.0	39.5
Incr Delay (d2), s/veh	15.6	0.1	0.0	0.0	0.0	37.4	0.0	0.0	0.0	7.3	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.5	0.0	0.0	0.0	40.1	0.0	0.0	0.0	9.4	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.7	5.2	0.0	0.0	0.0	58.3	0.0	0.0	0.0	52.8	0.0	39.9
LnGrp LOS	E	A	A	A	A	F	A	A	A	D	A	D
Approach Vol, veh/h		261			1214			0			381	
Approach Delay, s/veh		15.2			58.3			0.0			50.3	
Approach LOS		B			E						D	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.5	0.0	88.4		26.5	9.4	79.0
Change Period (Y+Rc), s		4.6	5.8	5.8		4.6	5.8	5.8
Max Green Setting (Gmax), s		24.4	6.2	73.2		24.4	6.2	73.2
Max Q Clear Time (g_c+I1), s		0.0	0.0	6.3		21.4	4.6	75.2
Green Ext Time (p_c), s		0.0	0.0	1.4		0.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.6
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	79	168	137	344	115	329	2322	85	96	2116	46
Future Volume (veh/h)	90	79	168	137	344	115	329	2322	85	96	2116	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	83	177	144	362	0	346	2444	0	101	2227	48
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	445	198	205	417		405	3094		157	2747	59
Arrive On Green	0.07	0.13	0.13	0.06	0.12	0.00	0.12	0.61	0.00	0.05	0.53	0.53
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5144	111
Grp Volume(v), veh/h	95	83	177	144	362	0	346	2444	0	101	1472	803
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1850
Q Serve(g_s), s	6.3	2.5	13.2	4.9	12.0	0.0	11.8	43.4	0.0	3.4	42.6	42.9
Cycle Q Clear(g_c), s	6.3	2.5	13.2	4.9	12.0	0.0	11.8	43.4	0.0	3.4	42.6	42.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	120	445	198	205	417		405	3094		157	1818	988
V/C Ratio(X)	0.79	0.19	0.89	0.70	0.87		0.85	0.79		0.65	0.81	0.81
Avail Cap(c_a), veh/h	238	445	198	461	423		461	3094		461	1818	988
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	47.0	51.7	55.4	52.0	0.0	51.9	17.9	0.0	56.3	23.0	23.0
Incr Delay (d2), s/veh	11.2	0.2	35.8	4.3	17.0	0.0	13.1	2.1	0.0	4.4	4.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.1	7.2	2.3	6.3	0.0	5.8	16.6	0.0	1.6	17.4	19.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.3	47.2	87.4	59.7	69.1	0.0	65.1	20.0	0.0	60.7	27.0	30.3
LnGrp LOS	E	D	F	E	E		E	C		E	C	C
Approach Vol, veh/h		355			506	A		2790	A		2376	
Approach Delay, s/veh		72.4			66.4			25.6			29.5	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	20.7	9.4	78.7	12.1	19.8	18.1	70.1
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	10.9	15.2	5.4	45.4	8.3	14.0	13.8	44.9
Green Ext Time (p_c), s	0.3	0.0	0.2	7.9	0.1	0.1	0.3	8.0

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	30	0	60	0	263	20	60	742	0
Future Volume (veh/h)	0	0	0	30	0	60	0	263	20	60	742	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	35	0	70	0	306	23	70	863	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	6	0	170	0	151	6	753	790	130	1157	0
Arrive On Green	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.40	0.40	0.07	0.62	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	35	0	70	0	306	23	70	863	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	1.3	0.0	3.7	0.2	1.2	10.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.6	0.0	1.3	0.0	3.7	0.2	1.2	10.3	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	6	0	170	0	151	6	753	790	130	1157	0
V/C Ratio(X)	0.00	0.00	0.00	0.21	0.00	0.46	0.00	0.41	0.03	0.54	0.75	0.00
Avail Cap(c_a), veh/h	0	1070	0	1302	0	1159	283	1932	1789	1104	2140	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	13.1	0.0	13.5	0.0	6.7	4.0	14.1	4.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	2.2	0.0	0.4	0.0	3.5	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.5	0.0	0.9	0.1	0.5	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	13.7	0.0	15.7	0.0	7.1	4.0	17.5	5.2	0.0
LnGrp LOS	A	A	A	B	A	B	A	A	A	B	A	A
Approach Vol, veh/h		0			105			329			933	
Approach Delay, s/veh		0.0			15.0			6.9			6.2	
Approach LOS					B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.8	17.2		0.0	0.0	24.0		7.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	19.5	32.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	3.2	5.7		0.0	0.0	12.3		3.3
Green Ext Time (p_c), s	0.1	1.9		0.0	0.0	7.2		0.3

Intersection Summary	
HCM 6th Ctrl Delay	7.0
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	410	321	150	80	360	1901	102	60	1910	50
Future Volume (veh/h)	60	90	410	321	150	80	360	1901	102	60	1910	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	0	490	334	156	83	375	1980	106	62	1990	52
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	0	587	231	238	127	151	2675	830	80	2471	767
Arrive On Green	0.04	0.00	0.19	0.07	0.21	0.21	0.08	0.52	0.52	0.04	0.48	0.48
Sat Flow, veh/h	1781	0	3170	3456	1149	611	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	62	0	490	334	0	239	375	1980	106	62	1990	52
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1728	0	1760	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	3.5	0.0	15.0	6.7	0.0	12.5	8.5	30.3	3.4	3.5	33.1	1.8
Cycle Q Clear(g_c), s	3.5	0.0	15.0	6.7	0.0	12.5	8.5	30.3	3.4	3.5	33.1	1.8
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	80	0	587	231	0	365	151	2675	830	80	2471	767
V/C Ratio(X)	0.78	0.00	0.83	1.45	0.00	0.66	2.49	0.74	0.13	0.78	0.81	0.07
Avail Cap(c_a), veh/h	128	0	916	231	0	500	151	2838	881	98	2685	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	39.4	46.8	0.0	36.5	45.9	18.6	12.2	47.5	21.9	13.8
Incr Delay (d2), s/veh	14.7	0.0	4.0	224.4	0.0	2.0	688.3	1.0	0.1	26.8	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	6.1	10.0	0.0	5.5	32.6	11.4	1.2	2.1	12.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	0.0	43.4	271.2	0.0	38.5	734.3	19.6	12.3	74.2	23.7	13.9
LnGrp LOS	E	A	D	F	A	D	F	B	B	E	C	B
Approach Vol, veh/h		552			573			2461			2104	
Approach Delay, s/veh		45.5			174.2			128.2			24.9	
Approach LOS		D			F			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	57.1	11.2	23.1	13.0	53.1	9.0	25.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	55.8	6.7	29.0	8.5	52.8	7.2	28.5
Max Q Clear Time (g_c+I1), s	5.5	32.3	8.7	17.0	10.5	35.1	5.5	14.5
Green Ext Time (p_c), s	0.0	16.9	0.0	1.6	0.0	13.5	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	86.6
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	326
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	140	0	5	580	371	0	0	5	460	0	221
Future Vol, veh/h	62	140	0	5	580	371	0	0	5	460	0	221
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	169	0	6	699	447	0	0	6	554	0	266
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	21.5	458.8	14.6	232.2
HCM LOS	C	F	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	31%	1%	68%
Vol Thru, %	0%	69%	61%	0%
Vol Right, %	100%	0%	39%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	202	956	681
LT Vol	0	62	5	460
Through Vol	0	140	580	0
RT Vol	5	0	371	221
Lane Flow Rate	6	243	1152	820
Geometry Grp	1	1	1	1
Degree of Util (X)	0.013	0.481	1.965	1.439
Departure Headway (Hd)	11.474	9.754	7.243	8.052
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	314	372	518	459
Service Time	9.474	7.754	5.243	6.052
HCM Lane V/C Ratio	0.019	0.653	2.224	1.786
HCM Control Delay	14.6	21.5	458.8	232.2
HCM Lane LOS	B	C	F	F
HCM 95th-tile Q	0	2.5	65.5	32.1

MOVEMENT SUMMARY

Site: 10 [Cook Riolo Rd / PFE Rd]

Cumulative plus Project PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Cook Riolo Rd												
3	L2	1	3.0	0.012	5.9	LOS A	0.0	1.1	0.59	0.46	0.59	28.8
8	T1	1	3.0	0.012	5.9	LOS A	0.0	1.1	0.59	0.46	0.59	27.2
18	R2	5	3.0	0.012	5.9	LOS A	0.0	1.1	0.59	0.46	0.59	28.1
Approach		8	3.0	0.012	5.9	LOS A	0.0	1.1	0.59	0.46	0.59	28.1
East: PFE Rd												
1	L2	5	3.0	0.777	15.2	LOS C	10.6	271.7	0.59	0.29	0.59	27.1
6	T1	630	3.0	0.777	15.2	LOS C	10.6	271.7	0.59	0.29	0.59	32.3
16	R2	403	3.0	0.777	15.2	LOS C	10.6	271.7	0.59	0.29	0.59	29.5
Approach		1039	3.0	0.777	15.2	LOS C	10.6	271.7	0.59	0.29	0.59	31.1
North: Cook Riolo Rd												
7	L2	500	3.0	0.660	16.8	LOS C	6.0	154.1	0.80	1.07	1.49	27.3
4	T1	1	3.0	0.660	16.8	LOS C	6.0	154.1	0.80	1.07	1.49	23.2
14	R2	240	3.0	0.317	8.5	LOS A	1.3	33.8	0.62	0.62	0.62	31.5
Approach		741	3.0	0.660	14.1	LOS B	6.0	154.1	0.74	0.92	1.21	28.5
West: PFE Rd												
5	L2	67	3.0	0.249	6.7	LOS A	1.0	25.3	0.53	0.50	0.53	33.4
2	T1	152	3.0	0.249	6.7	LOS A	1.0	25.3	0.53	0.50	0.53	35.4
12	R2	1	3.0	0.249	6.7	LOS A	1.0	25.3	0.53	0.50	0.53	27.8
Approach		221	3.0	0.249	6.7	LOS A	1.0	25.3	0.53	0.50	0.53	34.7
All Vehicles		2009	3.0	0.777	13.8	LOS B	10.6	271.7	0.64	0.55	0.81	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	438	326	753	427	1289	635
v/c Ratio	0.91	0.53	0.93	0.39	1.22	0.81
Control Delay	49.1	7.9	45.6	8.5	127.0	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	7.9	45.6	8.5	127.0	13.6
Queue Length 50th (ft)	166	14	151	80	~273	19
Queue Length 95th (ft)	#315	70	#247	130	#386	#200
Internal Link Dist (ft)	2079			587	1013	
Turn Bay Length (ft)		100	200			200
Base Capacity (vph)	495	626	807	1101	1058	785
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.52	0.93	0.39	1.22	0.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	390	290	670	380	581	1131
Future Volume (veh/h)	390	290	670	380	581	1131
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	438	326	753	427	641	1283
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	488	414	812	1095	430	765
Arrive On Green	0.26	0.26	0.23	0.59	0.24	0.24
Sat Flow, veh/h	1870	1585	3456	1870	1781	3170
Grp Volume(v), veh/h	438	326	753	427	641	1283
Grp Sat Flow(s),veh/h/ln	1870	1585	1728	1870	1781	1585
Q Serve(g_s), s	14.6	12.4	13.8	7.9	15.6	15.6
Cycle Q Clear(g_c), s	14.6	12.4	13.8	7.9	15.6	15.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	488	414	812	1095	430	765
V/C Ratio(X)	0.90	0.79	0.93	0.39	1.49	1.68
Avail Cap(c_a), veh/h	497	421	812	1105	430	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.1	22.2	24.2	7.2	24.5	24.5
Incr Delay (d2), s/veh	18.6	9.5	16.6	0.2	233.5	310.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	5.4	7.1	2.6	33.9	38.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.7	31.7	40.8	7.4	258.0	335.4
LnGrp LOS	D	C	D	A	F	F
Approach Vol, veh/h	764			1180	1924	
Approach Delay, s/veh	37.4			28.7	309.6	
Approach LOS	D			C	F	

Timer - Assigned Phs		2	3	4			8
Phs Duration (G+Y+Rc), s		21.0	21.0	22.7			43.7
Change Period (Y+Rc), s		5.4	5.8	5.8			5.8
Max Green Setting (Gmax), s		15.6	15.2	17.2			38.2
Max Q Clear Time (g_c+I1), s		17.6	15.8	16.6			9.9
Green Ext Time (p_c), s		0.0	0.0	0.3			2.8

Intersection Summary	
HCM 6th Ctrl Delay	170.2
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	1233	10	620	2102	821	20	1460	421	451	1320	270
Future Volume (veh/h)	380	1233	10	620	2102	821	20	1460	421	451	1320	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	388	1258	10	633	2145	838	20	1490	430	460	1347	276
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	1471	457	556	1861	578	84	1194	371	498	1805	695
Arrive On Green	0.08	0.29	0.29	0.16	0.36	0.36	0.02	0.23	0.23	0.14	0.35	0.35
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	388	1258	10	633	2145	838	20	1490	430	460	1347	276
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	10.0	27.5	0.5	19.0	43.0	43.0	0.7	27.6	27.6	15.5	27.3	14.0
Cycle Q Clear(g_c), s	10.0	27.5	0.5	19.0	43.0	43.0	0.7	27.6	27.6	15.5	27.3	14.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	1471	457	556	1861	578	84	1194	371	498	1805	695
V/C Ratio(X)	1.32	0.86	0.02	1.14	1.15	1.45	0.24	1.25	1.16	0.92	0.75	0.40
Avail Cap(c_a), veh/h	293	1471	457	556	1861	578	469	1194	371	498	1805	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	39.7	30.1	49.5	37.5	37.5	56.5	45.2	45.2	49.9	33.5	22.5
Incr Delay (d2), s/veh	168.0	5.2	0.0	82.1	75.4	212.4	1.4	118.6	97.8	23.1	1.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	12.1	0.2	14.5	30.5	50.4	0.3	24.7	20.8	8.3	11.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	222.0	44.8	30.1	131.6	112.9	249.9	57.9	163.8	143.0	73.0	35.2	22.9
LnGrp LOS	F	D	C	F	F	F	E	F	F	E	D	C
Approach Vol, veh/h		1656			3616			1940			2083	
Approach Delay, s/veh		86.3			147.9			158.1			41.9	
Approach LOS		F			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	34.0	23.0	40.0	6.9	48.1	14.0	49.0
Change Period (Y+Rc), s	4.0	6.4	4.0	6.0	4.0	6.4	4.0	6.0
Max Green Setting (Gmax), s	17.0	27.6	19.0	34.0	16.0	28.6	10.0	43.0
Max Q Clear Time (g_c+I1), s	17.5	29.6	21.0	29.5	2.7	29.3	12.0	45.0
Green Ext Time (p_c), s	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	115.3
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	27	48	110	300	26
Future Vol, veh/h	17	27	48	110	300	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	29	52	120	326	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	564	340	354	0	-	0
Stage 1	340	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	487	702	1205	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	465	702	1205	-	-	-
Mov Cap-2 Maneuver	549	-	-	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	813	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1205	-	634	-	-
HCM Lane V/C Ratio	0.043	-	0.075	-	-
HCM Control Delay (s)	8.1	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

KD Anderson & Associates, Inc.
Transportation Engineers

August 21, 2019

Mr. Nick Pappani
Raney Planning & Management
1501 Sports Drive
Sacramento, CA 95834

RE: TRAFFIC IMPACT ANALYSIS FOR BRADY VINEYARD SUBDIVISION: ASSESSMENT OF 12 ACCESSORY DWELLING UNITS

Dear Mr. Pappani:

This letter supplements our August 5, 2019 analysis for the traffic impacts associated with developing the **Brady Vineyard Subdivision** project to address the relative impacts of a project alternative that could add up to 12 Accessory Dwelling Units to the project to comply with Placer County's affordable housing requirements. Under this most intensive of the alternatives the project would involve 119 single family residential lots and between 6 and 12 Accessory Dwelling Units.

