Appendix A

CalEEMod Air Quality and GHG Modeling Outputs and N2O Mobile Source Calculations

Lico Subdivision Project

Monterey Bay Unified APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	11.18	Acre	11.18	487,151.00	0
City Park	8.18	Acre	8.18	356,386.00	0
Single Family Housing	149.00	Dwelling Unit	30.59	268,200.00	453

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.8	**Precipitation Freq (Days)**	53
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	298.65	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensities for 2030 RPS

Land Use - Parking lot LU is interior roadways, City park is park/stormwater; DOF estimate for population

Construction Phase - Phases from data request; assumed arch coating to start 3/4 through each building phase

Off-road Equipment - Left as default

Off-road Equipment - Default

Off-road Equipment - Default

Off-road Equipment - Default

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request, assuming 1 of each throughout

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Trips and VMT - Worker/vendor for grading and construction from data request, others left default

Demolition - From data request

Grading - From data request

Architectural Coating - MBARD Rule 426. Default values for sq ft div by 4 to account for construction phasing.

Vehicle Trips - City park/Parking Lot trips zeroed. WkDy trip rate from traffic study. Corrected model error for trip %

Woodstoves - NG fireplaces

Area Coating - MABRD Rule 426; sf adjusted per arch coating screen

Energy Use -

Water And Wastewater - 20% indoor water reduction

Solid Waste - No data to indicate waste hauler diverts more than 50%

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - MBARD Rule 426

Energy Mitigation - Efficient applicanes noted in data request. Solar generation from Rincon spreadsheet.

Water Mitigation - Low flow fixures accounted for in 20% overall water use reduction

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Residential_Exterior	181,035.00	45,259.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	181,035.00	45,259.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	181,035.00	45,259.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	181,035.00	45,259.00
tblArchitecturalCoating	ConstArea_Residential_Interior	543,105.00	135,776.00
tblArchitecturalCoating	ConstArea_Residential_Interior	543,105.00	135,776.00
tblArchitecturalCoating	ConstArea_Residential_Interior	543,105.00	135,776.00
tblArchitecturalCoating	ConstArea_Residential_Interior	543,105.00	135,776.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	100	50
tblAreaCoating	Area_EF_Residential_Interior	100	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	55.00	79.00
tblConstructionPhase	NumDays	55.00	79.00

tblConstructionPhase	NumDays	55.00	78.00
tblConstructionPhase	NumDays	55.00	79.00
tblConstructionPhase	NumDays	740.00	210.00
tblConstructionPhase	NumDays	740.00	210.00
tblConstructionPhase	NumDays	740.00	210.00
tblConstructionPhase	NumDays	740.00	210.00
tblConstructionPhase	NumDays	50.00	52.00
tblConstructionPhase	NumDays	75.00	104.00
tblConstructionPhase	NumDays	55.00	104.00
tblConstructionPhase	NumDays	55.00	104.00
tblConstructionPhase	NumDays	55.00	104.00
tblConstructionPhase	NumDays	55.00	104.00
tblConstructionPhase	NumDays	30.00	52.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblFireplaces	FireplaceWoodMass	1,508.00	0.00
tblFireplaces	NumberGas	81.95	149.00
tblFireplaces	NumberNoFireplace	14.90	0.00
tblFireplaces	NumberWood	52.15	0.00
tblGrading	MaterialImported	0.00	32,000.00
tblLandUse	LandUseSquareFeet	487,000.80	487,151.00
tblLandUse	LandUseSquareFeet	356,320.80	356,386.00
tblLandUse	LotAcreage	48.38	30.59
tblLandUse	Population	426.00	453.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
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tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00

tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	641.35	298.65
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	199.32	187.44
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	154.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	154.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	154.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	154.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	408.00	40.00
tblTripsAndVMT	WorkerTripNumber	82.00	40.00
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tblTripsAndVMT	WorkerTripNumber	33.00	20.00
tblTripsAndVMT	WorkerTripNumber	408.00	40.00

tblTripsAndVMT	WorkerTripNumber	82.00	40.00
tblTripsAndVMT	WorkerTripNumber	408.00	40.00
tblTripsAndVMT	WorkerTripNumber	82.00	40.00
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	HO_TTP	37.20	37.00
tblVehicleTrips	HS_TTP	18.80	19.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PR_TP	66.00	0.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44
tblWater	IndoorWaterUseRate	9,707,949.82	7,766,389.00
tblWaterMitigation	PercentReductionInFlowBathroomFaucet	32	0
tblWaterMitigation	PercentReductionInFlowKitchenFaucet	18	0
tblWaterMitigation	PercentReductionInFlowShower	20	0
tblWaterMitigation	PercentReductionInFlowToilet	20	0
tblWoodstoves	NumberCatalytic	7.45	0.00

tblWoodstoves	NumberNoncatalytic	7.45	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,120.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	12.7677	143.6579	83.3583	0.1883	19.6783	6.2938	25.9721	8.9659	5.8171	14.7830	0.0000	18,433.3674	18,433.3674	4.6551	0.0000	18,549.7438
2021	10.6251	53.8134	49.6789	0.0936	0.6707	2.6044	3.1108	0.1782	2.4489	2.5835	0.0000	9,003.0415	9,003.0415	2.1433	0.0000	9,056.6229
2022	10.2492	48.2605	49.0755	0.0934	0.6707	2.2736	2.7801	0.1782	2.1379	2.2725	0.0000	8,984.3316	8,984.3316	2.1327	0.0000	9,037.6500
2023	10.0389	44.3598	48.7289	0.0932	0.6707	2.0339	2.5403	0.1782	1.9111	2.0457	0.0000	8,966.5235	8,966.5235	2.1197	0.0000	9,019.5153
2024	9.8852	41.6320	48.4923	0.0930	0.6707	1.8581	2.3645	0.1782	1.7440	1.8787	0.0000	8,948.7922	8,948.7922	2.1126	0.0000	9,001.6078
Maximum	**12.7677**	**143.6579**	**83.3583**	**0.1883**	**19.6783**	**6.2938**	**25.9721**	**8.9659**	**5.8171**	**14.7830**	**0.0000**	**18,433.3674**	**18,433.3674**	**4.6551**	**0.0000**	**18,549.7438**

2.1 Overall Construction (Maximum Daily Emission)

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					
2020	12.7677	143.6579	83.3583	0.1883	19.6783	6.2938	25.9721	8.9659	5.8171	14.7830	0.0000	18,433.3674	18,433.3674	4.6551	0.0000	18,549.7438
2021	10.6251	53.8134	49.6789	0.0936	0.6707	2.6044	3.1108	0.1782	2.4489	2.5835	0.0000	9,003.0415	9,003.0415	2.1433	0.0000	9,056.6229
2022	10.2492	48.2605	49.0755	0.0934	0.6707	2.2736	2.7801	0.1782	2.1379	2.2725	0.0000	8,984.3316	8,984.3316	2.1327	0.0000	9,037.6500
2023	10.0389	44.3598	48.7289	0.0932	0.6707	2.0339	2.5403	0.1782	1.9111	2.0457	0.0000	8,966.5235	8,966.5235	2.1197	0.0000	9,019.5153
2024	9.8852	41.6320	48.4923	0.0930	0.6707	1.8581	2.3645	0.1782	1.7440	1.8787	0.0000	8,948.7921	8,948.7921	2.1126	0.0000	9,001.6078
Maximum	**12.7677**	**143.6579**	**83.3583**	**0.1883**	**19.6783**	**6.2938**	**25.9721**	**8.9659**	**5.8171**	**14.7830**	**0.0000**	**18,433.3674**	**18,433.3674**	**4.6551**	**0.0000**	**18,549.7438**

	ROG	NOx	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	7.0854	2.6131	13.3348	0.0164		0.2680	0.2680		0.2680	0.2680	0.0000	3,177.4327	3,177.4327	0.0817	0.0579	3,196.7132
Energy	0.1280	1.0934	0.4653	6.9800e-003		0.0884	0.0884		0.0884	0.0884		1,395.8738	1,395.8738	0.0268	0.0256	1,404.1688
Mobile	2.5633	13.7673	31.5154	0.1052	9.0612	0.0869	9.1481	2.4261	0.0811	2.5072		10,674.0304	10,674.0304	0.4941		10,686.3830
Total	**9.7767**	**17.4739**	**45.3155**	**0.1286**	**9.0612**	**0.4433**	**9.5045**	**2.4261**	**0.4375**	**2.8636**	**0.0000**	**15,247.3368**	**15,247.3368**	**0.6025**	**0.0834**	**15,287.2649**

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	7.0854	2.6131	13.3348	0.0164		0.2680	0.2680		0.2680	0.2680	0.0000	3,177.4327	3,177.4327	0.0817	0.0579	3,196.7132
Energy	0.1200	1.0252	0.4363	6.5400e-003		0.0829	0.0829		0.0829	0.0829		1,308.7691	1,308.7691	0.0251	0.0240	1,316.5465
Mobile	2.5633	13.7673	31.5154	0.1052	9.0612	0.0869	9.1481	2.4261	0.0811	2.5072		10,674.0304	10,674.0304	0.4941		10,686.3830
Total	**9.7687**	**17.4057**	**45.2865**	**0.1282**	**9.0612**	**0.4378**	**9.4990**	**2.4261**	**0.4320**	**2.8581**	**0.0000**	**15,160.2322**	**15,160.2322**	**0.6009**	**0.0818**	**15,199.6426**

	ROG	NOx	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	0.08	0.39	0.06	0.34	0.00	1.25	0.06	0.00	1.26	0.19	0.00	0.57	0.57	0.28	1.92	0.57

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2020	9/30/2020	6	52	
2	Site Preparation	Site Preparation	8/1/2020	9/30/2020	6	52	
3	Grading	Grading	8/1/2020	11/30/2020	6	104	
4	Paving - Phase I	Paving	12/1/2020	3/31/2021	6	104	
5	Building Construction - Phase I	Building Construction	3/1/2021	10/31/2021	6	210	
6	Architectural Coating - Phase I	Architectural Coating	8/1/2021	10/31/2021	6	78	
7	Paving - Phase II	Paving	12/1/2021	3/31/2022	6	104	
8	Building Construction - Phase II	Building Construction	3/1/2022	10/31/2022	6	210	
9	Architectural Coating - Phase II	Architectural Coating	8/1/2022	10/31/2022	6	79	
10	Paving - Phase III	Paving	12/1/2022	3/31/2023	6	104	
11	Building Construction - Phase III	Building Construction	3/1/2023	10/31/2023	6	210	
12	Architectural Coating - Phase III	Architectural Coating	8/1/2023	10/31/2023	6	79	
13	Paving - Phase IV	Paving	12/1/2023	3/31/2024	6	104	
14	Building Construction - Phase IV	Building Construction	3/1/2024	10/31/2024	6	210	
15	Architectural Coating - Phase IV	Architectural Coating	8/1/2024	10/31/2024	6	79	

Acres of Grading (Site Preparation Phase): 32.5

Acres of Grading (Grading Phase): 260

Acres of Paving: 11.18

Residential Indoor: 135,776; Residential Outdoor: 45,259; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 29,229 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	10.00	81	0.73
Demolition	Excavators	1	10.00	158	0.38
Demolition	Other Construction Equipment	1	10.00	172	0.42
Demolition	Rubber Tired Dozers	1	10.00	247	0.40
Demolition	Signal Boards	1	10.00	6	0.82
Demolition	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Site Preparation	Crawler Tractors	1	10.00	212	0.43
Site Preparation	Rubber Tired Dozers	1	10.00	247	0.40
Site Preparation	Signal Boards	1	10.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Grading	Crawler Tractors	1	10.00	212	0.43
Grading	Excavators	1	10.00	158	0.38
Grading	Graders	1	10.00	187	0.41
Grading	Plate Compactors	1	10.00	8	0.43
Grading	Rollers	1	10.00	80	0.38
Grading	Rough Terrain Forklifts	1	10.00	100	0.40
Grading	Rubber Tired Dozers	1	10.00	247	0.40
Grading	Rubber Tired Loaders	1	10.00	203	0.36
Grading	Scrapers	1	10.00	367	0.48
Grading	Signal Boards	1	10.00	6	0.82
Grading	Skid Steer Loaders	1	10.00	65	0.37
Grading	Tractors/Loaders/Backhoes	1	10.00	97	0.37

Grading	Trenchers	1	10.00	78	0.50
Paving - Phase I	Concrete/Industrial Saws	1	10.00	81	0.73
Paving - Phase I	Graders	1	10.00	187	0.41
Paving - Phase I	Pavers	1	10.00	130	0.42
Paving - Phase I	Paving Equipment	1	10.00	132	0.36
Paving - Phase I	Rollers	1	10.00	80	0.38
Paving - Phase I	Signal Boards	1	10.00	6	0.82
Paving - Phase I	Skid Steer Loaders	1	10.00	65	0.37
Paving - Phase I	Surfacing Equipment	1	10.00	263	0.30
Building Construction - Phase I	Concrete/Industrial Saws	1	10.00	81	0.73
Building Construction - Phase I	Cranes	1	10.00	231	0.29
Building Construction - Phase I	Forklifts	0	10.00	89	0.20
Building Construction - Phase I	Generator Sets	1	10.00	84	0.74
Building Construction - Phase I	Other Construction Equipment	1	10.00	172	0.42
Building Construction - Phase I	Rough Terrain Forklifts	1	10.00	100	0.40
Building Construction - Phase I	Skid Steer Loaders	1	10.00	65	0.37
Building Construction - Phase I	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Building Construction - Phase I	Trenchers	1	10.00	78	0.50
Building Construction - Phase I	Welders	0	10.00	46	0.45
Architectural Coating - Phase I	Air Compressors	1	6.00	78	0.48
Paving - Phase II	Concrete/Industrial Saws	1	10.00	81	0.73
Paving - Phase II	Graders	1	10.00	187	0.41
Paving - Phase II	Pavers	1	10.00	130	0.42
Paving - Phase II	Paving Equipment	1	10.00	132	0.36
Paving - Phase II	Rollers	1	10.00	80	0.38
Paving - Phase II	Signal Boards	1	10.00	6	0.82
Paving - Phase II	Skid Steer Loaders	1	10.00	65	0.37

Paving - Phase II	Surfacing Equipment	1	10.00	263	0.30
Building Construction - Phase II	Concrete/Industrial Saws	1	10.00	81	0.73
Building Construction - Phase II	Cranes	1	10.00	231	0.29
Building Construction - Phase II	Forklifts	0	10.00	89	0.20
Building Construction - Phase II	Generator Sets	1	10.00	84	0.74
Building Construction - Phase II	Other Construction Equipment	1	10.00	172	0.42
Building Construction - Phase II	Rough Terrain Forklifts	1	10.00	100	0.40
Building Construction - Phase II	Skid Steer Loaders	1	10.00	65	0.37
Building Construction - Phase II	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Building Construction - Phase II	Trenchers	1	10.00	78	0.50
Building Construction - Phase II	Welders	0	10.00	46	0.45
Architectural Coating - Phase II	Air Compressors	1	6.00	78	0.48
Paving - Phase III	Concrete/Industrial Saws	1	10.00	81	0.73
Paving - Phase III	Graders	1	10.00	187	0.41
Paving - Phase III	Pavers	1	10.00	130	0.42
Paving - Phase III	Paving Equipment	1	10.00	132	0.36
Paving - Phase III	Rollers	1	10.00	80	0.38
Paving - Phase III	Signal Boards	1	10.00	6	0.82
Paving - Phase III	Skid Steer Loaders	1	10.00	65	0.37
Paving - Phase III	Surfacing Equipment	1	10.00	263	0.30
Building Construction - Phase III	Concrete/Industrial Saws	1	10.00	81	0.73
Building Construction - Phase III	Cranes	1	10.00	231	0.29
Building Construction - Phase III	Forklifts	0	10.00	89	0.20
Building Construction - Phase III	Generator Sets	1	10.00	84	0.74
Building Construction - Phase III	Other Construction Equipment	1	10.00	172	0.42
Building Construction - Phase III	Rough Terrain Forklifts	1	10.00	100	0.40
Building Construction - Phase III	Skid Steer Loaders	1	10.00	65	0.37

Building Construction - Phase III	Tractors/Loaders/Backhoes		1	10.00	97	0.37
Building Construction - Phase III	Trenchers		1	10.00	78	0.50
Building Construction - Phase III	Welders		0	10.00	46	0.45
Architectural Coating - Phase III	Air Compressors		1	6.00	78	0.48
Paving - Phase IV	Concrete/Industrial Saws		1	10.00	81	0.73
Paving - Phase IV	Graders		1	10.00	187	0.41
Paving - Phase IV	Pavers		1	10.00	130	0.42
Paving - Phase IV	Paving Equipment		1	10.00	132	0.36
Paving - Phase IV	Rollers		1	10.00	80	0.38
Paving - Phase IV	Signal Boards		1	10.00	6	0.82
Paving - Phase IV	Skid Steer Loaders		1	10.00	65	0.37
Paving - Phase IV	Surfacing Equipment		1	10.00	263	0.30
Building Construction - Phase IV	Concrete/Industrial Saws		1	10.00	81	0.73
Building Construction - Phase IV	Cranes		1	10.00	231	0.29
Building Construction - Phase IV	Forklifts		0	10.00	89	0.20
Building Construction - Phase IV	Generator Sets		1	10.00	84	0.74
Building Construction - Phase IV	Other Construction Equipment		1	10.00	172	0.42
Building Construction - Phase IV	Rough Terrain Forklifts		1	10.00	100	0.40
Building Construction - Phase IV	Skid Steer Loaders		1	10.00	65	0.37
Building Construction - Phase IV	Tractors/Loaders/Backhoes		1	10.00	97	0.37
Building Construction - Phase IV	Trenchers		1	10.00	78	0.50
Building Construction - Phase IV	Welders		0	10.00	46	0.45
Architectural Coating - Phase IV	Air Compressors		1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	18.00	1.00	33.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	13	20.00	1.00	4,000.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase I	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase I	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase I	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase II	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase II	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase II	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase III	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase III	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase III	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase IV	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase IV	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase IV	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1389	0.0000	0.1389	0.0210	0.0000	0.0210			0.0000			0.0000
Off-Road	3.3913	33.5654	25.0856	0.0413		1.7833	1.7833		1.6619	1.6619		3,962.2253	3,962.2253	1.0753		3,989.1067
Total	**3.3913**	**33.5654**	**25.0856**	**0.0413**	**0.1389**	**1.7833**	**1.9222**	**0.0210**	**1.6619**	**1.6829**		**3,962.2253**	**3,962.2253**	**1.0753**		**3,989.1067**

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	5.3900e-003	0.1863	0.0348	5.1000e-004	0.0111	7.4000e-004	0.0118	3.0400e-003	7.1000e-004	3.7500e-003		53.4578	53.4578	2.2900e-003		53.5150
Vendor	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0860	0.0785	0.6664	1.4700e-003	0.1479	1.2300e-003	0.1491	0.0392	1.1300e-003	0.0404		145.8918	145.8918	6.1500e-003		146.0456
Total	**0.0961**	**0.3895**	**0.7358**	**2.2600e-003**	**0.1657**	**2.6800e-003**	**0.1684**	**0.0442**	**2.5200e-003**	**0.0467**		**228.9129**	**228.9129**	**0.0102**		**229.1670**

3.2 Demolition - 2020

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					0.1389	0.0000	0.1389	0.0210	0.0000	0.0210			0.0000			0.0000
Off-Road	3.3913	33.5654	25.0856	0.0413		1.7833	1.7833		1.6619	1.6619	0.0000	3,962.2253	3,962.2253	1.0753		3,989.1067
Total	**3.3913**	**33.5654**	**25.0856**	**0.0413**	**0.1389**	**1.7833**	**1.9222**	**0.0210**	**1.6619**	**1.6829**	**0.0000**	**3,962.2253**	**3,962.2253**	**1.0753**		**3,989.1067**

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	5.3900e-003	0.1863	0.0348	5.1000e-004	0.0111	7.4000e-004	0.0118	3.0400e-003	7.1000e-004	3.7500e-003		53.4578	53.4578	2.2900e-003		53.5150
Vendor	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0860	0.0785	0.6664	1.4700e-003	0.1479	1.2300e-003	0.1491	0.0392	1.1300e-003	0.0404		145.8918	145.8918	6.1500e-003		146.0456
Total	**0.0961**	**0.3895**	**0.7358**	**2.2600e-003**	**0.1657**	**2.6800e-003**	**0.1684**	**0.0442**	**2.5200e-003**	**0.0467**		**228.9129**	**228.9129**	**0.0102**		**229.1670**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1904	0.0000	8.1904	4.2094	0.0000	4.2094			0.0000			0.0000
Off-Road	2.6684	29.1870	14.3650	0.0291		1.3948	1.3948		1.2846	1.2846		2,798.2269	2,798.2269	0.8915		2,820.5135
Total	**2.6684**	**29.1870**	**14.3650**	**0.0291**	**8.1904**	**1.3948**	**9.5852**	**4.2094**	**1.2846**	**5.4940**		**2,798.2269**	**2,798.2269**	**0.8915**		**2,820.5135**

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	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0621	0.0567	0.4813	1.0600e-003	0.1068	8.9000e-004	0.1077	0.0283	8.2000e-004	0.0292		105.3663	105.3663	4.4400e-003		105.4774
Total	**0.0668**	**0.1814**	**0.5159**	**1.3400e-003**	**0.1136**	**1.6000e-003**	**0.1152**	**0.0303**	**1.5000e-003**	**0.0318**		**134.9296**	**134.9296**	**6.1600e-003**		**135.0837**

3.3 Site Preparation - 2020

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					8.1904	0.0000	8.1904	4.2094	0.0000	4.2094			0.0000			0.0000
Off-Road	2.6684	29.1870	14.3650	0.0291		1.3948	1.3948		1.2846	1.2846	0.0000	2,798.2269	2,798.2269	0.8915		2,820.5135
Total	**2.6684**	**29.1870**	**14.3650**	**0.0291**	**8.1904**	**1.3948**	**9.5852**	**4.2094**	**1.2846**	**5.4940**	**0.0000**	**2,798.2269**	**2,798.2269**	**0.8915**		**2,820.5135**

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	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0621	0.0567	0.4813	1.0600e-003	0.1068	8.9000e-004	0.1077	0.0283	8.2000e-004	0.0292		105.3663	105.3663	4.4400e-003		105.4774
Total	**0.0668**	**0.1814**	**0.5159**	**1.3400e-003**	**0.1136**	**1.6000e-003**	**0.1152**	**0.0303**	**1.5000e-003**	**0.0318**		**134.9296**	**134.9296**	**6.1600e-003**		**135.0837**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					10.2265	0.0000	10.2265	4.4313	0.0000	4.4313			0.0000			0.0000
Off-Road	6.1180	68.8321	39.7696	0.0817		3.0645	3.0645		2.8217	2.8217		7,877.5403	7,877.5403	2.5248		7,940.6592
Total	**6.1180**	**68.8321**	**39.7696**	**0.0817**	**10.2265**	**3.0645**	**13.2910**	**4.4313**	**2.8217**	**7.2530**		**7,877.5403**	**7,877.5403**	**2.5248**		**7,940.6592**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3269	11.2907	2.1115	0.0307	0.6722	0.0449	0.7170	0.1842	0.0429	0.2272		3,239.8671	3,239.8671	0.1387		3,243.3345
Vendor	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0956	0.0872	0.7405	1.6300e-003	0.1643	1.3700e-003	0.1657	0.0436	1.2600e-003	0.0448		162.1020	162.1020	6.8300e-003		162.2729
Total	**0.4272**	**11.5026**	**2.8865**	**0.0326**	**0.8432**	**0.0470**	**0.8902**	**0.2297**	**0.0449**	**0.2746**		**3,431.5324**	**3,431.5324**	**0.1473**		**3,435.2137**

3.4 Grading - 2020

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					10.2265	0.0000	10.2265	4.4313	0.0000	4.4313			0.0000			0.0000
Off-Road	6.1180	68.8321	39.7696	0.0817		3.0645	3.0645		2.8217	2.8217	0.0000	7,877.5403	7,877.5403	2.5248		7,940.6592
Total	**6.1180**	**68.8321**	**39.7696**	**0.0817**	**10.2265**	**3.0645**	**13.2910**	**4.4313**	**2.8217**	**7.2530**	**0.0000**	**7,877.5403**	**7,877.5403**	**2.5248**		**7,940.6592**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3269	11.2907	2.1115	0.0307	0.6722	0.0449	0.7170	0.1842	0.0429	0.2272		3,239.8671	3,239.8671	0.1387		3,243.3345
Vendor	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0956	0.0872	0.7405	1.6300e-003	0.1643	1.3700e-003	0.1657	0.0436	1.2600e-003	0.0448		162.1020	162.1020	6.8300e-003		162.2729
Total	**0.4272**	**11.5026**	**2.8865**	**0.0326**	**0.8432**	**0.0470**	**0.8902**	**0.2297**	**0.0449**	**0.2746**		**3,431.5324**	**3,431.5324**	**0.1473**		**3,435.2137**

3.5 Paving - Phase I - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3901	25.7947	20.2681	0.0423		1.1622	1.1622		1.0904	1.0904		4,056.2963	4,056.2963	1.1057		4,083.9384
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.6718**	**25.7947**	**20.2681**	**0.0423**		**1.1622**	**1.1622**		**1.0904**	**1.0904**		**4,056.2963**	**4,056.2963**	**1.1057**		**4,083.9384**

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	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0956	0.0872	0.7405	1.6300e-003	0.1643	1.3700e-003	0.1657	0.0436	1.2600e-003	0.0448		162.1020	162.1020	6.8300e-003		162.2729
Total	**0.1003**	**0.2119**	**0.7750**	**1.9100e-003**	**0.1711**	**2.0800e-003**	**0.1731**	**0.0455**	**1.9400e-003**	**0.0475**		**191.6653**	**191.6653**	**8.5500e-003**		**191.8792**

3.5 Paving - Phase I - 2020

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	2.3901	25.7947	20.2681	0.0423		1.1622	1.1622		1.0904	1.0904	0.0000	4,056.2963	4,056.2963	1.1057		4,083.9384
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.6718**	**25.7947**	**20.2681**	**0.0423**		**1.1622**	**1.1622**		**1.0904**	**1.0904**	**0.0000**	**4,056.2963**	**4,056.2963**	**1.1057**		**4,083.9384**

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	4.6700e-003	0.1247	0.0346	2.8000e-004	6.7700e-003	7.1000e-004	7.4800e-003	1.9500e-003	6.8000e-004	2.6300e-003		29.5633	29.5633	1.7200e-003		29.6064
Worker	0.0956	0.0872	0.7405	1.6300e-003	0.1643	1.3700e-003	0.1657	0.0436	1.2600e-003	0.0448		162.1020	162.1020	6.8300e-003		162.2729
Total	**0.1003**	**0.2119**	**0.7750**	**1.9100e-003**	**0.1711**	**2.0800e-003**	**0.1731**	**0.0455**	**1.9400e-003**	**0.0475**		**191.6653**	**191.6653**	**8.5500e-003**		**191.8792**

3.5 Paving - Phase I - 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	2.2430	24.0301	20.1648	0.0423		1.0536	1.0536		0.9880	0.9880		4,054.9142	4,054.9142	1.1013		4,082.4473
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5246**	**24.0301**	**20.1648**	**0.0423**		**1.0536**	**1.0536**		**0.9880**	**0.9880**		**4,054.9142**	**4,054.9142**	**1.1013**		**4,082.4473**

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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.0884	0.0778	0.6732	1.5800e-003	0.1643	1.3300e-003	0.1656	0.0436	1.2200e-003	0.0448		157.0261	157.0261	6.1000e-003		157.1786
Total	**0.0922**	**0.1914**	**0.7033**	**1.8600e-003**	**0.1711**	**1.6900e-003**	**0.1728**	**0.0455**	**1.5600e-003**	**0.0471**		**186.3302**	**186.3302**	**7.7700e-003**		**186.5244**

3.5 Paving - Phase I - 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	2.2430	24.0301	20.1648	0.0423		1.0536	1.0536		0.9880	0.9880	0.0000	4,054.9142	4,054.9142	1.1013		4,082.4473
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5246**	**24.0301**	**20.1648**	**0.0423**		**1.0536**	**1.0536**		**0.9880**	**0.9880**	**0.0000**	**4,054.9142**	**4,054.9142**	**1.1013**		**4,082.4473**

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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.0884	0.0778	0.6732	1.5800e-003	0.1643	1.3300e-003	0.1656	0.0436	1.2200e-003	0.0448		157.0261	157.0261	6.1000e-003		157.1786
Total	**0.0922**	**0.1914**	**0.7033**	**1.8600e-003**	**0.1711**	**1.6900e-003**	**0.1728**	**0.0455**	**1.5600e-003**	**0.0471**		**186.3302**	**186.3302**	**7.7700e-003**		**186.5244**

3.6 Building Construction - Phase I - 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	2.9293	29.3225	27.4342	0.0460		1.5462	1.5462		1.4565	1.4565		4,418.440 8	4,418.440 8	1.0203		4,443.948 2
Total	**2.9293**	**29.3225**	**27.4342**	**0.0460**		**1.5462**	**1.5462**		**1.4565**	**1.4565**		**4,418.440 8**	**4,418.440 8**	**1.0203**		**4,443.948 2**

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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.1768	0.1557	1.3464	3.1600e-003	0.3286	2.6500e-003	0.3312	0.0872	2.4500e-003	0.0896		314.0522	314.0522	0.0122		314.3572
Total	**0.1806**	**0.2693**	**1.3765**	**3.4400e-003**	**0.3354**	**3.0100e-003**	**0.3384**	**0.0891**	**2.7900e-003**	**0.0919**		**343.3563**	**343.3563**	**0.0139**		**343.7030**

3.6 Building Construction - Phase I - 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	2.9293	29.3225	27.4342	0.0460		1.5462	1.5462		1.4565	1.4565	0.0000	4,418.4408	4,418.4408	1.0203		4,443.9482
Total	**2.9293**	**29.3225**	**27.4342**	**0.0460**		**1.5462**	**1.5462**		**1.4565**	**1.4565**	**0.0000**	**4,418.4408**	**4,418.4408**	**1.0203**		**4,443.9482**

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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.1768	0.1557	1.3464	3.1600e-003	0.3286	2.6500e-003	0.3312	0.0872	2.4500e-003	0.0896		314.0522	314.0522	0.0122		314.3572
Total	**0.1806**	**0.2693**	**1.3765**	**3.4400e-003**	**0.3354**	**3.0100e-003**	**0.3384**	**0.0891**	**2.7900e-003**	**0.0919**		**343.3563**	**343.3563**	**0.0139**		**343.7030**

3.7 Architectural Coating - Phase I - 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	7.1157					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	**7.3346**	**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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.1768	0.1557	1.3464	3.1600e-003	0.3286	2.6500e-003	0.3312	0.0872	2.4500e-003	0.0896		314.0522	314.0522	0.0122		314.3572
Total	**0.1806**	**0.2693**	**1.3765**	**3.4400e-003**	**0.3354**	**3.0100e-003**	**0.3384**	**0.0891**	**2.7900e-003**	**0.0919**		**343.3563**	**343.3563**	**0.0139**		**343.7030**

3.7 Architectural Coating - Phase I - 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	7.1157					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	**7.3346**	**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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.1768	0.1557	1.3464	3.1600e-003	0.3286	2.6500e-003	0.3312	0.0872	2.4500e-003	0.0896		314.0522	314.0522	0.0122		314.3572
Total	**0.1806**	**0.2693**	**1.3765**	**3.4400e-003**	**0.3354**	**3.0100e-003**	**0.3384**	**0.0891**	**2.7900e-003**	**0.0919**		**343.3563**	**343.3563**	**0.0139**		**343.7030**

3.8 Paving - Phase II - 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	2.2430	24.0301	20.1648	0.0423		1.0536	1.0536		0.9880	0.9880		4,054.914 2	4,054.914 2	1.1013		4,082.447 3
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5246**	**24.0301**	**20.1648**	**0.0423**		**1.0536**	**1.0536**		**0.9880**	**0.9880**		**4,054.914 2**	**4,054.914 2**	**1.1013**		**4,082.447 3**

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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.0884	0.0778	0.6732	1.5800e-003	0.1643	1.3300e-003	0.1656	0.0436	1.2200e-003	0.0448		157.0261	157.0261	6.1000e-003		157.1786
Total	**0.0922**	**0.1914**	**0.7033**	**1.8600e-003**	**0.1711**	**1.6900e-003**	**0.1728**	**0.0455**	**1.5600e-003**	**0.0471**		**186.3302**	**186.3302**	**7.7700e-003**		**186.5244**

3.8 Paving - Phase II - 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	2.2430	24.0301	20.1648	0.0423		1.0536	1.0536		0.9880	0.9880	0.0000	4,054.9142	4,054.9142	1.1013		4,082.4473
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5246**	**24.0301**	**20.1648**	**0.0423**		**1.0536**	**1.0536**		**0.9880**	**0.9880**	**0.0000**	**4,054.9142**	**4,054.9142**	**1.1013**		**4,082.4473**

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	3.8400e-003	0.1136	0.0301	2.8000e-004	6.7700e-003	3.6000e-004	7.1300e-003	1.9500e-003	3.4000e-004	2.2900e-003		29.3041	29.3041	1.6700e-003		29.3459
Worker	0.0884	0.0778	0.6732	1.5800e-003	0.1643	1.3300e-003	0.1656	0.0436	1.2200e-003	0.0448		157.0261	157.0261	6.1000e-003		157.1786
Total	**0.0922**	**0.1914**	**0.7033**	**1.8600e-003**	**0.1711**	**1.6900e-003**	**0.1728**	**0.0455**	**1.5600e-003**	**0.0471**		**186.3302**	**186.3302**	**7.7700e-003**		**186.5244**

3.8 Paving - Phase II - 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	2.0439	21.3454	19.9747	0.0423		0.9122	0.9122		0.8556	0.8556		4,052.801 4	4,052.801 4	1.0980		4,080.252 2
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3256**	**21.3454**	**19.9747**	**0.0423**		**0.9122**	**0.9122**		**0.8556**	**0.8556**		**4,052.801 4**	**4,052.801 4**	**1.0980**		**4,080.252 2**

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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.0821	0.0697	0.6130	1.5200e-003	0.1643	1.2800e-003	0.1656	0.0436	1.1800e-003	0.0448		151.4893	151.4893	5.4400e-003		151.6252
Total	**0.0857**	**0.1771**	**0.6403**	**1.8000e-003**	**0.1711**	**1.5900e-003**	**0.1727**	**0.0455**	**1.4800e-003**	**0.0470**		**180.5237**	**180.5237**	**7.0700e-003**		**180.7004**

3.8 Paving - Phase II - 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	2.0439	21.3454	19.9747	0.0423		0.9122	0.9122		0.8556	0.8556	0.0000	4,052.8014	4,052.8014	1.0980		4,080.2522
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3256**	**21.3454**	**19.9747**	**0.0423**		**0.9122**	**0.9122**		**0.8556**	**0.8556**	**0.0000**	**4,052.8014**	**4,052.8014**	**1.0980**		**4,080.2522**

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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.0821	0.0697	0.6130	1.5200e-003	0.1643	1.2800e-003	0.1656	0.0436	1.1800e-003	0.0448		151.4893	151.4893	5.4400e-003		151.6252
Total	**0.0857**	**0.1771**	**0.6403**	**1.8000e-003**	**0.1711**	**1.5900e-003**	**0.1727**	**0.0455**	**1.4800e-003**	**0.0470**		**180.5237**	**180.5237**	**7.0700e-003**		**180.7004**

3.9 Building Construction - Phase II - 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	2.6834	26.4913	27.2071	0.0460		1.3570	1.3570		1.2781	1.2781		4,418.9937	4,418.9937	1.0151		4,444.3718
Total	**2.6834**	**26.4913**	**27.2071**	**0.0460**		**1.3570**	**1.3570**		**1.2781**	**1.2781**		**4,418.9937**	**4,418.9937**	**1.0151**		**4,444.3718**

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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.1643	0.1394	1.2261	3.0400e-003	0.3286	2.5600e-003	0.3312	0.0872	2.3600e-003	0.0895		302.9785	302.9785	0.0109		303.2505
Total	**0.1678**	**0.2468**	**1.2534**	**3.3200e-003**	**0.3354**	**2.8700e-003**	**0.3382**	**0.0891**	**2.6600e-003**	**0.0918**		**332.0129**	**332.0129**	**0.0125**		**332.3256**

3.9 Building Construction - Phase II - 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	2.6834	26.4913	27.2071	0.0460		1.3570	1.3570		1.2781	1.2781	0.0000	4,418.9937	4,418.9937	1.0151		4,444.3718
Total	**2.6834**	**26.4913**	**27.2071**	**0.0460**		**1.3570**	**1.3570**		**1.2781**	**1.2781**	**0.0000**	**4,418.9937**	**4,418.9937**	**1.0151**		**4,444.3718**

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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.1643	0.1394	1.2261	3.0400e-003	0.3286	2.5600e-003	0.3312	0.0872	2.3600e-003	0.0895		302.9785	302.9785	0.0109		303.2505
Total	**0.1678**	**0.2468**	**1.2534**	**3.3200e-003**	**0.3354**	**2.8700e-003**	**0.3382**	**0.0891**	**2.6600e-003**	**0.0918**		**332.0129**	**332.0129**	**0.0125**		**332.3256**

3.10 Architectural Coating - Phase II - 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	7.0256					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	**7.2302**	**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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.1643	0.1394	1.2261	3.0400e-003	0.3286	2.5600e-003	0.3312	0.0872	2.3600e-003	0.0895		302.9785	302.9785	0.0109		303.2505
Total	**0.1678**	**0.2468**	**1.2534**	**3.3200e-003**	**0.3354**	**2.8700e-003**	**0.3382**	**0.0891**	**2.6600e-003**	**0.0918**		**332.0129**	**332.0129**	**0.0125**		**332.3256**

3.10 Architectural Coating - Phase II - 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	7.0256					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	**7.2302**	**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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.1643	0.1394	1.2261	3.0400e-003	0.3286	2.5600e-003	0.3312	0.0872	2.3600e-003	0.0895		302.9785	302.9785	0.0109		303.2505
Total	**0.1678**	**0.2468**	**1.2534**	**3.3200e-003**	**0.3354**	**2.8700e-003**	**0.3382**	**0.0891**	**2.6600e-003**	**0.0918**		**332.0129**	**332.0129**	**0.0125**		**332.3256**

3.11 Paving - Phase III - 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	2.0439	21.3454	19.9747	0.0423		0.9122	0.9122		0.8556	0.8556		4,052.8014	4,052.8014	1.0980		4,080.2522
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3256**	**21.3454**	**19.9747**	**0.0423**		**0.9122**	**0.9122**		**0.8556**	**0.8556**		**4,052.8014**	**4,052.8014**	**1.0980**		**4,080.2522**

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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.0821	0.0697	0.6130	1.5200e-003	0.1643	1.2800e-003	0.1656	0.0436	1.1800e-003	0.0448		151.4893	151.4893	5.4400e-003		151.6252
Total	**0.0857**	**0.1771**	**0.6403**	**1.8000e-003**	**0.1711**	**1.5900e-003**	**0.1727**	**0.0455**	**1.4800e-003**	**0.0470**		**180.5237**	**180.5237**	**7.0700e-003**		**180.7004**

3.11 Paving - Phase III - 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	2.0439	21.3454	19.9747	0.0423		0.9122	0.9122		0.8556	0.8556	0.0000	4,052.8014	4,052.8014	1.0980		4,080.2522
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.3256**	**21.3454**	**19.9747**	**0.0423**		**0.9122**	**0.9122**		**0.8556**	**0.8556**	**0.0000**	**4,052.8014**	**4,052.8014**	**1.0980**		**4,080.2522**

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	3.5300e-003	0.1074	0.0273	2.8000e-004	6.7700e-003	3.1000e-004	7.0800e-003	1.9500e-003	3.0000e-004	2.2500e-003		29.0344	29.0344	1.6300e-003		29.0751
Worker	0.0821	0.0697	0.6130	1.5200e-003	0.1643	1.2800e-003	0.1656	0.0436	1.1800e-003	0.0448		151.4893	151.4893	5.4400e-003		151.6252
Total	**0.0857**	**0.1771**	**0.6403**	**1.8000e-003**	**0.1711**	**1.5900e-003**	**0.1727**	**0.0455**	**1.4800e-003**	**0.0470**		**180.5237**	**180.5237**	**7.0700e-003**		**180.7004**

3.11 Paving - Phase III - 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	1.9237	19.5132	19.9341	0.0423		0.8184	0.8184		0.7672	0.7672		4,052.0827	4,052.0827	1.0939		4,079.4299
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.2053**	**19.5132**	**19.9341**	**0.0423**		**0.8184**	**0.8184**		**0.7672**	**0.7672**		**4,052.0827**	**4,052.0827**	**1.0939**		**4,079.4299**

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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.0765	0.0625	0.5579	1.4700e-003	0.1643	1.2400e-003	0.1655	0.0436	1.1400e-003	0.0447		145.8660	145.8660	4.8400e-003		145.9870
Total	**0.0791**	**0.1508**	**0.5810**	**1.7400e-003**	**0.1711**	**1.3700e-003**	**0.1724**	**0.0455**	**1.2700e-003**	**0.0468**		**174.3829**	**174.3829**	**6.1000e-003**		**174.5355**

3.11 Paving - Phase III - 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	1.9237	19.5132	19.9341	0.0423		0.8184	0.8184		0.7672	0.7672	0.0000	4,052.0827	4,052.0827	1.0939		4,079.4299
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.2053**	**19.5132**	**19.9341**	**0.0423**		**0.8184**	**0.8184**		**0.7672**	**0.7672**	**0.0000**	**4,052.0827**	**4,052.0827**	**1.0939**		**4,079.4299**

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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.0765	0.0625	0.5579	1.4700e-003	0.1643	1.2400e-003	0.1655	0.0436	1.1400e-003	0.0447		145.8660	145.8660	4.8400e-003		145.9870
Total	**0.0791**	**0.1508**	**0.5810**	**1.7400e-003**	**0.1711**	**1.3700e-003**	**0.1724**	**0.0455**	**1.2700e-003**	**0.0468**		**174.3829**	**174.3829**	**6.1000e-003**		**174.5355**

3.12 Building Construction - Phase III - 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	2.5104	24.4825	27.0748	0.0460		1.2115	1.2115		1.1402	1.1402		4,419.8090	4,419.8090	1.0087		4,445.0275
Total	**2.5104**	**24.4825**	**27.0748**	**0.0460**		**1.2115**	**1.2115**		**1.1402**	**1.1402**		**4,419.8090**	**4,419.8090**	**1.0087**		**4,445.0275**

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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.1529	0.1249	1.1159	2.9300e-003	0.3286	2.4800e-003	0.3311	0.0872	2.2900e-003	0.0894		291.7319	291.7319	9.6900e-003		291.9740
Total	**0.1556**	**0.2133**	**1.1390**	**3.2000e-003**	**0.3354**	**2.6100e-003**	**0.3380**	**0.0891**	**2.4200e-003**	**0.0915**		**320.2489**	**320.2489**	**0.0110**		**320.5225**

3.12 Building Construction - Phase III - 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	2.5104	24.4825	27.0748	0.0460		1.2115	1.2115		1.1402	1.1402	0.0000	4,419.809 0	4,419.809 0	1.0087		4,445.027 5
Total	**2.5104**	**24.4825**	**27.0748**	**0.0460**		**1.2115**	**1.2115**		**1.1402**	**1.1402**	**0.0000**	**4,419.809 0**	**4,419.809 0**	**1.0087**		**4,445.027 5**

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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.1529	0.1249	1.1159	2.9300e-003	0.3286	2.4800e-003	0.3311	0.0872	2.2900e-003	0.0894		291.7319	291.7319	9.6900e-003		291.9740
Total	**0.1556**	**0.2133**	**1.1390**	**3.2000e-003**	**0.3354**	**2.6100e-003**	**0.3380**	**0.0891**	**2.4200e-003**	**0.0915**		**320.2489**	**320.2489**	**0.0110**		**320.5225**

3.13 Architectural Coating - Phase III - 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	7.0256					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	**7.2173**	**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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.1529	0.1249	1.1159	2.9300e-003	0.3286	2.4800e-003	0.3311	0.0872	2.2900e-003	0.0894		291.7319	291.7319	9.6900e-003		291.9740
Total	**0.1556**	**0.2133**	**1.1390**	**3.2000e-003**	**0.3354**	**2.6100e-003**	**0.3380**	**0.0891**	**2.4200e-003**	**0.0915**		**320.2489**	**320.2489**	**0.0110**		**320.5225**

3.13 Architectural Coating - Phase III - 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	7.0256					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	**7.2173**	**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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.1529	0.1249	1.1159	2.9300e-003	0.3286	2.4800e-003	0.3311	0.0872	2.2900e-003	0.0894		291.7319	291.7319	9.6900e-003		291.9740
Total	**0.1556**	**0.2133**	**1.1390**	**3.2000e-003**	**0.3354**	**2.6100e-003**	**0.3380**	**0.0891**	**2.4200e-003**	**0.0915**		**320.2489**	**320.2489**	**0.0110**		**320.5225**

3.14 Paving - Phase IV - 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	1.9237	19.5132	19.9341	0.0423		0.8184	0.8184		0.7672	0.7672		4,052.0827	4,052.0827	1.0939		4,079.4299
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.2053**	**19.5132**	**19.9341**	**0.0423**		**0.8184**	**0.8184**		**0.7672**	**0.7672**		**4,052.0827**	**4,052.0827**	**1.0939**		**4,079.4299**

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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.0765	0.0625	0.5579	1.4700e-003	0.1643	1.2400e-003	0.1655	0.0436	1.1400e-003	0.0447		145.8660	145.8660	4.8400e-003		145.9870
Total	**0.0791**	**0.1508**	**0.5810**	**1.7400e-003**	**0.1711**	**1.3700e-003**	**0.1724**	**0.0455**	**1.2700e-003**	**0.0468**		**174.3829**	**174.3829**	**6.1000e-003**		**174.5355**

3.14 Paving - Phase IV - 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	1.9237	19.5132	19.9341	0.0423		0.8184	0.8184		0.7672	0.7672	0.0000	4,052.0827	4,052.0827	1.0939		4,079.4299
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.2053**	**19.5132**	**19.9341**	**0.0423**		**0.8184**	**0.8184**		**0.7672**	**0.7672**	**0.0000**	**4,052.0827**	**4,052.0827**	**1.0939**		**4,079.4299**

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	2.6500e-003	0.0883	0.0231	2.7000e-004	6.7700e-003	1.3000e-004	6.9000e-003	1.9500e-003	1.3000e-004	2.0800e-003		28.5170	28.5170	1.2600e-003		28.5485
Worker	0.0765	0.0625	0.5579	1.4700e-003	0.1643	1.2400e-003	0.1655	0.0436	1.1400e-003	0.0447		145.8660	145.8660	4.8400e-003		145.9870
Total	**0.0791**	**0.1508**	**0.5810**	**1.7400e-003**	**0.1711**	**1.3700e-003**	**0.1724**	**0.0455**	**1.2700e-003**	**0.0468**		**174.3829**	**174.3829**	**6.1000e-003**		**174.5355**

3.14 Paving - Phase IV - 2024

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	1.8342	18.2180	19.9122	0.0423		0.7474	0.7474		0.7000	0.7000		4,051.5118	4,051.5118	1.0924		4,078.8219
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1158**	**18.2180**	**19.9122**	**0.0423**		**0.7474**	**0.7474**		**0.7000**	**0.7000**		**4,051.5118**	**4,051.5118**	**1.0924**		**4,078.8219**

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	2.5100e-003	0.0863	0.0214	2.7000e-004	6.7700e-003	1.2000e-004	6.8900e-003	1.9500e-003	1.2000e-004	2.0700e-003		28.2890	28.2890	1.2500e-003		28.3202
Worker	0.0715	0.0561	0.5113	1.4100e-003	0.1643	1.2000e-003	0.1655	0.0436	1.1100e-003	0.0447		140.2419	140.2419	4.3300e-003		140.3500
Total	**0.0740**	**0.1424**	**0.5327**	**1.6800e-003**	**0.1711**	**1.3200e-003**	**0.1724**	**0.0455**	**1.2300e-003**	**0.0468**		**168.5309**	**168.5309**	**5.5800e-003**		**168.6702**

3.14 Paving - Phase IV - 2024

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	1.8342	18.2180	19.9122	0.0423		0.7474	0.7474		0.7000	0.7000	0.0000	4,051.5118	4,051.5118	1.0924		4,078.8219
Paving	0.2817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1158**	**18.2180**	**19.9122**	**0.0423**		**0.7474**	**0.7474**		**0.7000**	**0.7000**	**0.0000**	**4,051.5118**	**4,051.5118**	**1.0924**		**4,078.8219**

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	2.5100e-003	0.0863	0.0214	2.7000e-004	6.7700e-003	1.2000e-004	6.8900e-003	1.9500e-003	1.2000e-004	2.0700e-003		28.2890	28.2890	1.2500e-003		28.3202
Worker	0.0715	0.0561	0.5113	1.4100e-003	0.1643	1.2000e-003	0.1655	0.0436	1.1100e-003	0.0447		140.2419	140.2419	4.3300e-003		140.3500
Total	**0.0740**	**0.1424**	**0.5327**	**1.6800e-003**	**0.1711**	**1.3200e-003**	**0.1724**	**0.0455**	**1.2300e-003**	**0.0468**		**168.5309**	**168.5309**	**5.5800e-003**		**168.6702**

3.15 Building Construction - Phase IV - 2024

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	2.3878	23.0730	27.0035	0.0460		1.1069	1.1069		1.0404	1.0404		4,419.9767	4,419.9767	1.0048		4,445.0954
Total	**2.3878**	**23.0730**	**27.0035**	**0.0460**		**1.1069**	**1.1069**		**1.0404**	**1.0404**		**4,419.9767**	**4,419.9767**	**1.0048**		**4,445.0954**

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	2.5100e-003	0.0863	0.0214	2.7000e-004	6.7700e-003	1.2000e-004	6.8900e-003	1.9500e-003	1.2000e-004	2.0700e-003		28.2890	28.2890	1.2500e-003		28.3202
Worker	0.1430	0.1123	1.0225	2.8200e-003	0.3286	2.4100e-003	0.3310	0.0872	2.2200e-003	0.0894		280.4838	280.4838	8.6500e-003		280.7001
Total	**0.1455**	**0.1986**	**1.0439**	**3.0900e-003**	**0.3354**	**2.5300e-003**	**0.3379**	**0.0891**	**2.3400e-003**	**0.0915**		**308.7728**	**308.7728**	**9.9000e-003**		**309.0203**

3.15 Building Construction - Phase IV - 2024

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	2.3878	23.0730	27.0035	0.0460		1.1069	1.1069		1.0404	1.0404	0.0000	4,419.9767	4,419.9767	1.0048		4,445.0954
Total	**2.3878**	**23.0730**	**27.0035**	**0.0460**		**1.1069**	**1.1069**		**1.0404**	**1.0404**	**0.0000**	**4,419.9767**	**4,419.9767**	**1.0048**		**4,445.0954**

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	2.5100e-003	0.0863	0.0214	2.7000e-004	6.7700e-003	1.2000e-004	6.8900e-003	1.9500e-003	1.2000e-004	2.0700e-003		28.2890	28.2890	1.2500e-003		28.3202
Worker	0.1430	0.1123	1.0225	2.8200e-003	0.3286	2.4100e-003	0.3310	0.0872	2.2200e-003	0.0894		280.4838	280.4838	8.6500e-003		280.7001
Total	**0.1455**	**0.1986**	**1.0439**	**3.0900e-003**	**0.3354**	**2.5300e-003**	**0.3379**	**0.0891**	**2.3400e-003**	**0.0915**		**308.7728**	**308.7728**	**9.9000e-003**		**309.0203**

3.16 Architectural Coating - Phase IV - 2024

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	7.0256					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**7.2064**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	2.5100e-003	0.0863	0.0214	2.7000e-004	6.7700e-003	1.2000e-004	6.8900e-003	1.9500e-003	1.2000e-004	2.0700e-003		28.2890	28.2890	1.2500e-003		28.3202
Worker	0.1430	0.1123	1.0225	2.8200e-003	0.3286	2.4100e-003	0.3310	0.0872	2.2200e-003	0.0894		280.4838	280.4838	8.6500e-003		280.7001
Total	**0.1455**	**0.1986**	**1.0439**	**3.0900e-003**	**0.3354**	**2.5300e-003**	**0.3379**	**0.0891**	**2.3400e-003**	**0.0915**		**308.7728**	**308.7728**	**9.9000e-003**		**309.0203**

3.16 Architectural Coating - Phase IV - 2024

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	7.0256					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**7.2064**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	2.5100e-003	0.0863	0.0214	2.7000e-004	6.7700e-003	1.2000e-004	6.8900e-003	1.9500e-003	1.2000e-004	2.0700e-003		28.2890	28.2890	1.2500e-003		28.3202
Worker	0.1430	0.1123	1.0225	2.8200e-003	0.3286	2.4100e-003	0.3310	0.0872	2.2200e-003	0.0894		280.4838	280.4838	8.6500e-003		280.7001
Total	**0.1455**	**0.1986**	**1.0439**	**3.0900e-003**	**0.3354**	**2.5300e-003**	**0.3379**	**0.0891**	**2.3400e-003**	**0.0915**		**308.7728**	**308.7728**	**9.9000e-003**		**309.0203**

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	2.5633	13.7673	31.5154	0.1052	9.0612	0.0869	9.1481	2.4261	0.0811	2.5072		10,674.03 04	10,674.03 04	0.4941		10,686.38 30
Unmitigated	2.5633	13.7673	31.5154	0.1052	9.0612	0.0869	9.1481	2.4261	0.0811	2.5072		10,674.03 04	10,674.03 04	0.4941		10,686.38 30

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Single Family Housing	1,406.56	1,476.59	1284.38	4,030,500	4,030,500
Total	1,406.56	1,476.59	1,284.38	4,030,500	4,030,500

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
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Single Family Housing	10.80	7.30	7.50	44.00	19.00	37.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.556074	0.026253	0.203701	0.115939	0.017760	0.004663	0.019655	0.042099	0.003061	0.002272	0.006688	0.001093	0.000742
Parking Lot	0.556074	0.026253	0.203701	0.115939	0.017760	0.004663	0.019655	0.042099	0.003061	0.002272	0.006688	0.001093	0.000742
Single Family Housing	0.556074	0.026253	0.203701	0.115939	0.017760	0.004663	0.019655	0.042099	0.003061	0.002272	0.006688	0.001093	0.000742

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	0.1200	1.0252	0.4363	6.5400e-003		0.0829	0.0829		0.0829	0.0829		1,308.7691	1,308.7691	0.0251	0.0240	1,316.5465
NaturalGas Unmitigated	0.1280	1.0934	0.4653	6.9800e-003		0.0884	0.0884		0.0884	0.0884		1,395.8738	1,395.8738	0.0268	0.0256	1,404.1688

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11864.9	0.1280	1.0934	0.4653	6.9800e-003		0.0884	0.0884		0.0884	0.0884		1,395.8738	1,395.8738	0.0268	0.0256	1,404.1688
Total		**0.1280**	**1.0934**	**0.4653**	**6.9800e-003**		**0.0884**	**0.0884**		**0.0884**	**0.0884**		**1,395.8738**	**1,395.8738**	**0.0268**	**0.0256**	**1,404.1688**

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	11.1245	0.1200	1.0252	0.4363	6.5400e-003		0.0829	0.0829		0.0829	0.0829		1,308.7691	1,308.7691	0.0251	0.0240	1,316.5465
Total		**0.1200**	**1.0252**	**0.4363**	**6.5400e-003**		**0.0829**	**0.0829**		**0.0829**	**0.0829**		**1,308.7691**	**1,308.7691**	**0.0251**	**0.0240**	**1,316.5465**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

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	7.0854	2.6131	13.3348	0.0164		0.2680	0.2680		0.2680	0.2680	0.0000	3,177.4327	3,177.4327	0.0817	0.0579	3,196.7132
Unmitigated	7.0854	2.6131	13.3348	0.0164		0.2680	0.2680		0.2680	0.2680	0.0000	3,177.4327	3,177.4327	0.0817	0.0579	3,196.7132

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	0.4969					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.9304					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2892	2.4717	1.0518	0.0158		0.1998	0.1998		0.1998	0.1998	0.0000	3,155.294 1	3,155.294 1	0.0605	0.0579	3,174.044 5
Landscaping	0.3689	0.1415	12.2830	6.5000e-004		0.0682	0.0682		0.0682	0.0682		22.1385	22.1385	0.0212		22.6687
Total	**7.0854**	**2.6131**	**13.3348**	**0.0164**		**0.2680**	**0.2680**		**0.2680**	**0.2680**	**0.0000**	**3,177.432 7**	**3,177.432 7**	**0.0817**	**0.0579**	**3,196.713 2**

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	0.4969					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.9304					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2892	2.4717	1.0518	0.0158		0.1998	0.1998		0.1998	0.1998	0.0000	3,155.294 1	3,155.294 1	0.0605	0.0579	3,174.044 5
Landscaping	0.3689	0.1415	12.2830	6.5000e-004		0.0682	0.0682		0.0682	0.0682		22.1385	22.1385	0.0212		22.6687
Total	**7.0854**	**2.6131**	**13.3348**	**0.0164**		**0.2680**	**0.2680**		**0.2680**	**0.2680**	**0.0000**	**3,177.432 7**	**3,177.432 7**	**0.0817**	**0.0579**	**3,196.713 2**

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Lico Subdivision Project

Monterey Bay Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	11.18	Acre	11.18	487,151.00	0
City Park	8.18	Acre	8.18	356,386.00	0
Single Family Housing	149.00	Dwelling Unit	30.59	268,200.00	453

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.8	**Precipitation Freq (Days)**	53
Climate Zone	4			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	298.65	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensities for 2030 RPS

Land Use - Parking lot LU is interior roadways, City park is park/stormwater; DOF estimate for population

Construction Phase - Phases from data request; assumed arch coating to start 3/4 through each building phase

Off-road Equipment - Left as default

Off-road Equipment - Default

Off-road Equipment - Default

Off-road Equipment - Default

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request, assuming 1 of each throughout

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Off-road Equipment - From data request

Trips and VMT - Worker/vendor for grading and construction from data request, others left default

Demolition - From data request

Grading - From data request

Architectural Coating - MBARD Rule 426. Default values for sq ft div by 4 to account for construction phasing.

Vehicle Trips - City park/Parking Lot trips zeroed. WkDy trip rate from traffic study. Corrected model error for trip %

Woodstoves - NG fireplaces

Area Coating - MABRD Rule 426; sf adjusted per arch coating screen

Energy Use -

Water And Wastewater - 20% indoor water reduction

Solid Waste - No data to indicate waste hauler diverts more than 50%

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - MBARD Rule 426

Energy Mitigation - Efficient applicanes noted in data request. Solar generation from Rincon spreadsheet.

Water Mitigation - Low flow fixures accounted for in 20% overall water use reduction

Lico Subdivision Project - Monterey Bay Unified APCD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Residential_Exterior	181,035.00	45,259.00
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tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44
tblWater	IndoorWaterUseRate	9,707,949.82	7,766,389.00
tblWaterMitigation	PercentReductionInFlowBathroomFaucet	32	0
tblWaterMitigation	PercentReductionInFlowKitchenFaucet	18	0
tblWaterMitigation	PercentReductionInFlowShower	20	0
tblWaterMitigation	PercentReductionInFlowToilet	20	0
tblWoodstoves	NumberCatalytic	7.45	0.00

tblWoodstoves	NumberNoncatalytic	7.45	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,120.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5383	6.1737	3.5507	8.4900e-003	0.8002	0.2602	1.0604	0.3545	0.2405	0.5950	0.0000	755.6531	755.6531	0.1861	0.0000	760.3063
2021	0.7529	4.4344	4.2255	7.7400e-003	0.0554	0.2213	0.2767	0.0148	0.2085	0.2232	0.0000	676.0883	676.0883	0.1520	0.0000	679.8877
2022	0.7144	3.9900	4.1732	7.7200e-003	0.0556	0.1936	0.2492	0.0148	0.1824	0.1972	0.0000	674.5569	674.5569	0.1511	0.0000	678.3344
2023	0.6864	3.6638	4.1283	7.6800e-003	0.0555	0.1726	0.2281	0.0148	0.1624	0.1772	0.0000	670.8419	670.8419	0.1495	0.0000	674.5795
2024	0.6396	3.2140	3.8489	7.1100e-003	0.0534	0.1482	0.2016	0.0142	0.1393	0.1536	0.0000	621.1758	621.1758	0.1364	0.0000	624.5860
Maximum	**0.7529**	**6.1737**	**4.2255**	**8.4900e-003**	**0.8002**	**0.2602**	**1.0604**	**0.3545**	**0.2405**	**0.5950**	**0.0000**	**755.6531**	**755.6531**	**0.1861**	**0.0000**	**760.3063**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5383	6.1737	3.5507	8.4900e-003	0.8002	0.2602	1.0604	0.3545	0.2405	0.5950	0.0000	755.6524	755.6524	0.1861	0.0000	760.3056
2021	0.7529	4.4344	4.2255	7.7400e-003	0.0554	0.2213	0.2767	0.0148	0.2085	0.2232	0.0000	676.0876	676.0876	0.1520	0.0000	679.8870
2022	0.7144	3.9900	4.1732	7.7200e-003	0.0556	0.1936	0.2492	0.0148	0.1824	0.1972	0.0000	674.5561	674.5561	0.1511	0.0000	678.3336
2023	0.6864	3.6638	4.1283	7.6800e-003	0.0555	0.1726	0.2281	0.0148	0.1624	0.1772	0.0000	670.8412	670.8412	0.1495	0.0000	674.5787
2024	0.6396	3.2140	3.8489	7.1100e-003	0.0534	0.1482	0.2016	0.0142	0.1393	0.1536	0.0000	621.1751	621.1751	0.1364	0.0000	624.5853
Maximum	**0.7529**	**6.1737**	**4.2255**	**8.4900e-003**	**0.8002**	**0.2602**	**1.0604**	**0.3545**	**0.2405**	**0.5950**	**0.0000**	**755.6524**	**755.6524**	**0.1861**	**0.0000**	**760.3056**

	ROG	**NOx**	**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	**8-1-2020**	**10-31-2020**	5.2358	5.2358
2	**11-1-2020**	**1-31-2021**	2.2125	2.2125
3	**2-1-2021**	**4-30-2021**	2.2116	2.2116
4	**5-1-2021**	**7-31-2021**	1.2875	1.2875
5	**8-1-2021**	**10-31-2021**	1.6540	1.6540
6	**11-1-2021**	**1-31-2022**	0.9925	0.9925

7	**2-1-2022**	**4-30-2022**	1.9834	1.9834
8	**5-1-2022**	**7-31-2022**	1.1650	1.1650
9	**8-1-2022**	**10-31-2022**	1.5214	1.5214
10	**11-1-2022**	**1-31-2023**	0.6096	0.6096
11	**2-1-2023**	**4-30-2023**	1.2698	1.2698
12	**5-1-2023**	**7-31-2023**	1.0773	1.0773
13	**8-1-2023**	**10-31-2023**	1.4273	1.4273
14	**11-1-2023**	**1-31-2024**	0.5646	0.5646
15	**2-1-2024**	**4-30-2024**	1.2026	1.2026
16	**5-1-2024**	**7-31-2024**	1.0160	1.0160
17	**8-1-2024**	**9-30-2024**	0.9020	0.9020
		Highest	5.2358	5.2358

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	1.2307	0.1190	1.5759	7.3000e-004		0.0167	0.0167		0.0167	0.0167	0.0000	119.8703	119.8703	4.6400e-003	2.1500e-003	120.6275
Energy	0.0234	0.1996	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	417.5026	417.5026	0.0132	6.1100e-003	419.6524
Mobile	0.3385	1.9686	3.8256	0.0162	1.5127	0.0109	1.5236	0.4058	0.0101	0.4159	0.0000	1,497.5178	1,497.5178	0.0608	0.0000	1,499.0370
Waste						0.0000	0.0000		0.0000	0.0000	38.1907	0.0000	38.1907	2.2570	0.0000	94.6159
Water						0.0000	0.0000		0.0000	0.0000	2.4639	13.2156	15.6795	0.2537	6.1100e-003	23.8419
Total	**1.5926**	**2.2871**	**5.4864**	**0.0182**	**1.5127**	**0.0437**	**1.5564**	**0.4058**	**0.0430**	**0.4488**	**40.6546**	**2,048.1063**	**2,088.7609**	**2.5893**	**0.0144**	**2,157.7746**

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	1.2307	0.1190	1.5759	7.3000e-004		0.0167	0.0167		0.0167	0.0167	0.0000	119.8703	119.8703	4.6400e-003	2.1500e-003	120.6275
Energy	0.0219	0.1871	0.0796	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	355.0092	355.0092	0.0106	5.3600e-003	356.8731
Mobile	0.3385	1.9686	3.8256	0.0162	1.5127	0.0109	1.5236	0.4058	0.0101	0.4159	0.0000	1,497.5178	1,497.5178	0.0608	0.0000	1,499.0370
Waste						0.0000	0.0000		0.0000	0.0000	38.1907	0.0000	38.1907	2.2570	0.0000	94.6159
Water						0.0000	0.0000		0.0000	0.0000	2.4639	13.2156	15.6795	0.2537	6.1100e-003	23.8419
Total	**1.5911**	**2.2747**	**5.4811**	**0.0181**	**1.5127**	**0.0427**	**1.5554**	**0.4058**	**0.0420**	**0.4478**	**40.6546**	**1,985.6129**	**2,026.2675**	**2.5868**	**0.0136**	**2,094.9953**

	ROG	NOx	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	**0.09**	**0.54**	**0.10**	**0.44**	**0.00**	**2.29**	**0.06**	**0.00**	**2.33**	**0.22**	**0.00**	**3.05**	**2.99**	**0.10**	**5.22**	**2.91**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2020	9/30/2020	6	52	
2	Site Preparation	Site Preparation	8/1/2020	9/30/2020	6	52	
3	Grading	Grading	8/1/2020	11/30/2020	6	104	
4	Paving - Phase I	Paving	12/1/2020	3/31/2021	6	104	
5	Building Construction - Phase I	Building Construction	3/1/2021	10/31/2021	6	210	
6	Architectural Coating - Phase I	Architectural Coating	8/1/2021	10/31/2021	6	78	
7	Paving - Phase II	Paving	12/1/2021	3/31/2022	6	104	
8	Building Construction - Phase II	Building Construction	3/1/2022	10/31/2022	6	210	
9	Architectural Coating - Phase II	Architectural Coating	8/1/2022	10/31/2022	6	79	
10	Paving - Phase III	Paving	12/1/2022	3/31/2023	6	104	
11	Building Construction - Phase III	Building Construction	3/1/2023	10/31/2023	6	210	
12	Architectural Coating - Phase III	Architectural Coating	8/1/2023	10/31/2023	6	79	
13	Paving - Phase IV	Paving	12/1/2023	3/31/2024	6	104	
14	Building Construction - Phase IV	Building Construction	3/1/2024	10/31/2024	6	210	
15	Architectural Coating - Phase IV	Architectural Coating	8/1/2024	10/31/2024	6	79	

Acres of Grading (Site Preparation Phase): 32.5

Acres of Grading (Grading Phase): 260

Acres of Paving: 11.18

Residential Indoor: 135,776; Residential Outdoor: 45,259; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 29,229 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	10.00	81	0.73

Demolition	Excavators	1	10.00	158	0.38
Demolition	Other Construction Equipment	1	10.00	172	0.42
Demolition	Rubber Tired Dozers	1	10.00	247	0.40
Demolition	Signal Boards	1	10.00	6	0.82
Demolition	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Site Preparation	Crawler Tractors	1	10.00	212	0.43
Site Preparation	Rubber Tired Dozers	1	10.00	247	0.40
Site Preparation	Signal Boards	1	10.00	6	0.82
Site Preparation	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Grading	Crawler Tractors	1	10.00	212	0.43
Grading	Excavators	1	10.00	158	0.38
Grading	Graders	1	10.00	187	0.41
Grading	Plate Compactors	1	10.00	8	0.43
Grading	Rollers	1	10.00	80	0.38
Grading	Rough Terrain Forklifts	1	10.00	100	0.40
Grading	Rubber Tired Dozers	1	10.00	247	0.40
Grading	Rubber Tired Loaders	1	10.00	203	0.36
Grading	Scrapers	1	10.00	367	0.48
Grading	Signal Boards	1	10.00	6	0.82
Grading	Skid Steer Loaders	1	10.00	65	0.37
Grading	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Grading	Trenchers	1	10.00	78	0.50
Paving - Phase I	Concrete/Industrial Saws	1	10.00	81	0.73
Paving - Phase I	Graders	1	10.00	187	0.41
Paving - Phase I	Pavers	1	10.00	130	0.42
Paving - Phase I	Paving Equipment	1	10.00	132	0.36
Paving - Phase I	Rollers	1	10.00	80	0.38

Paving - Phase I	Signal Boards	1	10.00	6	0.82
Paving - Phase I	Skid Steer Loaders	1	10.00	65	0.37
Paving - Phase I	Surfacing Equipment	1	10.00	263	0.30
Building Construction - Phase I	Concrete/Industrial Saws	1	10.00	81	0.73
Building Construction - Phase I	Cranes	1	10.00	231	0.29
Building Construction - Phase I	Forklifts	0	10.00	89	0.20
Building Construction - Phase I	Generator Sets	1	10.00	84	0.74
Building Construction - Phase I	Other Construction Equipment	1	10.00	172	0.42
Building Construction - Phase I	Rough Terrain Forklifts	1	10.00	100	0.40
Building Construction - Phase I	Skid Steer Loaders	1	10.00	65	0.37
Building Construction - Phase I	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Building Construction - Phase I	Trenchers	1	10.00	78	0.50
Building Construction - Phase I	Welders	0	10.00	46	0.45
Architectural Coating - Phase I	Air Compressors	1	6.00	78	0.48
Paving - Phase II	Concrete/Industrial Saws	1	10.00	81	0.73
Paving - Phase II	Graders	1	10.00	187	0.41
Paving - Phase II	Pavers	1	10.00	130	0.42
Paving - Phase II	Paving Equipment	1	10.00	132	0.36
Paving - Phase II	Rollers	1	10.00	80	0.38
Paving - Phase II	Signal Boards	1	10.00	6	0.82
Paving - Phase II	Skid Steer Loaders	1	10.00	65	0.37
Paving - Phase II	Surfacing Equipment	1	10.00	263	0.30
Building Construction - Phase II	Concrete/Industrial Saws	1	10.00	81	0.73
Building Construction - Phase II	Cranes	1	10.00	231	0.29
Building Construction - Phase II	Forklifts	0	10.00	89	0.20
Building Construction - Phase II	Generator Sets	1	10.00	84	0.74
Building Construction - Phase II	Other Construction Equipment	1	10.00	172	0.42

Building Construction - Phase II	Rough Terrain Forklifts	1	10.00	100	0.40
Building Construction - Phase II	Skid Steer Loaders	1	10.00	65	0.37
Building Construction - Phase II	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Building Construction - Phase II	Trenchers	1	10.00	78	0.50
Building Construction - Phase II	Welders	0	10.00	46	0.45
Architectural Coating - Phase II	Air Compressors	1	6.00	78	0.48
Paving - Phase III	Concrete/Industrial Saws	1	10.00	81	0.73
Paving - Phase III	Graders	1	10.00	187	0.41
Paving - Phase III	Pavers	1	10.00	130	0.42
Paving - Phase III	Paving Equipment	1	10.00	132	0.36
Paving - Phase III	Rollers	1	10.00	80	0.38
Paving - Phase III	Signal Boards	1	10.00	6	0.82
Paving - Phase III	Skid Steer Loaders	1	10.00	65	0.37
Paving - Phase III	Surfacing Equipment	1	10.00	263	0.30
Building Construction - Phase III	Concrete/Industrial Saws	1	10.00	81	0.73
Building Construction - Phase III	Cranes	1	10.00	231	0.29
Building Construction - Phase III	Forklifts	0	10.00	89	0.20
Building Construction - Phase III	Generator Sets	1	10.00	84	0.74
Building Construction - Phase III	Other Construction Equipment	1	10.00	172	0.42
Building Construction - Phase III	Rough Terrain Forklifts	1	10.00	100	0.40
Building Construction - Phase III	Skid Steer Loaders	1	10.00	65	0.37
Building Construction - Phase III	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Building Construction - Phase III	Trenchers	1	10.00	78	0.50
Building Construction - Phase III	Welders	0	10.00	46	0.45
Architectural Coating - Phase III	Air Compressors	1	6.00	78	0.48
Paving - Phase IV	Concrete/Industrial Saws	1	10.00	81	0.73
Paving - Phase IV	Graders	1	10.00	187	0.41

Paving - Phase IV	Pavers	1	10.00	130	0.42
Paving - Phase IV	Paving Equipment	1	10.00	132	0.36
Paving - Phase IV	Rollers	1	10.00	80	0.38
Paving - Phase IV	Signal Boards	1	10.00	6	0.82
Paving - Phase IV	Skid Steer Loaders	1	10.00	65	0.37
Paving - Phase IV	Surfacing Equipment	1	10.00	263	0.30
Building Construction - Phase IV	Concrete/Industrial Saws	1	10.00	81	0.73
Building Construction - Phase IV	Cranes	1	10.00	231	0.29
Building Construction - Phase IV	Forklifts	0	10.00	89	0.20
Building Construction - Phase IV	Generator Sets	1	10.00	84	0.74
Building Construction - Phase IV	Other Construction Equipment	1	10.00	172	0.42
Building Construction - Phase IV	Rough Terrain Forklifts	1	10.00	100	0.40
Building Construction - Phase IV	Skid Steer Loaders	1	10.00	65	0.37
Building Construction - Phase IV	Tractors/Loaders/Backhoes	1	10.00	97	0.37
Building Construction - Phase IV	Trenchers	1	10.00	78	0.50
Building Construction - Phase IV	Welders	0	10.00	46	0.45
Architectural Coating - Phase IV	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	7	18.00	1.00	33.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	13	20.00	1.00	4,000.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase I	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase I	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase I	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase II	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase II	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase II	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase III	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase III	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase III	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving - Phase IV	8	20.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Phase IV	8	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating - Phase IV	1	40.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.6100e-003	0.0000	3.6100e-003	5.5000e-004	0.0000	5.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0882	0.8727	0.6522	1.0700e-003		0.0464	0.0464		0.0432	0.0432	0.0000	93.4562	93.4562	0.0254	0.0000	94.0903
Total	**0.0882**	**0.8727**	**0.6522**	**1.0700e-003**	**3.6100e-003**	**0.0464**	**0.0500**	**5.5000e-004**	**0.0432**	**0.0438**	**0.0000**	**93.4562**	**93.4562**	**0.0254**	**0.0000**	**94.0903**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4000e-004	4.8400e-003	8.5000e-004	1.0000e-005	2.8000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.2770	1.2770	5.0000e-005	0.0000	1.2783
Vendor	1.2000e-004	3.2500e-003	8.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7103	0.7103	4.0000e-005	0.0000	0.7113
Worker	2.0300e-003	1.8600e-003	0.0166	4.0000e-005	3.7200e-003	3.0000e-005	3.7600e-003	9.9000e-004	3.0000e-005	1.0200e-003	0.0000	3.4573	3.4573	1.4000e-004	0.0000	3.4609
Total	**2.2900e-003**	**9.9500e-003**	**0.0183**	**6.0000e-005**	**4.1700e-003**	**7.0000e-005**	**4.2500e-003**	**1.1200e-003**	**7.0000e-005**	**1.1900e-003**	**0.0000**	**5.4446**	**5.4446**	**2.3000e-004**	**0.0000**	**5.4505**

3.2 Demolition - 2020

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					3.6100e-003	0.0000	3.6100e-003	5.5000e-004	0.0000	5.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0882	0.8727	0.6522	1.0700e-003		0.0464	0.0464		0.0432	0.0432	0.0000	93.4561	93.4561	0.0254	0.0000	94.0902
Total	**0.0882**	**0.8727**	**0.6522**	**1.0700e-003**	**3.6100e-003**	**0.0464**	**0.0500**	**5.5000e-004**	**0.0432**	**0.0438**	**0.0000**	**93.4561**	**93.4561**	**0.0254**	**0.0000**	**94.0902**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4000e-004	4.8400e-003	8.5000e-004	1.0000e-005	2.8000e-004	2.0000e-005	3.0000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.2770	1.2770	5.0000e-005	0.0000	1.2783
Vendor	1.2000e-004	3.2500e-003	8.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7103	0.7103	4.0000e-005	0.0000	0.7113
Worker	2.0300e-003	1.8600e-003	0.0166	4.0000e-005	3.7200e-003	3.0000e-005	3.7600e-003	9.9000e-004	3.0000e-005	1.0200e-003	0.0000	3.4573	3.4573	1.4000e-004	0.0000	3.4609
Total	**2.2900e-003**	**9.9500e-003**	**0.0183**	**6.0000e-005**	**4.1700e-003**	**7.0000e-005**	**4.2500e-003**	**1.1200e-003**	**7.0000e-005**	**1.1900e-003**	**0.0000**	**5.4446**	**5.4446**	**2.3000e-004**	**0.0000**	**5.4505**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2130	0.0000	0.2130	0.1094	0.0000	0.1094	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0694	0.7589	0.3735	7.6000e-004		0.0363	0.0363		0.0334	0.0334	0.0000	66.0012	66.0012	0.0210	0.0000	66.5269
Total	**0.0694**	**0.7589**	**0.3735**	**7.6000e-004**	**0.2130**	**0.0363**	**0.2492**	**0.1094**	**0.0334**	**0.1428**	**0.0000**	**66.0012**	**66.0012**	**0.0210**	**0.0000**	**66.5269**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.2500e-003	8.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7103	0.7103	4.0000e-005	0.0000	0.7113
Worker	1.4700e-003	1.3400e-003	0.0120	3.0000e-005	2.6900e-003	2.0000e-005	2.7100e-003	7.1000e-004	2.0000e-005	7.4000e-004	0.0000	2.4969	2.4969	1.0000e-004	0.0000	2.4995
Total	**1.5900e-003**	**4.5900e-003**	**0.0128**	**4.0000e-005**	**2.8600e-003**	**4.0000e-005**	**2.9000e-003**	**7.6000e-004**	**4.0000e-005**	**8.1000e-004**	**0.0000**	**3.2073**	**3.2073**	**1.4000e-004**	**0.0000**	**3.2108**

3.3 Site Preparation - 2020

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					0.2130	0.0000	0.2130	0.1094	0.0000	0.1094	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0694	0.7589	0.3735	7.6000e-004		0.0363	0.0363		0.0334	0.0334	0.0000	66.0012	66.0012	0.0210	0.0000	66.5268
Total	**0.0694**	**0.7589**	**0.3735**	**7.6000e-004**	**0.2130**	**0.0363**	**0.2492**	**0.1094**	**0.0334**	**0.1428**	**0.0000**	**66.0012**	**66.0012**	**0.0210**	**0.0000**	**66.5268**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.2500e-003	8.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7103	0.7103	4.0000e-005	0.0000	0.7113
Worker	1.4700e-003	1.3400e-003	0.0120	3.0000e-005	2.6900e-003	2.0000e-005	2.7100e-003	7.1000e-004	2.0000e-005	7.4000e-004	0.0000	2.4969	2.4969	1.0000e-004	0.0000	2.4995
Total	**1.5900e-003**	**4.5900e-003**	**0.0128**	**4.0000e-005**	**2.8600e-003**	**4.0000e-005**	**2.9000e-003**	**7.6000e-004**	**4.0000e-005**	**8.1000e-004**	**0.0000**	**3.2073**	**3.2073**	**1.4000e-004**	**0.0000**	**3.2108**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5318	0.0000	0.5318	0.2304	0.0000	0.2304	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3181	3.5793	2.0680	4.2500e-003		0.1594	0.1594		0.1467	0.1467	0.0000	371.6120	371.6120	0.1191	0.0000	374.5895
Total	**0.3181**	**3.5793**	**2.0680**	**4.2500e-003**	**0.5318**	**0.1594**	**0.6911**	**0.2304**	**0.1467**	**0.3772**	**0.0000**	**371.6120**	**371.6120**	**0.1191**	**0.0000**	**374.5895**

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	0.0167	0.5867	0.1035	1.6200e-003	0.0340	2.3000e-003	0.0363	9.3400e-003	2.2000e-003	0.0115	0.0000	154.7874	154.7874	6.2200e-003	0.0000	154.9429
Vendor	2.3000e-004	6.5000e-003	1.6600e-003	1.0000e-005	3.4000e-004	4.0000e-005	3.8000e-004	1.0000e-004	3.0000e-005	1.3000e-004	0.0000	1.4207	1.4207	8.0000e-005	0.0000	1.4226
Worker	4.5100e-003	4.1200e-003	0.0370	9.0000e-005	8.2700e-003	7.0000e-005	8.3400e-003	2.2000e-003	7.0000e-005	2.2700e-003	0.0000	7.6829	7.6829	3.2000e-004	0.0000	7.6909
Total	**0.0214**	**0.5973**	**0.1422**	**1.7200e-003**	**0.0426**	**2.4100e-003**	**0.0450**	**0.0116**	**2.3000e-003**	**0.0139**	**0.0000**	**163.8909**	**163.8909**	**6.6200e-003**	**0.0000**	**164.0563**

3.4 Grading - 2020

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					0.5318	0.0000	0.5318	0.2304	0.0000	0.2304	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3181	3.5793	2.0680	4.2500e-003		0.1594	0.1594		0.1467	0.1467	0.0000	371.6116	371.6116	0.1191	0.0000	374.5891
Total	**0.3181**	**3.5793**	**2.0680**	**4.2500e-003**	**0.5318**	**0.1594**	**0.6911**	**0.2304**	**0.1467**	**0.3772**	**0.0000**	**371.6116**	**371.6116**	**0.1191**	**0.0000**	**374.5891**

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	0.0167	0.5867	0.1035	1.6200e-003	0.0340	2.3000e-003	0.0363	9.3400e-003	2.2000e-003	0.0115	0.0000	154.7874	154.7874	6.2200e-003	0.0000	154.9429
Vendor	2.3000e-004	6.5000e-003	1.6600e-003	1.0000e-005	3.4000e-004	4.0000e-005	3.8000e-004	1.0000e-004	3.0000e-005	1.3000e-004	0.0000	1.4207	1.4207	8.0000e-005	0.0000	1.4226
Worker	4.5100e-003	4.1200e-003	0.0370	9.0000e-005	8.2700e-003	7.0000e-005	8.3400e-003	2.2000e-003	7.0000e-005	2.2700e-003	0.0000	7.6829	7.6829	3.2000e-004	0.0000	7.6909
Total	**0.0214**	**0.5973**	**0.1422**	**1.7200e-003**	**0.0426**	**2.4100e-003**	**0.0450**	**0.0116**	**2.3000e-003**	**0.0139**	**0.0000**	**163.8909**	**163.8909**	**6.6200e-003**	**0.0000**	**164.0563**

3.5 Paving - Phase I - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0323	0.3482	0.2736	5.7000e-004		0.0157	0.0157		0.0147	0.0147	0.0000	49.6774	49.6774	0.0135	0.0000	50.0160
Paving	3.8000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0361**	**0.3482**	**0.2736**	**5.7000e-004**		**0.0157**	**0.0157**		**0.0147**	**0.0147**	**0.0000**	**49.6774**	**49.6774**	**0.0135**	**0.0000**	**50.0160**

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	6.0000e-005	1.6900e-003	4.3000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3688	0.3688	2.0000e-005	0.0000	0.3693
Worker	1.1700e-003	1.0700e-003	9.6000e-003	2.0000e-005	2.1500e-003	2.0000e-005	2.1700e-003	5.7000e-004	2.0000e-005	5.9000e-004	0.0000	1.9946	1.9946	8.0000e-005	0.0000	1.9967
Total	**1.2300e-003**	**2.7600e-003**	**0.0100**	**2.0000e-005**	**2.2400e-003**	**3.0000e-005**	**2.2700e-003**	**6.0000e-004**	**3.0000e-005**	**6.2000e-004**	**0.0000**	**2.3634**	**2.3634**	**1.0000e-004**	**0.0000**	**2.3660**

3.5 Paving - Phase I - 2020

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	0.0323	0.3482	0.2736	5.7000e-004		0.0157	0.0157		0.0147	0.0147	0.0000	49.6774	49.6774	0.0135	0.0000	50.0159
Paving	3.8000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0361**	**0.3482**	**0.2736**	**5.7000e-004**		**0.0157**	**0.0157**		**0.0147**	**0.0147**	**0.0000**	**49.6774**	**49.6774**	**0.0135**	**0.0000**	**50.0159**

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	6.0000e-005	1.6900e-003	4.3000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3688	0.3688	2.0000e-005	0.0000	0.3693
Worker	1.1700e-003	1.0700e-003	9.6000e-003	2.0000e-005	2.1500e-003	2.0000e-005	2.1700e-003	5.7000e-004	2.0000e-005	5.9000e-004	0.0000	1.9946	1.9946	8.0000e-005	0.0000	1.9967
Total	**1.2300e-003**	**2.7600e-003**	**0.0100**	**2.0000e-005**	**2.2400e-003**	**3.0000e-005**	**2.2700e-003**	**6.0000e-004**	**3.0000e-005**	**6.2000e-004**	**0.0000**	**2.3634**	**2.3634**	**1.0000e-004**	**0.0000**	**2.3660**

3.5 Paving - Phase I - 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	0.0864	0.9252	0.7763	1.6300e-003		0.0406	0.0406		0.0380	0.0380	0.0000	141.6244	141.6244	0.0385	0.0000	142.5861
Paving	0.0108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0972**	**0.9252**	**0.7763**	**1.6300e-003**		**0.0406**	**0.0406**		**0.0380**	**0.0380**	**0.0000**	**141.6244**	**141.6244**	**0.0385**	**0.0000**	**142.5861**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	4.3900e-003	1.0700e-003	1.0000e-005	2.5000e-004	1.0000e-005	2.7000e-004	7.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0427	1.0427	6.0000e-005	0.0000	1.0441
Worker	3.0900e-003	2.7300e-003	0.0249	6.0000e-005	6.1300e-003	5.0000e-005	6.1800e-003	1.6300e-003	5.0000e-005	1.6800e-003	0.0000	5.5102	5.5102	2.1000e-004	0.0000	5.5155
Total	**3.2300e-003**	**7.1200e-003**	**0.0260**	**7.0000e-005**	**6.3800e-003**	**6.0000e-005**	**6.4500e-003**	**1.7000e-003**	**6.0000e-005**	**1.7700e-003**	**0.0000**	**6.5529**	**6.5529**	**2.7000e-004**	**0.0000**	**6.5596**

3.5 Paving - Phase I - 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	0.0864	0.9252	0.7763	1.6300e-003		0.0406	0.0406		0.0380	0.0380	0.0000	141.6243	141.6243	0.0385	0.0000	142.5859
Paving	0.0108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0972**	**0.9252**	**0.7763**	**1.6300e-003**		**0.0406**	**0.0406**		**0.0380**	**0.0380**	**0.0000**	**141.6243**	**141.6243**	**0.0385**	**0.0000**	**142.5859**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	4.3900e-003	1.0700e-003	1.0000e-005	2.5000e-004	1.0000e-005	2.7000e-004	7.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0427	1.0427	6.0000e-005	0.0000	1.0441
Worker	3.0900e-003	2.7300e-003	0.0249	6.0000e-005	6.1300e-003	5.0000e-005	6.1800e-003	1.6300e-003	5.0000e-005	1.6800e-003	0.0000	5.5102	5.5102	2.1000e-004	0.0000	5.5155
Total	**3.2300e-003**	**7.1200e-003**	**0.0260**	**7.0000e-005**	**6.3800e-003**	**6.0000e-005**	**6.4500e-003**	**1.7000e-003**	**6.0000e-005**	**1.7700e-003**	**0.0000**	**6.5529**	**6.5529**	**2.7000e-004**	**0.0000**	**6.5596**

3.6 Building Construction - Phase I - 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	0.3076	3.0789	2.8806	4.8300e-003		0.1624	0.1624		0.1529	0.1529	0.0000	420.8759	420.8759	0.0972	0.0000	423.3056
Total	**0.3076**	**3.0789**	**2.8806**	**4.8300e-003**		**0.1624**	**0.1624**		**0.1529**	**0.1529**	**0.0000**	**420.8759**	**420.8759**	**0.0972**	**0.0000**	**423.3056**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.9000e-004	0.0120	2.9100e-003	3.0000e-005	6.9000e-004	4.0000e-005	7.3000e-004	2.0000e-004	3.0000e-005	2.3000e-004	0.0000	2.8438	2.8438	1.5000e-004	0.0000	2.8476
Worker	0.0169	0.0149	0.1359	3.3000e-004	0.0334	2.8000e-004	0.0337	8.8800e-003	2.6000e-004	9.1400e-003	0.0000	30.0555	30.0555	1.1600e-003	0.0000	30.0844
Total	**0.0173**	**0.0269**	**0.1388**	**3.6000e-004**	**0.0341**	**3.2000e-004**	**0.0344**	**9.0800e-003**	**2.9000e-004**	**9.3700e-003**	**0.0000**	**32.8993**	**32.8993**	**1.3100e-003**	**0.0000**	**32.9320**

3.6 Building Construction - Phase I - 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	0.3076	3.0789	2.8806	4.8300e-003		0.1624	0.1624		0.1529	0.1529	0.0000	420.8754	420.8754	0.0972	0.0000	423.3051
Total	**0.3076**	**3.0789**	**2.8806**	**4.8300e-003**		**0.1624**	**0.1624**		**0.1529**	**0.1529**	**0.0000**	**420.8754**	**420.8754**	**0.0972**	**0.0000**	**423.3051**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.9000e-004	0.0120	2.9100e-003	3.0000e-005	6.9000e-004	4.0000e-005	7.3000e-004	2.0000e-004	3.0000e-005	2.3000e-004	0.0000	2.8438	2.8438	1.5000e-004	0.0000	2.8476
Worker	0.0169	0.0149	0.1359	3.3000e-004	0.0334	2.8000e-004	0.0337	8.8800e-003	2.6000e-004	9.1400e-003	0.0000	30.0555	30.0555	1.1600e-003	0.0000	30.0844
Total	**0.0173**	**0.0269**	**0.1388**	**3.6000e-004**	**0.0341**	**3.2000e-004**	**0.0344**	**9.0800e-003**	**2.9000e-004**	**9.3700e-003**	**0.0000**	**32.8993**	**32.8993**	**1.3100e-003**	**0.0000**	**32.9320**

3.7 Architectural Coating - Phase I - 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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5400e-003	0.0596	0.0709	1.2000e-004		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003	0.0000	9.9577	9.9577	6.8000e-004	0.0000	9.9748
Total	**0.2861**	**0.0596**	**0.0709**	**1.2000e-004**		**3.6700e-003**	**3.6700e-003**		**3.6700e-003**	**3.6700e-003**	**0.0000**	**9.9577**	**9.9577**	**6.8000e-004**	**0.0000**	**9.9748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	4.4500e-003	1.0800e-003	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	7.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0563	1.0563	6.0000e-005	0.0000	1.0577
Worker	6.2600e-003	5.5200e-003	0.0505	1.2000e-004	0.0124	1.0000e-004	0.0125	3.3000e-003	1.0000e-004	3.4000e-003	0.0000	11.1635	11.1635	4.3000e-004	0.0000	11.1742
Total	**6.4000e-003**	**9.9700e-003**	**0.0516**	**1.3000e-004**	**0.0127**	**1.1000e-004**	**0.0128**	**3.3700e-003**	**1.1000e-004**	**3.4900e-003**	**0.0000**	**12.2198**	**12.2198**	**4.9000e-004**	**0.0000**	**12.2319**

3.7 Architectural Coating - Phase I - 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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5400e-003	0.0596	0.0709	1.2000e-004		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003	0.0000	9.9577	9.9577	6.8000e-004	0.0000	9.9748
Total	**0.2861**	**0.0596**	**0.0709**	**1.2000e-004**		**3.6700e-003**	**3.6700e-003**		**3.6700e-003**	**3.6700e-003**	**0.0000**	**9.9577**	**9.9577**	**6.8000e-004**	**0.0000**	**9.9748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	4.4500e-003	1.0800e-003	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	7.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0563	1.0563	6.0000e-005	0.0000	1.0577
Worker	6.2600e-003	5.5200e-003	0.0505	1.2000e-004	0.0124	1.0000e-004	0.0125	3.3000e-003	1.0000e-004	3.4000e-003	0.0000	11.1635	11.1635	4.3000e-004	0.0000	11.1742
Total	**6.4000e-003**	**9.9700e-003**	**0.0516**	**1.3000e-004**	**0.0127**	**1.1000e-004**	**0.0128**	**3.3700e-003**	**1.1000e-004**	**3.4900e-003**	**0.0000**	**12.2198**	**12.2198**	**4.9000e-004**	**0.0000**	**12.2319**

3.8 Paving - Phase II - 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	0.0303	0.3244	0.2722	5.7000e-004		0.0142	0.0142		0.0133	0.0133	0.0000	49.6605	49.6605	0.0135	0.0000	49.9977
Paving	3.8000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0341**	**0.3244**	**0.2722**	**5.7000e-004**		**0.0142**	**0.0142**		**0.0133**	**0.0133**	**0.0000**	**49.6605**	**49.6605**	**0.0135**	**0.0000**	**49.9977**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.5400e-003	3.7000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.3656	0.3656	2.0000e-005	0.0000	0.3661
Worker	1.0800e-003	9.6000e-004	8.7400e-003	2.0000e-005	2.1500e-003	2.0000e-005	2.1700e-003	5.7000e-004	2.0000e-005	5.9000e-004	0.0000	1.9321	1.9321	7.0000e-005	0.0000	1.9340
Total	**1.1300e-003**	**2.5000e-003**	**9.1100e-003**	**2.0000e-005**	**2.2400e-003**	**2.0000e-005**	**2.2600e-003**	**6.0000e-004**	**2.0000e-005**	**6.2000e-004**	**0.0000**	**2.2978**	**2.2978**	**9.0000e-005**	**0.0000**	**2.3001**

3.8 Paving - Phase II - 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	0.0303	0.3244	0.2722	5.7000e-004		0.0142	0.0142		0.0133	0.0133	0.0000	49.6605	49.6605	0.0135	0.0000	49.9977
Paving	3.8000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0341**	**0.3244**	**0.2722**	**5.7000e-004**		**0.0142**	**0.0142**		**0.0133**	**0.0133**	**0.0000**	**49.6605**	**49.6605**	**0.0135**	**0.0000**	**49.9977**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.5400e-003	3.7000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.3656	0.3656	2.0000e-005	0.0000	0.3661
Worker	1.0800e-003	9.6000e-004	8.7400e-003	2.0000e-005	2.1500e-003	2.0000e-005	2.1700e-003	5.7000e-004	2.0000e-005	5.9000e-004	0.0000	1.9321	1.9321	7.0000e-005	0.0000	1.9340
Total	**1.1300e-003**	**2.5000e-003**	**9.1100e-003**	**2.0000e-005**	**2.2400e-003**	**2.0000e-005**	**2.2600e-003**	**6.0000e-004**	**2.0000e-005**	**6.2000e-004**	**0.0000**	**2.2978**	**2.2978**	**9.0000e-005**	**0.0000**	**2.3001**

3.8 Paving - Phase II - 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	0.0787	0.8218	0.7690	1.6300e-003		0.0351	0.0351		0.0329	0.0329	0.0000	141.5506	141.5506	0.0384	0.0000	142.5094
Paving	0.0108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0895**	**0.8218**	**0.7690**	**1.6300e-003**		**0.0351**	**0.0351**		**0.0329**	**0.0329**	**0.0000**	**141.5506**	**141.5506**	**0.0384**	**0.0000**	**142.5094**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	4.1500e-003	9.7000e-004	1.0000e-005	2.5000e-004	1.0000e-005	2.7000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0333	1.0333	5.0000e-005	0.0000	1.0347
Worker	2.8700e-003	2.4400e-003	0.0227	6.0000e-005	6.1300e-003	5.0000e-005	6.1800e-003	1.6300e-003	5.0000e-005	1.6700e-003	0.0000	5.3159	5.3159	1.9000e-004	0.0000	5.3206
Total	**3.0000e-003**	**6.5900e-003**	**0.0237**	**7.0000e-005**	**6.3800e-003**	**6.0000e-005**	**6.4500e-003**	**1.7000e-003**	**6.0000e-005**	**1.7500e-003**	**0.0000**	**6.3492**	**6.3492**	**2.4000e-004**	**0.0000**	**6.3553**

3.8 Paving - Phase II - 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	0.0787	0.8218	0.7690	1.6300e-003		0.0351	0.0351		0.0329	0.0329	0.0000	141.5505	141.5505	0.0384	0.0000	142.5092
Paving	0.0108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0895**	**0.8218**	**0.7690**	**1.6300e-003**		**0.0351**	**0.0351**		**0.0329**	**0.0329**	**0.0000**	**141.5505**	**141.5505**	**0.0384**	**0.0000**	**142.5092**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	4.1500e-003	9.7000e-004	1.0000e-005	2.5000e-004	1.0000e-005	2.7000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0333	1.0333	5.0000e-005	0.0000	1.0347
Worker	2.8700e-003	2.4400e-003	0.0227	6.0000e-005	6.1300e-003	5.0000e-005	6.1800e-003	1.6300e-003	5.0000e-005	1.6700e-003	0.0000	5.3159	5.3159	1.9000e-004	0.0000	5.3206
Total	**3.0000e-003**	**6.5900e-003**	**0.0237**	**7.0000e-005**	**6.3800e-003**	**6.0000e-005**	**6.4500e-003**	**1.7000e-003**	**6.0000e-005**	**1.7500e-003**	**0.0000**	**6.3492**	**6.3492**	**2.4000e-004**	**0.0000**	**6.3553**

3.9 Building Construction - Phase II - 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	0.2818	2.7816	2.8568	4.8300e-003		0.1425	0.1425		0.1342	0.1342	0.0000	420.9286	420.9286	0.0967	0.0000	423.3460
Total	**0.2818**	**2.7816**	**2.8568**	**4.8300e-003**		**0.1425**	**0.1425**		**0.1342**	**0.1342**	**0.0000**	**420.9286**	**420.9286**	**0.0967**	**0.0000**	**423.3460**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.6000e-004	0.0113	2.6300e-003	3.0000e-005	6.9000e-004	3.0000e-005	7.2000e-004	2.0000e-004	3.0000e-005	2.3000e-004	0.0000	2.8181	2.8181	1.5000e-004	0.0000	2.8218
Worker	0.0157	0.0133	0.1239	3.2000e-004	0.0334	2.7000e-004	0.0337	8.8800e-003	2.5000e-004	9.1300e-003	0.0000	28.9959	28.9959	1.0300e-003	0.0000	29.0217
Total	**0.0160**	**0.0247**	**0.1265**	**3.5000e-004**	**0.0341**	**3.0000e-004**	**0.0344**	**9.0800e-003**	**2.8000e-004**	**9.3600e-003**	**0.0000**	**31.8140**	**31.8140**	**1.1800e-003**	**0.0000**	**31.8435**

3.9 Building Construction - Phase II - 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	0.2818	2.7816	2.8567	4.8300e-003		0.1425	0.1425		0.1342	0.1342	0.0000	420.9281	420.9281	0.0967	0.0000	423.3455
Total	**0.2818**	**2.7816**	**2.8567**	**4.8300e-003**		**0.1425**	**0.1425**		**0.1342**	**0.1342**	**0.0000**	**420.9281**	**420.9281**	**0.0967**	**0.0000**	**423.3455**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.6000e-004	0.0113	2.6300e-003	3.0000e-005	6.9000e-004	3.0000e-005	7.2000e-004	2.0000e-004	3.0000e-005	2.3000e-004	0.0000	2.8181	2.8181	1.5000e-004	0.0000	2.8218
Worker	0.0157	0.0133	0.1239	3.2000e-004	0.0334	2.7000e-004	0.0337	8.8800e-003	2.5000e-004	9.1300e-003	0.0000	28.9959	28.9959	1.0300e-003	0.0000	29.0217
Total	**0.0160**	**0.0247**	**0.1265**	**3.5000e-004**	**0.0341**	**3.0000e-004**	**0.0344**	**9.0800e-003**	**2.8000e-004**	**9.3600e-003**	**0.0000**	**31.8140**	**31.8140**	**1.1800e-003**	**0.0000**	**31.8435**

3.10 Architectural Coating - Phase II - 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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0800e-003	0.0556	0.0716	1.2000e-004		3.2300e-003	3.2300e-003		3.2300e-003	3.2300e-003	0.0000	10.0854	10.0854	6.6000e-004	0.0000	10.1018
Total	**0.2856**	**0.0556**	**0.0716**	**1.2000e-004**		**3.2300e-003**	**3.2300e-003**		**3.2300e-003**	**3.2300e-003**	**0.0000**	**10.0854**	**10.0854**	**6.6000e-004**	**0.0000**	**10.1018**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	4.2600e-003	9.9000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0602	1.0602	5.0000e-005	0.0000	1.0615
Worker	5.8900e-003	5.0100e-003	0.0466	1.2000e-004	0.0126	1.0000e-004	0.0127	3.3400e-003	9.0000e-005	3.4400e-003	0.0000	10.9080	10.9080	3.9000e-004	0.0000	10.9177
Total	**6.0200e-003**	**9.2700e-003**	**0.0476**	**1.3000e-004**	**0.0128**	**1.1000e-004**	**0.0129**	**3.4200e-003**	**1.0000e-004**	**3.5300e-003**	**0.0000**	**11.9681**	**11.9681**	**4.4000e-004**	**0.0000**	**11.9792**

3.10 Architectural Coating - Phase II - 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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0800e-003	0.0556	0.0716	1.2000e-004		3.2300e-003	3.2300e-003		3.2300e-003	3.2300e-003	0.0000	10.0853	10.0853	6.6000e-004	0.0000	10.1018
Total	**0.2856**	**0.0556**	**0.0716**	**1.2000e-004**		**3.2300e-003**	**3.2300e-003**		**3.2300e-003**	**3.2300e-003**	**0.0000**	**10.0853**	**10.0853**	**6.6000e-004**	**0.0000**	**10.1018**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	4.2600e-003	9.9000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0602	1.0602	5.0000e-005	0.0000	1.0615
Worker	5.8900e-003	5.0100e-003	0.0466	1.2000e-004	0.0126	1.0000e-004	0.0127	3.3400e-003	9.0000e-005	3.4400e-003	0.0000	10.9080	10.9080	3.9000e-004	0.0000	10.9177
Total	**6.0200e-003**	**9.2700e-003**	**0.0476**	**1.3000e-004**	**0.0128**	**1.1000e-004**	**0.0129**	**3.4200e-003**	**1.0000e-004**	**3.5300e-003**	**0.0000**	**11.9681**	**11.9681**	**4.4000e-004**	**0.0000**	**11.9792**

3.11 Paving - Phase III - 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	0.0276	0.2882	0.2697	5.7000e-004		0.0123	0.0123		0.0116	0.0116	0.0000	49.6346	49.6346	0.0135	0.0000	49.9708
Paving	3.8000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0314**	**0.2882**	**0.2697**	**5.7000e-004**		**0.0123**	**0.0123**		**0.0116**	**0.0116**	**0.0000**	**49.6346**	**49.6346**	**0.0135**	**0.0000**	**49.9708**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.4600e-003	3.4000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.3623	0.3623	2.0000e-005	0.0000	0.3628
Worker	1.0100e-003	8.6000e-004	7.9600e-003	2.0000e-005	2.1500e-003	2.0000e-005	2.1700e-003	5.7000e-004	2.0000e-005	5.9000e-004	0.0000	1.8640	1.8640	7.0000e-005	0.0000	1.8657
Total	**1.0600e-003**	**2.3200e-003**	**8.3000e-003**	**2.0000e-005**	**2.2400e-003**	**2.0000e-005**	**2.2600e-003**	**6.0000e-004**	**2.0000e-005**	**6.2000e-004**	**0.0000**	**2.2264**	**2.2264**	**9.0000e-005**	**0.0000**	**2.2285**

3.11 Paving - Phase III - 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	0.0276	0.2882	0.2697	5.7000e-004		0.0123	0.0123		0.0116	0.0116	0.0000	49.6346	49.6346	0.0135	0.0000	49.9708
Paving	3.8000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0314**	**0.2882**	**0.2697**	**5.7000e-004**		**0.0123**	**0.0123**		**0.0116**	**0.0116**	**0.0000**	**49.6346**	**49.6346**	**0.0135**	**0.0000**	**49.9708**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.4600e-003	3.4000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	3.0000e-005	0.0000	3.0000e-005	0.0000	0.3623	0.3623	2.0000e-005	0.0000	0.3628
Worker	1.0100e-003	8.6000e-004	7.9600e-003	2.0000e-005	2.1500e-003	2.0000e-005	2.1700e-003	5.7000e-004	2.0000e-005	5.9000e-004	0.0000	1.8640	1.8640	7.0000e-005	0.0000	1.8657
Total	**1.0600e-003**	**2.3200e-003**	**8.3000e-003**	**2.0000e-005**	**2.2400e-003**	**2.0000e-005**	**2.2600e-003**	**6.0000e-004**	**2.0000e-005**	**6.2000e-004**	**0.0000**	**2.2264**	**2.2264**	**9.0000e-005**	**0.0000**	**2.2285**

3.11 Paving - Phase III - 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	0.0741	0.7513	0.7675	1.6300e-003		0.0315	0.0315		0.0295	0.0295	0.0000	141.5255	141.5255	0.0382	0.0000	142.4807
Paving	0.0108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0849**	**0.7513**	**0.7675**	**1.6300e-003**		**0.0315**	**0.0315**		**0.0295**	**0.0295**	**0.0000**	**141.5255**	**141.5255**	**0.0382**	**0.0000**	**142.4807**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.4200e-003	8.2000e-004	1.0000e-005	2.5000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	1.0150	1.0150	4.0000e-005	0.0000	1.0160
Worker	2.6700e-003	2.1900e-003	0.0207	6.0000e-005	6.1300e-003	5.0000e-005	6.1700e-003	1.6300e-003	4.0000e-005	1.6700e-003	0.0000	5.1186	5.1186	1.7000e-004	0.0000	5.1228
Total	**2.7700e-003**	**5.6100e-003**	**0.0215**	**7.0000e-005**	**6.3800e-003**	**5.0000e-005**	**6.4300e-003**	**1.7000e-003**	**4.0000e-005**	**1.7500e-003**	**0.0000**	**6.1336**	**6.1336**	**2.1000e-004**	**0.0000**	**6.1389**

3.11 Paving - Phase III - 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	0.0741	0.7513	0.7675	1.6300e-003		0.0315	0.0315		0.0295	0.0295	0.0000	141.5254	141.5254	0.0382	0.0000	142.4805
Paving	0.0108					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0849**	**0.7513**	**0.7675**	**1.6300e-003**		**0.0315**	**0.0315**		**0.0295**	**0.0295**	**0.0000**	**141.5254**	**141.5254**	**0.0382**	**0.0000**	**142.4805**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.4200e-003	8.2000e-004	1.0000e-005	2.5000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	1.0150	1.0150	4.0000e-005	0.0000	1.0160
Worker	2.6700e-003	2.1900e-003	0.0207	6.0000e-005	6.1300e-003	5.0000e-005	6.1700e-003	1.6300e-003	4.0000e-005	1.6700e-003	0.0000	5.1186	5.1186	1.7000e-004	0.0000	5.1228
Total	**2.7700e-003**	**5.6100e-003**	**0.0215**	**7.0000e-005**	**6.3800e-003**	**5.0000e-005**	**6.4300e-003**	**1.7000e-003**	**4.0000e-005**	**1.7500e-003**	**0.0000**	**6.1336**	**6.1336**	**2.1000e-004**	**0.0000**	**6.1389**

3.12 Building Construction - Phase III - 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	0.2636	2.5707	2.8429	4.8300e-003		0.1272	0.1272		0.1197	0.1197	0.0000	421.0062	421.0062	0.0961	0.0000	423.4084
Total	**0.2636**	**2.5707**	**2.8429**	**4.8300e-003**		**0.1272**	**0.1272**		**0.1197**	**0.1197**	**0.0000**	**421.0062**	**421.0062**	**0.0961**	**0.0000**	**423.4084**

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	2.7000e-004	9.3200e-003	2.2500e-003	3.0000e-005	6.9000e-004	1.0000e-005	7.1000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	2.7681	2.7681	1.1000e-004	0.0000	2.7710
Worker	0.0146	0.0119	0.1129	3.1000e-004	0.0334	2.6000e-004	0.0337	8.8800e-003	2.4000e-004	9.1200e-003	0.0000	27.9197	27.9197	9.2000e-004	0.0000	27.9427
Total	**0.0148**	**0.0213**	**0.1152**	**3.4000e-004**	**0.0341**	**2.7000e-004**	**0.0344**	**9.0800e-003**	**2.5000e-004**	**9.3300e-003**	**0.0000**	**30.6878**	**30.6878**	**1.0300e-003**	**0.0000**	**30.7137**

3.12 Building Construction - Phase III - 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	0.2636	2.5707	2.8429	4.8300e-003		0.1272	0.1272		0.1197	0.1197	0.0000	421.0057	421.0057	0.0961	0.0000	423.4079
Total	**0.2636**	**2.5707**	**2.8429**	**4.8300e-003**		**0.1272**	**0.1272**		**0.1197**	**0.1197**	**0.0000**	**421.0057**	**421.0057**	**0.0961**	**0.0000**	**423.4079**

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	2.7000e-004	9.3200e-003	2.2500e-003	3.0000e-005	6.9000e-004	1.0000e-005	7.1000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	2.7681	2.7681	1.1000e-004	0.0000	2.7710
Worker	0.0146	0.0119	0.1129	3.1000e-004	0.0334	2.6000e-004	0.0337	8.8800e-003	2.4000e-004	9.1200e-003	0.0000	27.9197	27.9197	9.2000e-004	0.0000	27.9427
Total	**0.0148**	**0.0213**	**0.1152**	**3.4000e-004**	**0.0341**	**2.7000e-004**	**0.0344**	**9.0800e-003**	**2.5000e-004**	**9.3300e-003**	**0.0000**	**30.6878**	**30.6878**	**1.0300e-003**	**0.0000**	**30.7137**

3.13 Architectural Coating - Phase III - 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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5700e-003	0.0515	0.0715	1.2000e-004		2.8000e-003	2.8000e-003		2.8000e-003	2.8000e-003	0.0000	10.0854	10.0854	6.0000e-004	0.0000	10.1004
Total	**0.2851**	**0.0515**	**0.0715**	**1.2000e-004**		**2.8000e-003**	**2.8000e-003**		**2.8000e-003**	**2.8000e-003**	**0.0000**	**10.0854**	**10.0854**	**6.0000e-004**	**0.0000**	**10.1004**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.5100e-003	8.5000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	1.0414	1.0414	4.0000e-005	0.0000	1.0424
Worker	5.4800e-003	4.4900e-003	0.0425	1.2000e-004	0.0126	1.0000e-004	0.0127	3.3400e-003	9.0000e-005	3.4300e-003	0.0000	10.5031	10.5031	3.5000e-004	0.0000	10.5118
Total	**5.5800e-003**	**8.0000e-003**	**0.0433**	**1.3000e-004**	**0.0128**	**1.1000e-004**	**0.0129**	**3.4200e-003**	**9.0000e-005**	**3.5100e-003**	**0.0000**	**11.5445**	**11.5445**	**3.9000e-004**	**0.0000**	**11.5542**

3.13 Architectural Coating - Phase III - 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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5700e-003	0.0515	0.0715	1.2000e-004		2.8000e-003	2.8000e-003		2.8000e-003	2.8000e-003	0.0000	10.0853	10.0853	6.0000e-004	0.0000	10.1004
Total	**0.2851**	**0.0515**	**0.0715**	**1.2000e-004**		**2.8000e-003**	**2.8000e-003**		**2.8000e-003**	**2.8000e-003**	**0.0000**	**10.0853**	**10.0853**	**6.0000e-004**	**0.0000**	**10.1004**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.5100e-003	8.5000e-004	1.0000e-005	2.6000e-004	1.0000e-005	2.7000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	1.0414	1.0414	4.0000e-005	0.0000	1.0424
Worker	5.4800e-003	4.4900e-003	0.0425	1.2000e-004	0.0126	1.0000e-004	0.0127	3.3400e-003	9.0000e-005	3.4300e-003	0.0000	10.5031	10.5031	3.5000e-004	0.0000	10.5118
Total	**5.5800e-003**	**8.0000e-003**	**0.0433**	**1.3000e-004**	**0.0128**	**1.1000e-004**	**0.0129**	**3.4200e-003**	**9.0000e-005**	**3.5100e-003**	**0.0000**	**11.5445**	**11.5445**	**3.9000e-004**	**0.0000**	**11.5542**

3.14 Paving - Phase IV - 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	0.0250	0.2537	0.2591	5.5000e-004		0.0106	0.0106		9.9700e-003	9.9700e-003	0.0000	47.7878	47.7878	0.0129	0.0000	48.1104
Paving	3.6600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0287**	**0.2537**	**0.2591**	**5.5000e-004**		**0.0106**	**0.0106**		**9.9700e-003**	**9.9700e-003**	**0.0000**	**47.7878**	**47.7878**	**0.0129**	**0.0000**	**48.1104**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.1500e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3427	0.3427	1.0000e-005	0.0000	0.3431
Worker	9.0000e-004	7.4000e-004	6.9900e-003	2.0000e-005	2.0700e-003	2.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.7284	1.7284	6.0000e-005	0.0000	1.7298
Total	**9.3000e-004**	**1.8900e-003**	**7.2700e-003**	**2.0000e-005**	**2.1600e-003**	**2.0000e-005**	**2.1700e-003**	**5.7000e-004**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**2.0711**	**2.0711**	**7.0000e-005**	**0.0000**	**2.0729**

3.14 Paving - Phase IV - 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	0.0250	0.2537	0.2591	5.5000e-004		0.0106	0.0106		9.9700e-003	9.9700e-003	0.0000	47.7878	47.7878	0.0129	0.0000	48.1103
Paving	3.6600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0287**	**0.2537**	**0.2591**	**5.5000e-004**		**0.0106**	**0.0106**		**9.9700e-003**	**9.9700e-003**	**0.0000**	**47.7878**	**47.7878**	**0.0129**	**0.0000**	**48.1103**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.1500e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3427	0.3427	1.0000e-005	0.0000	0.3431
Worker	9.0000e-004	7.4000e-004	6.9900e-003	2.0000e-005	2.0700e-003	2.0000e-005	2.0800e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.7284	1.7284	6.0000e-005	0.0000	1.7298
Total	**9.3000e-004**	**1.8900e-003**	**7.2700e-003**	**2.0000e-005**	**2.1600e-003**	**2.0000e-005**	**2.1700e-003**	**5.7000e-004**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**2.0711**	**2.0711**	**7.0000e-005**	**0.0000**	**2.0729**

3.14 Paving - Phase IV - 2024

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	0.0715	0.7105	0.7766	1.6500e-003		0.0292	0.0292		0.0273	0.0273	0.0000	143.3433	143.3433	0.0387	0.0000	144.3096
Paving	0.0110					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0825**	**0.7105**	**0.7766**	**1.6500e-003**		**0.0292**	**0.0292**		**0.0273**	**0.0273**	**0.0000**	**143.3433**	**143.3433**	**0.0387**	**0.0000**	**144.3096**

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	9.0000e-005	3.3800e-003	7.7000e-004	1.0000e-005	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	1.0198	1.0198	4.0000e-005	0.0000	1.0208
Worker	2.5300e-003	1.9900e-003	0.0192	6.0000e-005	6.2100e-003	5.0000e-005	6.2500e-003	1.6500e-003	4.0000e-005	1.6900e-003	0.0000	4.9852	4.9852	1.5000e-004	0.0000	4.9890
Total	**2.6200e-003**	**5.3700e-003**	**0.0200**	**7.0000e-005**	**6.4700e-003**	**5.0000e-005**	**6.5100e-003**	**1.7200e-003**	**4.0000e-005**	**1.7700e-003**	**0.0000**	**6.0050**	**6.0050**	**1.9000e-004**	**0.0000**	**6.0098**

3.14 Paving - Phase IV - 2024

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	0.0715	0.7105	0.7766	1.6500e-003		0.0292	0.0292		0.0273	0.0273	0.0000	143.3432	143.3432	0.0387	0.0000	144.3094
Paving	0.0110					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0825**	**0.7105**	**0.7766**	**1.6500e-003**		**0.0292**	**0.0292**		**0.0273**	**0.0273**	**0.0000**	**143.3432**	**143.3432**	**0.0387**	**0.0000**	**144.3094**

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	9.0000e-005	3.3800e-003	7.7000e-004	1.0000e-005	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	8.0000e-005	0.0000	1.0198	1.0198	4.0000e-005	0.0000	1.0208
Worker	2.5300e-003	1.9900e-003	0.0192	6.0000e-005	6.2100e-003	5.0000e-005	6.2500e-003	1.6500e-003	4.0000e-005	1.6900e-003	0.0000	4.9852	4.9852	1.5000e-004	0.0000	4.9890
Total	**2.6200e-003**	**5.3700e-003**	**0.0200**	**7.0000e-005**	**6.4700e-003**	**5.0000e-005**	**6.5100e-003**	**1.7200e-003**	**4.0000e-005**	**1.7700e-003**	**0.0000**	**6.0050**	**6.0050**	**1.9000e-004**	**0.0000**	**6.0098**

3.15 Building Construction - Phase IV - 2024

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	0.2507	2.4227	2.8354	4.8300e-003		0.1162	0.1162		0.1093	0.1093	0.0000	421.0222	421.0222	0.0957	0.0000	423.4149
Total	**0.2507**	**2.4227**	**2.8354**	**4.8300e-003**		**0.1162**	**0.1162**		**0.1093**	**0.1093**	**0.0000**	**421.0222**	**421.0222**	**0.0957**	**0.0000**	**423.4149**

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	2.5000e-004	9.1100e-003	2.0800e-003	3.0000e-005	6.9000e-004	1.0000e-005	7.1000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	2.7456	2.7456	1.1000e-004	0.0000	2.7484
Worker	0.0136	0.0107	0.1036	3.0000e-004	0.0334	2.5000e-004	0.0337	8.8800e-003	2.3000e-004	9.1200e-003	0.0000	26.8433	26.8433	8.2000e-004	0.0000	26.8640
Total	**0.0139**	**0.0198**	**0.1057**	**3.3000e-004**	**0.0341**	**2.6000e-004**	**0.0344**	**9.0800e-003**	**2.4000e-004**	**9.3300e-003**	**0.0000**	**29.5889**	**29.5889**	**9.3000e-004**	**0.0000**	**29.6123**

3.15 Building Construction - Phase IV - 2024

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	0.2507	2.4227	2.8354	4.8300e-003		0.1162	0.1162		0.1093	0.1093	0.0000	421.0217	421.0217	0.0957	0.0000	423.4144
Total	**0.2507**	**2.4227**	**2.8354**	**4.8300e-003**		**0.1162**	**0.1162**		**0.1093**	**0.1093**	**0.0000**	**421.0217**	**421.0217**	**0.0957**	**0.0000**	**423.4144**

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	2.5000e-004	9.1100e-003	2.0800e-003	3.0000e-005	6.9000e-004	1.0000e-005	7.1000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	2.7456	2.7456	1.1000e-004	0.0000	2.7484
Worker	0.0136	0.0107	0.1036	3.0000e-004	0.0334	2.5000e-004	0.0337	8.8800e-003	2.3000e-004	9.1200e-003	0.0000	26.8433	26.8433	8.2000e-004	0.0000	26.8640
Total	**0.0139**	**0.0198**	**0.1057**	**3.3000e-004**	**0.0341**	**2.6000e-004**	**0.0344**	**9.0800e-003**	**2.4000e-004**	**9.3300e-003**	**0.0000**	**29.5889**	**29.5889**	**9.3000e-004**	**0.0000**	**29.6123**

3.16 Architectural Coating - Phase IV - 2024

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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1400e-003	0.0481	0.0715	1.2000e-004		2.4100e-003	2.4100e-003		2.4100e-003	2.4100e-003	0.0000	10.0854	10.0854	5.7000e-004	0.0000	10.0996
Total	**0.2847**	**0.0481**	**0.0715**	**1.2000e-004**		**2.4100e-003**	**2.4100e-003**		**2.4100e-003**	**2.4100e-003**	**0.0000**	**10.0854**	**10.0854**	**5.7000e-004**	**0.0000**	**10.0996**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.4300e-003	7.8000e-004	1.0000e-005	2.6000e-004	0.0000	2.7000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	1.0329	1.0329	4.0000e-005	0.0000	1.0339
Worker	5.1200e-003	4.0300e-003	0.0390	1.1000e-004	0.0126	1.0000e-004	0.0127	3.3400e-003	9.0000e-005	3.4300e-003	0.0000	10.0982	10.0982	3.1000e-004	0.0000	10.1060
Total	**5.2200e-003**	**7.4600e-003**	**0.0398**	**1.2000e-004**	**0.0128**	**1.0000e-004**	**0.0129**	**3.4200e-003**	**9.0000e-005**	**3.5100e-003**	**0.0000**	**11.1311**	**11.1311**	**3.5000e-004**	**0.0000**	**11.1399**

3.16 Architectural Coating - Phase IV - 2024

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	0.2775					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1400e-003	0.0481	0.0715	1.2000e-004		2.4100e-003	2.4100e-003		2.4100e-003	2.4100e-003	0.0000	10.0853	10.0853	5.7000e-004	0.0000	10.0995
Total	**0.2847**	**0.0481**	**0.0715**	**1.2000e-004**		**2.4100e-003**	**2.4100e-003**		**2.4100e-003**	**2.4100e-003**	**0.0000**	**10.0853**	**10.0853**	**5.7000e-004**	**0.0000**	**10.0995**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.4300e-003	7.8000e-004	1.0000e-005	2.6000e-004	0.0000	2.7000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	1.0329	1.0329	4.0000e-005	0.0000	1.0339
Worker	5.1200e-003	4.0300e-003	0.0390	1.1000e-004	0.0126	1.0000e-004	0.0127	3.3400e-003	9.0000e-005	3.4300e-003	0.0000	10.0982	10.0982	3.1000e-004	0.0000	10.1060
Total	**5.2200e-003**	**7.4600e-003**	**0.0398**	**1.2000e-004**	**0.0128**	**1.0000e-004**	**0.0129**	**3.4200e-003**	**9.0000e-005**	**3.5100e-003**	**0.0000**	**11.1311**	**11.1311**	**3.5000e-004**	**0.0000**	**11.1399**

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	0.3385	1.9686	3.8256	0.0162	1.5127	0.0109	1.5236	0.4058	0.0101	0.4159	0.0000	1,497.517 8	1,497.517 8	0.0608	0.0000	1,499.037 0
Unmitigated	0.3385	1.9686	3.8256	0.0162	1.5127	0.0109	1.5236	0.4058	0.0101	0.4159	0.0000	1,497.517 8	1,497.517 8	0.0608	0.0000	1,499.037 0

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Single Family Housing	1,406.56	1,476.59	1284.38	4,030,500	4,030,500
Total	1,406.56	1,476.59	1,284.38	4,030,500	4,030,500

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
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Single Family Housing	10.80	7.30	7.50	44.00	19.00	37.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.569571	0.024470	0.206145	0.106238	0.013217	0.004041	0.019725	0.043623	0.003075	0.001900	0.006327	0.001084	0.000583
Parking Lot	0.569571	0.024470	0.206145	0.106238	0.013217	0.004041	0.019725	0.043623	0.003075	0.001900	0.006327	0.001084	0.000583
Single Family Housing	0.569571	0.024470	0.206145	0.106238	0.013217	0.004041	0.019725	0.043623	0.003075	0.001900	0.006327	0.001084	0.000583

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	138.3278	138.3278	6.4800e-003	1.3900e-003	138.9040
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	186.4000	186.4000	8.7400e-003	1.8700e-003	187.1765
NaturalGas Mitigated	0.0219	0.1871	0.0796	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.6814	216.6814	4.1500e-003	3.9700e-003	217.9690
NaturalGas Unmitigated	0.0234	0.1996	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	231.1026	231.1026	4.4300e-003	4.2400e-003	232.4759

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.3307e+006	0.0234	0.1996	0.0849	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	231.1026	231.1026	4.4300e-003	4.2400e-003	232.4759
Total		**0.0234**	**0.1996**	**0.0849**	**1.2700e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**231.1026**	**231.1026**	**4.4300e-003**	**4.2400e-003**	**232.4759**

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.06046e+006	0.0219	0.1871	0.0796	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.6814	216.6814	4.1500e-003	3.9700e-003	217.9690
Total		**0.0219**	**0.1871**	**0.0796**	**1.1900e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**216.6814**	**216.6814**	**4.1500e-003**	**3.9700e-003**	**217.9690**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	170503	23.0972	1.0800e-003	2.3000e-004	23.1934
Single Family Housing	1.20549e+006	163.3028	7.6600e-003	1.6400e-003	163.9830
Total		**186.4000**	**8.7400e-003**	**1.8700e-003**	**187.1765**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	-108807	-14.7396	-0.0007	-0.0002	-14.8010
Parking Lot	61695.8	8.3577	3.9000e-004	8.0000e-005	8.3925
Single Family Housing	1.06824e+006	144.7098	6.7800e-003	1.4500e-003	145.3125
Total		**138.3278**	**6.4800e-003**	**1.3800e-003**	**138.9040**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

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	1.2307	0.1190	1.5759	7.3000e-004		0.0167	0.0167		0.0167	0.0167	0.0000	119.8703	119.8703	4.6400e-003	2.1500e-003	120.6275
Unmitigated	1.2307	0.1190	1.5759	7.3000e-004		0.0167	0.0167		0.0167	0.0167	0.0000	119.8703	119.8703	4.6400e-003	2.1500e-003	120.6275

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	0.0907					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0823					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0119	0.1013	0.0431	6.5000e-004		8.1900e-003	8.1900e-003		8.1900e-003	8.1900e-003	0.0000	117.3598	117.3598	2.2500e-003	2.1500e-003	118.0572
Landscaping	0.0459	0.0177	1.5328	8.0000e-005		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	2.5105	2.5105	2.3900e-003	0.0000	2.5703
Total	**1.2307**	**0.1190**	**1.5759**	**7.3000e-004**		**0.0167**	**0.0167**		**0.0167**	**0.0167**	**0.0000**	**119.8703**	**119.8703**	**4.6400e-003**	**2.1500e-003**	**120.6275**

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	0.0907					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0823					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0119	0.1013	0.0431	6.5000e-004		8.1900e-003	8.1900e-003		8.1900e-003	8.1900e-003	0.0000	117.3598	117.3598	2.2500e-003	2.1500e-003	118.0572
Landscaping	0.0459	0.0177	1.5328	8.0000e-005		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	2.5105	2.5105	2.3900e-003	0.0000	2.5703
Total	**1.2307**	**0.1190**	**1.5759**	**7.3000e-004**		**0.0167**	**0.0167**		**0.0167**	**0.0167**	**0.0000**	**119.8703**	**119.8703**	**4.6400e-003**	**2.1500e-003**	**120.6275**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	15.6795	0.2537	6.1100e-003	23.8419
Unmitigated	15.6795	0.2537	6.1100e-003	23.8419

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 9.74632	4.6210	2.2000e-004	5.0000e-005	4.6403
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	7.76639 / 6.12023	11.0585	0.2535	6.0600e-003	19.2017
Total		**15.6795**	**0.2537**	**6.1100e-003**	**23.8419**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 9.74632	4.6210	2.2000e-004	5.0000e-005	4.6403
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	7.76639 / 6.12023	11.0585	0.2535	6.0600e-003	19.2017
Total		**15.6795**	**0.2537**	**6.1100e-003**	**23.8419**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	38.1907	2.2570	0.0000	94.6159
Unmitigated	38.1907	2.2570	0.0000	94.6159

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.7	0.1421	8.4000e-003	0.0000	0.3520
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	187.44	38.0486	2.2486	0.0000	94.2639
Total		**38.1907**	**2.2570**	**0.0000**	**94.6159**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.7	0.1421	8.4000e-003	0.0000	0.3520
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	187.44	38.0486	2.2486	0.0000	94.2639
Total		**38.1907**	**2.2570**	**0.0000**	**94.6159**

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

N2O Operational GHG Emission Mobile Calculations

Project Title: Lico Subdivision

Vehicle Population Breakdown*	
61591	Gasoline vehicles
5686	Diesel vehicles
91.5%	Gasoline vehicle %
8.5%	Diesel vehicle %

VMT per Vehicle Type	
4030500	Project VMT (CalEEMod output)
3689848	Gasoline vehicle VMT
340652	Diesel vehicle VMT

Gasoline Vehicles	
91.5%	Gasoline vehicle %
1.9686	Tons per year mobile NOX emissions (annual output in CalEEMod)
1.80	Gasoline vehicle tons per year NOX emissions
4.16%	Percentage to convert NOX emissions to N2O **
0.0750	Tons per year N2O emissions for gasoline vehicles
0.0680	Metric tons per year N2O emissions for gasoline vehicles

Diesel Vehicles	
0.3316	grams N2O per gallon of fuel for diesel vehicles**
161563.49	Diesel average miles per gallon*
0.00000	grams per mile N2O for diesel vehicles
0.7	grams per year N2O for diesel vehicles
0.0000007	Metric tons per year N2O emissions for diesel vehicles

CO2E Emissions from N2O	
0.0680	Metric tons per year from gasoline + diesel vehicles
298	GWP of N2O***
20.3	**CO2E emissions per year from N2O emissions from gasoline + diesel vehicles**

Sources

***Vehicle population source:**
EMFAC2014 (v1.0.7) Emissions Inventory
Region Type: County
Region: SAN BENITO
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2011 Categories

****Methodology source:**
EMFAC2011 Frequently Asked Questions
https://www.arb.ca.gov/msei/emfac2011-faq.htm

*****GWP source:**
Intergovernmental Panel on Climate Change (IPCC). 2007.
AR4 Climate Change 2007: The Physical Science Basis.
Contrbution of Working Group I to the Fourth Assessment Report of the
Intergovernmental Panel on Climate Change.

Solar PV Requirements for Low-Rise Residential Buildings
(2019 California Energy Code Section 150.1(b)14)

Equation 150.1-C	kWPV = (CFA x A)/1000 + (NDwell x B)

Inputs		
Climate Zone		4
A	Adjustment Factor from Table 150.1-C	0.586
B	Dwelling Adjustment Factor from Table 150.1-C	1.21

Unit Type	**Conditioned Floor Area (CFA)**	**Number of Dwelling Units (Ndwell)**	**kWPV (KWdc Size of the PV System)**
Average Unit	1800	149	181
2SFD P1X	0	0	0
2SFD P2	0	0	0
2SFD P3	0	0	0
3SFD P1	0	0	0
3SFD P2	0	0	0
3SFD P3	0	0	0
2TH P1	0	0	0
2TH P2	0	0	0
2TH P3	0	0	0
2TH P3X	0	0	0
2TH P3Y	0	0	0
			0
			0
			0
			0
Total Size of PV System (kW)		149	181
kW to kWh Conversion Factor			1800
Amount of Electricity Generated (kWh/yr)			326,421

Table 150.1-C		
Climate Zone	A - CFA	B - Dwelling Units
1	0.793	1.27
2	0.621	1.22
3	0.628	1.12
4	0.586	1.21
5	0.585	1.06
6	0.594	1.23
7	0.572	1.15
8	0.586	1.37
9	0.613	1.36
10	0.627	1.41
11	0.836	1.44
12	0.613	1.40
13	0.894	1.51
14	0.741	1.26
15	1.56	1.47
16	0.59	1.22

Sources	
Climate Zones	California Energy Commission. "California Building Climate Zone Areas." Last modified: November 2017. https://www.energy.ca.gov/maps/renewable/building_climate_zones.html
2019 California Energy Code	California Energy Commission. 2018. 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. December 2018. https://www.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf
kWh per kW PV Solar System (see page 12 of PDF)	United States Department of Energy. 2003. A Consumer's Guide: Get Your Power from the Sun. https://www.nrel.gov/docs/fy04osti/35297.pdf

Appendix B

Biological Resources Assessment

BIOLOGICAL RESOURCES ANALYSIS
213 ENTERPRISE ROAD
SAN BENITO COUNTY, CALIFORNIA

July 17, 2019

Prepared for

Longreach Associates, Inc.
101 Berkshire Street
Bellaire, Texas 77401
Attention: Mr. Ty Intravia

Prepared by

Monk & Associates, Inc.
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
Contact: Mr. Geoff Monk

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1. INTRODUCTION

Monk & Associates, Inc. (M&A) has prepared this biological resources analysis for the proposed 213 Enterprise Road development site (herein referred to as the project site) located outside the town of Hollister in San Benito County, California (Figures 1 and 2). The purpose of our analysis is to provide a description of existing biological resources on the project site and to identify potentially significant impacts that could occur to sensitive biological resources from the construction of a proposed residential development.

Biological resources include common plant and animal species, and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and other resource organizations including the California Native Plant Society. Biological resources also include waters of the United States and State, as regulated by the U.S. Army Corps of Engineers (Corps), California Regional Water Quality Control Board (RWQCB), and CDFW. An assessment of the potential for impacts to regulated waters and a formal delineation of "waters of the U.S." on the project site was conducted in 2015. This delineation was verified by the Corps, the regulatory agency that defines waters of the United States, on December 8, 2015, and a Preliminary Jurisdictional Determination was issued by the Corps on January 26, 2016.

This biological resources analysis also provides mitigation measures for "potentially significant" and "significant" impacts that could occur to biological resources. Whenever possible, upon implementation, the prescribed mitigation measures would reduce impacts to levels considered less than significant pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code §§ 21000 et seq.; 14 Cal. Code Regs §§ 15000 et seq). Accordingly, this report is suitable for review and inclusion in any review being conducted by the County of San Benito for the proposed project pursuant to the CEQA.

2. PROPERTY LOCATION AND SETTING

The approximately 50.7-acre project site is located on the south side of Enterprise Road between Southside Road and Fairview Road in San Benito County, south of the city of Hollister (Figure 3). The Ridgemark Golf and Country Club lies approximately 1.0 mile to the east. The San Benito River lies approximately three-quarters of a mile to the south and west. The project site is terraced, sloping south (464 feet) to north (346 feet) towards Enterprise Road. A residential inholding (i.e., not a part of the project site) and associated out-buildings are located near the northwest corner of the project site (see Figure 3). The majority of the project site is open fields that are seasonally farmed and grazed by cattle, horses, and goats. From aerial photography research it appears to have been farmed and grazed for many decades. Stand pipes and valves in the southern portions of the project site also indicate that irrigation of crops took place at some time in the past.

3. PROPOSED PROJECT

Longreach Associates, Inc. (the applicant) proposes to develop 151 single-family homes along with associated public streets, sidewalks, and on-street parking. Stormwater detention ponds and a sewer lift station are proposed in the lower, northeastern portion of the site.

4. ANALYSIS METHODS AND SURVEY HISTORY

4.1 Survey History

In 2015, between the months of January and September, qualified and permitted M&A biologists conducted multiple site surveys for several special-status (that is, threatened, endangered, rare) plant and animal species. Following resource agency (i.e., CDFW and USFWS) prescribed survey protocols, surveys were conducted for the California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), San Joaquin kit fox (*Vulpes macrotis mutica*), western burrowing owl (*Athene cunicularia*), American badger (*Taxidea taxus*), and special-status plants. No special-status plant or animal species was identified on or adjacent to the project site during the course of the survey effort.

4.2 2019 Research and Survey Methods

Prior to preparing this biological resource analysis report, M&A researched the most recent version of CDFW's Natural Diversity Database (CNDDB) (RareFind 5 application). The application (CNDDB 2019) for historic and recent records of special-status plant and animal species known to occur in the region of the project site. M&A also searched the 2019 electronic version of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2001) for records of special-status plants known in the region of the project site. All special-status species records were compiled in tables. M&A examined all known record locations for special-status species to determine if special-status species could occur on the project site or within an area of affect.

M&A biologists, Ms. Sharon Dulava and Mr. Zachery Stratton, conducted a survey of the project site on January 28, 2019 to record biological resources and to assess the likelihood of special-status species and resource agency regulated areas on the project site. M&A biologists, Mr. Geoff Monk and Ms. Dulava, conducted a follow-up survey on April 17, 2019 to survey for special-status species and check the Corps-regulated areas for any significant changes. The surveys involved searching all habitats on the site and recording all plant and wildlife species observed. M&A cross-referenced the habitats found on the project site against the habitat requirements of local or regionally known special-status species to determine if the proposed project could directly or indirectly impact such species.

Below we provide additional details of the 2019 survey dates and methods. Focused species surveys conducted in 2019 by M&A biologists were abbreviated over prior years since M&A conducted protocol-level surveys on this project site in 2015 which yielded negative results for all special-status species.

4.3 Special-Status Plant Surveys

In 2019, surveys were conducted by M&A biologists in January and April. Plants observed during these two survey months were recorded in project notes. Protocol-level, special-status plant surveys were previously conducted on the project site by M&A biologists, Ms. Sarah Lynch and Ms. Christina Owens, on March 10, April 8, and June 29, 2015. These surveys were timed to coincide with the flowering periods of all special-status plants known to occur in similar habitats in San Benito County. All surveys were conducted according to USFWS (2000), CDFW

(2009), and CNPS (2001) published survey guidelines. Special-status plant surveys were not repeated in 2019 due to an absence of suitable special-status plant habitats onsite and a general overall absence of any type of native or naturalized plant community onsite due to years of farming and overgrazing activity which has left the landscape essentially denuded by the summer months. While cattle have historically grazed the site, goats, which are far more damaging to plant life, were observed grazing the project site during the 2019 surveys.

4.4 Special-Status Wildlife Species Surveys

January and April 2019 surveys were conducted to confirm that site conditions remained the same as when the 2015 protocol-level species surveys had been conducted and to confirm that no special-status species had moved onto the project site in the intervening years (all 2015 survey findings were negative).On January 28, 2019, M&A biologists, Ms. Dulava and Mr. Stratton, conducted a survey for California tiger salamander, California red-legged frog, western spadefoot toad (*Spea hammondii*), western burrowing owl, American badger, and San Joaquin kit fox. This survey entailed walking systematic transects throughout the project site looking for suitable habitat for the species in question or sign of the animal (e.g., scat, track, feather, nest, characteristic digging/burrow, or direct observation of the species). High-powered binoculars (10x42) were used to scan the landscape and trees for animals. Notes were made in a notebook on site conditions, weather, and species observed. M&A biologists, Mr. Monk and Ms. Dulava, conducted a follow-up survey on April 17, 2019 using the same survey methods.

5. RESULTS OF RESEARCH AND PROJECT SITE ANALYSES

5.1 Topography

The project site is tiered and slopes south (464 feet) to north (346 feet) towards Enterprise Road. The majority of the site has a varying degree of slope ranging from 2 to 13 percent. This site drains north via sheet flow. There is also a culvert in the northeastern end of the project site that drains underneath Enterprise Road. Elevations range from an elevation of approximately 346 feet above sea level in the northwestern corner of the project site to approximately 464 feet above sea level in the southeastern corner.

5.2 Hydrology

There is a remnant drainage channel that historically flowed east to west, roughly parallel with Enterprise Road, across the northern quarter of the project site. The relatively recently constructed (likely in the last 20 years) high-density residential Oak Creek Development that occurs immediately east of the project site was constructed over the historical alignment of this drainage. That development included the construction of a flood control basin on the east side of the project site (see Sheet 1) that catches all flows from the now-developed watershed under the Oak Creek Development. This flood control basin accepts stormwater flowing from two parallel, 5-foot diameter, reinforced concrete pipes (RCPs) constructed under the Oak Creek Development. The basin includes an approximate 20-foot high berm on the downstream side of the basin ensuring that flood waters are not able to flow into the historical alignment of this drainage across the project site. To the west of this flood control basin, the remnant portions of this drainage that remain on the project site no longer flow (no unvegetated scour) and currently support upland plant species. Thus, the Corps did not take jurisdiction over this remnant channel when they confirmed their jurisdiction on the project site (see Sheet 1). The downstream reaches of the historic alignment of the now-truncated drainage are also filled by a now decades old home and outbuildings, which are inholdings within the project site. Thus, the remnant portions of the drainage on the project site are isolated from flows or connectivity to any water of the United States or State other than by sheet flow to collectors along Enterprise Road.

The flood control basin that receives flows from the watershed now composed of the Oak Creek Development jettisons stormwater through a 6-foot diameter RCP installed underneath Enterprise Road. This RCP terminates in a San Benito County maintained flood control basin off the project site immediately to the north of Enterprise Road. The County's flood control basin jettisons collected storm waters into a large diameter (~8-foot diameter) RCP that flows westward, parallel with and on the north side of Enterprise Road. This RCP presumably (not confirmed) drains to the San Benito River, a geographically appropriately positioned receiving water located approximately three-quarters of a mile to the south and west of the project site.

5.3 Plant Communities and Associated Wildlife Habitats

A complete list of plant species observed on the project site is presented in Table 1. Nomenclature used for plant names follows *The Jepson Manual* Second Edition (Baldwin 2012) and changes made to this manual as published on the Jepson Interchange Project website (http://ucjeps.berkeley.edu/interchange/index.html). Table 2 is a list of wildlife species observed on the project site. Nomenclature for wildlife follows CDFW's *Complete list of amphibian, reptile, bird, and mammal species in California* (2016) and any changes made to species nomenclature as published in scientific journals since the publication of CDFW's list.

5.3.1 ANTHROPOGENIC

The entire project site can be characterized as having anthropogenic, or human-influenced, plant communities. No natural plant communities remain onsite due to years of farming practices and intensive livestock grazing, most recently by goats. Hay fields, wheat fields, and ruderal vegetation are present on this project site. The project site's interior fencing gives the appearance that this sloping site has been sectioned off into different tiers or levels (see Figure 3 or Sheet 1). The southern portion of the site has historically been used as a hayfield and appears to be routinely disked. At the time of the January and April 2019 site surveys this section was vegetated with volunteer cultivated oats (*Avena sativa*), red-stem filaree (*Erodium cicutarium*) and white-stem filaree (*E. moschatum*), common fiddleneck (*Amsinckia menziesii*), with additional non-native grasses and forb species such as ripgut grass (*Bromus diandrus*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), winter vetch (*Vicia villosa*), and common hoary cress (*Lepidium draba*). The next section of the project site (to the north) supports a similar suite of herbaceous species as well as other non-native grass and forb species such as wild mustard (*Hirschfelda incana, Brassica nigra*), cheeseweed (*Malva parviflora*), annual bluegrass (*Poa annua*), Shepherd's purse (*Capsella bursa-pastoris*), and California burclover (*Medicago polymorpha*). Native grass and forb species in these areas include Miner's lettuce (*Claytonia perfoliata*), red maids (*Calandrinia ciliata*), and California poppy (*Eschscholzia californica*). This "non-crop" vegetation germinates in the winter months in low maintenance periods, but according to the land owner is then turned under by disking in the spring. There are also native and non-native trees that are sparsely distributed throughout the project site that include the native valley oak (*Quercus lobata*), California buckeye (*Aesculus californica*), and Monterey pine (*Pinus radiata*) tree, and the non-natives Peruvian pepper tree (*Schinus molle*), and blue gum (*Eucalyptus globulus*).

There are remnant reaches of a historical drainage on the project site that many years ago flowed east to west, roughly south of and parallel with Enterprise Road. The relatively recently constructed high-density residential Oak Creek Development that occurs immediately east of the project site was constructed over the historical alignment of this drainage. That development included the construction of a water quality basin that now intercepts and diverts all flows from the historic watershed now under the Oak Creek Development to the County of San Benito storm drain system (see Topography and Hydrology Section above). The water quality basin onsite supports annual and perennial wetland plant species such as creeping spikerush (*Eleocharis macrostachya*), annual bluegrass (*Poa annua*), Hyssop loosestrife (*Lythrum hyssopifolia*), popcornflower (*Plagiobothrys* sp.), curly dock (*Rumex crispus*), water plantain (*Alisma* sp.), and spiny cocklebur (*Xanthium spinosum*). To the west of this water quality basin, the remnant reaches of the former drainage on the project site no longer support stormwater flows. There are no unvegetated scours or wetlands in this remnant geographic feature. The former drainage supports upland plant species such as white-stem filaree, fiddleneck (*Amsinckia menziesii*), California burclover, Italian thistle (*Carduus pycnocephala*), everlasting cudweed (*Pseudognaphalium luteoalbum*), stinkwort (*Dittrichia graveolens*), Mediterranean barley (*Hordeum marinum* var. *gussoneanum*), foxtail barley, Italian ryegrass (*Festuca perennis*), short-podded mustard, common chickweed (*Stellaria media*), milk thistle, wild radish (*Raphanus sativus*), and jointed charlock (*Raphanus raphanistrum*). There are some native forbs such as vinegar weed (*Trichostema lanceolatum*) and California poppy around and in the remnant drainage channel.

Trees on the project site provide perching, nesting and foraging habitat for a large number of bird species. Insectivorous birds that "glean" insects from trees leaves and branches such as yellow-rumped warbler (*Dendroica coronata*), ruby-crowned kinglet (*Regulus calendula*), bushtit (*Psaltriparus minimus*), and orange-crowned warbler (*Vermivora celata*) were observed in the trees on multiple occasions. As were seed-eating birds that perch and/or nest in the trees such as Eurasian collared-dove (*Streptopelia decaocto*), mourning dove (*Zenaida macroura*), lark sparrow (*Chondestes grammacus*), white-crowned sparrow (*Zonotrichia leucophrys*), dark-eyed junco (*Junco hyemalis*), lesser goldfinch (*Spinus psaltria*), and house finch (*Haemorhous mexicanus*). These seed-eating species will forage for seeds on the ground, in the herbaceous vegetation (thistles, for example), and from the trees. Anna's hummingbird (*Calypte anna*) will eat insects in addition to sipping nectar from local flowers; this hummingbird was observed during every site visit. Other birds commonly observed on the project site were Nuttall's woodpecker (*Picoides nuttallii*), northern flicker (*Colaptes auratus*), Say's phoebe (*Sayornis saya*), California scrub jay (*Aphelocoma californica*), common raven (*Corvus corax*), oak titmouse (*Baeolophus inornatus*), Bewick's wren (*Thryomanes bewickii*), American robin (*Turdus migratorius*), northern mockingbird (*Mimus polyglottos*), black phoebe (*Sayornis nigricans*), and American pipit (*Anthus rubescens*). The larger trees provide nesting habitat for raptors such as the red-shouldered hawk (*Buteo lineatus*) and red-tailed hawk (*Buteo jamaicensis*). While no active nests were observed during 2019 surveys, a red-tailed hawk was observed nesting adjacent to the project site during the 2015 surveys. Mammals observed on the project site during M&A's surveys included gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), and Columbian black-tailed deer (*Odocoileus hemionus* var. *columbianus*). Table 2 provides a complete list of wildlife observed on the project site.

5.4 Wildlife Corridors

Wildlife corridors are linear and/or regional habitats that provide connectivity to other natural vegetation communities within a landscape fractured by urbanization and other development. Wildlife corridors have several functions: 1) they provide avenues along which wide-ranging animals can travel, migrate, and breed, allowing genetic interchange to occur; 2) populations can move in response to environmental changes and natural disasters; and 3) individuals can recolonize habitats from which populations have been locally extirpated (Beier and Loe 1992). All three of these functions can be met if both regional and local wildlife corridors are accessible to wildlife. Regional wildlife corridors provide foraging, breeding, and retreat areas for migrating, dispersing, immigrating, and emigrating wildlife populations. Local wildlife corridors also provide access routes to food, cover, and water resources within restricted habitats.

The project site is truncated from being a regional wildlife corridor due to the relatively recent development (last 20 years) that has occurred in the area. East, northeast, north, and south of the project site is dense residential and golf course development which restricts wildlife moving in or out from lands north, south and east. Associated with this development are heavily traveled roads such as Union Road, Southside Road, and Airline Highway which all pose obstacles to, and hazardous conditions for wildlife. Thus, the project site does not provide a thoroughfare for wildlife movement from contiguous or non-contiguous open spaces. The project site now functions as a local foraging ground for common terrestrial wildlife that reside in the immediate project site area of the project site. The project site does not provide a local or regional wildlife corridor. Thus, site development would not impact regional or local wildlife corridors.

6. SPECIAL-STATUS SPECIES DEFINITION

6.1 Definitions

For purposes of this analysis, special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). Special-status species are defined as:

- plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code §2050 *et seq*.; 14 CCR §670.1 *et seq.*) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);

- plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068);

- plants and animals that meet the definition of endangered, rare, or threatened under the CEQA (14 CCR §15380) that may include species not found on either State or Federal Endangered Species lists;

- Plants occurring on Ranks 1A, 1B, 2A, 2B, 3, and 4 of CNPS' electronic *Inventory* (CNPS 2001). The CDFW recognizes that Ranks 1A, 1B, 2A and 2B of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFW requests their inclusion in EIRs. Plants occurring on CNPS Ranks 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS 2001). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information (more on CNPS Rank species below);

- migratory nongame birds of management concern listed by USFWS (Migratory Nongame Birds of Management Concern in the United States: The list 1995; Office of Migratory Bird Management; Washington D.C.; Sept. 1995);

- animals that are designated as "species of special concern" by CDFW (2019);

- Animal species that are "fully protected" in California (Fish and Game Codes 3511, 4700, 5050, and 5515).

- Bat Species that are designated on the Western Bat Working Group's (WBWG) Regional Bat Species Priority Matrix as: "RED OR HIGH." This priority is justified by the WBWG as follows: "Based on available information on distribution, status, ecology, and known threats, this designation should result in these bat species being considered the highest priority for funding, planning, and conservation actions. Information about status and threats to most species could result in effective conservation actions being implemented should a commitment to management exist. These species are imperiled or are at high risk of imperilment."

In the paragraphs below, we provide further definitions of legal status as they pertain to the special-status species discussed in this report or in the attached tables.

<u>Federal Endangered or Threatened Species.</u> A species listed as Endangered or Threatened under the FESA is protected from unauthorized "take" (that is, harass, harm, pursue, hunt, shoot, trap) of that species. If it is necessary to take a federally-listed Endangered or Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the USFWS prior to initiating the take.

<u>State Threatened Species</u>. A species listed as Threatened under the CESA (§2050 of California Fish and Game Code) is protected from unauthorized "take" (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to "take" a state-listed Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from CDFW prior to initiating the "take."

California Species of Special Concern. These are species in which their California breeding populations are seriously declining and extirpation from all or a portion of their range is possible. This designation affords no legally mandated protection; however, pursuant to the CEQA Guidelines (14 CCR §15380), some species of special concern could be considered "rare." Pursuant to its rarity status, any unmitigated impacts to rare species could be considered a "significant effect on the environment" (§15382). Thus, species of special concern must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency.

CNPS Rank Species. The CNPS maintains an "Inventory" of special-status plant species. This inventory has four lists of plants with varying rarity. These lists are: Rank 1, Rank 2, Rank 3, and Rank 4. Although plants on these lists have no formal legal protection (unless they are also state or federally-listed species), CDFW requests the inclusion of Rank 1 species in environmental documents. In addition, other state and local agencies may request the inclusion of species on other lists as well. The Rank 1 and 2 species are defined below:

- Rank 1A: Presumed extinct in California;
- Rank 1B: Rare, threatened, or endangered in California and elsewhere;
- Rank 2A: Plants presumed extirpated in California, but more common elsewhere;
- Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere.

All of the plants constituting Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (CESA) of the Fish and Game Code and are eligible for state listing (CNPS 2001). Rank 2 species are rare in California, but more common elsewhere. Ranks 3 and 4 contain species about which there is some concern and are reviewed by CDFW and maintained on "watch lists."

Additionally, in 2006 CNPS updated their lists to include "threat code extensions" for each list. For example, Rank 1B species would now be categorized as Rank 1B.1, Rank 1B.2, or Rank 1B.3. These threat codes are defined as follows:

- .1 is considered "seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)";
- .2 is "fairly endangered in California (20-80% of occurrences threatened)";
- .3 is "not very endangered in California (less than 20% of occurrences threatened or no current threats known)."

Under the CEQA review process only CNPS Rank 1 and 2 species are considered since these are the only CNPS species that meet CEQA's definition of "rare" or "endangered." Impacts to Rank 3 and 4 species are not regarded as significant pursuant to CEQA.

Fully Protected Birds. Fully protected birds, such as the white-tailed kite and golden eagle, are protected under California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time.

6.2 Potential Special-Status Plants on the Project Site

Figure 4 provides a graphical illustration of the closest known records for special-status plant species within 3 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. No special-status plants have been mapped on or adjacent the project site. However, according to the CNPS *Inventory* and CDFW's CNDDB, a total of 15 special-status plant species are known to occur in the region of the project site (Table 3). Most of these plants occur in specialized habitats such as vernal pools, alkaline substrates, or chaparral/coastal scrub communities. Additionally, owing to the excessively disturbed and unnatural conditions found at the project site, the project site has been farmed and grazed by both cattle and currently goats, special-status plants would not likely occur. In order to substantiate this premise, M&A conducted three separate project site surveys in March, April, and June 2015, in order to document plant communities, note site conditions, and survey for special-status plants. Throughout the course of the three survey months M&A Botanists observed very few native plant species and concluded that no special-status plant species are present on the project site. In addition, no special-status plant species were observed during surveys conducted in January and April 2019. Hence, project site development could take place without concerns for special-status plants; no impacts to special-status plants would occur and no mitigation for special-status plants is warranted.

6.3 Potential Special-Status Animals on the Project Site

Figure 4 provides a graphical illustration of the closest known records for special-status wildlife species within 3 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. No special-status animal records have ever been mapped on or adjacent to the project site. However, a total of 13 special-status animal species are known to occur in the region of the project site (Table 4). Because of the sensitivity of four (4) of the special-status animal species known to occur in the area we further discuss these species below; these are the California tiger salamander, California red-legged frog, western burrowing owl, and the San Joaquin kit fox. We also discuss the greater western mastiff bat (*Eumops perotis californicus*) and western red bat (*Lasiurus blossevillii*) since suitable habitat for these bat species is provided by the project site.

6.3.1 California Tiger Salamander

The project site is located within the known range of the Central California "Distinct Population Segment" (DPS) of the California tiger salamander. The Central California DPS of the California tiger salamander was federally-listed as threatened under the FESA on August 4, 2004. The USFWS designated critical habitat for the Central California DPS in the summer of 2004 and updated the critical habitat designations in 2005 (USFWS 2005). The project site is located *outside* of mapped Critical Habitat Unit CV-18 (Figure 5). Finally, on August 19, 2010, the California tiger salamander was also state-listed as a threatened species under the CESA.

Proposed projects may not impact the California tiger salamander without incidental taking authority from both the USFWS and the CDFW. Prior to impacting habitat that supports the California tiger salamander the USFWS must prepare an incidental take permit pursuant to either Section 7 or Section 10 of the FESA. Similarly, projects that impact the California tiger salamander also require incidental taking authority from the. Under Section 2081 of CESA, an incidental take permit may be authorized by the CDFW for proposed projects that impact the California tiger salamander.

California tiger salamanders occur in grasslands and open oak woodlands that provide suitable over summering and/or breeding habitats. California tiger salamanders spend the majority of their lives underground. They typically only emerge from their subterranean refugia for a few nights each year during the rainy season to migrate to breeding ponds. Adult California tiger salamanders have been observed up to 2,092 meters (1.3 miles) from breeding ponds (USFWS 2004). As such, unobstructed migration corridors are an important component of California tiger salamander habitat.

California tiger salamanders emerge during the first heavy, warm rains of the year, typically in late November and early December. In most instances, larger movements of California tiger salamander do not occur unless it has been raining hard and continuously for several hours. Typically, for larger movements of California tiger salamanders to occur, nighttime temperatures also must be above 48° F. California tiger salamanders are able to move over, through or around almost all obstacles. Significant obstructions that block California tiger salamander movements include freeways and other major (heavy traffic) roads, rivers, and deep, vertical or near vertical sided, concrete irrigation/flood control ditches.

During the spring, summer, and fall months, most known populations of the California tiger salamander predominately use California ground squirrel burrows as over-summering habitat (Jennings and Hayes 1994; G. Monk personal observation). Other secondary subterranean refugia, or primary refugia where California ground squirrels are absent, likely include Botta's pocket gopher burrows, deep fissures in desiccated clay soils, and debris piles (e.g. downed wood, rock piles).

Stock ponds, seasonal wetlands, and deep vernal pools typically provide most of the breeding habitat used by the California tiger salamander. In such locations, California tiger salamanders attach their eggs to rooted, emergent vegetation, and other stable filamentous objects in the water column. Eggs are gelatinous and are laid singly or occasionally in small clusters. Eggs range in size from about ¾ the diameter of a dime to the full diameter of a dime. Occasionally California tiger salamanders are found breeding in slow-moving, streams or ditches. Ditches and/or streams that are subject to rapid flows, even if only on occasion, typically will not support or sustain California tiger salamander egg attachment through hatching, and thus, are not usually used successfully by California tiger salamanders for breeding (Mr. Monk and Ms. Lynch, pers. observations). Similarly, streams and/or ditches that support predators of the California tiger salamander or their eggs and larvae such as fish, bullfrogs, red swamp crayfish, or signal crayfish, almost never constitute suitable breeding habitat.

Typically, seasonal wetlands that are used for breeding must hold water into the month of May to allow enough time for larvae to fully metamorphose. In dry years, seasonal wetlands may dry too early to allow enough time for California tiger salamander larvae to successfully metamorphose. Under such circumstances, desiccated California tiger salamander larvae can be found in dried pools. In addition, as pools dry down to very small areas of inundation, California tiger salamander larvae become concentrated and are very susceptible to predation. However, in years exhibiting wet springs, these same pools can remain inundated long enough through continual rewetting to allow California tiger salamander larvae ample time to successfully metamorphose.

The closest known California tiger salamander record to the project site is a 1999 record located 1.2 miles east of the project site in a seasonal detention pond at the Ridgemark Golf Course (CNDDB Occurrence No. 190). There is dense residential development between this detention pond and the project site. It is therefore highly unlikely that California tiger salamander residing on this golf course could successfully migrate overland to the project site over major roads and through solid wood-fenced backyards. The next closest California tiger salamander record is from 2003 where a single male was observed approximately 1.2 miles southwest of the project site in the San Benito River (CNDDB Occurrence No. 868). This sighting is separated from the project site by homes and intensively maintained and irrigated agricultural lands making overland migration to the project site difficult, if not impossible. Additionally, since there is no breeding habitat on or adjacent to the project site, or accessible from the project site, there would be no reason for California tiger salamander to reside on the project site.

Aquatic habitat on the project site is limited to a man-made flood control basin that was constructed over the top of a historic drainage. Water flows into this basin via culverts emanating from the adjacent development (Oak Creek) to the east and then quickly flushes out of the basin via an outlet culvert that directs flows north and under Enterprise Road. The basin maintains positive flows, only catching by design very large storm events that would exceed the flow capacity of the 6-foot RCP exiting this basin. Water does not pool in this basin for any length of time and thus, it does not provide potential California tiger salamander breeding habitat. The basin only supported a shallow (< 3 inches deep) puddle for a short time in the winter of 2018-2019, after periods of heavy rain. Thus, it did not provide suitable aquatic habitat for California tiger salamander. West of this basin on the project site is a remnant portion of the historic drainage. This drainage historically flowed west to east, but no longer supports flows owing to the flood control basin constructed to catch all watershed flows upstream of the project site from within the Oak Creek Development. M&A never observed water in this drainage during the course of our 2019 site surveys. A detention area exists just south of the project site. This feature is surrounded by dense residential development and did not hold water in the winter of 2018-2019.

The only other aquatic habitat within the project site vicinity is a San Benito County maintained flood control basin on the north side of Enterprise Road. Similar to the flood control basin onsite, this basin was constructed to contain and slow flood waters before they are discharged into the surrounding landscape; thus, water is not detained for long-duration and aquatic conditions/habitat do not persist in this basin. This basin only supports upland vegetation (coyote brush, for example). This basin does not provide any indication that it retains water (no vegetation suppression; no aquatic vegetation such as cattails).

There are no other potential breeding ponds within 1.3 miles of the project site, the distance California tiger salamander can migrate, that are not separated from the project site by developed and/or intensively maintained and irrigated farmland. Due to an absence of suitable breeding habitats onsite and within the vicinity of the project site it can be concluded that the California tiger salamander would not reside onsite and therefore that the proposed project would not result in significant impacts to California tiger salamander. Thus, no mitigation for California tiger salamander is warranted for the proposed project.

6.3.2 California Red-legged Frog

The California red-legged frog was federally-listed as threatened on May 23, 1996 (Federal Register 61: 25813-25833) and as such is protected pursuant to the FESA. On March 16, 2010, the USFWS issued the final designation for California red-legged frog Critical Habitat (USFWS 2010). The 2010 Critical Habitat maps (Federal Register dated March 17, 2010 (Volume 75, Number 51:12815-12864) show that the project site falls *outside* Critical Habitat Unit SNB-1 (Figure 5). The California red-legged frog is also a state "species of special concern."

The California red-legged frog is typically found in ponds, slow-flowing portions of perennial and intermittent streams that maintain water in the summer months. This frog is also found in hillside seeps that maintain pool environments or saturated soils throughout the summer months. Populations probably cannot be maintained if all surface water disappears (i.e., no available surface water for egg laying and larval development habitat). Larval California red-legged frogs require 11-20 weeks of permanent water to reach metamorphosis (i.e., to change from a tadpole into a frog), in water depths of 10 to 20 inches (USFWS 2002). Riparian vegetation such as willows and emergent vegetation such as cattails are preferred red-legged frog habitats, though not necessary for this species to be present. Populations of California red-legged frog will be reduced in size or eliminated from ponds supporting non-native species such as bullfrog, Centrarchid fish species (such as sunfish, bluegill, or largemouth bass), and signal and red swamp crayfish (*Pacifastacus leniusculus* and *Procambarus clarkii*, respectively), all of which are known California red-legged frog predators. However, the presence of these non-native species does not preclude the presence of the California red-legged frog.

California red-legged frogs use both aquatic and upland habitats for migration and dispersal. The USFWS' *Recovery Plan for the California Red-Legged Frog* states that California red-legged frog overland excursions via uplands can vary between 0.25 mile up to 3 miles during the course of a wet season, and that frogs "have been observed to make long-distance movements that are straight-line, point to point migrations rather than using corridors for moving in between habitats" (USFWS 2002). The information presented in the USFWS' Recovery Plan was obtained in part from a publication by Bulger et al. (2003).

Bulger et al. (2003) studied 19 radio tagged California red-legged frogs in Santa Cruz County and found that "*most migrating individuals moved to the nearest pond to breed, and to the nearest pond or stream after breeding. The three exceptions to this pattern all resided in the same pond (not used for breeding) during the summer and then migrated to breed in a pond 2800 m distant."* Bulger et al. (2003) further stated that that their data showed *that "there is a relatively small segment of the adult population that is liable to migrate in any given year, and that most adults are resident year around at favorable breeding sites."* Data on migration rates from this study indicate that *"more than 75% of the adult population is resident at permanent aquatic sites over the course of a year." "Moreover, 90% of the radio-tagged frogs that were not migrating between aquatic sites remained within 60 m of water at all times and the farthest any non-migrating frog moved from water was 130 m."* For frogs that did migrate, Bulger et al. (2003) *reported that most migrating frogs moved overland in approximately straight lines to* *target sites without apparent regard to vegetation type or topography.* Bulger et al. (2003) also states that *they did not locate individual frogs daily,* and that they "*do not have tightly bounded data on numbers of days spent moving versus resting...*" Thus, to an extent, straight line migrations were determined by using departure and final resting/breeding locations.

Working in Point Reyes National Seashore on the coast of California, Fellers and Kleeman (2007) radio-tagged 115 California red-legged frogs in the greater Olema Valley [in Marin County] and determined that "*the median distance moved from breeding sites was 0 m, but for the 36 frogs that moved ≥ 30 m, the median was 150 m (range = 30-1400 m). In many cases, frogs almost certainly moved more than the straight-line distance between sites. This was confirmed with individuals that were located in transit. Presumed distance moved for those frogs that moved ≥ 30 m was 185 m (median, range = 30-1400 m)*."

As reported by Fellers and Kleeman (2007), migrations of California red-legged frogs that were radio-tagged to determine movements were conducted at study sites near the Pacific Ocean where summer fog and high relative humidity reduce the risk of desiccation for dispersing amphibians. Bulger et al. (2003) studies similarly were conducted near the Pacific Ocean where summer fog and relative humidity are much higher than in inland populations of the California red-legged. In locations that are characterized by hot and seasonally dry climates, desiccation mortality likely influences movements of the California red-legged to a greater extent. Tatarian (2005) studied an inland population of California red-legged frogs in eastern Contra Costa County where the climate is far drier than the coastal environment. Tatarian (2005) found that all movements of California red-legged frog started after the first 0.5 cm of rain in the fall, with more terrestrial movements being made in the fall pre-breeding season (57%) than in the winter breeding season (32%) or spring post-breeding season (11%). Tatarian (2007) also found that California red-legged frogs moved greater average distances aquatically (84.6 m) than terrestrially (27.7 m). Greater terrestrial distances were moved in the pre-breeding season (35.2 m) than in the breeding season (15.5 m) or post-breeding season (16.3 m) with the majority of movements occurring for only one of the 3-4 day survey periods. The majority of frogs (57%) were position faithful within a pool, indicating they did not migrate at all. These data likely suggest that long forays across the landscape that occur by a small percentage of breeding frogs in coastal populations are less likely in dry inland locations where the threat of desiccation is much higher.

The closest known CNDDB record to the project site is a 2005 record approximately 1.3 miles east of the project site in a seasonal detention pond and golf course pond (CNDDB Occurrence No. 84). There is dense residential development between this detention pond and the project site, making it highly unlikely that California red-legged frog could successfully migrate overland to the project site over major roads and through solid wood-fenced backyards. Additionally, since there is no breeding habitat on or adjacent to the project site, or accessible from the project site, there would be no reason for California red-legged frog to reside on the project site.

Aquatic habitat on the project site is limited to a man-made flood control basin that was constructed over the top of a historic drainage. Water flows into this basin via culverts emanating from the adjacent development (Oak Creek) to the east and then quickly flushes out of the basin via an outlet culvert that directs flows north and under Enterprise Road. The basin maintains positive flows, only catching by design very large storm events that would exceed the flow capacity of the 6-foot RCP exiting this basin. Water does not pool in this basin for any length of time and thus, it does not provide potential California red-legged frog breeding habitat. The basin only supported a shallow (< 3 inches deep) puddle for a short time in the winter of 2018-2019, after periods of heavy rain. Thus, it did not provide suitable aquatic habitat for California red-legged frog. West of this basin on the project site is a remnant portion of the historic drainage. This drainage historically flowed west to east, but no longer supports flows owing to the flood control basin constructed to catch all watershed flows upstream of the project site from within the Oak Creek Development. M&A never observed water in this drainage during the course of our 2019 site surveys. A detention area exists just south of the project site. This feature is surrounded by dense residential development and did not hold water in the winter of 2018-2019.

The only other aquatic habitat within the project site vicinity is a San Benito County maintained flood control basin on the north side of Enterprise Road. Similar to the flood control basin onsite, this basin was constructed to contain and slow flood waters before they are discharged into the surrounding landscape; thus, water is not detained for long-duration and aquatic conditions/habitat does not persist in this basin. This basin only supports upland vegetation (coyote brush, for example). This basin does not provide any indication that it retains water (no vegetation suppression, no aquatic vegetation such as cattails).

There are no other potential breeding ponds that are not separated from the project site by developed and/or intensively maintained and irrigated farmland. Due to an absence of suitable breeding habitats onsite and within the vicinity of the project site it can be concluded that the California red-legged frog would not reside onsite and therefore that the proposed project would not result in significant impacts to California red-legged frog. Thus, no mitigation for California red-legged frog is warranted for the proposed project.

6.3.3 Western Burrowing Owl

The western burrowing owl is a California "species of special concern." Its nest, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, and §3800). The burrowing owl is also protected from direct take under the Migratory Bird Treaty Act (50 CFR 10.13). Finally, based upon this species' rarity status, any unmitigated impacts to rare species would be considered a "significant effect on the environment" pursuant to §21068 of the CEQA Statutes and §15382 of the CEQA Guidelines. Thus, this owl species must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency. When these owls occur on project sites, typically mitigation requirements are mandated in the conditions of project approval from the CEQA lead agency.

Burrowing owl habitat is usually found in annual and perennial grasslands, characterized by low-growing vegetation. Often the burrowing owl utilizes rodent burrows, typically ground squirrel burrows, for nesting and cover. They may also on occasion dig their own burrows or use human-made objects such as concrete culverts or rip-rap piles for cover. They exhibit high site fidelity, reusing burrows year after year. Occupancy of suitable burrowing owl habitat can be verified at a site by observation of these owls during the spring and summer months or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement (white wash) at or near a burrow. Burrowing owls typically are not observed in grasslands with tall vegetation or wooded areas because the vegetation obscures their ability to detect avian and terrestrial predators. Since burrowing owls spend the majority of their time sitting at the entrances of their burrows, grazed grasslands seem to be their preferred habitat because it allows them to view the world at 360 degrees without obstructions.

The closest known CNDDB record to the project site is a year 2000 record located approximately 1.7 miles northeast of the project site in grazed annual grassland (Occurrence No. 758). No burrowing owls were observed onsite by M&A biologists during field surveys conducted in January and April 2019. In addition, no burrowing owls were observed onsite during multiple field surveys conducted by M&A between January and September 2015. Nonetheless, the project site does provide habitat that could be used by western burrowing owls. Therefore, M&A recommends that a preconstruction survey be conducted within 14 days of any earth-moving/site work to determine if owls could have moved onto the project site in the intervening period between 2019 surveys and when the proposed project is implemented. If no burrowing owls are observed onsite during the preconstruction survey, no mitigation would be necessary. However, if owls are observed onsite during the nesting season, mitigation would need to be prescribed to offset any project-related impact to this species to a less than significant level. See the Impacts and Mitigations section for details.

6.3.4 San Joaquin Kit Fox

San Joaquin kit fox is a federally-listed endangered species and a California state-listed threatened species. This species' distribution is primarily limited to the San Joaquin Valley and adjacent regions. The San Joaquin kit fox (kit fox) is the smallest fox species in North America, typically weighing between four and six pounds. It has large ears, long legs, and is generally a buffy tan color with a black-tipped tail. Kit fox live primarily in the lowlands of the San Joaquin Valley of California but are also known to occur in several counties in the coast mountain ranges including Santa Barbara, San Luis Obispo, Monterey, San Benito, Santa Clara, and Alameda Counties.

This fox species is usually found in open grassland and shrubland communities but has also been observed in orchards that border grassland or shrubland plant communities. Kit fox are carnivorous, usually feeding on small rodents such as pocket mice (*Perognathus inornatus*), deer mice (*Peromyscus maniculatus*), western harvest mice (*Reithrodontomys megalotis*), kangaroo rats (*Dipodomys* spp.), and larger rodents such California ground squirrel. Kit fox also prey upon lagomorphs such as black-tailed hare (*Lepus californicus*) and desert cottontail (*Sylvilagus audubonii*). It relies on dens for breeding, and to provide escape cover from potential predators. Kit fox are reputedly poor diggers, so dens are excavated in loose-textured soils, generally in areas with low to moderate relief, or they will utilize holes left by other species. They will utilize burrows dug by rabbits, ground squirrels, and on occasion, American badgers. Man-made structures, such as well-casings, culverts, and abandoned pipelines, are also occasionally used for dens. Typically, dens are small enough to discourage easy predation by coyotes. Populations of kit fox are thought to be related to the availability of denning sites, particularly natal denning sites, which are often moved several times throughout the season.