Trip Generation

Trip generation associated with the Accessory Dwelling Units was determined by applying applicable trip generation rates published in the *Trip Generation Manual* (Institute of Transportation Engineers, 10th Edition, 2018). Based on direction of Placer County staff and in conformance with the County's Traffic Impact Fee program's land use categories, multi-family residential is the applicable category for these units. Applicable rates are found in category 220 (Multiple Family Residential – Low Rise), as noted in Table 1. Application of these trip generation rates to the 12 units yields a total of 88 daily trips with 6 trips expected in the a.m. peak hour and 7 trips generated during the p.m. peak hour.

TABLE 1
TRIP GENERATION RATES / FORECASTS

Land Use	Unit / Quantity	Trip Generation						
		Daily	AM Peak Hour			PM Peak Hour		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Single Family Residential	Dwelling unit	9.44	25%	75%	0.74	63%	37%	0.99
Brady Vineyard Single Family	119 du's	1,123	22	66	88	74	64	118
Multiple Family Residential	Dwelling unit	7.32	23%	77%	0.46	63%	37%	0.56
Brady Vineyard Accessory Dwelling Units	12 units	88	1	5	6	4	3	7
Brady Vineyard Total		1,211	23	71	94	78	67	125

Trip Distribution and Assignment

Distribution. The distribution of trips to and from the Accessory Dwelling Units makes use of the assumptions made for the single family uses on the site as documented in the original traffic study. In the morning peak hour some parents may drop off students before continuing on to a regional destination. The share of project trips that may first visit Creekview Ranch School was determined based on the original factors. The DCUSD estimated a yield of 0.71 Creekview Ranch School students per residence. Thus the 12 Accessory Dwelling Units could yield 9 students. Assuming that the school's average bussing rate continues, then 3 bus riders would be generated, and 6 students would be driven to school. At a typical automobile occupancy rate for school traffic (i.e., 1.5 students per vehicle), 4 more vehicles would be destined for Creekview Ranch School in the morning, of those trips one will return to the site and 3 will continue to a regional destination.

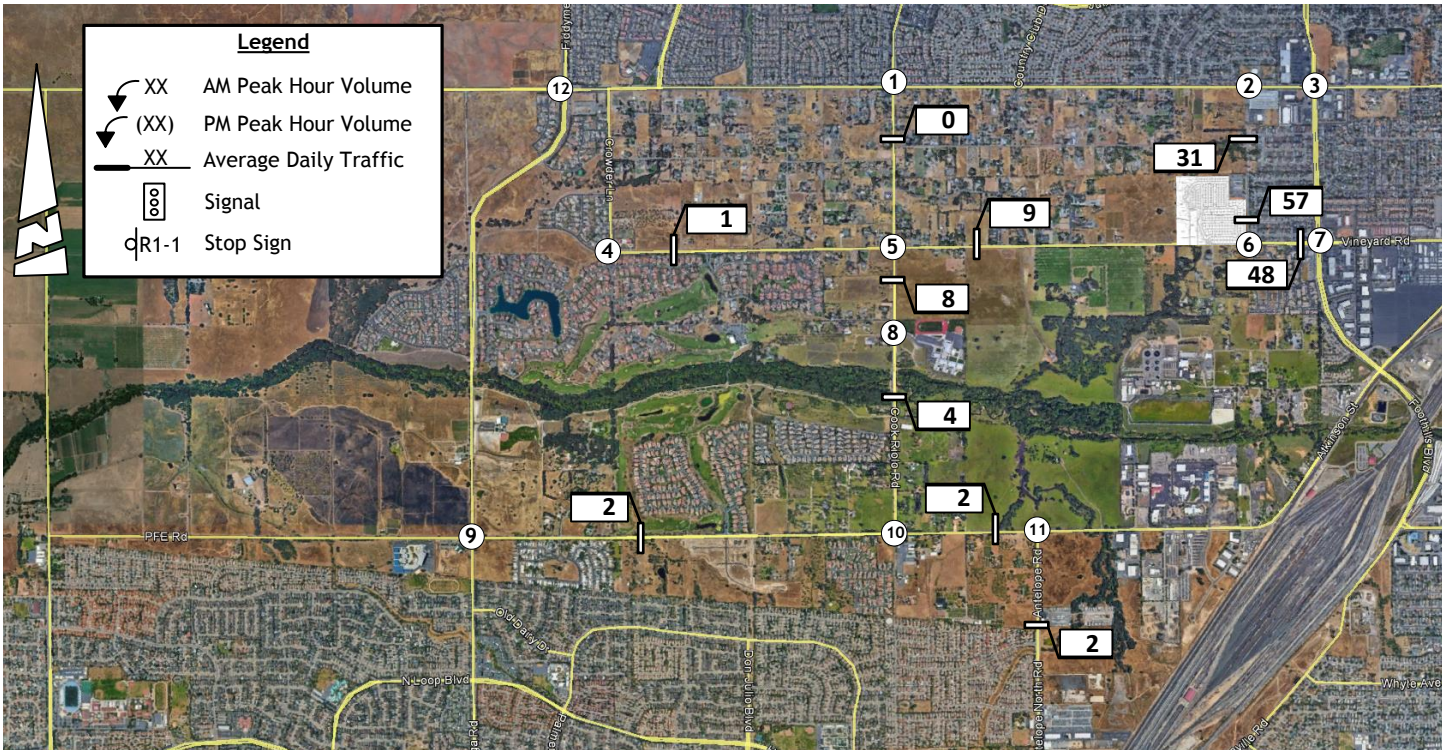
Trip Assignment. Figure 1 illustrates resulting "project only" trips for the 12 Accessory Dwelling Units, including trips continuing from Creekside Ranch School.

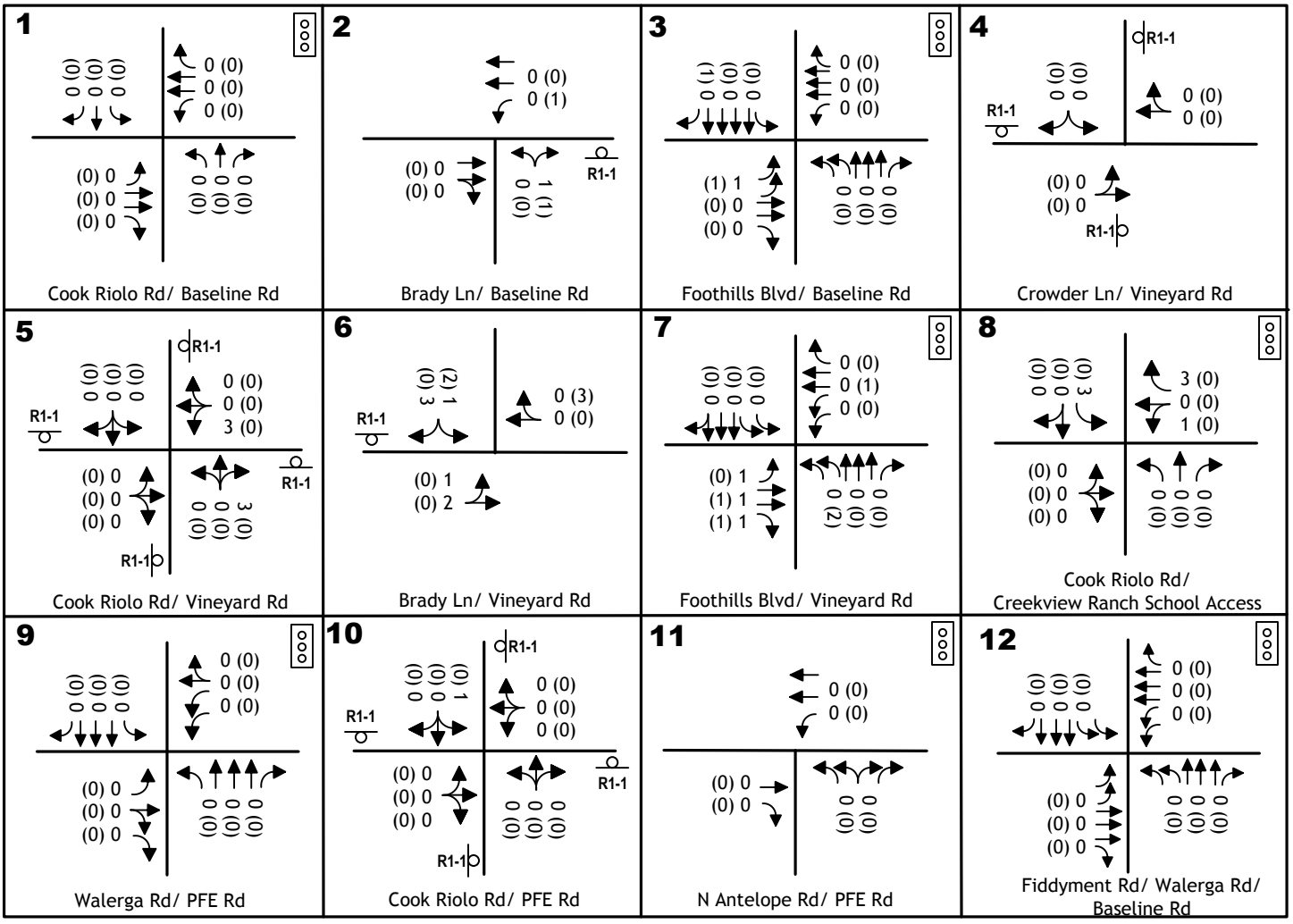
Existing Plus Project Conditions

Intersection Levels of Service. Table 2 presents the Levels of Service under Existing plus Project conditions with and without the 12 Accessory Dwelling Units. As indicated the Levels of Service resulting from the addition of 12 Accessory Dwelling Units are the same as those identified for the 119 SFR alone. In addition, the length of delays at the identified deficient intersection (i.e., Baseline Road / Brady Lane) is identical. Thus, the impacts of this alternative will be the same as those identified previously, and no additional mitigation is required.

Roadway Segment Levels of Service. Table 3 compares roadway segment traffic volumes and Levels of Service with the proposed 119 DFR units with and without another 12 Accessory Dwelling Units. As indicated, development of the 12 Accessory Dwelling Units will increase the volume of traffic along the study area roads slightly. However, all roadway segments will continue to operate within accepted Placer County minimum Level of Service thresholds.

Impact to Alternative Transportation Modes. The 12 Accessory Dwelling Units may result in a few additional pedestrians, bicyclists and transit riders. The project's impacts to alternative transportation modes would not change.





ACCESSORY DWELLING UNITS ONLY
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

5765-17 RA 8/21/2019

figure 1

TABLE 2
PEAK HOUR INTERSECTION LEVELS OF SERVICE
EXISTING PLUS PROJECT CONDITIONS

Location	Control	AM Peak Hour				PM Peak Hour				Traffic Signal Warranted?
		119 SFR		119 SFR plus 12 Accessory Dwelling Units		119 SFR		119 SFR plus 12 Accessory Dwelling Units		
		LOS	Avg Delay (veh/sec)	LOS	Avg Delay (veh/sec)	LOS	Avg Delay (veh/sec)	LOS	Avg Delay (veh/sec)	
1. Baseline Rd / Cook Riolo Rd / Woodcreek Oaks Blvd	Signal	C	32.0	C	32.0	C	30.5	C	30.5	N/A
2. Baseline Rd / Brady Lane	NB Stop									Yes
Northbound approach		**D**	**26.0**	**D**	**26.0**	C	23.0	C	23.0	
Westbound left turn		B	10.5	B	10.5	B	10.0	B	10.0	
3. Baseline Rd / Foothills Blvd -(R)	Signal	C	32.0	C	32.0	**D**	**41.0**	**D**	**41.0**	N/A
4. Vineyard Rd / Crowder Rd	SB Stop									No
(overall)		(A)	(9.0)	(A)	(9.0)	(A)	(9.0)	(A)	(9.0)	
Southbound approach		A	9.0	A	9.0	A	9.0	A	9.0	
Eastbound left turn		A	7.5	A	7.5	A	0.0	A	0.0	
5. Cook Riolo Rd / Vineyard Rd	AWS	C	16.0	C	16.5	B	11.0	B	11.0	No
6. Vineyard Rd / Brady Lane	AWS	A	10.0	A	10.0	A	9.5	A	9.5	No
7. Vineyard Rd / Foothills Blvd – (R)	Signal	C	25.5	C	25.5	C	30.5	C	31.0	N/A
8. Cook Riolo Rd / Creekview Ranch School	Signal	B	13.5	B	13.5	A	6.0	A	6.0	N/A
9. PFE Rd / Walerga Rd	Signal	D	36.0	D	36.0	**E**	**72.0**	**E**	**72.0**	N/A
10. PFE Rd / Cook Riolo Rd	AWS	D	28.5	D	28.5	B	14.0	B	14.0	Yes
11. PFE Rd / North Antelope Rd	AWS	C	17.5	C	17.5	C	15.5	C	15.5	Yes
12. Baseline Rd / Walerga Rd–Fiddyment Rd – (R)	Signal	**D**	**40.0**	**D**	**40.5**	**F**	**81.0**	**F**	**81.0**	N/A
13.Brady Lane / Project Access	EB Stop									No
(overall)		(A)	(8.5)	(A)	(8.5)	(A)	(8.5)	(A)	(8.5)	
Eastbound approach		A	9.0	A	9.0	A	7.5	A	7.5	
Northbound left turn		A	7.5	A	7.5	A	9.5	A	9.5	

N/S* – not studied. (R) indicates City of Roseville Minimum LOS C standard applies
Bold indicates MIN LOS threshold exceeded **Highlighted** values are a significant impact
* Overall Avg Delay = Σ (Delay x Volume of each delayed movement) / Σ Volume of each delayed movement