In 1971, this species was recorded approximately 1.3 miles east of the project site (CNDDB Occurrence No. 1024). This is the most current, known record for kit fox to the project site. This is an old record (~48 years old) and the record location is now densely developed with residential housing; this location is separated from the project site by this residential development. Regardless, there are open scrub/grasslands to the west of the project site associated with the San Benito River, and there are California ground squirrel burrows on the project site that provide unlikely, but suitable refugia for this fox. Thus, the presence of this fox could not be ruled out without conducting formal surveys.

In September 2015, M&A biologists, Mr. Monk and Ms. Lynch, conducted an abbreviated survey using methods provided in the USFWS' San Joaquin kit fox survey protocol (dated June 1999). This survey was conducted by two M&A biologists with many years of experience conducting protocol level kit fox surveys. These surveys included walking transects over the entire project site to identify potential dens (that is, burrows greater than 4 inches in diameter), establishing scent stations (track plates) at potential den sites, conducting nocturnal spotlight surveys, and establishing camera stations at "potential den" sites. The classification of a burrow as a "potential den" is not an acknowledgement that the kit fox could be using the burrow, only that the dimensions of the burrow is large enough for a kit fox to use, but not so large that kit fox predators such as the red fox or coyote would be able to easily dislodge a kit fox. Potential dens provide escape refugia for kit fox and can also be used for denning. The combination of survey methods used by M&A resulted in multiple observations/ detections of gray fox (*Urocyon cinereoargenteus*), domestic cat (*Felis cattus*), black-tailed jackrabbit, and California ground squirrel. No observations, photographs, tracks or scat of kit fox were made on or near the project site.

In January and April 2019, M&A biologists, Mr. Monk, Ms. Dulava, and Mr. Stratton, conducted abbreviated kit fox surveys on site. This abbreviated survey included systematic walking transects on the project site searching for potential dens. No potential dens or any evidence of kit fox were made on or near the project site. Hence, based on two years of negative survey results, it can be concluded that implementation of the proposed project is not expected to result in significant impacts to the San Joaquin kit fox. Therefore, mitigation for the San Joaquin kit fox is not warranted.

6.3.5 Greater Western Mastiff Bat

Greater western mastiff-bat is a California "species of special concern." It has no special federal status. The "species of special concern" status designation does not provide any special legally mandated protection for this bat species. However, this status designation likely meets the definition of "rare" pursuant to the CEQA (14 CCR §15380(2)(A)). As such, potential impacts to this bat species should be considered during any CEQA review. Any unmitigated impacts to this species would likely be regarded by the State resource agency (the CDFW) as a significant adverse impact pursuant to CEQA (§21068).

The greater western mastiff bat is the largest bat species in the United States. It typically uses crevices in cliffs, high buildings, large trees, and tunnels for roosting. Roosts are generally high above ground in order to allow for a clear vertical drop of at least 10 feet for flight. This bat forages most frequently in open areas, including chaparral, open woodlands, grasslands, meadows, and agricultural areas. This species does not hibernate and is intermittently active during the winter.

This species was recorded in 1998 approximately 1.5 miles northwest from the project site (CNDDB Occurrence No. 242). The large trees and barn on the project site provide “suitable” habitat for this bat; therefore, the presence of this species cannot be dismissed without conducting formal surveys. See the Impacts and Mitigations section for details.

6.3.6 WESTERN RED BAT

The western red bat is a California "species of special concern." It has no federal status. The “species of special concern” status designation does not provide any special legally mandated protection for this bat species. However, this status designation likely meets the definition of “rare” pursuant to the CEQA (14 CCR §15380(2)(A)). As such, potential impacts to this bat species should be considered during any CEQA review. Any unmitigated impacts to this species would likely be regarded by the State resource agency (the CDFW) as a significant adverse impact pursuant to CEQA (§21068).

The western red bat occurs in southern British Columbia, the western United States, Mexico, Central Mexico, and possibly South America (Cryan 2003; Pierson et al. 2006). Although the species has a wide range, relatively few records for the western red bat exist outside of California (Pierson et al. 2006). In California, most of the records are from the Central Valley, which is the breeding center for the western red bat in the state. About 83% of the breeding records for western red bat in California are from the Sacramento and San Joaquin rivers, with other breeding records from the San Diego, Santa Ana, and Los Angeles rivers (Pierson et al. 2006). It has been recorded in California every month of the year (Pierson et al. 2006).

The western red bat is closely associated with well-developed riparian habitats that provide suitable roosting sites. It roosts primarily in trees, 2 to 40 feet above the ground, from sea level up through mixed conifer forests. It prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging. In addition to riparian habitats, western red bats have been observed in orchard trees, including fig (*Ficus carica*), apricot (*Prunus armeniaca*), peach (*Prunus persica*), pear (*Pyrus communis*), almond (*Prunus amygdalus*), walnut (*Juglans regia*), and orange trees (*Citrus sinensis*) (Benson 1945, as cited in Pierson et al. 2006; Constantine 1959; Grinnell 1918, as cited in Pierson et al. 2006; Pierson et al. 2006). They have also been observed to use other non-native trees, including African hemp (*Sparmannia africana*), eucalyptus (*Eucalyptus* spp.), Chinaberry (*Melia azedarach*), mulberry (*Morus rubra*), and tamarisk (*Tamarix* spp.) (Constantine 1959; Dalquest, as cited in Pierson et al. 2006).

This closest record for this species is located within the general vicinity of the project site (CNDDB Occurrence No. 83); the exact location of this record is actually unknown. It is a 1998 record mapped “in the general vicinity of Hollister.” The large trees on the project site provide “suitable” habitat for this bat; therefore, the presence of this species cannot be dismissed without conducting formal surveys. See the Impacts and Mitigations section for details.

7. REGULATORY FRAMEWORK FOR NATIVE WILDLIFE, FISH, AND PLANTS

This section provides a discussion of those laws and regulations that are in place to protect native wildlife, fish, and plants. Under each law we discuss its relevance to the proposed project.

7.1 Federal Endangered Species Act

The FESA forms the basis for the federal protection of threatened or endangered plants, insects, fish and wildlife. FESA contains four main elements, they are as follows:

Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.

Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.

Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.

Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the National Marine Fisheries Service (NMFS). The USFWS enforces all other cases. Below, Sections 9, 7, and 10 of FESA are discussed since they are the sections most relevant to the proposed project.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). A December 2001 decision by the 9th Circuit Court of Appeals (Arizona Cattle Growers' Association, Jeff Menges, vs. the USFWS and Bureau of Land Management, and the Southwest Center for Biological Diversity) ruled that the USFWS must show that a threatened or endangered species is present on a project site and that it would be taken by the project activities. According to this ruling, the USFWS can no longer require mitigation based on the probability that the species could use the site. Rather they must show that it is "reasonably certain to occur."

Section 9 applies to any person, corporation, federal agency, or any local or State agency. If "take" of a listed species (other than a plant species) is necessary to complete an otherwise lawful activity, this triggers the need to obtain an "incidental take permit" either through a Section 7

Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency such as the Corps), or through Section 10 of FESA which requires preparation of a Habitat Conservation Plan (HCP) (for state and local agencies, or individuals, and projects without a federal "nexus"; for example, projects that do not need a Corps permit).

Section 7(a)(2) of the Act requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. Critical habitat designations mean: (1) specific areas within a geographic region currently occupied by a listed species, on which are found those physical or biological features that are essential to the conservation of a listed species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a listed species that are determined essential for the conservation of the species.

The Section 7 consultation process only applies to actions taken by federal agencies that are considering authorizing discretionary projects. Section 7 is by and between the NMFS and/or the USFWS and the federal agency contemplating a discretionary approval (that is, the federal "action agency," for example, the Corps or the Federal Highway Administration). Private parties, cities, counties, etc. (i.e., applicants) may participate in the Section 7 consultation *at the discretion of the federal agencies conducting the Section 7 consultation*. The Section 7 consultation process is triggered by a determination of the "action agency" – that is, the federal agency that is carrying out, funding, or approving a project - that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation between the nexus agency and the USFWS/NMFS is required. As part of the formal consultation, the USFWS/NMFS may resolve any issues informally with the nexus agency or may prepare a formal Biological Opinion assessing whether the proposed action would be likely to result in "jeopardy" to a listed species or if it could adversely modify designated critical habitat. If the USFWS/NMFS prepares a Biological Opinion, it will contain either a "jeopardy" or "non-jeopardy" decision. If the USFWS/NMFS concludes that a proposed project would result in adverse modification of critical habitat or would jeopardize the continued existence of a federally-listed species (that is, it will issue a jeopardy decision), the nexus federal agency would be most unlikely to authorize its discretionary permit. If the USFWS/NMFS prepares a "non-jeopardy" Biological Opinion, the nexus federal agency may authorize the discretionary permit making all conditions of the Biological Opinion conditions of its discretionary permit. A non-jeopardy Biological Opinion constitutes an "incidental take" permit that allows applicants to "take" federally-listed species while otherwise carrying out legally sanctioned projects.

For non-federal entities, for example private parties, cities, and counties that are proposing a project that might result in incidental take, Section 10 provides the mechanism for obtaining that take authorization. Under Section 10 of FESA, for the applicant to obtain an "incidental take permit," the applicant is required to submit a "conservation plan" to the USFWS or NMFS that specifies the impacts that are likely to result to federally-listed species, and the measures the applicant will undertake to minimize and mitigate such impacts, and the funding that will be available to implement those steps. Conservation plans under FESA have come to be known as "habitat conservation plans" or "HCPs" for short. The terms incidental take permit, Section 10 permit, and Section 10(a)(1)(B) permit are used interchangeably by the USFWS. Section 10(a)(2)(B) of FESA provides statutory criteria that must be satisfied before an incidental take permit can be issued.

7.1.1 Responsible Agency

FESA gives regulatory authority to the USFWS for federally-listed terrestrial species and non-anadromous fish. The NMFS has regulatory authority over federally-listed marine mammals and anadromous fish.

7.1.2 Applicability to the Proposed Project

The project site does not provide habitat for any federally-listed fish, plant or wildlife species. CNDDB records for three federally-listed species (San Joaquin kit fox, California tiger salamander, and California red-legged frog) exist within 3 miles of the project site. These species were addressed in further research and field surveys. Abbreviated protocol level surveys for the San Joaquin kit fox were conducted onsite in 2015, using all detection methods necessary to identify the San Joaquin kit fox should it be present in the area. Further surveys were conducted in 2019. No kit fox were observed on or adjacent to the project site during nocturnal spotlighting surveys, track plate study, and camera stations surveys in 2015. No sign of kit fox or potential dens were observed during 2019 surveys. The project would not impact the San Joaquin kit fox and authorization pursuant to the FESA would not be necessary. Similarly, the project site does not provide breeding habitat for California tiger salamander or California red-legged frog and there are no accessible California tiger salamander or California red-legged frog breeding habitats within 1.3 miles of the project site. Hence, the project site does not provide upland over-summering habitat or breeding habitat. Impacts to California tiger salamander and California red-legged frog from project implementation are not anticipated and authorization pursuant to the FESA would not be necessary. Protocol level special-status plant surveys were conducted on the project site in the spring and summer of 2015; no federally-listed plants were identified onsite during these appropriately timed surveys. Similarly, during January and April 2019 site surveys, no federally-listed plants were identified on the project site.

7.2 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to “take” (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

Executive Order 13186 for conservation of migratory birds (January 11, 2001) requires that any project with federal involvement address impacts of federal actions on migratory birds. The order is designed to assist federal agencies in their efforts to comply with the Migratory Bird Treaty Act and does not constitute any legal authorization to take migratory birds. The order also requires federal agencies to work with the USFWS to develop a memorandum of understanding

(MOU). Protocols developed under the MOU must promote the conservation of migratory bird populations through the following means:

- avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
- restore and enhance habitat of migratory birds, as practicable; and prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

In 2017, the Solicitor for the USFWS opined that the Migratory Bird Treaty Act only prohibits intentional take of bird species listed under the Act and does not prohibit unintentional take incidental to otherwise lawful activities. Accordingly, it is unlikely that development of the project would implicate the take prohibitions under the Migratory Bird Treaty Act. As of March 2019, however, the California Legislature was considering a bill (AB 454) that would make illegal, in California, the incidental take of bird species listed under the Act. The State's protections for avian species are more fully described in the California Fish and Game Code Section below.

7.2.1 APPLICABILITY TO THE PROPOSED PROJECT

White-tailed kite (*Elanus leucurus*), red-tailed hawk, and red-shouldered hawk could nest on the project site. In 2015, a pair of red-tailed hawks nested in a large tree adjacent to the project site; while these hawks were not observed nesting in 2019, trees on and near the project site provide suitable nesting habitat and these birds may nest in the vicinity in subsequent years. These raptors (birds of prey) would be protected by the Migratory Bird Treaty Act. Also, the common songbirds that could occur on the site would be protected pursuant to this Act. As long as there is no direct mortality of species protected pursuant to this Act caused by development of the site, there should be no constraints to development of the site. To comply with the Migratory Bird Treaty Act, all active nest sites would have to be avoided while such birds were nesting. Upon completion of nesting, the project could commence as otherwise planned. Please review specific requirements for avoidance of nest sites for potentially occurring species in the Impacts and Mitigations section below.

7.3 **California Endangered Species Act**

7.3.1 SECTION 2081 OF THE CALIFORNIA ENDANGERED SPECIES ACT

In 1984, the state legislated the CESA (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats. State agencies will not approve private or public projects under their jurisdiction that would impact threatened or endangered species if reasonable and prudent alternatives are available. Because CESA does not have a provision for "harm" (see discussion of FESA, above), CDFW considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

If CDFW determines that a proposed project could impact a state-listed threatened or endangered species, CDFW will provide recommendations for "reasonable and prudent" project alternatives. The CEQA lead agency can only approve a project if these alternatives are implemented, unless it finds that the project's benefits clearly outweigh the costs, reasonable mitigation measures are adopted, there has been no "irreversible or irretrievable" commitment of resources made in the interim, and the resulting project would not result in the extinction of the species. In addition, if there would be impacts to threatened or endangered species, the lead agency typically requires project applicants to demonstrate that they have acquired "incidental take" permits from CDFW and/or USFWS (if it is a federally-listed species) prior to allowing/permitting impacts to such species.

If proposed projects would result in impacts to a state-listed species, an "incidental take" permit pursuant to §2081 of the Fish and Game Code would be necessary (versus a federal incidental take permit for federally-listed species). CDFW will issue an incidental take permit only if:

1) The authorized take is incidental to an otherwise lawful activity;
2) the impacts of the authorized take are minimized and fully mitigated;
3) measures required to minimize and fully mitigate the impacts of the authorized take:
    a) are roughly proportional in extent to the impact of the taking on the species;
    b) maintain the project applicant's objectives to the greatest extent possible; and,
    c) capable of successful implementation; and,
4) adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with, and the effectiveness of, the measures.

If an applicant is preparing a HCP as part of the federal 10(a) permit process, the HCP might be incorporated into the §2081 permit if it meets the substantive criteria of §2081(b). To ensure that an HCP meets the mitigation and monitoring standards in Section 2081(b), an applicant should involve CDFW staff in development of the HCP. If a final Biological Opinion (federal action) has been issued for the project pursuant to Section 7 of the FESA, it might also be incorporated into the §2081 permit if it meets the standards of §2081(b).

No §2081 permit may authorize the take of a species for which the Legislature has imposed strict prohibitions on all forms of "take." These species are listed in several statutes that identify "fully protected" species and "specified birds." *See* Fish and Game Code §§ 3505, 3511, 4700, 5050, 5515, and 5517. If a project is planned in an area where a "fully protected" species or a "specified bird" occurs, an applicant must design the project to avoid all take.

Fish and Game Code §2080.1 allows an applicant who has obtained a "non-jeopardy" federal Biological Opinion pursuant to Section 7 of the FESA, or who has received a federal 10(a) permit (federal incidental take permit) pursuant to the FESA, to submit the federal opinion or permit to CDFW for a determination as to whether the federal document is "consistent" with CESA. If after 30 days CDFW determines that the federal incidental take permit is consistent with state law, and that all state-listed species under consideration have been considered in the federal Biological Opinion, then no further permit or consultation is required under CESA for the project. However, if CDFW determines that the federal opinion or permit is not consistent with CESA, or that there are state-listed species that were not considered in the federal Biological Opinion, then the applicant must apply for a state CESA permit under Section 2081(b). Section 2081(b) is of no use if an affected species is state-listed, but not federally-listed.

State and federal incidental take permits are issued on a discretionary basis and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management endowment fees are usually collected as part of the agreement for the incidental take permit(s). The endowment is used to manage any lands set-aside to protect listed species, and for biological mitigation monitoring of these lands over (typically) a five-year period.

7.3.2 Applicability to The Proposed Project

No state-listed plant or animal species would likely be impacted by the proposed project (Tables 3 and 4, respectively). The project site does not provide habitat for any state-listed fish, plant or wildlife species. A record search of the CNDDB identified a historical record of San Joaquin kit fox within 1.3 miles of the project site. That record is approximately 48 years old and the record location is now under high-density residential development. In 2015, a formal San Joaquin kit fox survey was conducted on the project site to corroborate M&A's initial assessment that this fox was cut off from migration to/from the project site by residential development and intensively farmed areas, and thus would not occur on the project site (See San Joaquin kit fox species discussion above). M&A's surveys used all detection methods necessary to identify the San Joaquin kit fox should it be present in the area. No kit fox were observed on or adjacent to the project site during nocturnal spotlighting surveys, track plate studies, and camera station surveys. M&A biologists found no evidence of kit fox or potential dens during 2019 surveys. 2019 surveys identified a small California ground squirrel colony on the project site but no burrows with dimensions that constitute "potential" San Joaquin kit fox dens. M&A's findings were that the San Joaquin kit fox does not occur on the project site and would not be expected to occur on the project site. Accordingly, the project would not impact the San Joaquin kit fox. Thus, a CESA authorization is not required for the proposed project.

M&A reached a similar conclusion for the state-listed California tiger salamander. The project site does not provide breeding habitat for California tiger salamander and there are no accessible California tiger salamander breeding habitats within 1.3 miles of the project site. Dense development and/or intensively managed and irrigated agricultural lands occurs between all record locations and the project site. Hence, the project site does not provide over-summering habitat either and impacts to California tiger salamander from project implementation are not anticipated and authorization pursuant to the CESA is therefore not required.

Protocol-level special-status plant surveys were conducted on the project site in the spring and summer of 2015; no state-listed plants were identified onsite during these appropriately timed surveys. No special-status plants were observed during 2019 field surveys. Thus, the project would not impact plants protected pursuant to the CESA.

7.4 California Fish and Game Code § 3503, 3503.5, 3511, and 3513

California Fish and Game Code §3503, 3503.5, 3511, and 3513 prohibit the "take, possession, or destruction of birds, their nests or eggs." Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered "take." Such a take would also violate federal law protecting migratory birds (Migratory Bird Treaty Act).

All raptors (that is, hawks, eagles, owls) their nests, eggs, and young are protected under California Fish and Game Code (§3503.5). Additionally, "fully protected" birds, such as the white-tailed kite and golden eagle (*Aquila chrysaetos*), are protected under California Fish and Game Code (§3511). "Fully protected" birds may not be taken or possessed (that is, kept in captivity) at any time.

7.4.1 Applicability to the Proposed Project

Raptors that could be impacted by the project include white-tailed kite, red-tailed hawk, and red-shouldered hawk. Preconstruction surveys would have to be conducted for these species to ensure that there is no direct take of these birds including their eggs, or young. Similarly, a survey for nesting passerine birds must be conducted. Any active nests that were found during preconstruction surveys would have to be avoided by the project. Suitable non-disturbance buffers would have to be established around nest sites until the nesting cycle is complete. More specifics on the size of buffers are provided below in the Impacts and Mitigations section.

7.5 San Benito County General Plan

San Benito County's 2035 General Plan, adopted by the Board of Supervisors on July 21, 2015, includes a Natural and Cultural Resources Element. This Element provides goals and policies that the County will follow when approving new developments to ensure that significant and sensitive natural and cultural resources within San Benito County are protected to the greatest extent possible. Below we present the Natural Resources goals that pertain to the project site.

Natural and Cultural Resources Element: Open Space
Goal NCR-1. To preserve and enhance valuable open space lands that provide wildlife habitat and conserve natural, historical, archaeological, paleontological, tribal, and visual resources of San Benito County.

<u>NCR-1.1 Maintenance of Open Space</u>

The County shall support and encourage maintenance of open space lands that support natural resources, agricultural resources, recreation, tribal resources, wildlife habitat, water management, scenic quality, and other beneficial uses.

<u>NCR-1.2 Conservation Easements</u>

The County shall support and encourage the use of conservation easements to protect open space that contains valuable natural resources.

<u>NCR-1.3 Open Space Overlay District</u>

The County shall continue to protect and preserve the rural landscape and implement open space policies for: public health, safety, and welfare; continued agricultural uses; scenic viewscape preservation, including scenic highway corridors; park and recreation uses; conservation of significant natural resources; the containment and definition of limits to urbanization; and the preservation of the natural habitat for threatened and/or endangered plant and animal species.

7.5.1 Applicability to the Proposed Project

The project site is located adjacent to medium-density residential development; hence, development of the project site would be a continuation of residential development in this area. Due to decades of agricultural use, the project site does not provide native plant habitats (other than a few native oak trees), nor does it support special-status animal or plant habitats. In recent years the project site has been used for hay farming and livestock grazing, with goats most recently grazing the site. Since development of the project site would not impact any significant or valuable natural resources, site development should not necessitate conservation easements or open space dedication.

Natural and Cultural Resources Element: Wildlife Habitat
Goal NCR-2. To protect and enhance wildlife communities through a comprehensive approach that conserves, maintains, and restores important habitat areas.

<u>NCR-2.1 Coordination for Habitat Preservation</u>

The County shall work with property owners and Federal and State agencies to identify feasible and economically-viable methods of protecting and enhancing natural habitats and biological resources in the county.

<u>NCR-2.2 Habitat Protection</u>

The County shall require major subdivisions within potential habitat of federal- or state-listed rare, threatened, or endangered plant or animal species to mitigate the effects of development. Mitigation for impacts to species may be accomplished on land preserved for open space, agricultural, or natural resources protection purposes.

<u>NCR-2.3 Habitat Conservation Plan</u>

The County shall consider working with federal and state agencies to develop and adopt an HCP and a Natural Community Conservation Plan (NCCP) for listed and candidate species in San Benito County in order to manage their habitats and ensure their long-term protection.

<u>NCR-2.4 Maintain Corridors for Habitat</u>

The County shall protect and enhance wildlife migration and movement corridors to ensure the health and long-term survival of local animal and plant populations, in particular contiguous habitat areas, in order to increase habitat value and lower land management costs. As part of this effort, the County shall require road and development sites in rural areas to:

a. Be designed to maintain habitat connectivity with a system of corridors for wildlife or plant species and avoiding fragmentation of open space areas; and
b. Incorporate measures to maintain the long-term health of the plant and animal

Communities in the area, such as buffers, consolidation of/or rerouting access, transitional landscaping, linking nearby open space areas, and habitat corridors.

NCR-2.5 Mitigation for Wetland Disturbance or Removal

The County shall encourage the protection of the habitat value and biological functions of oak woodlands, native grasslands, riparian and aquatic resources, and vernal pools and wetlands. The County shall require that development avoid encroachment and require buffers around these habitats to the extent practicable. The County shall further require mitigation for any development proposals that have the potential to reduce these habitats. Recreational trails and other features established within natural wetlands and aquatic and riparian buffer areas shall be, as long as such areas are not required to meet the Americans with Disabilities Act, located along the outside of the sensitive habitat whenever possible to minimize intrusions and maintain the integrity of the habitat. Exceptions to this action include irrigation pumps, roads and bridges, levees, docks, public boat ramps, and similar uses. In all cases where intrusions into these buffers are made, only the minimum amount of vegetation necessary to construct the feature shall be removed.

NCR-2.8 Pre-Development Biological Resource Assessment

The County shall require the preparation of biological resource assessments for new development proposals as appropriate. The assessment shall include the following: a biological resource inventory based on a reconnaissance-level site survey, and an analysis of anticipated project impacts to: potentially occurring special-status species (which may require focused special-status plant and/or animal surveys); an analysis of sensitive natural communities; wildlife movement corridors and nursery sites on or adjacent to the project site; potentially jurisdictional wetlands/waterways; and locally protected biological resources such as trees. The assessment shall contain suggested avoidance, minimization, and/or mitigation measures for significant impacts to biological resources.

NCR-2.9 Mitigation Funding and Site Protection

The County shall require that project applicants demonstrate that adequate funding can be provided to implement all required biological mitigation and monitoring activities. Habitat preserved as part of any mitigation and monitoring plan shall be preserved through a conservation easement, deed restriction, or other method to ensure that the habitat remains protected.

NCR- 2.10 Invasive Species

The County shall require that new developments avoids the introduction or spread of invasive plant species during construction by minimizing surface disturbance, seeding and mulching disturbed areas with certified weed-free native mixes, and using native or noninvasive species in erosion control plantings.

7.5.2 APPLICABILITY TO THE PROPOSED PROJECT

This report serves as the pre-development biological resources assessment required by the County pursuant to NCR-2.8. The project site does not support any special-status species or their habitats. Similarly, there are no native or significant habitats onsite, specifically, there are no riparian habitats or oak woodlands onsite. The project site can be classified as an anthropogenic (man-altered) community. Thus, it should not be necessary to prepare an HCP or NCCP for this project site. Numerous wildlife and botanical surveys have been conducted onsite and have not identified any special-status species. Hence, mitigation for project-related impacts to special-status species is not warranted. Similarly, the only agency regulated "waters" present on the project site are a man-made flood control basin that intercepted a natural drainage channel that at one time, long ago, flowed through the project site. This basin does not provide native wildlife, plant, or special-status species habitat; regardless, mitigation for impacts to these waters would likely be imposed by the Corps if the water quality basin would be impacted by the proposed project. Prior to impacting these features and implementing any required mitigation, the project applicant will submit proof to the County of San Benito that applicable agency permits have been obtained (e.g., a Corps permit and a RWQCB permit) and that adequate funding is available for any required mitigation. Finally, any revegetation or hydroseed mix used on barren soils onsite as part of the proposed development would not include invasive species in the seed mix and necessary precautions will be in place during site grading, development and landscaping to ensure that invasive species are not introduced.

7.6 San Benito County Management and Conservation of Woodlands

In the San Benito County Code of Ordinances, Title 19, Land Use and Environmental Regulations, there is a chapter that discusses the management and conservation of woodlands. This chapter, Chapter 19.33, pertains to rural zoned properties such as the project site which is zoned R/PUD (that is, Rural/Planned Use Development). The purpose of this chapter is to establish regulations for the conservation and protection of woodlands in the unincorporated areas of San Benito County by limiting tree removal in a manner which allows for reasonable use and enjoyment of the property. A discretionary permit shall be required for the removal of woodlands when: (A) The removal of individual and or masses of trees within woodlands of between 90% and 100% as per the canopy retention standard in Table 19.33.007(1) (below) within a period of ten years; or (B) Any tree removal is located on slopes greater than or equal to 30%. (1966 Code, § 33-5) (Ord. 757, § 1(part)).

(A) Table 19.33.007(1) shall be used to determine the minimum amounts of woodland canopy that must be retained during site modification or maintenance on any parcel:

Table 19.33.007(1) Canopy Retention Standard	
Canopy Retention Standard Shall Be the Greater of Column a or Column B:	
Baseline Canopy Cover (1) Column A (2)	***Column B (2)***
80-100%	.75 x baseline canopy cover 65% canopy cover
60-79%	.80 x baseline canopy cover 51% canopy cover

40-59%	.85 x baseline canopy cover 36% canopy cover
20-39%	.90 x baseline canopy cover 19% canopy cover
19% or less	1.0 x baseline canopy cover

(B) Individual trees and or massed individual trees shall be included in the calculation of canopy retention standard. Example: For 50% baseline canopy, the minimum allowable canopy after modification and maintenance would be the greater of Column A, (0.85 times 50% equals 42.5% canopy) or Column B, (36% canopy). In this example, the minimum allowable canopy after modification and maintenance would be 42.5%. Pursuant to §19.33.005, if the canopy is located on a slope of 30% or greater the canopy retention area (the percentage of removal of individual and/or masses of woodland trees is equal to the baseline percentage of the canopy retention percentage in this table subtracted from 100%) must be increased by a factor of 50%.

(C) Canopy retention standard shall be applied to retain undisturbed woodlands as a priority over retention of individual trees. No more than 10% of the canopy retention standard may be met by individual trees not included within designated woodlands (1966 Code, § 33-7) (Ord. 757, § 1(part)).

7.6.1 Applicability to the Proposed Project

Since the project site currently supports less than 19% canopy cover, in order to meet the County's "Canopy Retention Standards" it would be necessary to retain 100% of the native trees onsite. Native trees onsite are the oak trees, buckeye trees, and according to San Benito County's native tree list, pepper trees (*Schinus molle*) are considered "native" trees. If retention of 100% of the native trees onsite is not practical, it would be necessary to obtain a discretionary permit from the County prior to tree removal. The County may require replacement planting for tree removal.

8. REGULATORY REQUIREMENTS PERTAINING TO WATERS OF THE UNITED STATES AND STATE

This section presents an overview of the criteria used by the Corps, the RWQCB, the State Water Resources Control Board (SWRCB), and the CDFW to determine those areas within a project area that would be subject to their regulation.

8.1 U.S. Army Corps of Engineers Jurisdiction and Permitting

8.1.1 Section 404 of the Clean Water Act

Congress enacted the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. §1251(a)). Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the Corps regulates the disposal of dredged or fill material into "waters of the United States" (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill materials into any water of the United States.

In the Federal Register "waters of the United States" are defined as, "...all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..." (33 CFR Section 328.3).

Limits of Corps' jurisdiction:

(a) Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (See 33 CFR 329.12)

(b) Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:

> (1) Extends to the high tide line, or
> (2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.

(c) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:

> (1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
> (2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
> (3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

Section 404 jurisdiction in "other waters" such as lakes, ponds, and streams, extends to the upward limit of the OHWM or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is:

- the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]).

Wetlands are defined as: "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR Section 328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the Corps pursuant to Section 404 of the Clean Water Act.

8.1.1.1 Clean Water Rule 2015

In 2015, the Environmental Protection Agency (EPA) and the Corps published the Clean Water Rule: Definition of ''Waters of the United States''; Final Rule which defines the scope of waters protected under the Clean Water Act. This Final Rule was published in light of the statute, science, Supreme Court decisions in *U.S.* v. *Riverside Bayview Homes, Solid Waste Agency of Northern Cook County* v. *U.S. Army Corps of Engineers (SWANCC),* and *Rapanos* v. *United States (Rapanos)*, and the agencies' experience and technical expertise. The Clean Water Rule reflects consideration of the extensive public comments received on the proposed rule. The Clean Water Rule was stayed in federal court shortly after it was adopted in 2015. In August 2018, the stay was lifted and the Clean Water Rule (Rule) became effective once again and remains in effect today. The Rule ensures protection for the nation's public health and aquatic resources and increases Clean Water Act program predictability and consistency by clarifying the scope of "waters of the United States" protected under the Act.

The Rule only protects waters that have been historically covered by the Clean Water Act. A tributary, or upstream water, must show physical features of flowing water – a bed, bank, and ordinary high-water mark – to warrant protection. The Rule provides protection for headwaters that have these features and have a significant connection to downstream waters. Adjacent waters are defined by three qualifying circumstances established by the Rule. These can include wetlands, ponds, impoundments, and lakes which can impact the chemical, biological or physical integrity of neighboring waters. All existing exclusions from longstanding agency practices are officially established for the first time. Waters used in normal agricultural, ranching, or silvicultural activities, as well as certain defined ditches, prior converted cropland, and waste treatment systems continue to be excluded from Clean Water Act protection.

8.1.1.2 Permitting Corps Jurisdictional Areas

To remain in compliance with Section 404 of the Clean Water Act, project proponents and property owners (applicants) are required to be permitted by the Corps prior to discharging or otherwise impacting waters of the United States. In many cases, the Corps must visit a proposed project area (to conduct a "jurisdictional determination") to confirm the extent of area falling under their jurisdiction prior to authorizing any permit for that project area. Typically, at the time the jurisdictional determination is conducted, applicants (or their representative) will discuss the appropriate permit application that would be filed with the Corps for permitting the proposed impact(s) to "waters of the United States."

Pursuant to Section 404, the Corps normally provides two alternatives for permitting impacts to the type of waters of the United States found in the project area. The first alternative would be to use Nationwide Permit(s) (NWP). The second alternative is to apply to the Corps for an Individual Permit (33 CFR Section 235.5(2)(b)). The application process for Individual Permits is extensive and includes public interest review procedures (i.e., public notice and receipt of public comments) and must contain an "alternatives analysis" that is prepared pursuant to Section 404(b) of the Clean Water Act (33 U.S.C. 1344(b)). The alternatives analysis is also typically reviewed by the federal EPA and thus brings another resource agency into the permitting framework. Both the Corps and EPA take the initial viewpoint that there are practical alternatives to the proposed project if there would be impacts to waters of the United States, and the proposed permitted action is not a water dependent project (e.g., a pier or a dredging project). Alternative analyses therefore must provide convincing reasons that the proposed permitted impacts are unavoidable. Individual Permits may be available for use in the event that discharges into regulated waters fail to meet conditions of NWP(s).

NWPs are a type of general permit administered by the Corps and issued on a nationwide basis that authorize minor activities that affect Corps regulated waters. Under NWP, if certain conditions are met, the specified activities can take place without the need for an individual or regional permit from the Corps (33 CFR, Section 235.5[c][2]). In order to use NWP(s), a project must meet 27 general nationwide permit conditions, and all specific conditions pertaining to the NWP being used (as presented at 33 CFR Section 330, Appendices A and C). It is also important to note that pursuant to 33 CFR Section 330.4(e), there may be special regional conditions or modifications to NWPs that could have relevance to individual proposed projects. Finally, pursuant to 33 CFR Section 330.6(a), Nationwide permittees may, and in some cases must, request from the Corps confirmation that an activity complies with the terms and conditions of the NWP intended for use (*i.e.,* must receive “verification” from the Corps).

Prior to finalizing design plans, the applicant needs to be aware that the Corps maintains a policy of “no net loss” of wetlands (waters of the United States) from project area development. Therefore, it is incumbent upon applicants that propose to impact Corps regulated areas to submit a mitigation plan that demonstrates that impacted regulated areas would be recreated (*i.e.,* impacts would be mitigated). Typically, the Corps requires mitigation to be “in-kind” (i.e., seasonal wetlands would be filled, mitigation would include seasonal wetland mitigation), and at a minimum of a 1:1 replacement ratio (i.e., one acre or fraction there of recreated for each acre or fraction thereof lost). Often a 2:1 replacement ratio is required if the Permittee is responsible for the mitigation. In some cases, the Corps allows “out-of-kind” mitigation if the compensation site has greater value than the impacted site. Finally, there are many Corps approved wetland mitigation banks where wetland mitigation credits can be purchased by applicants to meet mitigation compensation requirements. Mitigation banks have defined service areas and the Corps may only allow their use when a project would have minimal impacts to wetlands.

8.1.2 Applicability to the Proposed Project

On September 22, 2015, M&A biologists conducted a formal wetland delineation on the project site. M&A mapped areas within a flood control basin in the northeastern portion of the project site as potential “other waters of the United States” (see Sheet 1, OW 1 through OW 6). The flood control basin was constructed to intercept a blue line tributary that historically occurred under what is now the Oak Manor development immediately east of the project site. An extension of the blue line drainage now courses through the flood control basin and where a flow pattern is apparent, it was mapped by M&A as potential other waters. M&A did not map “wetlands” as the flow areas do not exhibit the three parameters required to define an area as “wetland.” On December 8, 2015, M&A biologists met with the Corps on the project site to have our preliminary wetland delineation map verified. The Corps concurred with M&A’s wetland delineation map and exerted their jurisdiction over the other waters that are mapped within the flood control basin. The Corps has confirmed their jurisdiction over 0.24-acre of other waters of the United States on the project site (see Sheet 1). Thus, prior authorization from the Corps (a permit) would be necessary before filling or otherwise impacting the Corps’ regulated features shown on Sheet 1, attached. The current site development plan (dated June 18, 2019) shows that all waters of the United States on the project site will be avoided by the proposed project (see

Attachment B: Tentative Map: Subdivision). Thus, there would be no impacts to waters of the United States and mitigation is not warranted.

8.2 California Regional Water Quality Control Board (RWQCB)

8.2.1 SECTION 401 OF THE CLEAN WATER ACT

The SWRCB and RWQCB regulate activities in "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. While the Corps administers a permitting program that authorizes impacts to waters of the United States, including wetlands and other waters, any Corps permit authorized for a proposed project would be inoperative unless it is an NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project specific certification of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the California Environmental Quality Act, the CESA, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project specific RWQCB certification of water quality. Where a project will result in dredge or fill of non-federal waters of the State, the RWQCB will authorize those fills through waste discharge requirements issued under the Porter Cologne Water Quality Control Act.

On April 2, 2019, the SWRCB adopted a state-level definition of "wetlands, which is broader than the federal definition in that unvegetated areas may be considered a "water of the State." As a part of the same policy, the Water Board adopted permit procedures and standards governing the discharge of dredged or fill material into wetlands and other waters of the State. The policy includes, among other things, requirements for analyses to identify the least environmentally damaging practicable alternative (LEDPA) and compensatory mitigation standards including a minimum 1:1 ratio for wetlands and streams, and full functional replacement of all waters on top of this minimum where applicable. The policy, which will govern both Section 401 certifications and WDRs, is scheduled to become effective nine months following the completion of review by the California Office of Administrative Law.

8.2.2 APPLICABILITY TO THE PROPOSED PROJECT

The Corps has confirmed their jurisdiction over 0.24-acre of other waters onsite; thus, any Section 404 permit authorized by the Corps for the project would be inoperative without also obtaining authorization from the RWQCB pursuant to Section 401 of the Clean Water Act (i.e., without obtaining a certification of water quality). Since the RWQCB does not have a formal method for technically defining what constitutes waters of the State, M&A expect that the RWQCB should remain consistent with the Corps' determination.

Any impacts to waters of the State would have to be mitigated to the satisfaction of the RWQCB prior to the time this resource agency would issue a permit for impacts to such features. The RWQCB requirements for issuance of a "401 Permit" typically parallel the Corps requirements for permitting impacts to Corps regulated areas pursuant to Section 404 of the Clean Water Act. Please refer to the Corps "Applicability" section above for likely mitigation requirements for impacts to RWQCB regulated waters. Also, please refer to the applicability section of the Porter-

Cologne Water Quality Control Act below for other applicable actions that may be imposed on the project by the RWQCB prior to the time any certification of water quality is authorized for the project. Please note that any isolated wetlands or other waters that are determined to be on the project site that are not regulated by the Corps pursuant to the SWANCC decision, would still be regulated by the RWQCB pursuant to the Porter-Cologne Water Quality Control Act (see below).

The current site development plan (dated June 18, 2019) shows that all waters of the State on the project site will be avoided by the proposed project (see Attachment B: Tentative Map: Subdivision). Thus, there would be no impacts to waters of the State and mitigation is not warranted.

8.2.3 PORTER-COLOGNE WATER QUALITY CONTROL ACT

The uncontrolled discharge of pollutants into impaired water bodies is considered particularly detrimental. According to the EPA, **sediment is one of the most widespread pollutants contaminating U.S. rivers and streams**. Sediment runoff from construction sites is 10 to 20 times greater than from agricultural lands and 1,000 to 2,000 times greater than from forest lands (EPA 2005). Consequently, the discharge of stormwater from large construction sites is regulated by the RWQCB under the federal Clean Water Act and California's Porter-Cologne Water Quality Control Act.

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the Corps' jurisdiction pursuant to the SWANCC decision (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code §13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices Plan (BMPs) of any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES). That is, a *Stormwater Pollution Prevention Plan* (SWPPP) must be developed prior to the time that a site is graded (see NPDES section below). In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

8.2.4 Applicability to The Proposed Project

The project site falls within the Central Valley Region (Region 3) of the RWQCB. The Corps has confirmed that there are waters of the United States/waters of the State on the project site. The RWQCB would have jurisdiction over these areas pursuant to the Porter-Cologne Water Quality Control Act. Since any "threat" to water quality could conceivably be regulated pursuant to the Porter-Cologne Water Quality Control Act, care will be required when constructing the proposed project to be sure that adequate pre-and post-construction BMPs are incorporated into the project implementation plans.

It should also be noted that prior to issuance of any permit from the RWQCB this agency will require submittal of a Notice of Determination from San Benito County indicating that the proposed project has completed a review conducted pursuant to CEQA. The pertinent sections of the CEQA document (typically the biology section) are often submitted to the RWQCB for review prior to the time this agency will issue a permit for a proposed project.

9. STATE WATER RESOURCES CONTROL BOARD (SWRCB)/RWQCB – STORM WATER MANAGEMENT

9.1 Construction General Permit

While federal Clean Water Act NPDES regulations allow two permitting options for construction related stormwater discharges (individual permits and General Permits), the State Water Resources Control Board (SWRCB) has elected to adopt only one statewide Construction General Permit at this time that will apply to all stormwater discharges associated with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (CalTrans).

The Construction General Permit requires all dischargers where construction activity disturbs greater than one acre of land or those sites less than one acre that are part of a common plan of development or sale that disturbs more than one acre of land surface to:

1. Develop and implement a SWPPP which specifies BMPs that will prevent all construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation. Achieve quantitatively-defined (i.e., numeric) pollutant-specific discharge standards, and conduct much more rigorous monitoring based on the project's projected risk level.

3. Perform inspections of all BMPs.

This Construction General Permit is implemented and enforced by the nine RWQCBs. It is also enforceable through citizens' suits and represents a dramatic shift in the State Water Board's approach to regulating new and redevelopment sites, imposing new affirmative duties and fixed standards on builders and developers.

<u>Types of Construction Activity Covered by the Construction General Permit</u>

- clearing,
- grading,
- disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre or more of total land area.

Construction activity that results in soil disturbances to a smaller area would still be subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses greater than one acre of soil disturbance, or if there is significant water quality impairment resulting from the activity.

Construction activity <u>does not include:</u>

- routine maintenance to maintain original line and grade,
- hydraulic capacity, or original purpose of the facility,
- nor does it include emergency construction activities required to protect public health and safety.

The Construction General Permit includes several "post-construction" requirements. These requirements entail that site designs provide no net increase in overall site runoff and match pre-project hydrology by maintaining runoff volume and drainage concentrations. To achieve the required results where impervious surfaces such as roofs and paved surfaces are being increased, developers must implement non-structural off-setting BMPs, such as landform grading, site design BMPs, and distributed structural BMPs (bioretention cells, rain gardens, and rain cisterns). This "runoff reduction" approach is essentially a State Water Board-imposed regulatory requirement to implement Low Impact Development ("LID") design features. Volume that cannot be addressed using non-structural BMPs must be captured in structural BMPs that are approved by the RWQCB.

Improving the quality of site runoff is necessary to improve water quality in impaired and threatened streams, rivers, and lakes (that is, water bodies on the EPA's 303(d) list). The RWQCB prioritizes the water bodies on the 303(d) list according to potential impacts to beneficial uses. Beneficial uses can include a wide range of uses, such as nautical navigation; wildlife habitat; fish spawning and migration; commercial fishing, including shellfish harvesting; recreation, including swimming, surfing, fishing, boating, beachcombing, and more; water supply for domestic consumption or industrial processes; and groundwater recharge, among other uses. The State is required to develop action plans and establish Total Maximum Daily Loads (TMDLs) to improve water quality within these impaired water bodies. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating the applicable water quality standards.

Pursuant to the Clean Water Act, the RWQCB regulates construction discharges under the National Pollutant Discharge Elimination System (NPDES). The project sponsor of construction or other activities that disturb more than one acre of land must obtain coverage under NPDES Construction General Permit Order 2009-0009-DWQ, administered by the RWQCB[1].

9.1.1 Applicability to The Proposed Project

To obtain coverage under the SWRCB administered Construction General Permit, the applicant (typically through its civil engineer) must electronically file a number of permit-related compliance documents (Permit Registration Documents (PRDs), including a Notice of Intent (NOI), a risk assessment, site map, signed certification, SWPPP, Notice of Termination (NOT), NAL exceedance reports, and other site-specific PRDs that may be required. The PRDs must be prepared by a Qualified SWPPP Practitioner (QSP) or Qualified SWPPP Developer (QSD) and filed by a Legally Responsible Person (LRP) on the RWQCB's Stormwater Multi-Application Report Tracking System (SMARTS). (QSDs are typically civil engineers, professional hydrologists, engineering geologists, or landscape architects.) Once filed, these documents become immediately available to the public for review and comment. At a minimum, the SWPPP shall identify BMPs for implementation during project construction that are in accordance with the applicable guidance and procedures contained in the California Stormwater Quality Association's *California Stormwater Best Management Practices Handbook* (2015).

9.2 RWQCB Municipal Storm Water Permitting Programs

The federal Clean Water Act was amended in 1987 to address urban stormwater runoff pollution of the nation's waters. In 1990, the EPA promulgated rules establishing Phase 1 of the NPDES stormwater program. The Phase 1 program for Municipal Separate Storm Sewer System (MS4s) requires operators that serve populations of 100,000 or greater to implement a stormwater management program to control polluted discharges from these MS4s. While Phase 1 of the municipal stormwater program has focused on large urban areas, Phase 2 of the municipal stormwater program was promulgated by the USEPA for smaller urban areas including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes.

MS4 permits require the discharger (or dischargers that are permitted by the MS4 permittees) to develop and implement a SWMP with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not.

[1] CGP Order 2009-0009-DWQ remains in effect, but has been amended by CGP Order 2009-0014-DWQ, effective February 14, 2011, and CGP Order 2009-0016-DWQ, effective July 17, 2012. The first amendment merely provided additional clarification to Order 2009-0009-DWQ, while Order 2009-0016-DWQ eliminated numeric effluent limits on pH and turbidity (except in the case of active treatment systems), in response to a legal challenge to the original order.

9.2.1 NPDES C.3 REQUIREMENTS

The NPDES C.3 requirements went into effect for any project (public or private) that is "deemed complete" by the City or County (Lead Agency) on or after February 15, 2005, and which will result in the creation or replacement (other than normal maintenance) of at least 10,000 square feet of impervious surface area (roofs, streets, patios, parking lots, etc. Provision C.3 requires the onsite treatment of stormwater prior to its discharge into downstream receiving waters. Note that these requirements are in addition to the existing NPDES requirements for erosion and sedimentation controls during project construction that are typically addressed through acquisition of coverage under the SWRCB administered Construction General Permit. The C.3 requirements are typically required to be implemented by MS4 permittees (and their constituencies).

Projects subject to Provision C3 must include the capture and onsite treatment of all stormwater from the site prior to its discharge, including rainwater falling on building rooftops. Project applicants are required to implement appropriate source control and site design measures and to design and implement stormwater treatment measures in order to reduce the discharge of stormwater pollutants to the *maximum extent practicable.* While the Clean Water Act does not define "maximum extent practicable," the Stormwater Quality Management Plans required as a condition of the municipal NPDES permits identify control measures (BMPs) and, where applicable, performance standards, to establish the level of effort required to satisfy the maximum extent practicable criterion. It is ultimately up to the professional judgment of the reviewing municipal staff in the individual jurisdictions to determine whether a project's proposed stormwater controls will satisfy the maximum extent practicable criterion. However, there are numeric criteria used to ensure that treatment BMPs have been adequately sized to accommodate and treat a site's stormwater. The C3 requirements are quite extensive, and their complete explanation is not provided here. However, the following are minimums that should be understood and adhered to:

- The applicant must provide a detailed and realistic site design *and impervious surface area calculations*. This site design *and calculations* will be used by the Lead Agency (County or City) to determine/*verify* the amount of impervious surface area that is being created or replaced. It should include all proposed buildings, roads, walkways, parking lots, landscape areas, etc., that are being created or redeveloped. If large (greater than 10,000 square feet) lots are being created an effort will need to be made to determine the total impervious surface area that could be created on that parcel. For example, if only a portion of the lot is shown as a "building envelope" then the lead agency will need to consider that a driveway will have to be constructed to access the envelope and that the envelope will then be developed as shown. If the C.3 thresholds are met (creation/redevelopment of 10,000 square feet of impervious surface area), a Stormwater Control Plan (SWCP) (if required by the Lead Agency, or whatever steps for compliance with Provision C3 are required locally) must accompany the application.

- If a SWCP is required by the Lead Agency for the project it must be stamped by a Licensed Civil Engineer, Architect, or Landscape Architect.

9.2.2 APPLICABILITY TO THE PROPOSED PROJECT

The project site is located in an unincorporated area of San Benito County. San Benito County is an MS4 permittee and thus is required to enforce development of a project specific SWMP that incorporates pre and post construction BMPs. It is the applicant's responsibility to ensure that the project civil engineer prepares all required Storm Water Planning documents for submittal to San Benito County so that compliance with its MS4 permit requirements can be verified as reported to the RWQCB or as otherwise necessary to comply with the Clean Water Act NPDES requirements. In addition, if the project includes a requirement to obtain a Clean Water Act Section 401 permit from the RWQCB, the Storm Water Management Plan (or equivalent plan) must be submitted to the RWQCB with the application package submitted for acquisition of a Section 401 permit (aka "water quality certification").

9.3 California Department of Fish and Wildlife Protections

9.3.1 SECTION 1602 OF CALIFORNIA FISH AND GAME CODE

Pursuant to Section 1602 of the California Fish and Game Code: "An entity may not substantially divert or obstruct the natural flow of, or 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, unless all of the following occur:

(1) CDFW receives written notification regarding the activity in the manner prescribed by CDFW. The notification shall include, but is not limited to, all of the following:
  - (A) A detailed description of the project's location and a map.
  - (B) The name, if any, of the river, stream, or lake affected.
  - (C) A detailed project description, including, but not limited to, construction plans and drawings, if applicable.
  - (D) A copy of any document prepared pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.
  - (E) A copy of any other applicable local, state, or federal permit or agreement already issued.
  - (F) Any other information required by CDFW" (Fish & Game Code 2014).

Please see Section 1602 of the current California Fish and Game Code for further details.

Please also note that while not stated in the regulations above, CDFW typically considers its jurisdiction to include riparian vegetation (that is, the trees and bushes growing along the stream). Thus, any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, including its riparian vegetation, would require entering into a Streambed Alteration Agreement (SBAA) with CDFW prior to commencing with work in the stream. However, prior to authorizing such permits, CDFW typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

9.3.2 Applicability to The Proposed Project

There are two linear features on the project site: a short reach of roadside ditch in the project site's northwestern corner and a remnant drainage channel that no longer appears to convey flows. *The Corps did not take jurisdiction over either of these features and M&A does not believe either of these linear features meets the CDFW's criteria as regulated streams pursuant to Section 1602 of the California Fish and Game Code*. First, the roadside ditch emanates from a pipe where it daylights for approximately 20 linear feet before entering a box culvert and traveling underneath Enterprise Road and entering the County stormdrain system. Second, the unnamed drainage channel is very shallowly incised with less than six inches between natural grade and the bottom of the channel and this vertical difference is not even apparent during the winter and spring months when upland grasses obscure the channel. This remnant channel appears in the field as more of an upland swale rather than an incised drainage. Thus, it is our professional opinion that neither the roadside ditch nor the drainage channel meets the CDFW's criteria pursuant Section 1602 of California Fish and Game Code. Regardless, since only the CDFW can make the final determination as to what constitutes a regulated stream, M&A has prescribed a mitigation measure that would reduce impacts to CDFW-regulated stream channels to a less than significant level pursuant to CEQA (please see the Impacts and Mitigations section for details).

10. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REGULATIONS

A CEQA lead agency must determine if a proposed activity constitutes a project requiring further review pursuant to the CEQA. Pursuant to CEQA, a lead agency would have to determine if there could be significant adverse impacts to the environment from a proposed project. Typically, if within the city limits, the city would be the CEQA lead agency. If a discretionary permit (i.e., conditional use permit) would be required for a project (e.g. an occupancy permit must be issued), the lead agency typically must determine if there could be significant environmental impacts. This is usually accomplished by an "Initial Study." If there could be significant environmental impacts, the lead agency must determine an appropriate level of environmental review prior to approving and/or otherwise permitting the impacts. In some cases, there are "Categorical Exemptions" that apply to the proposed activity; thus, the activity is exempt from CEQA. The Categorical Exemptions are provided in CEQA. There are also Statutory Exemptions in CEQA that must be investigated for any proposed project. If the project is not exempt from CEQA, the lowest level of review typically reserved for projects with no significant effects on the environment would be for the lead agency to prepare a "Negative Declaration." If a proposed project would have only minimal impacts that can be mitigated to a level of no significance pursuant to the CEQA, then a "Mitigated Negative Declaration" is typically prepared by the lead agency. Finally, those projects that may have significant effects on the environment, or that have impacts that can't be mitigated to a level considered less than significant pursuant to the CEQA, typically must be reviewed via an Environmental Impact Report (EIR). All CEQA review documents are subject to public circulation, and comment periods.

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat of extinction to that species despite its legal status or lack thereof.

10.1.1 Applicability to the Proposed Project

This report has been prepared as a Biology section that is suitable for incorporation by the CEQA lead agency (in this case San Benito County) into a CEQA review document such as a Mitigated Negative Declaration or an Environmental Impact Report. This document addresses potential impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA.

11. IMPACTS ANALYSIS

Below the criteria used in assessing impacts to Biological Resources is presented.

11.1 Significance Criteria

A significant impact is determined using CEQA and CEQA Guidelines. Pursuant to CEQA §21068, a significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment. Pursuant to CEQA Guideline §15382, a significant effect on the environment is further defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. Other Federal, State, and local agencies' considerations and regulations are also used in the evaluation of significance of proposed actions.

Direct and indirect adverse impacts to biological resources are classified as "significant," "potentially significant," or "less than significant." Biological resources are broken down into four categories: vegetation, wildlife, threatened and endangered species, and regulated "waters of the United States" and/or stream channels.

11.1.1 Thresholds of Significance

11.1.1.1 Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.

- Have a substantial adverse effect on federally protected “wetlands” as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

11.1.1.2 Waters of the United States and State.

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the Corps regulates the discharge of dredged or fill material into waters of the United States, which includes wetlands, as discussed in the bulleted item above, and also includes “other waters” (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the state. Thus, substantial impacts to RWQCB regulated areas on a project site would also be considered a significant adverse impact.

11.1.1.3 Stream Channels

Pursuant to Section 1602 of the California Fish and Game Code, CDFW regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFW typically considers to include riparian vegetation. Any proposed activity that would result in substantial modifications to a natural stream channel would be considered a significant adverse impact.

12. IMPACT ASSESSMENT AND PROPOSED MITIGATION

In this section we discuss potential impacts to sensitive biological resources including special-status animal species and nesting birds. We follow each impact with a mitigation prescription that when implemented would reduce impacts to the greatest extent possible. This impact analysis is based on a Tentative Map prepared by San Benito Engineering & Surveying, Inc., on June 18, 2019 (see Attachment B).

12.1 Impact BIO-1. Development of the Project Would Have a Significant Adverse Impact on County Protected Trees (Significant)

In the San Benito County Code of Ordinances, Title 19, Land Use and Environmental Regulations, there is a chapter that discusses the management and conservation of woodlands. This chapter, Chapter 19.33, pertains to rural zoned properties such as the project site which is zoned R/PUD. Since the project site currently supports less than 19% canopy cover, in order to meet the County's "Canopy Retention Standards" it would be necessary to retain 100% of the native trees onsite. Native trees onsite are the oak trees, buckeye trees, and according to San Benito County's native tree list, pepper trees are considered "native" trees. If retention of 100% of the native trees onsite is not practical, it would be necessary to obtain a discretionary permit from the County prior to tree removal. Removal of native trees onsite without a discretionary permit issued by the County of San Benito would be in conflict with a local ordinance protecting biological resources and would be considered **a significant adverse impact** pursuant to CEQA. This impact could be mitigated to a less than significant level by obtaining a discretionary permit from the County as discussed in the mitigation measure below.

12.2 Mitigation Measure BIO-1 County Protected Trees

Prior to any tree removal on the project site the applicant should apply for a discretionary permit from San Benito County. Any conditions imposed by San Benito County for tree removal onsite would become conditions of project approval. ***This mitigation measure would reduce the project's impact on County protected trees to a level considered less than significant***.

12.3 Impact BIO-2. Development of The Project Would Have a Potentially Significant Adverse Impact on Nesting Birds (Potentially Significant)

Red-tailed hawk, white-tailed kite, and red-shouldered hawk are all known from the area and could nest on the project site. Common song birds (passerine birds) could also nest on the project site. All of these birds are protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their eggs and young are protected under California Fish and Game Code Sections 3503, 3503.5. Any project-related impacts to these species would be considered a significant adverse impact. Potential impacts to these species from the proposed project include disturbance to nesting birds and possibly death of adults and/or young. In the absence of survey results, it must be concluded that impacts to nesting raptors and song birds from the proposed project would be **potentially significant pursuant to CEQA.** This impact could be mitigated to a level considered less than significant.

12.4 Mitigation Measure BIO-2. Nesting Birds

To avoid impacts to nesting birds, a nesting survey should be conducted within 15 days of commencing with construction work or tree removal if this work would commence between February 1st and August 31st. The nesting survey should include an examination of all buildings onsite and all trees onsite and within 200 feet of the entire project site (i.e., within a zone of influence of nesting birds), not just trees slated for removal. The zone of influence includes those areas outside the project site where birds could be disturbed by earth- moving vibrations and/or other construction-related noise.

If birds are identified nesting on or within the zone of influence of the construction project, a qualified biologist should establish a temporary protective nest buffer around the nest(s). The nest buffer should be staked with orange construction fencing. The buffer must be of sufficient size to protect the nesting site from construction-related disturbance and should be established by a qualified ornithologist or biologist with extensive experience working with nesting birds near and on construction sites. Typically, adequate nesting buffers are 50 feet from the nest site or nest tree dripline for small birds and up to 300 feet for sensitive nesting birds that include several raptor species known the region of the project site but that are not expected to occur on the project site. Upon completion of nesting surveys, if nesting birds are identified on or within a zone of influence of the project site, a qualified ornithologist/biologist that frequently works with nesting birds should prescribe adequate nesting buffers to protect the nesting birds from harm while the project is constructed.

No construction or earth-moving activity should occur within any established nest protection buffer prior to September 1 unless it is determined by a qualified ornithologist/biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones, or that the nesting cycle is otherwise completed. In the region of the project site, most species complete nesting by mid-July. This date can be significantly earlier or later and would have to be determined by the qualified biologist. At the end of the nesting cycle, and fledging from the nest by its occupants, as determined by a qualified biologist, temporary nesting buffers may be removed, and construction may commence in established nesting buffers without further regard for the nest site. ***Implementation of these mitigation measures would reduce impacts to nesting birds to a level regarded as less than significant pursuant to CEQA.***

12.5 Impact BIO-3. Development of the Project Could Have a Potentially Significant Adverse Impact on Western Burrowing Owl (Potentially Significant)

The western burrowing owl is a California species of special concern. This raptor (that is, bird of prey) is also protected under the Migratory Bird Treaty Act (50 CFR 10.13) and its nest, eggs, and young are protected under California Fish and Game Code Sections 3503, 3503.5. The closest known record of western burrowing owl to the project site is 1.7 miles to the northeast (Occurrence No. 758) and was recorded in 2000. While western burrowing owls have not been observed on the project site during two separate survey years (2015 and 2019) and their likelihood of presence is low, suitable nesting and foraging habitat (e.g., California ground squirrel burrows) occurs on the project site. Since the western burrowing owl is a mobile species and could move onsite, impact avoidance measures are warranted. Impacts to the western burrowing owl would be **potentially significant.** This impact could be mitigated to a level considered less than significant pursuant to CEQA.

12.6 Mitigation Measure BIO-3. Western Burrowing Owl

Based on the presence for this species in the project vicinity and the potential habitat found on the project site, a preconstruction survey for burrowing owls should be conducted.

CDFW's 2012 *Staff Report* states that take avoidance (preconstruction) surveys should be conducted 14 days prior or less to initiating ground disturbance. As burrowing owls may recolonize a site after only a few days, time lapses between project activities trigger subsequent take avoidance surveys including, but not limited to, a final survey conducted within 24 hours prior to ground disturbance to ensure absence. If no owls are found during these surveys, no further regard for the burrowing owl would be necessary.

a. Burrowing owl surveys should be conducted by walking the entire project site and (where possible) in areas within 150 meters (approx. 500 feet) of the project impact zone. The 150-meter buffer zone is surveyed to identify burrows and owls outside of the project area which may be impacted by factors such as noise and vibration (heavy equipment) during project construction.

Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be 7 meters to 20 meters and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. Poor weather may affect the surveyor's ability to detect burrowing owls thus, avoid conducting surveys when wind speed is greater than 20 kilometers per hour and there is precipitation or dense fog. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approx. 160 ft.) wherever practical to avoid flushing occupied burrows. Disturbance to occupied burrows should be avoided during all seasons.

b. If burrowing owls are detected on the site, the following restricted activity dates and setback distances are recommended per CDFW's *Staff Report* (2012).

- From April 1 through October 15, <u>low disturbance</u> activities should have a 200-meter buffer while <u>high disturbance</u> activities should have a 500-meter buffer from occupied nests.
- From April 1 through August 15, however, <u>medium disturbance</u> activities should have a 500-meter buffer from occupied nests. Medium disturbance activities can have a reduced buffer of 200 meters starting August 16 through October 15.
- From October 16 through March 31, low disturbance activities should have a 50-meter buffer, medium disturbance activities should have a 100-meter buffer, and high disturbance activities should have a 500-meter buffer from occupied nests, or as otherwise determined by a qualified WBO biologist to be an adequate buffer that will protect the nesting burrowing owls.
- No earth-moving activities or other disturbance should occur within the afore-mentioned buffer zones of occupied burrows. These buffer zones should be fenced as well. If burrowing owls were found in the project area, a qualified biologist would also need to delineate the extent of burrowing owl habitat on the site.
- If western burrowing owls are found occupying the project site they may be passively relocated from the project site between October 1 and February 1. Passive removal shall be conducted by a qualified biologist with demonstrated experience with passive relocation.

c. Finally, in accordance with the 2012 *Staff Report*, if burrowing owls were found nesting onsite, credits would have to be purchased from a mitigation bank to offset the project's habitat loss on the burrowing owl. This would be developed in coordination with CDFW and San Benito County.

These mitigation measures would reduce impacts to western burrowing owl to a level considered less than significant.

12.7 Impact BIO-4. Bats – Tree Removal and Site Development May Have a Potentially Significant Impact on Greater Western Mastiff Bat and Western Red Bat (Potentially Significant)

The trees and buildings onsite may provide roosting and maternity habitat for special-status bats including the greater western mastiff bat and the western red bat. These bat species are designated by the State as "species of special concern." In accordance with the CEQA Guidelines (Section 15380) which protects "rare" and "endangered" species as defined by CEQA (species of special concern meet this CEQA definition), impacts to these bat species would be considered a **potentially significant adverse impact**. Potential impacts to special-status bats from the proposed project include loss of maternity and/or roosting habitat, death of individual adult bats and/or young. This impact could be mitigated to a less than significant level.

12.8 Mitigation Measure BIO-4. Bats

In order to avoid impacts to the greater western mastiff bat, western red bat, and other special-status bat species, a biologist should survey trees and buildings 15 days prior to commencing with any removal or demolition. All bat surveys should be conducted by a biologist with known experience surveying for bats. If no special-status bats are found during the surveys, then there would be no further regard for these bat species.

If special-status bat species are found on the project site a determination should be if there are young bats present. If young are found roosting in any tree or building, impacts to the tree or building should be avoided until the young have reached independence. A non-disturbance buffer fenced with orange construction fencing should also be established around the maternity site. The size of the buffer zone should be determined by a qualified bat biologist at the time of the surveys. If adults are found roosting in a tree or building on the project site but no maternal sites are found, the following measures should be undertaken to avoid impacting the bats:

Tree Trimming and/or removal should only be conducted during seasonal periods of bat activity: between August 31 and October 15, when bats would be able to fly and feed independently, and between March 1 and April 15 to avoid hibernating bats, and prior to the formation of maternity colonies.

Any trees that will be removed, and that the biologist has identified as having potentially suitable bat roost habitat, should be removed using a two-day phased removal method:

- On day one, in the afternoon, limbs and branches should be removed using chainsaws only. Limbs with cavities, crevices, and deep bark fissures should be avoided.
- On day two, the rest of the tree should be removed under the direct supervision of the biologist.

If tree removal must occur outside of the seasonal activity periods mentioned above (i.e., between October 16 and February 28/29, or between April 16 and April 30), then a qualified biologist, one with at least two years of experience surveying for bats, should do preconstruction surveys within 14 days of starting work. If the qualified biologist finds evidence of bat presence during the surveys, then he/she should develop a plan for removal and exclusion, in conjunction with CDFW.

This mitigation measure would reduce the project's impact to special-status bats to a level considered less than significant.

13. LITERATURE CITED

Baldwin D.H, Goldman D.H., Keil D.J., Patterson R, Rosatti T.J., Wilken D.H. (ed.). 2012. The Jepson Manual Vascular Plants of California: Second Edition. University of California Press, Berkeley. 1568 pps.

Cryan, P.M. 2003. Seasonal distribution of migratory tree bats (*Lasiurus and Lasionycteris*) in North America. Journal of mammalogy, 84(2), 579-593.

CDFG (California Department of Fish and Game). 2012. Staff report on burrowing owl mitigation. March 7, 2012. 15 pages plus appendices.

CDFW (California Department of Fish and Wildlife). 2016. Complete list of amphibian, reptile, bird and mammal species in California. Published September 2008; updated May 2016.

CNDDB (California Natural Diversity Data Base). 2019. RareFind 5. Computer printout for special-status species within a 3-mile radius of the project site. California Natural Heritage Division, California Department of Fish and Wildlife, Sacramento, CA.

CNPS (California Native Plant Society). 2001. Inventory of rare and endangered plants of California (sixth edition). Rare plant scientific advisory committee, David P. Tibor, convening editor. California Native Plant Society. Sacramento, CA. x+338 pps.

Environmental Laboratory. 1987. U.S. Army Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, MS.

Hickman, J. (ed.). 1993. The Jepson manual: higher plants of California. University of California Press, Berkeley. 1400 pp.

Holland, V.L. & D.J. Keil. 1995. California vegetation. Kendall/Hunt Publishing Company.

Jennings, M.R., M.P. Hayes, and Research Section, Animal Management Division, Metro Washington Park Zoo. 1994. Amphibian and Reptile Species of Special Concern in California. Final Report Submitted to the California Department of Fish & Game, Inland Fisheries Division. Rancho Cordova, CA. 255 pp. November 1.

Pierson, E. D., Rainey, W. E., & Corben, C. (2006). Distribution and status of western red bats (*Lasiurus blossevillii*) in California. California Department of Fish and Game, Habitat Conservation Planning Branch, Species Conservation and Recovery Program Report, 4.

U.S. Army Corps of Engineers. 2008. Regional supplement to the Corps of Engineers wetland delineation manual: arid west region (Version 2). Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center. September 2008.

USFWS (U.S. Fish and Wildlife Service). 2004. Endangered and threatened wildlife and plants; determination of threatened status for the California tiger salamander; and special rule exemption for existing routine ranching activities; Final Rule. Federal Register Vol 69, No 149 pps. 47212-47248. August 4, 2004.

USFWS (U.S. Fish & Wildlife Service). 2005. Endangered and threatened wildlife and plants; designation of critical habitat for the California tiger salamander, central population; final rule (50 CFR Part 17, August 23, 2005).

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Figure 1. 213 Enterprise Road Project Site
Regional Map
Hollister, California

County: San Benito
Map Preparation Date: April 23, 2019

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Figure 2. 213 Enterprise Road Project Site
Project Site Location Map
Hollister, California

Land Grant
7.5-Minute Hollister quadrangle
Aerial Photograph Source: ESRI
Map Preparation Date: April 23, 2019

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Figure 3. Aerial Photograph of the
213 Enterprise Road Project Site
Hollister, California

Aerial Photograph Source: ESRI
Map Preparation Date: April 23, 2019

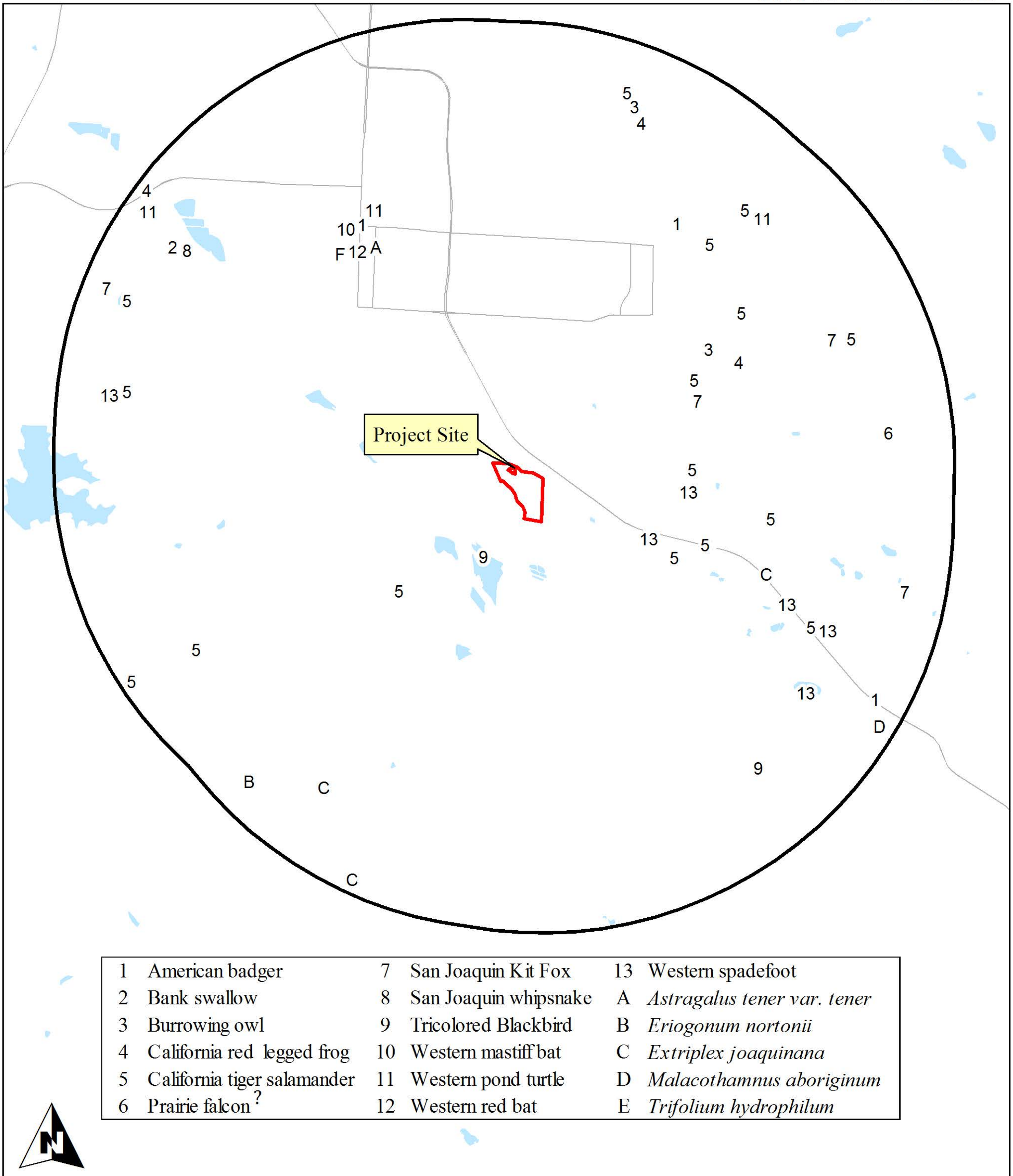

Figure 4. CNDDB Special-Status Occurences
Within 3 Miles of the 213 Enterprise Road Project Site
Hollister, California

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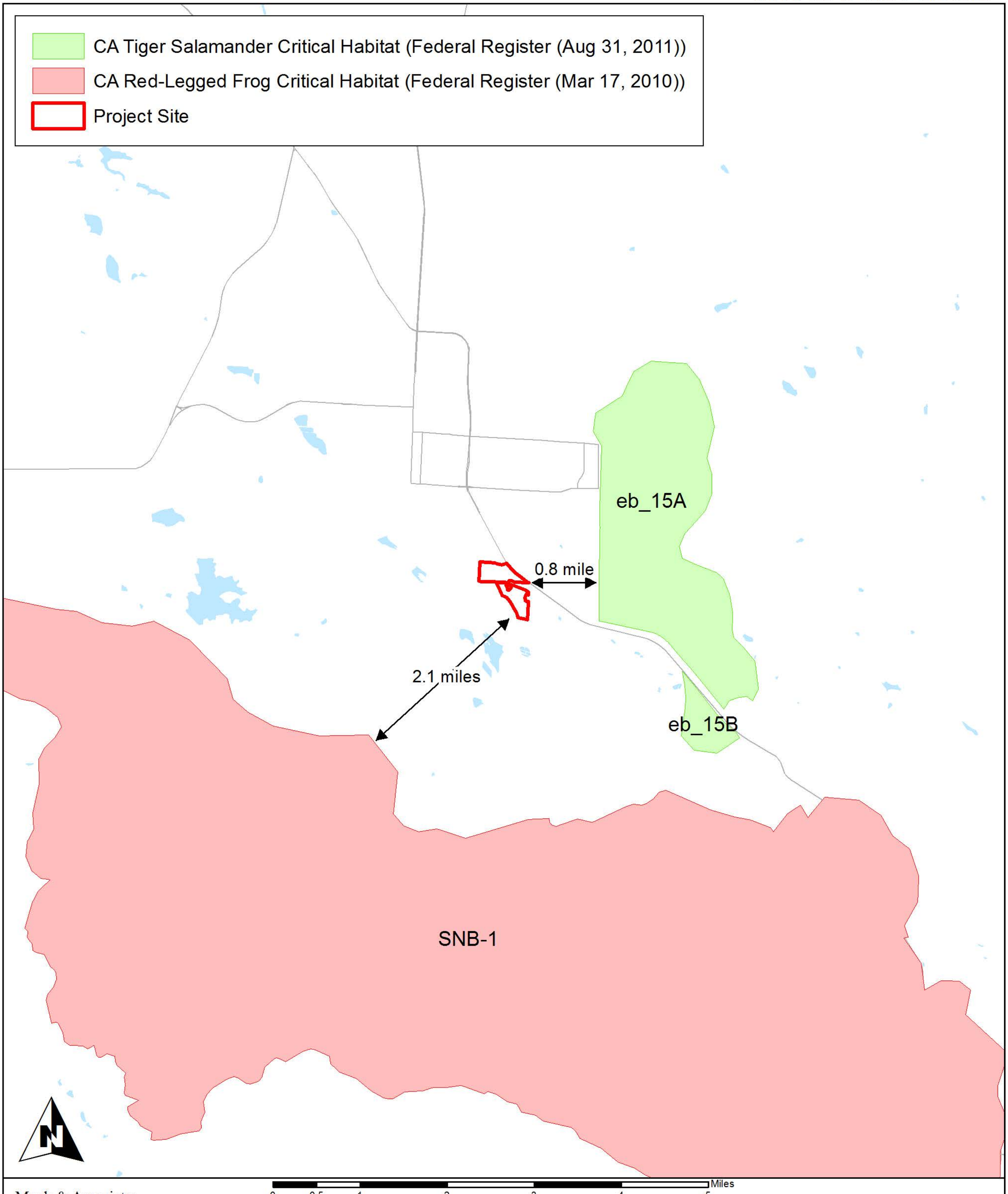
Map Preparation Date:
June 26, 2019
3-Mile Radius
Source: CDFW,
California Natural Diversity Data Base, 2019



Monk & Associates
Environmental Consultants
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
(925) 947-4867

Figure 5. USFWS Critical Habitat in the Vicinity of the 213 Enterprise Road Project Site Hollister, California

County: San Benito
Map Preparation Date: June 24, 2019

Table 1

Plants Species Observed on the 213 Enterprise Road Project Site.

Angiosperms - Dicots

Asteraceae

**Carduus pycnocephalus subsp. pycnocephalus*	Italian thistle
Xanthium spinosum	Spiny cocklebur

Boraginaceae

Amsinckia menziesii	Common fiddleneck

Brassicaceae

**Brassica nigra*	Black mustard
**Capsella bursa-pastoris*	Shepherd's purse
**Lepidium draba*	Heart-podded hoary cress
**Raphanus sativus*	Wild radish
**Sinapis arvensis*	Wild mustard

Caryophyllaceae

**Stellaria media*	Common chickweed

Fabaceae

**Vicia villosa*	Winter vetch

Geraniaceae

**Erodium botrys*	Broad-leaf filaree

Lythraceae

**Lythrum hyssopifolia*	Hyssop loosestrife

Plantaginaceae

**Veronica persica*	Persian speedwell

Polygonaceae

**Rumex crispus*	Curly dock

Angiosperms -Monocots

Alismataceae

Alisma sp.	Water plantain

Juncaceae

Juncus bufonius	Toad rush

Poaceae

**Avena sativa*	Cultivated oat
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Festuca perennis*	perennial ryegrass
**Hordeum murinum*	Wall barley
**Poa annua*	Annual bluegrass
**Triticum aestivum*	Wheat

* Indicates a non-native species

Table 2
Wildlife Species Observed on the 213 Enterprise Road Project Site

Amphibians	
Sierran treefrog	*Pseudacris sierra*
Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Birds	
Turkey vulture	*Cathartes aura*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
California quail	*Callipepla californica*
Eurasian collared-dove	*Streptopelia decaocto*
Mourning dove	*Zenaida macroura*
Anna's hummingbird	*Calypte anna*
Acorn woodpecker	*Melanerpes formicivorus*
Nuttall's woodpecker	*Picoides nuttallii*
Black phoebe	*Sayornis nigricans*
Say's phoebe	*Sayornis saya*
California scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Oak titmouse	*Baeolophus inornatus*
Bushtit	*Psaltriparus minimus*
Bewick's wren	*Thryomanes bewickii*
Western bluebird	*Sialia mexicana*
American robin	*Turdus migratorius*
Northern mockingbird	*Mimus polyglottos*
European starling	*Sturnus vulgaris*
Cedar waxwing	*Bombycilla cedrorum*
Yellow-rumped warbler	*Setophaga coronata*
Savannah sparrow	*Passerculus sandwichensis*
White-crowned sparrow	*Zonotrichia leucophrys*
Dark-eyed junco	*Junco hyemalis*
House finch	*Haemorhous mexicanus*
Mammals	
Virginia opossum	*Didelphis virginiana*
Black-tailed jackrabbit	*Lepus californicus*
California ground squirrel	*Otospermophilus beecheyi*
Botta's pocket gopher	*Thomomys bottae*
Raccoon	*Procyon lotor*

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the 213 Enterprise Road, Hollister Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Apiaceae					
Eryngium aristulatum hooveri Hoover's button-celery	Fed: - State: - CNPS: Rank 1B	July-July	Vernal pools.	CNPS nine-quad search	None. No vernal pool habitat on the project site. No impact expected.
Asteraceae					
Centromadia parryi congdonii Congdon's tarplant	Fed: - State: - CNPS: Rank 1B.2	May-November	Valley and foothill grassland (alkaline).	CNPS nine-quad search	None. No alkaline habitat on the project site. Was not observed onsite. No impact expected.
Boraginaceae					
Plagiobothrys glaber Hairless popcornflower	Fed: - State: - CNPS: Rank 1A	April-May	Meadows (alkaline); marshes and swamps (coastal salt).	CNPS nine-quad search	None. No alkaline meadowsn, marshes, or swamp habitat on the project site. No impact expected.
Brassicaceae					
Streptanthus albidus peramoenus Uncommon jewelflower	Fed: - State: - CNPS: Rank 1B.2	April-June	Chaparral; valley and foothill grassland; [serpentinite].	CNPS nine-quad search	None. No serpentine habitat on the project site. No impact expected.
Chenopodiaceae					
Extriplex joaquinana San Joaquin spearscale	Fed: - State: - CNPS: Rank 1B.2	April-October	Chenopod scrub; meadows; valley and foothill grassland; [alkaline].	Closest known occurrence is approximately 1.3 miles southeast of the project site (CNDDB Occurrence No. 114).	None. No alkaline habitat on the project site. Was not observed during surveys. No impact expected.

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the 213 Enterprise Road, Hollister Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Ericaceae					
Arctostaphylos gabilanensis Gabilan manzanita	Fed: - State: - CNPS: Rank 1B	January-January	Chaparral; cis-montane woodlands [granitic].	CNPS nine-quad search	None. No chaparral or granitic habitat on the project site. No manzanita species occur on the project site. No impact expected.
Arctostaphylos pajaroensis Pajaro manzanita	Fed: - State: - CNPS: Rank 1B	January-December	Chaparral (sandy).	CNPS nine-quad search	None. No sandy chaparral on the project site. No manzanita species occur on the project site. No impact expected.
Fabaceae					
Astragalus tener tener Alkali milkvetch	Fed: - State: - CNPS: Rank 1B.2	March-June	Playas; mesic grasslands (adobe clay), vernal pools (alkaline).	Closest known occurrence is approximately 1.9 miles northwest of the project site (CNDDB Occurrence No. 2).	None. No playas, mesic grassland, or vernal pool habitat on the project site. No impact expected.
Trifolium hydrophilum Saline clover	Fed: - State: - CNPS: Rank 1B.2	April-June	Marshes and swamps; valley and foothill grassland (mesic, alkaline); vernal pools. 0-300 m.	Closest known occurrence is approximately 1.5 miles northwest of the project site (CNDDB Occurrence No. 21).	None. No marshes, swamps, mesic or alkaline grassland, or vernal pool habitat on the project site. Not observed during surveys. No impact expected.
Malvaceae					
Malacothamnus aboriginum Indian Valley bush mallow	Fed: - State: - CNPS: Rank 1B	April-October	Chaparral; cismontane woodland; [rocky].	Closest known occurrence is approximately 3.3 miles southeast of the project site (CNDDB Occurrence No. 24).	None. No chaparral or cismontane woodland habitat on the project site. No impact expected.

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the 213 Enterprise Road, Hollister Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Orobanchaceae					
Castilleja rubicundula rubicundula Pink creamsacs	Fed: - State: - CNPS: Rank 1B	April-June	Chaparral; cismontane woodland; valley and foothill grassland; meadows and seeps.	CNPS nine-quad search	None. Was not observed during appropriately timed special-status plant surveys. No impact expected.
Polemoniaceae					
Navarretia prostrata Prostrate vernal pool navarretia	Fed: State: CNPS: Rank 1B.1	April-July	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), and vernal pools (mesic). Elevation 15-1210 m.	CNPS nine-quad search	None. No coastal scrub, meadows, seeps, alkaline grassland, or vernal pool habitat on the project site. Was not observed. No impact expected.
Polygonaceae					
Chorizanthe biloba immemora Hernandez spineflower	Fed: - State: - CNPS: Rank 1B	May-September	Chaparral; cismontane woodland.	CNPS nine-quad search	None. No chaparral or cismontane woodland on the project site. No impact expected.
Chorizanthe pungens pungens Monterey spineflower	Fed: FT State: - CNPS: Rank 1B.2	April-June	Coastal dunes; coastal scrub.	CNPS nine-quad search	None. No coastal dunes or scrub on the project site. No impact expected.
Eriogonum nortonii Pinnacles buckwheat	Fed: - State: - CNPS: Rank 1B	May-June	Chaparral; valley and foothill grassland; [sandy, often on recent burns].	Closest known occurrence is approximately 2.9 miles southwest of the project site (CNDDB Occurrence No. 24).	None. Was not observed during appropriately timed special-status plant surveys. No impact expected.

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the 213 Enterprise Road, Hollister Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern

CNPS:
Rank 1A - Presumed extinct in California
Rank 1B - Plants rare, threatened, or endangered in California and elsewhere
Rank 1B.1 - Seriously endangered in California (over 80% occurrences threatened/ high degree and immediacy of threat)
Rank 1B.2 - Fairly endangered in California (20-80% occurrences threatened)
Rank 1B.3 - Not very endangered in California (<20% of occurrences threatened or no current threats known)

CNPS Continued:
Rank 2 - Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 2A - Extirpated in California, common elsewhere
Rank 2B.1 - Seriously endangered in California, but more common elsewhere
Rank 2B.2 - Fairly endangered in California, but more common elsewhere
Rank 2B.3 - Not very endangered in California, but more common elsewhere
Rank 3 - Plants about which we need more information (Review List)
Rank 3.1 - Plants about which we need more information (Review List) Seriously endangered in California
Rank 3.2 - Plants about which we need more information (Review List) Fairly endangered in California
Rank 4 - Plants of limited distribution - a watch list

Table 4

Special-Status Animal Species Known to Occur Within 3 Miles of the 213 Enterprise Road, Hollister Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Amphibians				
California tiger salamander (Cnt Vly DPS) *Ambystoma californiense*	Fed: FT State: CT Other:	Found in grassland habitats of the valleys and foothills. Requires burrows for aestivation and standing water until late spring (May) for larvae to metamorphose.	Closest record is from 1999 and is located approximately 1.2 miles east of the project site (Occurrence No. 190) in a seasonal detention pond at the Ridgemark Golf Course.	None. No potential breeding habitat on the project site. Site is isolated from records in the area. None seen during multiple surveys. No suitable aquatic habitat onsite. No aquatic habitats within 1.3 miles. No impact expected.
Western spadefoot *Spea hammondii*	Fed: -- State: CSC Other:	Found primarily in grassland habitats, but may occur in valley and foothill woodlands. Requires vernal pools, seasonal wetlands, or stock ponds for breeding and egg laying. Eggs are typically laid in March. Eggs hatch and larval metamorphose quickly.	Closest record is from 2005 and is located approximately 1.1 miles east of the project site (Occurrence No. 115) in a detention pond at the Ridgemark Golf Course.	None. The project site does not provide potential breeding habitat and is isolated by farming and high density development from current records. No impact expected.
California red-legged frog *Rana draytonii*	Fed: FT State: CSC Other:	Occurs in lowlands and foothills in deeper pools and streams, usually with emergent wetland vegetation. Requires 11-20 weeks of permanent water for larval development.	Closest record is from 2005 and is located approximately 1.3 miles east of the project site (Occurrence No. 84) in a seasonal detention pond and a golf course pond.	None. There is no potential pool habitat on the project site. The project site is isolated by farming and high density residential development from records in the area. None seen during January thru June surveys nor in September 2015. No impact expected.
Reptiles				
Western pond turtle ** *Emys marmorata*	Fed: - State: CSC Other:	Inhabits ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Needs suitable basking sites and upland habitat for egg laying. Occurs in the Central Valley and Contra Costa County.	Closest record located approximately 1.3 miles northwest of the project site (Occurrence No. 31).	None. No suitable aquatic habitat on the project site. None seen during multiple surveys. No impact expected.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	Fed: -- State: CSC Other:	Arid regions below 1,800 meters in open terrain. Most abundant in grassland, desert, scrub, chaparral, and pasture lands. Uses rodent burrows for retreats.	Closest record is from 1996 and is located approximately 2.7 miles northwest of the project site (Occurrence No. 1) in San Benito river channel.	Unlikely. The project site provides farmed, ruderal habitats. The project site is isolated by farming and high density residential development from records in the area. No impact.

Table 4

Special-Status Animal Species Known to Occur Within 3 Miles of the 213 Enterprise Road, Hollister Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Birds				
Prairie falcon *Falco mexicanus*	Fed: - State: WL Other:	Inhabits dry, open terrain. Nests on cliffs and forages over wide areas.	Closest nesting record is from 1978 and is located approximately 0.8 mile east of the project site (Occurrence No. 347).	None. Nest sites are the concern. No cliff nesting habitat on or near the project site. No impact expected.
Western burrowing owl *Athene cunicularia hypugaea*	Fed: -- State: CSC Other:	Found in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Closest record is from 2000 and is located approximately 1.7 miles northeast of the project site (Occurrence No. 758) in grazed annual grassland.	Low. Potential burrows on the project site, but this owl was not observed during multiple surveys. See text.
Bank swallow *Riparia riparia*	Fed: - State: CT Other:	Colonial nester near riparian and other lowland habitats. Requires vertical banks or cliffs with fine-textured, sandy soils usually near streams, rivers, and lakes.	Closest record is from 1922 and is located approximately 2.4 miles northwest of the project site (Occurrence No. 290) in San Benito River.	None. No suitable banks on the project site. No nests of any kind on cobbly banks on and near site. No impact expected.
Tricolored blackbird *Agelaius tricolor*	Fed: - State: CC Other: CSC	Colonial nester in dense cattails, tules, brambles or other dense vegetation. Requires open water, dense vegetation, and open grassy areas for foraging.	Closest record located approximately 0.4 miles south of the project site (Occurrence No. 992).	None. No suitable nesting habitat on the project site. No impact expected.
Mammals				
Western red bat *Lasiurus blossevillii*	Fed: State: CSC Other:	Prefers riparian areas where they roost in tree foliage. This bat is occasionally captured in riparian habitats dominated by cottonwoods, oaks, sycamores, and walnuts and is rarely found in desert habitats.	Closest record located within general vicinity of the project site; exact location unknown (Occurrence No. 83).	Low. Potential roosting habitat on the project site. See text.

Table 4

Special-Status Animal Species Known to Occur Within 3 Miles of the 213 Enterprise Road, Hollister Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Greater western mastiff bat *Eumops perotis californicus*	Fed: -- State: CSC Other:	Inhabits open habitats including conifer and broad-leaved woodlands, coastal scrub, chaparral, and grassland. Roosts in crevices, high buildings, trees, and tunnels.	Closest record is from 1998 and is located approximately 1.5 miles northwest of the project site (Occurrence No. 242)	Low. Potential roosting habitat on the project site. See text.
San Joaquin kit fox *Vulpes macrotis mutica*	Fed: FE State: CT Other:	Inhabits open grasslands with scattered shrubs. Needs loose-textured sand soils for burrowing.	Closest record is from 1971 and is located approximately 1.3 miles east of the project site (Occurrence No. 1024).	None. No kit fox observed or photographed during an abbreviated protocol survey. Too much recent development in the area discourages this shy fox. See text.
American badger *Taxidea taxus*	Fed: - State: CSC Other:	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Need sufficient food, friable soils & open, uncultivated ground. Prey on burrowing rodents. Dig burrows.	Closest record located approximately 1.9 miles northwest of the project site (Occurrence No. 121).	Low. Potential herbaceaous habitat on the project site. No evidence of badger use on the site found. Likely CA ground squirrel populations too low from control programs owing to onsite farming practices. No impact expected.

***Status**

Federal:	State:
FE - Federal Endangered	CE - California Endangered
FT - Federal Threatened	CT - California Threatened
FPE - Federal Proposed Endangered	CR - California Rare
FPT - Federal Proposed Threatened	CC - California Candidate
FC - Federal Candidate	CSC - California Species of Special Concern
FPD - Federally Proposed for delisting	FP - Fully Protected
	WL - Watch List. Not protected pursuant to CEQA

**The USFWS hopes to finish a 12-month finding for western pond turtle in 2021 but until formally listed, it is not afforded the protections of FESA.

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

JAN 26 2016

Regulatory Division

Subject: File No. 2015-00438S

Ms. Christy Owens
Monk & Associates, Inc.
1136 Saranap Ave., Suite Q
Walnut Creek, California 94595

Dear Ms. Owens:

This correspondence is in reference to your submittal of November 12, 2015, on behalf of Pacific Union Land Company, requesting a preliminary jurisdictional determination of the extent of navigable waters of the United States (U.S.) and waters of the U.S. occurring on a 51.2-acre project site located to the south of Enterprise Road between Southside Road and Fairfield Road in the City of Hollister, San Benito County, California (APN 020-290-040 and 029-290-029).

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the U.S.; or below the high tide line in tidal waters of the U.S.; and within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq*.). Waters of the U.S. generally include the territorial seas; all traditional navigable waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally; and wetlands directly abutting such tributaries. Where a case-specific analysis determines the existence of a "significant nexus" effect with a traditional navigable water, waters of the U.S. may also include non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary; and certain ephemeral streams in the arid West.

The enclosed delineation map entitled, "Preliminary Jurisdictional Determination, 213 Enterprise Road, Hollister, San Benito County," in one sheet and date certified January 6, 2016, depicts the extent and location of other waters of the U.S. within the boundary area of the site that **may be** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. This preliminary jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of December 8, 2015, and a review of other data included in your submittal. While this preliminary jurisdictional determination was conducted pursuant to Regulatory Guidance Letter No. 08-02, *Jurisdictional Determinations*, it may be subject to future revision if new information or a change in field conditions becomes subsequently apparent. The basis for this preliminary jurisdictional determination is fully explained in the enclosed *Preliminary Jurisdictional Determination Form.* You are requested to sign and date this form and return it to this office within two weeks of receipt.

You are advised that the preliminary jurisdictional determination may **not** be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000). Under the provisions of 33 C.F.R § 331.5(b)(9), non-appealable actions include preliminary jurisdictional determinations since they are considered to be only advisory in nature and make no definitive conclusions on the jurisdictional status of the water bodies in question. However, you may request this office to provide an approved jurisdictional determination that precisely identifies the scope of jurisdictional waters on the site; an approved jurisdictional determination may be appealed through the *Administrative Appeal Process*. If you anticipate requesting an approved jurisdictional determination at some future date, you are advised not to engage in any on-site grading or other construction activity in the interim to avoid potential violations and penalties under Section 404 of the Clean Water Act. Finally, you may provide this office new information for further consideration and request a reevaluation of this preliminary jurisdictional determination.

You may refer any questions on this matter to Naomi Schowalter of my Regulatory staff by telephone at 415-503-6763 or by e-mail at naomi.a.schowalter@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: http://www.spn.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

Katerina Galacatos

fo Tori White
Acting Chief, Regulatory Division

Enclosures

Copy Furnished (w/ enclosures):

Pacific Union Land Company, Danville, CA (Attn: Bruce Myers)

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
San Francisco District

This Preliminary Jurisdictional Determination finds that there *"may be"* waters of the United States in the subject review area and identifies all such aquatic features, based on the following information:

Regulatory Division: South Branch **File Number:** 2015-00438S **PJD Completion Date:** 01-06-2016

Review Area Location
City/County: San Benito County State: California
Nearest Named Waterbody: San Benito River
Approximate Center Coordinates of Review Area
Latitude (degree decimal format): 36.82034°N
Longitude (degree decimal format): -121.38106°W
Approximate Total Acreage of Review Area: 51.2 acres

File Name: 213 Enterprise Rd, Hollister, San Benito

Applicant or Requestor Information
Name: Christy Owens
Company Name: Monk and Associates, Inc.
Street/P.O. Box: 1136 Saranap Ave., Suite Q
City/State/Zip Code: Walnut Creek, CA 94595

Estimated Total Amount of Waters in Review Area

Non-Wetland Waters: lineal feet feet wide and/or 0.24 acre(s) Flow Regime: Ephemeral

Wetlands: lineal feet feet wide and/or acre(s) Cowardin Class: Select

Name of Section 10 Waters Occurring in Review Area
Tidal: N/A
Non-Tidal: N/A

☐ Office (Desk) Determination
☒ Field Determination:
Date(s) of Site Visit(s): 12-08-2015

SUPPORTING DATA: Data reviewed for Preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below)

☒ Maps. Plans, plots or plat submitted by or on behalf of applicant/requestor (specify):

☒ Data sheets submitted by or on behalf of applicant/requestor (specify):

- ☐ Corps concurs with data sheets/delineation report.
- ☐ Corps does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps.
☐ Corps navigable waters' study (specify):
☒ U.S. Geological Survey Hydrologic Atlas:
- ☒ USGS NHD data.
- ☐ USGS HUC maps.

☐ U.S. Geological Survey map(s) (cite quad name/scale):
☐ USDA Natural Resources Conservation Service Soil Survey.
☐ National wetlands inventory map(s) (specify):
☐ State/Local wetland inventory map(s) (specify):
☐ FEMA/FIRM maps.
☐ 100-year Floodplain Elevation (specify, if known):
☐ Photographs: ☐ Aerial (specify name and date):
☐ Other (specify name and date):
☐ Previous JD determination(s) (specify File No. and date of response letter):
☐ Other information (specify):

IMPORTANT NOTE: If the information recorded on this form has not been verified by the Corps, the form should not be relied upon for later jurisdictional determinations.

SCHOWALTER.NAOMI.ANN.1515584478 Digitally signed by SCHOWALTER.NAOMI.ANN.1515584478 Date: 2019.06.27 10:04:02 -07'00'

Signature and Date of Regulatory Project Manager (REQUIRED)

Christy Owens

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

Aquatic Resource I.D.	Latitude (degree decimal format)	Longitude (degree decimal format)	Cowardin Class and Flow Regime	Estimated Area or Lineal Feet of Aquatic Resource	Type of Aquatic Resource
ow 1	36.821326°N	-121.378122°W	Riverine Flow: Ephemeral	lineal ft ft wide 0.192 acre(s)	Natural Creek
ow 2	36.821000°N	-121.377952°W	Riverine Flow: Ephemeral	lineal ft ft wide 0.006 acre(s)	Natural Creek
ow 3	36.820823°N	-121.377934°W	Riverine Flow: Ephemeral	lineal ft ft wide 0.006 acre(s)	Natural Creek
ow 4	36.820734°N	-121.377933°W	Riverine Flow: Ephemeral	lineal ft ft wide 0.001 acre(s)	Natural Creek
ow 5	36.820641°N	-121.37792°W	Riverine Flow: Ephemeral	lineal ft ft wide 0.017 acre(s)	Natural Creek
ow 6	36.821772°N	-121.378248°W	Riverine Flow: Ephemeral	lineal ft ft wide 0.021 acre(s)	Channelized Creek
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
	°Select	- °Select	Select Flow: Select	lineal ft ft wide acre(s)	Select
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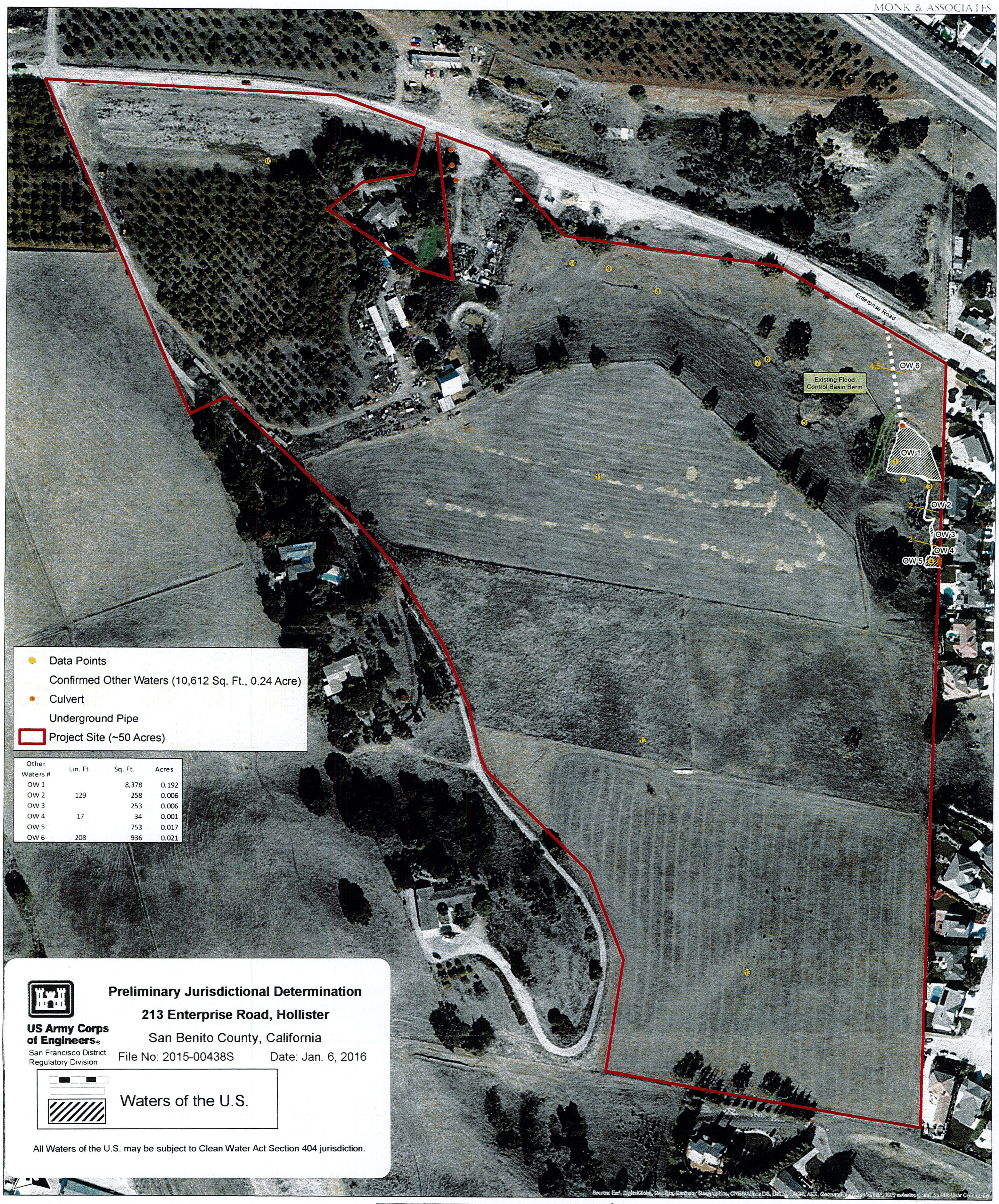

Other Waters #	Lin. Ft.	Sq. Ft.	Acres
OW 1		8,378	0.192
OW 2	129	258	0.006
OW 3		253	0.006
OW 4	17	34	0.001
OW 5		753	0.017
OW 6	208	936	0.021

0 50 100 200 300 400 500 Feet

Sheet 1. Confirmed Wetland Delineation Map
213 Enterprise Road Project Site
Hollister, California

Scale: 1 inch = 100 feet
Aerial Photograph Source: ESRI
Corps Confirmation Date: December 8, 2015
Confirmed by: Naomi Schowalter and Gregory Brown, Corps
Christy Owens and Sarah Lynch, M&A
Map Preparation Date: December 17, 2015

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PRELIMINARY NOT FOR CONSTRUCTION

NO.	REVISIONS	DATE

COUNTY OF SAN BENITO

LICO PROPERTY

STATE OF CALIFORNIA

TENTATIVE MAP

SUBDIVISION

SCALE: SCALE 1" = 100'
DATE: 18 June 2019
JOB #: 118063
DWG: 118063TM.dwg

SHEET: 1 OF 1 SHEETS

* FILE NAME: X:\AutoCAD Projects\2018\118063\118063TM.dwg * Plotted on: Tuesday, 18 June 2019 at 1:57pm by: SBE1 *

Appendix C

Arborist Report

Preliminary Arborist Report

Enterprise Road
San Benito County, CA

Prepared for:
TTI Developers, Inc.
601 McCray Street
Hollister, CA 95023

Prepared by:
HortScience | Bartlett Consulting
325 Ray Street
Pleasanton, CA 94566

December 28, 2019

HORT SCIENCE
BARTLETT CONSULTING
Divisions of The F.A. Bartlett Tree Expert Company

Preliminary Arborist Report

Enterprise Rd.
Hollister, CA

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San Benito County, CA

Introduction and Overview
TTI Developers, Inc. is proposing to develop the site at 395 Enterprise Road in San Benito County, CA. HortScience | Bartlett Consulting was asked to prepare a **Preliminary Arborist Report** for the site as part of the tentative map application for San Benito County. This report is considered preliminary because detailed site and civil plans were not provided.

This report provides the following information:

1. An evaluation of the health and structural condition of the trees within the proposed project area based on a visual inspection from the ground.
2. General guidelines for tree preservation during the design, construction, and maintenance phases of development.

Assessment Methods
Trees were assessed on December 11, 2015, and conditions updated on November 25, 2019. In the four years since our initial assessment, 10 trees were removed. Five new trees were added to the assessment. The assessment included all trees within proposed construction areas measuring 8” and greater in diameter. The assessment procedure consisted of the following steps:

1. Identifying the tree species;
2. Tagging each tree with a numerically coded metal tag and recording its location on a map;
3. Measuring the trunk diameter at a point 54” above grade;
4. Evaluating the health and structural condition using a scale of 1 to 5:
   5 - A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
   4 - Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
   3 - Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
   2 - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
   1 - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
5. Rating the suitability for preservation as "high”, “moderate” or “low”. Suitability for preservation considers the health, age, and structural condition of the tree species and its potential to remain an asset to the site.

   High: Trees with good health and structural stability that have the potential for longevity at the site.
   Moderate: Trees with somewhat declining health and/or structural defects than can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in ‘high’ category.
   Low: Trees in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual tree may have characteristics that are undesirable for landscapes, and generally are unsuited for use areas.

Description of Trees

Eighty-nine (89) trees, representing seven species, were evaluated (Table 1), including nine off-site trees (#62, 77-81, 92, 93, and 94) whose canopies extended onto the site. Walnut trees located in the orchard were not included in the assessment. There were three species of indigenous oaks – blue oak, coast live oak, and valley oak – concentrated in the northeast quadrant of the site. In general, trees appeared unmaintained – particularly those in and around the pastures – resulting in a history of branch failures and canopies that extended to the ground.

For all trees combined, 45% were in good condition, 48% were in fair condition, and 7% were poor. Descriptions of each tree are found in the ***Tree Assessment*** and approximate locations are plotted on the ***Tree Inventory Map*** (see Exhibits).

Table 1. Condition ratings and frequency of occurrence of trees
Enterprise Rd., Hollister, CA

Common Name	**Scientific Name**	**Condition**			**Total**
		Poor (1-2)	Fair (3)	Good (4-5)	
California buckeye	*Aesculus californica*	-	1	-	**1**
Deodar cedar	*Cedrus deodara*	-	5	4	**9**
Coast live oak	*Quercus agrifolia*	1	6	11	**18**
Blue oak	*Quercus douglasii*	1	2	5	**8**
Valley oak	*Quercus lobata*	-	3	7	**10**
California pepper	*Schinus molle*	3	26	13	**42**
Xylosma	*Xylosma congestum*	1	-	-	**1**
Total		**6**	**43**	**40**	**89**

Photo 1: Mature coast live oak #20, located near the walnut orchard, had a 32-inch diameter trunk and was in good condition, with dense crown and branches that extended to the ground.

Thirty-six (36) indigenous oaks were assessed at the site. They were in their natural habitat and appeared not to have been maintained, but many were in good (23 trees) and fair (11 trees) condition.

Coast live oak was the most numerous oak species, with 18 trees, including off-site tree #95. Trees were semi-mature to mature in development, with trunk diameters from nine to 32 inches. The average trunk diameter of the 10 single-trunk trees was 18 inches. Trees were mostly in good and fair condition, with one tree (#64) in poor condition. Trees in good condition had good form and dense crowns. Trees in fair condition had minor structural defects such as codominant trunks with narrow attachments. Tree #20, in good condition, had a 32-inch diameter trunk, spreading form, and branches that extended to the ground (Photo 1).

A total of 10 valley oaks were evaluated at the site. Five trees had trunk diameters greater than 32 inches. Most trees (7 trees) were in good condition with good form and structure. Three trees in fair condition had crowded form and fair structure, and tree #69 had a basal wound with decay that had spread around more than 50% of the trunk's circumference. One tree (#62) was in poor condition.

The most significant tree on the site was valley oak #70, with a 70-inch diameter trunk, located in shallow valley on the north end of the site (Photo 2). The tree was in excellent condition, with good form and structure, symmetrical crown, and no visible significant defects.

Photo 2: Valley oak #70 (looking east) was mature in form and development with good structure. It was in very good condition with no visible defects.

Photo 3: Blue oak #58, like many oaks on the site, was in good condition with spreading form and good structure.

Eight blue oaks were located on the east edge of the site. Five trees were in good condition, with good form and structure, dense crowns, and minor twig dieback (Photo 3). Tree #57, in poor condition, was suppressed under blue oak #58. Tree #93 was off site.

California pepper was the most common species, with 42 trees (47% of the population). California peppers were growing close to the house and out buildings and bordering the pasture. Trees were semi-mature to mature in development, and they were characterized as having codominant or multiple trunks; only 12 trees were single-trunked. Most trees (26 trees) were in fair condition, with fair form and/or structure, broken limbs, and/or trunk wounds with decay. Thirteen (13) trees were in good condition, with good form and structure and no significant defects. Tree #23, in good condition, had a 46-inch diameter trunk, dense crown, and branches that extended over the coops and touching the ground.

The remaining species included the following.

- Nine deodar cedars in good and fair condition that lined the driveway leading to the house
- One California buckeye in fair condition

San Benito County protects all 89 trees included in this assessment (§25.29.213), and trees cannot be removed without a permit. Three of the trees evaluated qualified as *Heritage* trees (§25.29.212): California pepper #23, and valley oaks #65 and 70.

Suitability for Preservation

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to provide greater assurance they survive development impacts, adapt to a new environment, and perform well in the landscape.

Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. Evaluation of suitability for preservation considers several factors:

- **Tree health**
  Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade, soil moisture, and soil compaction than are non-vigorous trees.
- **Structural integrity**
  Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely. For example, coast live oak #69 with decay around the trunk should not be retained.
- **Species response**
  There is a wide variation in the response of individual species to construction impacts and changes in the environment. In general, coast live oak is relatively tolerant of construction impacts and site changes, and valley oak is considered moderately tolerant.
- **Tree age and longevity**
  Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.
- **Invasiveness**
  Species that spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (http://www.cal-ipc.org/paf/) lists species identified as being invasive. Hollister is part of the Central West Floristic Province.

  California pepper is considered *limited* for invasiveness. Limited is defined as "species [that] are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic."

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment. Table 2 provides a summary of suitability ratings. Suitability ratings for individual trees are provided in the *Tree Assessment* (see *Exhibits*). Off-site trees did not receive a suitability rating.

We consider trees with high suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Table 2: Tree suitability for preservation
Enterprise Rd., Hollister CA.

High	These are trees with good health and structural stability that have the potential for longevity at the site. Twenty-seven (27) trees were in this category.
Moderate	Trees in this category have fair health and/or structural defects that may be abated with treatment. These trees require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Forty-six (46) trees were in this category.
Low	Trees in this category are in poor health or have significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Sixteen (16) trees were in this category.

Preliminary Evaluation of Impacts and Recommendations

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The ***Tree Assessment*** was the reference point for tree condition and quality. Potential impacts from construction were estimated for each tree given the project information available to date. We referred to the Grading Plan in the Vesting Tentative Map plan set (San Benito Engineering & Surveying, Inc., dated 12 November 2019). Surveyed tree locations were not included on plans.

Plans show grading across the entire site for roads, lot subdivisions, and flood hazard zone mitigation. There is little opportunity to preserve any trees on the site. Only off-site trees may be preserved given grading activities do not encroach on trees’ critical root zones (=3x trunk diameter). Preservation is predicated on following the *Tree Preservation Guidelines* (next section).

Based on my evaluation of the plans, 67 trees would require removal due to grading Three trees identified for removal were *Heritage* trees: 36” valley oak #65, 70” valley oak #70, and 38” California pepper #72.

Twenty-two (22) off-site trees were identified for preservation (Table 3).

Preservation of these trees depends on the extent and intensity of construction around trees and following the *Tree Preservation Guidelines*. Surveyed tree locations should be plotted on all future plans to determine if trees can be retained and how they can be preserved.

Table 3. Trees identified for possible preservation
Enterprise Rd., Hollister, CA

Tree no.	Species	Trunk diam.	Tree no.	Species	Trunk diam.
4	Deodar cedar	19	23	Ca. pepper	46
5	Deodar cedar	21	25	Ca. pepper	16,11
6	Deodar cedar	20	62	Ca. pepper	9,5
7	Deodar cedar	15	77	Ca. pepper	17,9,8,7
8	Deodar cedar	18	78	Ca. pepper	27,19,15,14
9	Deodar cedar	17	79	Coast live oak	8,7,7
10	Deodar cedar	19	80	Coast live oak	8,6
11	Deodar cedar	18	81	Valley oak	12
12	Deodar cedar	12	92	Ca. pepper	26,24
13	Ca. pepper	10	93	Blue oak	27
19	Ca. pepper	11,9	94	Coast live oak	28

Tree Preservation Guidelines

The goal of tree preservation is not merely tree survival during development but maintenance of tree health and beauty for many years. Trees retained at Enterprise Rd. that are either subject to extensive injury during construction or are inadequately maintained become a liability rather than an asset. The response of individual trees will depend on the amount of excavation and grading and the construction methods. Impacts can be minimized by coordinating any construction activities inside the **TREE PROTECTION ZONE**.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing, grading, and construction phases.

Design recommendations

1. Establish horizontal and vertical elevations of perimeter and off-site trees identified for possible preservation. Overlay tree locations with precise grading plans to determine which trees may be preserved and should be protected.
2. Any changes to the plans affecting the trees shall be reviewed by the Consulting Arborist regarding tree impacts. These include, but are not limited to, demolition plans, site plans, improvement plans, utility and drainage plans, grading plans, and landscape and irrigation plans.
3. A **TREE PROTECTION ZONE** (**TPZ**) shall be established around each tree to be preserved. No grading, excavation, construction or storage of materials shall occur within that zone. The **TPZ** shall be established at the tree's dripline or 10' from the trunk, whichever is greater. **TPZ** dimensions may be adjusted by the Consulting Arborist to accommodate site design or construction access.
4. No underground services including utilities, sub-drains, water or sewer shall be placed in the **TREE PROTECTION ZONE**.
5. Irrigation systems must be designed so that no trenching will occur within the **TREE PROTECTION ZONE**.
6. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.

7. **Tree Preservation Guidelines**, prepared by the Consulting Arborist, should be included on all plans.
8. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.

Pre-construction treatments and recommendations

1. Fence all trees to be retained to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link or equivalent as approved by the Consulting Arborist or the County of San Benito. Fences are to remain until all grading and construction are completed.
2. Trees may require pruning to provide construction clearance. All pruning shall be completed by a Certified Arborist or Tree Worker and adhere to the latest edition of the ANSI Z133 and A300 standards as well as the *Best Management Practices -- Tree Pruning* published by the International Society of Arboriculture. Brush shall be chipped and spread beneath the trees within the **TREE PROTECTION ZONE**.
3. Tree(s) to be removed that have branches extending into the canopy of tree(s) to remain must be removed by a qualified arborist and not by construction contractors. The qualified arborist shall remove the tree in a manner that causes no damage to the tree(s) and understory to remain. Tree stumps shall be ground 12” below ground surface.
4. Structures and underground features to be removed within the **TREE PROTECTION ZONE** shall use the smallest equipment, and operate from outside the **TREE PROTECTION ZONE**. The Consulting Arborist shall be on-site during all operations within the **TREE PROTECTION ZONE** to monitor demolition activity.
5. Apply and maintain 4-6” wood chip mulch within the **TREE PROTECTION ZONE.**

Recommendations for tree protection during construction

1. Prior to beginning work, the contractors working in the vicinity of trees to be preserved are required to meet with the Consulting Arborist at the site to review all work procedures, access routes, storage areas, and tree protection measures.
2. All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved.
3. Fences have been erected to protect trees to be preserved. Fences define a specific **TREE PROTECTION ZONE** for each tree or group of trees. Fences are to remain until all site work has been completed. Fences may not be relocated or removed without permission of the Consulting Arborist.
4. Any grading, construction, demolition, or other work that is expected to encounter tree roots should be monitored by the Consulting Arborist.
5. All underground utilities, drain lines, or irrigation lines shall be routed outside the **TREE PROTECTION ZONE**. If lines must traverse through the protection area, they shall be tunneled or bored under the tree as directed by the Consulting Arborist.
6. Construction trailers, traffic, and storage areas must always remain outside fenced areas.
7. Any root pruning required for construction purposes shall receive the prior approval of and be supervised by the Consulting Arborist.
8. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.
9. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.

10. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

Maintenance of impacted trees

Our procedures included assessing trees for observable defects in structure. This is not to say that trees without significant defects will not fail. Failure of apparently defect-free trees does occur, especially during storm events. Wind forces, for example, can exceed the strength of defect-free wood causing branches and trunks to break. Wind forces coupled with rain can saturate soils, reducing their ability to hold roots, and blow over defect-free trees. Although we cannot predict all failures, identifying those trees with observable defects is a critical component of enhancing public safety.

Furthermore, trees change over time. Our inspections represent the condition of the tree at the time of inspection. As trees age, the likelihood of failure of branches or entire trees increases. Annual tree inspections are recommended to identify changes to tree health and structure. In addition, trees should be inspected after storms of unusual severity to evaluate damage and structural changes. Initiating these inspections is the responsibility of the client and/or tree owner.

Preserved trees will experience a physical environment different from that pre-development. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. In addition, provisions for monitoring both tree health and structural stability following construction must be made a priority.

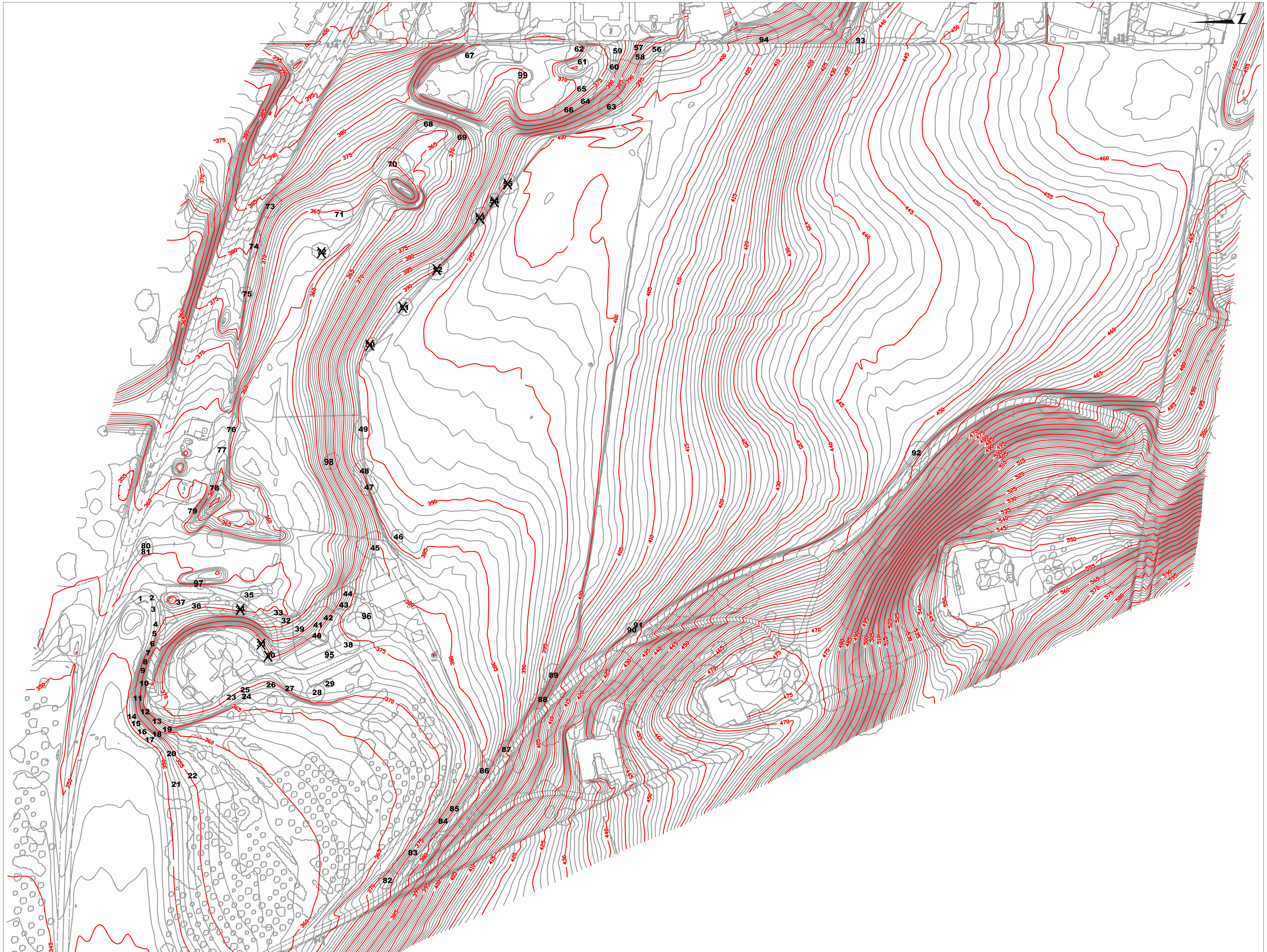
HortScience | Bartlett Consulting

Deanne Ecklund
Registered Consulting Arborist #647

Exhibits

Tree Inventory Map
Tree Assessment

HORT SCIENCE



Tree Inventory Map

Enterprise Road
Hollister, CA

Prepared for:

TTI Developers, Inc.
Hollister, CA

December 2019

No Scale

Notes:
Base map provided by:
MacKay & Somps
Pleasanton, CA

Numbered tree locations are approximate.

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Tree Assessment

TTI Developers, Inc.
Enterprise Road
Hollister, CA
December 11, 2015
Updated Nov. 25, 2019

HORT SCIENCE
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Tree No.	Species	Trunk Diameter (in.)	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
1	Coast live oak	14	4	Moderate	Codominant trunks at 5' and 7'; dense crown; narrow form; growing on drainage
2	Coast live oak	14,7	3	Moderate	Codominant trunks at 4'; slightly thin crown; growing on slope of drainage ditch.
3	Coast live oak	6,5	3	Moderate	Codominant trunks at 3'; asymmetrical crown; crowded on east; growing on slope of
4	Deodar cedar	19	3	Moderate	Slightly thin crown; lower twig and branch dieback; good form.
5	Deodar cedar	21	4	High	Good form and structure; dense crown
6	Deodar cedar	20	4	High	Good form and structure; dense crown
7	Deodar cedar	15	3	Moderate	Fair form and structure; slightly thin crown.
8	Deodar cedar	18	4	High	Good form and structure; lower branches pruned for driveway clearance.
9	Deodar cedar	17	4	High	Good form and structure; dense crown.
10	Deodar cedar	19	3	Moderate	Slightly thin crown; good form and structure.
11	Deodar cedar	18	3	Moderate	Slightly thin crown; good form and structure.
12	Deodar cedar	12	3	Moderate	Good form, fair structure; slightly thin crown.
13	California pepper	10	3	Low	Trunk bows east; base outside of dripline.
14	California pepper	18	3	Low	Trunk bows east; base outside of dripline; crowded by #15.
15	California pepper	26,25	3	Moderate	No tag; multiple attachments at 3'; broken stem lying on ground; good form.
16	California pepper	24,16,14, 12	3	Moderate	Multiple attachments at base and 2'; spreading form; broken stems; topped for overhead utilities.
17	California pepper	18	3	Moderate	Codominant trunks at 9'; trunk bows west; dense crown.
18	California pepper	11	3	Moderate	Codominant trunks at base; one stem bows south; dense crown.
19	California pepper	11,9	3	Moderate	Codominant trunks at 3'; trunk bows southwest; base outside of dripline; dense
20	Coast live oak	32	4	High	Codominant trunks at 5' with narrow attachments; spreading form; heavy lateral
21	California pepper	32,25	3	Moderate	Codominant trunks at 2'; smaller stem bows south; large stem failure; history of branch failure; spreading form.
22	California pepper	14	4	High	Codominant trunks at 10'; slightly one-sided on south; crowded by #21 on northeast;
23	California pepper	46	4	High	Multiple attachments at 9'; heavy lateral limb extends southwest over coops, touches ground; large upright stem; dense crown.
24	California pepper	13,8	3	Moderate	Codominant trunks at 1'; good form, fair structure; twig dieback.
25	California pepper	16,11	4	High	Codominant trunks at 3' and 8'; good form and structure; twig dieback.

Tree Assessment

TTI Developers, Inc.
Enterprise Road
Hollister, CA
December 11, 2015
Updated Nov. 25, 2019

HORT SCIENCE
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Divisions of The F.A. Bartlett Tree Expert Company

Tree No.	Species	Trunk Diameter (in.)	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
26	California pepper	17,11	3	Moderate	Codominant trunks at 3'; thin crown; grown around old water tank.
27	California pepper	16,12,11, 10,8	2	Low	Multiple attachments at 2'; spreading crown; dieback in upper crown.
28	California pepper	8,6	2	Low	Codominant trunks at 4'; thin crown; topped.
29	California pepper	11,7,5	2	Low	Multiple attachments at 3'; thin crown; topped.
~~30~~	~~California pepper~~	~~23~~	~~4~~	~~High~~	Removed
~~31~~	~~California pepper~~	~~17,16~~	~~3~~	~~Moderate~~	Removed
32	California pepper	15,8	3	Low	Trunk bows west with branches touching ground; base outside of dripline; dense crown.
33	California pepper	12,9	3	Moderate	Codominant trunks at 2'; fair structure; dense crown.
~~34~~	~~Siberian elm~~	~~9,9~~	~~3~~	~~Moderate~~	Removed
35	Coast live oak	8,5,4	3	Moderate	Codominant trunks at 2' and 4'; dense crown; good form.
36	Valley oak	16	4	High	Codominant trunks at 10'; twig dieback.
37	Coast live oak	12	4	Moderate	Codominant trunks at 14'; good form; dense crown; growing on slope of drainage ditch.
38	California pepper	27	3	Low	Codominant trunks at 7'; spreading form; thin crown.
39	Valley oak	9,8	4	Moderate	Codominant trunks at 4'; good form and structure; twig dieback.
40	California pepper	14,14,13,	3	Moderate	Multiple attachments at 2'; spreading form; dense crown; heavy lateral limb.
41	California pepper	17	3	Moderate	Codominant trunks at 9'; fair form and structure; lower branch dieback.
42	California pepper	17,12	4	Moderate	Codominant trunks at 11'; heavy lateral limb extends to ground; trunk wound; dense
43	Valley oak	8	3	Moderate	Fair form and structure; twig dieback; slightly crowded by #44.
44	Valley oak	15	5	High	Good form and structure; multiple attachments at 7' with good attachments.
45	California pepper	32,18,24	4	High	Multiple attachments at 4'; spreading crown; dense crown; heavy laterals.
46	California pepper	10	4	High	Good form and structure; good young tree.
47	California pepper	14,8	4	High	Codominant trunks at 3'; good form and structure; low canopy.
48	California pepper	14,14	4	High	Codominant trunks at 3'; good form and structure; low canopy.
49	California pepper	14,11,6	4	High	Codominant trunks at base; spreading form, limbs extend to ground.
~~50~~	~~California pepper~~	~~8,5,4,4,3~~	~~3~~	~~Moderate~~	Removed

Tree No.	Species	Trunk Diameter (in.)	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
~~51~~	~~California pepper~~	~~10,8,6,5,5~~	~~3~~	~~Moderate~~	Removed
~~52~~	~~California pepper~~	~~11,19,7,6,~~	4	~~Moderate~~	Removed
~~53~~	~~California pepper~~	~~10,10,9,8,~~	~~3~~	~~Moderate~~	Removed
~~54~~	~~California pepper~~	~~8,7,6,5,4,~~	~~3~~	~~Moderate~~	Removed
~~55~~	~~California pepper~~	~~14,12,9,6~~	4	~~Moderate~~	Removed
56	Blue oak	17,15,15	4	Moderate	Multiple attachments at 1'; good form, fair structure; history of branch failure; twig dieback.
57	Blue oak	21	2	Low	Suppressed under #58; poor form and structure; trunk bows east.
58	Blue oak	30	5	High	Good form and structure; spreading form; lower twig dieback.
59	Blue oak	16	3	Moderate	Codominant trunks at 10'; trunk bows south; fair form and structure.
60	Blue oak	10	3	Low	Trunk bows south; poor form, fair structure.
61	Valley oak	35	4	High	Codominant trunks at 9'; spreading form; good structure; twig dieback.
62	California pepper	9,5	3	off-site	tag on fence; base on wall; entire canopy over pond; dense crown.
63	Blue oak	20	4	High	Codominant trunks at 7'; good form and structure.
64	Coast live oak	19	2	Low	Codominant trunks at 6'; stem failure; crowded form.
65	Valley oak	36	4	High	Codominant trunks at 7'; good form and structure; spreading crown; twig dieback.
66	Blue oak	25	4	High	Codominant trunks at 5' and 7'; good form and structure.
67	California pepper	29,24	3	Low	Codominant trunks at 3'; large stem failed at 5'; dense, spreading crown.
68	California pepper	26,17,13	3	Low	Multiple attachments at base; spreading crown; dense crown; numerous trunk cavities with decay.
69	Valley oak	33,29,	3	Low	Multiple attachments at 3'; spreading crown; basal wound with decay around 50% of
70	Valley oak	70	5	High	Multiple attachments at 7' and 10'; good form and structure; spreading crown; beautiful mature tree.
71	Valley oak	33,30	4	High	Codominant trunks at base; spreading form; dead twigs and small branches; beautiful mature tree.
~~72~~	~~California pepper~~	~~38~~	~~3~~	~~Low~~	Removed
73	California pepper	19,15,11,	3	Moderate	Multiple attachments at base; spreading form; branches extend to ground.
74	California pepper	17,11,11,	3	Moderate	Multiple attachments at base; fair form and structure; slightly thin crown.

Tree Assessment

TTI Developers, Inc.
Enterprise Road
Hollister, CA
December 11, 2015
Updated Nov. 25, 2019

HORT SCIENCE | BARTLETT CONSULTING
Divisions of The F.A. Bartlett Tree Expert Company

Tree No.	Species	Trunk Diameter (in.)	Condition 1=poor 5=excellent	Suitability for Preservation	Comments
75	California pepper	11,8,8,6,5	3	Moderate	Multiple attachments at base; fair form and structure; slightly thin crown.
76	California pepper	25,17,12,	4	Moderate	Multiple attachments at 2'; dense, spreading crown.
77	California pepper	17,9,8,7	3	Moderate	Multiple attachments at 1'; spreading crown; fair structure.
78	California pepper	27,19,15,	3	Moderate	Multiple attachments at base; spreading crown; fair structure.
79	Coast live oak	8,7,7	4	Moderate	Codominant trunks at 1' and 4'; fair structure; dense crown.
80	Coast live oak	8,6	3	Low	Codominant trunks at 4'; crowded by #81; fair form and structure; beneath overhead utilities.
81	Valley oak	12	3	Low	Fair form and structure; crowded by #80; beneath overhead utilities.
82	California buckeye	8,7,65,5,5	3	Moderate	Multiple attachments at 1'; fair form and structure.
83	Coast live oak	11	3	Moderate	Codominant trunks at 8';/fair structure; small crown.
84	Coast live oak	13,10,8	4	Moderate	Multiple attachments at 3'; good form, fair structure; dense crown.
85	Coast live oak	23	4	High	Codominant trunks at 5'; good form and structure; vehicle damage on 7" limb.
86	Coast live oak	16	4	Moderate	Codominant trunks at 5' and 10'; fair form and structure; dense crown.
87	Coast live oak	15	3	Moderate	Codominant trunks at 6'; trunk canker; good form.
88	Coast live oak	11,9,8,5	4	Moderate	Multiple attachments at 4'; canker on limb; good form; dense crown.
89	California pepper	11,9,8,6,5	3	Moderate	Multiple attachments at 1'; spreading, dense crown; fair form and structure.
90	California pepper	14	4	Moderate	Codominant trunks at 5'; good structure, fair form.
91	California pepper	9,8	3	Moderate	Codominant trunks at 2'; fair form and structure; twig dieback.
92	California pepper	26,24	4	High	Codominant trunks at 3'; good form; dense crown.
93	Blue oak	27	4	off-site	no tag; Codominant trunks at 6'; good form and structure; canopy extends 16' over fence.
94	Coast live oak	28	5	off-site	no tag; Multiple attachments at 6'; good form and structure; canopy extends 23' over fence.

Appendix D

Historical Resource Evaluation

Rincon Consultants, Inc.

437 Figueroa Street, Suite 203
Monterey, California 93940

831 333 0310 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

February 5, 2020
Project No: 19-08643

Ty Intravia
Longreach Associates, Inc.
601 McCray Street, Suite 205
Hollister, California 95023
Via email: Ty@ttidevelopers.com

Subject: Historic Resource Evaluation of 213 Enterprise Road, Unincorporated San Benito County, California

Dear Mr. Intravia:

This report presents the findings of a historical resources study of 213 Enterprise Road, located on Assessor Parcel Number (APN) 020-290-029 in unincorporated San Benito County (subject property). Longreach Associates retained Rincon to complete the study as part of the Initial Study-Mitigated Negative Declaration (IS-MND) for the Lico Major Subdivision Project (project). Currently an approximately 50.7-acre agricultural property, APN 020-290-029would be subdivided and redeveloped with 149 residential units under the project, resulting in the the demolition of a barn and livestock pen dating from circa 1950 and two ancillary buildings constructed sometime between 1960 and 1974. The present study was completed to determine if the extant buildings are historical resources and includes background and archival research, an intensive-level survey, and an evaluation of the barn, livestock pen, and ancillary buildings for inclusion in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR). All work was completed in compliance with the California Environmental Quality Act (CEQA).

This historical resources evaluation was completed by Senior Architectural Historian Steven Treffers, MHP and Architectural Historian James Williams, MA. Mr. Treffers and Mr. Williams meet the Secretary of the Interior's Professional Qualification Standards for architectural history and/or history (NPS 1983). Rincon Principal Shannon Carmack reviewed this report for quality control.

Methods

Archival and Background Research

Archival research was completed in February 2020 and focused on the review of a variety of primary and secondary source materials relating to the history and development of the subject property and its surroundings. Sources included, but were not limited to, historic maps and photographs and written histories of the area. The following is a list of publications consulted and repositories visited in order to conduct research pertaining to properties within the subject property.

- Historic United States Geological Survey topographical maps, aerial photographs, and city directory listings acquired via Environmental Data Resources (EDR), Inc.

- Historic aerial photographs accessed digitally via Nationwide Environmental Title Research (NETR) Online, Inc. and the University of California, Santa Barbara Map & Imagery Lab
- Historic newspaper articles accessed digitally via newspapers.com and the California Digital Newspaper Collection

Intensive-Level Field Survey

Rincon conducted a historical resources field survey of the project site on February 3, 2020. The survey consisted of a visual inspection of the subject residence to assess overall condition and integrity, and to identify and document any potential character-defining features. Observations were recorded using detailed notes and digital photographs. The barn, livestock pen, and ancillary buildings were the only potential cultural resources identified within the project site. They were recorded and evaluated on California Department Parks and Recreation (DPR) 523 series forms, which are included in Attachment A.

Findings

The subject property consists of a barn, livestock pen, and two ancillary buildings dating from the mid-twentieth century (Figure 1). Although the buildings and features on the subject property may have been historically associated with a circa 1969 residence at 394 Enterprise Road (APN 020-290-030), the properties have since been subdivided and the current study was limited to the current project area APN 020-290-030). The area in which it is located, just south of the city of Hollister, has been associated with intensive farming and ranching since the arrival of Euro-Americans in the mid-nineteenth century. In the 1870s, the Southern Pacific Railroad constructed a branch line to Hollister and nearby Tres Pinos, thereby connecting the region’s area hay, grain, and ranching operations to important markets in San Francisco. This development helped to sustain the local agricultural economy for decades (SBCCC 2020).

The earliest available source with information pertinent to the subject property is an 1891 map of San Benito County identifying the property as that of M. Caldera. At the time, the property was substantially larger and spanned both sides of Enterprise Road. Its owner may have been Manuel de Caldera, who is listed as a resident of the “Enterprise District” in an 1892 state voter roll and later appears in the 1900 U.S. Census rolls for the area. Although the census entry does not include an address or other specific locational information, the family is listed in the census as a neighbor of Robinson Ruckledge, whose first initial and surname label a parcel immediately adjacent to the Caldera property in the 1891 map. In 1900, Manuel reported his occupation as farmer and resided with his wife, Mary, and their children, Antonio, Jose, and Rosa (McCray and McCray 1891; Ancestry 2004; 2011).

The earliest available aerial photograph of the property reveals the land was still agricultural in character and contained no buildings as of 1939. Orchards occupied the northernmost portion of the parcel, immediately south of Enterprise Road. No buildings are visible in 1939 imagery (EDR 2019). Available sources suggest Joseph A. and Lena Doris Lico acquired the Caldera property in 1948. Lico was a partner in the firm of Lico & Greco, which operated a grocery store and tavern in Watsonville and a garage in Pajaro (Hollister Free Lance 11/19/2012; The Californian 9/14/1964). According to Joseph’s obituary, he and Lena acquired an unspecified Enterprise Road property in 1948 and began a career in ranching. It appears likely the subject property is the property the Licos purchased that year given historic newspaper articles and other sources indicate the Lico family and the Lico & Greco firm had a long association with 213 Enterprise Road, the primary address with which the subject property is associated (The Californian 9/18/1951; 7/31/1975; Santa Cruz Sentinel 6/14/1976; TTI Developers 2020). Other individuals associated with Lico & Greco business interests include Ralph Lico, Elmer Lico, Annie Greco, and Albert Greco (The Californian 9/18/1951; Santa Cruz Sentinel 7/11/2000). Research conducted for this study failed to identify additional substantial information about the Licos or any individual associated with the subject property.

Historic aerial imagery indicates that sometime between 1947 and 1953, within a half-decade of the Licos' acquisition of land along Enterprise Road, the subject barn and, possibly, the adjacent feeding pens were completed. Between 1953 and 1974, the orchard at the north end of the property was removed and replanted. Sometime between 1960 and 1974, the ancillary buildings were constructed. So too was the residence at 394 Enterprise Road, though that property is no longer part of the subject property (EDR 2019). As of 1975, 213 Enterprise Road was identified as the address of Lico & Greco Farms, which grew apricots and cherries in the 1970s (The Californian 7/31/1975; Santa Cruz Sentinel 6/14/1976). The livestock pen and large expanses of open grassland suggest the land was also used for grazing.

There have been few documented changes to the property since the 1970s. The most notable alterations have been the southward expansion of the orchard between 1981 and 1998, the removal of orchard trees along Enterprise Road in the years between 1998 and 2006, and the construction of a rear addition to the barn between 2009 and 2012 (EDR 2019aerials). According to city directory listings, as of 1995, the property was still associated with the Lico family and the Lico-Greco firm. A succession of owners and/or occupants followed. These included Maria Arreguin, Juana Elias, Maria Gallo, Jacabo Gonzales in 2000; Richard Galvan, Victor Luna, Adela Rodriguez, Celeste Salazar, Jose L Sandoval in 2005; and Maria Fonseca, Rios Gonzales, J Jimenez, Samuel Luna; Filiberto Rios, Adela Rodriguez, Idineo Santiago, and Zepeda, Mario in 2010 and 2014. The 2010 and 2014 listings also identify "Part, Lico" as an owner or occupant of the property, suggesting the Lico family business retained an association with the property (TTI Developers 2020).

The subject property is recommended ineligible for listing in the NRHP and the CRHR under all significance criteria. While the property has an association with agriculture in the areas around Hollister dating from the late nineteenth century, the extant buildings and structures on the property date to the 1950s and are not directly associated or representative of early American-era agriculture in the Hollister area. In addition, there is no indication the property is historically significant for its associations with twentieth-century agriculture in the area, or with any other event significant in the history of the locality, region, state, or nation. The property is, therefore, recommended ineligible under Criteria A/1.

Research conducted for this study uncovered no evidence that Manuel Caldera, Mary Caldera, Joseph A. Lico, Lena Doris Lico, Ralph Lico, Elmer Lico, Annie Greco, Albert Greco, or any other individual associated with the property has made significant historical contributions to local, regional, state, or national history. Further, any potentially notable contributions of these individuals would be more closely associated with the retail businesses operated by the Lico-Greco partnership, including the tavern and grocery store in Watsonville. None of these individuals are known to have made important contributions to the history of agriculture in San Benito County in the twentieth century. In light of this, the subject property is recommended ineligible under Criteria B/2.

Architecturally, the property consists of a barn, a livestock pen, and two ancillary buildings. All of these feature utilitarian designs and are unremarkable examples of their respective building or structure types. Neither the individual built elements nor the property as a whole embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic values. Therefore, the property is recommended ineligible under Criteria C/3.

A review of available evidence and records search results did not indicate that it may yield important information about prehistory or history. As a result, the property is recommended ineligible under Criteria D/4. Finally, the property is also not recommended eligible as a contributor to any existing or potential historic districts.

Conclusions

As detailed above, the subject property was found ineligible for listing in the NRHP or CRHR. As such, it does not qualify as a historical resource as defined by CEQA.

Should you have any questions concerning this study, please do not hesitate to contact the undersigned at (805) 644-4455 x2028 or jwilliams@rinconconsultants.com.

Should you have any questions concerning this study, please do not hesitate to contact any of the undersigned.

Sincerely,
Rincon Consultants, Inc.

James Williams, MA	Steven Treffers, MHP
Architectural Historian	Senior Architectural Historian

Attachments

Figure Site Map

Attachment A California DPR 523 Series Forms

References

Ancestry.com. 2004. *1900 United States Federal Census* [database on-line]. Provo, UT, USA: Ancestry.com Operations Inc. https://search.ancestry.com, accessed February 2, 2020.

______.2011. *California, Voter Registers, 1866-1898* [database on-line]. Provo, UT, USA: Ancestry.com Operations, Inc. https://search.ancestry.com, accessed February 2, 2020.

Californian, The. 1951. Fictitious Name Statement for Lico & Greco, September 18. www.newspapers.com, accessed February 3, 2020.

______.1964. "Window Broken," September 14. www.newspapers.com, accessed February 3, 2020.

______.1975. Classified advertisement for Lico & Greco Farms, July 31. www.newspapers.com, accessed February 3, 2020.

Environmental Data Resources (EDR), Inc. 2019. The EDR Aerial Photo Decade Package. Vista Del Calabria Phase I ESA, Southside Rd/Enterprise Rd, Hollister, CA 95023Inquiry Number: 5914923.8. December 23.

Hollister Free Lance. 2012. "Archived Obituaries: Joseph A. Lico June 27, 1915- November 18, 2012," https://sanbenito.com/2012/11/19/joseph-a-lico-june-27-1915-november-18-2012/, accessed February 3, 2020.

McCray, V.T. and Harry McCray. 1891. Official map of San Benito County, California / compiled from public records and private surveys by Vic. T. & Harry W. McCray [map]. http://digitalcollections.ucsc.edu/cdm/ref/collection/p15130coll3/id/1729, accessed February 3, 2020.

National Park Service. 1983. Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. Electronic document, online at http://www.nps.gov/history/local-law-Arch_Standards.htm, accessed December 6, 2011.

San Benito County Chamber of Commerce (SBCCC). 2020. "History," http://www.discoversanbenitocounty.com/discover-san-benito-county/history/, accessed February 4, 2020.

Santa Cruz Sentinel. 1976. Classified advertisement for Lico & Greco Farms. June 14. www.newspapers.com, accessed February 3, 2020.

______.2000. "Annie D. Greco," July 11. www.newspapers.com, accessed February 3, 2020.

TTI Developers. 2020. Phase I Environmental Site Assessment: Vista Del Calabria, Enterprise Road (APNs 020-290-051 & -052), Hollister, California. January 16.

Figure 1 Site Map

Imagery provided by Microsoft Bing and its licensors © 2020.

CRFig X Buildings on Property

Attachment A

California DPR 523 Series Forms

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 6Z

Other Listings
Review Code **Reviewer** **Date**

 ***Resource Name or #:** 213 Enterprise Road

P1. Other Identifier:

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Los Angeles

***b. USGS 7.5' Quad:** *Hollister* **Date:** 2012 Township 13S, Range 5E, Section 11, 12 M.D.**B.M.**

c. Address: 213 Enterprise Road City: Hollister Zip: 95023

d. UTM: Zone: mE/ mN (G.P.S.)

e. Other Locational Data: APN: 0202900520; 0202900510

***P3a. Description:**

The subject property is an approximately 50-acre farm, on which there are four built-environment features, a barn and livestock pen constructed sometime ca. 1950 and two ancillary buildings dating from between 1960 and 1974 (EDR 2019a. The buildings are clustered in the north-central section of the property.

One story in height, the barn has an irregular plan and a concrete foundation. Typical of a monitor-roof barn, its three-bay configuration consists of a central gable-roof bay flanked by pent-roof bays. The roof is clad in corrugated metal throughout, while vertical plank siding conceals the wood-frame structural system. The front (west) elevation features three openings, a comparatively large opening in the central bay and two smaller openings on the wings. None of these includes a door. A centrally placed hinged, wood-plank door opens at the rear of the building. A hay hoist extends beneath the peak of the front-facing gable. Alterations include the replacement of roofing materials and the construction of a rear addition sometime between 2009 and 2012.

The partially sheltered livestock pen is located immediately adjacent to the barn's south elevation. It is enclosed with a combination of wood and metal-rail fencing. An open-frame, pent-roof structure covers the south one third of the feature.

Two ancillary buildings, utilitarian in design, are clustered southwest of the barn. Long and rectangular in form, the buildings sit parallel to one another with a roughly north-to-south aspect. The east ancillary building is the shorter of the two. It possesses a flat roof sheathed in corrugated metal, vertical plank and plywood siding, and at least one horizontal-sliding aluminum-frame window. Limited visibility prevented the recording of further details. The west ancillary building is also has a flat roof with corrugated metal sheeting and plywood and vertical plank siding. A wood panel door is located on the north elevation. A breezeway near the building's south end functions as a utility room. **See continuation sheet, p. 4**

***P3b. Resource Attributes:** HP4. Ancillary buildings; HP39. Other (feeding pen)

***P4. Resources Present:** ■ Building ■ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing

P5b. Description of Photo:
Overview of barn and feeding pen; camera facing east.

***P6. Date Constructed/Age and Sources:**
■ Historic ☐ Prehistoric ☐ Both

Ca. 1950; between 1960 and 1974 (EDR 2019a)

***P7. Owner and Address:**
N/A

***P8. Recorded by:**
James Williams
Rincon Consultants
250 E. First Street, Ste. 1400
Los Angeles, CA 90012

***P9. Date Recorded:**
February 3, 2020

***P10. Survey Type:**
Intensive

***P11. Report Citation:**

Williams, James and Steven Treffers. 2020. Historic Resource Evaluation of 213 Enterprise Road, Hollister, San Benito County, California. Rincon Project 19-08643. February 5.

***Attachments:** ☐ NONE ■ Location Map ☐ Sketch Map ■ Continuation Sheet ■ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

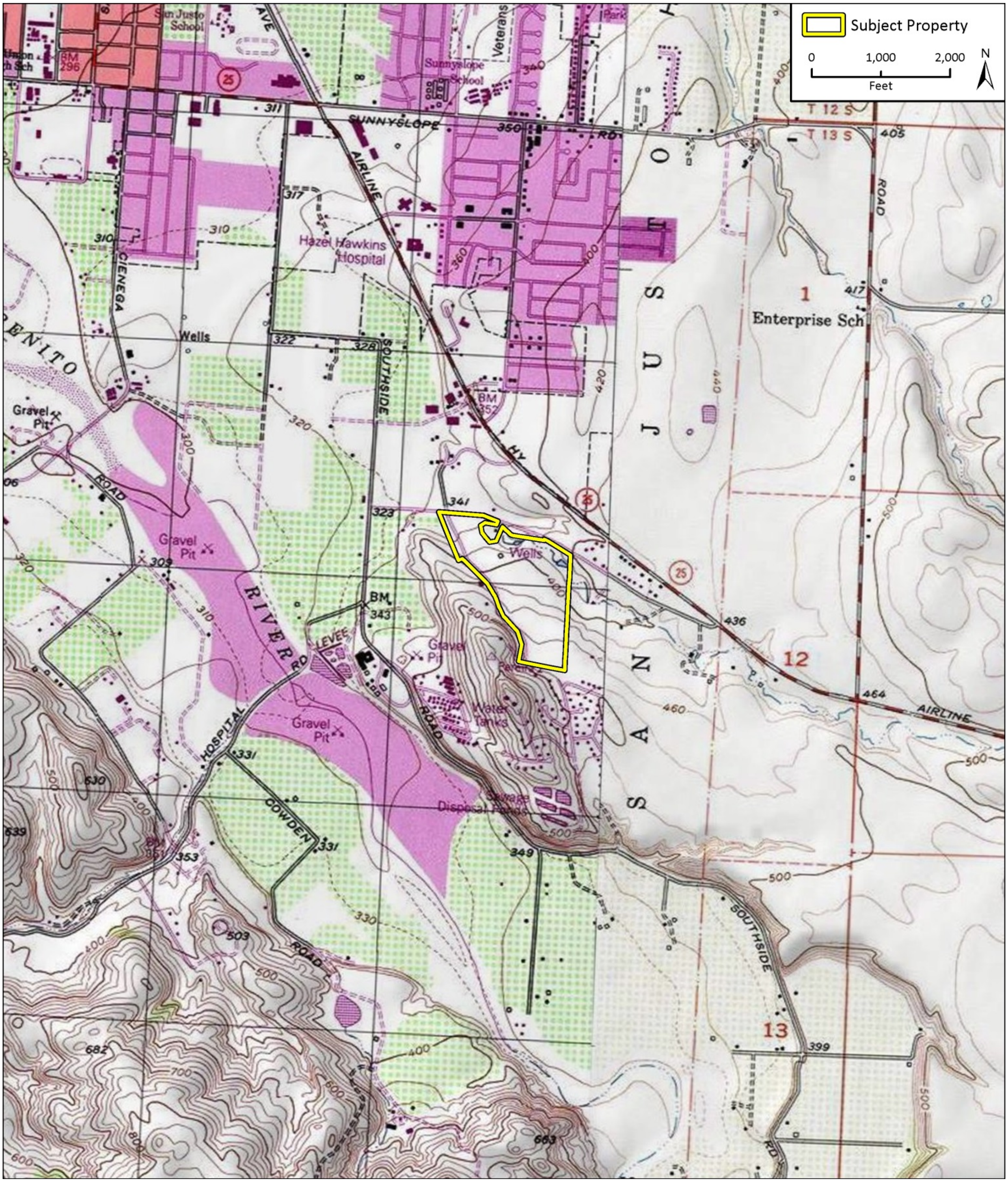
State of California X Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

Page 2 **of** 6 ***Resource Name or #** 213 Enterprise Road

***Map Name:** *Hollister* ***Scale:** 1:24,000 ***Date of map:** 2012



BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** 213 Enterprise Road ***NRHP Status Code 6Z**

B1. Historic Name: Lico & Greco Farms
B2. Common Name: N/A
B3. Original Use: Agriculture B4. Present Use: Agriculture
***B5. Architectural Style:** N/A
***B6. Construction History:**

Aerial photographs indicate the barn and livestock pen were constructed ca. 1950 and that the ancillary buildings date from sometime between 1960 and 1974 (EDR 2019). A rear addition to the barn was constructed sometime between 1998 and 2006, and it is likely that the roofing material on the barn is non-original, given its condition.

***B7. Moved?** ☐ **No** ☐ **Yes** ■ **Unknown** **Date:** N/A **Original Location:** N/A
***B8. Related Features:** None
B9a. Architect: Unknown b. Builder: Unknown
***B10. Significance: Theme** N/A **Area** N/A
Period of Significance N/A **Property Type** N/A **Applicable Criteria** N/A

The subject property consists of two parcels of farm and ranch land containing a barn, livestock pen, and two ancillary buildings dating from the mid-twentieth century. Excluded from the present evaluation are two properties that were historically associated with the subject property. One is 394 Enterprise Road (APN 0202900300), which contains a single-family residence constructed sometime between 1960 and 1974 (EDR 2020). It is situated on a separate parcel that was divided from one of the subject property. The other is APN 0202900450. Despite being situated on opposite sides of Enterprise Road, this parcel and the subject property have addresses within a close range of odd-numbered designations: 209 and 211 Enterprise Road for APN 0202900450 and 213 Enterprise Road in the case of the subject property. All three properties share associations with the Caldera and Lico families (see below for additional details). However, because the subject property alone was recently subdivided for residential development, it is regarded as a distinct property for the purposes of this evaluation.

The area in which it is located, just south of the city of Hollister, has been associated with intensive farming and ranching since the arrival of Euro-Americans in the mid-nineteenth century. In the 1870s, the Southern Pacific Railroad constructed a branch line to Hollister and nearby Tres Pinos, thereby connecting the region's area hay, grain, and ranching operations to important markets in San Francisco. This development helped to sustain the local agricultural economy for decades (SBCCC 2020).

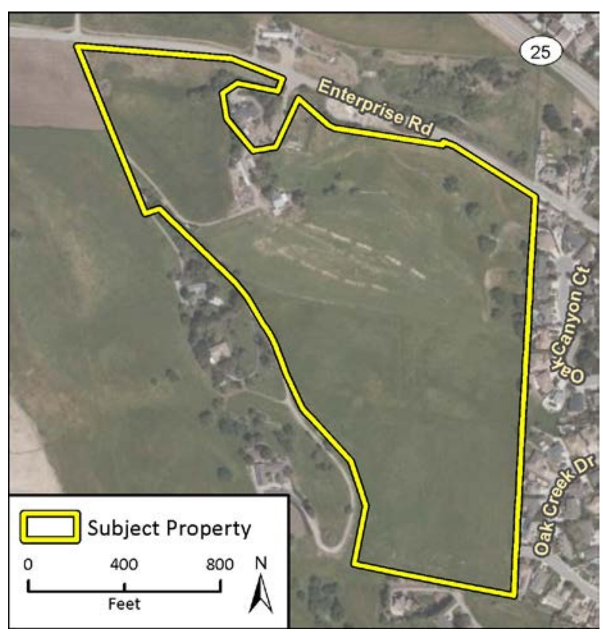
See continuation sheet, p. 4.

B11. Additional Resource Attributes: N/A
***B12. References:**

Ancestry.com
2004 1900 United States Federal Census [database on-line]. Provo, UT, USA: Ancestry.com Operations Inc. https://search.ancestry.com, accessed February 2, 2020.
_____. 2011. California, Voter Registers, 1866-1898 [database on-line]. Provo, UT, USA: Ancestry.com Operations, Inc. https://search.ancestry.com, accessed February 2, 2020.

See continuation sheet, p. 5.

B13. Remarks:
***B14. Evaluator:** James Williams, Rincon Consultants
***Date of Evaluation:** February 4, 2020



(This space reserved for official comments.)

***Recorded by:** James Williams, Rincon Consultants ***Date:** February 2, 2020 ■Continuation □Update

P3a. Description (continued):

The property is on sloping terrain at the base of a hill. Most of the land is open and has been used historically for livestock grazing. A small orchard occupies part of the north end of the property. A residence constructed sometime between 1960 and 1974 is located immediately east of the orchard (APN 0202900300). Although it was historically a part of the subject property, it was eventually subdivided from the subject parcel and is not subject to this evaluation.

B10. Significance (continued):

The earliest available source with information pertinent to the subject property is an 1891 map of San Benito County identifying the property as that of M. Caldera. At the time, the property was substantially larger and spanned both sides of Enterprise Road. Its owner may have been Manuel de Caldera, who is listed as a resident of the "Enterprise District" in an 1892 state voter roll and later appears in the 1900 U.S. Census rolls for the area. Although the census entry does not include an address or other specific locational information, the family is listed in the census as a neighbor of Robinson Ruckledge, whose first initial and surname label a parcel immediately adjacent to the Caldera property in the aforementioned 1891 map. In 1900, Manuel reported his occupation as farmer and resided with his wife, Mary, and their children, Antonio, Jose, and Rosa (McCray and McCray 1891; Ancestry 2004; 2011).

The earliest available aerial photograph of the property reveals the land was still agricultural in character and contained no buildings as of 1939. Orchards occupied the northernmost portion of the parcel, immediately south of Enterprise Road. No buildings are visible in 1939 imagery (EDR 2019). Available sources suggest Joseph A. and Lena Doris Lico acquired the Caldera property in 1948. Lico was a partner in the firm of Lico & Greco, which operated a grocery store and tavern in Watsonville and a garage in Pajaro (*Hollister Free Lance* 11/19/2012; *The Californian* 9/14/1964). According to Joseph's obituary, he and Lena acquired an unspecified Enterprise Road property in 1948 and began a career in ranching. It appears likely the subject property is the property the Licos purchased that year given historic newspaper articles and other sources indicate the Lico family and the Lico & Greco firm had a long association with 213 Enterprise Road, the primary address with which the subject property is associated (*The Californian* 9/18/1951; 7/31/1975; *Santa Cruz Sentinel* 6/14/1976; TTI Developers 2020). Other individuals associated with Lico & Greco business interests include Ralph Lico, Elmer Lico, Annie Greco, and Albert Greco (*The Californian* 9/18/1951; *Santa Cruz Sentinel* 7/11/2000). Research conducted for this study failed to identify additional substantial information about the Licos or any individual associated with the subject property.

Historic aerial imagery indicates that sometime between 1947 and 1953, within a half-decade of the Licos' acquisition of land along Enterprise Road, the subject barn and, possibly, the adjacent feeding pens were completed. Between 1953 and 1974, the orchard at the north end of the property was removed and replanted. Sometime between 1960 and 1974, the ancillary buildings were constructed. So too was the residence at 394 Enterprise Road, though that property is no longer part of the subject property (EDR 2019). As of 1975, 213 Enterprise Road was identified as the address of Lico & Greco Farms, which grew apricots and cherries in the 1970s (*The Californian* 7/31/1975; *Santa Cruz Sentinel* 6/14/1976). The livestock pen and large expanses of open grassland suggest the land was also used for grazing.

There have been few documented changes to the property since the 1970s. The most notable alterations have been the southward expansion of the orchard between 1981 and 1998, the removal of orchard trees along Enterprise Road in the years between 1998 and 2006, and the construction of a rear addition to the barn between 2009 and 2012 (EDR 2019aerials). According to city directory listings, as of 1995, the property was still associated with the Lico family and the Lico-Greco firm. A succession of owners and/or occupants followed. These included Maria Arreguin, Juana Elias, Maria Gallo, Jacabo Gonzales in 2000; Richard Galvan, Victor Luna, Adela Rodriguez, Celeste Salazar, Jose L Sandoval in 2005; and Maria Fonseca, Rios Gonzales, J Jimenez, Samuel Luna; Filiberto Rios, Adela Rodriguez, Idineo Santiago, and Zepeda, Mario in 2010 and 2014. The 2010 and 2014 listings also identify "Part, Lico" as an owner or occupant of the property, suggesting the Lico family business retained an association with the property (TTI Developers 2020).

The subject property is recommended ineligible for listing in the National Register of Historic Places and the California Register of Historical Resources under all significance criteria. While the property has an association with agriculture in the areas around Hollister dating from the late nineteenth century, the extant buildings and structures on the property date to the 1950s and are not directly associated or representative of early American-era agriculture in the Hollister area. In addition, there is no indication the property is historically significant for its associations with twentieth-century agriculture in the area, or with any other event significant in the history of the locality, region, state, or nation. The property is, therefore, recommended ineligible under Criteria A/1.

Research conducted for this study uncovered no evidence that Manuel Caldera, Mary Caldera, Joseph A. Lico, Lena Doris Lico, Ralph Lico, Elmer Lico, Annie Greco, Albert Greco, or any other individual associated with the property has made significant historical contributions to local, regional, state, or national history. Further, any potentially notable contributions of these individuals would be more closely associated with the retail businesses operated by the Lico-Greco partnership, including the tavern and grocery store in Watsonville. None of these individuals are known to have made important contributions to the history of agriculture in San Benito County in the twentieth century. In light of this, the subject property is recommended ineligible under Criteria B/2.

Architecturally, the property consists of a barn, a livestock pen, and two ancillary buildings. All of these feature utilitarian designs and are unremarkable examples of their respective building or structure types. Neither the individual built elements nor the property as a whole embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic values. Therefore, the property is recommended ineligible under Criteria C/3.

A review of available evidence and records search results did not indicate that it may yield important information about prehistory or history. As a result, the property is recommended ineligible under Criteria D/4. Finally, the property is also not recommended eligible as a contributor to any existing or potential historic districts.

***Recorded by:** James Williams, Rincon Consultants ***Date:** February 3, 2020 ■Continuation □Update

B12. References (continued):

Californian, The
1951 Fictitious Name Statement for Lico & Greco, September 18. www.newspapers.com, accessed February 3, 2020.
1964 "Window Broken," September 14. www.newspapers.com, accessed February 3, 2020.
1975 Classified advertisement for Lico & Greco Farms, July 31. www.newspapers.com, accessed February 3, 2020.

Environmental Data Resources (EDR), Inc.
2019 The EDR Aerial Photo Decade Package. Vista Del Calabria Phase I ESA, Southside Rd/Enterprise Rd, Hollister, CA 95023Inquiry Number: 5914923.8. December 23.

Haas, H. and L. Hoffman
2016 Cultural Resources Study for the Lico Major Subdivision Project, San Benito County, California. Rincon Consultants Project No. 16-02351. Report on file at the Northwest Information Center, Sonoma State University, Rohnert Park, California.

Hollister Free Lance
2012 "Archived Obituaries: Joseph A. Lico June 27, 1915- November 18, 2012," https://sanbenito.com/2012/11/19/joseph-a-lico-june-27-1915-november-18-2012/, accessed February 3, 2020.

McCray, V.T. and Harry McCray
1891 Official map of San Benito County, California / compiled from public records and private surveys by Vic. T. & Harry W. McCray [map]. http://digitalcollections.ucsc.edu/cdm/ref/collection/p15130coll3/id/1729, accessed February 3, 2020.

San Benito County Chamber of Commerce (SBCCC)
2020 "History," http://www.discoversanbenitocounty.com/discover-san-benito-county/history/, accessed February 4, 2020.

Santa Cruz Sentinel
1976 Classified advertisement for Lico & Greco Farms. June 14. www.newspapers.com, accessed February 3, 2020.
2000 "Annie D. Greco," July 11. www.newspapers.com, accessed February 3, 2020.

TTI Developers
2020 Phase I Environmental Site Assessment: Vista Del Calabria, Enterprise Road (APNs 020-290-051 & -052), Hollister, California. January 16.

P5a. Photographs (continued):

Photograph 2. Barn, main (west) elevation. Camera facing east.

State of California -- The Resources Agency DEPARTMENT OF PARKS AND RECREATION **CONTINUATION SHEET**	Primary # HRI# Trinomial

Page 6 **of** 6 ***Resource Name or #** 213 Enterprise Road

***Recorded by:** James Williams, Rincon Consultants ***Date:** February 3, 2020 ■Continuation ☐Update

P5a. Photographs (continued):

Photograph 3. East Ancillary Building, west elevation. Camera facing northeast.

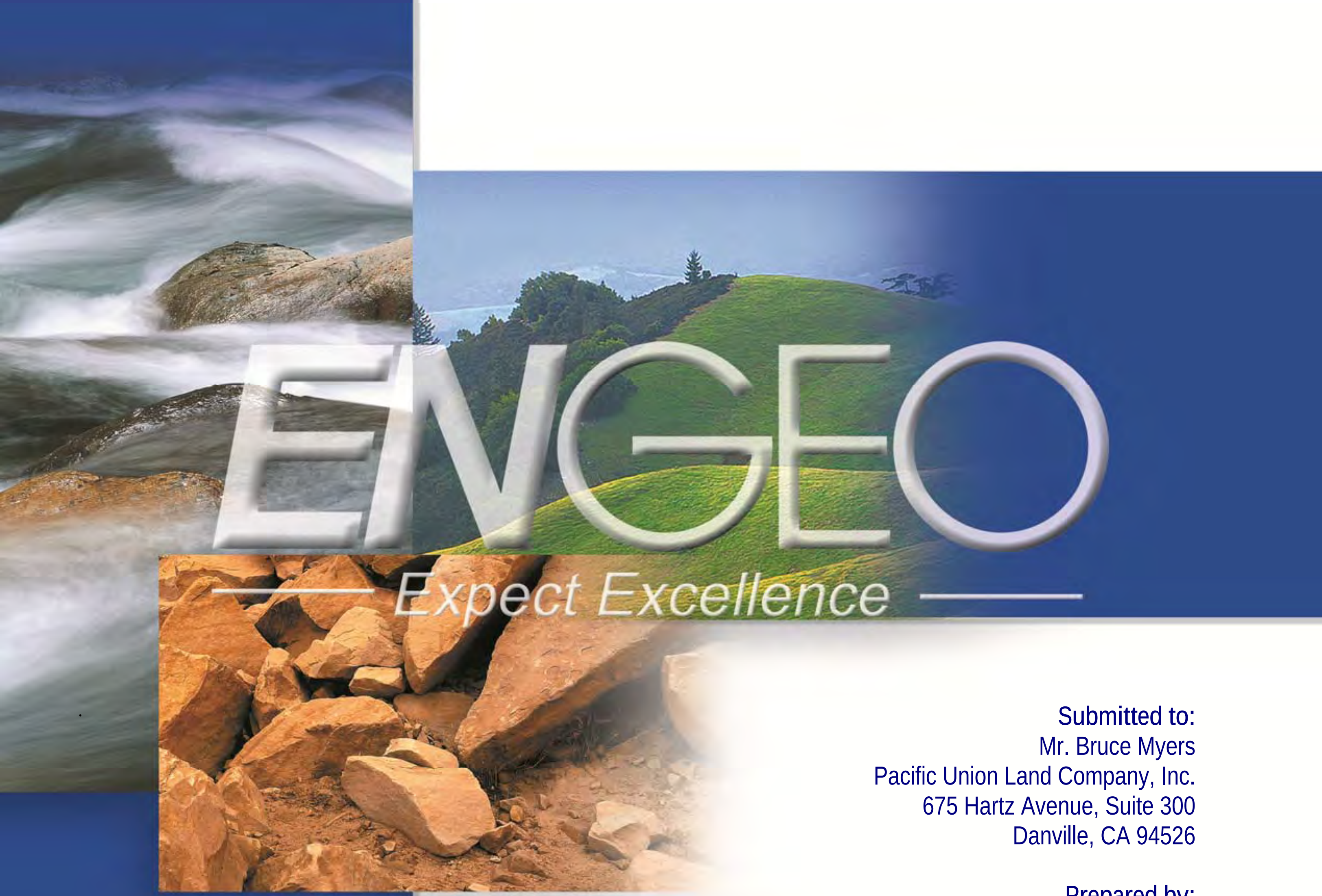
Photograph 4. West Ancillary Building, east elevation. Camera facing south.

Appendix E

Fault Evaluation Report

FAULT EVALUATION REPORT

LICO PROPERTY (APN 020-290-029)
213 ENTERPRISE ROAD
SAN BENITO COUNTY, CALIFORNIA



Submitted to:
Mr. Bruce Myers
Pacific Union Land Company, Inc.
675 Hartz Avenue, Suite 300
Danville, CA 94526

Prepared by:
ENGEO Incorporated

September 15, 2015

Project No:
11227.000.100

ENGEO
Expect Excellence

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
11227.000.100

September 30, 2015

Mr. Bruce Myers
Pacific Union Land Company, Inc.
675 Hartz Avenue, Suite 300
Danville, CA 94526

Subject: Lico Property (APN 020-290-029)
213 Enterprise Road
Hollister, California

FAULT EVALUATION REPORT

Dear Mr. Myers:

With your authorization, we prepared this report describing the results of our fault exploration at the Lico Property (APN 020-290-029) located at 213 Enterprise Road in Hollister, California. The accompanying report presents the findings of our exploration and our conclusions and recommendations regarding potential fault hazards at the site.

Evidence of faulting was encountered on the western portion of the site. In our opinion, hazards associated with fault rupture at the site can be mitigated by implementation of the fault setback recommendations provided in this report. Additional design-level exploration services will be required in the future in order to present grading, drainage, and foundation design recommendations. We are pleased to have been of service to you on this project and are prepared to consult further with you and your design team as the project progresses.

Sincerely,

ENGEO Incorporated

PROFESSIONAL GEOLOGIST
J. BROOKS RAMSDELL
No. 2356
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

J. Brooks Ramsdell, CEG

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Phillip Stuecheli, CEG

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SELECTED REFERENCES

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1.0 EXECUTIVE SUMMARY

The purpose of this investigation was to evaluate the potential for surface fault rupture along the eastern trace of the East Branch Calaveras Fault as identified on the Alquist-Priolo Earthquake Fault Zone map for the Hollister Quadrangle within the subject site. Our scope of work included the following:

- Review of regional geologic maps, publications, and consultant reports.
- Review of aerial photographs.
- Excavation and logging of five trenches at the proposed site and soil profile age assessment.
- Preparation of this report discussing our findings and providing recommendations for the mitigation of the impacts of surface fault rupture at the site.

1.1 ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE ACT

The Alquist-Priolo program requires the State Geologist, via the California Geological Survey (CGS) to establish regulatory zones around fault traces that are considered active and sufficiently well defined to create the potential for surface fault rupture hazards to structures. A fault trace is considered “active” if it is judged to have had identifiable surface rupture during the Holocene (defined by the CGS as the last 11,000 years). The State requires geological investigations prior to construction of new structures within Earthquake Fault hazard zones as described in CGS Special Publication 42 and Note 49. The policies and criteria of the State Mining and Geology Board with reference to the Alquist-Priolo Earthquake Fault Zoning Act are described in CGS Special Publication 42, Specific Criteria that include:

> **Appendix B Section 3603 (a):** No structure for human occupancy, identified as a project under Section 2621.6 of the Act, shall be permitted to be placed across the trace of an active fault. Furthermore, as the area within fifty (50) feet of such active faults shall be presumed to be underlain by active branches of that fault unless proven otherwise by an appropriate geologic investigation and report prepared as specified in Section 3603(d) of this subchapter, no such structures shall be permitted in this area.
>
> **Appendix C Guidelines for Evaluating the Hazards of Surface Rupture:** Setback distances of proposed structures from hazardous faults. The setback distance generally will depend on the quality of data and type and complexity of fault(s) encountered at the site.

1.2 FAULT ZONE AND GEOLOGIC CONDITIONS

The CGS Alquist-Priolo (AP) Earthquake Fault Hazard Zone map for the Hollister Quadrangle depicts three traces of the Calaveras fault south of Hollister. The three traces comprise the West Branch Calaveras fault, located approximately ½ mile southwest of the subject property, and the

East Branch Calaveras fault, which consists of two fault traces on the southwestern and northeastern flanks of Hill 668 (Figure 3). The eastern trace of the east branch of the Calaveras fault is mapped near the western boundary of the subject site as shown on Figures 6 and 7. The site has been mapped as underlain by both Plio-Pleistocene-age San Benito Gravels (Rogers, 1993) and late Pleistocene to Holocene-age alluvium (Majmundar 1994 and Wagner, 2002).

1.3 FINDINGS FROM TRENCH EXCAVATIONS

ENGEO excavated and logged five trenches across the mapped fault zone as depicted on Figure 7. The following is a summary of observed soil conditions exposed in the trench walls.

Evidence of faulting was observed in four out of the five trenches excavated at the site. The observed faults cut across the San Benito Gravels and offset the alluvial sediments, with evidence of vertical uplift on the west side. The faults observed in the trenches dipped towards the west, which is consistent with uplift along the pressure ridge to the west. The interpreted surface trace of the fault zone is depicted on Figure 7.