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TABLE 3
EXISTING PLUS PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Standard			Existing Plus 119 SFR			Existing Plus 119 SFR and 12 Accessory Dwelling Units				
		LOS	Volume Threshold Per Lane (veh/ln)	Max two-way volume at LOS standard[1]	Daily Volume	v/c	LOS	Daily Volume: 12 units Only	Daily Volume: Total	v/c	LOS	Diff in v/c from No Project
PFE Rd	Walerga Rd to Cook Riolo Rd	D	7,750	15,500	5,335	0.21	B	2	5,337	0.21	B	0.00
PFE Rd	Cook Riolo Rd to N. Antelope Rd	D	5,700	11,400	6,715	0.32	C	2	6,717	0.32	C	0.00
Cook Riolo Rd	Baseline Rd to Vineyard Rd	D	7,750	15,500	3,720	0.13	B	0	3,720	0.13	B	0.00
Cook Riolo Rd	Vineyard Rd to Creekview Ranch School	D	5,700	11,400	5,090	0.24	C	8	5,098	0.24	C	0.00
Cook Riolo Rd	Creekview Ranch School to PFE Rd	D	5,700	11,400	4,525	0.22	C	4	4,529	0.22	C	0.00
N. Antelope Rd	from PFE Rd to Great Valley Dr	D	5,700	11,400	7,785	0.37	D	2	7,787	0.37	D	0.00
Vineyard Rd	Crowder Lane to Cook Riolo Rd	D	5,700	11,400	2,650	0.13	B	1	2,651	0.13	B	0.00
Vineyard Rd	Cook Riolo Rd to Brady Lane	D	5,700	11,400	4,450	0.21	C	9	4,459	0.21	C	0.00
Vineyard Rd	Brady Lane to Foothills Blvd (R)	D	7,500	11,400	6,250	0.42	A	48	6,298	0.42	A	0.04
Brady Lane	Baseline Rd to Project (R)	D	5,700	11,400	1,405	0.07	A	31	1,436	0.07	A	0.02
Brady Lane	Project to Vineyard Rd (R)	D	5,700	11,400	1,740	0.08	A	57	1,797	0.09	B	0.04

[1] all study roadways are 2-lanes
(R) is City of Roseville jurisdiction.
Bold values exceed minimum LOS threshold **highlighted** values are a significant impact

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Cumulative Conditions

Intersection Level of Service. Table 4 identifies the long term Cumulative plus Project Level of Service projected at the study intersections with and without the 12 Accessory Dwelling Units. As indicated, the addition of 12 units does not change the Level of Service forecasts at any location, and the increment change in delay caused by the increase doe not result in significant impacts to any additional intersections. Thus, the project alternative's impacts are the same as those identified for the proposed project, and no additional mitigation is required.

Roadway Segment Levels of Service. Table 5 summarizes Levels of Service based on the projected daily traffic volumes on study area roads assuming the project is developed with and without 12 additional Accessory Dwelling Units. As noted, two study roadway segments are projected to operate at LOS E or LOS F. No change to identified Level of Service occurs. Because the incremental change in volumes continues to be less than the 0.05 significance threshold and less than 100 daily vehicles per lane, the projects impact with 12 Accessory Dwelling Units is also not significant.

PFE Road from Cook-Riolo Road to N. Antelope Road will operate at LOS F with and without the project. While the DCWPCP accepts LOS F on this roadway, because the incremental change in v/c does not exceed the 0.05 significance threshold and the incremental increase in volume is less than the 100 daily vehicles per lane threshold allowed under County guidelines, the project's impact is not significant and no improvement is required.

North Antelope Road south of PFE Road is projected to operate at LOS E. The DCWPCP accepts LOS E on this roadway. Because the incremental change in v/c does not exceed the 0.05 significance threshold and the incremental increase in volume is less than the 100 daily vehicles per lane threshold allowed under County guidelines, the project's impact is not significant and no improvement is required.

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TABLE 4
PEAK HOUR INTERSECTION LEVELS OF SERVICE - CUMULATIVE PLUS PROJECT CONDITIONS

Location	Control	AM Peak Hour				PM Peak Hour				Traffic Signal Warranted?
		Cumulative		Cum Plus Project		Cumulative		Cum Plus Project		
		LOS	Avg Delay or v/c ratio	LOS	Avg Delay or v/c ratio	LOS	Avg Delay or v/c ratio	LOS	Avg Delay or v/c ratio	
1. Baseline Rd / Cook Riolo Rd / Woodcreek Oaks Blvd (R)	Signal	**F**	**98.0**	**F**	**98.0**	**D**	**54.5**	**D**	**54.5**	N/A
2. Baseline Rd / Brady Lane (R)	NB Stop									YES
Northbound approach		F	**>300**	F	**>300**	**F**	**>300**	**F**	**>300**	
Westbound left turn		C	22.0	C	22.0	C	18.5	**C**	18.5	
	Signal and 2nd EB thru lane	*B*	*18.0*	*B*	*18.0*	*B*	*12.0*	*B*	*12.0*	
3. Baseline Rd / Foothills Blvd -(R)	Signal	**D**	**46.5**	**D**	**46.5**	**D**	**50.5**	**D**	**50.5**	N/A
4. Vineyard Rd / Crowder Rd	SB Stop									No
(overall)*		(C)	(17.0)	(C)	(17.0)	(B)	(11.5)	(B)	(11.5)	
Southbound approach		C	17.0	C	17.0	B	12.0	B	12.0	
Eastbound left turn		A	7.5	A	7.5	A	9.0	A	9.0	
5. Cook Riolo Rd / Vineyard Rd	AWS	**F**	**>300**	**F**	**(>300)**	**F**	**297.5**	**F**	**297.5**	YES
	Roundabout (2)	*C*	*16.0*	*C*	*16.0*	*B*	*11.5*	*B*	*11.5*	
6. Vineyard Rd / Brady Lane	AWS	**F**	**191.5**	**F**	**194.5**	**F**	**292.5**	**F**	**295.0**	YES
	Roundabout (1)	*B*	*13.5*	*B*	*13.5*	*C*	*18.0*	*C*	*18.0*	
	Signal	*8*	*10.0*	*B*	*10.0*	*D*	*50.5*	*D*	*50.5*	
7. Vineyard Rd / Foothills Blvd – (R)	Signal	C	34.5	C	34.5	C	33.5	C	33.5	N/A
8. Cook Riolo Rd / Creekview Ranch School	Signal	D	46.0	D	47.0	A	7.0	A	7.0	N/A
9. PFE Rd / Walerga Rd	Signal	**E**	**80.0**	**F**	**80.0**	**F**	**86.5**	**F**	**86.5**	N/A
10. PFE Rd / Cook Riolo Rd	AWS	**F**	**282.0**	**F**	**282.0**	**F**	**>300**	**F**	**>300**	YES
	Roundabout (1)	*C*	*20.0*	*C*	*20.0*	*B*	*14.0*	*B*	*14.0*	
11. PFE Rd / North Antelope Rd	Signal	**F**	**176.0**	**F**	**176.0**	**F**	**170.0**	**F**	**170.0**	N/A
12.Baseline Rd / Walerga Rd – Fiddyment Rd (R)	Signal	**F**	**116.5**	**F**	**116.5**	**F**	**115.5**	**F**	**115.5**	N/A
13. Brady Lane / Project Access	EB Stop									No
(overall)*		(A)	(9.1)	(A)	(9.1)	(A)	(9.5)	(A)	(9.5)	
Eastbound approach		A	9.5	A	9.5	B	11.0	B	11.0	
Northbound left turn		A	7.5	A	7.5	A	8.0	A	8.0	

(R) indicates City of Roseville jurisdiction and Minimum LOS C standard applies
Bold indicates MIN LOS threshold exceeded **Highlighted** values are a significant impact
* Overall Avg Delay = Σ (LOS x Volume of each delayed movement) / Σ Volume of each delayed movement

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TABLE 5
CUMULATIVE PLUS PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Standard			Segment Level of Service							
					Cumulative with 119 SFR			Cumulative with 119 SFR and 12 Accessory Dwelling Units				
								Daily Volume				
		LOS	Volume Threshold Per Lane (veh/ln)	Max two-way Volume at LOS Standard[1]	Daily Vol	v/c	LOS	12 units Only	Total	v/c	LOS	Diff in v/c
PFE Rd	Walerga Rd to Cook Riolo Rd	D	6,870	13,740	7.935	0.53	A	2	7,937	0.53	A	0.00
PFE Rd	Cook Riolo Rd to N. Antelope Rd	**F**	**6,870**	**13,740**	**18,310**	**1.22**	**F**	**2**	**18,312**	**1.22**	**F**	**0.00**
Cook Riolo Rd	Baseline Rd to Vineyard Rd	F	6,870	13,740	9,615	0.64	B	0	9,615	0.64	B	0.00
Cook Riolo Rd	Vineyard Rd to Creekview Ranch School	F	6,870	13,740	13,420	0.89	D	8	13,428	0.89	D	0.01
Cook Riolo Rd	Creekview Ranch School to PFE Rd	F	6,870	13,740	12,150	0.81	D	19	12,154	0.81	D	0.00
N. Antelope Rd	from PFE Rd to Great Valley Dr	**E**	18,000[2]	36,000	**32,575**	**0.91**	**E**	**2**	**32,577**	**0.91**	**E**	**0.01**
Vineyard Rd	Crowder Lane to Cook Riolo Rd	D	6,870	13,740	8,915	0.59	A	1	8,916	0.59	A	0.00
Vineyard Rd	Cook Riolo Rd to Brady Lane	D	6,870	13,740	12,035	0.80	C	9	12,044	0.80	D	0.01
Vineyard Rd	Brady Lane to Foothills Blvd	D	7,500	15,000	18,875	1.26	F	48	18.923	1.26	F	0.04
Brady Lane	Baseline Rd to Project	D	5,700	11,400	6,295	0.30	C	31	6,326	0.30	C	0.02
Brady Lane	Project to Vineyard Rd	D	5,700	11,400	8,090	0.39	C	57	8,147	0.39	D	0.04

[1] 2 - lane road except as noted.
[2] 4 - lane road.
Bold values exceed minimum LOS threshold **highlighted** values are a significant impact

KDA

Thank you for your attention to this information.

Please feel free to contact me if you have any questions or need additional information.

Sincerely Yours,

KD Anderson & Associates, Inc.

Kenneth D. Anderson, P.E.
President

Attachments: LOS calculations

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Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	955	36	17	532	44	53
Future Vol, veh/h	955	36	17	532	44	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1016	38	18	566	47	56

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1054	0	1354	1035
Stage 1	-	-	-	-	1035	-
Stage 2	-	-	-	-	319	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	658	-	152	281
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	658	-	148	281
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	691	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	25.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	-	-	658	-
HCM Lane V/C Ratio	0.377	-	-	0.027	-
HCM Control Delay (s)	25.9	-	-	10.6	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	168	227	503	87	131	79	334	1080	22	76	1014	82
Future Volume (veh/h)	168	227	503	87	131	79	334	1080	22	76	1014	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	187	252	337	97	146	88	371	1200	24	84	1127	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	669	298	128	463	206	494	2184	678	150	1675	
Arrive On Green	0.13	0.19	0.19	0.07	0.13	0.13	0.14	0.43	0.43	0.04	0.33	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	187	252	337	97	146	88	371	1200	24	84	1127	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.6	4.6	14.0	4.0	2.8	3.8	7.7	13.1	0.7	1.8	14.2	0.0
Cycle Q Clear(g_c), s	7.6	4.6	14.0	4.0	2.8	3.8	7.7	13.1	0.7	1.8	14.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	669	298	128	463	206	494	2184	678	150	1675	
V/C Ratio(X)	0.81	0.38	1.13	0.76	0.32	0.43	0.75	0.55	0.04	0.56	0.67	
Avail Cap(c_a), veh/h	383	669	298	527	956	426	976	3296	1023	743	2952	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.5	26.4	30.2	33.9	29.3	29.8	30.6	15.9	12.4	34.9	21.5	0.0
Incr Delay (d2), s/veh	6.6	0.4	91.7	8.9	0.4	1.4	2.3	0.2	0.0	3.3	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	1.9	12.7	2.0	1.2	1.5	3.1	4.4	0.2	0.8	5.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.1	26.7	121.8	42.8	29.7	31.2	32.9	16.1	12.4	38.1	22.0	0.0
LnGrp LOS	D	C	F	D	C	C	C	B	B	D	C	
Approach Vol, veh/h		776			331			1595			1211	A
Approach Delay, s/veh		70.8			33.9			20.0			23.1	
Approach LOS		E			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	37.8	13.6	15.7	14.6	30.4	9.3	20.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	48.0	16.0	20.0	21.0	43.0	22.0	14.0
Max Q Clear Time (g_c+I1), s	3.8	15.1	9.6	5.8	9.7	16.2	6.0	16.0
Green Ext Time (p_c), s	0.1	9.6	0.3	0.9	1.0	8.2	0.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	16.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	81	75	160	29	20	36	147	165	24	164	6
Future Vol, veh/h	12	81	75	160	29	20	36	147	165	24	164	6
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	100	93	198	36	25	44	181	204	30	202	7
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13	15.2	20.1	13.9
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	7%	77%	12%
Vol Thru, %	42%	48%	14%	85%
Vol Right, %	47%	45%	10%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	348	168	209	194
LT Vol	36	12	160	24
Through Vol	147	81	29	164
RT Vol	165	75	20	6
Lane Flow Rate	430	207	258	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.681	0.364	0.467	0.421
Departure Headway (Hd)	5.703	6.318	6.516	6.321
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	632	568	552	568
Service Time	3.749	4.379	4.573	4.377
HCM Lane V/C Ratio	0.68	0.364	0.467	0.423
HCM Control Delay	20.1	13	15.2	13.9
HCM Lane LOS	C	B	C	B
HCM 95th-tile Q	5.3	1.7	2.5	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	136	134	136	43	56	100	1400	70	84	1569	34
Future Volume (veh/h)	110	136	134	136	43	56	100	1400	70	84	1569	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	122	151	149	151	48	0	111	1556	0	93	1743	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	393	175	212	165		137	3053		117	3017	66
Arrive On Green	0.08	0.11	0.11	0.06	0.09	0.00	0.08	0.60	0.00	0.07	0.59	0.59
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	5106	1585	1781	5142	112
Grp Volume(v), veh/h	122	151	149	151	48	0	111	1556	0	93	1154	627
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1702	1585	1781	1702	1850
Q Serve(g_s), s	8.1	4.7	11.1	5.1	2.9	0.0	7.4	21.1	0.0	6.2	25.4	25.4
Cycle Q Clear(g_c), s	8.1	4.7	11.1	5.1	2.9	0.0	7.4	21.1	0.0	6.2	25.4	25.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	149	393	175	212	165		137	3053		117	1998	1086
V/C Ratio(X)	0.82	0.38	0.85	0.71	0.29		0.81	0.51		0.79	0.58	0.58
Avail Cap(c_a), veh/h	238	423	189	461	223		238	3053		238	1998	1086
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	49.6	52.4	55.3	51.2	0.0	54.5	13.9	0.0	55.2	15.5	15.5
Incr Delay (d2), s/veh	11.4	0.6	27.8	4.3	1.0	0.0	10.6	0.6	0.0	11.3	1.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	2.1	5.7	2.4	1.4	0.0	3.7	8.0	0.0	3.1	9.8	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.4	50.2	80.2	59.6	52.2	0.0	65.1	14.6	0.0	66.5	16.7	17.7
LnGrp LOS	E	D	F	E	D		E	B		E	B	B
Approach Vol, veh/h		422			199	A		1667	A		1874	
Approach Delay, s/veh		65.2			57.8			17.9			19.5	
Approach LOS		E			E			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	19.0	11.9	77.8	14.0	16.3	13.3	76.4
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	7.1	13.1	8.2	23.1	10.1	4.9	9.4	27.4
Green Ext Time (p_c), s	0.3	0.2	0.1	14.9	0.1	0.1	0.1	15.4

Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	184	0	186	0	158	244	245	152	0
Future Volume (veh/h)	0	0	0	184	0	186	0	158	244	245	152	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	259	0	262	0	223	344	345	214	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	4	0	399	0	727	4	457	742	418	1080	0
Arrive On Green	0.00	0.00	0.00	0.22	0.00	0.22	0.00	0.24	0.24	0.23	0.58	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	259	0	262	0	223	344	345	214	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	6.0	0.0	4.9	0.0	4.6	6.7	8.4	2.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.0	0.0	4.9	0.0	4.6	6.7	8.4	2.5	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	4	0	399	0	727	4	457	742	418	1080	0
V/C Ratio(X)	0.00	0.00	0.00	0.65	0.00	0.36	0.00	0.49	0.46	0.83	0.20	0.00
Avail Cap(c_a), veh/h	0	741	0	902	0	1174	196	1091	1280	569	1482	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	16.0	0.0	8.0	0.0	14.7	8.2	16.5	4.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.8	0.0	0.3	0.0	0.8	0.5	7.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.3	0.0	1.3	0.0	1.8	3.0	3.7	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	17.8	0.0	8.3	0.0	15.5	8.7	23.7	4.7	0.0
LnGrp LOS	A	A	A	B	A	A	A	B	A	C	A	A
Approach Vol, veh/h		0			521			567			559	
Approach Delay, s/veh		0.0			13.0			11.4			16.4	
Approach LOS					B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.2	15.6		0.0	0.0	30.7		14.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	14.5	26.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	10.4	8.7		0.0	0.0	4.5		8.0
Green Ext Time (p_c), s	0.4	2.4		0.0	0.0	1.3		2.2

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Intersection	
Intersection Delay, s/veh	28.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	149	283	0	4	109	204	0	1	3	218	1	103
Future Vol, veh/h	149	283	0	4	109	204	0	1	3	218	1	103
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	182	345	0	5	133	249	0	1	4	266	1	126
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	40.1	18.8	10.6	23.5
HCM LOS	E	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	34%	1%	68%
Vol Thru, %	25%	66%	34%	0%
Vol Right, %	75%	0%	64%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	432	317	322
LT Vol	0	149	4	218
Through Vol	1	283	109	1
RT Vol	3	0	204	103
Lane Flow Rate	5	527	387	393
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.892	0.636	0.704
Departure Headway (Hd)	7.423	6.093	5.92	6.458
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	479	595	611	562
Service Time	5.51	4.132	3.964	4.501
HCM Lane V/C Ratio	0.01	0.886	0.633	0.699
HCM Control Delay	10.6	40.1	18.8	23.5
HCM Lane LOS	B	E	C	C
HCM 95th-tile Q	0	10.6	4.5	5.6

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	60	20	44	46	3
Future Vol, veh/h	11	60	20	44	46	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	75	25	55	58	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	165	60	62	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	105	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	826	1005	1541	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	919	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	812	1005	1541	-	-	-
Mov Cap-2 Maneuver	796	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	919	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	2.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1541	-	966	-	-
HCM Lane V/C Ratio	0.016	-	0.092	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	252	0	2	154	33	0	1	1	45	0	58
Future Vol, veh/h	31	252	0	2	154	33	0	1	1	45	0	58
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	293	0	2	179	38	0	1	1	52	0	67
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	10.7	9.3	8.2	8.9
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	11%	1%	100%	0%
Vol Thru, %	50%	89%	81%	0%	0%
Vol Right, %	50%	0%	17%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	283	189	45	58
LT Vol	0	31	2	45	0
Through Vol	1	252	154	0	0
RT Vol	1	0	33	0	58
Lane Flow Rate	2	329	220	52	67
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.003	0.414	0.276	0.091	0.095
Departure Headway (Hd)	5.162	4.526	4.523	6.268	5.054
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	688	796	793	570	705
Service Time	3.233	2.558	2.559	4.024	2.81
HCM Lane V/C Ratio	0.003	0.413	0.277	0.091	0.095
HCM Control Delay	8.2	10.7	9.3	9.7	8.3
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0	2	1.1	0.3	0.3

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	816	30	57	1086	36	50
Future Vol, veh/h	816	30	57	1086	36	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	859	32	60	1143	38	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	891	0	1567	875
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	692	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	759	-	112	348
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	759	-	103	348
Mov Cap-2 Maneuver	-	-	-	-	236	-
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	423	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	-	-	759	-
HCM Lane V/C Ratio	0.312	-	-	0.079	-
HCM Control Delay (s)	22.9	-	-	10.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.3	-	-	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	228	353	109	326	113	558	1187	91	142	1488	142
Future Volume (veh/h)	212	228	353	109	326	113	558	1187	91	142	1488	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	253	125	121	362	70	620	1319	101	158	1653	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	648	289	150	439	196	704	2502	777	225	1794	
Arrive On Green	0.14	0.18	0.18	0.08	0.12	0.12	0.20	0.49	0.49	0.07	0.35	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	236	253	125	121	362	70	620	1319	101	158	1653	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	14.7	7.0	7.8	7.5	11.1	4.5	19.5	19.9	3.9	5.0	34.8	0.0
Cycle Q Clear(g_c), s	14.7	7.0	7.8	7.5	11.1	4.5	19.5	19.9	3.9	5.0	34.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	648	289	150	439	196	704	2502	777	225	1794	
V/C Ratio(X)	0.93	0.39	0.43	0.81	0.82	0.36	0.88	0.53	0.13	0.70	0.92	
Avail Cap(c_a), veh/h	254	648	289	286	507	226	863	2502	777	555	1823	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.5	40.3	40.7	50.4	47.9	45.0	43.3	19.6	15.6	51.3	34.9	0.0
Incr Delay (d2), s/veh	37.5	0.4	1.0	9.8	9.5	1.1	9.0	0.2	0.1	4.0	8.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	3.1	3.1	3.7	5.5	1.8	8.9	7.3	1.4	2.2	14.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.0	40.7	41.7	60.2	57.4	46.1	52.3	19.9	15.6	55.3	43.0	0.0
LnGrp LOS	F	D	D	E	E	D	D	B	B	E	D	
Approach Vol, veh/h		614			553			2040			1811	A
Approach Delay, s/veh		57.9			56.6			29.5			44.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	60.9	20.0	19.9	26.8	45.4	13.4	26.4
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	18.0	50.0	16.0	16.0	28.0	40.0	18.0	14.0
Max Q Clear Time (g_c+I1), s	7.0	21.9	16.7	13.1	21.5	36.8	9.5	9.8
Green Ext Time (p_c), s	0.3	10.7	0.0	0.7	1.3	2.6	0.2	0.8

Intersection Summary	
HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	51	85	194	127	126	212	1753	98	74	1702	93
Future Volume (veh/h)	108	51	85	194	127	126	212	1753	98	74	1702	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	57	94	216	141	0	236	1948	0	82	1891	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	333	149	280	173		238	3075		105	2616	142
Arrive On Green	0.08	0.09	0.09	0.08	0.09	0.00	0.13	0.60	0.00	0.06	0.53	0.53
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	5106	1585	1781	4957	269
Grp Volume(v), veh/h	120	57	94	216	141	0	236	1948	0	82	1297	697
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1702	1585	1781	1702	1822
Q Serve(g_s), s	8.0	1.8	6.9	7.4	8.9	0.0	15.9	29.4	0.0	5.5	34.9	35.1
Cycle Q Clear(g_c), s	8.0	1.8	6.9	7.4	8.9	0.0	15.9	29.4	0.0	5.5	34.9	35.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	147	333	149	280	173		238	3075		105	1797	962
V/C Ratio(X)	0.82	0.17	0.63	0.77	0.82		0.99	0.63		0.78	0.72	0.72
Avail Cap(c_a), veh/h	238	423	189	461	223		238	3075		238	1797	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.2	50.1	52.4	54.1	53.5	0.0	51.9	15.3	0.0	55.7	21.6	21.7
Incr Delay (d2), s/veh	10.8	0.2	4.4	4.5	16.5	0.0	56.5	1.0	0.0	11.9	2.6	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.8	2.9	3.4	5.0	0.0	10.8	11.2	0.0	2.8	14.1	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.0	50.3	56.8	58.5	70.0	0.0	108.5	16.3	0.0	67.6	24.2	26.4
LnGrp LOS	E	D	E	E	E		F	B		E	C	C
Approach Vol, veh/h		271			357	A		2184	A		2076	
Approach Delay, s/veh		59.1			63.1			26.3			26.6	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	16.9	11.1	78.3	13.9	16.8	20.0	69.3
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	10.4	8.9	7.5	31.4	10.0	10.9	17.9	37.1
Green Ext Time (p_c), s	0.4	0.2	0.1	15.8	0.1	0.2	0.0	12.6

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	120	0	0	248	76	0	0	0	54	0	20
Future Vol, veh/h	20	120	0	0	248	76	0	0	0	54	0	20
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	132	0	0	273	84	0	0	0	59	0	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	8.7	10.2	0	9.1
HCM LOS	A	B	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	14%	0%	100%	0%
Vol Thru, %	100%	86%	77%	0%	0%
Vol Right, %	0%	0%	23%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	140	324	54	20
LT Vol	0	20	0	54	0
Through Vol	0	120	248	0	0
RT Vol	0	0	76	0	20
Lane Flow Rate	0	154	356	59	22
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0	0.195	0.415	0.101	0.03
Departure Headway (Hd)	5.286	4.559	4.199	6.142	4.931
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	0	788	858	583	725
Service Time	3.333	2.582	2.216	3.881	2.669
HCM Lane V/C Ratio	0	0.195	0.415	0.101	0.03
HCM Control Delay	8.3	8.7	10.2	9.6	7.8
HCM Lane LOS	N	A	B	A	A
HCM 95th-tile Q	0	0.7	2.1	0.3	0.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	29	51	44	45	27
Future Vol, veh/h	18	29	51	44	45	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	32	55	48	49	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	222	64	78	0	-	0
Stage 1	64	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	766	1000	1520	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	738	1000	1520	-	-	-
Mov Cap-2 Maneuver	744	-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	871	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1520	-	884	-	-
HCM Lane V/C Ratio	0.036	-	0.058	-	-
HCM Control Delay (s)	7.5	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	120.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1984	41	32	1090	63	98
Future Vol, veh/h	1984	41	32	1090	63	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2111	44	34	1160	67	104

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2155	0	2781	2133
Stage 1	-	-	-	-	2133	-
Stage 2	-	-	-	-	648	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	247	-	~ 18	~ 62
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	247	-	~ 16	~ 62
Mov Cap-2 Maneuver	-	-	-	-	~ 16	-
Stage 1	-	-	-	-	98	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	$ 2477.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	29	-	-	247	-
HCM Lane V/C Ratio	5.906	-	-	0.138	-
HCM Control Delay (s)	$ 2477.4	-	-	21.9	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	20.9	-	-	0.5	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	185	441	1009	68	191	51	414	1572	79	57	1333	195
v/c Ratio	0.53	0.35	1.21	0.48	0.12	0.08	0.75	0.90	0.12	0.40	0.86	0.12
Control Delay	54.7	29.0	128.1	63.0	28.7	0.3	55.3	44.8	0.8	59.7	48.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	29.0	128.1	63.0	28.7	0.3	55.3	44.8	0.8	59.7	48.0	0.2
Queue Length 50th (ft)	69	131	~730	50	36	0	154	422	0	42	281	0
Queue Length 95th (ft)	106	182	#1012	99	59	0	211	#570	4	85	#339	0
Internal Link Dist (ft)		293			630			691			1477	
Turn Bay Length (ft)	360		360	230		120	210		250	250		170
Base Capacity (vph)	952	1267	832	174	1602	617	645	1749	633	253	1606	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.35	1.21	0.39	0.12	0.08	0.64	0.90	0.12	0.23	0.83	0.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	419	959	65	181	48	393	1493	75	54	1266	185
Future Volume (veh/h)	176	419	959	65	181	48	393	1493	75	54	1266	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	441	641	68	191	51	414	1572	79	57	1333	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	263	1329	593	88	1773	550	494	1777	552	74	1586	
Arrive On Green	0.08	0.37	0.37	0.05	0.35	0.35	0.14	0.35	0.35	0.04	0.25	0.00
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	5106	1585	1781	6434	1585
Grp Volume(v), veh/h	185	441	641	68	191	51	414	1572	79	57	1333	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	1702	1585	1781	1609	1585
Q Serve(g_s), s	5.6	9.5	40.0	4.0	2.7	2.3	12.5	31.0	3.7	3.4	21.1	0.0
Cycle Q Clear(g_c), s	5.6	9.5	40.0	4.0	2.7	2.3	12.5	31.0	3.7	3.4	21.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	263	1329	593	88	1773	550	494	1777	552	74	1586	
V/C Ratio(X)	0.70	0.33	1.08	0.77	0.11	0.09	0.84	0.88	0.14	0.77	0.84	
Avail Cap(c_a), veh/h	1002	1329	593	183	1773	550	679	1777	552	267	1685	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.2	23.9	33.5	50.2	23.7	23.5	44.6	32.8	23.9	50.7	38.3	0.0
Incr Delay (d2), s/veh	3.4	0.1	60.8	13.4	0.0	0.1	6.7	5.7	0.1	15.3	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	4.0	24.9	2.1	1.1	0.9	5.6	12.9	1.4	1.8	8.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.6	24.1	94.3	63.6	23.7	23.6	51.3	38.6	24.0	66.0	42.1	0.0
LnGrp LOS	D	C	F	E	C	C	D	D	C	E	D	
Approach Vol, veh/h		1267			310			2065			1390	A
Approach Delay, s/veh		63.6			32.4			40.6			43.1	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	43.2	12.1	43.1	19.3	32.4	9.3	46.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	33.0	31.0	20.0	21.0	28.0	11.0	40.0
Max Q Clear Time (g_c+I1), s	5.4	33.0	7.6	4.7	14.5	23.1	6.0	42.0
Green Ext Time (p_c), s	0.1	0.0	0.6	1.2	0.8	3.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	571.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	540	140	164	70	40	40	566	291	40	240	20
Future Vol, veh/h	50	540	140	164	70	40	40	566	291	40	240	20
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	667	173	202	86	49	49	699	359	49	296	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	618	93.1	835.6	105.8
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	7%	60%	13%
Vol Thru, %	63%	74%	26%	80%
Vol Right, %	32%	19%	15%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	897	730	274	300
LT Vol	40	50	164	40
Through Vol	566	540	70	240
RT Vol	291	140	40	20
Lane Flow Rate	1107	901	338	370
Geometry Grp	1	1	1	1
Degree of Util (X)	2.78	2.284	0.887	0.95
Departure Headway (Hd)	12.5	13.737	20.841	20.282
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	310	279	179	181
Service Time	10.5	11.737	18.841	18.282
HCM Lane V/C Ratio	3.571	3.229	1.888	2.044
HCM Control Delay	835.6	618	93.1	105.8
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	68.5	46.9	6.5	7.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	112	295	254	115	55	54	135	1853	51	146	2242
v/c Ratio	0.48	0.64	0.60	0.43	0.16	0.03	0.47	0.67	0.03	0.49	0.81
Control Delay	57.0	56.0	11.8	57.4	49.4	0.0	57.4	22.5	0.0	57.6	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	56.0	11.8	57.4	49.4	0.0	57.4	22.5	0.0	57.6	26.6
Queue Length 50th (ft)	84	115	0	44	20	0	52	367	0	56	503
Queue Length 95th (ft)	142	160	76	73	41	0	83	487	0	88	659
Internal Link Dist (ft)		650			673			2611			626
Turn Bay Length (ft)	160		180	290		220	250		200	180	
Base Capacity (vph)	259	481	434	457	421	1583	457	2752	1583	457	2761
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.61	0.59	0.25	0.13	0.03	0.30	0.67	0.03	0.32	0.81