Soil weathering profile dating in Trenches T-1 and T-2 by Soil Tectonics provided an estimate of relative soil ages. Two paleosols were observed in the trenches. The paleosols were interpreted as late Pleistocene relict paleosols of approximately 40,000 and 80,000 years in age. The age dating of the soils exposed within the trenches indicates sufficient age for evaluation of fault activity. Pleistocene age alluvium was exposed in all of the trenches.

Based on the geologic conditions exposed in the trenches, we conclude that the trace of the East Branch Calaveras Fault at the west portion of the site shows evidence of movement during the Holocene. As described above, the guidelines for implementation of the Alquist-Priolo act state that fault setbacks should be based on the level of detail of the characterization and the complexity of the faulting, but do not mandate a 50-foot distance. The 50-foot clearance from traces shown on State maps is a requirement for construction within the zone in the absence of a site-specific geologic study. In our opinion, ENGEO has fulfilled the requirements for conducting a site-specific and detailed fault investigation. The fault zone exposed in the trenches is relatively well defined, and alluvial sediments estimated to be greater than 11,000 year in age are un-faulted east of the identified fault trace. It is, therefore, our opinion that habitable structures can be located as close as 25 feet from the eastern side of the identified fault trace. The recommended setbacks are depicted on Figure 7.

2.0 INTRODUCTION

2.1 PURPOSE AND SCOPE

The purpose of this investigation was to evaluate the potential for surface fault rupture along the eastern trace of the east branch Calaveras fault at the subject site as identified on the Alquist-Priolo Earthquake Fault Zone map for the Hollister Quadrangle. Our scope of work included the following:

- Review of regional geologic maps published by the U.S. Geological Survey (USGS), and California Geological Survey (CGS)

- Review of the California Geological Survey (CGS) Alquist Priolo Earthquake Fault Hazard Map for the Hollister Quadrangle and supporting documentation provided in the CGS Fault Evaluation Report for the Calaveras Fault.

- Review of stereo-paired historic aerial images flown in 1939, and available historic topographic maps.

- Review of selected fault hazard reports prepared for the subject site and adjacent parcels.

- Excavation and logging of five trenches at the site.

- Soil profile dating by Soil Tectonics, Inc.

- Preparation of this report.

The documents and maps reviewed for this study are described in the References. The results of the Soil Tectonics soil profile analysis are summarized in Appendix A.

This report was prepared for the exclusive use of our client and their consultants. In the event that any changes are made in the character, design or layout of the development, we must be contacted to review the conclusions and recommendations contained in this report to determine whether modifications are necessary.

2.2 ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE ACT

The Alquist-Priolo program requires the State Geologist, via the California Geological Survey (CGS) to establish regulatory zones around fault traces that are considered active and sufficiently well defined to create the potential for surface fault rupture hazards to structures. A fault trace is considered "active" if it is judged to have had identifiable surface rupture during the Holocene (defined by the CGS as the last 11,000 years). The State requires geological investigations prior to construction of new structures within Earthquake Fault hazard zones as described in CGS Special Publication 42 and Note 49. The policies and criteria of the State Mining and Geology Board with reference to the Alquist-Priolo Earthquake Fault Zoning Act are described in CGS Special Publication 42, Specific Criteria that include:

> **Appendix B Section 3603 (a):** No structure for human occupancy, identified as a project under Section 2621.6 of the Act, shall be permitted to be placed across the trace of an active fault. Furthermore, as the area within fifty (50) feet of such active faults shall be presumed to be underlain by active branches of that fault unless proven otherwise by an appropriate geologic investigation and report prepared as specified in Section 3603(d) of this subchapter, no such structures shall be permitted in this area.

Appendix C Guidelines for Evaluating the Hazards of Surface Rupture: Setback distances of proposed structures from hazardous faults. The setback distance generally will depend on the quality of data and type and complexity of fault(s) encountered at the site.

2.3 PROJECT LOCATION

The site consists of a single parcel (APN 020-290-029) located between south of Enterprise Road in San Benito County just south of Hollister, California (Figure 1). APN 020-290-029 is bordered by Enterprise Road on the north, and existing residential development on the south, east and west.

The current topography of the site can generally be characterized as gently sloping towards the north with steeper slopes near the flanks of the northwest-trending elongate hill (Hill 668) along the west property line. Current elevations range from a high of about 480 feet (NAVD88) in the southwest corner of the site to approximately 345 feet in the northwest corner of the site.

The southern parcel is currently occupied by grassland and orchards with a farmhouse and related structures located in the northern portion of the site.

2.4 PROJECT DESCRIPTION

Although no formal plans are available at this time, preliminary plans prepared by MacKay and Somps (April 14, 2015) show the proposed development of approximately 150 single-family residential lots, with interior roadways, and open space areas.

2.5 REGIONAL GEOLOGY

The site is located within the Coast Ranges geomorphic province of California. The Coast Ranges province is typified by a system of northwest trending, fault-bounded mountain ranges and intervening alluviated valleys. Bedrock in the Coast Ranges consists of igneous, metamorphic, and sedimentary rocks that range in age from Jurassic to Pleistocene. The present geology of the Coast Ranges is the result of deformation and deposition along the tectonic boundary between the North American plate and the Pacific plate. Plate boundary fault movements are largely concentrated along the well-known fault zones, which in the area include the San Andreas, Calaveras, and Hayward faults, as well as other lesser-order faults.

2.6 LOCAL GEOLOGY

The site is located approximately 4 miles northeast of the San Andreas fault in the southern portion of the Hollister Valley. The local site geology has been shaped predominately by deformation along the Calaveras fault, with linear fault-bounded pressure ridges exposing Plio-Pleistocene San Benito Gravels elevated above the surrounding Pleistocene and Holocene alluvium.

The site is underlain primarily by terrestrial granular sedimentary deposits ranging from Holocene to Plio-Pleistocene Age. The site geology has been mapped by Wagner (2002), Majmundar (1994), Rogers (1993), and Dibblee and Rogers (1975) as underlain by the following (Figure 2):

- Holocene Alluvium (Q) – located at the former creek channel in the northeastern most portion of the site.

- Late Pleistocene Alluvium (Qo) or Pleistocene terrace deposits – across the majority of the site located east of the prominent fault bound pressure ridge (Hill 668). Majmundar (1994) maps these deposits continuing towards the west and underlying Hill 668.

- Plio-Pleistocene Continental Deposits (QT) or San Benito Gravels – underlying Hill 668 along the west site boundary. Rogers (1993) interprets areas mapped by others as Pleistocene terrace deposits as underlain by the San Benito Gravels and thus maps the majority of the site as underlain by the San Benito Gravels.

The Holocene and Pleistocene alluvium is characterized as undifferentiated floodplain deposits comprising unconsolidated to semi consolidated sand, gravel, silt and clay. Pleistocene alluvium typically occupies terraces that are elevated above the current drainage courses. The Plio-Pleistocene San Benito Gravels generally comprises poorly bedded sandy gravels with cobbles and moderately well bedded and commonly crossbedded gravelly sands with some silt. In the vicinity of the site, bedding within the Pleistocene alluvium has been mapped as gently dipping 10 to 20 degrees in a variably northern direction. The Plio-Pleistocene San Benito Gravels has been mapped as generally northwest to east-west striking and dipping to the north from 20 to 40 degrees (Wagner, 2002).

2.7 CALAVERAS FAULT

The Calaveras fault is a major branch of the overall San Andreas fault system in northern California. The Calaveras fault diverges towards the east from the San Andreas fault approximately 5 to 10 miles south of the site and extends approximately 80 miles to the north-northwest where it dies out near the town of Danville.

The history of mapping and identification of the Calaveras fault zone in the vicinity of the site as identified on the Hollister 7.5 minute Quadrangle is described in the Fault Evaluation Report (FER-94) by Hart (1979). In 1974, the CDMG established Special Studies Zones (SSZ) around the Calaveras fault zone based on the mapping of Nason (1971), Radbruch (1968), Rogers (1973), and Taliaferro (1948).

South of Hollister the Calaveras fault zone is mapped as three fault traces. The three fault traces comprise the West Branch Calaveras fault, located approximately ½ mile southwest of the subject property, and the East Branch Calaveras fault, which comprises two fault traces on the southwest and northeast flanks of Hill 668 (Figure 3).

According to FER-94, the West Branch Calaveras fault is described as the main trace of the fault. Fault creep is well documented along this trace of the fault with evidence of 13 inches of right lateral strike slip displacement from 1909 through 1971 (Hart, 1979). More recent evaluations of creep along this trace of the fault by Galehouse and Lienkaemper (2003), documented creep rates of 6.4 and 12.2 mm/year at two sites in the Hollister area. Creep along the main trace occurs in a zone that varies from approximately 10 to 50 feet wide (Hart, 1979).

The East Branch Calaveras fault comprises two fault traces on both sides of Hill 668 based on Radbruch (1968) and Rogers (1973). According to Kilburn (1972) the East Branch Calaveras fault acts as a groundwater barrier and the water table is 20 to 25 feet higher on the east side of the fault(Hart, 1972). The east trace of the East Branch Calaveras fault is mapped in the vicinity of the west property line of the subject site (Figure 3).

The epicenters for earthquakes and numerous micro-earthquakes have been plotted near the mapped surface traces of the Calaveras fault (Hart, 1979, Sleeter, et al., 2004). The distribution of earthquakes clearly defines the overall trend and approximate location of the Calaveras fault as it diverges from the San Andreas fault in a northwesterly direction (Figure 4).

The most recent earthquake on the Calaveras fault with a moment magnitude of 6 or greater occurred on April 24, 1984, in the vicinity of Morgan Hill. The 1984 Morgan Hill Earthquake had an approximate moment magnitude of 6.2. A larger (M~6.5) earthquake is thought to have occurred on the Calaveras fault on July 1, 1911. Other relatively recent notable earthquakes attributed to the Calaveras fault include the October 30, 2007, moment magnitude 5.6, Alum Rock Earthquake; the August 6, 1979, moment magnitude 5.7 Coyote Lake Earthquake; January 7, 2010 moment magnitude 4.1.

The USGS has published the Quaternary Fault and Fold Database (QFFD) a nationwide database of Quaternary-active faults. According to the QFFD, the above-described traces of the Calaveras fault at and in the vicinity of the site are considered to be Holocene to Latest Pleistocene age faults (defined as active within the last 15,000 years by the Database). As shown on Figures 3 and 6, the CGS and USGS have mapped the eastern trace of the East Branch Calaveras Fault through western portions of the subject property.

2.8 REGIONAL SEISMICITY

Because of the presence of nearby active faults, the Central Coast Region of California is considered seismically active. Numerous small earthquakes occur every year in the region, and large (>M7) earthquakes have been recorded and can be expected to occur in the future. The site is located within the Earthquake Fault Hazard Zone for the Calaveras Fault (Figure 3). Figure 4 shows the approximate location of active and potentially active faults and significant historic earthquakes mapped within the Central Coast Region. Based on the 2008 USGS National Seismic Hazard Maps database, the nearest active fault is the Calaveras fault, located very near the western boundary of the subject site. Other active faults located near the site include the San Andreas fault, located approximately 4 miles to the southwest, the Quien Sabe fault, located approximately 5 miles to the northeast; the Zayante Vergeles fault located approximately 5 miles to the west, the Ortigalita fault located approximately 20 miles to the northeast and the Rinconada fault located approximately 21 miles to the southwest. These faults have estimated maximum moment magnitudes (Mw) of 7.0, 7.9, 6.6, 7.0, 7.1 and 7.5, respectively. Although not included on the 2008 National Seismic Hazard Maps database the Sargent fault is also considered active by the CGS and USGS and is located approximately 4 miles northwest of the site.

The Uniform California Earthquake Rupture Forecast (UCERF 2013) evaluated the 30-year probability of a M6.7 or greater earthquake occurring on the known active fault systems in California. The UCERF generated a probability of 16 percent for the Calaveras fault, 15 percent for the San Andreas fault, 0.72 percent for the Sargent fault, 0.3 percent for the Quien Sabe fault, 0.1 percent for the Zayante Vergeles fault, 1.9 percent for the Ortigalita fault and 0.3 percent for the Rinconada fault.

2.9 GEOMORPHOLOGY

The subject site is located on an elevated alluvial terrace on the east side of a northwest trending fault-bound pressure ridge (Figure 6). A relatively prominent break in slope occurs along the east edge of the pressure ridge at the western portion of the site. At a few locations, the break in slope along the property line is relatively linear and at others, it is more subdued. An access road to neighboring properties was graded along the east flank of the pressure ridge slightly obscuring the current geomorphology in the area. In 1939, stereo-paired aerial photographs covering the site shows a relatively linear, northwest trending trough is visible along the pressure ridge approximately 275 feet west of the property line. A more subdued northwest trending swale is visible at the base of the pressure ridge along the west side of the property. Northwest trending, linear tonal variations are visible in the 1939 aerial photographs at the west portion of the site. These tonal variations correspond closely with the location of the CGS mapped fault trace at the site. Based on our review, the geomorphology visible in the 1939 aerial photographs is suggestive of an anastomosing series of faults that straddle and crosscut the pressure ridge.

2.10 PREVIOUS INVESTIGATIONS

The following section provides a summary of pertinent aspects of previous fault explorations performed by others at the site.

2.10.1 Leighton Associates 1974

Lieghton Associates (LA) performed a fault hazard study (1974) on selected portions of the roughly 400-acre Ridgemark Estates development located just south of the Lico Property. The scope of work included review of published geologic maps and reports, geologic mapping, aerial photograph interpretations, and excavation and logging of eleven exploratory trenches. Leighton Associates identified the eastern trace of the East Branch Calaveras fault in trenches T-2 and T-4 excavated across the mapped fault trace. The LA Trench T-2 was located approximately 150 feet south of the Lico Property along the mapped fault trace (Figure 6). Based on their observations with regard to the cross cutting relationships exposed in the two trenches it was concluded that the fault is potentially active to active. The fault trace exposed in trench T-2 was mapped extending into the Lico Property along a northwesterly trend. An active east-west trending secondary fault trace was identified by LA on the south flank of Hill 668. This secondary fault is located approximately 1500 feet southwest of the Lico Property.

2.10.2 Earth Systems 2004

Earth Systems (ES) performed a geological fault investigation at the southern portion of the subject site in 2004. The scope of work included review of geologic reports and maps, aerial photograph interpretations, and excavation and logging of two exploratory trenches. As part of the ES investigation, they reviewed an unpublished Pacific Geotechnical Engineering report covering the property near the southeast corner of the Lico Property. According to the ES 2004 report, the Pacific Geotechnical Engineering investigation found no evidence of faulting on the property located to the southeast.

Earth Systems exploration included the excavation of two trenches T-1 and T-2. The approximate locations of the ES trenches are shown on Figure 6. The ES trenches encountered clay and sand beds overlying sand and gravel beds interpreted as overbank and stream channel deposits of the San Benito Formation. The ES report concluded that no evidence of faulting was observed in the trench exposures at the site.

Soil Tectonics prepared a pedochronological report as an appendix to the ES 2004 report. A soil profile survey was performed at the location of both trenches T-1 and T-2. The soil profiles exposed at the locations of the trenches were concluded to be considerably greater than 10,000 years old (34,000 to 40,000 years old).

2.10.3 Earth Systems 2007

Earth Systems (ES) performed a geological fault investigation at the Lico Property Parcel located on the north side of Enterprise Road just north of the subject site. The scope of work included a site reconnaissance, review of available geologic reports and maps, review of stereo-paired aerial photographs, and excavation and logging of seven exploratory trenches.

The ES trenches encountered lake/alluvial deposits and San Benito formation (Figure 6). According to the ES report marker, beds within the lake alluvial deposits and the San Benito formation were observed to be relatively unbroken within the trench exposures. Radiocarbon testing of the lake alluvial deposits indicate an age of about 2000 years at a depth of about 8 feet below the ground surface. ES concluded that no fault related features were observed within the trench exposures at the site and that the lake alluvial deposits at a depth of about 10 feet should be old enough to have exhibited fault related features if the Eastern Branch Calaveras fault crossed the portion of the site that had been explored.

2.10.4 Earth Systems Unpublished Trench Log, 2008

In 2008, Earth Systems performed additional fault trenching on the Lico Property Parcel located north of Enterprise Road (Figure 6). Based on our review of the ES trench log, exposures within the trench walls comprised Holocene alluvial flood plain deposits underlain by fluvial sands and gravels. The fault trench was approximately 20 feet deep with a deepened section up to 30 feet in depth. Radiocarbon dating yielded an age of 2510 year for the fluvial sands and gravels at the base of the trench and an age of 7720 for a consolidated clay layer at a depth of approximately 25 feet below the ground surface. No reference to fault related features is depicted on the trench log.

3.0 SITE EXPLORATION

3.1 TRENCH EXCAVATIONS

We excavated and logged a total of approximately 1,150 feet of trench as depicted on Figures 8, 9, and 10. The trenches were excavated with a tracked excavator to depths ranging from approximately 5 to 16 feet. The excavations were benched or shored for safety and the south walls of the trenches were cleaned of smeared materials and logged by ENGEO geologists as noted on the logs. The trench locations and significant features were located by measuring from existing fence lines. The location of the trenches are shown on Figure 7.

The purpose of the trench excavations was to expose the alluvial deposits and San Benito Gravels so that they could be closely examined for evidence of recent fault displacement. The geologic logging process included description of soil color, estimated grain size, structure and interpretation of geologic features such as development of soil weathering profiles, depositional layering and contacts between differing soil layers.

Soil features described on the log include the soil color based on the Munsell color chart, the relative development of blocky prismatic structure, the relative accumulation of translocated clay as films on soils grains and fracture surfaces, and the accumulation of pedogenic (weathering-derived) calcium carbonate, gypsum, and manganese oxides.

We retained Dr. Glenn Borchardt to provide detailed pedochronologic descriptions of represented weathering profiles developed in the Trenches 1 and 2 at the locations noted on the log. The purpose of the pedochronologic description was to correlate the soils observed onsite with nearby dated profiles and to estimate the age of weathering profiles. The results of Dr. Borchardt's study are presented in Appendix A.

The trenches were northeast trending and oriented roughly perpendicular with previously mapped fault traces. Trench T-1 was excavated from the west property line across the west portion of the site to the east limit of the AP Earthquake Fault Hazard Zone (Figure 7). Trench T-2 was excavated from the east edge of the paved driveway at the west property line, through the west portion of the orchard in the northern portion of the site. Trench T-3 was excavated from the west property line towards the northeast. Trench T-4 was excavated from the southwest property corner towards the northeast and Trench T-5 was excavated across the northwestward projection of the fault exposed in the 1974 Leighton Associates fault trench located south of the subject site. Evidence of faulting was encountered in trenches T-1, T-3, T-4, and T-5.

3.2 SUBSURFACE CONDITIONS

3.2.1 Fill (F)

A wedge of fill was encountered adjacent to the driveway at the west end of trenches T-1 and T-2. The fill was likely generated from adjacent cuts during grading for the driveway. The fill encountered generally consists of lean sandy clay with scattered gravel.

3.2.2 Modern to Holocene Age soils and Alluvium (2A, 2B and 3)

The uppermost soil layers in all five trenches is a dark gray brown to dark yellowish brown sandy clay. These soils appear to be disturbed from bioturbation with many krotovina throughout the soil column. These soils are slightly plastic when wet. At many locations in the trenches, the contact between these upper soils and the underlying deposits is sharp. We interpret this as likely indicating an unconformity and deposition on an erosional surface. At locations where these soils overly faults, they are not visibly sheared but they do show minor to more significant changes in thickness. This type of soil would be unlikely to preserve subtle fractures or shearing that could result from small surface fault displacements.

3.2.3 Pleistocene Alluvium (4A, 4B, 4C, 4D and 5)

Interbedded sandy clay and sandy to clayey gravel with cobbles were encountered in the trenches below the younger Holocene soils. These deposits generally display strong clay film development, blocky ped structures, with manganese oxide coatings, and well-developed carbonate horizons. Relatively thick clay films are present coating the gravels and cobbles. These deposits are interpreted to be older alluvium of Pleistocene age. In the trenches where faulting was observed, these units are visibly offset, tilted and deformed near the fault.

3.2.4 Plio Pleistocene San Benito Gravels (6A and 6B)

Coarse sands and gravels interbedded with finer grained dense sand to clayey sand was encountered below the Pleistocene alluvium within all of the trenches with the exceptions of trench T-2 located in the northern portion of the site. At some locations, the sands and gravels displayed planar beds and some cross beds. Coarse gravels and cobbles within the unit generally comprised granodiorite, sandstone, volcanics, chert, and greenstone. We interpret these deposits as San Benito Gravels.

Bedding within the sands and gravels generally dips gently towards the north except where it was observed to be tilted near the fault. Near the fault in trench T-1 bedding was observed striking towards the northwest and dipping from 30 to 40 degrees. A drag fold was observed within the

San Benito Gravels adjacent to the fault. Within a distance of less than 20 feet from west to east, bedding was observed to go from a dip of 40 degrees to 15 degrees.

3.3 FAULTING

3.3.1 T-1

Trench T-1 was excavated from the west property line towards the northeast at the northern half of the site (Figure 7). In T-1, we encountered a well-defined fault at the extreme southwest end of the trench. Our trench appeared to intersect the eastern edge of the fault zone at a point where the fault was transitioning (rolling over) to a relatively low angle as it approached the surface. The fault comprised a southwest-dipping zone of sheared and disrupted clayey sand that truncates northeast dipping sand and gravel beds of the San Benito Gravels. The approximate strike and dip of the fault zone was measured as N47W 14SW Bedding within the sands and gravels near the base of the fault were disrupted to the point where no bedding or sedimentary structures were discernible. The fault appeared to steepen towards the southwest near the end of the trench. The overlying Pleistocene alluvium was tilted and offset and the younger Holocene soils were very thin overlying the fault. The thin modern soils is likely related to the uplift and erosion adjacent to the fault. The modern soils were observed to thicken towards the northeast of the fault and appeared to be slightly warped. A sharp linear contact within the Holocene soils interpreted as evidence of ponding water was observed within the soils east of the fault. This contact was tilted towards the southwest by approximately 2 degrees.

3.3.2 T-2

Trench T-2 was excavated at the northern portion of the site just east of the paved access roadway/driveway (Figure 7). No evidence of faulting was observed in trench T-2. Based on the geomorphology, review of aerial photographs and the mapped location of the fault we interpret the location of the fault to be just west of the southwest end of the fault trench.

3.3.3 T-3

Trench T-3 was excavated south of Trench T-1 from the west property line towards the northeast (Figure 7). Evidence of faulting was observed near the southwest end of the trench. A southwest dipping fault was observed to offset the San Benito Gravels near Station 0+35. The approximate strike and dip of the fault zone was measured as N45W 16SW. A dense fine-grained sand interpreted as San Benito formation was offset and disrupted at the location of the fault. The younger overlying soils were relatively thin and were observed to thicken slightly towards the southwest. No evidence of faulting was observed within the thin soils overlying the fault. We interpret the relatively thin and at one location completely absent Holocene soils at this location as related to uplift, warping and erosion on the northeast flank of the pressure ridge.

3.3.4 T-4

Trench T-4 was excavated from the southwest corner of the property towards the northeast. In T-4 we encountered a fault at approximately Station 1+45 near the northeast end of the trench. The fault comprised a southwest-dipping zone of sheared and disrupted gravel and clayey sand. The approximate strike and dip of the fault zone was measured as N55W 35SW. A highly disrupted zone of clayey sand of the San Benito formation is present southwest of the fault. The overlying soils were observed to be offset slightly (less than 6 inches). The rough sense of movement was up on the southwest indicating that the southwest dipping fault was accommodating transpressional deformation and uplift along the pressure ridge located to the southwest.

3.3.5 T-5

Trench T-5 was excavated near the southern property boundary across the northern projection of the mapped fault trace (Figure 7). Two fault zones were encountered at the southwest portion of Trench T-5. At approximately Station 0+10 a southwest dipping fault was encountered. The approximate strike and dip of the fault zone was measured as N45W 55SW The fault was observed to slightly offset sand and gravel beds within the San Benito Gravels. A disrupted zone of Pleistocene alluvium was observed overlying the fault. The overlying Holocene soils did not appear to be disrupted by the fault at this location.

At approximately Station 0+45 a southwest dipping fault was encountered. The approximate strike and dip of the fault zone was measured as N35W 30SW. The fault was observed to truncate sand and gravel units of the San Benito formation and the sense of movement was up on the southwest. Wedges of disrupted San Benito sands and gravels were observed within the fault zone. The overlying Pleistocene alluvium was disrupted and offset within the zone of faulting. A slight warping of the overlying surficial soils was observed near the fault.

4.0 DISCUSSION AND CONCLUSIONS

Previous consultant studies along the East Branch Calaveras have discovered evidence of fault rupture in soils interpreted to be latest Pleistocene to Holocene age. Based on the Leighton Associates (1974) fault investigation for the Ridgemark Development a structural setback for dwellings was established just south of the Lico Property. Earth Systems (2004) performed a fault exploration at the southern portion of the subject property and concluded that no evidence of active faulting was observed within the two trench exposures at the site. A 50-foot setback for structures for human occupancy was recommended from the west ends of the Earth Systems trenches to account for uncertainty with regards to faulting west of the trenches.

Trenches excavated for this study found evidence for surface faulting that is likely to be of Holocene age based on the following observations:

- The Holocene/modern soil horizon is warped and thickens towards the east at the approximate location of the fault zone in Trench T-1.

- A Holocene soil horizon indicative of ponding water located just east of the fault in Trench T-1 is visibly tilted towards the southwest by approximately 2 degrees indicating Holocene tilting of a localized area just east of the fault.

- The Holocene/modern soil horizon thickens near the west end of the trench and thins towards the east in Trench T-3. We interpret this as evidence of tilting towards the southwest similar to what was observed in Trench T-1.

- Alluvium of latest Pleistocene to Holocene age is offset by faults in Trenches T-1, T-4 and T-5. Layers identifiable across the faults are offset up to 6 inches vertically.

- In Trench T-1 and T-5, the alluvium is relatively thin west of the fault and thickens significantly east of the fault. The faults exposed in the trenches all dip towards the southwest. These observations suggests that the fault has a vertical component of up on the west movement. This is consistent with the geomorphology at the site, which indicates the presence of a linear pressure ridge west of the site. The geometry of faults exposed in the trenches are consistent with the interpretation that they are located on the east edge of a fault flower structure that underlies the pressure ridge west of the site.

5.0 RECOMMENDATIONS

Four of the five trench excavations encountered relatively narrow zones of faulting. Pleistocene age and older deposits east of the faults exposed in the trenches are continuous and show no evidence of ground surface rupture. The guidelines for implementation of the Alquist-Priolo act state that fault setbacks should be based on the level of detail of the characterization and the complexity of the faulting, but do not mandate a 50-foot distance. The 50-foot clearance from traces shown on State maps is a requirement for construction within the zone in the absence of a site-specific geologic study. In our opinion, ENGEO has fulfilled the requirements for conducting a site-specific and detailed fault investigation. The fault zone exposed in the trenches is relatively simple and well defined, and alluvial sediments estimated to be greater than 11,000 year in age are un-faulted east of the identified fault trace. Based on the results of this study we have the following recommendations:

- Structures intended for human occupancy should be set back from the fault zone trace a minimum of 25 feet as depicted on Figure 7.

- It will be acceptable to construct improvements such as roads, parking lots, detention basins, parks, and underground utilities within the recommended fault setback zones. However, these improvements may be susceptible to damage in the event of fault rupture.

- If possible, lifeline utilities such as fire protection water lines should be situated to avoid crossing the active fault trace where possible, or provided with shutoff valves at fault crossings.

6.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

If changes occur in the nature or design of the project, we should be allowed to review this report and provide additional recommendations, if any. It is the responsibility of the owner to transmit the information and recommendations of this report to the appropriate organizations or people involved in design of the project, including, but not limited to, developers, owners, buyers, architects, engineers, and designers. The conclusions and recommendations contained in this report are solely professional opinions and are valid for a period of no more than 2 years from the date of report issuance.

We strived to perform our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty is expressed or implied. There are risks of earth movement and property damages inherent in building on or with earth materials. We are unable to eliminate all risks or provide insurance; therefore, we are unable to guarantee or warrant the results of our services.

This report is based upon field and other conditions discovered at the time of report preparation. We developed this report with limited subsurface exploration data. We assumed that our subsurface exploration data is representative of the actual subsurface conditions across the site. If unexpected conditions are encountered, notify ENGEO immediately to review these conditions and provide additional and/or modified recommendations, as necessary.

Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to ENGEO's documents. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include on-site construction observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims arising from or resulting from the performance of such services by other persons or entities, and from any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

SELECTED REFERENCES

California Division of Mines and Geology, 1982, Special Studies Zone Maps, Hollister Quadrangle, California, State of California.

California Geological Survey Special Publication 117A (2008). Guidelines for Evaluation and Mitigating Seismic Hazards in California.

City of Hollister, 2005, General Plan, Health and Safety Element.

Dibblee, T.W., 1975, Geologic Map of the Hollister Quadrangle, California, U.S. Geological Survey Open-Filoe Map 75-394.

Earth Systems Consultants, 2002, Geologic Literature Review and Percolation Test Results, Lico Subdivision, Hollister, California, June 26, 2002.

Earth Systems Consultants, 2003, Geotechnical Feasibility Report, Lico Residential Development, September 8, 2003.

Earth Systems Consultants, 2004, Geological Fault Investigation, Lico Residential Development, February 6, 2004.

Earth Systems Consultants, 2007, Geological Fault Investigation, Lico Residential Development May 4, 2007.

Earth Systems Pacific, 2008, Addendum Geological Fault Investigation, Lico Residential Development October 2008.

Hart, 1979, California Division of Mines and Geology, 1979, Fault Evaluation Report FER-94, Calaveras (Hollister segment), October 19, 1979.

Hart, E.W. and Bryant, W.A. (2007), Fault-Rupture Hazard Zones m California: California Division of Mines and Geology, Special Publication 42.

Jennings and Bryant, 2010, Fault Activity Map of California, California Geological Survey, Geologic Data Map No. 6, http://www.quake. ca.gov/gmaps/FAM/ faultactivitymap.html

Leighton and Associates, 1974, Fault Hazard Study of the Eastern and Western Portions of Ridgemark Estates Development, Hollister, California, November 19, 1974.

Majmundar, H.H., 1994, Geologic Map, Landslide Hazards in the Hollister Area, San Benito County, California, Divisions of Mines and Geology, Open-File Report 94-02.

Radbruch, D.H., 1974, Map Showing Recently Active Breaks Along the Hayward Fault Zone and the Southern Part of the Calaveras Fault Zone, California, U.S. Geological Survey IMap: 813.

SELECTED REFERENCES (Continued)

Radbruch, D. H., 1968, New evidence of historic fault activity in Alameda, Contra Costa, and Santa Clara Counties, California in Proceedings of Conference on Geologic Problems of San Andreas Fault System; Stanford University Publications in Geological Sciences, v. II, p. 46-54.

Rogers, Thomas H., 1993, Geology of the Hollister and San Felipe Quadrangles, San Benito, Santa Clara, and Monterey Counties, California, Divisions of Mines and Geology, Open-File Report 93-01.

San Benito County General Plan, 2035 General Plan, February 2013, Chapter 10 Geology, soils and Mineral Resources.

Sleeter, B.M., Calzia, J.P., Walter, S.R., Wong, F.L., and Saucedo, G.J., 2004, Earthquakes and faults in the San Francisco Bay area (1970-2003): U.S. Geological Survey, Scientific Investigations Map SIM-2848, scale 1:300,000.

United States Geological Survey and the California Geological Survey, 2006; Quaternary fault and fold database for the United States, accessed August 2015, from USGS web site: http//earthquakes.usgs.gov/regional/qfaults/.

Wagner, D.L., 2002, Geologic Map of the Monterey 30'x 60' Quadrangle and Adjacent Areas, Department of Conservation, California Geological Survey 2002.

Working Group on California Earthquake Probabilities, 2008, The Uniform California Earthquake Rupture Forecast, Version 2 UCERF 2, USGS Open File Report 2007-1437.

FIGURES

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BASE MAP SOURCE: GOOGLE EARTH PRO

ENGEO Expect Excellence	VICINITY MAP LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.100 SCALE: AS SHOWN DRAWN BY: DLB CHECKED BY: PJS	FIGURE NO. 1

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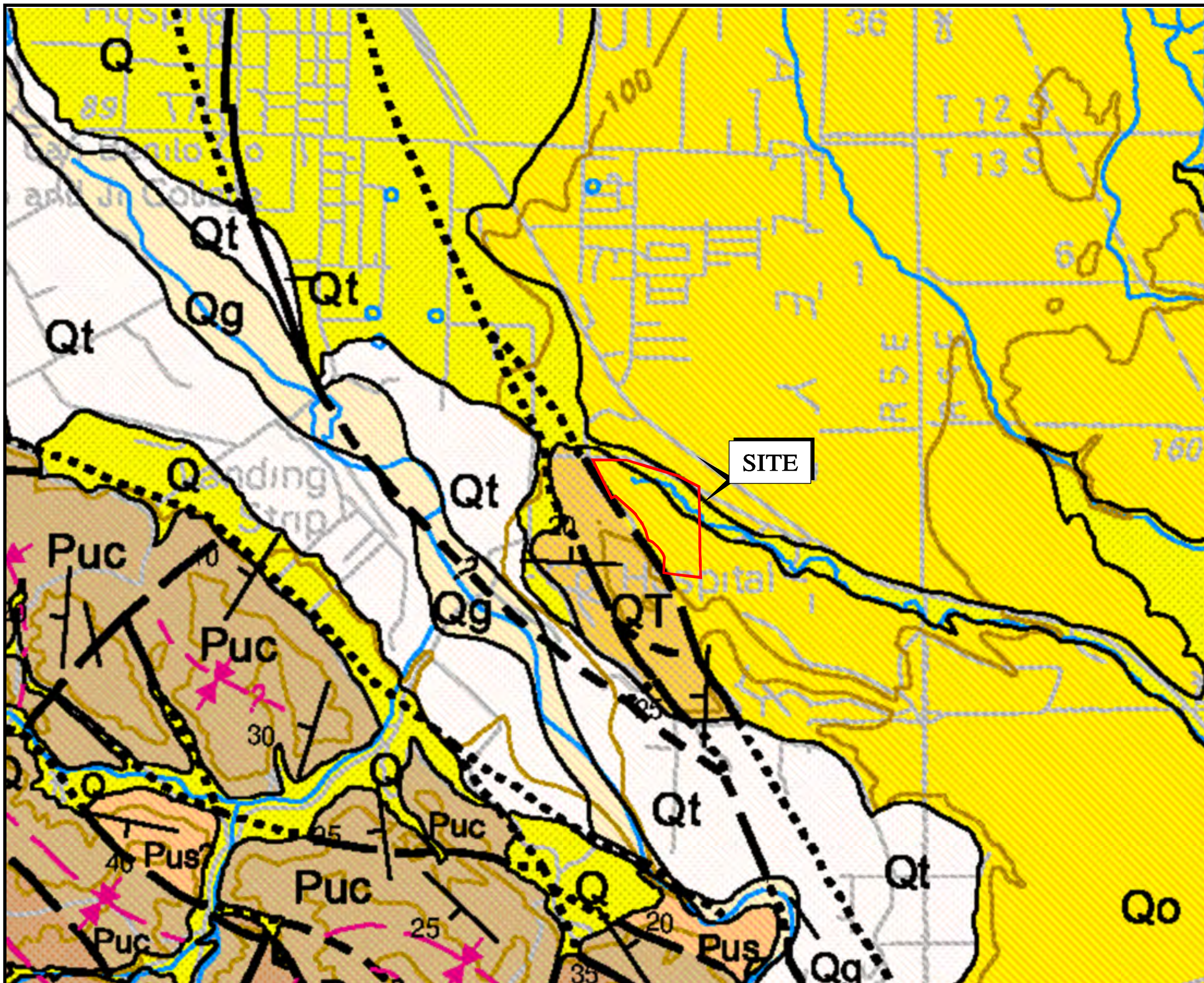

BASE MAP SOURCE: WAGNER, 2002

ENGEO — Expect Excellence

REGIONAL GEOLOGIC MAP	PROJECT NO.: 11227.000.100	FIGURE N
LICO PROPERTY	SCALE: AS SHOWN	2
HOLLISTER, CALIFORNIA	DRAWN BY: DLB CHECKED BY: PJS	

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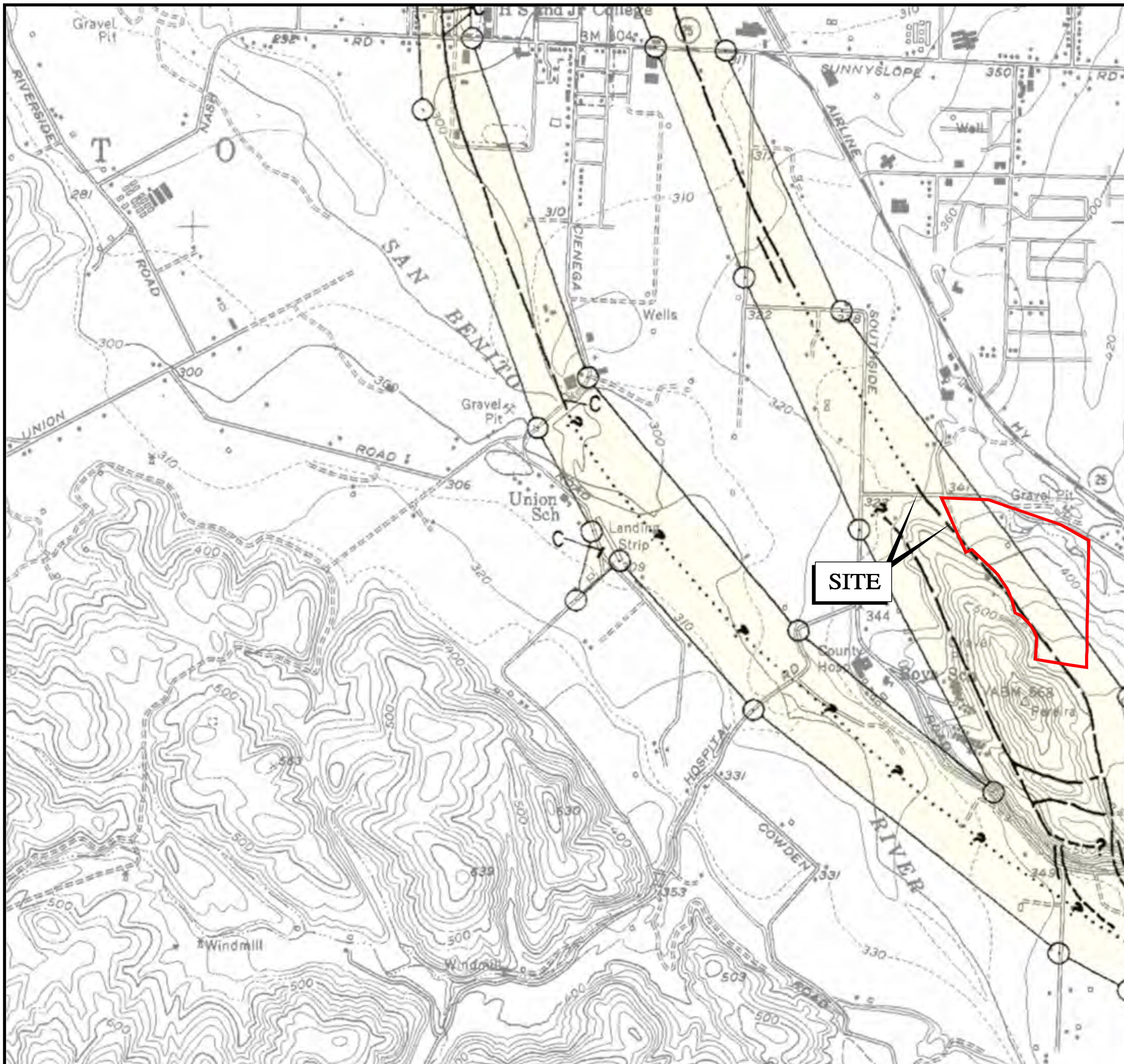

N

0 FEET 2000
0 METERS 1000

EXPLANATION

1906 C

FAULTS CONSIDERED TO HAVE BEEN ACTIVE DURING HOLOCENE TIME AND TO HAVE A RELATIVELY HIGH POTENTIAL FOR SURFACE RUPTURE; SOLID LINE WHERE ACCURATELY LOCATED, LONG DASH WHERE APPROXIMATELY LOCATED, SHORT DASH WHERE INFERRED, DOTTED WHERE CONCEALED; QUERY (?) INDICATES ADDITIONAL UNCERTAINTY. EVIDENCE OF HISTORIC OFFSET INDICATED BY YEAR OF EARTHQUAKE-ASSOCIATED EVENT OR C FOR DISPLACEMENT CAUSED BY CREEP OR POSSIBLE CREEP.

SPECIAL STUDIES ZONE BOUNDARIES; DELINEATED AS STRAIGHT-LINE SEGMENTS THAT CONNECT ENCIRCLED TURNING POINTS SO AS TO DEFINE SPECIAL STUDIES ZONE SEGMENTS.

BASE MAP SOURCE: CDMG, 1982

ENGEO Expect Excellence	EARTHQUAKE FAULT ZONE MAP LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.100 SCALE: AS SHOWN DRAWN BY: DLB / CHECKED BY: PJS	FIGURE NO. 3

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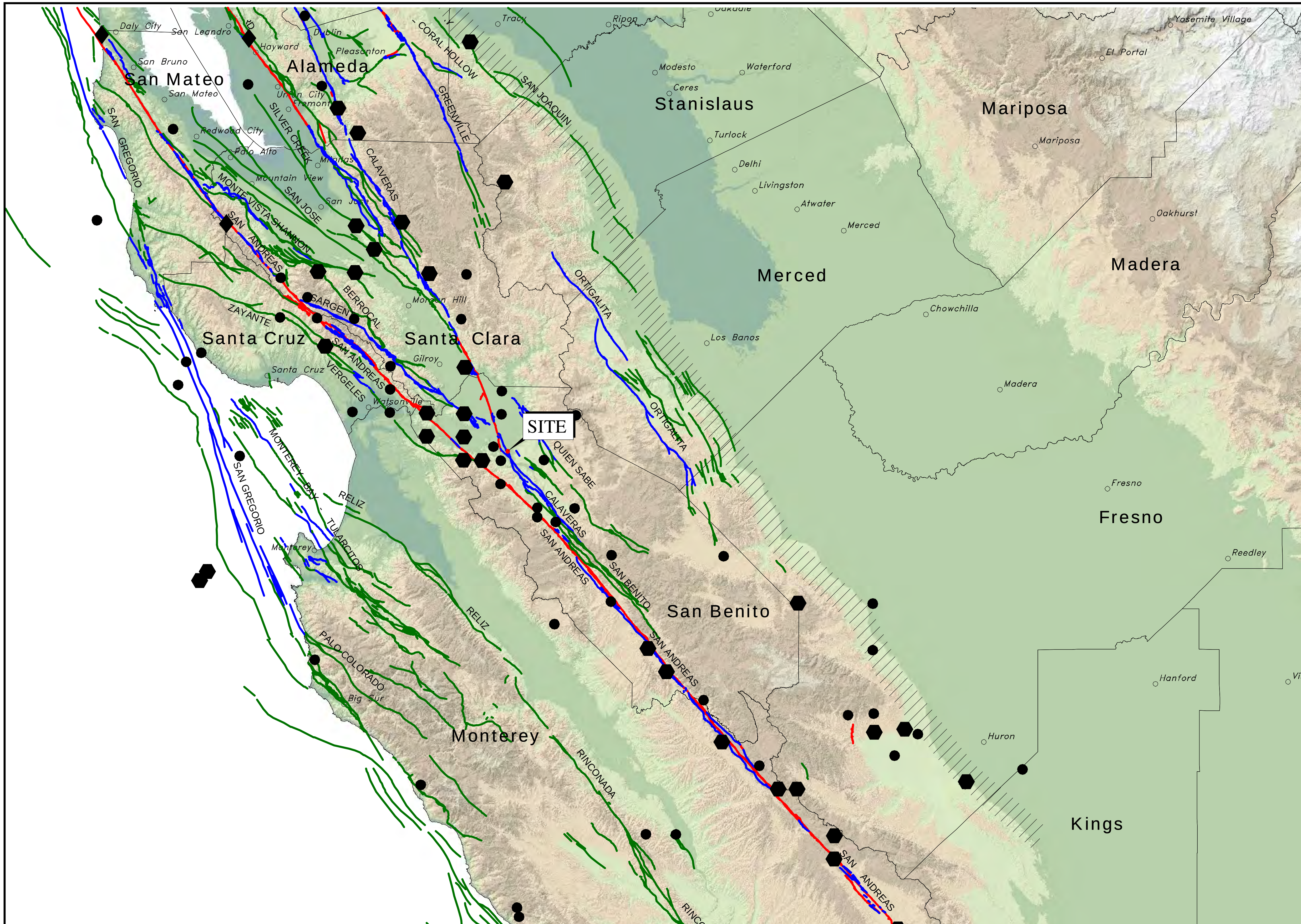

EXPLANATION

- MAGNITUDE 7+
- MAGNITUDE 6-7
- MAGNITUDE 5-6
- HISTORIC FAULT
- HOLOCENE FAULT
- QUATERNARY FAULT
- HISTORIC BLIND THRUST FAULT ZONE

BASE MAP SOURCE:
COLOR HILLSHADE IMAGE BASED ON THE NATIONAL ELEVATION DATASET (NED) AT 30 METER RESOLUTION
U.S.G.S. QUATERNARY FAULT DATABASE, NOVEMBER, 2010
U.S.G.S. HISTORIC EARTHQUAKE DATABASE (1800–2000)

ENGEO Expect Excellence	REGIONAL FAULTING AND SEISMICITY LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.100		FIGURE NO
		SCALE: AS SHOWN		4
		DRAWN BY: DLB	CHECKED BY: PJS	

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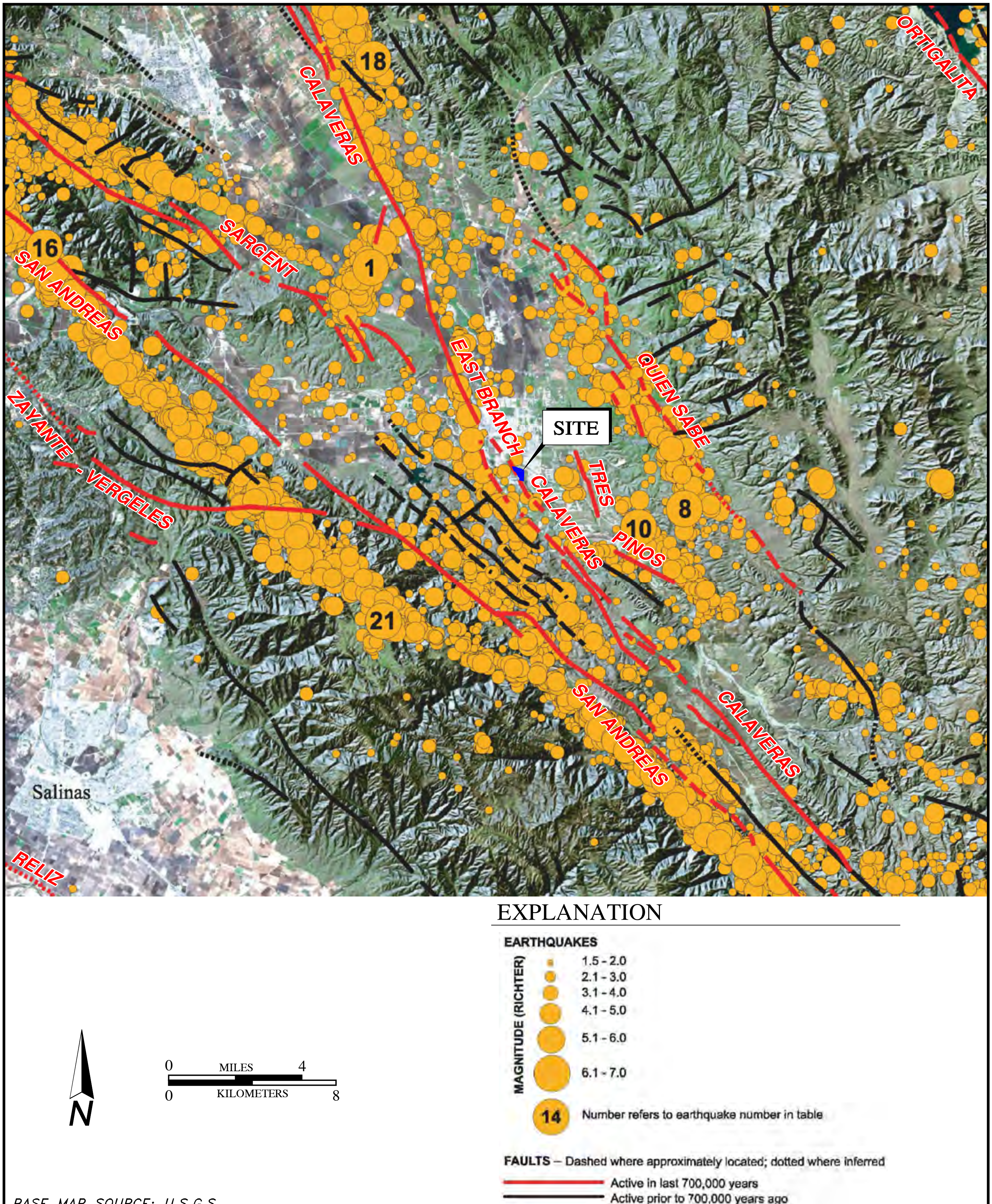

BASE MAP SOURCE: U.S.G.S.

ENGEO Expect Excellence	U.S.G.S. EARTHQUAKES AND FAULTS LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.100 SCALE: AS SHOWN DRAWN BY: DLB CHECKED BY: PJS	FIGURE N 5

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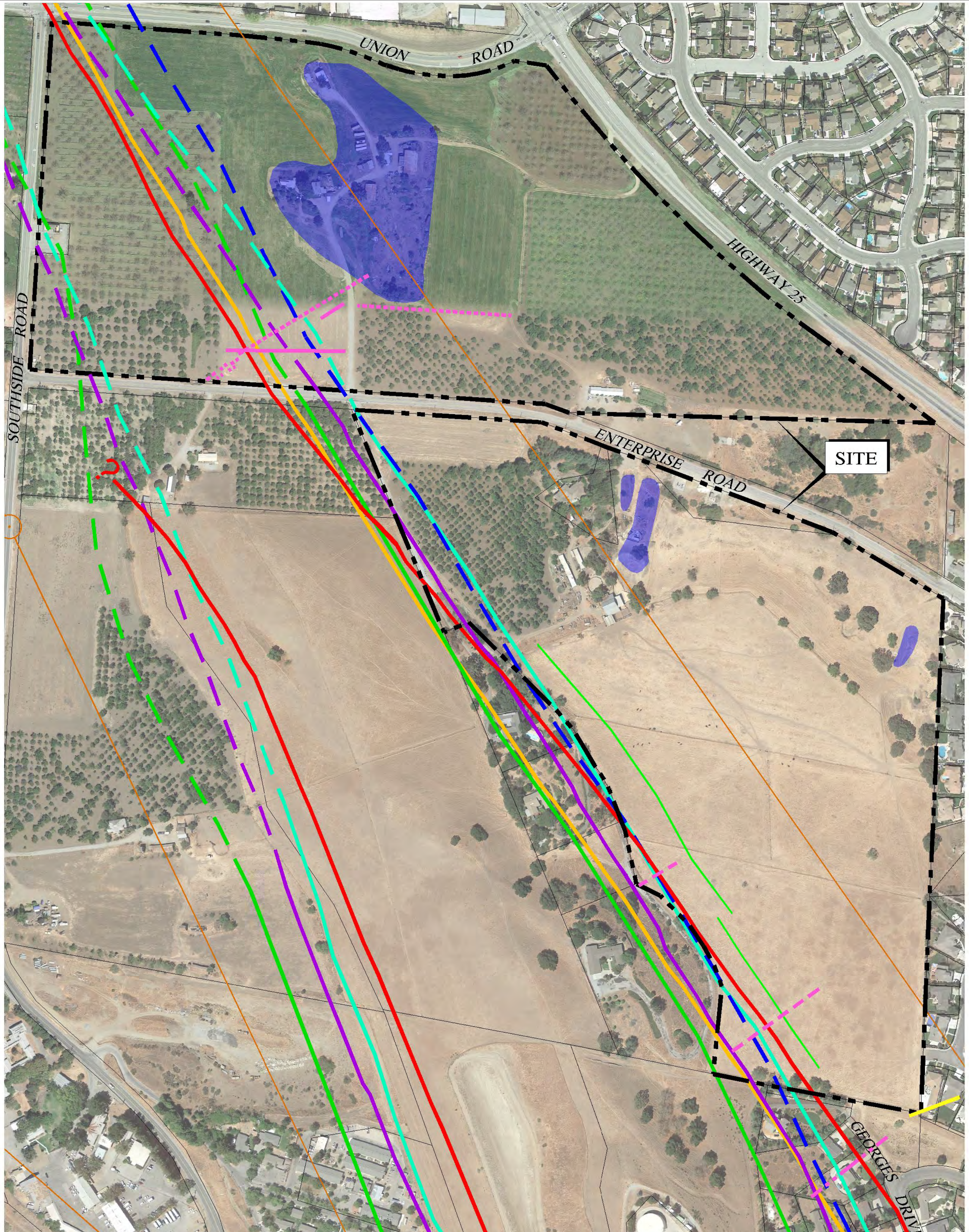


N

0 FEET 400
0 METERS 200

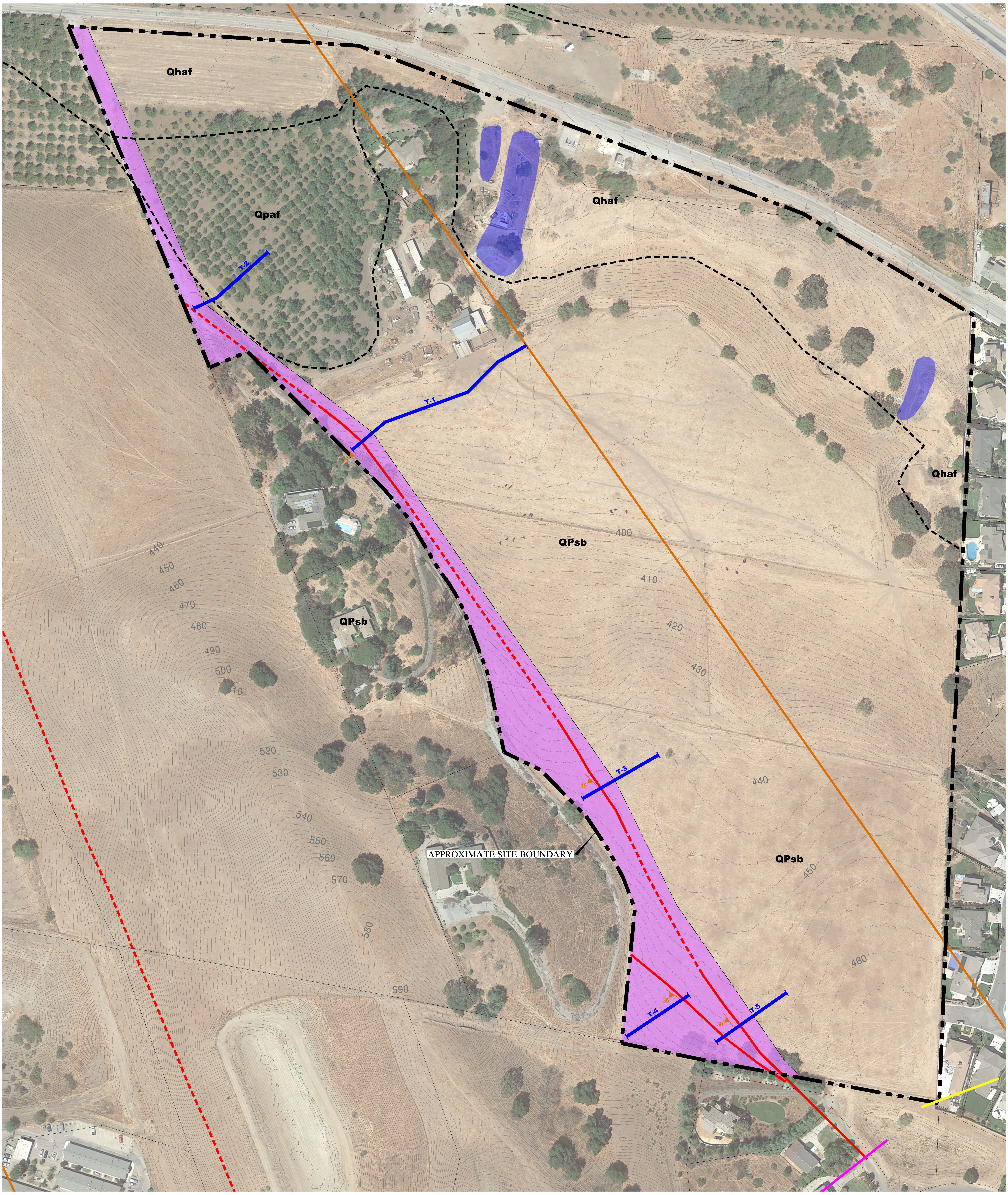
EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

- FAULT LOCATION - WAGNER, 2002
- FAULT LOCATION - MAJMUNDAR, 1994
- FAULT LOCATION - ROGERS, 1993
- FAULT LOCATION - ALQUIST-PRIOLO, 1982
- FAULT LOCATION - DIBBLEE, 1975
- FAULT LOCATION - RADBRUCH-HALL, 1974
- LIMIT OF SPECIAL STUDIES ZONE
- PREVIOUS FAULT TRENCH (EARTH SYSTEMS, 2008)
- PREVIOUS FAULT TRENCH (EARTH SYSTEMS, 2007)
- PREVIOUS FAULT TRENCH (EARTH SYSTEMS, 2004)
- PREVIOUS FAULT TRENCH (PACIFIC GEOTECHNICAL, 1991)
- FAULT TRENCH (LEIGHTON AND ASSOCIATES 1974)
- TONAL LINEAMENT (1998 AERIAL PHOTO)
- UNDOCUMENTED FILL

BASE MAP SOURCE: GOOGLE EARTH PRO

ENGEO Expect Excellence	COMPILATION OF PREVIOUS FAULT EXPLORATION LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.000 SCALE: AS SHOWN DRAWN BY: DLB CHECKED BY: PJS	FIGURE NO. 6



EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

Symbol	Description	Symbol	Description
	LIMIT OF SPECIAL STUDIES ZONE	Qhaf	ALLUVIUM (HOLOCENE)
T-5	FAULT TRENCH (ENGEO, 2015)	Qpaf	ALLUVIUM (PLEISTOCENE)
	PREVIOUS FAULT TRENCH (PACIFIC GEOTECHNICAL, 1991)	QPsb	SAN BENITO FORMATION (PLIO-PLEISTOCENE)
	FAULT TRENCH (LEIGHTON AND ASSOCIATES 1974)	30	STRIKE AND DIP OF SHEAR PLANE
	EXISTING FILL		RECOMMENDED FAULT SETBACK ZONE
	GEOLOGIC CONTACT		PROPOSED HABITABLE STRUCTURE EXCLUSION ZONE

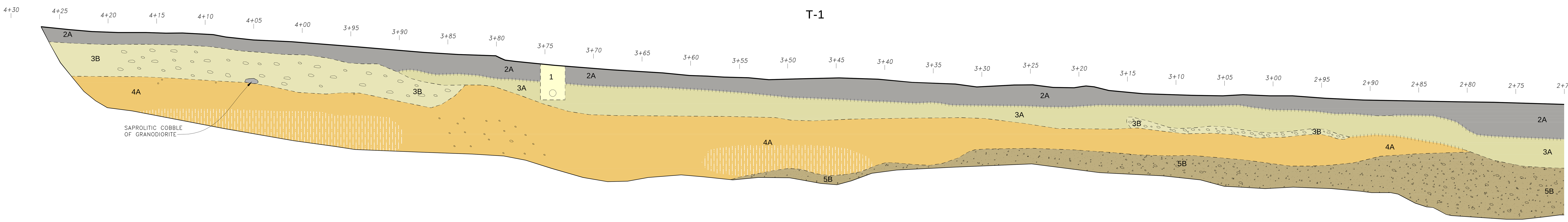
N

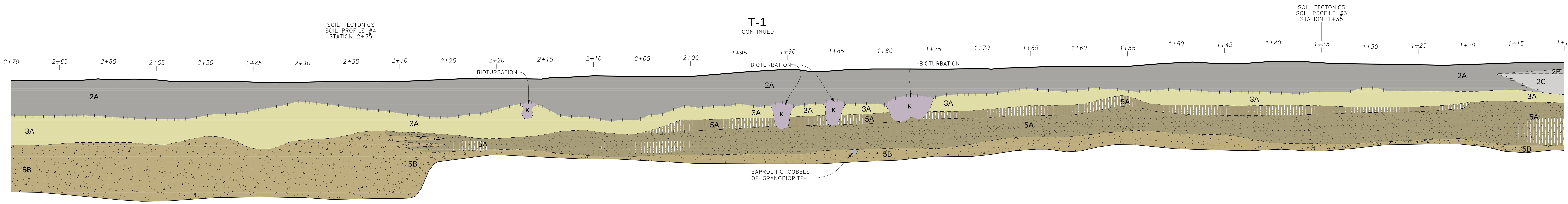
0 FEET 100
0 METERS 50

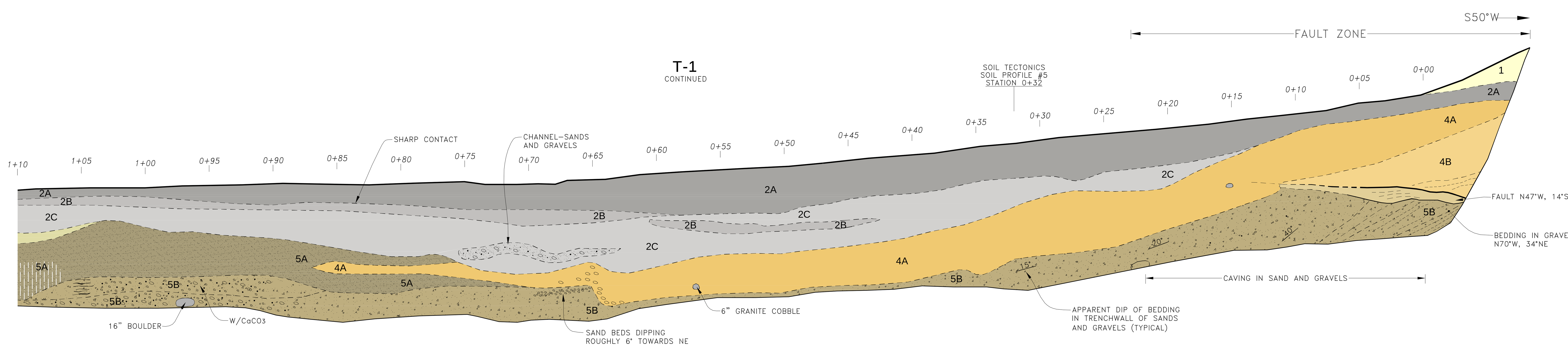
BASE MAP SOURCE: UNKNOWN

ENGEO Expect Excellence	SITE PLAN LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.100 SCALE: AS SHOWN DRAWN BY: DLB CHECKED BY: PJS	FIGURE NO. 7

ORIGINAL FIGURE PRINTED IN COLOR

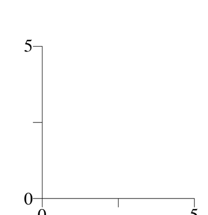






TRENCH T-1 GEOLOGIC UNITS

FILL	1	Sandy Lean CLAY-mottled very dark grayish brown (10YR 3/2) to dark brown (10YR 5/5), scattered gravel and cobbles, poorly sorted (Fill)
HOLOCENE ALLUVIUM/COLLUVIUM	2A	Sandy Lean CLAY-very dark grayish brown (10YR 3/2); very fine to fine grained sand, scattered gravel, slightly plastic when wet, disturbed within upper 8 inches (agricultural tilling), bioturbated throughout with many krotovina, porous, minor roots
	2B	Lean CLAY-yellowish brown (10YR 5/4), with fine to medium grained sand, sticky and plastic when wet, weak blocky structure; very friable when moist, and extremely hard when dry; very thin clay films coating peds and lining pores, some fine grained sand on ped surfaces. Very sharp, planar basal contact, interpreted as relating to deposition in an area of ponding water
	2C	Lean CLAY-dark yellowish brown (10YR 4/6) with strong brown (7.5YR4/6m) ped coatings, with fine to medium grained sand, sticky and plastic when wet, moderate angular to subangular blocky structure; very friable when moist, and extremely hard when dry; thin to medium thick clay films coating peds and lining pores
LATEST PLEISTOCENE TO HOLOCENE ALLUVIUM (QPH)	3A	Sandy Lean CLAY-dark yellowish brown (10YR 4/6), with fine to medium grained sand, moist, moderate blocky ped development, pores, some clay films coating pores and ped surfaces
	3B	Clayey SAND AND GRAVEL-brown (10YR 5/3) and dark yellowish brown (10YR 4/6), with fine to medium grained sand, fine to coarse gravel and occasional cobbles, moderately developed translocated clay films on gravel and cobbles, moist
PLEISTOCENE (?) ALLUVIUM (QP)	4A	Clayey SAND AND GRAVEL-color dominated by dark reddish brown (5YR 3/4) clay films coating sand, gravel and cobbles, moist, very dense, subrounded cobbles, well developed tranlocated clay films. Clasts include saprolitic granodiorite, sandstone, volcanics, chert, metamorphics (Franscican and Salinian Block origin)
	4B	Clayey SAND-yellowish brown (10YR 5/4) fine to medium grained sand, scattered gravel, moist, very dense, subrounded, poorly sorted, weak blocky ped structure, occasional roots. In fault contact with underlying San Benito Gravels (Unit 5B)
PLIO-PLEISTOCENE BEDROCK (QPsb)	5A	Clayey SAND-yellowish brown (10YR 5/6), very dense, moderately cemented, pervasive calcium carbonate within upper portion of unit, calcium carbonate filaments and coatings on fracture surfaces, moist, occasional gravel lenses indicate bedding (San Benito Gravels)
	5B	SAND and GRAVEL-brown (10YR 5/3) to grayish brown (10YR 5/2), very dense, moderately sorted, well rounded, imbricated distinct sand and gravel beds, localized cross beds, localized cobbles and lag deposits, Clasts include granodiorite, sandstone, volcanics, chert, metamorphics. Franscican and Salinian Block origin (San Benito Gravels)



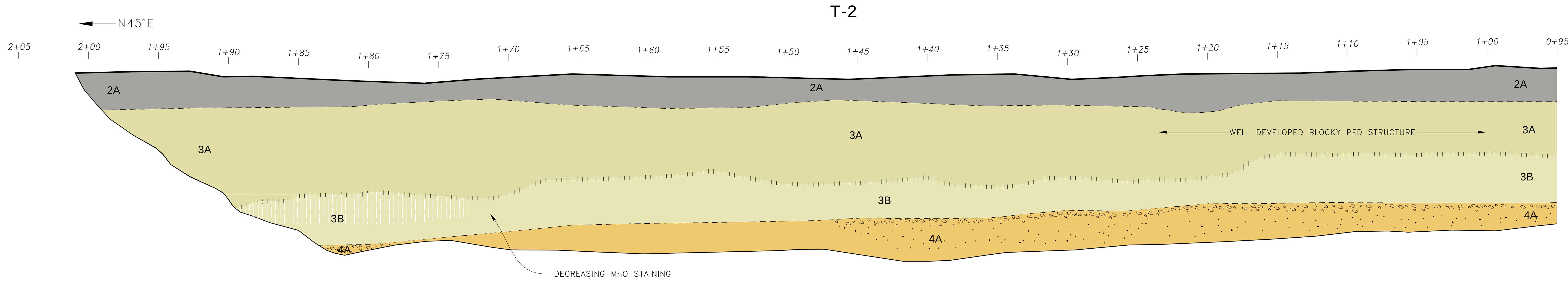
SCALE IN FEET

EXPLANATION

- CARBONATE FILAMENTS AND SMALL NODULES
- SILTY PEBBLY SAND
- SANDY TO CLAYEY GRAVEL LENSES
- K KROTOVINA
- GEOLOGIC CONTACT

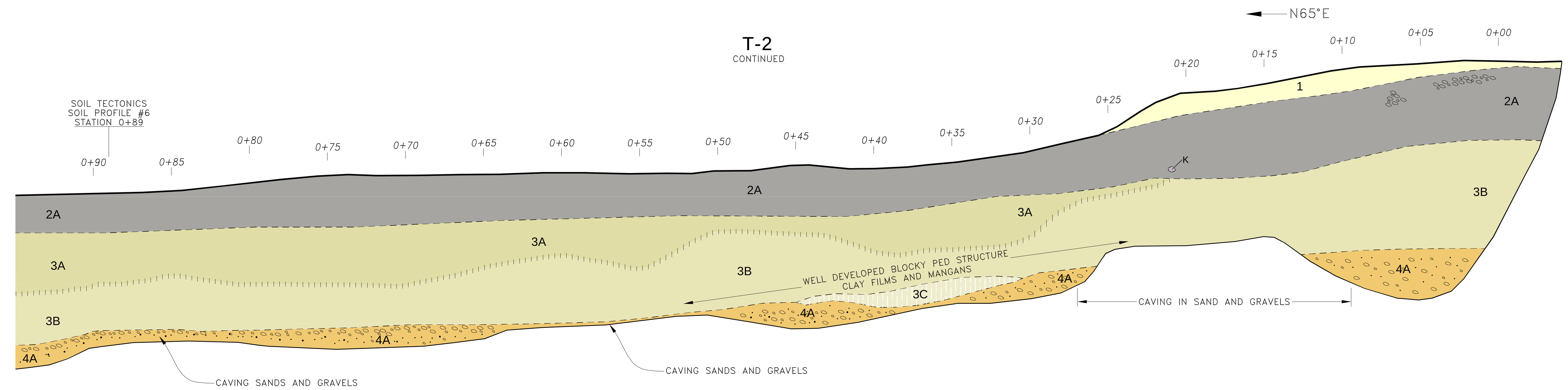
ENGEO Expect Excellence	TRENCH LOG T-1 LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.000 SCALE: AS SHOWN DRAWN BY: DLB CHECKED BY: PJS	FIGURE NO 8

ORIGINAL FIGURE PRINTED IN COLOR



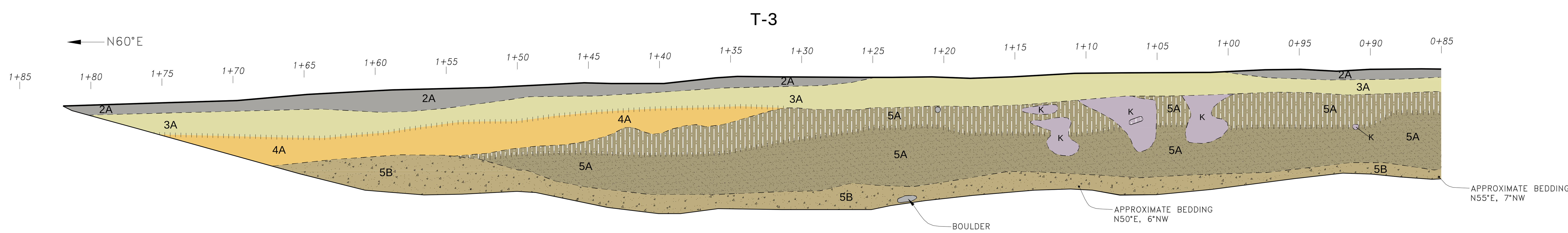
TRENCH T-2 GEOLOGIC UNITS

FILL	1	Sandy Lean CLAY-mottled very dark grayish brown (10YR 3/2) to dark brown (10YR 5/5), scattered gravel and cobbles, poorly sorted. (Fill)
HOLOCENE ALLUVIUM/COLLUVIUM	2A	Sandy Lean CLAY-dark gray (10YR 4/1) to brown (7.5 YR 4/2); fine grained sand, loose in upper 18 inches, stiff below, few clay films, bioturbated throughout with many krotovina, porous, roots
LATEST PLEISTOCENE TO HOLOCENE ALLUVIUM (QPH)	3A	Sandy Lean CLAY-dark yellowish brown (10YR 4/6), with fine to medium grained sand, few clay films, moist transitional to Unit 3B
	3B	Sandy Lean CLAY-dark yellowish brown (10YR 3/4) fine grained sand, well developed prismatic ped structure, well developed clay films and MnO staining on ped surfaces, thin to medium thick clay films coating peds and lining pores
	3C	Sandy Lean CLAY-yellowish brown (10YR 5/6) fine grained sand, moderately developed ped structure, calcium carbonate filaments and coatings on ped surfaces
PLEISTOCENE (?) ALLUVIUM (QP)	4A	Clayey SAND AND GRAVEL-yellowish brown (10YR5/6) and olive yellow (5YR 6/6), very dense, poorly sorted, subrounded cobbles, thin to medium thick clay films coating gravel and cobbles within upper 6 inches. Clasts include granodiorite, sandstone, volcanics, chert, metamorphics (Franscican and Salinian Block origin)



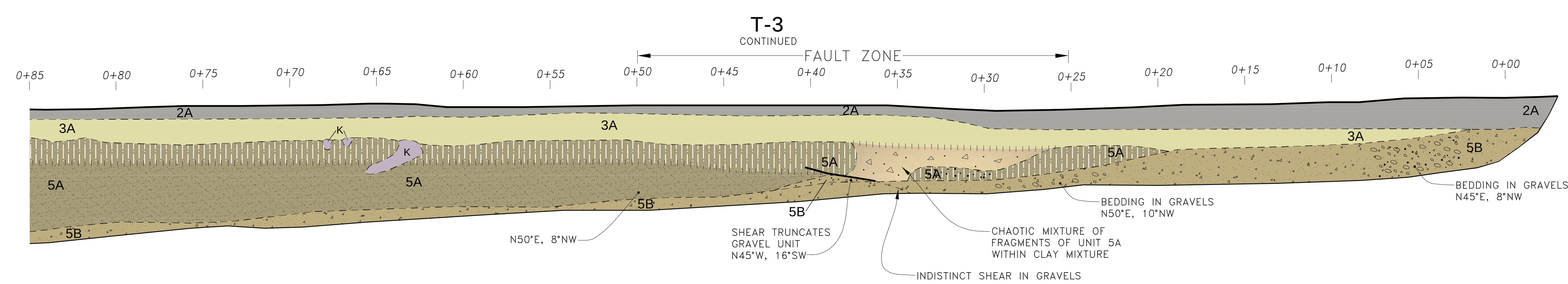
EXPLANATION

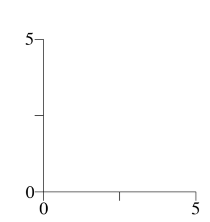
- CARBONATE FILAMENTS AND SMALL NODULES
- SILTY PEBBLY SAND
- SANDY TO CLAYEY GRAVEL LENSES
- K KROTOVINA
- GEOLOGIC CONTACT



TRENCH T-3 GEOLOGIC UNITS

HOLOCENE ALLUVIUM/COLLUVIUM	2A	Sandy Lean CLAY-very dark grayish brown (10YR 3/2); very fine to fine grained sand, scattered gravel, porous, dry, bioturbated, minor roots, disturbed
LATEST PLEISTOCENE TO HOLOCENE ALLUVIUM (QPH)	3A	CLAY-very dark grayish brown (10YR 3/2), stiff, moist, moderately developed blocky ped structure, thin clay films on ped surfaces
PLEISTOCENE (?) ALLUVIUM (QP)	4A	Sandy CLAY-dark yellowish brown (10YR 4/4), with fine to medium grained sand, moderate angular to subangular blocky structure; thin clay films on ped surfaces
PLIO-PLEISTOCENE BEDROCK (QPsb)	5A	Clayey SAND-pale yellow (10YR 3/2) to light gray (5Y 7/1), fine grained sand, moderately cemented, very dense, pervasive calcium carbonate within upper portion of unit, calcium carbonate filaments and coatings on fracture surfaces, moist, occasional gravel lenses and clay beds indicate bedding (San Benito Gravels)
	5B	SAND and GRAVEL-brown (10YR 5/3) to yellowish brown (10YR 5/6), medium to coarse grained sand, dense, moderately sorted, well rounded, imbricated distinct sand and gravel beds, localized cobbles and lag deposits, Clasts include granodiorite, sandstone, volcanics, chert, metamorphics. Franscican and Salinian Block origin (San Benito Gravels)



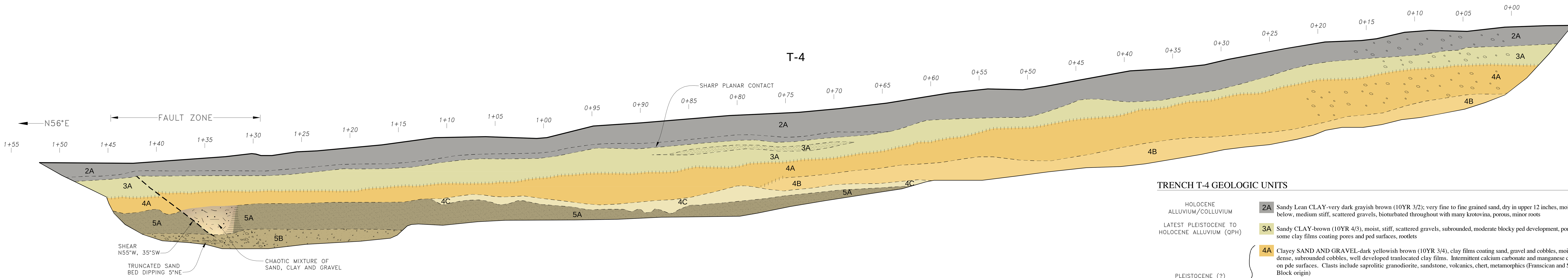


ENGEO
Expect Excellence

TRENCH LOGS T-2 AND T-3
LICO PROPERTY
HOLLISTER, CALIFORNIA

PROJECT NO.: 11227.000.000		FIGURE NO 9
SCALE: AS SHOWN		
DRAWN BY: DLB	CHECKED BY: PJS	

ORIGINAL FIGURE PRINTED IN COLOR

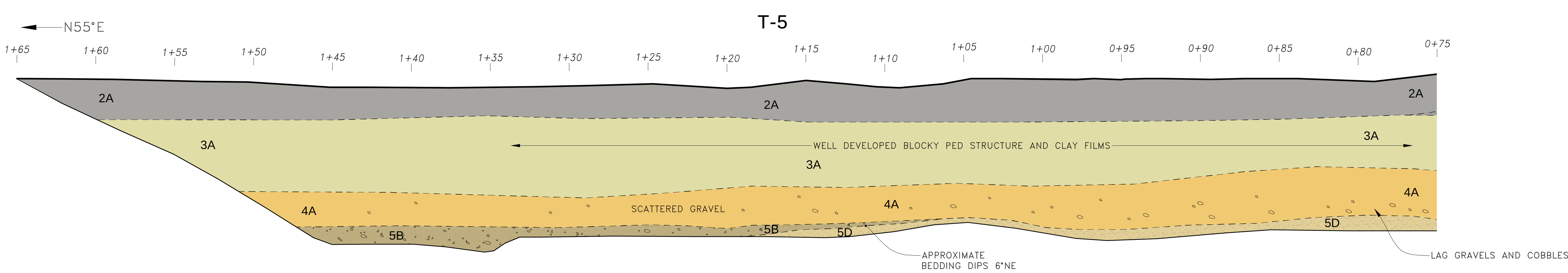


TRENCH T-4 GEOLOGIC UNITS

HOLOCENE ALLUVIUM/COLLUVIUM	2A	Sandy Lean CLAY-very dark grayish brown (10YR 3/2); very fine to fine grained sand, dry in upper 12 inches, moist below, medium stiff, scattered gravels, bioturbated throughout with many krotovina, porous, minor roots
LATEST PLEISTOCENE TO HOLOCENE ALLUVIUM (QPH)	3A	Sandy CLAY-brown (10YR 4/3), moist, stiff, scattered gravels, subrounded, moderate blocky ped development, pores, some clay films coating pores and ped surfaces, rootlets
PLEISTOCENE (?) ALLUVIUM (QP)	4A	Clayey SAND AND GRAVEL-dark yellowish brown (10YR 3/4), clay films coating sand, gravel and cobbles, moist, very dense, subrounded cobbles, well developed tranlocated clay films. Intermittent calcium carbonate and manganese coatings on pde surfaces. Clasts include saprolitic granodiorite, sandstone, volcanics, chert, metamorphics (Franscican and Salinian Block origin)
	4B	Clayey SAND-light olive brown (2.5YR 5/3) fine to medium grained sand, scattered gravel, moist, very dense, subrounded, poorly sorted, well developed blocky ped structure.
	4C	Sandy CLAY-olive brown (2.5YR 4/3) fine to medium grained sand, scattered gravel, moist, stiff, moderately developed blocky ped structure, manganese staining on ped surfaces
PLIO-PLEISTOCENE BEDROCK (QPsb)	5A	Clayey SAND-light yellowish brown (10YR 5/6), very dense, moderately cemented, pervasive calcium carbonate within upper portion of unit, calcium carbonate filaments and coatings on fracture surfaces, moist, occasional gravel lenses indicate bedding (San Benito Gravels)
	5B	SAND and GRAVEL-brown (10YR 5/3) to grayish brown (10YR 5/2), very dense, poorly sorted, well rounded, imbricated distinct sand and gravel beds, localized cross beds, localized cobbles and lag deposits, iron oxide staining, Clasts include granodiorite, sandstone, volcanics, chert, metamorphics. Franscican and Salinian Block origin (San Benito Gravels)

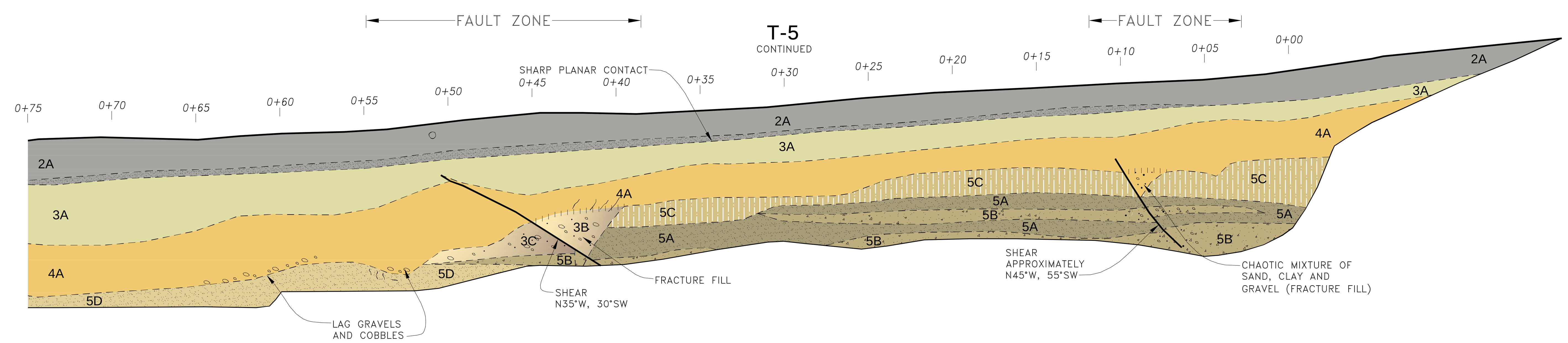
EXPLANATION

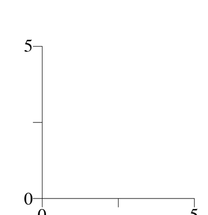
- CARBONATE FILAMENTS AND SMALL NODULES
- SILTY PEBBLY SAND
- SANDY TO CLAYEY GRAVEL LENSES
- GEOLOGIC CONTACT



TRENCH T-5 GEOLOGIC UNITS

HOLOCENE ALLUVIUM/COLLUVIUM	2A	Lean CLAY-dark yellowish brown (10YR 3/4); very fine to fine grained sand, dry in upper 12 inches, moist below, medium stiff, scattered gravels, bioturbated throughout with many krotovina, porous, minor roots, thin yellowish brown (10YR 5/4) sandy layer near base
LATEST PLEISTOCENE TO HOLOCENE ALLUVIUM (QPH)	3A	Lean CLAY- dark reddish brown (5YR 3/3), moist, stiff, well developed block ped structure, moderately well developed clay films on ped surfaces, some fine grained sand and scattered gravels
	3B	Chaotic Mixture of CLAY, SAND and GRAVEL- mottled olive brown (2.5Y 4/6), brown (10YR 4/3), and dark yellowish brown (10YR 3/4), moist, medium stiff, no blocky ped structure, scattered cobbles, unit occurs only adjacent to fault
	3C	Chaotic Mixture of SAND and GRAVEL-mottled olive (5Y 5/3), olive brown (2.5Y 4/3), and light olive brown (2.5Y 5/3), moist, medium stiff, no blocky ped structure, resembles disrupted version of Units 5B and 5D, unit occurs only adjacent to fault
PLEISTOCENE (?) ALLUVIUM (QP)	4A	Lean CLAY-brown (10YR 4/3), moist, stiff, poorly developed ped structure, scattered clasts of San Benito Formation within a clay matrix, unit thickens east of fault
PLIO-PLEISTOCENE BEDROCK (QPsb)	5A	Clayey SAND-light olive brown (2.5Y 5/3), very dense, moderately cemented, laminations and occasional gravel lenses indicate bedding (San Benito Gravels)
	5B	SAND and GRAVEL-olive brown (2.5Y 4/3) to grayish brown (10YR 5/2), very dense, poorly sorted, well rounded, imbricated distinct sand and gravel beds, localized cross beds, localized cobbles and lag deposits, iron oxide staining, Clasts include granodiorite, sandstone, volcanics, chert, metamorphics. Franscican and Salinian Block origin (San Benito Gravels)
	5C	Clayey SAND to Sandy CLAY-light olive brown (5Y 6/2), very dense or stiff, highly weathered, moderately cemented, pervasive calcium carbonate within upper portion of unit, calcium carbonate filaments and coatings on fracture surfaces, moist, occasional gravel lenses indicate bedding (San Benito Gravels)
	5D	Silty SAND-light yellowish brown (2.5Y 6/3), very dense, closely fractured, moderately cemented, calcium carbonate veins and filaments throughout, occasional gravel lenses indicate bedding (San Benito Gravels)





SCALE IN FEET

ENGEO Expect Excellence	TRENCH LOGS T-4 AND T-5 LICO PROPERTY HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.000 SCALE: AS SHOWN DRAWN BY: DLB CHECKED BY: PJS	FIGURE NO 10

ORIGINAL FIGURE PRINTED IN COLOR

APPENDIX A

Soil Tectonics Report

APPENDIX A

APPENDIX A

PEDOCHRONOLOGICAL REPORT FOR THE LICO SUBDIVISION, ENTERPRISE ROAD, HOLLISTER, CALIFORNIA II

Prepared for ENGEO, Inc., San Ramon, California,
Project No. 11227.000.000

2015-09-30

Soil Tectonics
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Glenn Borchardt

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Certified Professional Soil Scientist No. 24836

PEDOCHRONOLOGICAL REPORT FOR THE LICO SUBDIVISION, ENTERPRISE ROAD, HOLLISTER, CALIFORNIA II

Prepared for ENGEO, Inc., San Ramon, California,

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2015-09-30

Glenn Borchardt

INTRODUCTION

An assessment of seismic and landslide risk due to ground movement can be aided greatly by the techniques of pedochronology (Borchardt, 1992, 1998), soil dating. This is because the youngest geological unit overlying fault traces is generally a soil horizon. The age and relative activity of ground movement often can be estimated by evaluating the age and relative disturbance of overlying soil units, as well as buried soils called paleosols. Terms, prefixes, and suffixes are defined in the Soils Glossary at the end of this report.