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	280	241	109	52	51	128	1760	48	139	2098	32
Future Volume (veh/h)	106	280	241	109	52	51	128	1760	48	139	2098	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	112	295	254	115	55	0	135	1853	0	146	2208	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	423	189	173	325		195	3098		207	3161	49
Arrive On Green	0.08	0.12	0.12	0.05	0.09	0.00	0.06	0.61	0.00	0.06	0.61	0.61
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5180	80
Grp Volume(v), veh/h	112	295	254	115	55	0	135	1853	0	146	1450	792
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1856
Q Serve(g_s), s	7.4	9.6	14.3	3.9	1.7	0.0	4.6	26.9	0.0	5.0	34.7	34.8
Cycle Q Clear(g_c), s	7.4	9.6	14.3	3.9	1.7	0.0	4.6	26.9	0.0	5.0	34.7	34.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	138	423	189	173	325		195	3098		207	2077	1132
V/C Ratio(X)	0.81	0.70	1.34	0.67	0.17		0.69	0.60		0.70	0.70	0.70
Avail Cap(c_a), veh/h	238	423	189	461	423		461	3098		461	2077	1132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	50.8	52.9	56.0	50.3	0.0	55.6	14.6	0.0	55.4	15.9	15.9
Incr Delay (d2), s/veh	10.6	4.9	186.1	4.3	0.2	0.0	4.3	0.9	0.0	4.3	2.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	4.5	15.4	1.8	0.8	0.0	2.1	10.1	0.0	2.3	13.3	15.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	55.7	239.0	60.4	50.5	0.0	59.9	15.4	0.0	59.7	17.9	19.5
LnGrp LOS	E	E	F	E	D		E	B		E	B	B
Approach Vol, veh/h		661			170	A		1988	A		2388	
Approach Delay, s/veh		127.7			57.2			18.4			21.0	
Approach LOS		F			E			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	20.0	11.2	78.8	13.3	16.7	10.8	79.2
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	5.9	16.3	7.0	28.9	9.4	3.7	6.6	36.8
Green Ext Time (p_c), s	0.2	0.0	0.3	16.2	0.1	0.1	0.3	13.9

Intersection Summary	
HCM 6th Ctrl Delay	34.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	290	406	775	324	413	354
v/c Ratio	0.72	0.40	1.09	0.28	1.02	0.29
Control Delay	40.9	2.5	88.2	1.3	84.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	2.5	88.2	1.3	84.6	7.1
Queue Length 50th (ft)	143	0	~484	0	~243	72
Queue Length 95th (ft)	169	8	#601	6	#292	89
Internal Link Dist (ft)	1176		1098			805
Turn Bay Length (ft)				290	550	
Base Capacity (vph)	479	1008	713	1213	406	1239
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.40	1.09	0.27	1.02	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	206	0	288	0	620	230	293	251	0
Future Volume (veh/h)	0	0	0	206	0	288	0	620	230	293	251	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	290	0	406	0	775	324	413	354	0
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.80	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	2	0	408	0	727	2	716	969	409	1244	0
Arrive On Green	0.00	0.00	0.00	0.23	0.00	0.23	0.00	0.38	0.38	0.23	0.67	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Grp Volume(v), veh/h	0	0	0	290	0	406	0	775	324	413	354	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1870	1585	1781	1870	0
Q Serve(g_s), s	0.0	0.0	0.0	12.7	0.0	15.8	0.0	32.5	8.5	19.5	6.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	12.7	0.0	15.8	0.0	32.5	8.5	19.5	6.6	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	2	0	408	0	727	2	716	969	409	1244	0
V/C Ratio(X)	0.00	0.00	0.00	0.71	0.00	0.56	0.00	1.08	0.33	1.01	0.28	0.00
Avail Cap(c_a), veh/h	0	396	0	482	0	793	105	716	969	409	1244	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	30.2	0.0	16.7	0.0	26.2	8.1	32.7	5.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.0	0.0	0.7	0.0	58.3	0.2	47.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	5.7	0.0	5.5	0.0	25.1	4.8	13.5	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	34.1	0.0	17.5	0.0	84.6	8.3	79.7	6.0	0.0
LnGrp LOS	A	A	A	C	A	B	A	F	A	F	A	A
Approach Vol, veh/h		0			696			1099			767	
Approach Delay, s/veh		0.0			24.4			62.1			45.7	
Approach LOS					C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.0	37.0		0.0	0.0	61.0		23.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	19.5	32.5		18.0	5.0	36.0		23.0
Max Q Clear Time (g_c+I1), s	21.5	34.5		0.0	0.0	8.6		17.8
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	2.2		1.6

Intersection Summary		
HCM 6th Ctrl Delay		46.9
HCM 6th LOS		D

Intersection	
Intersection Delay, s/veh	194.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	896	0	0	200	85	0	0	0	85	0	75
Future Vol, veh/h	75	896	0	0	200	85	0	0	0	85	0	75
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	87	1042	0	0	233	99	0	0	0	99	0	87
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	276.9	14.3	0	13.6
HCM LOS	F	B	-	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	8%	0%	53%
Vol Thru, %	100%	92%	70%	0%
Vol Right, %	0%	0%	30%	47%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	971	285	160
LT Vol	0	75	0	85
Through Vol	0	896	200	0
RT Vol	0	0	85	75
Lane Flow Rate	0	1129	331	186
Geometry Grp	1	1	1	1
Degree of Util (X)	0	1.568	0.485	0.32
Departure Headway (Hd)	8.221	4.999	5.902	7.244
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	734	616	500
Service Time	6.221	3.051	3.902	5.244
HCM Lane V/C Ratio	0	1.538	0.537	0.372
HCM Control Delay	11.2	276.9	14.3	13.6
HCM Lane LOS	N	F	B	B
HCM 95th-tile Q	0	57.8	2.6	1.4

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	60	20	140	100	3
Future Vol, veh/h	11	60	20	140	100	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	65	22	152	109	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	307	111	112	0	-	0
Stage 1	111	-	-	-	-	-
Stage 2	196	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	685	942	1478	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	674	942	1478	-	-	-
Mov Cap-2 Maneuver	674	-	-	-	-	-
Stage 1	899	-	-	-	-	-
Stage 2	837	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	887	-	-
HCM Lane V/C Ratio	0.015	-	0.087	-	-
HCM Control Delay (s)	7.5	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	60.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1420	189	98	1940	45	73
Future Vol, veh/h	1420	189	98	1940	45	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1495	199	103	2042	47	77

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1694	0	2822	1595
Stage 1	-	-	-	-	1595	-
Stage 2	-	-	-	-	1227	-
Critical Hdwy	-	-	4.13	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	374	-	~ 17	131
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	241	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	374	-	~ 12	131
Mov Cap-2 Maneuver	-	-	-	-	~ 12	-
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	175	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	$ 1914
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	27	-	-	374	-
HCM Lane V/C Ratio	4.6	-	-	0.276	-
HCM Control Delay (s)	$ 1914	-	-	18.3	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	15.2	-	-	1.1	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	254	334	518	93	548	131	805	1658	94	149	1760	279
Future Volume (veh/h)	254	334	518	93	548	131	805	1658	94	149	1760	279
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	267	352	334	98	577	138	847	1745	99	157	1853	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	576	257	124	687	213	862	2477	769	187	2191	
Arrive On Green	0.10	0.16	0.16	0.07	0.13	0.13	0.25	0.49	0.49	0.10	0.34	0.00
Sat Flow, veh/h	3456	3554	1585	1781	5106	1585	3456	5106	1585	1781	6434	1585
Grp Volume(v), veh/h	267	352	334	98	577	138	847	1745	99	157	1853	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1702	1585	1728	1702	1585	1781	1609	1585
Q Serve(g_s), s	8.5	10.3	18.2	6.1	12.4	9.3	27.4	30.0	3.9	9.7	29.9	0.0
Cycle Q Clear(g_c), s	8.5	10.3	18.2	6.1	12.4	9.3	27.4	30.0	3.9	9.7	29.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	336	576	257	124	687	213	862	2477	769	187	2191	
V/C Ratio(X)	0.79	0.61	1.30	0.79	0.84	0.65	0.98	0.70	0.13	0.84	0.85	
Avail Cap(c_a), veh/h	493	576	257	286	728	226	862	2477	769	254	2293	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.6	43.7	47.0	51.4	47.4	46.0	41.9	22.6	15.9	49.3	34.3	0.0
Incr Delay (d2), s/veh	5.5	1.9	160.5	10.5	8.3	5.8	26.3	0.9	0.1	16.6	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	4.7	18.6	3.1	5.8	4.0	14.3	11.2	1.4	5.0	11.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.1	45.6	207.6	61.9	55.7	51.9	68.2	23.5	15.9	66.0	37.3	0.0
LnGrp LOS	E	D	F	E	E	D	E	C	B	E	D	
Approach Vol, veh/h		953			813			2691			2010	A
Approach Delay, s/veh		105.0			55.8			37.3			39.5	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	60.5	14.9	21.1	32.0	44.2	11.8	24.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	50.0	16.0	16.0	28.0	40.0	18.0	14.0
Max Q Clear Time (g_c+I1), s	11.7	32.0	10.5	14.4	29.4	31.9	8.1	20.2
Green Ext Time (p_c), s	0.1	11.5	0.4	0.7	0.0	6.3	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	80	169	137	345	115	331	2322	85	96	2116	46
Future Volume (veh/h)	90	80	169	137	345	115	331	2322	85	96	2116	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	84	178	144	363	0	348	2444	0	101	2227	48
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	446	199	205	418		407	3093		157	2743	59
Arrive On Green	0.07	0.13	0.13	0.06	0.12	0.00	0.12	0.61	0.00	0.05	0.53	0.53
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5144	111
Grp Volume(v), veh/h	95	84	178	144	363	0	348	2444	0	101	1472	803
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1850
Q Serve(g_s), s	6.3	2.5	13.3	4.9	12.0	0.0	11.9	43.4	0.0	3.4	42.7	42.9
Cycle Q Clear(g_c), s	6.3	2.5	13.3	4.9	12.0	0.0	11.9	43.4	0.0	3.4	42.7	42.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	120	446	199	205	418		407	3093		157	1815	987
V/C Ratio(X)	0.79	0.19	0.90	0.70	0.87		0.85	0.79		0.65	0.81	0.81
Avail Cap(c_a), veh/h	238	446	199	461	423		461	3093		461	1815	987
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	47.0	51.7	55.4	52.0	0.0	51.9	17.9	0.0	56.3	23.0	23.1
Incr Delay (d2), s/veh	11.2	0.2	36.4	4.3	17.2	0.0	13.3	2.1	0.0	4.4	4.1	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.1	7.3	2.3	6.4	0.0	5.9	16.7	0.0	1.6	17.5	20.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.3	47.2	88.1	59.7	69.2	0.0	65.2	20.0	0.0	60.7	27.1	30.4
LnGrp LOS	E	D	F	E	E		E	C		E	C	C
Approach Vol, veh/h		357			507	A		2792	A		2376	
Approach Delay, s/veh		72.7			66.5			25.7			29.6	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	20.8	9.4	78.7	12.1	19.8	18.1	70.0
Change Period (Y+Rc), s	4.0	5.7	4.0	6.0	4.0	5.7	4.0	6.0
Max Green Setting (Gmax), s	16.0	14.3	16.0	54.0	16.0	14.3	16.0	54.0
Max Q Clear Time (g_c+I1), s	10.9	15.3	5.4	45.4	8.3	14.0	13.9	44.9
Green Ext Time (p_c), s	0.3	0.0	0.2	7.9	0.1	0.1	0.3	8.0

Intersection Summary	
HCM 6th Ctrl Delay	33.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	294.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	190	0	0	920	127	0	0	0	267	0	63
Future Vol, veh/h	34	190	0	0	920	127	0	0	0	267	0	63
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	221	0	0	1070	148	0	0	0	310	0	73
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	16.6	439.6	0	23.8
HCM LOS	C	F	-	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	15%	0%	100%	0%
Vol Thru, %	100%	85%	88%	0%	0%
Vol Right, %	0%	0%	12%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	224	1047	267	63
LT Vol	0	34	0	267	0
Through Vol	0	190	920	0	0
RT Vol	0	0	127	0	63
Lane Flow Rate	0	260	1217	310	73
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0	0.456	1.932	0.638	0.126
Departure Headway (Hd)	10.013	7.507	5.713	9.138	7.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	0	484	645	397	457
Service Time	8.013	5.507	3.713	6.838	5.593
HCM Lane V/C Ratio	0	0.537	1.887	0.781	0.16
HCM Control Delay	13	16.6	439.6	26.6	11.7
HCM Lane LOS	N	C	F	D	B
HCM 95th-tile Q	0	2.3	79.2	4.3	0.4

APPENDIX L

TECHNICAL MEMORANDUM

SUBJECT: Collection System Flow Study for Brady-Vineyard Development

PREPARED BY: Zachary Roy, Woodard & Curran

REVIEWED BY: Ian Jaffe, Woodard & Curran, PE No. 85788
Chris van Lienden, Woodard & Curran, PE No. 75034

DATE: April 19, 2018, updated May 8, 2019

RE: 0011168.00

1. BACKGROUND

Woodard & Curran was asked to analyze the impacts of the proposed Brady-Vineyard development on the existing sewers owned by the City of Roseville (City) and South Placer Wastewater Authority (SPWA). Two parcels, APN 473-020-002, and 473-020-013, comprise the development. The proposed Brady-Vineyard development, located at the intersection of Vineyard Road and Brady Lane in the City of Roseville would create 124 new Equivalent Dwelling Units (EDUs) on currently vacant land. In the 2007 SPWA Systems Evaluation, this area was assigned 52 single-family dwelling units (at 190 gpd/unit) plus 9.9 acres of public/quasi-public (at 660 gpd/acre), resulting in a total ADWF of about 16,400 gpd; however, the area was loaded directly to the Dry Creek WWTP without entering any of the City's sewers. Woodard & Curran has recently completed an update of the City's sewer collection system model (2017 Sewer Model Update) which included all existing sewers within the City. However, consistent with the 2007 Systems Evaluation, flow from the proposed development was not applied to any of the existing sewers. For this analysis, the model was revised to incorporate anticipated flows from the proposed development.

The location of the proposed development is indicated in Figure 1.

2. MODELED SEWER EVALUATION

For the purposes of estimating potential sewer flows, a unit flow factor of 190 gpd/EDU has been used, consistent with the standard ADWF factor used in the 2017 Sewer Model Update. As shown in Table 1, the development would contribute an estimated average base wastewater flow (BWF) of 23,600 gallons per day (gpd). The existing land use for the two parcels is zoned for 70 EDUs[1] (with an estimated average BWF of 13,300 gpd). The Brady-Vineyard development represents a BWF increase of 10,300 gpd more than the previously zoned land use, and 23,600 gpd more currently modeled flows.

Table 1: Estimated Development Loads

Development Description	Equivalent Dwelling Units	Unit Flow Factor (gpd/EDU)	Estimated BWF (gpd)
Medium Density Residential	124	190	23,600

[1] Zoning RS-AG-B-20 per the Placer County zoning map (http://maps.placer.ca.gov/Html5Viewer/Index.html?configBase=http://maps.placer.ca.gov/Geocortex/Essentials/REST/sites/Parcel_Query_Placer_County1/viewers/Test1/virtualdirectory/Resources/Config/Default)

Estimated development loads were added to manhole SMH-B03-007 on Foothills Boulevard based on the drainage plan included in Appendix A. Rainfall dependent inflow and infiltration (RDI/I) was added to the area based on the rainfall response in the adjacent area. The model was then run under the design storm scenario for future land use conditions with and without the proposed development. Peak wet weather flows from the development were estimated to be 0.075 mgd.

The resulting modeled profiles for the sewer downstream of the proposed development are included in Figures 2 and 3. The model indicates that no surcharging would occur downstream of the development under design peak flow conditions. The City's design standard for pipes 15-inches and larger is that d/D must be 1.0 or less. All sewers downstream of SMH-B03-007 are 15-inches or larger, and maximum d/D with the proposed Brady Vineyard development is 0.41.

Therefore, it is concluded that the proposed Brady-Vineyard development would not create any capacity issues in the City's existing sewer system, from SMH-B03-007 to the WWTP.

3. NORTHEAST AREA SEWER EVALUATION (NOVEMBER 2, 2018 UPDATE)

As part of this sewer evaluation, the City also wanted to consider the impacts of other potential developments in this area of Placer County (County) that could drain into the City sewers. The County provided an exhibit indicating the area (the NE Area, included in Appendix B), as well as potential acreages and dwelling units. Based on general plan land uses, the area could potentially include up to 325 dwelling units (124 units from the Brady-Vineyard Development plus 201 units from the rest of the NE Area), and a residential area of 247.8 acres. Based on a flow factor of 190 gpd/EDU, this results in an estimated BWF of 61,750 gpd (23,560 gpd from the Brady-Vineyard Development and 38,190 gpd from the rest of the NE Area).

Estimated development loads were added to manhole SMH-B03-007, with RDI/I flow added to the area based on the rainfall response in the adjacent area. The model was run under the design storm scenario for three future conditions: (1) as originally modeled without any flow from the NE Area; (2) with the 124 units from the proposed Brady-Vineyard Development but without any additional NE Area flows, and (3) with the full potential development of 325 units from the NE Area. Profiles of the sewer downstream of SMH-B03-007 for those three scenarios are presented in Figure 2, 3, and 4. Peak wet weather flows from the NE Area under were estimated to be 0.57 mgd. The increase in flow is primarily due to the increase in sewered area (from 19 acres to 248 acres), resulting in higher RDI/I estimates. While a newly sewered area would typically have less RDI/I per acre than existing sewers due to newer pipe materials and better construction methods, no reduction in RDI/I has been assumed.

If the entire NE Area discharges directly into SMH B03-007, the downstream sewer has a minimum d/D of 0.58.

Therefore, it is concluded that the NE Area would not create any capacity issues in the City's existing sewer system, if the area discharges directly into SMH B03-007.

Figure 1: Proposed Development Vicinity Map

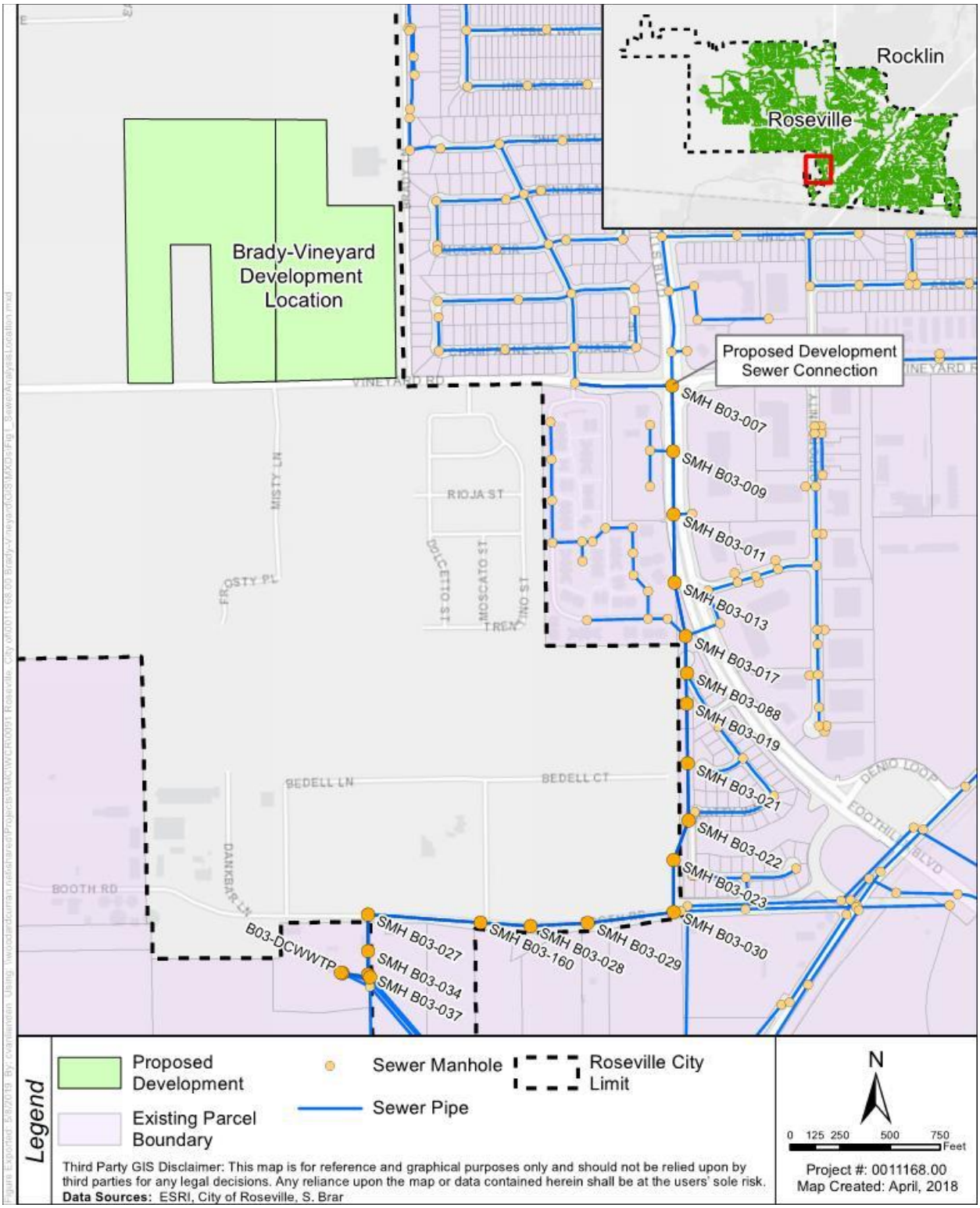
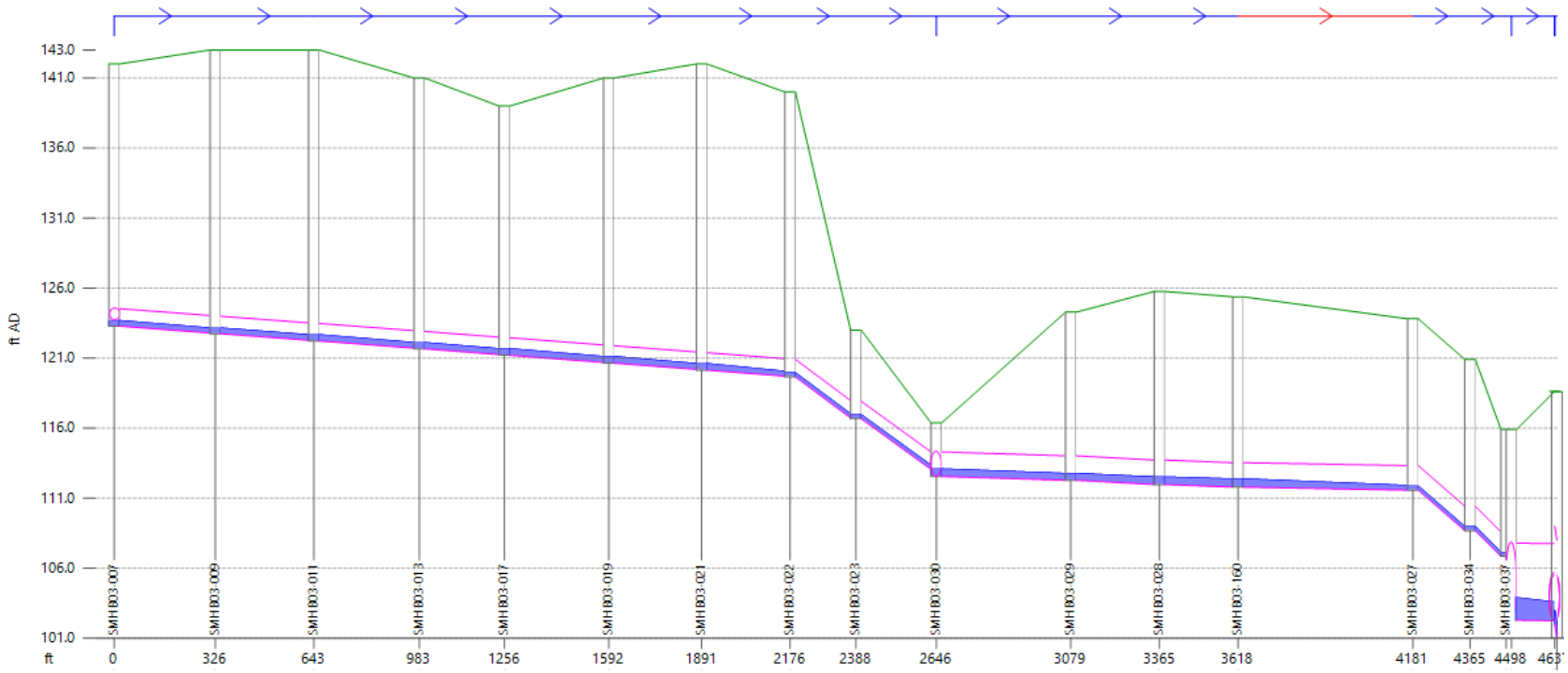


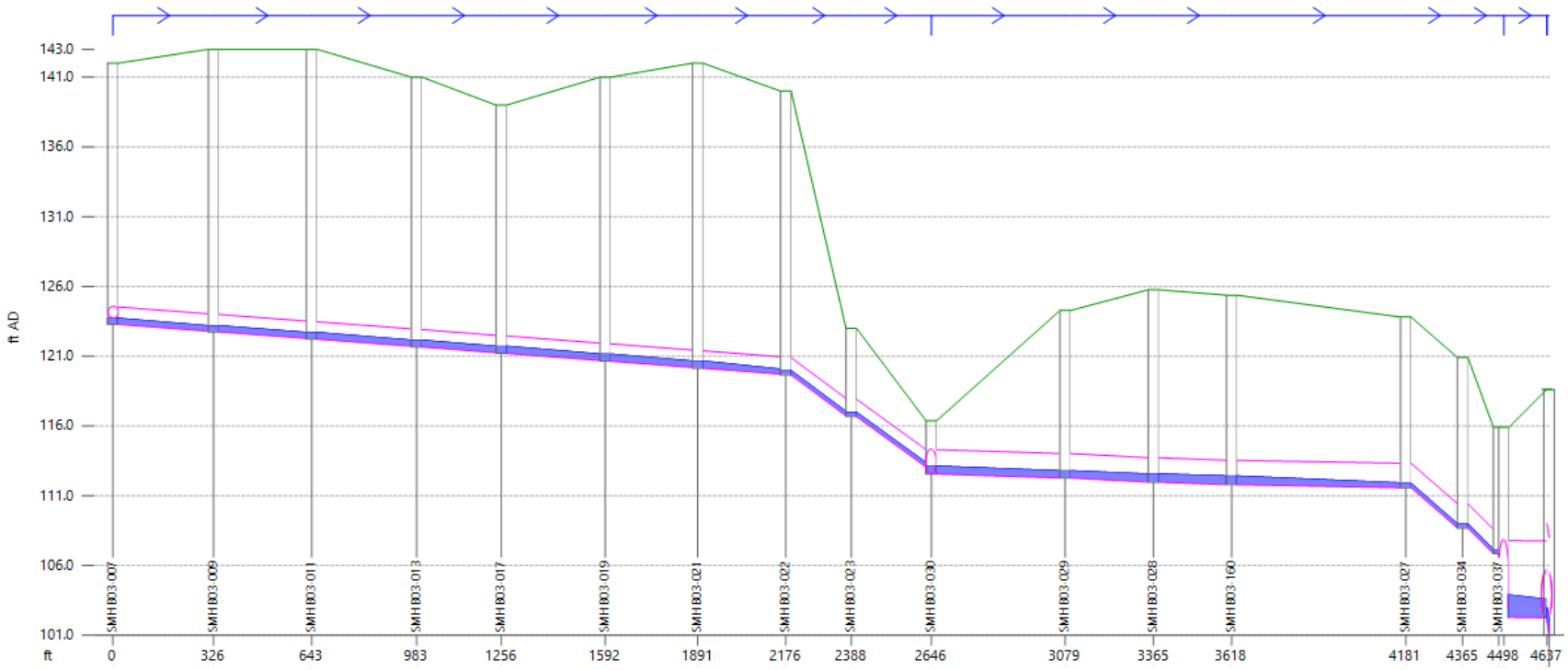
Figure 2: Future Conditions: PWWF Results in Foothills Boulevard Trunk from SMH-B03-007 (Foothill Boulevard/Vineyard Road) to the Dry Creek Waste Water Treatment Plant Outfall