Soil horizons exhibit a wide range of physical, chemical, and mineralogical properties that evolve at varying rates. Soil scientists use various terms to describe these properties. A black, highly organic "A" horizon, for example, may form within a few centuries, while a dark brown, clayey "Bt" horizon may take up to 40,000 years to form. Certain soil properties are invariably absent in young soils. For instance, soils developed in granitic alluvium of the San Joaquin Valley do not have Munsell hues redder than 10YR until they are at least 100,000 years old (Birkeland, 1999; Harden, 1982). Still other properties, such as the movement and deposition of clay-size particles and the precipitation of calcium carbonate at extraordinary depths, indicate soil formation during a climate much wetter than at present. In the absence of a radiometric age date for the material from which a particular soil formed, an estimate of its age must take into account all the known properties of the soil and the landscape and climate in which it evolved.

METHOD

The first step in studying a soil is the compilation of the data necessary for describing it (Birkeland, 1999; Borchardt, 2010). At minimum, this requires a Munsell color chart, hand lens, acid bottle, and instruments for 1:1 soil:water pH and electrical conductivity (EC) measurements. The second step may involve collecting samples of each horizon of the soil profile column for laboratory analysis of particle size. This is done to check the textural classifications made in the field and to evaluate the genetic relationships between horizons and between different soils in the landscape. When warranted, the clay mineralogy and chemistry of the soil also is analyzed to provide additional information on the changes undergone by the initial material from which the soil weathered. The last step is the comparison of this accumulated soil data with that for soils having developed under similar conditions, preferably in the same region. Such information is scattered in soil survey reports (e.g., Welch, 1981), soil science journals, and consulting reports. In a particular locality, there is seldom enough comparative data available for this purpose. That is why, at the very least, the study of one soil profile always makes the evaluation of the next that much easier.

RESULTS OF THIS EVALUATION

Soil profiles were studied to assess the age of the soil in Trench T-1 excavated northeast of a pressure ridge formed by the Calaveras fault at Enterprise Road, Hollister, California (Table 1).

Soil Profile No. 3

This profile was developed in fine overbank deposits overlying a relatively unweathered portion of the San Benito Formation, which consisted of well-rounded cobble and coarse sand. This profile is very similar to Soil Profile No. 2 in the previous study (Borchardt, 2004). It has a 32-cm thick dark brown silt loam A1 horizon overlying an 18-cm thick brown silty clay A2 horizon. This overlies a 60-cm thick strong brown silty clay Bt/A with many coarse pronounced brown krotovinas (upper right corner of Figure 1). It has medium strong angular to subangular blocky structure and a few thin patchy clay films coating peds and clasts in the Bt portion. This overlies a 20-cm thick strong brown silty clay Bt horizon with a few thin to medium thick clay films coating peds and lining pores.

The Bt overlies two reddish yellow silty clay loam Bk horizons (Figure 1). The Bk1 is 23-cm thick with many fine to medium pronounced white mottles due to violently effervescent calcite coatings and soft nodules. It has common thin to medium thick clay films coating peds and lining pores. The matrix is slightly to strongly effervescent. The Bk2 is 122-cm thick with common fine to medium pronounced white mottles due to violently effervescent calcite coatings and soft nodules. It has medium strong subangular to angular blocky structure and a few thin clay films lining pores with some previously lined with calcite. The matrix is slightly effervescent.

This overlies a brown to light brown 2Bk horizon comprised of sandy rounded cobble to 6 cm with fine to medium pronounced white mottles due to violently effervescent calcite coatings and soft nodules mostly on upper surfaces of clasts. The structure is loose and there are a few thin clay films bridging sand grains. The matrix is noneffervescent. Except for the pedogenic calcite that trickled down from the overlying Bk horizons this is a relatively unweathered portion of the San Benito Formation. At the southeastern end of the trench, a similar completely unweathered portion of the formation is uplifted along the eastern side of a pressure ridge along the Calaveras fault (Figure 2).

Soil Profile No. 4

This partial profile was sampled at station 2+35' to include an underlying paleosol remnant developed on the San Benito Formation (Figure 3). Unlike the 2Bk horizon in Soil Profile No. 3, it consists of a 160-cm thick strong brown 2Btb horizon with coarse sandy cobble to 6 cm. It has loose structure with many thin to medium thick clay films coating clasts, lining pores, and bridging sand grains. This overlies a strong brown 2CBtb horizon consisting of coarse sandy cobble to 5 cm. It has loose structure with many thin patchy clay films coating clasts, lining pores, and bridging sand grains.

Soil Profile No. 5

This partial profile, also in the weathered portion of the San Benito Formation, was selected to compare to the 2Btb horizon of Soil Profile No. 4. It has a 90-cm thick strong brown 2Btb horizon consisting of coarse sandy cobble to 3 cm. Like Soil Profile No. 4, it has loose structure and many thin to medium thick clay films coating clasts, lining pores, and bridging sand grains (Figure 4).

Soil Profile No. 6

This profile, from Trench T-2, also was developed on Pleistocene alluvium and has characteristics similar to the soils in Trench T-1. (Table 2). It has a 17-cm thick dark brown silty clay loam Ap horizon overlying a 36-cm thick brown silty clay loam A horizon with fine to medium strong granular to subangular blocky structure. There is a brown transitional AB horizon overlying a 118-cm thick brown clay to silty clay loam Bt horizon with medium moderate angular blocky structure with medium thick clay films lining pores and peds. This is underlain by a 72-cm thick brown clayey Btb horizon with medium strong prismatic to angular blocky structure (Figure 5) coated with silvery back mangans (Figure 6). It has many medium thick clay films lining pores and coating peds. This overlies a pinkish gray gravelly sandy clay loam 2CBtb horizon.

Soil pH and Electrical Conductivity

The properties of young sediments of consistent texture generally are not expected to show much change with depth. That is why changes in chemical properties, such as soil pH and electrical conductivity (EC), supply information on the degree soil weathering. Such “depth functions” prove that pedogenesis indeed did occur, and help to support the judgements involved in preparing soil descriptions (Borchardt, 2015).

The pH in Soil Profile No. 3 gradually increased from 6.5 to 9.5, a process that often reflects the high pH typical of soils in equilibrium with calcite (Figure 7). Normally, high amounts of calcite in combination with salts, particularly sodium, can result in pHs greater than 8.4. However, the EC in the 2CBk horizon is only 110 μS/cm, which does not seem to be enough to boost the pH to the 9.5 measured there (Figure 7 and Figure 8). The 2Btb paleosol remnant in Soil Profile No. 4 also had a relatively high pH (8.7) without correspondingly high conductivity (Table 1). The equilibrium pH for calcareous soils usually is around 8.3, so the reason for values higher than this remains to be discovered.

Soil Profile No. 6 is typical of cultivated soils in which the pH tends to be slightly elevated in the surface, probably due to leaf drop or fertilization (Figure 9). The increase in pH in the B horizon is common. The EC pattern is typical of fine-textured cumulic soils in which additions of overbank materials can leave high salt contents at depth as the wetting front rises in the soil. Here, the maximum EC exists at the 250-cm depth (Figure 10). The low annual precipitation of only 13.82 in/yr is currently insufficient for producing a wetting front that low (Table 2).

Soil Ages

This landscape has soil development representing two major time periods: Early Wisconsin (80-40 ka) and Late Wisconsin to the present (<40 ka).

Remnants of the Early Wisconsin paleosol appear as a strong brown (7.5YR5/6m) cobbly 2Btb horizon that is up to 160 cm thick (Table 1, Soil Profile No. 4). In other places, it is only 90 cm thick (Table 1, Soil Profile No. 5) or nonexistent (Table 1, Soil Profile No. 3). These variations are due to significant erosion and channelization of the Early Wisconsin surface, which formed on the cobbly phase of the San Benito Formation (Figure 2). For instance, cobble is encountered at a depth of 160 cm in Soil Profile Nos. 4 and 5 at stations 2+35’ (Figure 3) and 0+32’ (Figure 4), where the erosion was less, and at a depth of 275 cm in Soil Profile No. 3 at station 1+35’ where the erosion was greater (Table 1). Where it was uplifted along the northeastern margin of the pressure ridge, the Early Wisconsin paleosol escaped channelization altogether (Figure 11).

The Late Wisconsin relict paleosol was formed in fine-textured overbank deposits that filled in the channels and depressions in the eroded Early Wisconsin surface. Minor folding near the pressure ridge at the southwest end of Trench T-1 indicates that some downwarping is occurring at present (Figure 12). Where the channels were cut deeply and the subsequent overbank deposits were especially thick, the Late Wisconsin soil had a tendency to trap pedogenic calcite (Soil Profile No. 3, Table 1; Figure 1). In such soils, the pH tends to increase with depth (Figure 7; Borchardt, 2004, Figure 3). Judging by the electrical conductivity measurements, soluble salts also were trapped in the finer portions of these materials (Figure 8).

The analysis for Soil Profile No. 6 in Trench T-2 is similar. A period of extensive pedogenesis occurred during the Early Wisconsin, as indicated by the prismatic structure in the Btb horizon formed at depth (Figure 5). The 118-cm thick Bt horizon in the upper portion of the profile is indicative of pedogenesis during the Late Wisconsin (Table 2).

CONCLUSIONS

1. Both the Late Wisconsin relict paleosol and the underlying Early Wisconsin paleosol can be used to evaluate surface fault rupture (SFR) at this site.
2. If any offsets or warping of either solum is discovered during subsequent investigations, they should be considered potential for SFR.

REFERENCES

Birkeland, P.W., 1999, Soils and geomorphology (3rd ed.): New York, Oxford University Press, 430 p.

Borchardt, Glenn, 1998, Soil tectonics: Geotimes, v. 36, p. 72-84.

Borchardt, Glenn, 2002, Mineralogy and soil tectonics, *in* Dixon, J. B., and Schulze, D. G., eds., Soil mineralogy with environmental applications: Soil Science Society of America Book Series No. 7: Madison, WI, Soil Science Society of America, p. 711-736.

Borchardt, Glenn, 2004, Pedochronological report for the Lico Subdivision, Enterprise Road, Hollister, California, *in* Faust, B.D., and Pischke, G., eds., Geological fault investigation: Lico residential subdivision, Hollister, San Benito, California, Project No. SH10127-SA: Hollister, California, Earth Systems Pacific, p. A-1 to A-21.

Borchardt, Glenn, 2010, Soil stratigraphy for trench logging (3rd ed.): Berkeley, CA, Soil Tectonics, 67 p.

Borchardt, Glenn, 2015, Conductivity depth functions for delineating paleosols [abs.], Inaugural Global Workshop On Digital Soil Morphometrics: Madison, WI, International Union of Soil Sciences and Department of Soil Science, University of Wisconsin-Madison, p. 33.

Harden, J.W., 1982, A quantitative index of soil development from field descriptions: Examples from a chronosequence in central California: Geoderma, v. 28, p. 1-23.

Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Soil Survey Staff, 2012, Field book for describing and sampling soils, Version 3.0: Lincoln, NE, Natural Resources Conservation Service, National Soil Survey Center.

Soil Survey Staff, 1993, Soil survey manual (3rd edition): USDA-SCS Agriculture Handbook 18, U.S. Government Printing Office, Washington, DC, 457 p.

Soil Survey Staff, 1999, Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys: USDA-SCS Agriculture Handbook 436, U.S. Government Printing Office, Washington, DC, 900 p.

Soil Survey Staff, 2010, Keys to soil taxonomy (11th edition), Washington DC: USDA-Natural Resources Conservation Service, 346 p.

Welch, L. E., 1981, Soil survey of Alameda County, California, western part, U.S. Department of Agriculture, Soil Conservation Service in cooperation with University of California Agriculture Experiment Station, 103 p.

Table 1. Soil profiles described northeast of the eastern trace of the Calaveras fault on the Lico property at Hollister, California. Abbreviations and definitions are given in Schoeneberger and others (2012) and Soil Survey Staff (1993, 1999, 2010).

Description of soils developed in alluvium/bedrock by Glenn Borchardt, who measured and sampled the soil on July 23, 2015 at latitude N36.82114^{o} and longitude W121.38189^{o} in the southeast wall of Trench T-1 at an elevation of 385'(385' Google Earth and 349' GPS) for station 1+35'. Mediterranean climate with mean annual precipitation of 13.82"/yr at Hollister (1948-2010). Slope 1% along trench. Aspect northeast. Excellent drainage. Water table deep. The parent material is overbank silts, clays, and fine sands over San Benito cobbly gravel. Soil pH increases from slightly acid in the surface to very strongly alkaline at the bottom of the profile. Soil in the area is variously mapped as: Antioch loam, *Typic Natrixeralfs, 2-5% slopes, with a solum thickness of 152 cm and an A horizon thickness of 48 cm.*

Horizon	Depth, cm	Description

Soil Profile No. 3 at Station 1+35'

A1 0-32 Dark brown (7.5YR3/2m; 6/2d) silt loam; medium strong subangular to angular blocky structure; slightly sticky and slightly plastic when wet, very friable when moist, and extremely hard when dry; common very fine to fine roots; common fine to medium continuous random tubular and irregular pores; clear smooth boundary; pH 6.48; conductivity 310 uS; Sample No. 15B091.

A2 32-50 Brown (7.5YR4/2m; 4/2d) silty clay; medium strong subangular blocky structure; sticky and plastic when wet, very friable when moist, and extremely hard when dry; few very fine roots; common fine to medium continuous random tubular and irregular pores; gradual wavy boundary; pH 6.80; conductivity 300 uS; Sample No. 15B092.

Bt/A 50-110 Strong brown (7.5YR5/6m; 6/4d) silty clay with many coarse pronounced brown (7.5YR4/2m) krotovinas; medium strong angular to subangular blocky structure; sticky and plastic when wet, very friable when moist, and extremely hard when dry; few very fine roots; common fine to medium continuous random tubular and irregular pores; few thin patchy clay films coating peds and clasts in the Bt; abrupt wavy boundary; pH 7.60; conductivity 360 uS; Sample No. 15B093.

Bt 110-130 Strong brown (7.5YR5/6m; 6/4d) silty clay with few medium distinct strong brown (7.5YR4/6m) ped coatings; fine to medium moderate angular to subangular blocky structure; sticky and plastic when wet, very friable when moist, and extremely hard when dry; few fine to medium continuous random tubular and irregular pores; few thin to medium thick clay films coating peds and lining pores; clear wavy boundary; pH 8.10; conductivity 360 uS; Sample No. 15B094. [Level line at 130 cm.]

Bk1 130-153 Reddish yellow (7.5YR6/6m; 6/4d) silty clay loam with many fine to medium pronounced white mottles due to violently effervescent calcite coatings and soft nodules; medium strong subangular blocky structure; sticky and plastic when wet, very friable when moist, and extremely hard when dry; few fine to medium continuous random tubular and irregular pores; common thin to medium thick clay films coating peds and lining pores; matrix is slightly to strongly effervescent; abrupt wavy boundary; pH 8.95; conductivity 410 uS; Sample No. 15B095.

Bk2 153-275 Reddish yellow (7.5YR6/6m; 6/4d) silty clay loam with many fine to medium pronounced white mottles due to violently effervescent calcite coatings and soft nodules; medium strong subangular to angular blocky structure; slightly sticky and slightly plastic when wet, very friable when moist, and very hard when dry; few fine to medium continuous random tubular and irregular pores; few thin clay films lining pores previously lined with calcite; matrix is slightly effervescent; abrupt smooth boundary; pH 8.95; conductivity 310 uS; Sample No. 15B096.

2Bk 275-280+ Brown to light brown (7.5YR4/2-6/4md) sandy rounded cobble to 6 cm with fine to medium pronounced white mottles due to violently effervescent calcite coatings and soft nodules mostly on upper surfaces of clasts; loose structure; nonsticky and nonplastic when wet, loose when moist, and soft when dry; many fine interstitial pores; few thin clay films bridging sand grains; matrix is noneffervescent; pH 9.50; conductivity 110 uS; Sample No. 15B097. San Benito Formation.

*ESTIMATED AGE:	t_o	=	40	ka
	t_b	=	0	ka
	t_d	=	40	ky

Soil Profile No. 4 at Station 2+35’

2Btb 160-320 Strong brown (7.5YR5/6m; 5/6d) coarse sandy cobble to 6 cm; loose structure; slightly sticky and nonplastic when wet, loose when moist, and soft when dry; many fine interstitial pores; many thin to medium thick clay films coating clasts, lining pores, and bridging sand grains; clear wavy boundary; pH 8.70; conductivity 170 uS; Sample No. 15B098.

2CBtb 320-360+ Strong brown (7.5YR5/6m; 5/6d) coarse sandy cobble to 5 cm; loose structure; nonsticky and nonplastic when wet, loose when moist, and soft when dry; many fine interstitial pores; many thin patchy clay films coating clasts, lining pores, and bridging sand grains; pH 7.60; conductivity 350 uS; Sample No. 15B099. San Benito Formation.

*ESTIMATED AGE:	t_o	=	80	ka
	t_b	=	40	ka
	t_d	=	40	ky

Soil Profile No. 5 at Station 0+32’

2Btb 160-250 Strong brown (7.5YR5/6m; 5/6d) coarse sandy cobble to 3 cm; loose structure; slightly sticky and nonplastic when wet, loose when moist, and soft when dry; many fine interstitial pores; many thin to medium thick clay films coating clasts, lining pores, and bridging sand grains; clear smooth boundary; pH 7.60; conductivity 380 uS; Sample No. 15B100. San Benito Formation.

*ESTIMATED AGE:	t_o	=	80	ka
	t_b	=	40	ka
	t_d	=	40	ky

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*Pedochronological estimates based on available information. All ages should be considered subject to $\pm$50% variation unless otherwise indicated (Borchardt, 1992). Bold dates are absolute.

t_o = date when soil formation or aggradation began, ka

t_b = date when soil or strata was buried, ka

t_d = duration of soil development or aggradation, ky

Table 2. Soil profile described northeast of the eastern trace of the Calaveras fault on the Lico property at Hollister, California. Abbreviations and definitions are given in Schoeneberger and others (2012) and Soil Survey Staff (1993, 1999, 2010).

Description of soil developed in alluvium by Glenn Borchardt, who measured and sampled the soil on August 5, 2015 at latitude N36.82190^{o} and longitude W121.38319^{o} in the southeast wall of Trench T-2 at an elevation of 364'(364' Google Earth and 365' GPS) for station 0+89'. Mediterranean climate with mean annual precipitation of 13.82"/yr at Hollister (1948-2010). Slope 1% along trench. Aspect northeast. Excellent drainage. Water table deep. The parent material is overbank silts and clays over gravelly sandy clay loam alluvium. Soil pH increases from mildly alkaline in the surface to very strongly alkaline in the B horizon. Soil in the area is variously mapped as: Antioch loam, *Typic Natrixeralfs, 2-5% slopes, with a solum thickness of 152 cm and an A horizon thickness of 48 cm.*

Horizon	Depth, cm	Description

Soil Profile No. 6 at Station 0+89'

Ap 0-17 Dark brown (7.5YR3/2m; 5/2d) silty clay loam; medium to coarse strong subangular blocky structure; slightly sticky and slightly plastic when wet, very friable when moist, and extremely hard when dry; common fine to medium roots; many fine to medium continuous random tubular pores; clear smooth boundary; pH 7.82; conductivity 580 uS; Sample No. 15B101.

A 17-53 Brown (7.5YR4/2m; 5/2d) silty clay loam; fine to medium strong granular to subangular blocky structure; slightly sticky and plastic when wet, very friable when moist, and extremely hard when dry; common fine to medium roots; common fine continuous random tubular pores; diffuse smooth boundary; pH 8.84; conductivity 370 uS; Sample No. 15B102.

AB 53-70 Brown (7.5YR4/2m; 5/2d) silty clay loam; medium to fine strong subangular blocky to granular structure; sticky and plastic when wet, very friable when moist, and very hard when dry; few fine to medium roots; common fine continuous random tubular and irregular pores; few thin clay films lining pores; clear smooth boundary; pH 8.89; conductivity 470 uS; Sample No. 15B103.

Bt1 70-139 Brown (7.5YR5/2m; 10YR7/4d) clay; medium moderate angular blocky structure; very sticky and very plastic when wet, very friable when moist, and very hard when dry; common fine continuous random tubular pores; few medium thick clay films lining pores and few thin clay films on peds; gradual smooth boundary; pH 8.55; conductivity 940 uS; Sample No. 15B104.

Bt2 139-188 Brown (7.5YR5/2m; 10YR7/4d) silty clay loam; medium moderate angular blocky structure; sticky and plastic when wet, very friable when moist, and very hard when dry; common fine continuous random tubular pores; many medium thick clay films lining pores and many thin clay films on peds; clear wavy boundary; pH 8.14; conductivity 1350 uS; Sample No. 15B105.

*ESTIMATED AGE:	t_o	=	40	ka
	t_b	=	0	ka
	t_d	=	40	ky

Btb 188-260 Brown (7.5YR5/2m; 10YR7/4d) clay with many medium prominent black to blue mangans; medium strong prismatic to angular blocky structure; very sticky and very plastic when wet, very friable when moist, and very hard when dry; common fine continuous random tubular pores; many medium thick clay films lining pores and coating peds; abrupt wavy boundary; pH 8.12; conductivity 1530 uS; Sample No. 15B106. [Level line at 218 cm.]

2CBtb 260-280 Pinkish gray (7.5YR6/2m; 10YR7/4d) gravelly sandy clay loam with few fine prominent distinct black to blue mangans in pores; medium moderate subangular blocky structure; sticky and plastic when wet, very friable when moist, and very hard when dry; common fine continuous random tubular pores; few thin to medium thick clay films lining pores; pH 8.52; conductivity 910 uS; Sample No. 15B107.

*ESTIMATED AGE:	t_o	=	80	ka
	t_b	=	40	ka
	t_d	=	40	ky

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*Pedochronological estimates based on available information. All ages should be considered subject to $\pm$50% variation unless otherwise indicated (Borchardt, 1992). Bold dates are absolute.

t_o = date when soil formation or aggradation began, ka

t_b = date when soil or strata was buried, ka

t_d = duration of soil development or aggradation, ky

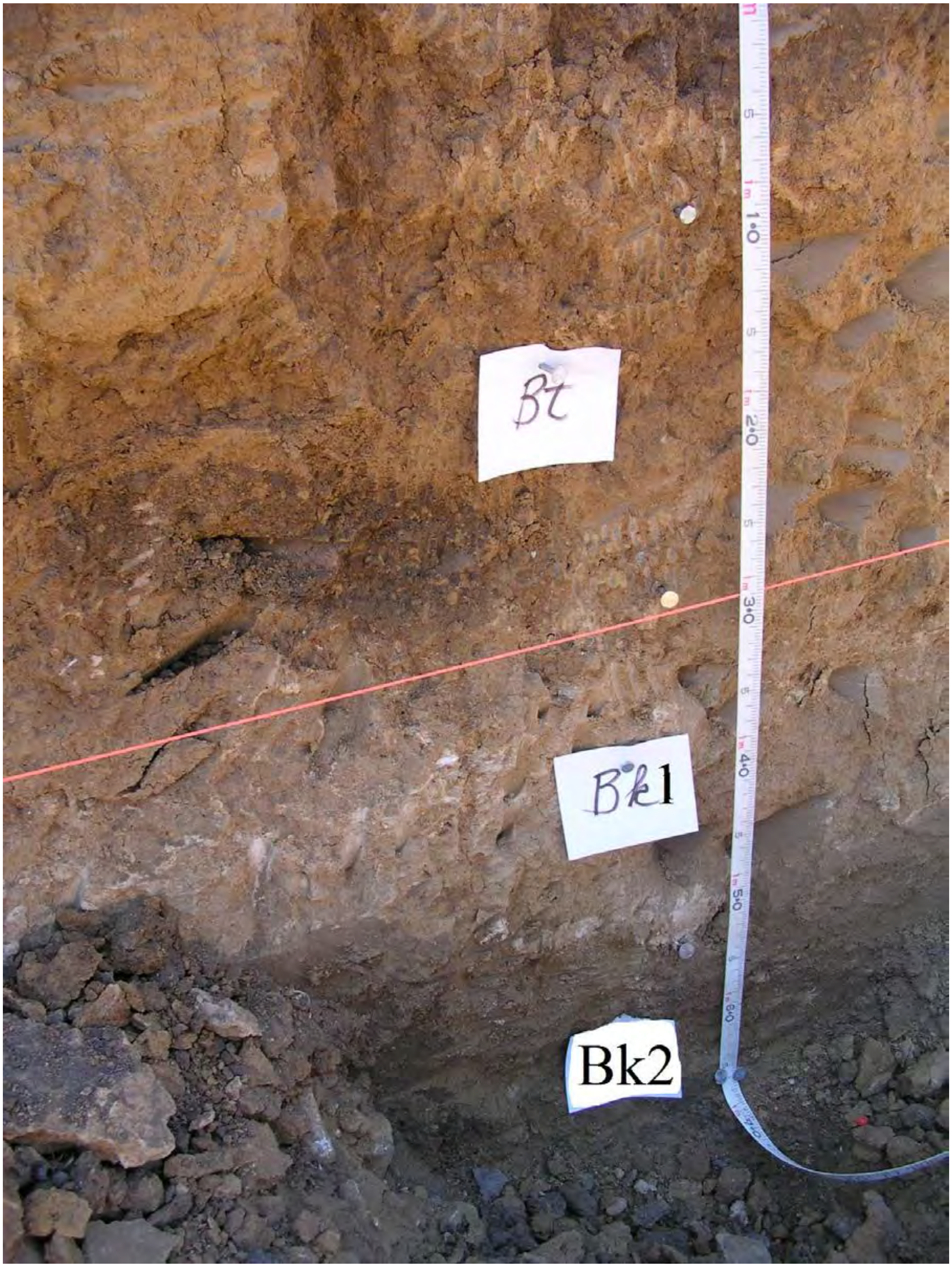

Figure 1. Soil Profile No. 3 showing the strong brown Bt overlying the Bk horizons at the 130-cm depth in Trench T-1. View SE.

Figure 2. Relatively unweathered San Benito Formation dipping NE against the eastern side of the pressure ridge along the Calaveras fault.. View SE.

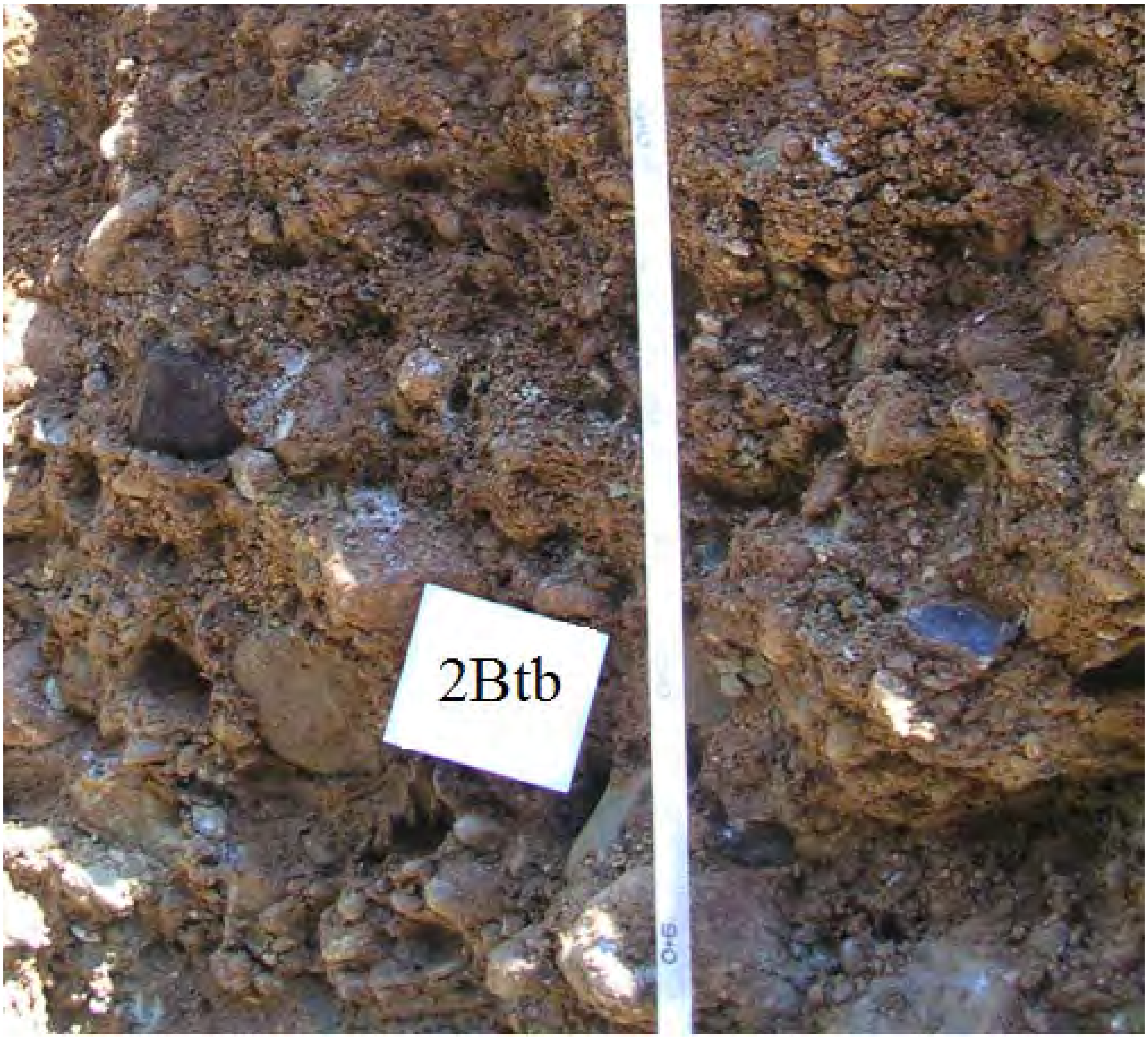

Figure 3. The 2Btb horizon in Soil Profile No. 4. Measurements taken from the top of the paleosol, which was about 160 cm below ground surface

Figure 4. The 2Btb paleosol horizon in Soil Profile No. 5 at base of Trench T-1 at station 0+32'. The shore is 122 cm long. View SE.

Figure 5. Prismatic structure typical of the Btb horizon in Soil Profile No. 6. Level line is at 218 cm. View SE.

Figure 6. Close up of the Btb of the Early Wisconsin paleosol in Soil Profile No. 6. Note the silvery mangans above the knife handle. View SE.

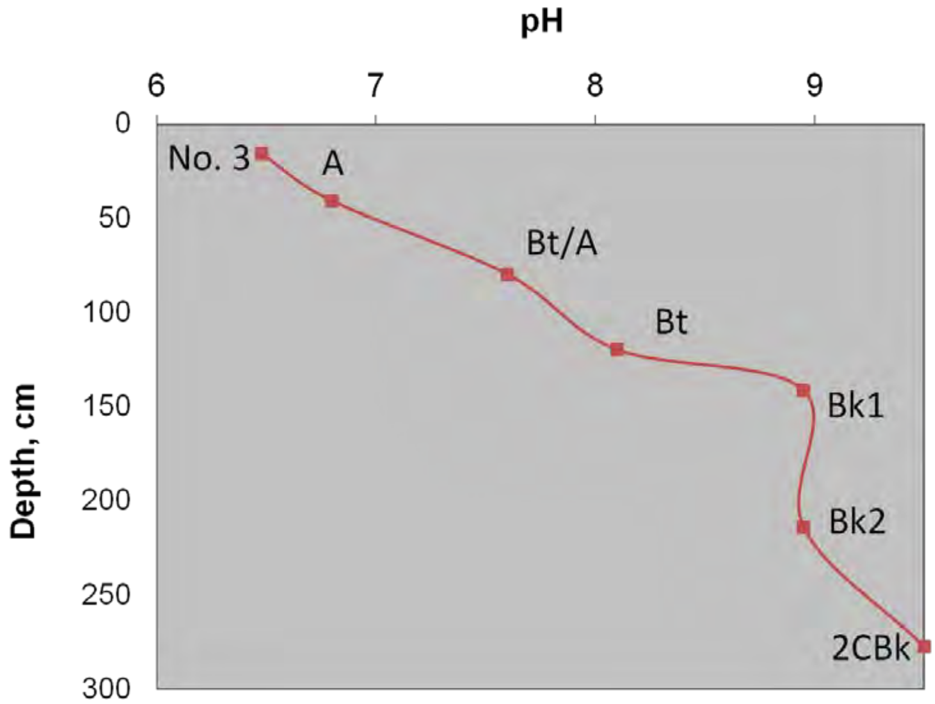

Figure 7. Depth function for pH in Soil Profile No. 3 at the Lico property, Hollister, California.

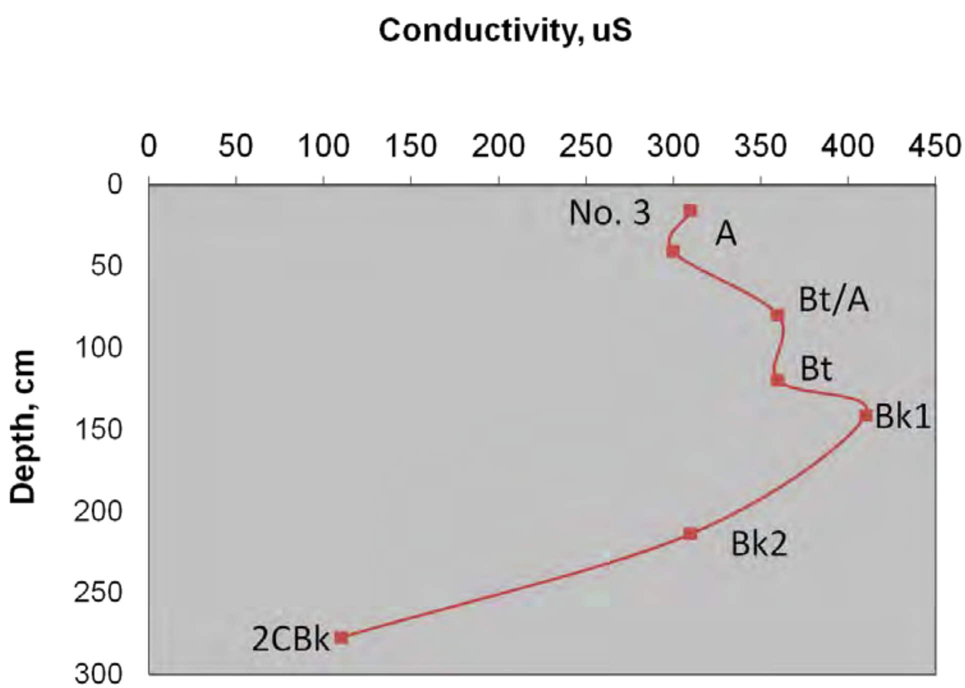

Figure 8. Depth function for electrical conductivity in Soil Profile No. 3 at the Lico property, Hollister, California. The maximum indicates an area of salt entrapment. These often exist at the base of fine-textured soils (Borchardt, 2015).

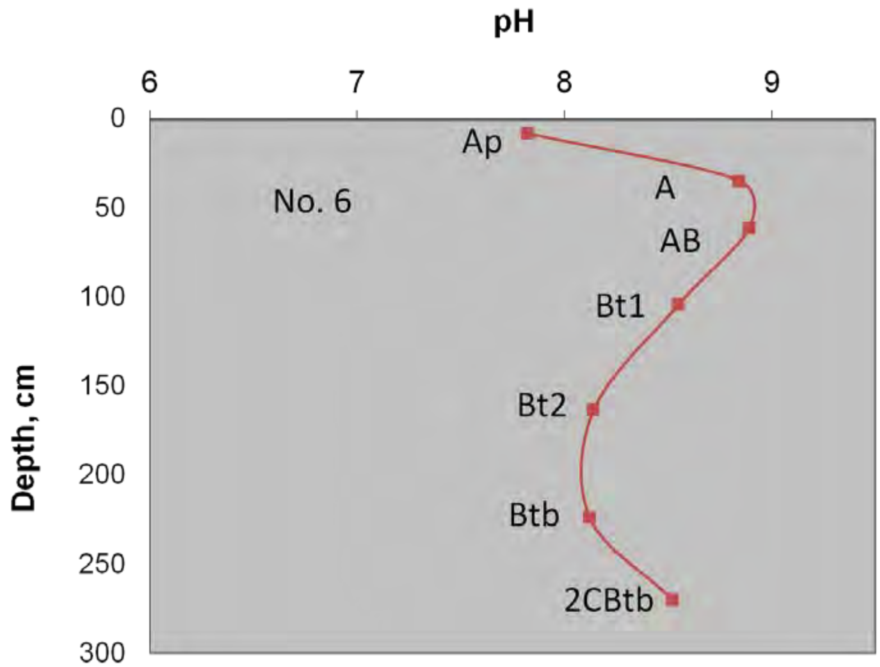

Figure 9. Depth function for pH in Soil Profile No. 6 at the Lico property, Hollister, California.

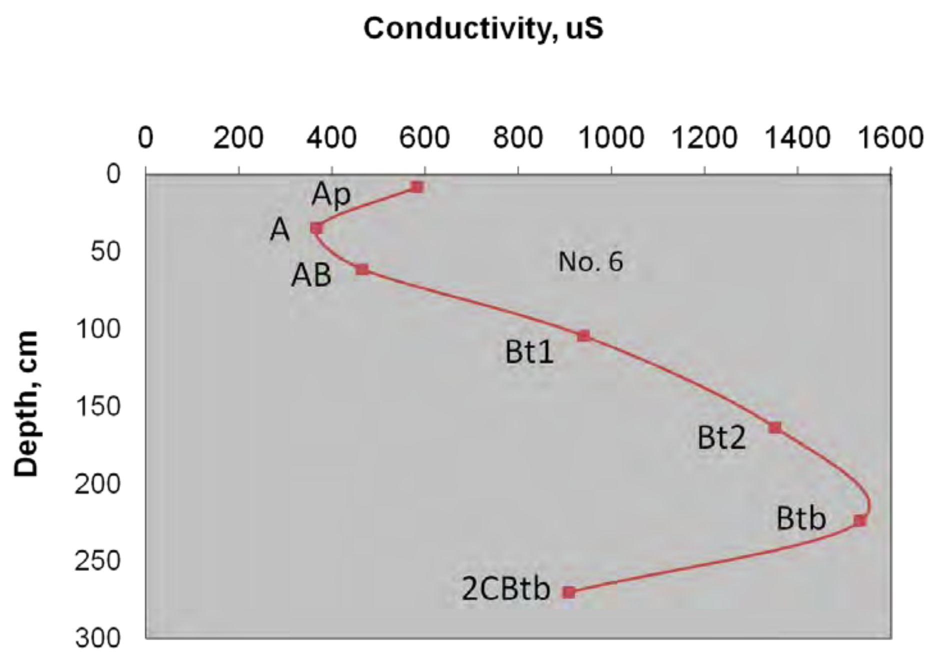

Figure 10. Depth function for electrical conductivity in Soil Profile No. 6 at the Lico property, Hollister, California. The maximum indicates an area of salt entrapment. These often exist at the base of fine-textured paleosols (Borchardt, 2015). The size of the peak and the extreme depth of the maximum in the Btb is indicative of an age greater than in Soil Profile No. 3.

Figure 11. Early Wisconsin paleosol uplifted against the northeastern side of the pressure ridge in the vicinity of stations 0+10 and 0+15. Elsewhere, this weathered cobble of the San Benito Formation is at least 160 cm beneath the surface. View SE.

Figure 12. A and E horizons formed over the Bt horizon in a downwarp along the Calaveras fault in Trench T-1. Orange line is level. Bk horizon formation is minimal here due to the shallow presence of the underlying gravels. View S.

July 29, 2015

SOILS GLOSSARY

AGE. Elapsed time in calendar years. Because the cosmic production of C-14 has varied during the Quaternary, radiocarbon years (expressed as ky B.P.) must be corrected by using tree-ring and other data. Abbreviations used for corrected ages are: ka (kilo anno or years in thousands) or Ma (millions of years). Abbreviations used for intervals are: yr (years), ky (thousands of years). radiocarbon ages = yr B.P. Calibrated ages are calculated from process assumptions, relative ages fit in a sequence, and correlated ages refer to a matching unit. (See also yr B.P., HOLOCENE, PLEISTOCENE, QUATERNARY, PEDOCHRONOLOGY).

AGGRADATION. Deposition on the earth's surface in the direction of uniformity of grade.

ALKALI (SODIC) SOIL. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 % or more of the total exchangeable bases) that plant growth is restricted.

ALKALINE SOIL. Any soil that has a pH greater than 7.3. (See Reaction, Soil.)

ANGULAR ORPHANS. Angular fragments separated from weathered, well-rounded cobbles in colluvium derived from conglomerate.

ARGILLAN. (See Clay Film.)

ARGILLIC horizon. A horizon containing clay either translocated from above or formed in place through pedogenesis.

ALLUVIATION. The process of building up of sediments by a stream at places where stream velocity is decreased. The coarsest particles settle first and the finest particles settle last.

ANOXIC. (See also GLEYED SOIL). A soil having a low redox potential.

AQUICLUDE. A saturated body of sediment or rock that is incapable of transmitting significant quantities of water under ordinary hydraulic gradients.

AQUITARD. A body of rock or sediment that retards but does not prevent the flow of water to or from an adjacent aquifer. It does not readily yield water to wells or springs but may serve as a storage unit for groundwater.

ATTERBERG LIMITS. The moisture content at which a soil passes from a semi-solid to a plastic state (plastic limit, PL) and from a plastic to a liquid state (liquid limit, LL). The plasticity index (PI) is the numerical difference between the LL and the PL.

BEDROCK. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

BISEQUUM. Two soils in vertical sequence, each soil containing an eluvial horizon and its underlying B horizon.

BOUDIN, BOUDINAGE. From a French word for sausage, describes the way that layers of rock break up under extension. Imagine the hand, fingers together, flat on the table, encased in soft clay and being squeezed from above, as being like a layer of rock. As the spreading clay moves the fingers (sausages) apart, the most mobile rock fractions are drawn or squeezed into the developing gaps.

BURIED SOIL. A developed soil that was once exposed but is now overlain by a more recently formed soil.

CALCAREOUS SOIL. A soil containing enough calcium carbonate (commonly with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid. A soil having measurable amounts of calcium carbonate or magnesium carbonate.

CARBONATE MORPHOLOGY STAGES. Descriptive classes of calcite precipitation indicating increasing pedogenesis over time:

Stage	Description	Percent Carbonate
I	Bk horizon with few filaments and coatings	<10
I+	Bk with common filaments and continuous clast coatings	<10
II	Bk with continuous clast coatings, white masses, few nodules	>10
II+	Bk as above, but matrix is completely whitened, common nodules	>15
>II	K horizon that is 90% white, many nodules	>20
III+	K that is completely plugged	>40
IV	K as above, but upper part cemented and has weak platy structure	>50
V	K same as above, but laminar layer is strong with incipient brecciation	>50
VI	K brecciation and recementation, as well as pisoliths, are common	>50

CATENA. A sequence of soils of about the same age, derived from similar parent material and forming under similar climatic conditions, but having different characteristics due to variation in relief and drainage. (See also TOPOSEQUENCE.)

CEC. Cation exchange capacity. The amount of negative charge balanced by positively charged ions (cations) that are exchangeable by other cations in solution (meq/100 g soil = cmol(+)/kg soil).

CLAY. As a soil separate, the mineral soil particles are less than 0.002 mm in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

CLAY FILM. A coating of oriented clay on the surface of a sand grain, pebble, soil aggregate, or ped. Clay films also line pores or root channels and bridge sand grains. Frequency classification is based on the percent of the ped faces and/or pores that contain films: very few--<5%; few--5-25%; common--25-50%; many--50-90%; and continuous--90-100%. Thickness classification is based on visibility of sand grains: thin--very fine sand grains standout; moderately thick--very fine sand grains impart microrelief to film; thick--fine sand grains enveloped by clay and films visible without magnification. Synonyms: clay skin, clay coat, argillan, illuviation cutan.

CLAY LAMELLAE. Thin, generally wavy bands that appear as multiple micro-Bt horizons at the base of the solum in sandy Holocene deposits. The lamellae generally are 1-3 cm in thickness and 5 to 30 cm apart. There may be two to six or more clay lamellae comprising the Bt horizon of such a soil.

COBBLE. Rounded or partially rounded fragments of rock ranging from 7.5 to 25 cm in diameter.

COLLUVIUM. Any loose mass of soil or rock fragments that moves downslope largely by the force of gravity. Usually it is thicker at the base of the slope.

COLLUVIUM-FILLED SWALE. The prefailure topography of the source area of a debris flow.

COMPARATIVE PEDOLOGY. The comparison of soils, particularly through examination of features known to evolve through time.

CONCRETIONS. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

CONDUCTIVITY. The ability of a soil solution to conduct electricity, generally expressed as the reciprocal of the electrical resistivity. Electrical conductance is the reciprocal of the resistance (1/R = 1/ohm = ohm^{-1} = mho [reverse of ohm] = siemens = S), while electrical conductivity is the reciprocal of the electrical resistivity (EC = 1/r = 1/ohm-cm = mho/cm = S/cm or mmho/cm = dS/m). EC, expressed as uS/cm, is equivalent to the ppm of salt in solution when multiplied by 0.640. Pure rain water has an EC of 0, standard 0.01 N KCl is 1411.8 uS at 25C, and the growth of salt-sensitive crops is restricted in soils having saturation extracts with an EC greater than 2,000 uS/cm. Measurements in soils are usually performed on 1:1 suspensions containing one part by weight of soil and one part by weight of distilled water.

CONSISTENCE, SOIL. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are --

Loose.--Noncoherent when dry or moist; does not hold together in a mass.

Friable.--When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.--When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.--When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.--When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.--When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.--When dry, breaks into powder or individual grains under very slight pressure.

Cemented.--Hard and brittle; little affected by moistening.

CTPOT. Easily remembered acronym for climate, topography, parent material, organisms, and time; the five factors of soil formation.

CUMULIC. A soil horizon that has undergone aggradation coincident with its active development.

CUTAN. (See Clay Film.)

DEBRIS FLOW. Incoherent or broken masses of rock, soil, and other debris that move downslope in a manner similar to a viscous fluid.

DEBRIS SLOPE. A constant slope with debris on it from the free face above.

DEGRADATION. A modification of the earth's surface by erosion.

DOWNWARP. A segment of the earth's crust that is broadly bent downward.

DURIPAN. A subsurface soil horizon that is cemented by illuvial silica, generally deposited as opal or microcrystalline silica, to the degree that less than 50 percent of the volume of air-dry fragments will slake in water or HCl.

ELUVIATION. The removal of soluble material and solid particles, mostly clay and humus, from a soil horizon by percolating water.

EOLIAN. Deposits laid down by the wind, landforms eroded by the wind, or structures such as ripple marks made by the wind.

FAULT-LINE SCARP. A scarp that has been produced by differential erosion along an old fault line.

FAULTSLIDE. A landslide that shows physical evidence of its interaction with a fault.

FIRST-ORDER DRAINAGE. The most upstream, field-discernible concavity that conducts water and sediments to lower parts of a watershed.

FLOOD PLAIN. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

FOSSIL FISSURE. A buried rectilinear chamber associated with extension due to ground movement. The chamber must be oriented along the strike of the shear and must have vertical and horizontal dimensions greater than its width. It must show no evidence of faunal activity and its walls may have silt or clay coatings indicative of frequent temporary saturation with ground water. May be mistaken for an animal burrow. Also known as a paleofissure.

FRIABILITY. Term for the ease with which soil crumbles. A friable soil is one that crumbles easily.

GENESIS, SOIL. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum (A and B horizons) from the unconsolidated parent material.

GEOMORPHIC. Pertaining to the form of the surface features of the earth. Specifically, geomorphology is the analysis of landforms and their mode of origin.

GLEYED SOIL. A soil having one or more neutral gray horizons as a result of water logging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent water logging.

GRAVEL. Rounded or angular fragments of rock 2 to 75 mm in diameter. Soil textures with >15% gravel have the prefix "gravelly" and those with >90% gravel have the suffix "gravel."

HIGHSTAND. The highest elevation reached by the ocean during an interglacial period.

HOLOCENE. The most recent epoch of geologic time, extending from 10 ka to the present.

HORIZON, SOIL. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major soil horizons:

O horizon.--The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.--The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

E horizon -- This eluvial horizon is light in color, lying beneath the A horizon and above the B horizon. It is made up mostly of sand and silt, having lost most of its clay and iron oxides through reduction, chelation, and translocation.

B horizon.--The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these.

C horizon.--The relatively unweathered material immediately beneath the solum. Included are sediment, saprolite, organic matter, and bedrock excavatable with a spade. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a number precedes the letter C.

R horizon.--Consolidated rock not excavatable with a spade. It may contain a few cracks filled with roots or clay or oxides. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Major horizons may be further distinguished by applying prefix Arabic numbers to designate differences in parent materials as they are encountered (e.g., 2B, 2BC, 3C) or by applying suffix numerals to designate minor changes (e.g., B1, B2).

The following is from the Natural Resources Conservation Service, except for the proposed addition of mn:

“Suffix Symbols

Lowercase letters are used as suffixes to designate specific kinds of master horizons and layers. The term “accumulation” is used in many of the definitions of such horizons to indicate that these horizons must contain more of the material in question than is presumed to have been present in the parent material. The suffix symbols and their meanings are as follows:

a Highly decomposed organic material

This symbol is used with O to indicate the most highly decomposed organic materials, which have a fiber content of less than 17 percent (by volume) after rubbing.

b Buried genetic horizon

This symbol is used in mineral soils to indicate identifiable buried horizons with major genetic features that were developed before burial. Genetic horizons may or may not have formed in the overlying material, which may be either like or unlike the assumed parent material of the buried soil. This symbol is not used in organic soils, nor is it used to separate an organic layer from a mineral layer.

c *Concretions or nodules*

This symbol indicates a significant accumulation of concretions or nodules. Cementation is required. The cementing agent commonly is iron, aluminum, manganese, or titanium. It cannot be silica, dolomite, calcite, or more soluble salts.

co *Coprogenous earth*

This symbol, used only with L, indicates a limnic layer of coprogenous earth (or sedimentary peat).

d *Physical root restriction*

This symbol indicates noncemented, root-restricting layers in natural or human-made sediments or materials. Examples are dense basal till, plowpans, and other mechanically compacted zones.

di *Diatomaceous earth*

This symbol, used only with L, indicates a limnic layer of diatomaceous earth.

e *Organic material of intermediate decomposition*

This symbol is used with O to indicate organic materials of intermediate decomposition. The fiber content of these materials is 17 to 40 percent (by volume) after rubbing.

f *Frozen soil or water*

This symbol indicates that a horizon or layer contains permanent ice. The symbol is not used for seasonally frozen layers or for dry permafrost.

ff *Dry permafrost*

This symbol indicates a horizon or layer that is continually colder than 0^{o} C and does not contain enough ice to be cemented by ice. This suffix is not used for horizons or layers that have a temperature warmer than 0^{o} C at some time of the year.

g *Strong gleying*

This symbol indicates either that iron has been reduced and removed during soil formation or that saturation with stagnant water has preserved it in a reduced state. Most of the affected layers have chroma of 2 or less, and many have redox concentrations. The low chroma can represent either the color of reduced iron or the color of uncoated sand and silt particles from which iron has been removed. The symbol g is not used for materials of low chroma that have no history of wetness, such as some slates or E horizons. If g is used with B, pedogenic change in addition to gleying is implied. If no other pedogenic change besides gleying has taken place, the horizon is designated Cg.

h *Illuvial accumulation of organic matter*

This symbol is used with B to indicate the accumulation of illuvial, amorphous, dispersible complexes of organic matter and sesquioxides if the sesquioxide component is dominated by aluminum but is present only in very small quantities. The organo-sesquioxide material coats sand and silt particles. In some horizons these coatings have coalesced, filled pores, and cemented the horizon. The symbol h is also used in combination with s as “Bhs” if the amount of the sesquioxide component is significant but the color value and chroma, moist, of the horizon are 3 or less.

i *Slightly decomposed organic material*

This symbol is used with O to indicate the least decomposed of the organic materials. The fiber content of these materials is 40 percent or more (by volume) after rubbing.

j *Accumulation of jarosite*

Jarosite is a potassium or iron sulfate mineral that is commonly an alteration product of pyrite that has been exposed to an oxidizing environment. Jarosite has hue of 2.5Y or yellower and normally has chroma of 6 or more, although chromas as low as 3 or 4 have been reported. [Note: No longer used to indicate “juvenile.”]

jj *Evidence of cryoturbation*

Evidence of cryoturbation includes irregular and broken horizon boundaries, sorted rock fragments, and organic soil materials existing as bodies and broken layers within and/or between mineral soil layers. The organic bodies and layers are most commonly at the contact between the active layer and the permafrost.

k *Accumulation of secondary carbonates*

This symbol indicates an accumulation of visible pedogenic calcium carbonate (less than 50 percent, by volume). Carbonate accumulations exist as carbonate filaments, coatings, masses, nodules, disseminated carbonate, or other forms.

kk *Engulfment of horizon by secondary carbonates*

This symbol indicates major accumulations of pedogenic calcium carbonate. The suffix kk is used when the soil fabric is plugged with fine grained pedogenic carbonate (50 percent or more, by volume) that exists as an essentially continuous medium. The suffix corresponds to the stage III plugged horizon or higher of the carbonate morphogenetic stages (Gile et al., 1966).

m *Cementation or induration*

This symbol indicates continuous or nearly continuous cementation. It is used only for horizons that are more than 90 percent cemented, although they may be fractured. The cemented layer is physically root-restrictive. The dominant cementing agent (or the two dominant ones) may be indicated by adding defined letter suffixes, singly or in pairs. The horizon suffix km or kkm indicates cementation by carbonates; qm, cementation by silica; sm, cementation by iron; yym, cementation by gypsum; kqm, cementation by lime and silica; and zm, cementation by salts more soluble than gypsum.

ma *Marl*

This symbol, used only with L, indicates a limnic layer of marl.

mn *Mangans*

This symbol indicates an accumulation of manganese oxide, generally as ped coatings called mangans (First used by Borchardt on 20130418.)

n *Accumulation of sodium*

This symbol indicates an accumulation of exchangeable sodium.

o *Residual accumulation of sesquioxides*

This symbol indicates a residual accumulation of sesquioxides.

p *Tillage or other disturbance*

This symbol indicates a disturbance of the surface layer by mechanical means, pasturing, or similar uses. A disturbed organic horizon is designated Op. A disturbed mineral horizon is designated Ap even though it is clearly a former E, B, or C horizon.

q *Accumulation of silica*

This symbol indicates an accumulation of secondary silica.

r *Weathered or soft bedrock*

This symbol is used with C to indicate cemented layers (moderately cemented or less cemented). Examples are weathered igneous rock and partly consolidated sandstone, siltstone, or slate. The excavation difficulty is low to high.

s *Illuvial accumulation of sesquioxides and organic matter*

This symbol is used with B to indicate an accumulation of illuvial, amorphous, dispersible complexes of organic matter and sesquioxides if both the organic-matter and sesquioxide components are significant and if either the color value or chroma, moist, of the horizon is 4 or more. The symbol is also used in combination with h as “Bhs” if both the organic-matter and sesquioxide components are significant and if the color value and chroma, moist, are 3 or less.

se *Presence of sulfides*

Typically dark colors (e.g., value <4, chroma <2); may have a sulphurous odor.

ss *Presence of slickensides*

This symbol indicates the presence of slickensides. Slickensides result directly from the swelling of clay minerals and shear failure, commonly at angles of 20 to 60 degrees above horizontal.

They are indicators that other vertic characteristics, such as wedge-shaped peds and surface cracks, may be present.

t *Accumulation of silicate clay*

This symbol indicates an accumulation of silicate clay that either has formed *in situ* within a horizon or has been moved into the horizon by illuviation, or both. At least some part of the horizon should show evidence of clay accumulation either as coatings on surfaces of peds or in pores, as lamellae, or as bridges between mineral grains.

u *Presence of human-manufactured materials (artifacts)*

This symbol indicates the presence of manufactured artifacts that have been created or modified by humans, usually for a practical purpose in habitation, manufacturing, excavation, or construction activities. Examples of artifacts are processed wood products, liquid petroleum products, coal, combustion by-products, asphalt, fibers and fabrics, bricks, cinder blocks, concrete, plastic, glass, rubber, paper, cardboard, iron and steel, altered metals and minerals, sanitary and medical waste, garbage, and landfill waste.

v *Plinthite*

This symbol indicates the presence of iron-rich, humus-poor, reddish material that is firm or very firm when moist and hardens irreversibly when exposed to the atmosphere and to repeated wetting and drying.

w *Development of color or structure*

This symbol is used with B to indicate the development of color or structure, or both, with little or no apparent illuvial accumulation of material. It should not be used to indicate a transitional horizon.

x *Fragipan character*

This symbol indicates a genetically developed layer that has a combination of firmness and brittleness and commonly a higher bulk density than the adjacent layers. Some part of the layer is physically root-restrictive.

y *Accumulation of gypsum*

This symbol indicates an accumulation of gypsum (<50% by volume).

yy *Dominance of gypsum*

This symbol indicates an accumulation of gypsum (>50% by volume); light colored (e.g., value >7, chroma <4); may be pedogenically derived or inherited transformation of primary gypsum from parent material.

z *Accumulation of salts more soluble than gypsum*

This symbol indicates an accumulation of salts that are more soluble than gypsum; e.g., NaCl.

HUMUS. The well-decomposed, more or less stable part of the organic matter in mineral soils.

ILLUVIATION. The deposition by percolating water of solid particles, mostly clay or humus, within a soil horizon.

INTERFLUVE. The land lying between streams.

ISOCHRONOUS BOUNDARY. A gradational boundary between two sedimentary units indicating that they are approximately the same age. Opposed to a nonisochronous boundary, which by its abruptness indicates that it delineates units having significant age differences.

KROTOVINA. An animal burrow filled with soil.

LEACHING. The removal of soluble material from soil or other material by percolating water.

LOWSTAND. The lowest elevation reached by the ocean during a glacial period.

MANGAN. A thin coating of manganese oxide (cutan) on the surface of a sand grain, pebble, soil aggregate, or ped. Mangans also line pores or root channels and bridge sand grains.

MAP. Mean annual precipitation.

MODERN SOIL. The portion of a soil section that is under the influence of current pedogenetic conditions. It generally refers to the uppermost soil regardless of age.

MODERN SOLUM. The combination of the A and B horizons in the modern soil.

MORPHOLOGY, SOIL. The physical make-up of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

MOTTLING, SOIL. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: abundance--few, common, and many; size--fine, medium, and coarse; and contrast--faint, distinct and prominent. The size measurements are these: fine, less than 5 mm in diameter along the greatest dimension; medium, from 5 to 15 mm, and coarse, more than 15 mm.

MRT (MEAN RESIDENCE TIME.) The average age of the carbon atoms within a soil horizon. Under ideal reducing conditions, the humus in a soil will have a C-14 age that is half the true age of the soil. In oxic soils humus is typically destroyed as fast as it is produced, generally yielding MRT ages no older than 300-1000 years, regardless of the true age of the soil.

MUNSELL COLOR NOTATION. Scientific description of color determined by comparing soil to a Munsell Soil Color Chart (Available from Macbeth Division of Kollmorgen Corp., 2441 N. Calvert St., Baltimore, MD 21218). For example, dark yellowish brown is denoted as 10YR3/4m in which the 10YR refers to the hue or proportions of yellow and red, 3 refers to value or lightness (0 is black and 10 is white), 4 refers to chroma (0 is pure black and white and 20 is the pure color), and m refers to the moist condition rather than the dry (d) condition.

OVERBANK DEPOSIT. Fine-grained alluvial sediments deposited from floodwaters outside of the fluvial channel.

OXIC. A soil having a high redox potential. Such soils typically are well drained, seldom being waterlogged or lacking in oxygen. Rubification in such soils tends to increase with age.

PALEO SOIL TONGUE. A soil tongue that formed during a previous soil-forming interval.

PALEOSEISMOLOGY. The study of prehistoric earthquakes through the examination of soils, sediments, and rocks.

PALEOSOL. A soil that formed on a landscape in the past with distinctive morphological features resulting from a soil-forming environment that no longer exists at the site. The former pedogenic process was either altered because of external environmental change or interrupted by burial.

PALINSPASTIC RECONSTRUCTION. Diagrammatic reconstruction used to obtain a picture of what geologic and/or soil units looked like before their tectonic deformation.

PARENT MATERIAL. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

PED. An individual natural soil aggregate, such as a granule, a prism, or a block.

PEDOCHRONOLOGY. The study of pedogenesis with regard to the determination of when soil formation began, how long it occurred, and when it stopped. Also known as soil dating. Two ages and the calculated duration are important:

t_o = age when soil formation or aggradation began, ka

t_b = age when the soil or stratum was buried, ka

t_d = duration of soil development or aggradation, ky

Pedochronological estimates are based on available information. All ages should be considered subject to ±50% variation unless otherwise indicated.

PEDOCHRONOPALEOSEISMOLOGY. The study of prehistoric earthquakes by using pedochronology.

PEDOLOGY. The study of the process through which rocks, sediments, and their constituent minerals are transformed into soils and their constituent minerals at or near the surface of the earth.

PEDOGENESIS. The process through which rocks, sediments, and their constituent minerals are transformed into soils and their constituent minerals at or near the surface of the earth.

PERCOLATION. The downward movement of water through the soil.

pH VALUE. The negative log of the hydrogen ion concentration. Measurements in soils are usually performed on 1:1 suspensions containing one part by weight of soil and one part by weight of distilled water. A soil with a pH of 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid or "sour" soil is one that gives an acid reaction; an alkaline soil is one that gives an alkaline reaction. In words, the degrees of acidity or alkalinity are expressed as:

Extremely acid	<4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4

Strongly alkaline	8.5 to 9.0
Very strongly alkaline	>9.0
Used if significant:	
Very slightly acid	6.6 to 6.9
Very mildly alkaline	7.1 to 7.3

PHREATIC SURFACE. (See Water Table.)

PLANATION. The process of erosion whereby a portion of the surface of the Earth is reduced to a fundamentally even, flat, or level surface by a meandering stream, waves, currents, glaciers, or wind.

PLEISTOCENE. An epoch of geologic time extending from 10 ka to 1.8 Ma; it includes the last Ice Age.

PROFILE, SOIL. A vertical section of the soil through all its horizons and extending into the parent material.

QUATERNARY. A period of geologic time that includes the past 1.8 Ma. It consists of two epochs--the Pleistocene and Holocene.

PROGRADATION. The building outward toward the sea of a shoreline or coastline by nearshore deposition.

REFUGIUM. A place of refuge. Plants, animals, and soil minerals tend to accumulate only in the most ideal areas when surrounded by a hostile environment.

RELICT SOIL. A surface soil that was partly formed under climatic conditions significantly different from the present.

RUBIFICATION. The reddening of soils through the release and precipitation of iron as an oxide during weathering. Munsell hues and chromas of well-drained soils generally increase with soil age.

SALINE SOIL. A soil that contains soluble salts in amounts that impair the growth of crop plants but that does not contain excess exchangeable sodium.

SAND. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 mm. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

SECONDARY FAULT. A minor fault that bifurcates from or is associated with a primary fault. Movement on a secondary fault never occurs independently of movement on the primary, seismogenic fault.

SHORELINE ANGLE. The line formed by the intersection of the wave-cut platform and the sea cliff. It approximates the position of sea level at the time the platform was formed.

SILT. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 mm) to the lower limit of very find sand (0.05 mm.) Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

SLICKENSIDES. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may form along a fault plane; at the bases of slip surfaces on steep slopes; on faces of blocks, prisms, and columns undergoing shrink-swell. In tectonic slickensides the striations are strictly parallel.

SLIP RATE. The rate at which the geologic materials on the two sides of a fault move past each other over geologic time. The slip rate is expressed in mm/yr, and the applicable duration is stated. Faults having slip rates less than 0.01 mm/yr are generally considered inactive, while faults with Holocene slip rates greater than 0.1 mm/yr generally display tectonic geomorphology.

SMECTITE. A fine, platy, aluminosilicate clay mineral that expands and contracts with the absorption and loss of water. It has a high cation-exchange capacity and is plastic and sticky when moist.

SOIL. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

SOIL SEISMOLOGIST. Soil scientist who studies the effects of earthquakes on soils.

SOIL SLICKS. Curvilinear striations that form in swelling clayey soils, where there is marked change in moisture content. Clayey slopes buttressed by rigid materials may allow minor amounts of gravitationally driven plastic flow, forming soil slicks sometimes mistaken for evidence of tectonism. Soil slicks disappear with depth and the striations are seldom strictly parallel as they are when movement is major. (See also SLICKENSIDES.)

SOIL TECTONICS. The study of the interactions between soil formation and tectonism.

SOIL TONGUE. That portion of a soil horizon extending into a lower horizon.

SOLUM. Combined A and B horizons. Also called the true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

STONELINE. A thin, buried, planar layer of stones, cobbles, or bedrock fragments. Stonelines of geological origin may have been deposited upon a former land surface. The fragments are more often pebbles or cobbles than stones. A stoneline generally overlies material that was subject to weathering, soil formation, and erosion before deposition of the overlying material. Many stonelines seem to be buried erosion pavements, originally formed by running water on the land surface and concurrently covered by surficial sediment.

STRATH TERRACE. A gently sloping terrace surface bearing little evidence of aggradation.

STRUCTURE, SOIL. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are--platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are either single grained (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).

SUBSIDIARY FAULT. A branch fault that extends a substantial distance from the main fault zone.

SURFACE FAULT RUPTURE (SFR). Permanent disturbance of soil surface occurring as a result of tectonic offset. This may produce ground cracks, offsets, and warping of soil horizons.

TECTOTURBATION. Soil disturbance resulting from tectonic movement.

TEXTURE, SOIL. Particle size classification of a soil, generally given in terms of the USDA system which uses the term "loam" for a soil having equal properties of sand, silt, and clay. The basic textural classes, in order of their increasing proportions of fine particles are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sand clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

TOPOSEQUENCE. A sequence of kinds of soil in relation to position on a slope. (See also CATENA.)

TRANSLOCATION. The physical movement of soil particles, particularly fine clay, from one soil horizon to another under the influence of gravity.

UNIFIED SOIL CLASSIFICATION SYSTEM. The particle size classification system used by the U.S. Army Corps of Engineers and the Bureau of Reclamation. Like the ASTM and AASHO systems, the sand/silt boundary is at 80 um instead of 50 um used by the USDA. Unlike all other systems, the gravel/sand boundary is at 4 mm instead of 2 mm and the silt/clay boundary is determined by using Atterberg limits.

VERTISOL. A soil with at least 30% clay, usually smectite, that fosters pronounced changes in volume with change in moisture. Cracks greater than 1 cm wide appear at a depth of 50 cm during the dry season each year. One of the ten USDA soil orders.

WATER TABLE. The upper limit of the soil or underlying rock material that is wholly saturated with water. Also called the phreatic surface.

WAVE-CUT PLATFORM. The relatively smooth, slightly seaward-dipping surface formed along the coast by the action of waves generally accompanied by abrasive materials.

WEATHERING. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

WETTING FRONT. The greatest depth affected by moisture due to precipitation.

yr B.P. Uncorrected radiocarbon age expressed in years before present, calculated from 1950. Calendar-corrected ages are expressed in ka, or, if warranted, as A.D. or B.C.

Appendix F

Geotechnical Engineering Report

Earth Systems
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May 17, 2019 File No.: 302615-001

Mr. Ty Intravia
TTI Developers
601 McCray Street, Ste. 205
Hollister, CA 95023

PROJECT: LICO PROPERTY DEVELOPMENT
ENTERPRISE ROAD, APNS 020-290-051 & -052
HOLLISTER, SAN BENITO COUNTY, CALIFORNIA

SUBJECT: Geotechnical Engineering Report

REF.: Proposal for a Geotechnical Engineering Investigation, Lico Property Development, Enterprise Road, APNs 020-290-051 & -052, Hollister, San Benito County, California, by Earth Systems Pacific, dated May 16, 2019

Dear Mr. Intravia:

In accordance with your authorization of the above-referenced proposal, this geotechnical engineering report was prepared for use in development of plans and specifications for the planned development of the approximately 50-acre property located on Enterprise Road (APNs 020-290-051 and -052) in the Hollister area of San Benito County. As shown on the Vesting Tentative Map by MacKay & Somps, the development will consist of 151 detached single-family residential lots that will be accessed by several new interior streets originating at Enterprise Road. Extensive site grading is planned, including cuts and fills on the order of 25 feet. Maximum slope heights in excess of 30 feet are planned upon completion of grading. Retaining walls up to about four feet in height will be constructed between some of the lots. Two stormwater detention basins, having maximum depths of approximately 11 feet, are planned along the northern edge of the property.

An existing residence on the northwest section of the site is to remain, but other nearby structures are to be demolished to accommodate the development. Plans for the new residences are not currently available, but we understand that they will be one or two story conventional light frame structures supported by either reinforced concrete structural mat foundations or post-tensioned concrete slabs-on-grade. The project will be served by public utilities.

A Fault Evaluation Report was prepared by ENGEO Incorporated (Project No. 11227.000.100, dated September 15, 2015). That report provided a fault exclusion zone for structures along the southwestern property edge that was incorporated in the project design. Information contained in the ENGEO report, as well as the results of a preliminary geologic fault study for the project and a geotechnical subsurface investigation and laboratory testing program conducted by Earth Systems Pacific (ESP) during 2008 for a portion of the site (APN 020-290-51), were utilized in our analysis and report.

Scope of Services

The scope of work for the geotechnical engineering investigation included a general site reconnaissance, subsurface exploration, laboratory testing of soil samples, engineering evaluation of the data collected, review of information contained in the Fault Evaluation Report by ENGEO, and preparation of this report. The analysis and subsequent recommendations were based on the Vesting Tentative Map by MacKay & Somps (Sheets 1 through 11, dated November 2015), and verbal information provided by the client.

The report and recommendations are intended to comply with the considerations of Sections 1803.1 through 1803.6, and 1803.7 (portions of) of the 2016 California Building Code (CBC), and common geotechnical engineering practice in this area at this time under similar conditions. The tests were performed in general conformance with the standards noted, as modified by common geotechnical practice in this area at this time under similar conditions.

Preliminary geotechnical recommendations for site preparation and grading, post-tensioned slab-on-grade and structural mat foundations, exterior flatwork, retaining walls, asphalt concrete pavement sections, utility trenches, site drainage and finish improvements, and geotechnical observation and testing are presented to guide the development of project plans and specifications. It is our intent that this report be used by the client to form the geotechnical basis of the design of the project as described herein, and in the preparation of plans and specifications.

Evaluation of the site geology, and analyses of the soil for infiltration rates, mold or other microbial content, lead, asbestos, corrosion potential, radioisotopes, hydrocarbons, or other chemical properties are beyond the scope of this report. This report does not address issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, excavatability, shoring, temporary slope angles, and construction means and methods. Ancillary features such as temporary access roads, fences, light poles, signs, effluent disposal systems, swimming pools, LID/BMP improvements, and nonstructural fills are not within our scope and are also not addressed.

To verify that pertinent issues have been addressed and to aid in conformance with the intent of this report, it is requested that grading and foundation plans be submitted to the geotechnical engineer for review as they near completion. In the event that there are any changes in the nature, design, or locations of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained herein should not be considered valid unless the changes are reviewed and the conclusions of this report are verified or modified in writing by the geotechnical engineer. The criteria presented in this report are considered preliminary until such time as they are verified or modified in writing by the geotechnical engineer in the field during construction.

Site Setting

The site consists of two irregularly-shaped parcels (APNs 020-290-051 and -052) located on the south side of Enterprise Road in the Hollister area of San Benito County, California. At the time of the investigation, the properties immediately to the southwest were occupied by rural single-family residences, and the Oak Creek residential development was to the east. Two residences and a few agricultural out-buildings were present on the northwest section of the subject site, and the remainder of the site was undeveloped. The site is located on the northeast flank of a northwest-southeast trending broad topographic ridge. Locally, the site topography is characterized by broad rolling ridges and valleys descending toward a wide natural drainage channel roughly paralleling Enterprise Road and seasonally flowing in a northwest direction. In some areas, the channel has been modified by previous grading, particularly to construct a cut basin and fill berm for stormwater management on an easement near the northeast site corner, just beyond the proposed development area. The ground elevations range from approximately 480 feet at the southwest corner to 345 feet at the northwest corner, with a distinctly steeper slope having inclinations greater than 20 percent crossing the approximate center of the property. The site was vegetated with a variable cover of weeds and grass, with an orchard and mature trees present on the northwestern portion of the property near the existing structures.

Subsurface Investigation and Laboratory Testing

To supplement the six borings drilled by Earth Systems Pacific on the southern portion of the site in 2008, eight additional borings were advanced on November 1, 2018. The supplemental borings were drilled using a Mobile Drill rig, Model B-53, equipped with an 8-inch outside diameter, continuous flight, hollow stem auger. The approximate boring locations are shown on the attached Boring Location Map. For numerical continuity, the 2008 borings were identified as Borings 1 through 6, and the supplemental borings were identified as Borings 7 through 14.

Soils encountered in the borings were categorized and logged in general accordance with the Unified Soil Classification System and ASTM D 2488-17. Soil samples were obtained from the borings using an internally-lined barrel sampler (ASTM D 3550-17, with shoe similar to D 2937-17), Standard Penetration Tests - SPT (ASTM D 1586-11) were conducted at selected depths, and bulk soil samples were obtained from the auger cuttings. Copies of the boring logs are attached (please note that the original borings describe the site APN using a previous designation).

The previous laboratory testing program included unit weight and moisture tests on selected liner samples (ASTM D 2937-04, modified for ring liners), particle size distribution tests on four liner samples and one bulk sample (ASTM D 422-07 and D 1140-06), and R-value tests on two bulk samples (ASTM D 2844-07). For the supplemental investigation, ten liner samples were tested for unit weight and/or moisture (ASTM D 2937-17e1, modified for internal liners), and two bulk samples and two ring samples were tested for particle size distribution (ASTM D 1140-17 and D 422-63/07, or D 7928-17). Two of these samples were also tested for plasticity index (ASTM D 4318-17). Copies of the laboratory test results are attached.

General Subsurface Profile

In general, the soils encountered in the borings were mixtures of lean and fat clays, silts, sands, and gravels. Some occasional cobbles were also encountered. These predominantly fine-grained deposits had very stiff to hard consistencies, and these predominantly coarse-grained materials were typically medium dense to very dense. Drilling refusal was experienced in Boring 10 at an approximate depth of 7 feet due to the presence of hard cemented clay with cobbles. Except for some slightly moist surface material, the soils were generally moist at the time of the investigation. Free subsurface water was not encountered within the maximum 20-foot depth of exploration.

Conclusions

Site Suitability:

Based on the results of the subsurface investigation and laboratory testing program, in our opinion, the site is geotechnically suitable for the proposed Lico Property residential development provided that the recommendations contained herein are implemented in the design and construction. The primary geotechnical consideration is the high expansion potential of the clay soils at the site, as discussed below. Due to the sloping nature of the site and the planned differential thicknesses of cuts and fills within the building pads, measures should be taken during grading to provide more uniform support for the proposed improvements.

Soil Expansion Potential:

Plasticity index tests performed on four samples of the upper clay soils from the site resulted in liquid limits (LL) ranging from 21 to 48 and plasticity indices (PI) ranging from 6 to 32. The greater values indicate that soils having high expansion potentials are present at the site. Expansive soils tend to swell with increases in soil moisture and shrink as the soil moisture decreases. The volume changes that the soils undergo in this cyclical pattern can stress and damage foundations, exterior flatwork, and other improvements if precautionary measures are not incorporated into the design and construction procedures. To help mitigate the effects of the expansive soils, the post-tensioned slabs or structural mat foundations should be designed to withstand forces related to soil expansion and contraction. The upper soils should also be removed, moisture conditioned, and blended during grading to help reduce the amount of future expansion. Exterior concrete flatwork should be constructed over a layer of nonexpansive imported material.

Seismic Setting:

Details of the seismic setting of the site are provided in Fault Evaluation Report by ENGEO, and the report provided a fault exclusion zone for structures along the southwestern property edge that was incorporated in the project design. Severe ground shaking should be expected during the design life of the planned residences. At a minimum, the planned improvements should be designed to resist seismic shaking in accordance with current California Building Code (CBC) requirements. Seismic design parameters based on the 2016 edition of the CBC are presented later in the report.

Liquefaction Potential:

The term liquefaction refers to the liquefied condition and subsequent softening that can occur in soils when they are subjected to cyclic strains, such as those generated during a seismic event. Studies of areas where liquefaction has occurred have led to the conclusion that saturated soil conditions, low soil density, grain sizes within a certain range, and a sufficiently strong earthquake, in combination, create a potential for liquefaction. According to the document "*Liquefaction Susceptibility of the Hollister Area San Benito County, California, Final Technical Report",* USGS Award No. 1434-HQ-97-GR-03125, by Lewis Rosenberg, the site is located in an area having a very low liquefaction potential, and potentially liquefiable soils were not encountered in our exploratory borings. Thus, measures to mitigate potential soil liquefaction are not considered necessary for the project.

Recommendations

Site Preparation and Grading

1. The site should be prepared for grading by removing existing trees and other vegetation, roots larger than 1 inch in diameter, foundations and demolition debris, and other potentially deleterious materials from areas to receive improvements. The site preparation operations should be observed by the geotechnical engineer prior to continuing grading.

2. Existing utility lines that will not remain in service should be either removed or abandoned. The appropriate method of utility abandonment will depend upon the type, depth, and location of the utility. Recommendations for abandonment can be made as necessary.

3. The soil in the building areas and in areas to receive exterior flatwork and other improvements should be removed (overexcavated) to minimum depths of 1 foot below existing grade, or 1 foot below the planned building pad elevations, whichever is deeper. The overexcavated areas should extend a minimum of 5 feet beyond the planned building foundation perimeters, and 2 feet beyond the edges of exterior flatwork and other improvements.

4. Where a building pad will span cuts and fills, or where the depth of fill will vary significantly across the building area, the soil should be removed (overexcavated) and replaced as compacted fill to provide a relatively uniform depth of compacted fill beneath the structure. For cut/fill building pads, the soil should be overexcavated as necessary to provide a minimum 2 feet of compacted fill material below the planned building area. Additional depth of overexcavation may be necessary where the depth of fill beneath the building area will vary by more than 50 percent (see following paragraph).

5. For building pads in fill where the planned fill depth (including replaced overexcavated material per above) will vary by more than 50 percent, the exposed soil surfaces should be overexcavated as necessary so that the thickness of fill material within the building area will not vary by more than 50 percent. For example, if a building pad is to receive 2 feet of fill at one edge and 10 feet of fill at the opposite edge, the side of the pad to receive 2 feet of fill should be overexcavated so that a minimum of 5 feet of compacted fill is present across the pad.

6. The overexcavation should be observed by the geotechnical engineer prior to continuing grading. If soft soils, buried objects, existing undocumented fill, or other potentially deleterious conditions are observed during overexcavation, additional depth of overexcavation or other remedial measures may be recommended by the geotechnical engineer.

7. The overexcavated surfaces should be cross-scarified to an approximate depth of 8 inches. The soil should then be moisture conditioned to a level above optimum moisture content and recompacted to a minimum of 90 percent of maximum dry density. Cut surfaces to receive improvements should be scarified and recompacted in a similar manner.

8. The previously overexcavated material can be re-used as fill provided that it is cleared of excessive quantities of debris, organics, or other potentially deleterious materials. Fill should be placed in moisture conditioned lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 90 percent of maximum dry density. Large roots, rock, debris, and irreducible material larger than 4 inches in diameter should be removed from the soil prior to compaction.

9. In areas where fill will be placed above a cut slope, the fill should be keyed into the cut. The keyway should extend from approximately 2 feet behind the face of the cut portion of the slope, back into the slope for a minimum distance of 8 feet or 1-½ times the width of the compaction equipment, whichever is wider. The keyway should penetrate a minimum of 3 feet into firm native soil at the front edge of the keyway. The actual configuration and depth of the keyway should be recommended by the geotechnical engineer based on conditions observed at the time of grading.

10. The slope above the keyway, as well as any surfaces steeper than 10 percent to receive fill, should be cut to create benches. The benches should be a minimum of 6 feet wide and should be bottomed into firm native soil. Other slopes steeper than 10 percent to receive fill should be benched in a similar manner.

11. The bottoms of the keyways and benches should be angled 2 to 3 percent back into the slope. The soil at the bottoms of the keyways and benches should be cross-scarified to an approximate depth of 8 inches, moisture conditioned to a level above optimum moisture content, and recompacted. The keying and benching operations should be observed by the geotechnical engineer during grading.

12. Due to the potential that seepage of subsurface water could destabilize the fill, a subsurface drain should be installed in each keyway. The subsurface drain should consist of a minimum 4-inch diameter rigid perforated pipe covered with gravel surrounded by filter fabric, or encased in Caltrans Class 2 permeable material. Alternatively, a pre-fabricated synthetic drain could be utilized. The locations and configuration of the drains should be as recommended by the geotechnical engineer based on conditions observed at the time of grading. The subsurface drain system should be connected to one or more non-perforated pipes that discharge in a non-erosive manner away from slopes, foundations, and other improvements. Depending on the observed conditions, installation of one or more drains in the benches may also be recommended.

13. Fill should be placed in lifts not exceeding 8 inches in loose thickness, moisture conditioned to a level above optimum moisture content, and compacted to a minimum of 90 percent of maximum dry density. Organics and rock, debris, and irreducible material larger than 4 inches in diameter should be removed from the soil to be compacted.

14. If fill is to be imported for general use at the site (other than nonexpansive imported material), the fill should be coarse grained (ASTM D 2487-17) with a plasticity index (ASTM D 4318-17) of 20 or less. Nonexpansive imported material should be placed in areas to receive exterior concrete (refer to Exterior Concrete Flatwork below). Proposed imported soils should be evaluated by the geotechnical engineer before being transported to the site, and on an intermittent basis during placement and compaction on the site.

15. Due to the fine-grained nature of the site soils, and depending on moisture conditions at the time of construction, there is a potential for the soils to become unstable during grading. Unstable soils hinder compactive effort and are inappropriate for placement of additional fill. Alternatives to correct instability include aeration to dry the soils, lime treatment, and the use of gravel or geotextiles as stabilizing measures. Recommendations for stabilization should be provided by a representative of this firm as needed during construction.

16. Cut and fill slopes should not be steeper than 2:1, measured horizontally to vertically.

Foundations

1. The residences should be supported by post-tensioned slab or structural mat foundations designed to resist soil expansion and contraction. Post-tensioned slabs should be designed in accordance with the provisions of the current edition of the California Building Code and the recommendations of the Post-Tensioning Institute. The following design criteria were developed for the post construction case in general accordance with the recommendations contained in the document "Design and Construction of Post-Tensioned Slabs-on-Ground", 3rd Edition published by the Post-Tensioning Institute. The criteria were based on Thornthwaite Moisture Indices ranging from -20 for dry conditions to +10 for irrigated conditions.

Edge Moisture Variation Distance (e_m)	
Center Lift Condition	8.0 feet
Edge Lift Condition	4.4 feet
Estimated Differential Swell (y_m)	
Center Lift Condition	0.9 inches
Edge Lift Condition	2.4 inches

2. For design of structural mat foundations, the effective plasticity index (PI) based on the method presented in Section 1808.6.2 of the California Building Code should be 30. The following design parameters should also pertain for design of structural mat foundations.