Link	-	-	SMH B03-011.1	-	-	-	-	-	-	SMH B03-030.1	-	-	SMH B03-160.1	-	-	-
length (ft)	326.1	316.8	339.6	273.7	336.1	298.6	284.8	212.0	258.8	432.7	285.5	252.9	563.3	183.7	-	139.3
width (in)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	21.0	21.0	21.0	21.0	21.0	21.0	66.0
us inv (ft AD)	123.280	122.740	122.220	121.660	121.200	120.640	120.140	119.660	116.670	112.550	112.274	111.974	111.788	111.574	-	-
ds inv (ft AD)	122.790	122.270	121.710	121.250	120.690	120.190	119.710	116.720	113.050	112.274	111.974	111.788	111.574	108.677	-	-
pfc (MGD)	1.62	1.61	1.62	1.62	1.63	1.62	1.62	4.92	4.94	2.59	3.32	2.78	2.00	12.86	-	36.79
surc	0.32	0.32	0.36	0.36	0.38	0.38	0.37	0.24	0.24	0.31	0.31	0.34	0.34	0.17	0.17	0.29
US flow (MGD)	0.3449	0.3520	0.4359	0.4358	0.4849	0.4849	0.4854	0.5025	0.5028	0.5279	0.5277	0.5275	0.5273	0.5272	-	-

Node	-	-	-	-	-	-	-	-	-	SMH B03-030	SMH B03-029	-	SMH B03-160	SMH B03-027	-
ground (ft AD)	-	143.000	143.000	141.000	139.000	141.000	142.000	140.000	123.000	116.374	124.274	125.758	125.375	123.809	-
GIS Object ID	-	15.000	16.000	17.000	18.000	19.000	20.000	21.000	22.000	29.000	28.000	27.000	70.000	26.000	-
level (ft AD)	-	123.143	122.667	122.107	121.669	121.109	120.608	119.955	116.965	113.084	112.761	112.517	112.377	111.869	-
flood dep (ft)	-	-19.857	-20.333	-18.893	-17.331	-19.891	-21.392	-20.045	-6.035	-3.290	-11.513	-13.241	-12.998	-11.940	-

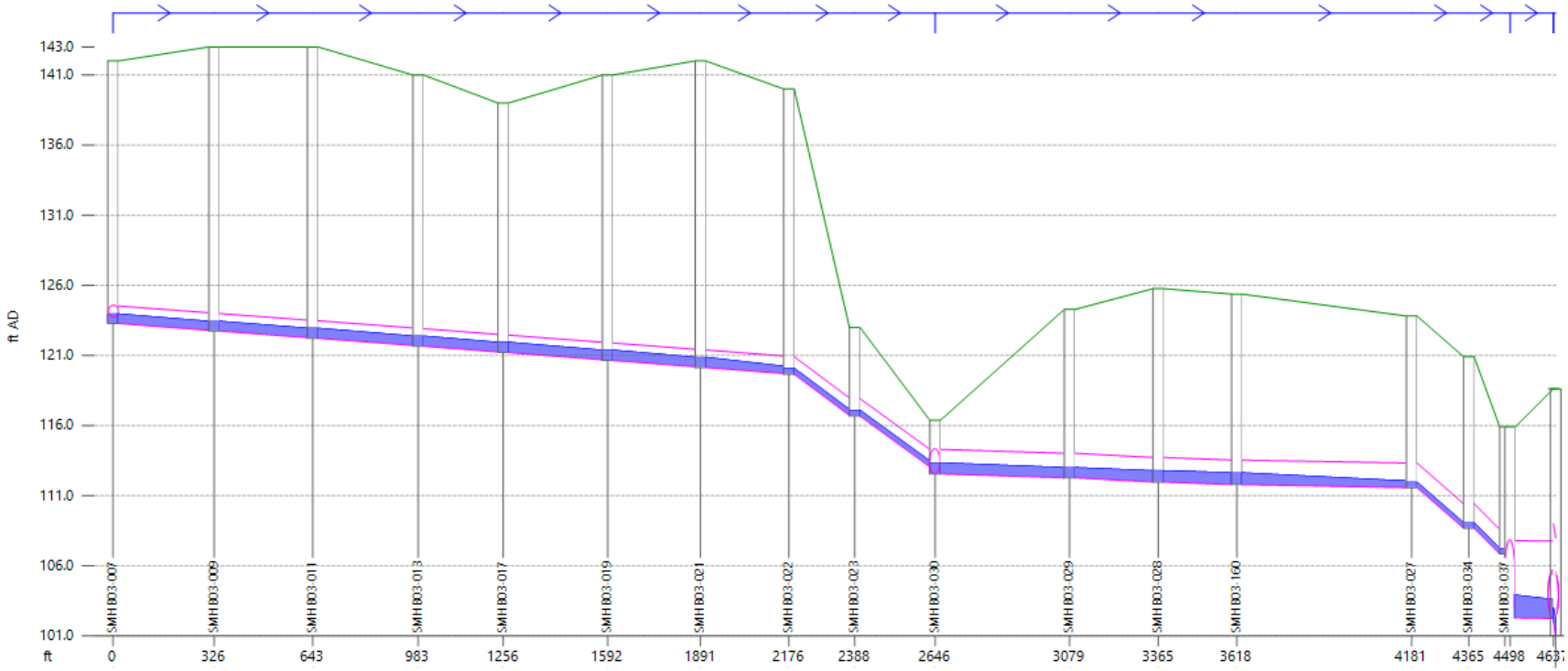
Figure 3: Future Conditions + Brady Vineyard Development: PWWF Results in Foothills Boulevard Trunk from SMH-B03-007 (Foothill Boulevard/Vineyard Road) to the Dry Creek Waste Water Treatment Plant Outfall



Link	-	-	SMH B03-011.1	-	-	-	-	-	-	SMH B03-030.1	-	-	SMH B03-160.1	-	-	-
length (ft)	326.1	316.8	339.6	273.7	336.1	298.6	284.8	212.0	258.8	432.7	285.5	252.9	563.3	183.7	-	139.3
width (in)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	21.0	21.0	21.0	21.0	21.0	21.0	66.0
us inv (ft AD)	123.280	122.740	122.220	121.660	121.200	120.640	120.140	119.660	116.670	112.550	112.274	111.974	111.788	111.574	-	-
ds inv (ft AD)	122.790	122.270	121.710	121.250	120.690	120.190	119.710	116.720	113.050	112.274	111.974	111.788	111.574	108.677	-	-
pfc (MGD)	1.62	1.61	1.62	1.62	1.63	1.62	1.62	4.92	4.94	2.59	3.32	2.78	2.00	12.86	-	36.79
surc	0.35	0.36	0.39	0.39	0.41	0.41	0.41	0.25	0.25	0.33	0.33	0.36	0.36	0.18	0.18	0.29
US flow (MGD)	0.4184	0.4255	0.5095	0.5093	0.5583	0.5582	0.5587	0.5758	0.5760	0.6010	0.6007	0.6005	0.6003	0.6002	-	-

Node	-	-	-	-	-	-	-	-	-	SMH B03-030	SMH B03-029	-	SMH B03-160	SMH B03-027	-	
ground (ft AD)	-	143.000	143.000	141.000	139.000	141.000	142.000	140.000	123.000	116.374	124.274	125.758	125.375	123.809	-	
GIS Object ID	-	15.000	16.000	17.000	18.000	19.000	20.000	21.000	22.000	29.000	28.000	27.000	70.000	26.000	-	
level (ft AD)	-	123.184	122.705	122.145	121.712	121.152	120.650	119.975	116.985	113.124	112.791	112.557	112.414	111.884	-	
flood dep (ft)	-	-19.816	-20.295	-18.855	-17.288	-19.848	-21.350	-20.025	-6.015	-3.250	-11.482	-13.201	-12.961	-11.925	-	

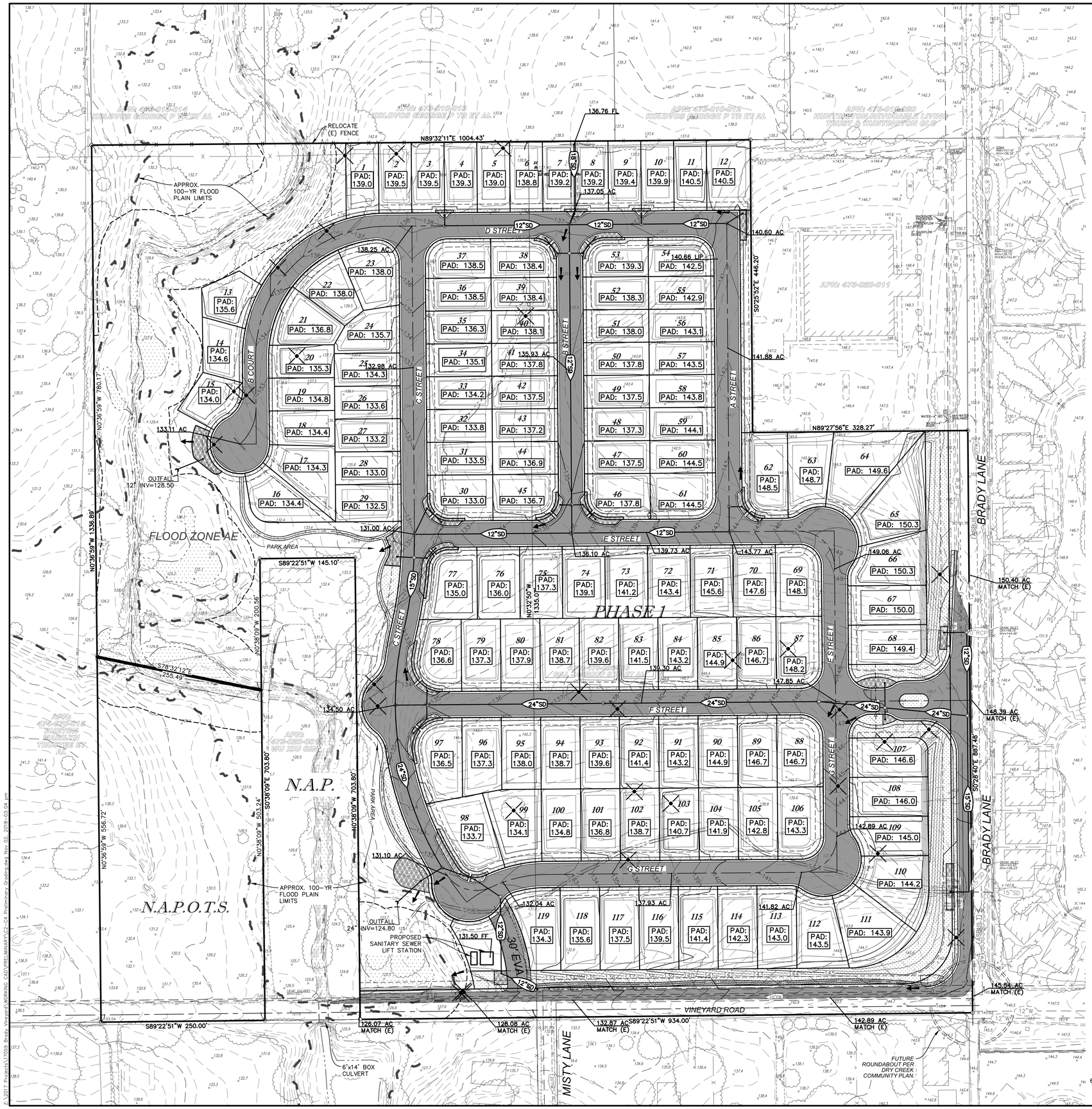
Figure 4: Future Conditions + Dry Creek NE Area: PWWF Results in Foothills Boulevard Trunk from SMH-B03-007 (Foothill Boulevard @ Vineyard Road) to the Dry Creek Waste Water Treatment Plant Outfall



Link	-	-	SMH B03-011.1	-	-	-	-	-	-	SMH B03-030.1	-	-	SMH B03-160.1	-	-	-
length (ft)	326.1	316.8	339.6	273.7	336.1	298.6	284.8	212.0	258.8	432.7	285.5	252.9	563.3	183.7	-	139.3
width (in)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	21.0	21.0	21.0	21.0	21.0	21.0	66.0
us inv (ft AD)	123.280	122.740	122.220	121.660	121.200	120.640	120.140	119.660	116.670	112.550	112.274	111.974	111.788	111.574	-	-
ds inv (ft AD)	122.790	122.270	121.710	121.250	120.690	120.190	119.710	116.720	113.050	112.274	111.974	111.788	111.574	108.677	-	-
pfc (MGD)	1.62	1.61	1.62	1.62	1.63	1.62	1.62	4.92	4.94	2.59	3.32	2.78	2.00	12.86	-	36.79
surc	0.54	0.55	0.57	0.57	0.58	0.58	0.58	0.34	0.33	0.45	0.46	0.48	0.48	0.22	0.22	0.29
US flow (MGD)	0.9149	0.9216	1.0055	1.0054	1.0545	1.0544	1.0549	1.0721	1.0723	1.0973	1.0969	1.0965	1.0963	1.0962	-	-

Node	-	-	-	-	-	-	-	-	-	SMH B03-030	SMH B03-029	-	SMH B03-160	SMH B03-027	-
ground (ft AD)	-	143.000	143.000	141.000	139.000	141.000	142.000	140.000	123.000	116.374	124.274	125.758	125.375	123.809	-
GIS Object ID	-	15.000	16.000	17.000	18.000	19.000	20.000	21.000	22.000	29.000	28.000	27.000	70.000	26.000	-
level (ft AD)	-	123.426	122.936	122.377	121.931	121.370	120.862	120.080	117.089	113.330	112.999	112.775	112.625	111.959	-
flood dep (ft)	-	-19.574	-20.064	-18.623	-17.069	-19.630	-21.138	-19.920	-5.911	-3.044	-11.275	-12.983	-12.750	-11.850	-

APPENDIX A – PRELIMINARY GRADING PLAN



LEGEND

DESCRIPTION	EXISTING	PROPOSED
PROPERTY LINE		
ROW		
EASEMENT		
LOT LINE		
CENTERLINE		
SW, CURB & GUTTER		
DITCH / FLOWLINE		
EP		
STORM DRAIN	XX"SD	XX"SD
SANITARY SEWER	XX"SS	XX"SS
WATER	XX"W	XX"W
SDMH		D
DROP INLET		
OVERLAND RELEASE PATH		
SSMH		S
SSCO		
FIRE HYDRANT		
PIV		
FDC		
WATER VALVE		
WATER METER	WM	WM
REDUCED PRESSURE BACKFLOW PREVENTER	RP	RP
BLOW OFF ASSEMBLY		
MONUMENT WELL		
UTILITY POLE		
STREET LIGHT		
FENCE	X X	X X
RETAINING WALL		
BLOCK WALL		
INDEX CONTOUR	25	25
INTERMEDIATE CONTOURS		
CULVERT WITH FES		
GRADE BREAK LINE		GB
TREE & DRIP		REMOVAL
CONTROL POINT		100 100.00 PK
PAD ELEVATION		PAD: 123.00
SPOT ELEVATION (ASPHALT CONCRETE)	× 157.01 AC	13.34 AC / 13.61 AC
TRUNCATED DOMES		
BUILDING		
DOOR		
WETLAND AREA		
50-FOOT WETLAND SETBACK		
100 YEAR FLOOD PLAIN LIMITS		

PAVING LEGEND:

- ASPHALT PAVEMENT
- DG PATH
- LANDSCAPED AREA
- BIORETENTION
- WETLANDS

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE WEST LINE OF THE NORTHWEST ONE-QUARTER OF SECTION 9, T. 10 N., R. 6 E., M.D.M., WHICH IS ALSO THE CENTERLINE OF COOK-RIOLO ROAD, AS SHOWN ON THAT CERTAIN RECORD OF SURVEY MAP FILED FOR RECORD IN BOOK 19 OF SURVEYS, AT PAGE 129, THE BEARING OF WHICH IS NORTH 00° 14' 16" WEST AND WAS ESTABLISHED FROM RECORD MONUMENTATION.

BENCHMARK:

THE BENCHMARK FOR THIS SURVEY IS THE NGS MONUMENT DESIGNATED "BASEWALE, PID DL9133" AND IS A SURVEY DISC STAMPED "BASEWALE 2008" RECESSED IN A WELL LOCATED 68.0 FEET SOUTH OF THE CENTERLINE OF BASELINE ROAD AND 46.7 FEET WEST OF THE CENTERLINE OF WALERGA ROAD.
ELEVATION = 116.3 FEET (NAVD 1988 DATUM)
CONVERSION TO NGVD 1929 DATUM = SUBTRACT 2.44 FEET FROM NAVD88
CONVERSION TO CITY OF ROSEVILLE DATUM = SUBTRACT 2.49 FEET FROM NAVD88

TOTAL AREA DISTURBED: 26.9 ACRES

PRELIMINARY EARTHWORK SUMMARY

CUT: 57,015 CY
FILL: 57,015 CY
NET: 0

NOTE:
EARTHWORK QUANTITIES ARE ESTIMATED TO SUBGRADE AND DO NOT TAKE INTO ACCOUNT SHRINKAGE. EXCESS MATERIALS FROM TRENCHING AND MISC. UNKNOWN STRUCTURAL SECTIONS. CONTRACTOR SHOULD VERIFY EARTHWORK QUANTITIES.

811 Know what's below. Call before you dig. or (800) 227-2600

REVISION	DATE	BY	APPRV'D

BY	CHECK NO.
SBS	RFE
SBS	RFE

DESIGN SBS
DRAWN SBS
QUANT.
0 ORIGINAL SCALE IS IN INCHES 1 2

PRELIMINARY NOT FOR CONSTRUCTION

SUKHBIR BRAR
2351 SUNSET BOULEVARD,
ROCKLIN, CA 95765
PH: (916) 749-0967

RFE ENGINEERING, INC
Civil Engineers • Planners • Surveyors
2260 Douglas Blvd., Suite 160, Roseville, CA 95661
Ph: (916) 772-7800 Fax: (916) 772-7804
www.rfeengineering.com

BRADY SUBDIVISION
VINEYARD ROAD AND BRADY LANE,
PLACER COUNTY, CA
(APNS 473-020-011 & 473-020-034)

PRELIMINARY GRADING PLAN - OVERALL

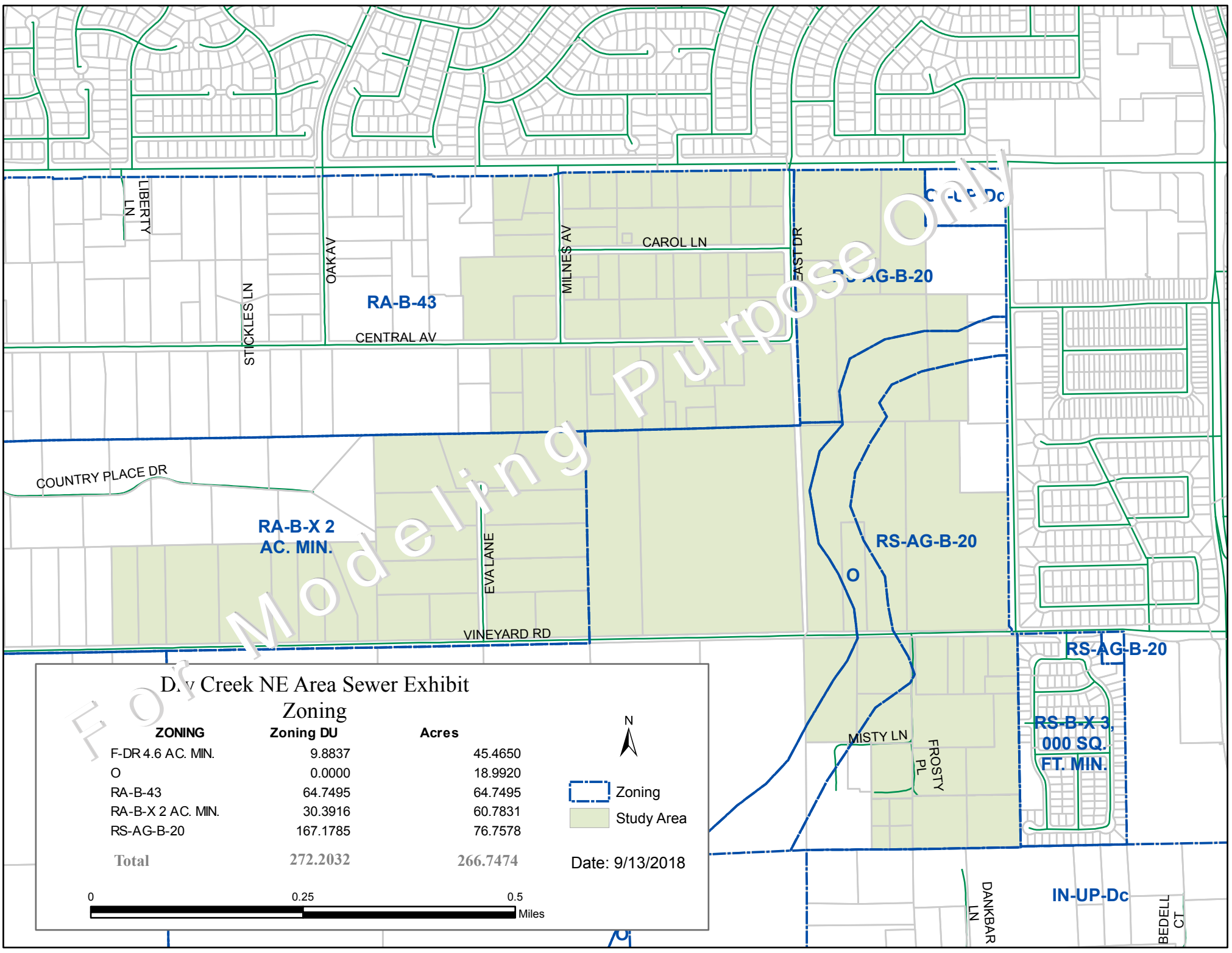
Drawing C2 of Sheet Total 13

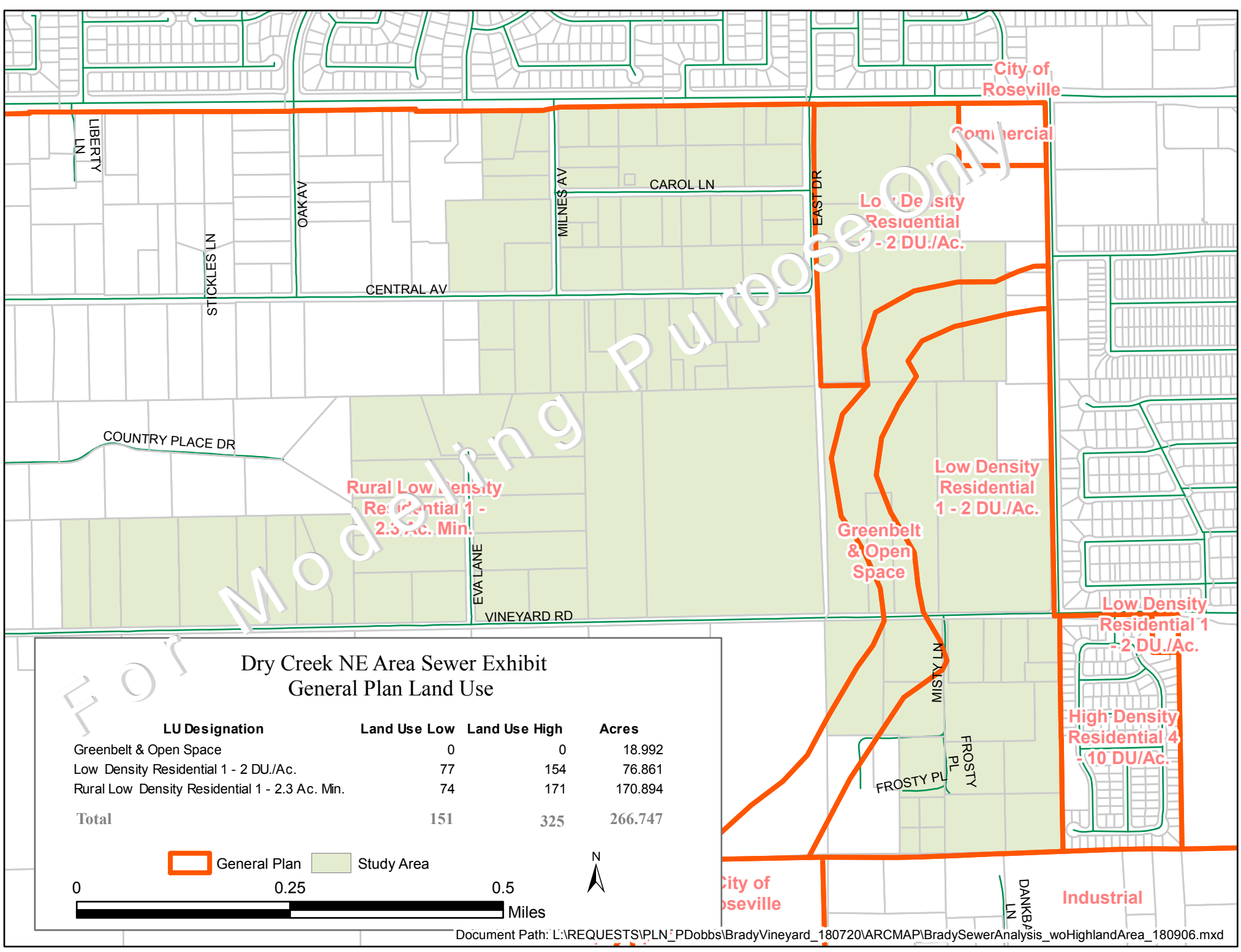
11/02/2018

RFE PROJECT #17059 – VINEYARD ROAD AND BRADY LANE, PLACER COUNTY, CALIFORNIA

Z:\2017 Projects\17059 Brady Vineyard\WORKING CAD\PRELIMINARY\C2-C4 Preliminary Grading.dwg Nov 02, 2018-03:04 pm

APPENDIX B – NORTHEAST AREA LAND USE EXHIBIT


LIBERTY LN
STICKLES LN
OAK AV
MILNES AV
CAROL LN
EAST DR
RA-B-43
CENTRAL AV
RS-AG-B-20
COUNTRY PLACE DR
RA-B-X 2 AC. MIN.
EVA LANE
RS-AG-B-20
O
VINEYARD RD
RS-AG-B-20
MISTY LN
FROSTY PL
RS-B-X 3,000 SQ. FT. MIN.
DANKBAR LN
IN-UP-Dc
BEDELL CT
Dry Creek NE Area Sewer Exhibit
Zoning
ZONING | Zoning DU | Acres
F-DR 4.6 AC. MIN. | 9.8837 | 45.4650
O | 0.0000 | 18.9920
RA-B-43 | 64.7495 | 64.7495
RA-B-X 2 AC. MIN. | 30.3916 | 60.7831
RS-AG-B-20 | 167.1785 | 76.7578
Total | 272.2032 | 266.7474
N
Zoning
Study Area
Date: 9/13/2018
0
0.25
0.5
Miles
For Modeling Purpose Only


City of Roseville
Commercial
LIBERTY LN
STICKLES LN
OAK AV
MILNES AV
CAROL LN
EAST DR
Low Density Residential 1 - 2 DU./Ac.
CENTRAL AV
COUNTRY PLACE DR
Rural Low Density Residential 1 - 2.3 Ac. Min.
Greenbelt & Open Space
Low Density Residential 1 - 2 DU./Ac.
EVA LANE
VINEYARD RD
Low Density Residential 1 - 2 DU./Ac.
MISTY LN
High Density Residential 4 - 10 DU/Ac.
FROSTY PL
FROSTY PL
City of Roseville
DANKBAR LN
Industrial
Dry Creek NE Area Sewer Exhibit
General Plan Land Use
LU Designation | Land Use Low | Land Use High | Acres
Greenbelt & Open Space | 0 | 0 | 18.992
Low Density Residential 1 - 2 DU./Ac. | 77 | 154 | 76.861
Rural Low Density Residential 1 - 2.3 Ac. Min. | 74 | 171 | 170.894
Total | 151 | 325 | 266.747
General Plan
Study Area
N
0
0.25
0.5
Miles
For Modeling Purpose Only
Document Path: L:\REQUESTS\PLN_PDobbs\BradyVineyard_180720\ARCMAP\BradySewerAnalysis_woHighlandArea_180906.mxd