Edge cantilever length	8 feet
Interior free span	12 feet

3. Additional design criteria for both post-tensioned slabs and structural mat foundations are as follows:

Allowable Bearing Capacity (dead loads)	1,500 psf
Allowable Bearing Capacity (dead + live loads)	2,000 psf
Allowable Bearing Capacity (DL+LL+ wind or seismic)	2,500 psf
Subgrade Friction Factor (slab against subgrade)	0.25
Modulus of subgrade reaction (K_{30})	20 psi/inch
Total settlement	1 inch
Differential settlement, within 25 feet	½ inch

4. The seismic design parameters for the site per Chapter 16 of the California Building Code (2016 Edition) are as follows. The values were determined utilizing the SEAOC/OSHPD web-based tool and the provisions of ASCE 7-10. The site coordinates were determined using the Google Earth web site.

Site Class = D

Short Term Spectral Acceleration Parameter, S_s = 2.273 g
1 Second Spectral Acceleration Parameter, S_1 = 0.872 g

Site Coefficient, F_a = 1.00
Site Coefficient, F_v = 1.50

Adjusted Spectral Acceleration Parameter, S_{MS} = 2.273 g
Adjusted Spectral Acceleration Parameter, S_{M1} = 1.307 g

Design Spectral Acceleration Parameter, S_{DS} = 1.515 g
Design Spectral Acceleration Parameter, S_{D1} = 0.872 g

5. The building pads should be periodically moisture conditioned as necessary to maintain the soil moisture content at a minimum of 2 percent above optimum to a minimum depth of 12 inches at the time of placement of concrete or vapor retarding membranes. The moisture content of the soil should be tested by the geotechnical engineer prior to placement of the concrete or vapor retarding membranes.

6. In areas where moisture transmitted from the subgrade would be undesirable, a vapor retarder should be utilized beneath the post-tensioned slab foundation. The vapor retarder should comply with ASTM Standard Specification E 1745-17 and the latest recommendations of ACI Committee 302. The vapor retarder should be installed in accordance with ASTM Standard Practice E 1643-18a. Care should be taken to properly lap and seal the vapor retarder, particularly around utilities, and to protect it from damage during construction.

7. If sand, gravel or other permeable material is to be placed over the vapor retarder, the material over the vapor retarder should be only lightly moistened and not saturated prior to casting the slab concrete. Recent studies, including those by ACI Committee 302, have concluded that excess water above the vapor retarder would increase the potential for moisture damage to floor coverings and could increase the potential for mold growth or other microbial contamination. The studies also concluded that it is preferable to eliminate the sand layer and place the slab concrete in direct contact with the vapor retarder, particularly during wet weather construction. However, placing the concrete directly on the vapor retarder would require special attention to using the proper vapor retarder, concrete mix design, and finishing and curing techniques.

8. When concrete slabs are in direct contact with vapor retarders, the concrete water to cement (w/c) ratio should be correctly specified to control bleed water and plastic shrinkage cracking. Also, the concrete could be proportioned to reduce its porosity (and its corresponding potential for transmitting moisture) by limiting the w/c ratio. Concrete materials, placement and curing methods should be specified by the design professional.

9. To further protect moisture-sensitive floor coverings, the perimeters of the post-tensioned slabs and structural mat foundations should be deepened to penetrate a minimum of 6 inches into the subgrade soil.

10. The post-tensioned slabs and structural mat foundations should be constructed and maintained in accordance with the publication *Construction and Maintenance Manual for Post-tensioned Slab-on-Ground Foundations* by the Post-Tensioning Institute. Particular attention should be paid to the "Property Owner Maintenance" and "Landscaping" sections of the Manual.

Exterior Flatwork

1. Exterior concrete flatwork should have a minimum thickness of 4 full inches and should be reinforced as directed by the architect/engineer. Due to the soil expansion potential, exterior flatwork should be cast on a minimum 8-inch layer of compacted, nonexpansive material such as clean sand or aggregate base. However, a greater thickness of nonexpansive material would enhance flatwork performance. Prior to placement of the nonexpansive material, the soil surface in the flatwork area should be at or above optimum moisture content, and no desiccation cracks should be present.

2. Exterior flatwork adjacent to the structure should be designed to be independent of the post-tensioned slab or structural mat foundation. The flatwork should not be doweled to foundations, and a separator should be placed between the two.

3. Prior to placement of the concrete, the nonexpansive material in the flatwork area should moistened, and no desiccation cracks should be present.

4. To reduce shrinkage cracks in concrete, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, contraction joints should be installed, and the concrete should be properly cured. Concrete materials, placement and curing specifications should be at the direction of the architect/engineer.

Retaining Walls

1. Retaining walls should be supported by conventional spread footings. The footings should have minimum depths of 30 inches below lowest adjacent grade and should bear in firm native soil or compacted engineered fill. The footing reinforcement should be specified by the design engineer. The footing excavations should be observed by the geotechnical

engineer to verify penetration into firm native material prior to placement of formwork and should be moisture conditioned to close any desiccation cracks prior to concrete placement.

2. Footings should be designed using a maximum allowable bearing capacity of 2,500 psf dead plus live load. This value may be increased by one-third when transient loads such as wind or seismicity are included. Using these criteria, long term total and differential foundation settlements are expected to be on the order of ½ inch.

3. Resistance to lateral loads should be calculated based on a passive equivalent fluid pressure of 250 pcf and a friction factor of 0.25. Passive and frictional resistance can be combined in the calculations without reductions. These values are based on the assumption that backfill adjacent to foundations is adequately compacted.

4. Lateral earth pressures for wall design should be based on the following parameters.

   Active equivalent fluid pressure (horizontal backfill) ....60 pcf
   At-rest equivalent fluid pressure (horizontal backfill) ....75 pcf
   Active equivalent fluid pressure (sloping backfill) ....85 pcf
   At-rest equivalent fluid pressure (sloping backfill) ....110 pcf

5. If seismic forces are to be considered in the retaining wall design, the seismic increment of earth pressure should be 10H pounds per square foot, where H is the height of the retained soil. The seismic pressure should be applied uniformly on the back of the wall along the height of the retained material.

6. Retaining wall backfill should be fully drained utilizing either a free draining gravel blanket, permeable material, or a manufactured synthetic drainage system. Water from the drainage medium should be collected and discharged via either a rigid perforated pipe or weep holes. Collection pipes should be placed perforations downward near the bottom of the drainage medium and should discharge in a nonerosive manner away from foundations, slopes, and other improvements. Drainage medium consisting of a gravel blanket or permeable material should have a width of approximately 1 foot and should extend upward to within 1 foot of the top of the wall backfill. The upper foot of backfill

over the drainage medium should consist of native soil to reduce the flow of surface drainage into the wall drain system. Gravel blankets should be separated from the backfill soil using a permeable synthetic fabric conforming to Caltrans Standard Specifications, Section 88-1.02B, Class A. Permeable material should conform to Section 68-2.02F(3), Class 2, of the Caltrans Standard Specifications. Manufactured synthetic drains such as Miradrain or Enkadrain should be installed in accordance with the recommendations of the manufacturer.

7. Water from the drainage medium can be drained using weep holes, provided that seepage at the base of the wall is acceptable. The weep holes should consist of minimum 1-½ inch diameter holes at 10-foot maximum spacings. The weep holes should be placed as low as possible on the wall. Corrosion-resistant screens or filter fabric should be placed behind the weep holes to reduce the chance of the drainage medium from washing out from behind the wall.

8. Retaining wall backfill should be placed in thin, moisture conditioned, lifts, compacted to a minimum 90 percent of maximum dry density, as tested by the geotechnical engineer.

9. The architect/engineer should bear in mind that retaining walls by their nature are flexible structures, and this flexibility can result in cracking of surface coatings. Where walls are to be plastered or will otherwise have a finish surface applied, this flexibility should be considered in determining the suitability of the surfacing material, spacing of horizontal and vertical joints, connections to structures, etc.

10. Long-term settlement of properly compacted sand or gravel retaining wall backfill should be assumed to be about ¼ percent of the depth of the backfill. Long-term settlement of properly compacted clayey retaining wall backfill should be assumed to be about ½ to 1 percent of the depth of the backfill. Improvements constructed near the tops of retaining walls should be designed to accommodate the estimated settlement.

<u>Pavement Sections</u>

1. Three R-value tests performed on samples of the upper clay soils from the site resulted in R-values of 10 and less than 5. The following pavement sections were based on the lower

R-value. The asphalt concrete (AC) sections were designed in accordance with the Caltrans Highway Design Method for Traffic Indices (TIs) of 4.0 through 8.0. Determination of the appropriate TI for each area to be paved is the province of the design engineer. The calculated base and AC thicknesses are for compacted material. Normal Caltrans construction tolerances should apply. The aggregate base should conform to Caltrans Class 2.

R-value	Traffic Index	AC Thickness	Class 2 Base Thickness
<5	4.0	2.5”	8”
<5	4.5	2.5”	10”
<5	5.0	3.0”	10”
<5	5.5	3.0”	12”
<5	6.0	3.5”	13”
<5	6.5	3.5”	15”
<5	7.0	4.0”	16”
<5	7.5	4.5”	17”
<5	8.0	4.5”	19”

2. The upper 12 inches of subgrade soil in areas to receive public street improvements should be compacted to a minimum 95 percent of maximum dry density. In private driveway and parking areas, the upper 8 inches of subgrade soil should be compacted to a minimum 92 percent of maximum dry density.

3. The aggregate base courses should be compacted to a minimum 95 percent of maximum dry density. The subgrade and base should be firm and unyielding when proofrolled with heavy, rubber-tired equipment prior to paving. The pavement subgrade soils should be periodically moistened as necessary prior to placement of the aggregate base to maintain the soil moisture content near optimum.

4. As an alternative to conventional pavement sections using aggregate base courses, the subgrade soil can be chemically treated with quicklime and/or Portland cement, and the aggregate base can be eliminated. Recommendations for chemical treatment of the

subgrade soil, if desired, should be provided by the geotechnical engineer based on the conditions observed at the time of construction.

5. To provide stability for curbs, they should be set back a minimum of 3 feet from the tops of slopes. Foundations may be provided to increase curb stability, particularly atop slopes.

6. Pavement longevity will be enhanced if the surface grade drains away from the edges of the pavement. Finished AC surfaces should slope toward drainage facilities at 2 percent where practicable, but in no case should water be allowed to pond.

7. Cutoff walls below curbs and around landscape islands may be used to extend the life of the pavement by reducing irrigation water and runoff that seeps into the aggregate base. Where utilized, cutoff walls should extend through the aggregate base to penetrate a minimum of 3 inches into the subgrade soils.

8. To reduce migration of surface drainage into the subgrade, maintenance of the paved areas is critical. Any cracks that develop in the AC should be promptly sealed.

Utility Trenches

1. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utility pipes. The site soils may be used for trench backfill above the select material. However, if obtaining compaction is difficult with the site soils, use of a more easily compacted sand may be desirable. The upper foot of backfill in unimproved areas should consist of native material to reduce the potential for seepage of water into the backfill.

2. In private driveway and parking areas, the upper 8 inches of trench backfill should be compacted to a minimum 92 percent of maximum dry density. Trench backfill in other areas should be compacted to a minimum of 90 percent of maximum dry density. For public street improvements, the trench backfill materials and compaction should be in accordance with County of San Benito standards. Jetting of utility trench backfill should not be allowed.

3. Where utility trenches extend under perimeter foundations, exterior flatwork, or pavement the trenches should be backfilled entirely with compacted native soil. The zone of native soil should extend to a minimum distance of 2 feet on both sides of the foundation, flatwork, or pavement edges. If utility pipes pass through sleeves cast into the perimeter foundations, the annulus between the pipes and sleeves should be sealed.

Site Drainage and Finish Improvements

1. Unpaved ground surfaces should be finish graded to direct surface runoff away from site improvements at a minimum 5 percent grade for a minimum distance of 10 feet. The site should be similarly sloped to drain away from improvements during construction. If this is not practicable due to the terrain, property lines, or other site features, swales with improved surfaces or other drainage facilities should be provided to divert runoff from those areas. The landscape should be planned and installed to maintain proper surface drainage conditions.

2. Raised planter beds adjacent to foundations should be provided with sealed sides and bottoms so that irrigation water is not allowed to penetrate the subsurface beneath foundations. Outlets should be provided in the planters to direct accumulated irrigation water away from foundations.

3. Runoff should discharge in a non-erosive manner away from foundations, exterior flatwork, pavement, and other improvements in accordance with the requirements of the governing jurisdiction.

4. Stabilization of surface soils, particularly those disturbed during construction, by vegetation or other means during and following construction is essential to protect the site from erosion damage. Care should be taken to establish and maintain vegetation.

5. Due to the soil expansion potential, open areas adjacent to foundations, exterior flatwork, and other improvements should be irrigated or otherwise maintained so that constant moisture conditions are created throughout the year. Irrigation systems should be controlled to the minimum levels that will sustain the vegetation without saturating the soil.

Geotechnical Observation and Testing

1. It must be recognized that the recommendations contained in this report are based on a limited subsurface investigation and rely on continuity of the subsurface conditions encountered.

2. It is assumed that the geotechnical engineer will be retained to provide consultation during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

3. Unless otherwise stated, the terms "compacted" and "recompacted" refer to soils placed in level lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 90 percent of maximum dry density. The standard tests used to define maximum dry density and field density should be ASTM D 1557-12 and ASTM D 6938-17, respectively, or other methods acceptable to the geotechnical engineer and jurisdiction.

4. Unless otherwise stated, “moisture conditioning” refers to adjusting the soil moisture to at least optimum moisture prior to application of compactive effort.

5. At a minimum, the following should be provided by the geotechnical engineer:

   - Review of grading and foundation plans as they near completion
   - Professional observation during site preparation, grading, and foundation construction
   - Oversight of soil compaction testing during grading
   - Oversight of soils special inspection during grading

6. Special inspection of grading should be provided as per Section 1705.6 and Table 1705.6 of the CBC; the soils special inspector should be under the direction of the geotechnical engineer. In our opinion, the following operations should be subject to *continuous* soils special inspection:

   - Slope keying and benching
   - Overexcavation to the recommended depths
   - Scarification and recompaction
   - Fill placement and compaction

7. In our opinion, the following operations may be subject to *periodic* soils special inspection; subject to approval by the Building Official:

    - Site preparation
    - Proposed imported materials
    - Compaction of utility trench backfill
    - Compaction of pavement subgrade and aggregate base
    - Compaction retaining wall backfill
    - Building pad moisture conditioning

8. It will be necessary to develop a program of quality control prior to beginning grading. It is the responsibility of the owner, contractor, or project manager to determine any additional inspection items required by the architect/engineer or the governing jurisdiction.

9. The locations and frequencies of compaction tests should be as per the recommendations of the geotechnical engineer at the time of construction. The recommended test locations and frequencies may be subject to modification by the geotechnical engineer based upon soil and moisture conditions encountered, the size and type of equipment used by the contractor, the general trend of the compaction test results, and other factors.

10. A preconstruction conference among a representative of the owner, the geotechnical engineer, the soils special inspector, the architect/engineer, and contractors is recommended to discuss planned construction procedures and quality control requirements. The geotechnical engineer should be notified at least 48 hours prior to beginning grading operations.

Closure

This report is valid for conditions as they exist at this time for the type of project described herein. Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client for the subject project. Application beyond the stated intent is strictly at the user's risk.

If changes with respect to the project type or location become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions stated in this report are not correct, the geotechnical engineer should be notified for modifications to this report. Any items not specifically addressed in this report should comply with the California Building Code and the requirements of the governing jurisdiction.

The preliminary recommendations of this report are based upon the geotechnical conditions encountered during the investigation, and may be augmented by additional requirements of the architect/engineer, or by additional recommendations provided by the geotechnical engineer based on conditions exposed at the time of construction.

If Earth Systems Pacific is not retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising there from.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Pacific. This report shall be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Pacific, the client, and his authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems Pacific.

Thank you for this opportunity to have been of service. Please do not hesitate to contact this office if you have any questions regarding this report.

Sincerely,

Earth Systems Pacific

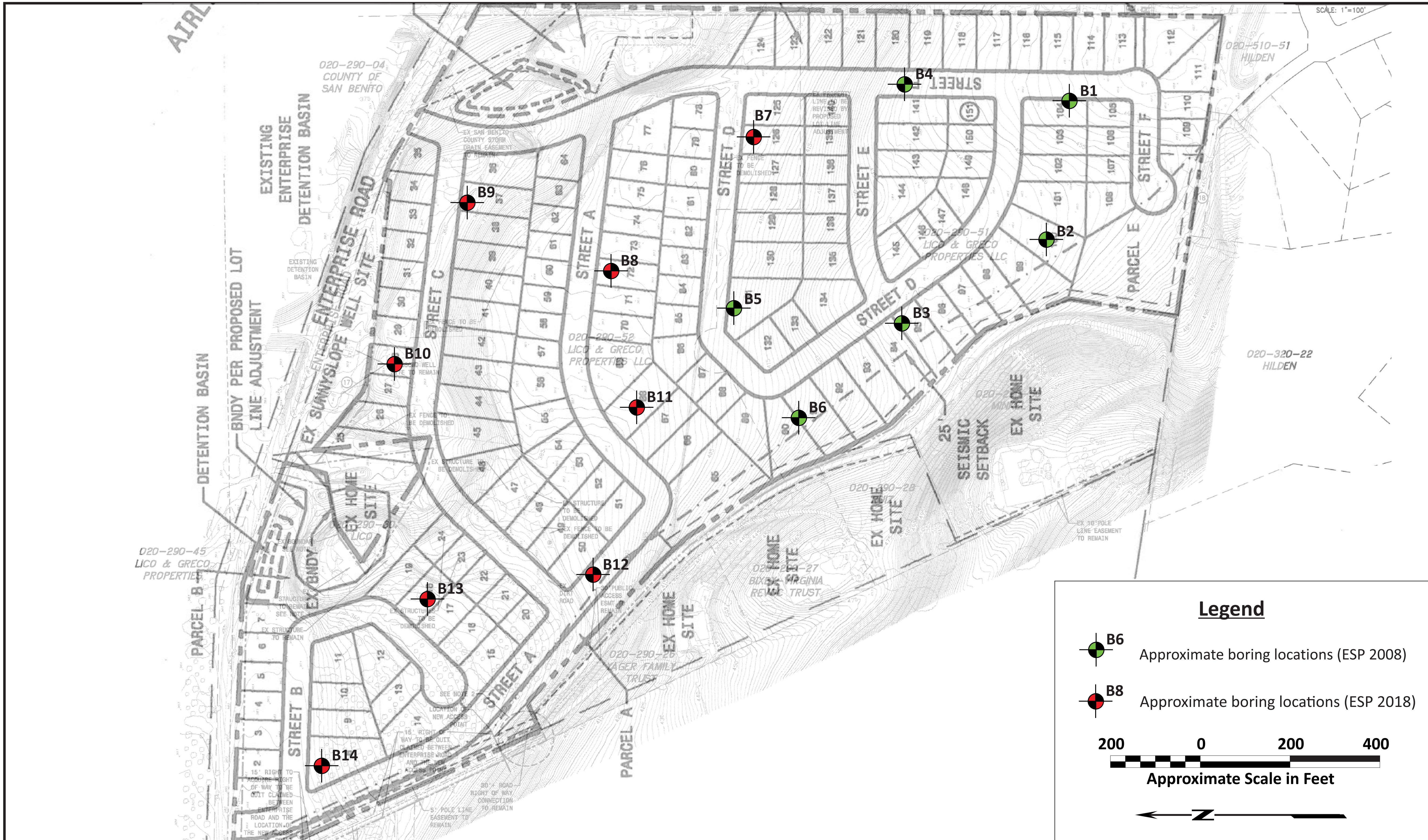
REGISTERED PROFESSIONAL ENGINEER
GEORGE J. BARNETT
GE2309
GEOTECHNICAL
STATE OF CALIFORNIA

George J. Barnett
Geotechnical Engineer

Phillip Penrose
Staff Engineer

Attachments: Boring Location Map
Boring Logs
Laboratory Test Results

Doc. No.: 1905-031.SER/ev



Earth Systems **Pacific**

Lico Property Development
Enterprise Road (APNs 020-290-051 & -052)
Hollister, California

Boring Location Map

302615-001

Earth Systems Pacific

Boring No. 1

LOGGED BY: B. Faust
DRILL RIG: B-40
AUGER TYPE: 8" Hollow Stem

JOB NO.: SH-10127-SC
DATE: 09/08/08

LICO RESIDENTIAL DEVELOPMENT
Enterprise Road ~ APN 020-290-029
Hollister, San Benito County, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.
0	SC	Yellow brown CLAYEY SAND, slightly moist, medium dense; disked					
1	CL/CH	Yellow brown SANDY LEAN to FAT CLAY, moist, hard, fine to medium sand	1.0–5.0	Bulk Sample			
2			2.0–2.5	Ring Sample	118.2	13.5	71
4			4.0–4.5	Ring Sample	118.3	10.7	50/2"
6	GM	Dark yellow brown SILTY GRAVEL with sand, moist, dense					
8.5			8.5–10.0	SPT			34
13.5			13.5–15.0	SPT			40
15		End of Boring @ 15.0' No subsurface water encountered					

LEGEND: Ring Sample; Bulk Sample; Shelby Tube Sample; SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

LOGGED BY: B. Faust
DRILL RIG: B-40
AUGER TYPE: 8" Hollow Stem

Boring No. 2

JOB NO.: SH-10127-SC
DATE: 09/08/08

LICO RESIDENTIAL DEVELOPMENT
Enterprise Road ~ APN 020-290-029
Hollister, San Benito County, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.
0–1	SC		Yellow CLAYEY SAND					
1–5.5	CL/CH		Olive to yellow brown SANDY LEAN to FAT CLAY, moist, hard, fine to medium sand	2.0–2.5	Ring Sample	112.4	14.1	37
				4.5–5.0	Ring Sample	122.8	13.4	68
5.5–14.2	SC		Light yellow brown CLAYEY SAND, moist, medium dense, mostly medium sand	8.5–10.0	SPT			21
			–some gravel					
				13.5–15.0	SPT			30
14.2–20	CL		Olive SANDY LEAN CLAY, moist, hard, mostly fine sand	18.5–20.0	SPT			31
20			End of Boring @ 20.0' No subsurface water encountered					

LEGEND: Ring Sample ◯ Bulk Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 3

LOGGED BY: B. Faust
DRILL RIG: B-40
AUGER TYPE: 8" Hollow Stem

JOB NO.: SH-10127-SC
DATE: 09/08/08

LICO RESIDENTIAL DEVELOPMENT
Enterprise Road ~ APN 020-290-029
Hollister, San Benito County, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.
0–1	SC		Dark yellow brown CLAYEY SAND, slightly moist, medium dense; disked					
1–5	CL/CH		Yellow brown SANDY LEAN to FAT CLAY, moist, hard, fine to medium sand	2.0–2.5	■	110.3	8.9	73
			–less plastic	4.0–4.5	■	132.7	11.7	50/6"
5–9	GC		Dark yellow brown CLAYEY GRAVEL with sand, moist, dense, mostly fine gravel	8.5–10.0	●			22
9–13	SM		Light yellow brown SILTY SAND, moist, medium dense					
13–15	CL		Olive to yellow brown LEAN CLAY, moist, very stiff	13.5–15.0	●			21
15			End of Boring @ 15.0' No subsurface water encountered					

LEGEND: ■ Ring Sample ○ Bulk Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

LOGGED BY: B. Faust
DRILL RIG: B-40
AUGER TYPE: 8" Hollow Stem

JOB NO.: SH-10127-SC
DATE: 09/08/08

LICO RESIDENTIAL DEVELOPMENT
Enterprise Road ~ APN 020-290-029
Hollister, San Benito County, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.
0	SC		Yellow brown CLAYEY SAND, slightly moist, medium dense; disked					
1	CL		Yellow brown SANDY LEAN CLAY, moist, hard	1.5–2.0	Ring Sample	124.0	11.3	50/6"
2	SC		Yellow brown CLAYEY SAND with gravel, moist, very dense, mostly fine to medium sand, fine gravel					
4.5				4.5–5.0	Ring Sample	113.8	3.7	83
8.5				8.5–10.0	SPT			53
9	SM		Yellow brown SILTY SAND with gravel, moist, very dense, mostly medium sand, fine to coarse gravel					
13.5				13.5–14.5	SPT			50/4"
14.5			End of Boring @ 14.5' No subsurface water encountered					

Depth scale: 0 to 26 feet.

LEGEND: Ring Sample ◯ Bulk Sample ☐ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

LOGGED BY: B. Faust
DRILL RIG: B-40
AUGER TYPE: 8" Hollow Stem

Boring No. 5

JOB NO.: SH-10127-SC
DATE: 09/08/08

LICO RESIDENTIAL DEVELOPMENT
Enterprise Road ~ APN 020-290-029
Hollister, San Benito County, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.
0	SC		Yellow brown CLAYEY SAND, slightly moist, medium dense; disked	0.0–3.0	Bulk Sample			
1.5			–very dense					
2.5				2.5–3.0	Ring Sample	129.2	11.2	76
4.0			–orange brown	4.0–4.5	Ring Sample	122.3	9.3	50/5"
6	SM		Yellow SILTY SAND, moist, medium dense, fine to medium sand					
8.5				8.5–10.0	SPT			16
13.5				13.5–15.0	SPT			71
13.5	GC		Yellow brown CLAYEY GRAVEL with sand, moist, very dense, fine gravel					
15			End of Boring @ 15.0' No subsurface water encountered					

LEGEND: Ring Sample, Bulk Sample, Shelby Tube Sample, SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

LOGGED BY: B. Faust
DRILL RIG: B-40
AUGER TYPE: 8" Hollow Stem

Boring No. 6

JOB NO.: SH-10127-SC
DATE: 09/08/08

LICO RESIDENTIAL DEVELOPMENT
Enterprise Road ~ APN 020-290-029
Hollister, San Benito County, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.
0–7.5	CL–ML		Dark yellow brown SILTY CLAY with sand, moist, hard, mostly fine sand	0.0–3.0	Bulk Sample			
				1.5–2.0	Ring Sample	112.8	5.3	50/6"
			–more clayey	4.0–4.5	Ring Sample	116.4	12.0	50/6"
7.5–12	SM		Yellow brown SILTY SAND, moist, medium dense, fine to medium sand	8.5–10.0	SPT			13
12–15	GM		Yellow brown SILTY GRAVEL with sand, moist, dense, fine to coarse gravel	13.5–15.0	SPT			50
15			End of Boring @ 15.0' No subsurface water encountered					

LEGEND: Ring Sample; Bulk Sample; Shelby Tube Sample; SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

B□r□ng N□. □

LOGGED BY: D. Te□□ □□r□n

DRILL RIG: M□□□e B□□3 Red

AUGER TYPE: 8" H□□□w S□e□

PAGE 1 OF 1

FILE NO.: 30261□□001

DATE: 11□1□18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (□ee□)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (□ee□)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (□□□□)	MOISTURE (□□ □)	BLOWS PER 6 IN.	POC□ET PEN (□□.□□)
0	CL		SANDY LEAN CLAY; very stiff, brown, moist, fine sand							
2				0.0-4.0	Bag A	○				
2–3				1.5-3.0	7-1	▬		7.9	9 18 23	
4–5			-hard, dark yellow brown	3.5-5.0	7-2	▬	100.7	19.5	17 26 30	
9–10			- layer of well graded sand with clay approximately 6-inches thick	8.5-10.0	7-3	▬			29 26 35	
13	SC		CLAYEY SAND; very dense, gray brown, moist, fine to coarse sand, few fine greavel							
14–15				13.5-15.0	7-4	●			33 40 45	
15			Bottom of boring at 15' Groundwater not encountered							

Depth scale: 0 – 26

LEGEND: ▬ 2.□" M□d C□□S□□ □e ○ Bu□□S□□ □e ▭ 2.0" M□d C□□S□□ □e ● SPT ▼ Gr□undw□□er

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

B□r□ng N□. 8
PAGE 1 OF 1

LOGGED BY: D. Te□□ □□r□n
DRILL RIG: M□□□e B□□3 Red
AUGER TYPE: 8" H□□□w S□e□

FILE NO.: 30261□□001
DATE: 11□1□18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (□ee□)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (□ee□)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (□□□□)	MOISTURE (□□ □)	BLOWS PER 6 IN.	POC□ET PEN (□□□□)
0	CL		SANDY LEAN CLAY; hard, brown, moist, fine sand							
2			[LL=27, PI=11]	0.0-3.5	Bag B	Bulk			21	
3				1.5-3.0	8-1	2.□" Mod	121.5	13.8	30 47	
4			-dark yellow brown						18 25	
5				3.5-5.0	8-2	2.□" Mod	114.8	13.7	50/4"	
8	SC		CLAYEY SAND; very dense, gray brown, moist, fine to coarse sand, few fine gravel							
10				8.5-10.0	8-3	SPT			33 37 43	
11				8.0-12.0	Bag C	Bulk				
15				13.5-15.0	8-4	SPT			26 33 46	
15			Bottom of boring at 15' Groundwater not encountered							

LEGEND: 2.□" M□d C□□S□□ □e Bu□□S□□ □e 2.0" M□d C□□S□□ □e SPT Gr□undw□□er

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

B□r□ng N□. 9

PAGE 1 OF 1

LOGGED BY: D. Te□□ □□r□n
DRILL RIG: M□□□e B□□3 Red
AUGER TYPE: 8" H□□□w S□e□

FILE NO.: 30261□□001
DATE: 11□1□18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (□ee□)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (□ee□)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (□□□□)	MOISTURE (□□ □)	BLOWS PER 6 IN.	POC□ET PEN (□□□□)
0	SC		CLAYEY SAND; very dense, dark brown, moist, fine to medium sand, trace fine gravel							
2			[LL=27, PI=11]	0.0-4.0	Bag D	○			19 26 50/6"	
3				1.5-3.0	9-1	▬	102.9	5.1		
4			-dense, few fine to coarse gravel						30 26 23	
5				3.5-5.0	9-2	▬	111.9	14.1		
7	CL		SANDY LEAN CLAY; hard, dark yellow brown, moist, mostly fine sand							
10				8.5-10.0	9-3	●			13 26 31	
14			- caliche cemented in shoe	13.5-14.5	9-4	●			26 50/5"	
15			Bottom of boring at 14.5' Groundwater not encountered							

LEGEND: ▬ 2.□" M□d C□□S□□□e ○ Bu□□S□□□e ▭ 2.0" M□d C□□S□□□e ● SPT Gr□undw□□er

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 10

PAGE 1 OF 1

LOGGED BY: D. Te[illegible]

DRILL RIG: Mobile B-53 Red

AUGER TYPE: 8" Hollow Stem

FILE NO.: 30261[illegible]001

DATE: 11[illegible]1[illegible]18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (tsf)
0	CL		SANDY LEAN CLAY; very stiff, brown, moist, few fine to medium sand							
1.5-3.0				1.5-3.0	10-1	■	102.9	5.1	10 16 25	
3.5-4.5			-hard, dark brown, fine to coarse sand, few fine gravel, cobble fragment in shoe	3.5-4.5	10-2	■	102.9	5.1	23 50/6"	
6			- caliche cemented in shoe							
7			Bottom of boring at 7' due to auger and sampler refusal Groundwater not encountered							

LEGEND: ■ 2.5" Mod Cal Sample ○ Bulk Sample □ 2.0" Mod Cal Sample ● SPT Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 11

LOGGED BY: D. Te[illegible]

DRILL RIG: Mobile B-53 Red

AUGER TYPE: 8" Hollow Stem

PAGE 1 OF 1

FILE NO.: 30261-001

DATE: 11/1/18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY	MOISTURE	BLOWS PER 6 IN.	POCKET PEN
0	SC		CLAYEY SAND with GRAVEL; dense, dark yellow brown, moist, fine to coarse sand, fine to coarse gravel							
1.5-3.0				1.5-3.0	11-1	2.5" Mod Cal Sample			13 34 40	
3.5-4.5			-very dense, fine gravel	3.5-4.5	11-2	2.5" Mod Cal Sample			30 50/6''	
8.5-10.0				8.5-10.0	11-3	SPT			16 19 31	
13.5-14.5				13.5-14.5	11-4	SPT			30 50/3''	
14.5			Bottom of boring at 14.5' Groundwater not encountered							

LEGEND: ■ 2.5" Mod Cal Sample ○ Bulk Sample □ 2.0" Mod Cal Sample ● SPT Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 12

LOGGED BY: D. [illegible]
DRILL RIG: [illegible] 3 Red
AUGER TYPE: 8" Hollow Stem

FILE NO.: 30261[illegible]001
DATE: 11[illegible]18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY	MOISTURE	BLOWS PER 6 IN.	POCKET PEN
0	CL		SANDY LEAN CLAY; very stiff, brown, moist, fine sand							
1.5–3				1.5-3.0	12-1	▬			14 15 23	
3.5–4.5			-caliche cemented, hard	3.5-4.5	12-2	▬	102.6	5.6	37 50/5"	
8.5–9				8.5-9.0	12-3	●		7.1	50/5.5"	
13.5–14.5				13.5-14.5	12-4	●			32 50/5"	
15			Bottom of boring at 14.5' Groundwater not encountered							

Depth scale: 0 – 26 feet

LEGEND: ▬ 2.[illegible]" Mod Cal Sample ○ Bulk Sample ▭ 2.0" Mod Cal Sample ● SPT ▽ Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 13

PAGE 1 OF 1

LOGGED BY: D. Te[illegible]
DRILL RIG: Mobile B-53 Red
AUGER TYPE: 8" Hollow Stem

FILE NO.: 30261[illegible]001
DATE: 11[illegible]1[illegible]18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (tsf)
0	CL		SANDY LEAN CLAY; very stiff, brown, moist, fine to medium sand							
2–3			[LL=27, PI=13]	1.5-3.0	13-1	▬			13 13 13	
4–5			-dark yellow brown, mostly fine sand	3.5-5.0	13-2	▬	109.0	11.6	11 27 23	
6			-hard							
9–10				8.5-10.0	13-3	●			30 40 50/5"	
13	SP-SC		Poorly-graded SAND with CLAY; dense, gray brown, moist, fine to medium sand							
14–15				13.5-15.0	13-4	●			18 22 24	
15			Bottom of boring at 15' Groundwater not encountered							

LEGEND: ▬ 2.5" Mod Cal Sample ○ Bulk Sample ▭ 2.0" Mod Cal Sample ● SPT Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

B□r□ng N□. 1□

LOGGED BY: D. Te□□ □□r□n
DRILL RIG: M□□□e B□□3 Red
AUGER TYPE: 8" H□□□w S□e□

PAGE 1 OF 1
FILE NO.: 30261□□001
DATE: 11□1□18

Lico Property Development
Enterprise Road, APNs 020-290-051 & 052
Hollister, California

DEPTH (□ee□)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	INTERVAL (□ee□)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (□□□□)	MOISTURE (□□ □)	BLOWS PER 6 IN.	POC□ET PEN (□□□□)
0	CL		SANDY LEAN CLAY with GRAVEL; very stiff, dark brown, moist, fine to coarse sand, fine gravel							
1.5-3.0				1.5-3.0	14-1	■			8 17 22	
3.5-5.0				3.5-5.0	14-2	●			16 17 14	
8	SC		CLAYEY SAND; medium dense, dark yellow brown, moist, mostly fine sand							
8.5-10.0				8.5-10.0	14-3	●			4 5 6	
11	SP-SC		Poorly-graded SAND with CLAY; dense, dark yellow brown to gray brown, moist, fine sand							
13.5-15.0				13.5-15.0	14-4	●			14 18 26	
15			Bottom of boring at 15' Groundwater not encountered							

Depth scale: 0 - 26 feet

LEGEND: ■ 2.□" M□d C□□S□□□e ○ Bu□□S□□□e ▭ 2.0" M□d C□□S□□□e ● SPT Gr□undw□□er NR = No Recovery

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

BULK DENSITY TEST RESULTS

ASTM D 2937-04 (modified for ring liners)

October, 2008

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
B-1	2.0 - 2.5	13.5	134.1	118.2
B-1	4.0 - 4.5	10.7	131.0	118.3
B-2	2.0 - 2.5	14.1	128.2	112.4
B-2	4.5 - 5.0	13.4	139.3	122.8
B-3	2.0 - 2.5	8.9	120.1	110.3
B-3	4.0 - 4.5	11.7	148.2	132.7
B-4	1.5 - 2.0	11.3	138.0	124.0
B-4	4.5 - 5.0	3.7	118.1	113.8
B-5	2.5 - 3.0	11.2	143.7	129.2
B-5	4.0 - 4.5	9.3	133.7	122.3
B-6	1.5 - 2.0	5.3	118.8	112.8
B-6	4.0 - 4.5	12.0	130.3	116.4

Lico Residential Development

File No. SH-10127-SC

PARTICLE SIZE ANALYSIS

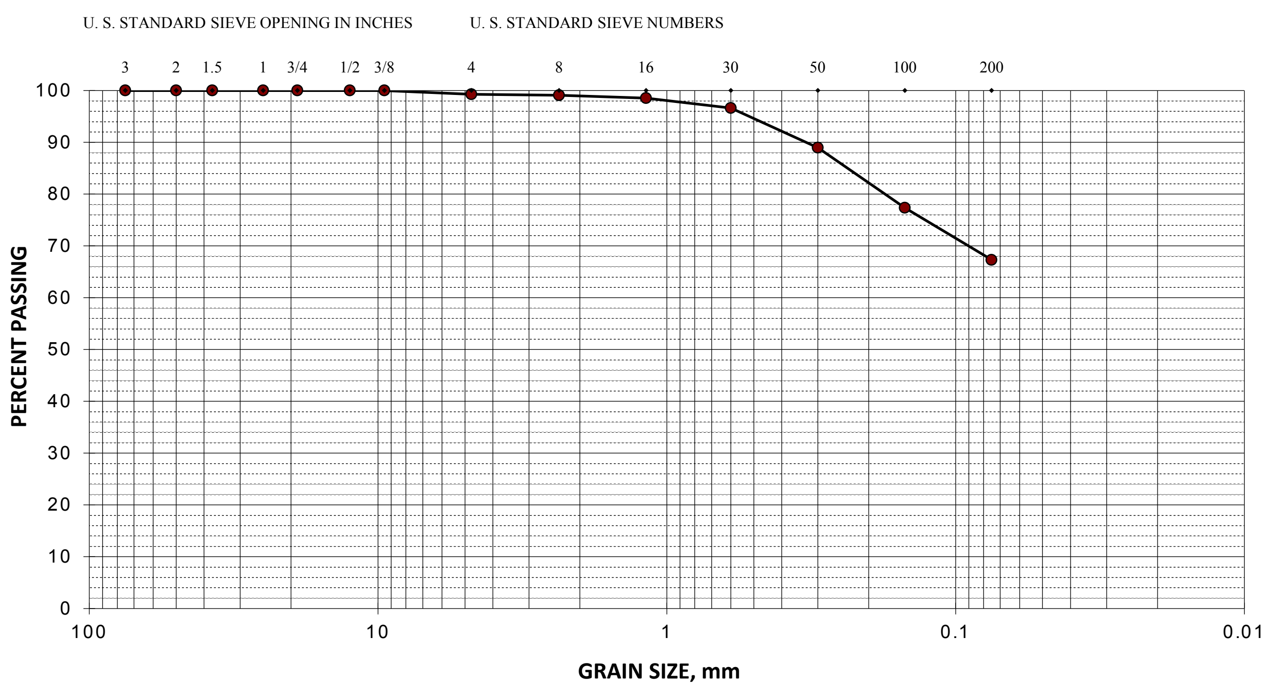
ASTM D 422-07; D 1140-06

Boring #1 @ 2.0 - 2.5'

October, 2008

Sandy Lean Clay to Fat Clay (CL/CH)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	1	99
#8 (2.36-mm)	1	99
#16 (1.18-mm)	1	99
#30 (600-µm)	3	97
#50 (300-µm)	11	89
#100 (150-µm)	23	77
#200 (75-µm)	33	67



Lico Residential Development

File No. SH-10715-SB

PARTICLE SIZE ANALYSIS

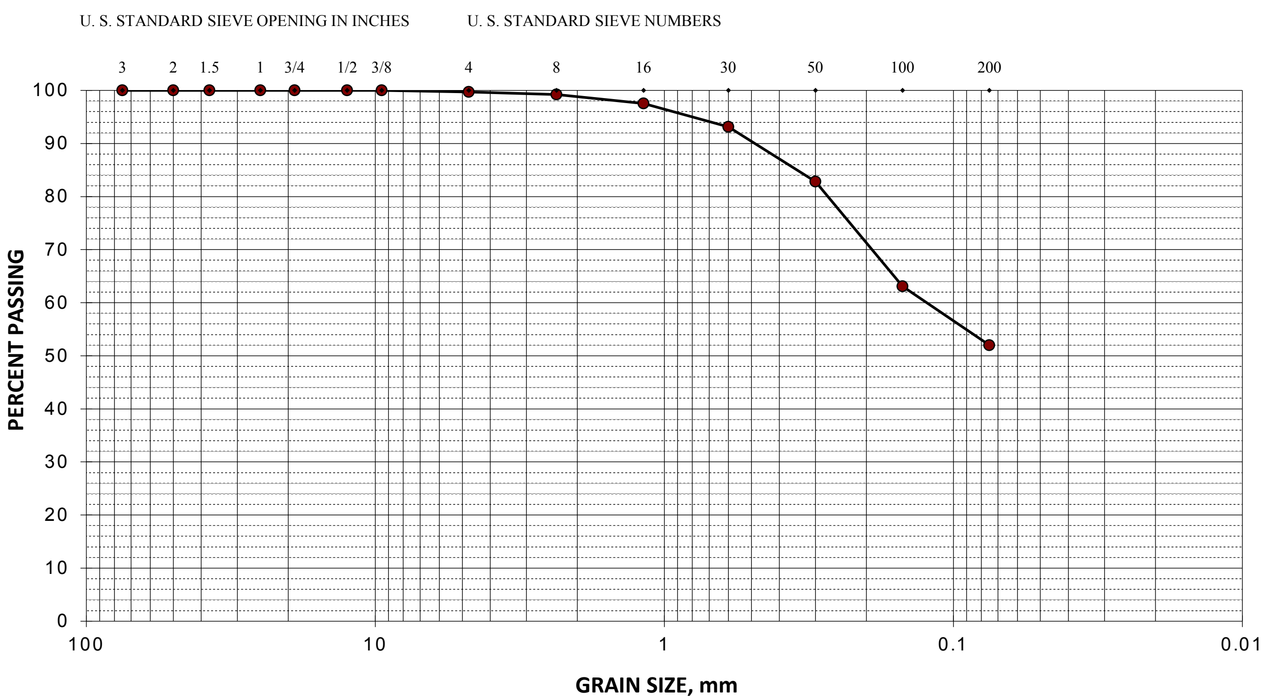
ASTM D 422-07; D 1140-06

Boring #2 @ 2.0 - 2.5'

October, 2008

Sandy Lean to Fat Clay (CL/CH)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	1	99
#16 (1.18-mm)	2	98
#30 (600-µm)	7	93
#50 (300-µm)	17	83
#100 (150-µm)	37	63
#200 (75-µm)	48	52



Lico Residential Development File No. SH-10715-SB

PARTICLE SIZE ANALYSIS

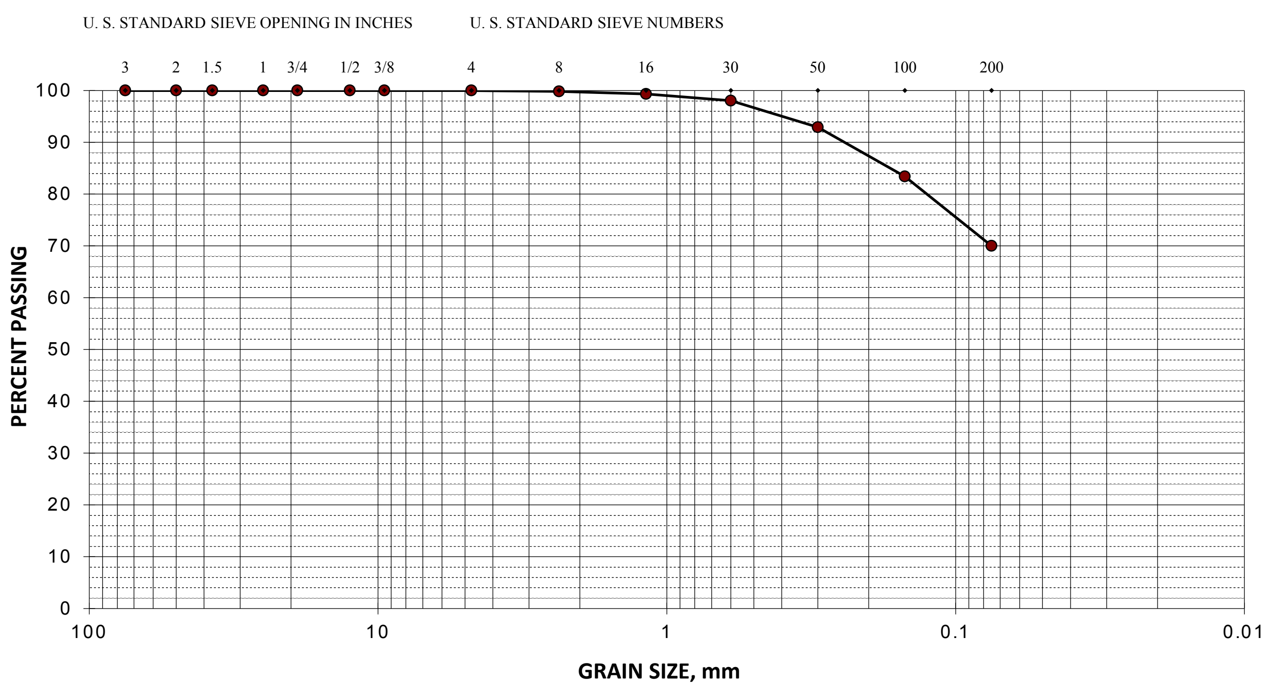
ASTM D 422-07; D 1140-06

Boring #3 @ 2.0 - 2.5'

October, 2008

Sandy Lean to Fat Clay (CL/CH)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	1	99
#30 (600-µm)	2	98
#50 (300-µm)	7	93
#100 (150-µm)	17	83
#200 (75-µm)	30	70



Lico Residential Development File No. SH-10715-SB

PARTICLE SIZE ANALYSIS

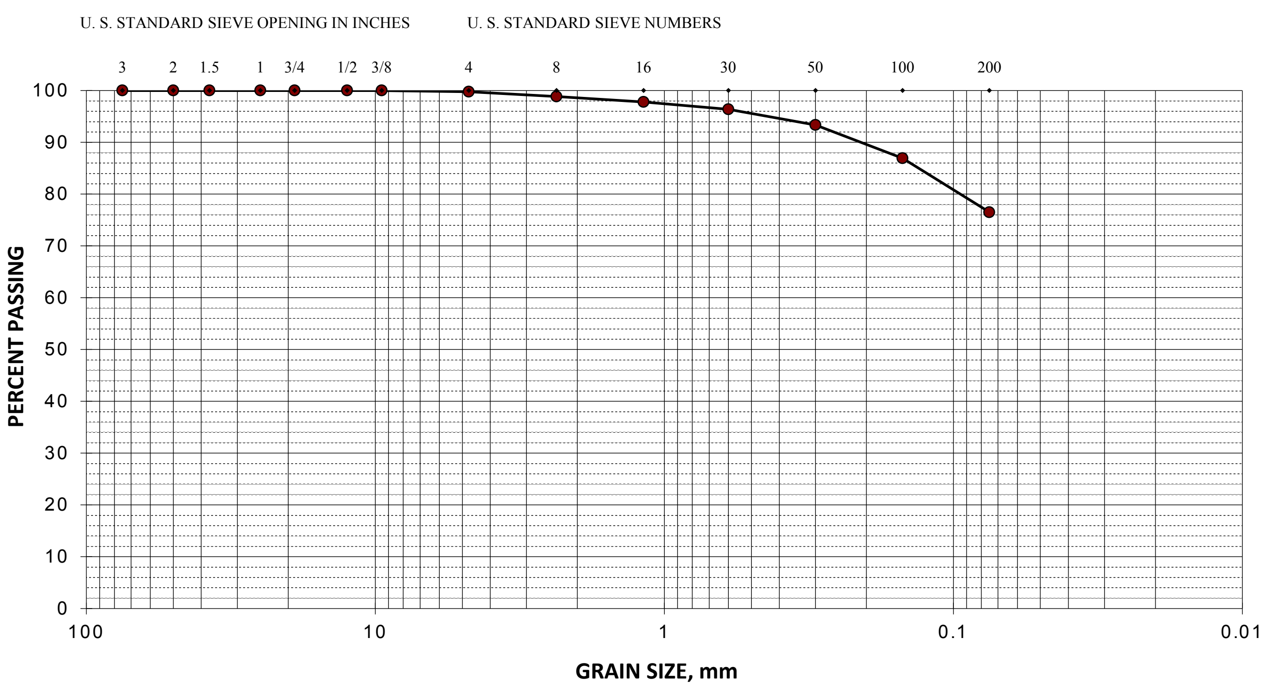
ASTM D 422-07; D 1140-06

Boring #4 @ 1.5 - 2.0'

October, 2008

Sandy Lean Clay (CL)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	1	99
#16 (1.18-mm)	2	98
#30 (600-µm)	4	96
#50 (300-µm)	7	93
#100 (150-µm)	13	87
#200 (75-µm)	23	77



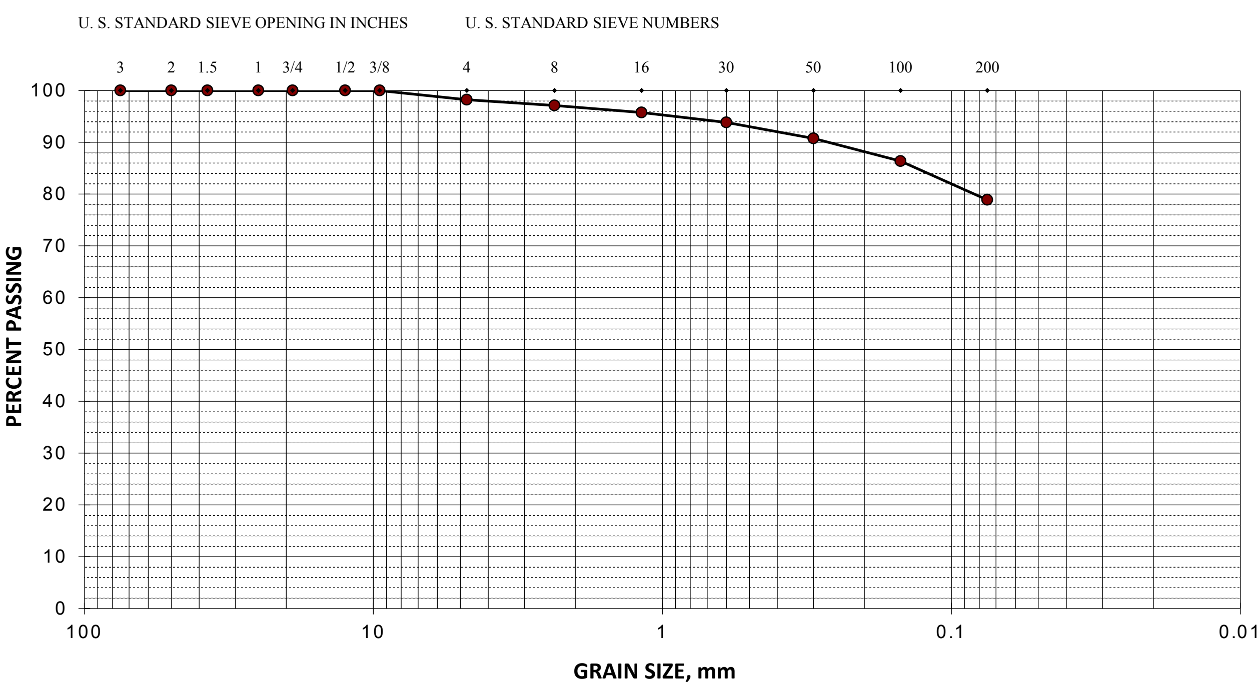
PARTICLE SIZE ANALYSIS

ASTM D 422-07; D 1140-06

Boring #6 @ 0.0 - 3.0' October, 2008

Silty Clay with sand (CL-ML)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	2	98
#8 (2.36-mm)	3	97
#16 (1.18-mm)	4	96
#30 (600-µm)	6	94
#50 (300-µm)	9	91
#100 (150-µm)	14	86
#200 (75-µm)	21	79



Lico Residential Development

File No. SH-10127-SC

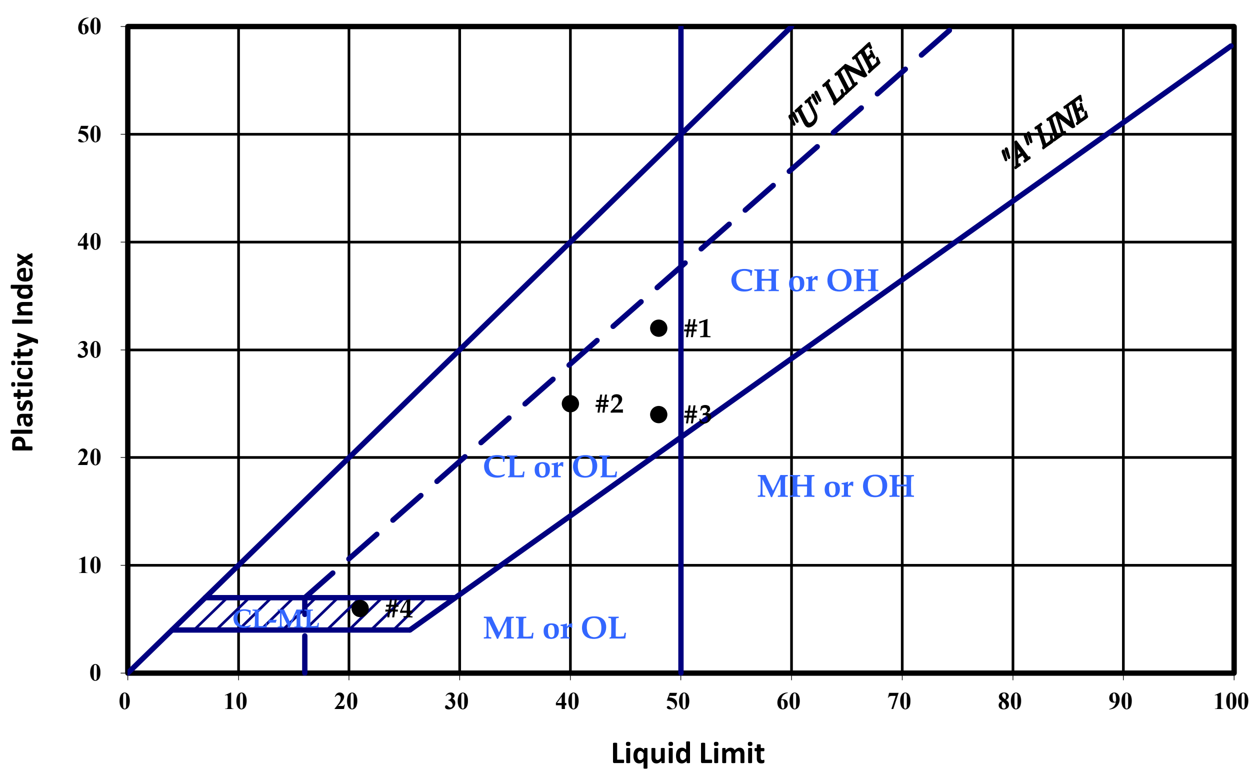
PLASTICITY INDEX

ASTM D 4318-00

October, 2008

Test No.:	1	2	3	4	5
Boring No.:	3	4	5	6	
Sample Depth:	2.0 - 2.5'	1.5 - 2.0'	0.0 - 3.0'	0.0 - 3.0'	
Liquid Limit:	48	40	48	21	
Plastic Limit:	16	16	18	15	
Plasticity Index:	32	24	30	6	

Plasticity Chart



Lico Residential Development | File No.SH-10127-SC

RESISTANCE '*R*' VALUE AND EXPANSION PRESSURE

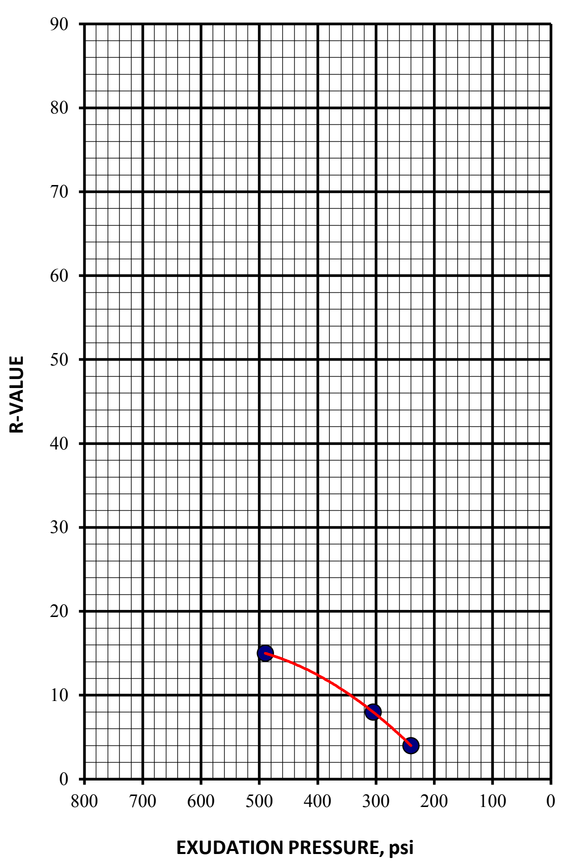
ASTM D 2844-07

November, 2008

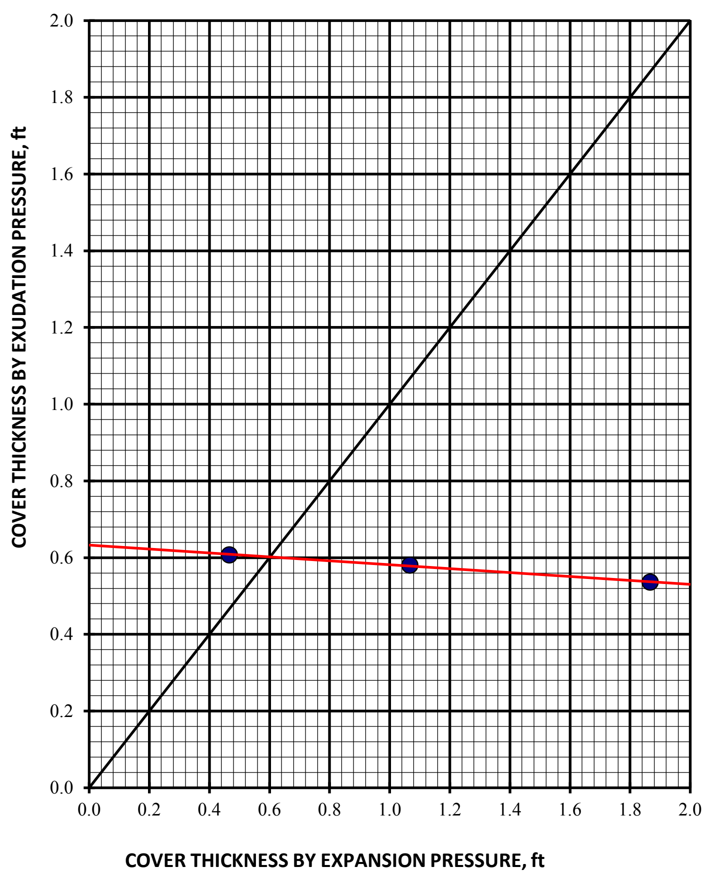
Boring #1 @ 1.0 - 5.0'
Yellow brown Sandy Lean to Fat Clay (CL/CH)
Specified Traffic Index: 5.0

Dry Density @ 300 psi Exudation Pressure: 102.5-pcf
%Moisture @ 300 psi Exudation Pressure: 21.9%
R-Value - Exudation Pressure: 8
R-Value - Expansion Pressure: 4
R-Value @ Equilibrium: 4

EXUDATION PRESSURE CHART



EXPANSION PRESSURE CHART



Lico Residential Development

File No. SH-10715-SC

RESISTANCE '*R*' VALUE AND EXPANSION PRESSURE

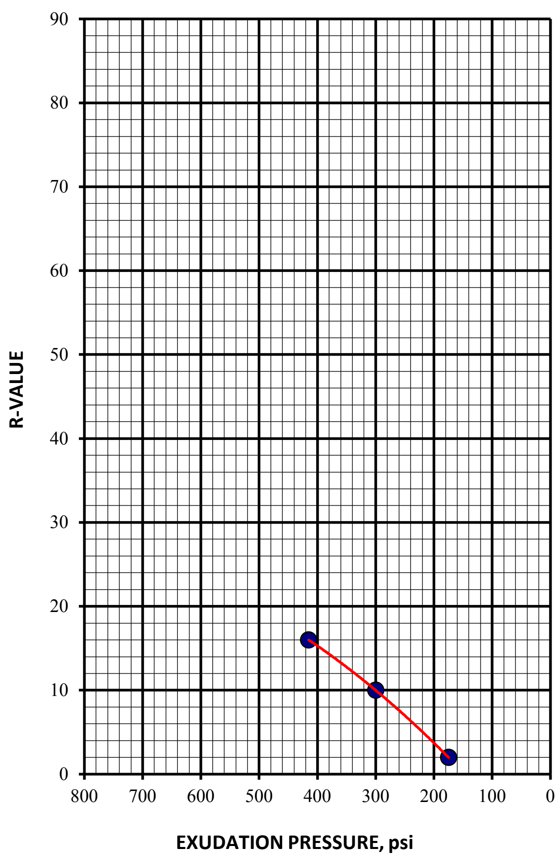
ASTM D 2844-07

November, 2008

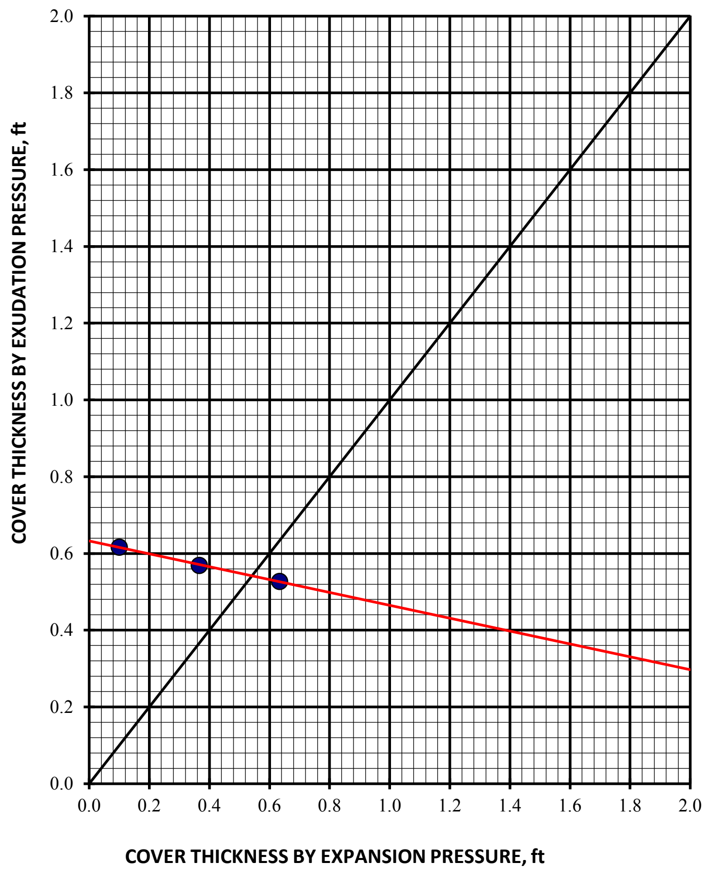
Boring #5 @ 0.0 - 3.0'
Yellow brown Clayey Sand (SC)
Specified Traffic Index: 5.0

Dry Density @ 300 psi Exudation Pressure: 101.1-pcf
%Moisture @ 300 psi Exudation Pressure: 16.8%
R-Value - Exudation Pressure: 10
R-Value - Expansion Pressure: 14
R-Value @ Equilibrium: 10

EXUDATION PRESSURE CHART



EXPANSION PRESSURE CHART



Lico Property Development
Hollister, California

File No. 302615-001

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

November 13, 2018

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
B7	2.5 - 3.0	7.9		
B7	4.5 - 5.0	19.5	120.3	100.7
B8	2.5 - 3.0	13.8	138.2	121.5
B8	4.5 - 5.0	13.7	130.5	114.8
B9	2.5 - 3.0	5.1	108.1	102.9
B9	4.5 - 5.0	14.1	127.7	111.9
B12	4.0 - 4.5	5.6	108.4	102.6
B12	8.5 - 9.0	7.1		
B13	4.5 - 5.0	11.6	121.6	109.0
B14	2.5 - 3.0	9.1	123.0	112.7

Lico Property Development
Hollister, California

File No. 302615-001

PARTICLE SIZE ANALYSIS

ASTM D 7928-16

Boring #8 @ 0.0 - 3.5'

November 13, 2018

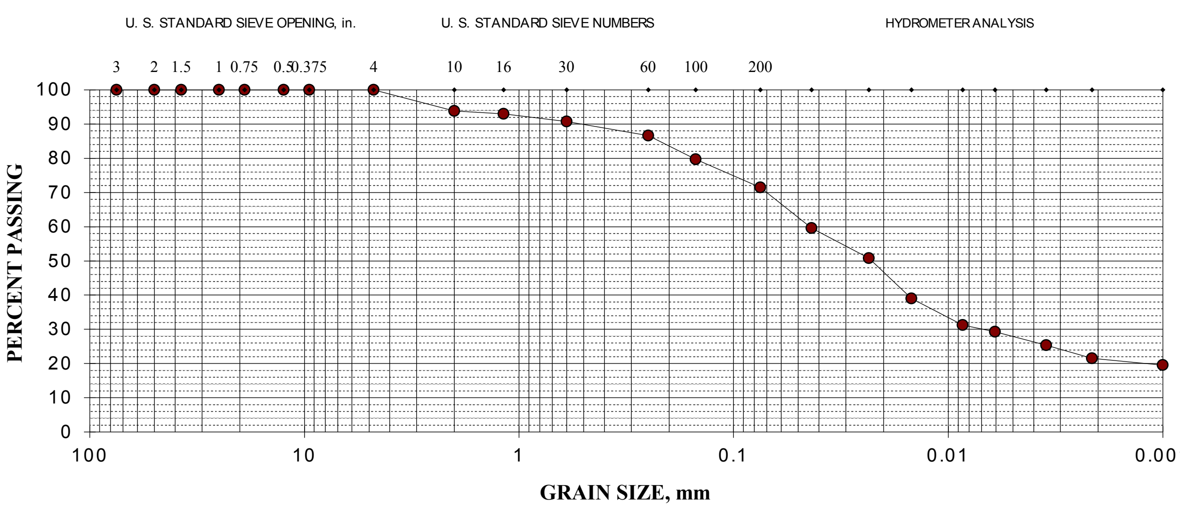
Sandy Lean Clay (CL)

Specific Gravity = 2.65 (assumed)

LL = 27; PL = 16; PI = 11

Gravel = 0%; Sand = 29%; Silt = 46%; Clay = 25%

Sieve size	% Retained	% Passing
3" (75.0-mm)	0	100
2" (50.0-mm)	0	100
1-1/2" (37.5-mm)	0	100
1" (25.0-mm)	0	100
3/4" (19.0-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#10 (2.00-mm)	6	94
#16 (1.18-mm)	7	93
#30 (600-µm)	9	91
#60 (250-µm)	13	87
#100 (150-µm)	20	80
#200 (75-µm)	29	71
Hydrometer Analysis		
43-µm		60
23-µm		51
15-µm		39
9-µm		31
6-µm		29
3.5-µm		25
2.1-µm		21
Colloids		20



Lico Property Development
Hollister, California

File No. 302615-001

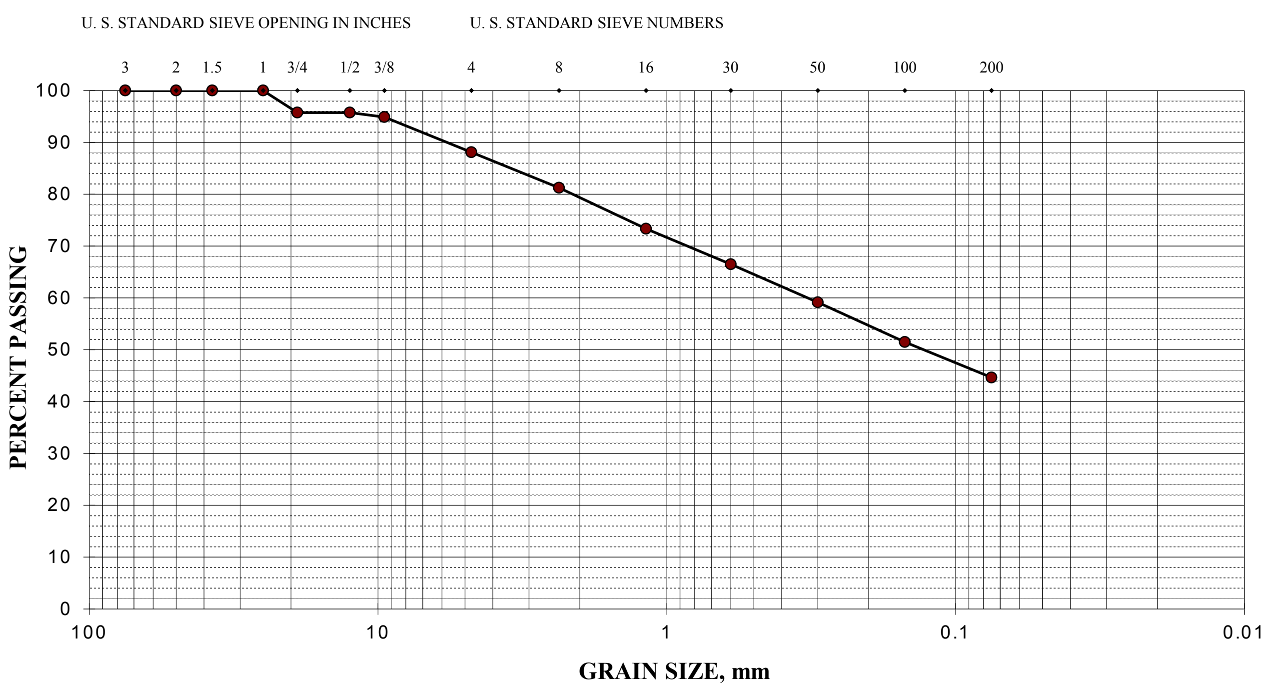
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #9 @ 0.0 - 4.0'
Clayey Sand (SC)

November 13, 2018

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	4	96
1/2" (12.5-mm)	4	96
3/8" (9.5-mm)	5	95
#4 (4.75-mm)	12	88
#8 (2.36-mm)	19	81
#16 (1.18-mm)	27	73
#30 (600-µm)	34	66
#50 (300-µm)	41	59
#100 (150-µm)	49	51
#200 (75-µm)	55	45



Lico Property Development
Hollister, California

File No. 302615-001

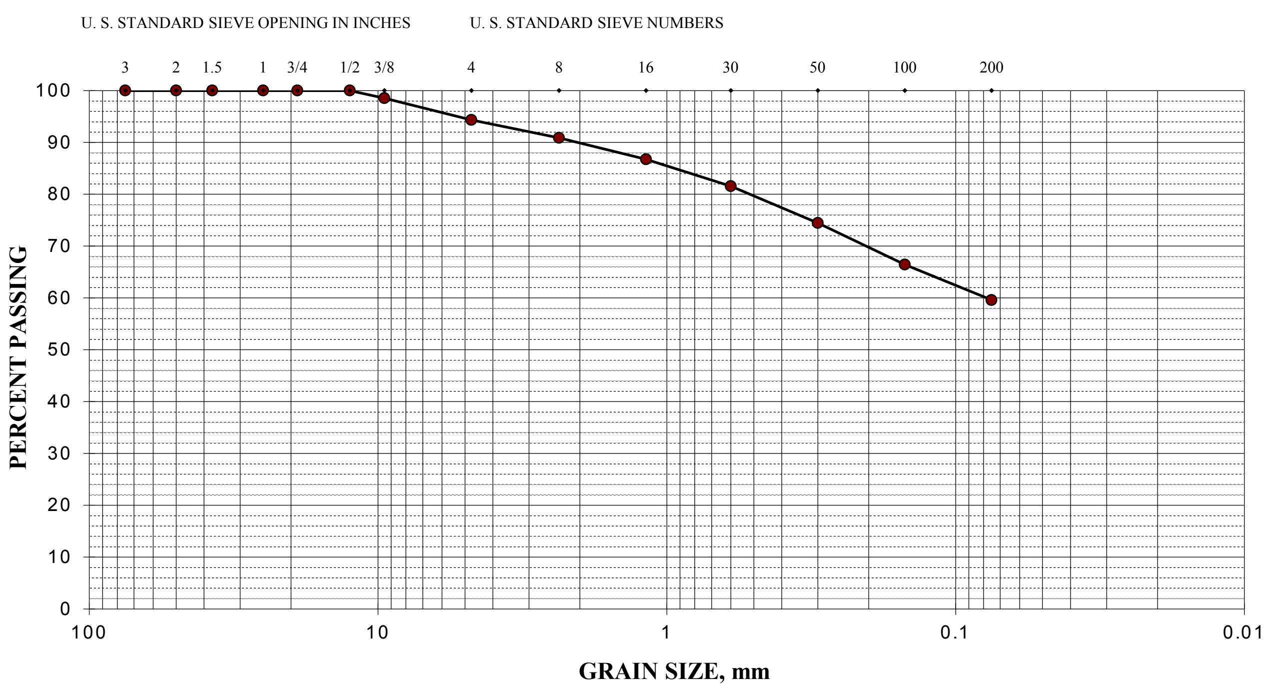
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #12 @ 2.5 - 3.0'
Sandy Lean Clay (CL)

November 13, 2018

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	1	99
#4 (4.75-mm)	6	94
#8 (2.36-mm)	9	91
#16 (1.18-mm)	13	87
#30 (600-µm)	18	82
#50 (300-µm)	26	74
#100 (150-µm)	34	66
#200 (75-µm)	40	60



Lico Property Development
Hollister, California

File No. 302615-001

PARTICLE SIZE ANALYSIS

ASTM D 7928-16

Boring #13 @ 2.5 - 3.0'

November 13, 2018

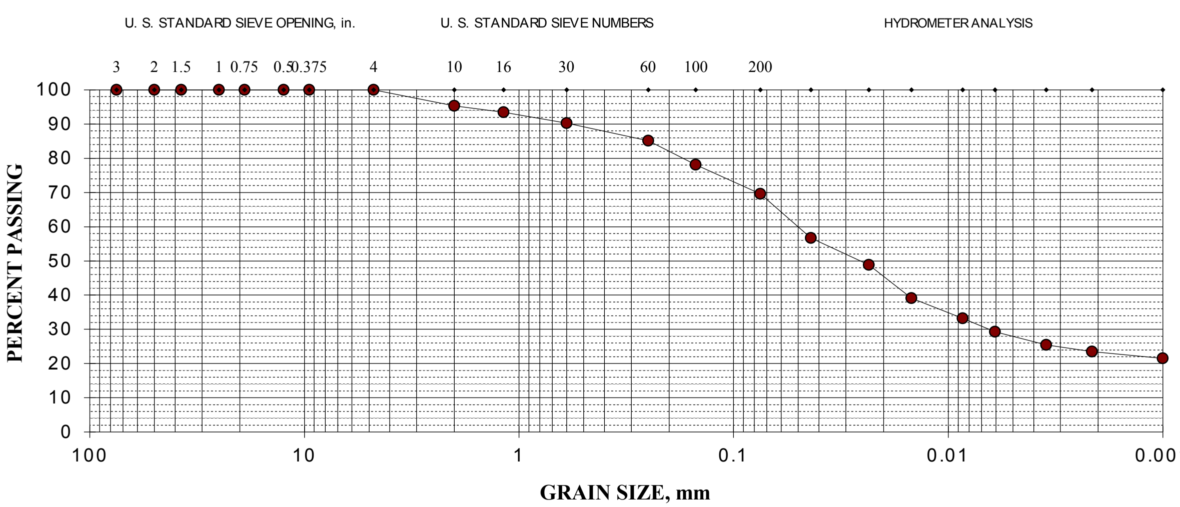
Sandy Lean Clay (CL)

Specific Gravity = 2.65 (assumed)

LL = 27; PL = 14; PI = 13

Gravel = 0%; Sand = 30%; Silt = 45%; Clay = 25%

Sieve size	% Retained	% Passing
3" (75.0-mm)	0	100
2" (50.0-mm)	0	100
1-1/2" (37.5-mm)	0	100
1" (25.0-mm)	0	100
3/4" (19.0-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#10 (2.00-mm)	5	95
#16 (1.18-mm)	6	94
#30 (600-µm)	10	90
#60 (250-µm)	15	85
#100 (150-µm)	22	78
#200 (75-µm)	30	70
Hydrometer Analysis		
44-µm		57
23-µm		49
15-µm		39
9-µm		33
6-µm		29
3.5-µm		25
2.1-µm		23
Colloids		22



Lico Property Development
Hollister, California

File No. 302615-001

PLASTICITY INDEX

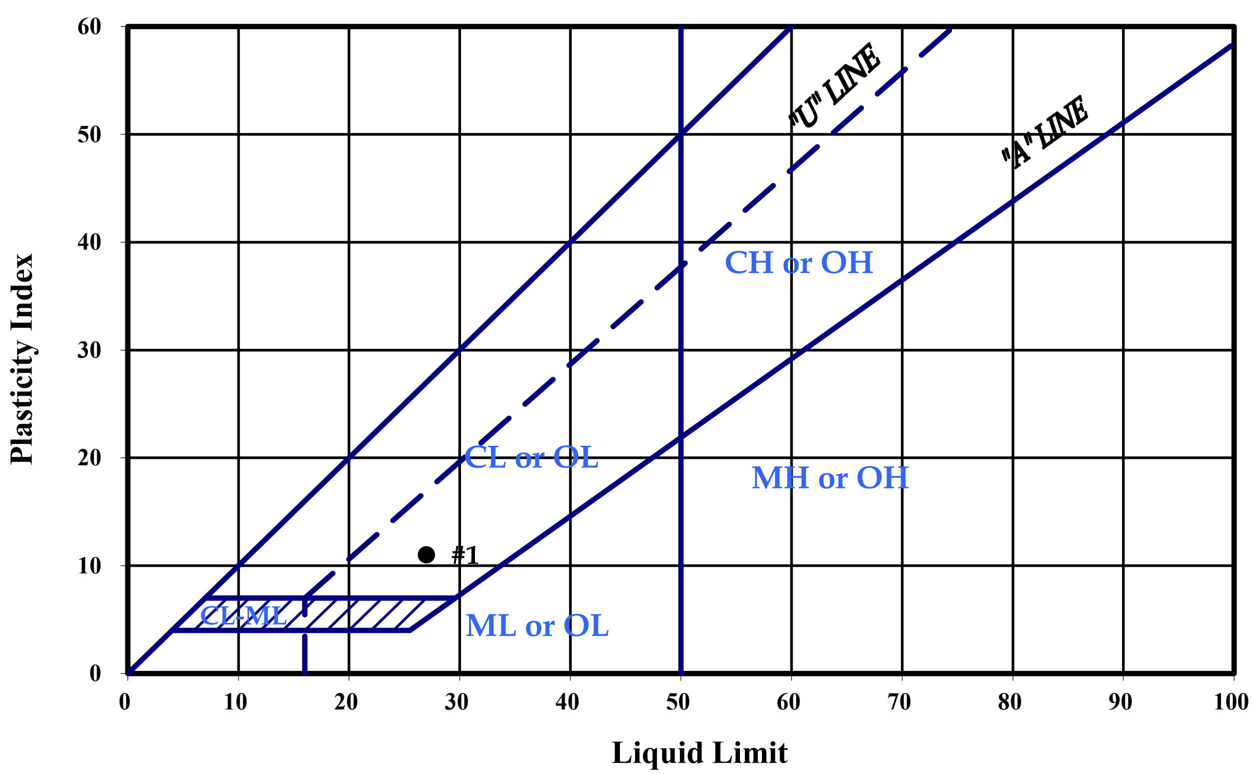
ASTM D 4318-17

Sandy Lean Clay (CL)

November 13, 2018

Test No.:	1	2	3	4	5
Boring No.:	8				
Sample Depth:	0.0 - 3.5'				
Liquid Limit:	27				
Plastic Limit:	16				
Plasticity Index:	11				

Plasticity Chart



Lico Property Development
Hollister, California

File No. 302615-001

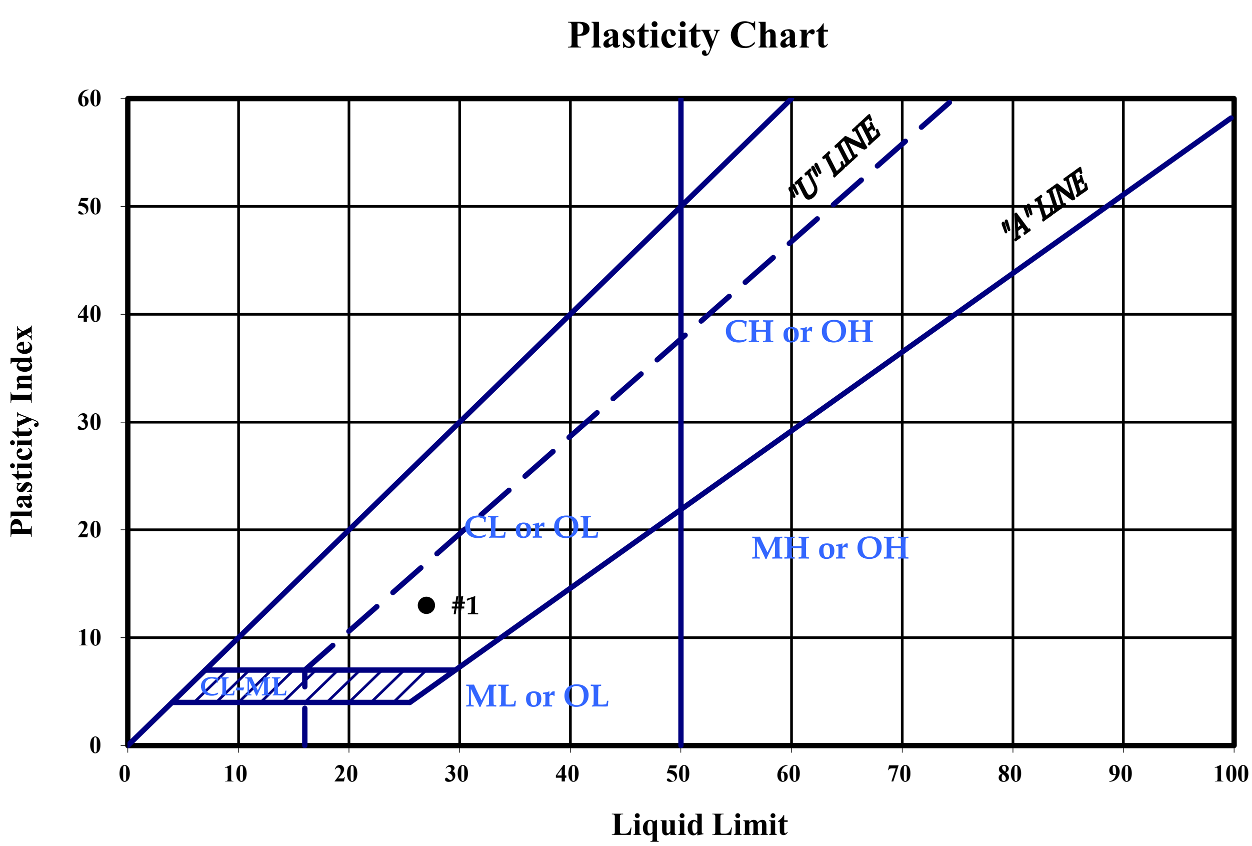
PLASTICITY INDEX

ASTM D 4318-17

Sandy Lean Lean Clay (CL)

November 13, 2018

Test No.:	1	2	3	4	5
Boring No.:	13				
Sample Depth:	2.5 - 3.0'				
Liquid Limit:	27				
Plastic Limit:	14				
Plasticity Index:	13				



Appendix G

Phase I Environmental Assessment

PHASE I ENVIRONMENTAL SITE ASSESSMENT
VISTA DEL CALABRIA
ENTERPRISE ROAD (APNS 020-290-051 & -052)
HOLLISTER, CALIFORNIA

January 16, 2020

Prepared for:

TTI Developers
601 McCray Street, Suite 205
Hollister, CA 95023

Prepared by:

Earth Systems Pacific
500 Park Center Drive, Suite 1
Hollister, CA 95023

Earth Systems
500 Park Center Drive, Suite 1 | Hollister, CA 95023 | Ph: 831.637.2133 | www.earthsystems.com

January 16, 2020 File No.: 302615-002

Mr. Ty Intravia
TTI Developers
601 McCray Street, Suite 205
Hollister, CA 95023

PROJECT: VISTA DEL CALABRIA - ESA
ENTERPRISE ROAD (APNs 020-290-051 & -052)
HOLLISTER, CALIFORNIA

SUBJECT: Report of Phase I Environmental Site Assessment

REF.: Change order for a Phase I Environmental Site Assessment, Lico Property Development, Enterprise Road (APNs 020-290-051 & -052), Hollister, California, Doc. No. 1912-007.PRP.CO1/ev., dated December 11, 2019.

Dear Mr. Intravia:

As authorized by you, Earth Systems Pacific (ESP) has completed this Phase I Environmental Site Assessment (ESA) at the above-referenced site. It was prepared to stand as a whole, and no part should be excerpted or used in exclusion of any other part. This project was conducted in accordance with our proposal dated December 11, 2019. If you have any questions regarding this report or the information contained herein, please contact the undersigned at your convenience.

I declare that I meet the definition of an Environmental Professional as defined in 40CFR 312.10. I have the specific qualifications based on education, training and experience to assess a property of the nature, history and setting of the subject site. I have endeavored to perform this project in conformance with the standards and practices set forth in ASTM Standard E1527-13.

Sincerely,

Earth Systems Pacific

David Teimoorian
Staff Geologist

Brett Faust
Senior Geologist

PROFESSIONAL GEOLOGIST
BRETT D. FAUST
No. 2386
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Doc. No.: 2001-014.RPT/ev

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1.0 INTRODUCTION

Project Information

This report presents the findings of a Phase I Environmental Site Assessment (ESA) conducted by Earth Systems Pacific (ESP) for two parcels located approximately 1,000 feet east of the intersection of Southside Road and Enterprise Road in Hollister, California. The site encompasses a total of about 50.4-acres and identified as San Benito County Assessor Parcel Numbers (APN) 020-290-051 & -052. The subject site is undeveloped and accessed via Enterprise Road (see Vicinity Map and Overall Site Map in Appendix A). This project was conducted for Mr. Ty Intravia in accordance with our proposal dated December 11, 2019. The work was performed in connection with residential development of the site.

Purpose and Scope of Work

The purpose of an ESA is to evaluate the potential for soil or groundwater contamination at a site due to the possible past use, storage, or handling of hazardous materials or petroleum products on or near the site, based on a visit to the site and a review of readily obtainable information concerning site activities and conditions. The scope of work is based on United States Environmental Protection Agency Final All Appropriate Inquiry Rule (2006) [US EPA AAI] and ASTM Standard E-1527-13, Standard Practice for Environmental Site Assessments, and consisted of the tasks listed below. A search for environmental liens on the site was not performed.

Site Reconnaissance: This involved: a visual reconnaissance of the site, noting physical evidence of potential contamination or possible sources of contamination; and observation of adjacent properties to identify readily observable visual evidence of possible impacts to the subject site. Site conditions are shown on a Overall and Detail Site Maps in Appendix A. Significant on-site features were photographed to document current conditions. Selected site photographs are presented in Appendix B.

Records Review: Records regarding the regulatory status and history of the site were evaluated regarding the possible presence of Recognized Environmental Conditions (RECs). Regulatory agency records were reviewed by obtaining a report listing known sites that generate, store, use, and/or have released hazardous materials from a firm that specializes in maintaining a database of this type of information. A copy of the agency database search report is presented in Appendix E and is discussed in Section 5.0. The search radii for the agency database search were in general accordance with the US EPA AAI and ASTM E1527-13, as measured from the site perimeter.

Other sources of information are listed in the references section of this report and may include the following categories of information (note that each category is utilized at the discretion of EP until, in the EP's opinion, sufficient data has been obtained):

- Aerial photographs
- Topographic maps
- Oil and gas production maps and records.
- Fire insurance maps
- Land title information
- Local street directories
- Zoning/land use records
- Interviews with current and/or former owners, occupants, and operators
- Engineering and institutional controls, such as deed restrictions and restrictive zoning to a radius of ½ mile, if contained in publicly available lists/registries
- Tribal records of subject property and adjoining properties (if tribal land)
- Local government records such as building department files

Interviews: Persons familiar with the site were interviewed (if possible) regarding the potential presence of RECs on the site or in a position to affect the site, including the site owner/operator/occupant, former site owners/operators/occupants (if reasonably accessible), neighboring property occupants (if the site is abandoned), and selected government personnel likely to have information regarding environmental conditions at or near the site. Information from persons who were contacted is presented in Section 6.0.

Report Preparation: This report was prepared to present our findings, conclusions, and recommendations.

Definitions

ASTM E1527-13 provides definitions of various terms and acronyms used in the ESA process. ESP endeavors to use these terms and acronyms within the meaning provided by the ASTM standard. The majority of these terms are either obvious in their meaning or are seldom used in this report, but a few are significant enough to warrant defining here, as follows:

Site: The term "site" is used in place of the term "property," and is the physical location that is the subject of the assessment. The site can include more than one parcel of land, or a portion of a parcel of land, depending on the needs of the client. ESAs focus primarily on activities that occur within the boundaries of the site, or that could potentially affect conditions and activities within the boundaries of the site. RECs on off-site properties that are not likely to affect the site are not considered to be RECs for the subject site.

Recognized Environmental Condition (REC): the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to a release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The term does not include *de minimis* conditions.

Controlled Recognized Environmental Condition (CREC): An REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum projects allowed to remain in place subject to the implementation of required controls.

Historic Recognized Environmental Condition (HREC): A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the regulatory authority, or meeting unrestricted land use criteria, without subjecting the property to any required controls (such as a deed restriction). HRECs are no longer RECs for a site.

De Minimis Condition: A condition that does not present a significant threat to human health or the environment, and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

Environmental Professional (EP): An EP is defined as "a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases (of hazardous substances) on, at, in, or to a property, sufficient to meet the objectives and performance factors (of the rule)." Specific minimum credentials are required to be identified as an EP.

<u>User</u>: The "user" of the report is defined as the party for whom the assessment is being conducted (i.e., the Client).

Qualifications

Work on this project was performed under the direct supervision of an EP, in accordance with ASTM E1527-13 requirements. Brett Faust (PG, CEG) was the lead EP and project manager. David Teimoorian (Staff Geologist), conducted the site reconnaissance, historical research, agency database review, and report preparation. Qualifications statements are presented in Appendix G.

Exclusions and Data Gaps

The scope of work for this ESA did not includez testing soil, air, groundwater, or building materials for the presence of hazardous constituents.

ASTM E1527-13 requires that gaps in the data used to evaluate the site be identified. Data gaps encountered in this project, and their significance to the project, are summarized below.

- Chain-of-title information was not provided, and therefore, not reviewed.
- No Sanborn maps are available for the site. Because of the availability of other data sources, the absence of the maps is not considered to be a significant data gap.
- A search for environmental liens on the site was not performed

Because of the availability of other data sources, the absence of these items is not considered to be significant data gaps and in our opinion, further assessment regarding these data gaps is not warranted.

Limitation and Reliance

This ESA has been prepared for the exclusive use of TTI Developers for the subject site. Any other use of, or reliance on the information and opinions contained in this report without the express written authorization of ESP is at the sole risk of the user.

The conclusions and recommendations rendered in this report are based on readily available information obtained to date within the scope of the work authorized by the client, and apply only to site conditions as of the date of the site visit. The scope of work for this project was developed to address the needs of the client related residential development of the site.

A Phase I ESA cannot ascertain that a property is completely free of chemical or toxic substances. We believe the scope of work has been appropriate to allow the client to make an informed business decision. According to ASTM E1527-13, the “shelf life” of an ESA report is six months; an update can be provided to the client within the first year of the report’s publication. Changes in site conditions/use could render this report obsolete within a shorter period of time. Use of this report outside of these time frames or after site conditions/uses have changed is at the sole risk of the user.

The results contained in this report are based upon the information acquired during the assessment, including information obtained from third parties. ESP makes no warranty as to the accuracy of the information obtained from others. In addition, it is possible that variations exist beyond or between points evaluated during this assessment, and that changes in conditions could occur due to the works of man, contaminant migration, variations in rainfall or temperature, changes in regulatory standards, or other circumstances not existent at the time the assessment was prepared.

The services performed by ESP have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the site vicinity. No other warranty, express or implied, is offered.

2.0 GENERAL SITE INFORMATION

Size and Location

The site is located about 1,100 feet east of the intersection of the Southside Road and Enterprise Road in Hollister, California. The site encompasses two parcels and a total of approximately 50.4-acres with a separate approximate 1.4-acre rural residential property at 394 Enterprise Road and an approximate 1.9-acre well easement (San Benito County Water District) along Enterprise Road that are not included in this ESA.

Assessor's Parcel Number

The site is identified as San Benito County Assessor's Parcel Numbers 020-290-051 and -052.

Site Boundaries

The property is bounded on the north and northeast by Enterprise Road. A northwest trending ridge and rural residential and agricultural lands are present to the west, Quail Oak subdivision is present on the east, and Ridgemark Golf and Country Club is present on the south.

Current Development and Access

The site is accessed from Enterprise Road and is currently undeveloped, The site is used for cattle grazing and growing dryland crops.

Land Use/Zoning

Land use/zoning information was obtained from the San Benito County Zoning Map. The site is zoned rual residential.

Site Topography

Elevations on site range from about 464 feet at its south end to about 349 feet at Enterprise Road. Topographically the site consist of a gently to moderately sloping terrace surface on its south and central sections that descends across a terrace face about 8 feet in height at its northen edge and about 10 feet in height on its eastern edge. A broad swale that drains northward is present east of the terrace face and essentiall flat areas are present to the north. Overall the site is drained by northeast-directed sheetflow to a the broad swale.

Surface Water Bodies

No natural surface water bodies are located on the property. The San Benito River is located about 2,400 feet to the west and flows to the northwest. Based on Environmental Data Resources' (EDR) Radius Map Report with GeoCheck (Appendix E), the eastern portion of the site associated with the broad swale lies within a 1% Special Flood Hazard Area.

Geology and Hydrogeology

Based on mapping by Rosenberg (1998), the entire site is underlain by Pleistocene-age, older flood-plain deposits (Qof). Pleistocene to Pliocene-age, San Benito Gravels are mapped on the rdidge west of the site and a trace of the East Branch Calaveras fault is mapped along its eastern base.

Based on Environmental Data Resources Radius Map report (see Appendix E) soils at the site mostly consist of Antioch Loam with Reiff sandy loam along the northern edge of the site and terrace escarpment soils within the broad swale. Antioch loam is described as moderately well drained with a high corrosion potential and very slow infiltration rates. Reiff sandy loam is described as moderately well and well drained with a moderate corrosion potential and moderate infiltration rates. The terrace escarpments soils are described as having slow infiltration rates.

Site specific hydrogeologic data was not available to Environmental Data Resources Radius Map report (see Appendix E). Based on San Benito County's Annual Groundwater Report (Todd Groundwater, 2018), depth to first groundwater in the site vicinity measured December 2018 is on the order of 100 feet below ground surface and flows to the northwest.

3.0 SITE RECONNAISSANCE

Site Observations

On December 31, 2019, and again on January 14, 2020, Earth Systems Pacific personnel visited the site. The purpose of the reconnoitering was to evaluate current site conditions and adjacent land use. Photographs of the site are presented in Appendix B. A summary of our observations is presented below.

The northern portion of the site was developed with a barn and two long sheds used for farm equipment maintenance and storage. The central and southern portions of the site were undeveloped and used for cattle grazing and dryland farming. House keeping in the area of the sheds and barns was generally poor and surrounded with dilapidated farm equipment, cars, trucks, and trailers. Deteriorated bags of powdered herbicides and small containers of what appeared to be fuel were present in the sheds. There were two drums with unknown contents resting on their side and what appeared to be an old fuel tank in the general area of the barn and sheds. There was no obvious evidence that the drums or tank leaked.

Site Vicinity Observations

The property opposite the site on Enterprise Road was occupied by farm structures, associated farming equipment and a small abandoned gravel quarry; activity of the farm is unknown however conditions of tooling suggests no current farming activities associated with this address/property. Two water wells are present on San Benito County Water District easement. We did not observe evidence that environmental conditions at the site have been impacted by use or activities in the surrounding areas.

4.0 HISTORICAL INFORMATION

Information regarding the history of the site was obtained from various sources, as discussed below.

Sanborn Fire Insurance Maps

To evaluate past site uses, a search for Sanborn Fire Insurance Company maps was performed by EDR. According to EDR, Sanborn map coverage is not available for is area of Hollister.

Aerial Photographs

To assist in determining past uses that could have an environmental impact on the property, historical aerial photographs were reviewed. The information below is a summary of the review of photographs of the site taken between 1939 and 2016. Features on the site and adjacent areas are described below. Copies of the aerial photographs are presented in Appendix C.

1937 – Enterprise Road and incipient Airline Highway are present. The northern half of the site is primarily used to grow dryland crops, with the southern half appearing to be fallow. Orchards are seen at the northwest corner of the site. Bundles of dry crops are seen at then northeastern area of the site. The site is bounded by agricultural fields used to grow dry crops to the west, south, and east, and by Enterprise Road to the north.

1949– A majority of the orchards on the site have been removed with a small portion remaining along Enterprise road. Elsewhere the site and vicinity appear similar to the 1937 photograph.

1953 – The barn is present on the northern portion of the site. Elsewhere the site and vicinity appear similar to the 1949 photograph.

<u>1960</u> – Low resolution. Possible structures present on the western-bounding property.

<u>1971</u> – No discernible image.

<u>1974</u> – The barn and sheds are present on the northern portion of the site. Structures referenced in the 1960 imagery are visable and a building is constructed on the southeast bouding property. Elsewhere the site and vicinity appear similar to the 1953 and 1960 photograph.

<u>1981 (infrared, low-resolution)</u> - Site conditions appear similar to 1974. A stormwater-type basin appears to be developed on the south-bounding parcel. Ridgemark Golf and Country Club is developed on the southeast-bounding property. Elsewhere the site and vicinity appear similar to the 1974 photograph.

<u>1998</u> – Additional orchards are established at the northwestern corner of the site and occupy an area similar to that of 1949 imagery. Qual Hallow residential development is under construction on the eastern-bounding property. Elsewhere the site and vicinity appear similar to the 1981 photograph.

<u>2006</u> – What appears to be plastic sheeting is present covering the ground on the northwest site corner that may have been placed in connection with preparing for growing row-crops. What appears to be a storm water pond is present just east of the barn and sheds. The Quail Oak residential development is completed on the eastern-bounding property. Elsewhere the site and vicinity appear similar to the 1974 photograph.

<u>2009</u> – The plastic sheeting is absent and the land appears to be fallow. Elsewhere the site and vicinity appear similar to the 2006 photograph.

<u>2012 and 2016</u> – Site and vicinity conditions appear similar to 2009 imagery, except that the storm water pond is no longer present in the 2016 photograph.

Earth Systems also reviewed historic images dated later than 2016 available through Google Earth. The northest portion of the site was used to grow orchard crops until February 2018. The orchards are absent in later images. Elsewhere, the site appears similar to the 2016 photograph.

Historic Topographic Maps

Topographic maps published by the U.S. Geological Survey were reviewed to evaluate past land use on the site. The maps available for the Hollister area date from 1921-2012. In general, the maps indicate a use history similar to that present in the aerial photographs. Features depicted on the site and adjacent areas are described below. Copies of the topographic maps are attached with this report in Appendix D.

<u>1919, 1921, and 1923 (15-minute quadrangles)</u> – Enterprise Road and railroad tracks are shown and there are no features or indicated land use depicted on the site.

<u>1955, 1971 (both 7.5-minute quadrangles); 1987 (15-minute quadrangle)</u> – A building structure is depicted on the site. A gravel pit is labeled directly accoss the northeast corner of the site along Enterprise Road. Structures are depicted on the western-bounding property and development of Ridgemark Golf and Country Club is seen at the southeast-bounding property. Elsewhere the site and vicinity are depicted similar to the 1923 map.

<u>1993, 1995 (7.5-minute quadrangles)</u> – wells are depicted at the northeastern portion of the site. Elsewhere the site and vicinity are depicted similar to the 1987 map.

<u>2012 (7.5-minute quadrangle)</u> – Wells are not depicted on the site. Roads related to Qual Hallow residential development is seen to the east of the site. Elsewhere the site and vicinity are depicted similar to the 1995 map.

City Directory Listings

City directories, which contain telephone book listings alphanumerically by their street address, were also researched by EDR for information regarding past site use. The directories were reviewed in 5-year intervals dating from 1964 to 2014. The address associated with the site is 213 Enterprise Road. Below are the directory listings associated with the address aforementioned.

<u>1992</u>

Elias, Ralph; L&G Transportation; Lico & Greco; Russell, Waler

<u>1995</u>
Elias, Ralph; L&G Transportation; Lico, Joe A; Russell, Waler

<u>2000</u>
Arreguin, Maria J; Elias, Juana; Gallo, Maria I; Gonzales, Jacabo

<u>2005</u>
Galvan, Richard; Luna, Victor; Part, Lico; Rodriguez, Adela; Salazar, Celeste; Sandoval, Jose L

<u>2010</u>
Fonseca, Maria E; Gonzales, Rios F; Jimenez, J; Luna Samuel; Part, Lico; Rios, Filiberto G; Rodriguez, Adela; Santiago, Idineo; Zepeda, Mario

<u>2014</u>
Fonseca, Maria E; Gonzales, Rios F; Jimenez, Valentin; Luna Samuel; Ortiz, Jorge; Part, Lico; Zepeda, Mario

Based on the city directory listing review, there is no record of listing(s) on the site with the potential to impact the subject site.

5.0 RECORDS REVIEW

Agency Database Search Report

A report summarizing the information available from regulatory agencies regarding sites that generate, store, use, and/or have released hazardous materials was prepared by Environmental Data Resources (EDR). Search distances used for each list are in accordance with ASTM E1527-13 guidelines as measured from the site perimeter. The subject property and additional facilities are listed in the report within 1-mile of the site. No orphan sites were listed in the EDR report.

Facilities of interest within the search radius are detailed below. A copy of the database summary report is included as Appendix E.

Listing	Location	Database	Distance
Enterprise Well #7	600 Enterprise Road	CUPA, et. al	0.068 mi.
Sunnyslope CWD Well #11	2783 Southside Road	CUPA, et. al	0.250 mi.
Sunnyside Estates	2780 Southside Road	Envirostor, et. al	0.251 mi
Southside Road Project Area	3110 Southside Road	Envirostar Brownfields	0.305 mi
Carolyn Hamilton	161 Ladd Lane	Envirostor, et. Al	0.655 mi.
Hazel Hawkins Hospital	911 Sunset Drive	LUST, et. Al	0.802 mi.

Based on the types, status of listing, distance, and relative elevation from the subject site, none of the identified facilities appear to have the potential to impact the site nor indicate the likelihood for the presence of RECs at the site.

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) *Envirostor* database was queried to research records on file regarding known problems at the site address or in the site vicinity. No sites within a 0.5-mile radius not already listed in Section 5.0 were found in the *Envirostor* database.

Tribal Records

This site is not located on or near tribal lands; therefore, tribal records were not researched.

Engineering and Institutional Controls

No Engineering or Institutional Controls (Waste Discharge Requirements, etc.) were identified for the site.

Oil and Gas Maps

The California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) online mapping service was reviewed for information regarding historic oil or gas well drilling activities on or near the site. According to the map, no oil or gas wells have been drilled on the subject site. The nearest well is shown about 6,500 feet to the southwest and listed as a plugged dry hole. Based on the status of the well, it does not present a REC to the site.

6.0 INTERVIEWS AND GENERAL RESEARCH

Current Owners/Occupants/Operators

Mr. Anthony Lico, owner representative, was briefly interviewed on January 15, 2020. Mr. Lico stated that he was not aware of underground storage tanks on the site or known environmental concerns.

Previous Report

Earth Systems was provided with an Agrichemical Assessment - Phase II ESA report completed by Engeo (2014) that included the northwest section of the subject site where orchard crops, and possibly row crops, were grown. Below is a summary of our review of laboratory results of samples collected on the subject site. A copy of Engeo's report is presented in Appendix F.

Composite samples S-17, S-18, S-19, and S-20 were collected on the subject site. The samples were tested for organochlorine pesticides and the metal arsenic. Trace amounts of the pesticides DDE and dieldrin were detected in the samples. The levels were compared to California Regional Water Quality Control Board 2019 (rev. 2) Environmental Screening Levels (ESLs) for direct human exposure in residential settings. The pesticide levels are below their respective ESLs. Arsenic was detected in all of the samples at levels above its ESL. However, the levels are within the range found to naturally occur in this region of California (Duvergé, 2011). It is our opinion that the levels of pesticides and arsenic detected in shallow soil on the site do not present a recognized environmental condition at the site.

Past Owners/Occupants/Operators

Contact information for past owner/occupants/operators was not provided to us and, therefore, no interviews were conducted.

Local Agency Records

We requested to review San Benito County hazardous material files pertaining to the subject site. There was no response to our request by the time of this report.

7.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This report presents the findings of the Phase I ESA conducted for the Vista Del Calabria residential development located at Enterprise Road on APNs 020-290-051 & -052, in Hollister, California. We understand that the requested ESA is in connection with development of the property. We have endeavored to perform this ESA in general conformance with the scope and limitations of the ASTM Standard E1527-13. Exceptions to or deviations from this scope are described in Section 1.0 of this report. The purpose of this assessment was to evaluate the site for the presence of Recognized Environmental Conditions (RECs) related to the current or past use, handling, storage, or disposal of hazardous materials or petroleum products on or near the subject property. This assessment has identified the following information:

- The site is occupied by a barn and sheds that were constructed between 1959 and 1974. The northwest portion of the site was used to grow orchards between at least 1939 and February 2018. Other site areas have been used for cattle grazing and to grow dryland crops since at least 1939. There was no evidence of water wells on the site. San Benito County Water District wells # 6 and 7 are located adjacent to Enterprise Road and outside the boundaries of the subject site.

- Because the northwest portion of the site was previously used for growing crops, shallow soils were previously sampled and analyzed for organochlorine pesticides and arsenic. Based on an Agrichemical Assessment - Phase II ESA report by Engeo (2014), trace levels of the pesticides DDE and dieldrin are present on the site. However, the levels are below Regional Water Quality Control Board Environmental Screening Levels (ESls), direct human exposure in residential settings. Whereas arsenic levels exceeded its ESL, the levels are within the range found to naturally occur in this region of California (Duvergé, 2011). As such, prior use of the site for agricultural purposes does not constitute a REC at the site.

- During our reconnaissance, dilapidated farm equipment, vehicles, and trailers were present in the area of the barn and sheds. We also observed two drums resting on their side, what appeared to be an old fuel tank, deteriorated packages of dry herbicides, and a few small containers that appeared to contain fuel. There was no obvious evidence that the drums, tank or fuel containers leaked. However, it is possible that there are limited areas of oil staining on the site in connection with the dilapidated equipment and vehicles.

- There was no evidence that conditions on adjacent properties observed during the site reconnaissance were likely to adversely affect the subject property.

Recognized Environmental Conditions (REC)

Based on the work for this Phase I Environmental Site Assessment, there were no recognized environmental conditions identified at the site.

Recommendations

Whereas there were no RECs identified on the site, Earth Systems has developed the following recommendations regarding de minimis conditions observed at the site.

- The drums and old fuel tank, as well as any their contents if any, should be recycled or disposed of in a regulatory approved manner.

- The deteriorated bags of dry herbicide should be repackaged, if planned for future use, or disposed of in a regulatory approved manner.

- It is possible that petroleum staining associated with the dilapidated farm equipment and vehicles not obvious at the time of our reconnaissance is present at the site. It is assumed that such staining would be limited to small areas and less than a foot in depth. During site development if staining is present to a greater degree, Earth Systems should be contacted to assess their possible impacts.

REFERENCES

American Society for Testing and Materials (ASTM) Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessments.*

California Department of Conservation, Division of Oil, Gas and Geothermal Resources, *DOGGR Online Mapping Service (DOMS),* http://maps.conservation.ca.gov/doms/doms-app.html.

California Department of Toxic Substances Control, 2019, *EnviroStor website*, http://www.envirostor.dtsc.ca.gov/public/.

Duvergé, D.J., 2011, Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region, Thesis, San Francisco State University

ENGEO, 2014, Agrichemical Assessment-Phase II ESA, 213 Enterprise Road, Hollister, California, Project No. 11227.000.000.

Environmental Data Resources, 2019, *EDR Radius Map with GeoCheck Report for Vista Del Calabria, Southside Road and Enterprise Road, Hollister, California*, EDR Inquiry No. 5914923.2s, dated December 30, 2019.

Rosenberg, L., 1998, Liquefaction Susceptibility of the Hollister Area, San Benito County, California, Relative Liquefaction Susceptibility Map.

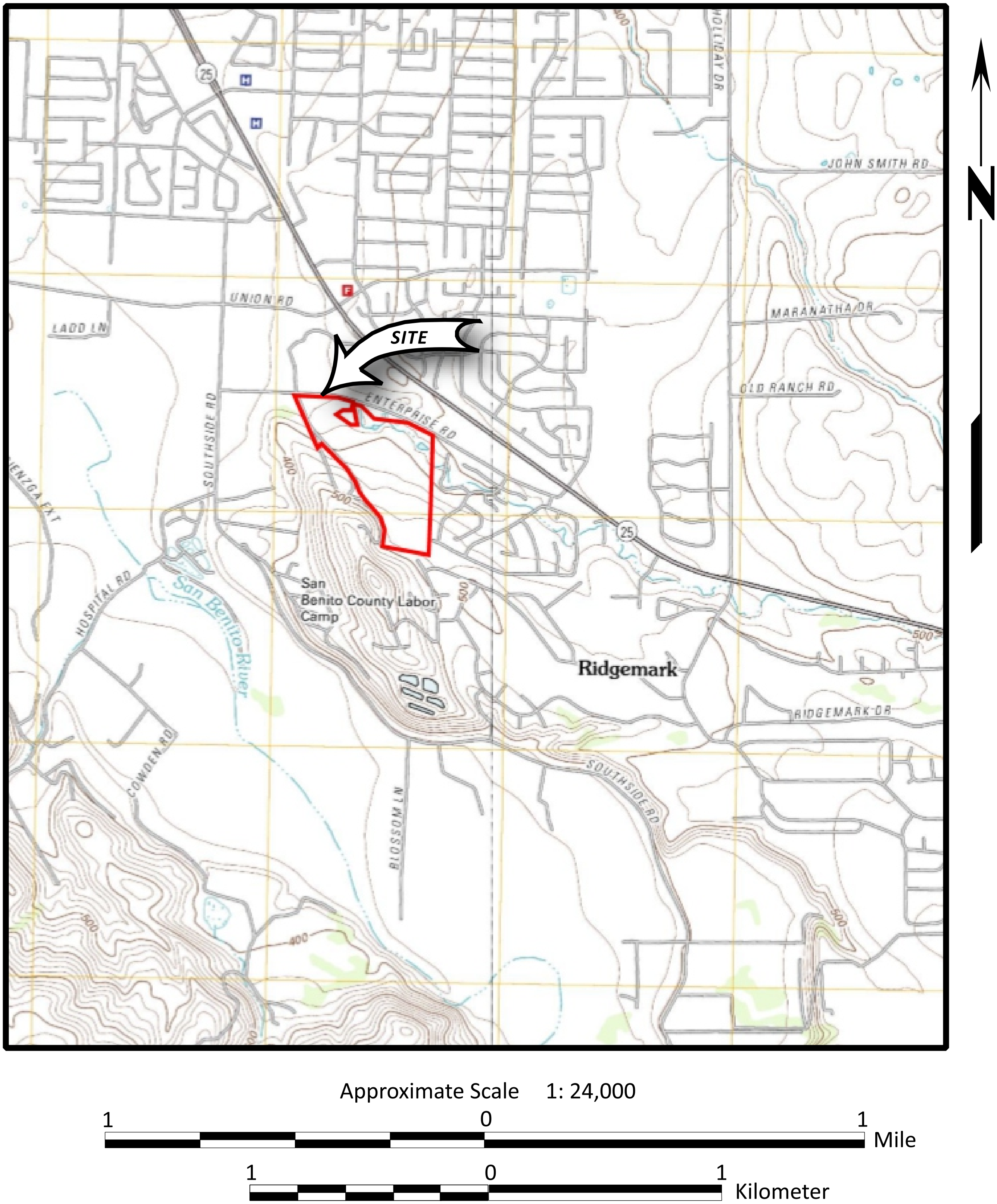
Rosenberg, L., 1998, Liquefaction Susceptibility of the Hollister Area, San Benito County, California, Quaternary Geologic Map.

San Benito County, 2019, Assessor Map, WebGIS search tool.

San Benito County Water District, 2018, Annual Groundwater Report.

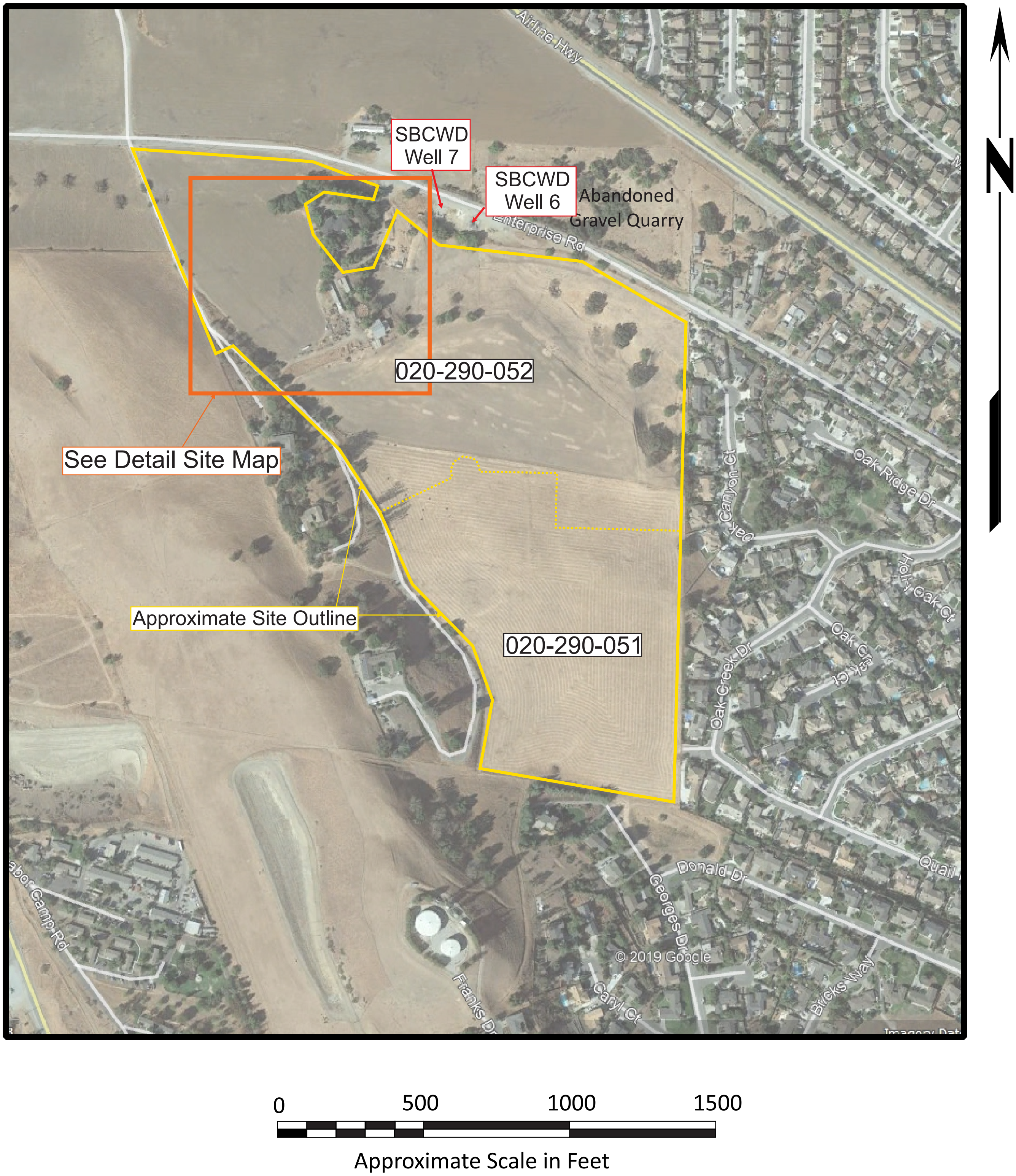
APPENDIX A

FIGURES



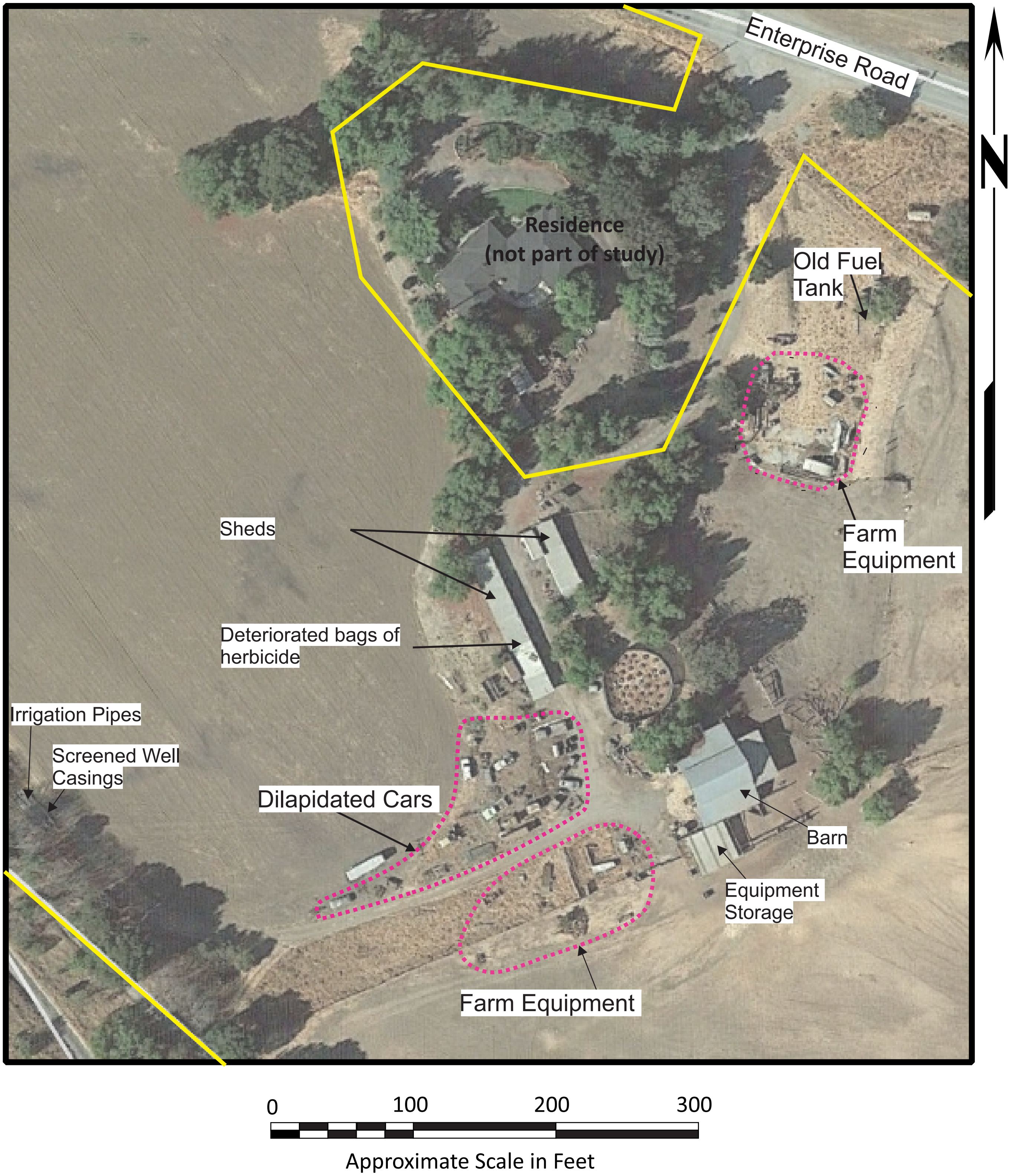
Base: EDR Historical Topo Map; composite of Tres Pinos and Hollister, 2012, 7.5-Minute Quadrangles

Earth Systems Pacific	Vista Del Calabria Phase I ESA Enterprise Road Hollister, California	**Vicinity Map** **302615-002**



Base: Google Earth (2018)

Earth Systems Pacific	Vista Del Calabria Phase I ESA Enterprise Road Hollister, California	**Overall Site Map** 302615-002



Base: Google Earth (2018)

Earth Systems Pacific	Vista Del Calabria Phase I ESA Enterprise Road Hollister, California	**Detail Site Map** **302615-002**

APPENDIX B

PHOTOGRAPHS

Dilapidated Vehicles and possible old fuel storage tank.

View of dilapidated vehicles and barn, looking east.

View of shed and deteriorated bags of herbicide.

Southern portion of the site with cattle grazing. Picture taken facing northeast.

Qual Oak Hallow at top left and Ridgemark at top right. Picture taken facing southeast.

Small containers with possible fuel.

Drum resting on its side rear of shed.

Drum resting on its side, west site boundary.

APPENDIX C

AERIAL PHOTOGRAPHS

Vista Del Calabria Phase I ESA

Southside Rd/Enterprise Rd

Hollister, CA 95023

Inquiry Number: 5914923.8

December 23, 2019

The EDR Aerial Photo Decade Package

EDR®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

12/23/19

Site Name:

Vista Del Calabria Phase I ESA
Southside Rd/Enterprise Rd
Hollister, CA 95023
EDR Inquiry # 5914923.8

Client Name:

Earth Systems Pacific, Northern CA
500 Park Center Drive
Hollister, CA 95023
Contact: David Teimoorian

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
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1998	1"=500'	Acquisition Date: August 17, 1998	USGS/DOQQ
1981	1"=500'	Flight Date: August 03, 1981	USDA
1974	1"=500'	Flight Date: July 12, 1974	USGS
1971	1"=500'	Flight Date: July 04, 1971	USGS
1960	1"=500'	Flight Date: April 02, 1960	USGS
1953	1"=500'	Flight Date: July 15, 1953	USGS
1949	1"=500'	Flight Date: August 01, 1949	USDA
1939	1"=500'	Flight Date: May 25, 1939	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.


INQUIRY #: 5914923.8
YEAR: 2016
= 500'
N
EDR


INQUIRY #: 5914923.8
YEAR: 2012
= 500'
N
EDR

INQUIRY #: 5914923.8

YEAR: 2009

= 500'

N

EDR

INQUIRY #: 5914923.8

YEAR: 2006

= 500'

N

EDR

INQUIRY #: 5914923.8

YEAR: 1998

= 500'

N

EDR

INQUIRY #: 5914923.8

YEAR: 1981

= 500'

EDR

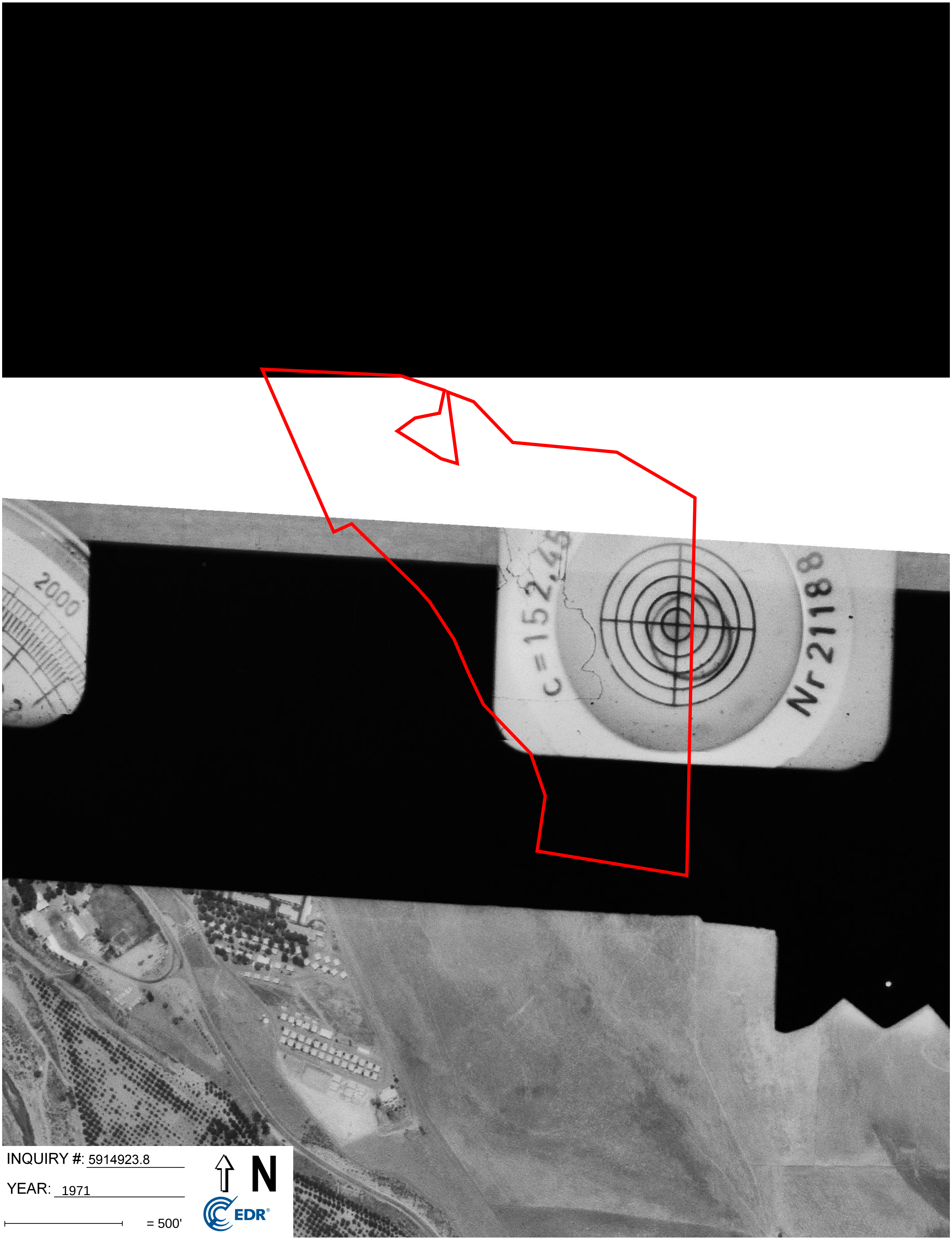
INQUIRY #: 5914923.8

YEAR: 1974

= 500'

N

EDR



INQUIRY #: 5914923.8

YEAR: 1971

= 500'

N

EDR

INQUIRY #: 5914923.8

YEAR: 1960

= 500'

N

EDR

INQUIRY #: 5914923.8

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 5914923.8

YEAR: 1949

= 500'

N

INQUIRY #: 5914923.8

YEAR: 1939

= 500'

N

EDR

APPENDIX D

TOPOGRAPHIC MAPS

Vista Del Calabria Phase I ESA

Southside Rd/Enterprise Rd

Hollister, CA 95023

Inquiry Number: 5914923.4

December 23, 2019

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

12/23/19

Site Name:	Client Name:
Vista Del Calabria Phase I ESA	Earth Systems Pacific, Northern CA
Southside Rd/Enterprise Rd	500 Park Center Drive
Hollister, CA 95023	Hollister, CA 95023
EDR Inquiry # 5914923.4	Contact: David Teimoorian

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Earth Systems Pacific, Northern CA 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.#	302615-002
Project:	Lico Property Development

Coordinates:

Latitude:	36.818916 36° 49' 8" North
Longitude:	-121.379382 -121° 22' 46" West
UTM Zone:	Zone 10 North
UTM X Meters:	644542.92
UTM Y Meters:	4076009.70
Elevation:	453.82' above sea level

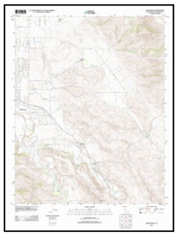
Maps Provided:

2012
1995
1993
1987
1971
1955
1923
1921
1919

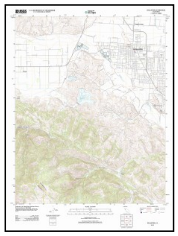
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

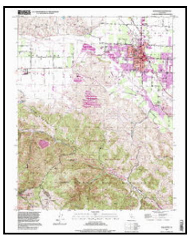


Tres Pinos
2012
7.5-minute, 24000



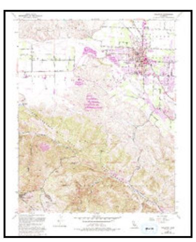
Hollister
2012
7.5-minute, 24000

1995 Source Sheets



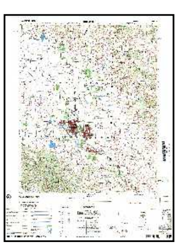
Hollister
1995
7.5-minute, 24000
Aerial Photo Revised 1987

1993 Source Sheets



Hollister
1993
7.5-minute, 24000
Aerial Photo Revised 1987

1987 Source Sheets



HOLLISTER
1987
15-minute, 50000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

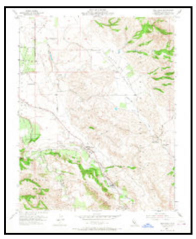
1971 Source Sheets

Hollister
1971
7.5-minute, 24000
Aerial Photo Revised 1971

Tres Pinos
1971
7.5-minute, 24000
Aerial Photo Revised 1971

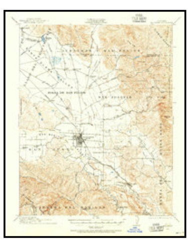
1955 Source Sheets

Hollister
1955
7.5-minute, 24000
Aerial Photo Revised 1952



Tres Pinos
1955
7.5-minute, 24000
Aerial Photo Revised 1953

1923 Source Sheets



Hollister
1923
15-minute, 62500

1921 Source Sheets

Hollister
1921
15-minute, 62500

Topo Sheet Key

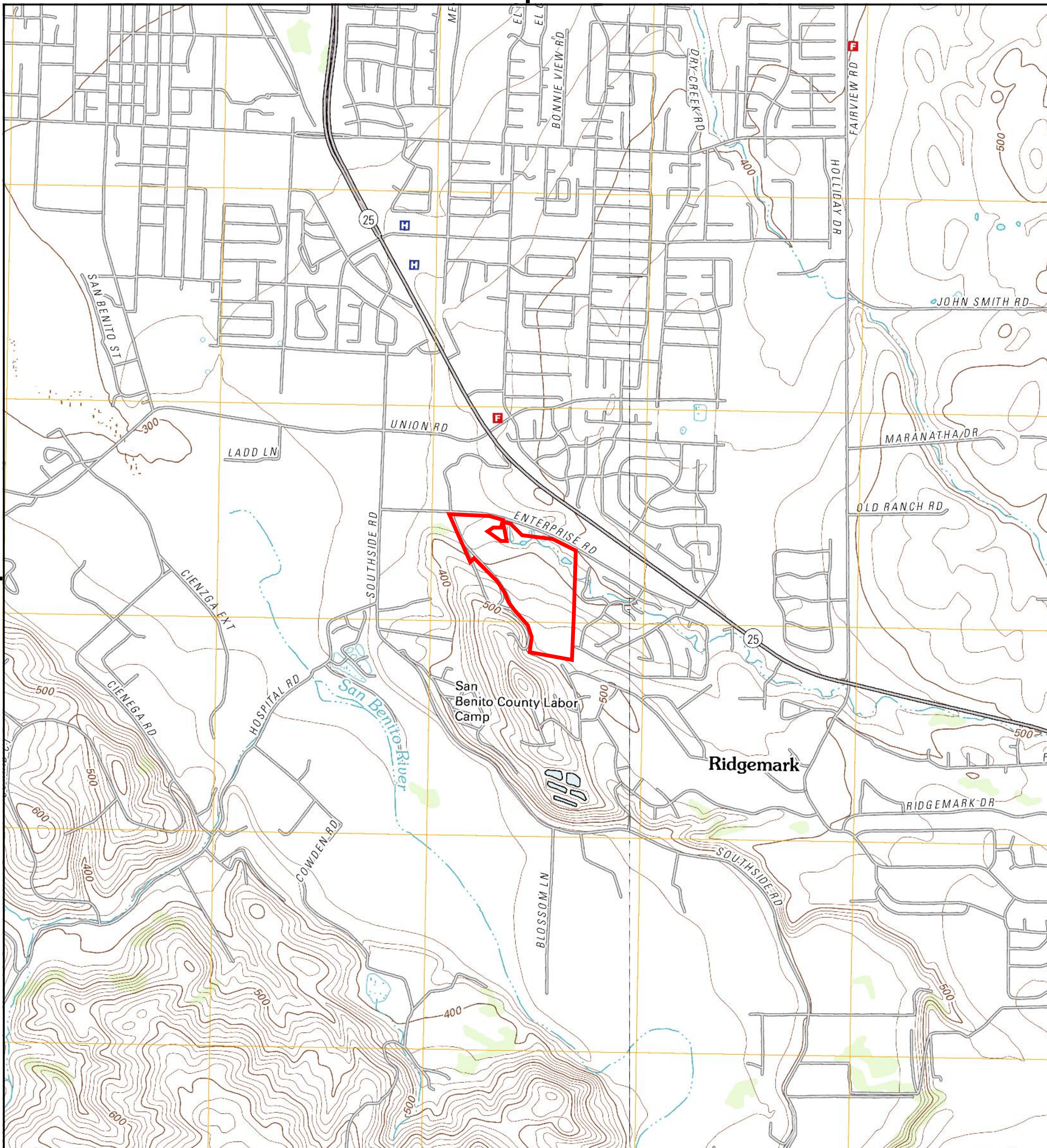
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1919 Source Sheets

Hollister
1919
15-minute, 48000

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

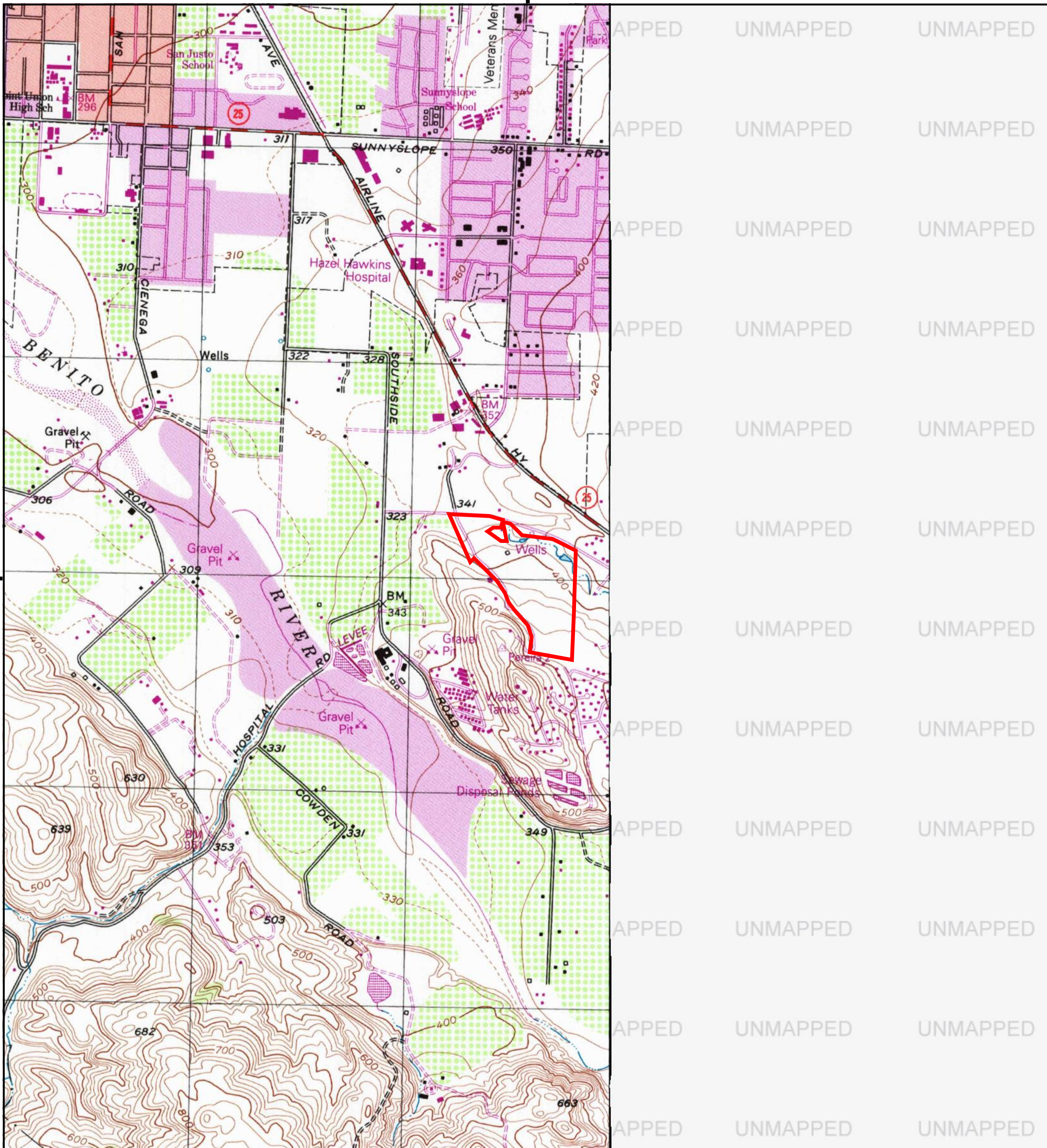
TP, Hollister, 2012, 7.5-minute
E, Tres Pinos, 2012, 7.5-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

Historical Topo Map

1995



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

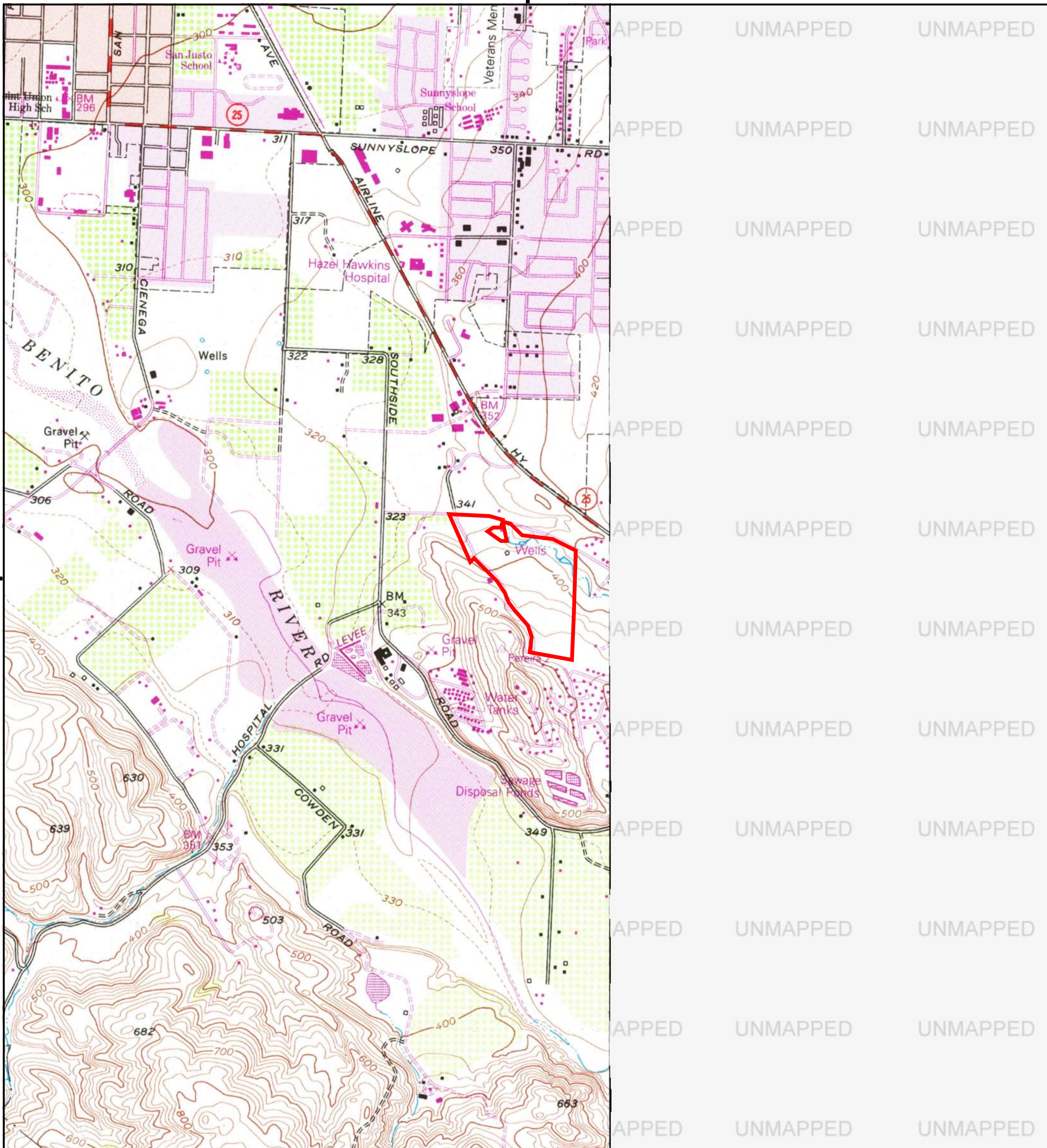
TP, Hollister, 1995, 7.5-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

Historical Topo Map

1993



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

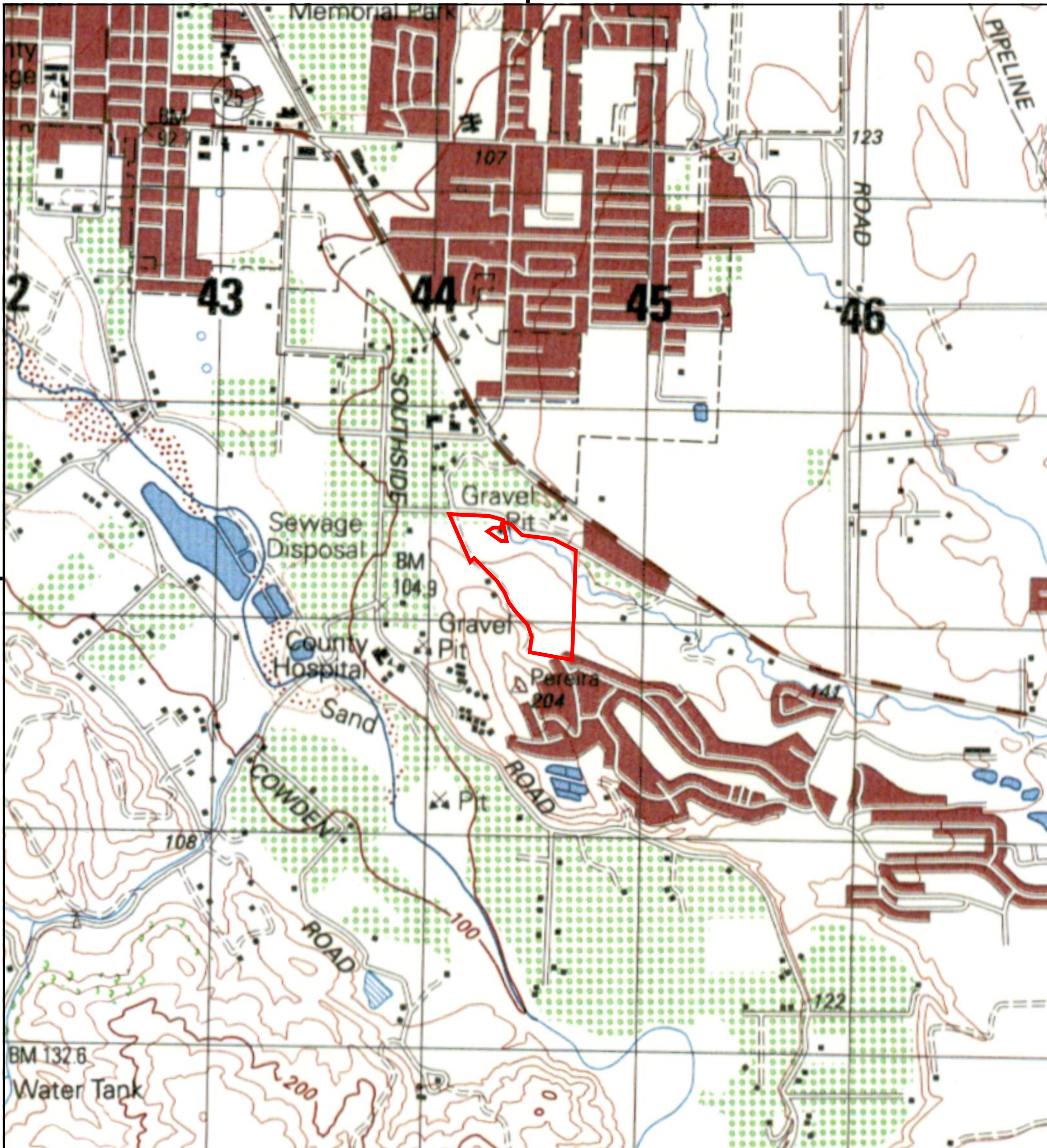
TP, Hollister, 1993, 7.5-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

Historical Topo Map

1987



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

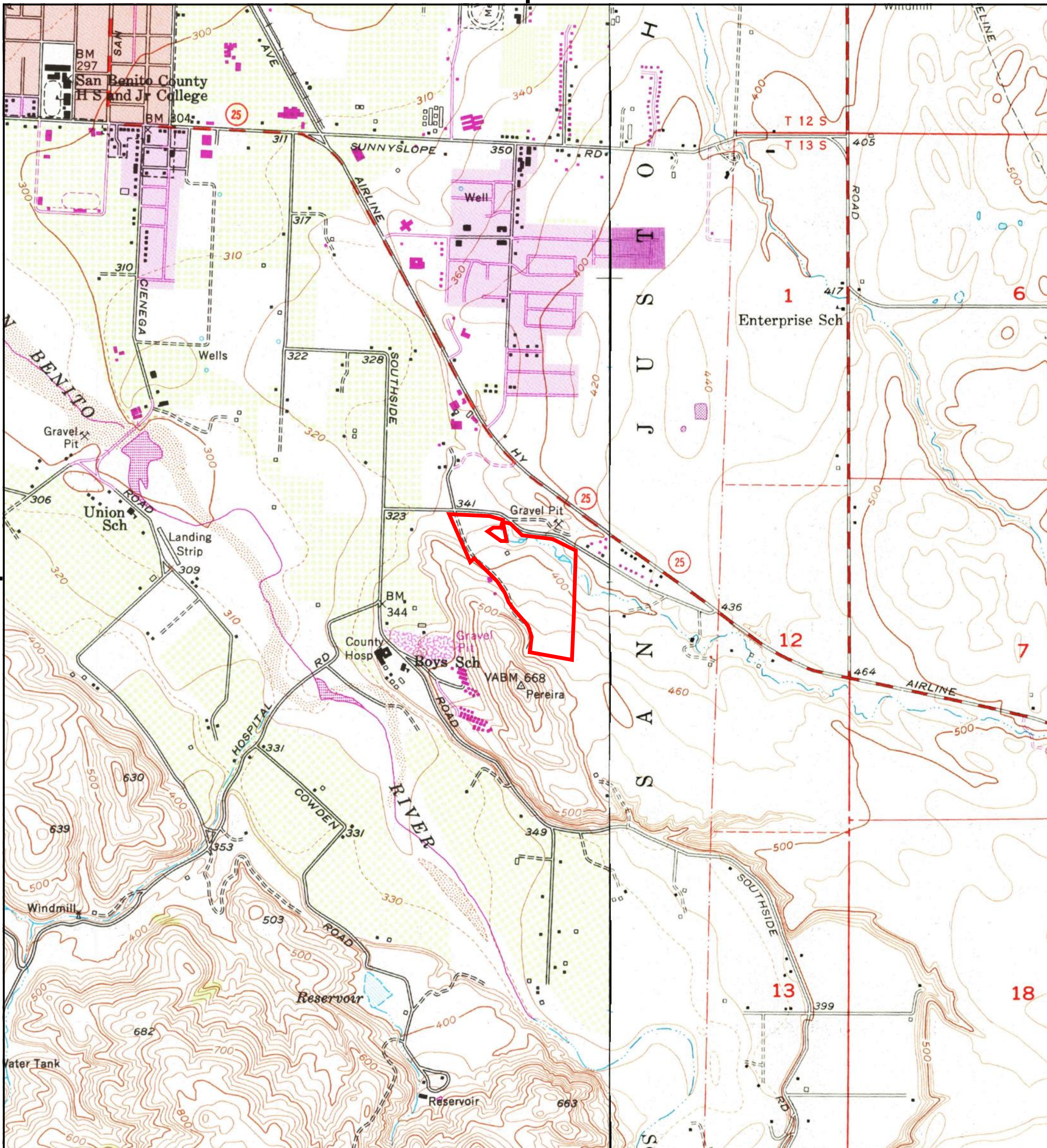
TP, HOLLISTER, 1987, 15-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

Historical Topo Map

1971



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

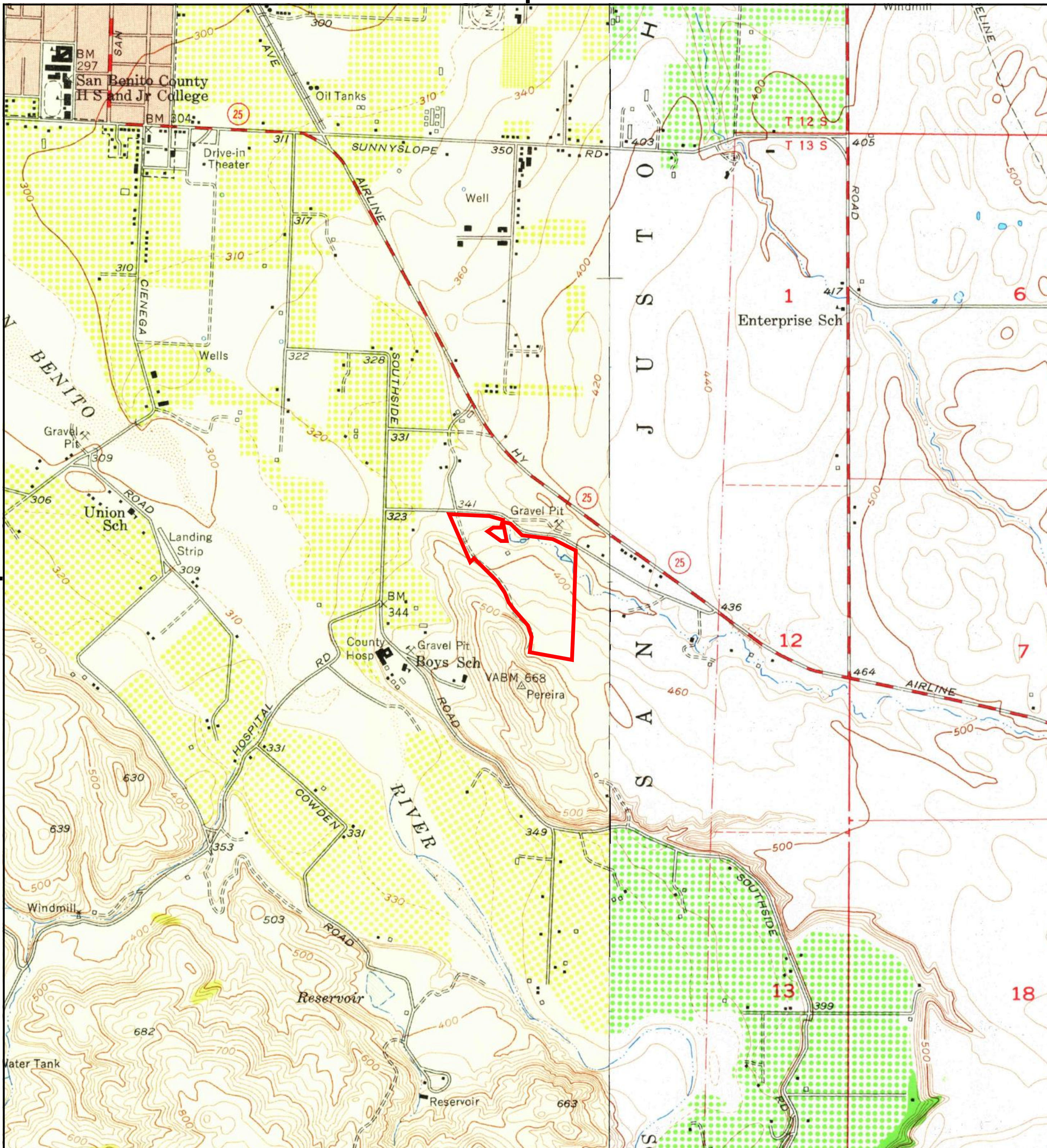
TP, Hollister, 1971, 7.5-minute
E, Tres Pinos, 1971, 7.5-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

Historical Topo Map

1955



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

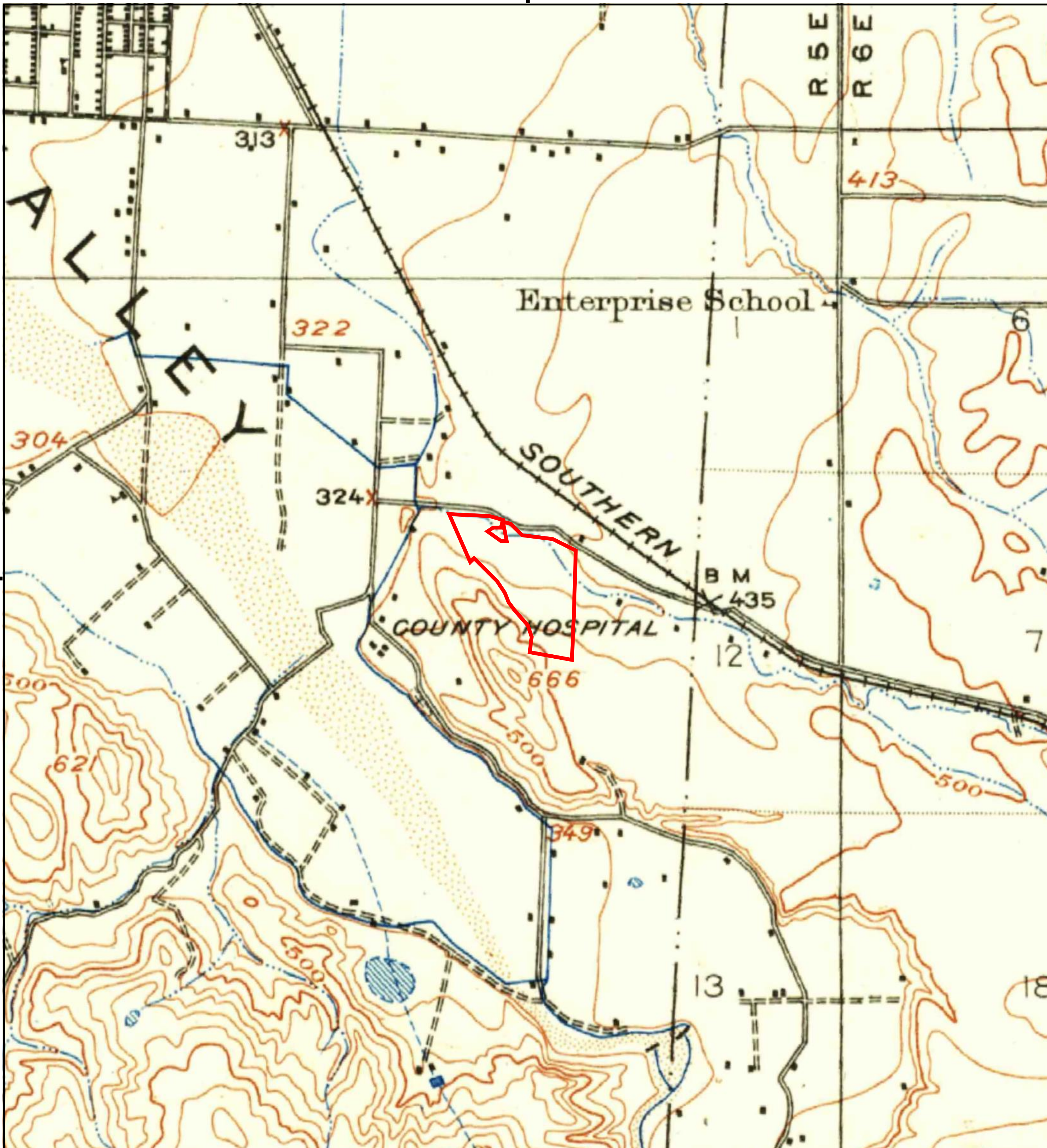
NW N NE
W E
SW S SE

TP, Hollister, 1955, 7.5-minute
E, Tres Pinos, 1955, 7.5-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

Historical Topo Map

1923



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

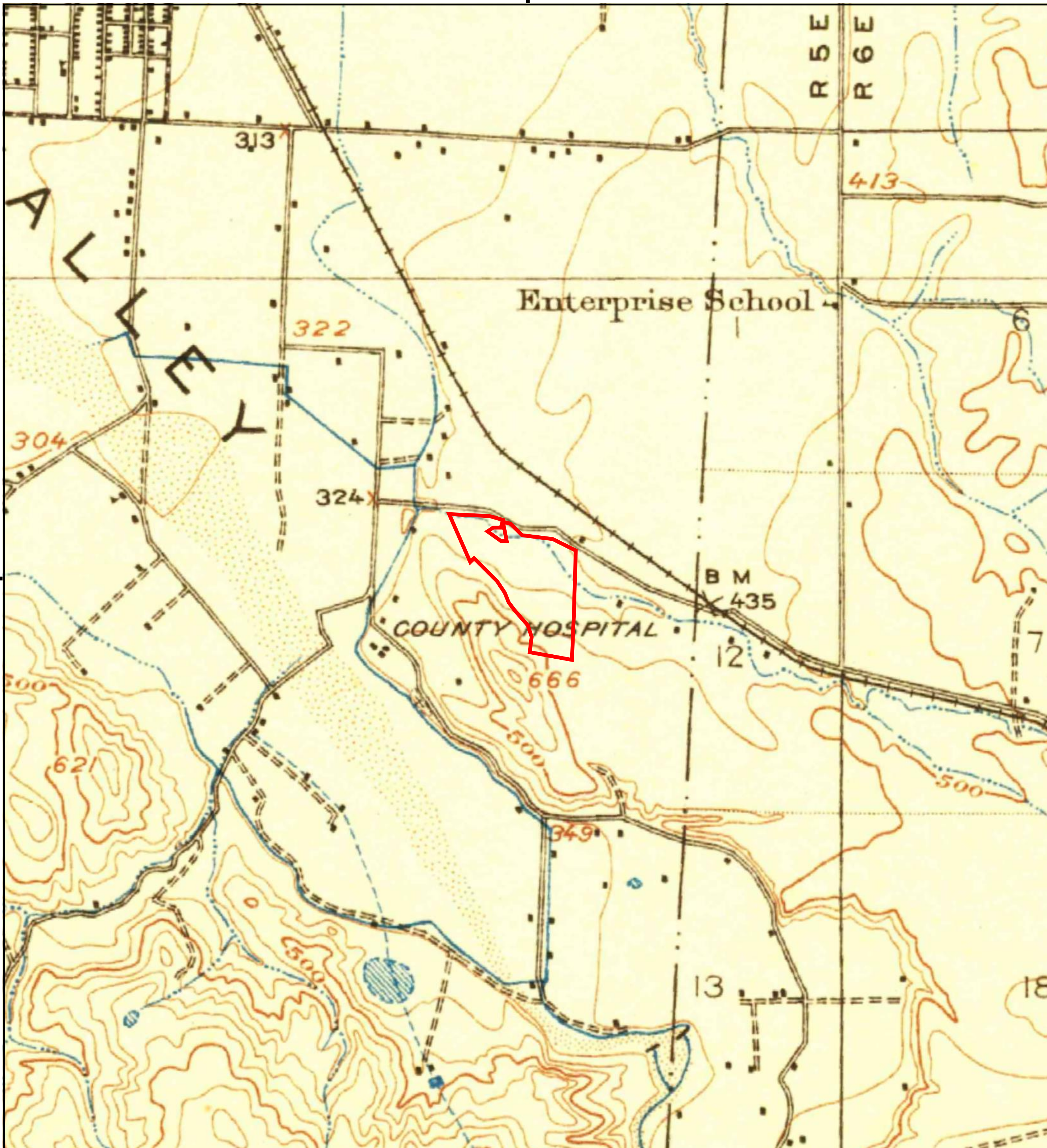
TP, Hollister, 1923, 15-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

Historical Topo Map

1921



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

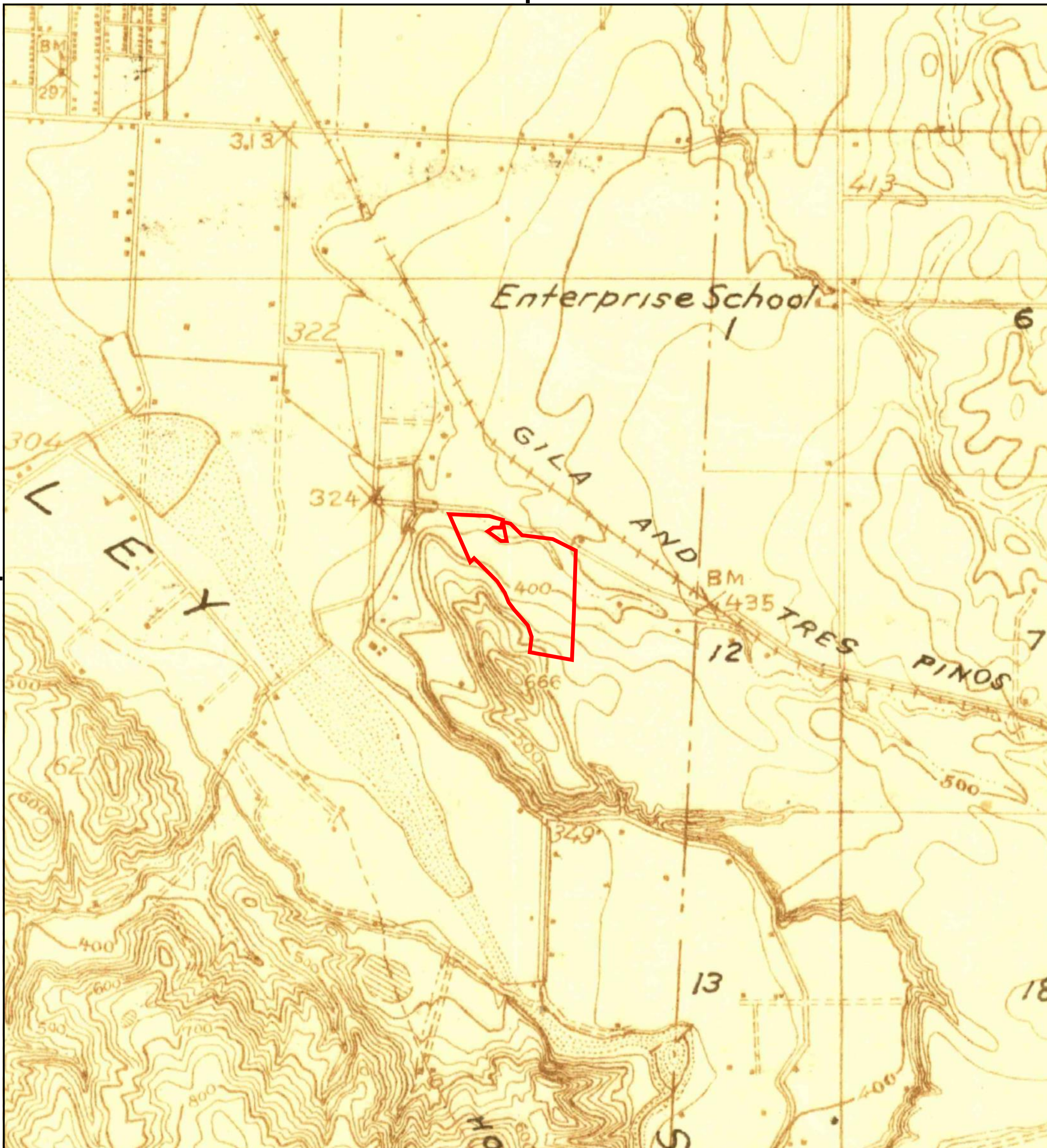
TP, Hollister, 1921, 15-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

Historical Topo Map

1919



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, Hollister, 1919, 15-minute

SITE NAME: Vista Del Calabria Phase I ESA
ADDRESS: Southside Rd/Enterprise Rd
Hollister, CA 95023
CLIENT: Earth Systems Pacific, Northern CA

N

APPENDIX E

AGENCY DATABASE SEARCH REPORT

Vista Del Calabria Phase I ESA
Southside Rd/Enterprise Rd
Hollister, CA 95023

Inquiry Number: 5914923.2s
December 30, 2019

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION **PAGE**

GEOCHECK ADDENDUM

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

SOUTHSIDE RD/ENTERPRISE RD
HOLLISTER, CA 95023

COORDINATES

Latitude (North):	36.8189160 - 36˚ 49’ 8.09’’
Longitude (West):	121.3793820 - 121˚ 22’ 45.77’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	644546.4
UTM Y (Meters):	4075807.0
Elevation:	454 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey
Target Property:	E
Source:	U.S. Geological Survey

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140609
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
SOUTHSIDE RD/ENTERPRISE RD
HOLLISTER, CA 95023

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	ENTERPRISE WELL # 7	600 ENTERPRISE RD	CUPA Listings, CERS	Lower	361, 0.068, NE
A2	VERIZON WIRELESS HOL	25 FRANKS DR	CUPA Listings, CERS	Higher	844, 0.160, South
A3	AT&T MOBILITY - HILD	25 FRANKS DR	CUPA Listings	Higher	844, 0.160, South
4	SEXTON TRUCKING	2411 PARADISE CIRCLE	RCRA NonGen / NLR	Lower	991, 0.188, NNE
B5	K HOVNANIAN HOMES	3061 SOUTHSIDE RD	RCRA NonGen / NLR	Lower	1305, 0.247, WNW
B6	SUNNYSLOPE CWD SOUTH	2783 SOUTHSIDE RD	CUPA Listings, CERS	Lower	1320, 0.250, WNW
B7	SUNNYSIDE ESTATES	2780 SOUTHSIDE ROAD	ENVIROSTOR, VCP	Lower	1326, 0.251, WNW
C8	SOUTHSIDE ROAD PROJE	3110 SOUTHSIDE ROAD	ENVIROSTOR, VCP	Lower	1610, 0.305, West
C9	SOUTHSIDE ROAD PROJE	3110 SOUTHSIDE ROAD	US BROWNFIELDS	Lower	1610, 0.305, West
10	CAROLYN S HAMILTON	161 LADD LANE	ENVIROSTOR, SCH, HIST UST	Lower	3456, 0.655, NW
11	HAZEL HAWKINS HOSPIT	911 SUNSET DR	LUST, AST, CERS HAZ WASTE, CERS TANKS, CUPA...	Lower	4232, 0.802, NNW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

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

State- and tribal - equivalent CERCLIS

ENVIROSTOR: A review of the ENVIROSTOR list, as provided by EDR, and dated 07/29/2019 has revealed that there are 3 ENVIROSTOR sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SUNNYSIDE ESTATES Status: Active Facility Id: 60002575	***2780 SOUTHSIDE ROAD***	***WNW 1/4 - 1/2 (0.251 mi.)***	***B7***	***9***
SOUTHSIDE ROAD PROJE Status: No Further Action Facility Id: 60002236	***3110 SOUTHSIDE ROAD***	***W 1/4 - 1/2 (0.305 mi.)***	***C8***	***9***
CAROLYN S HAMILTON Status: No Further Action Facility Id: 35010003	***161 LADD LANE***	***NW 1/2 - 1 (0.655 mi.)***	***10***	***10***

State and tribal voluntary cleanup sites

VCP: A review of the VCP list, as provided by EDR, and dated 07/29/2019 has revealed that there are 2 VCP sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SUNNYSIDE ESTATES Status: Active Facility Id: 60002575	***2780 SOUTHSIDE ROAD***	***WNW 1/4 - 1/2 (0.251 mi.)***	***B7***	***9***
SOUTHSIDE ROAD PROJE	***3110 SOUTHSIDE ROAD***	***W 1/4 - 1/2 (0.305 mi.)***	***C8***	***9***

Status: No Further Action
Facility Id: 60002236

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A review of the US BROWNFIELDS list, as provided by EDR, and dated 06/03/2019 has revealed that there is 1 US BROWNFIELDS site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SOUTHSIDE ROAD PROJE ACRES property ID: 219288	3110 SOUTHSIDE ROAD	W 1/4 - 1/2 (0.305 mi.)	C9	9

Other Ascertainable Records

RCRA NonGen / NLR: A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/16/2019 has revealed that there are 2 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SEXTON TRUCKING EPA ID:: CAR000182212	2411 PARADISE CIRCLE	NNE 1/8 - 1/4 (0.188 mi.)	4	8
K HOVNANIAN HOMES EPA ID:: CAC002978541	3061 SOUTHSIDE RD	WNW 1/8 - 1/4 (0.247 mi.)	B5	8

CUPA Listings: A review of the CUPA Listings list, as provided by EDR, has revealed that there are 4 CUPA Listings sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
VERIZON WIRELESS HOL Database: CUPA SAN BENITO, Date of Government Version: 07/16/2019	***25 FRANKS DR***	***S 1/8 - 1/4 (0.160 mi.)***	***A2***	***8***
AT&T MOBILITY - HILD Database: CUPA SAN BENITO, Date of Government Version: 07/16/2019	25 FRANKS DR	S 1/8 - 1/4 (0.160 mi.)	A3	8

Lower Elevation	Address	Direction / Distance	Map ID	Page
ENTERPRISE WELL # 7 Database: CUPA SAN BENITO, Date of Government Version: 07/16/2019	***600 ENTERPRISE RD***	***NE 0 - 1/8 (0.068 mi.)***	***1***	***8***
SUNNYSLOPE CWD SOUTH Database: CUPA SAN BENITO, Date of Government Version: 07/16/2019	***2783 SOUTHSIDE RD***	***WNW 1/8 - 1/4 (0.250 mi.)***	***B6***	***9***

EXECUTIVE SUMMARY

Notify 65: A review of the Notify 65 list, as provided by EDR, and dated 09/16/2019 has revealed that there is 1 Notify 65 site within approximately 1 mile of the target property.

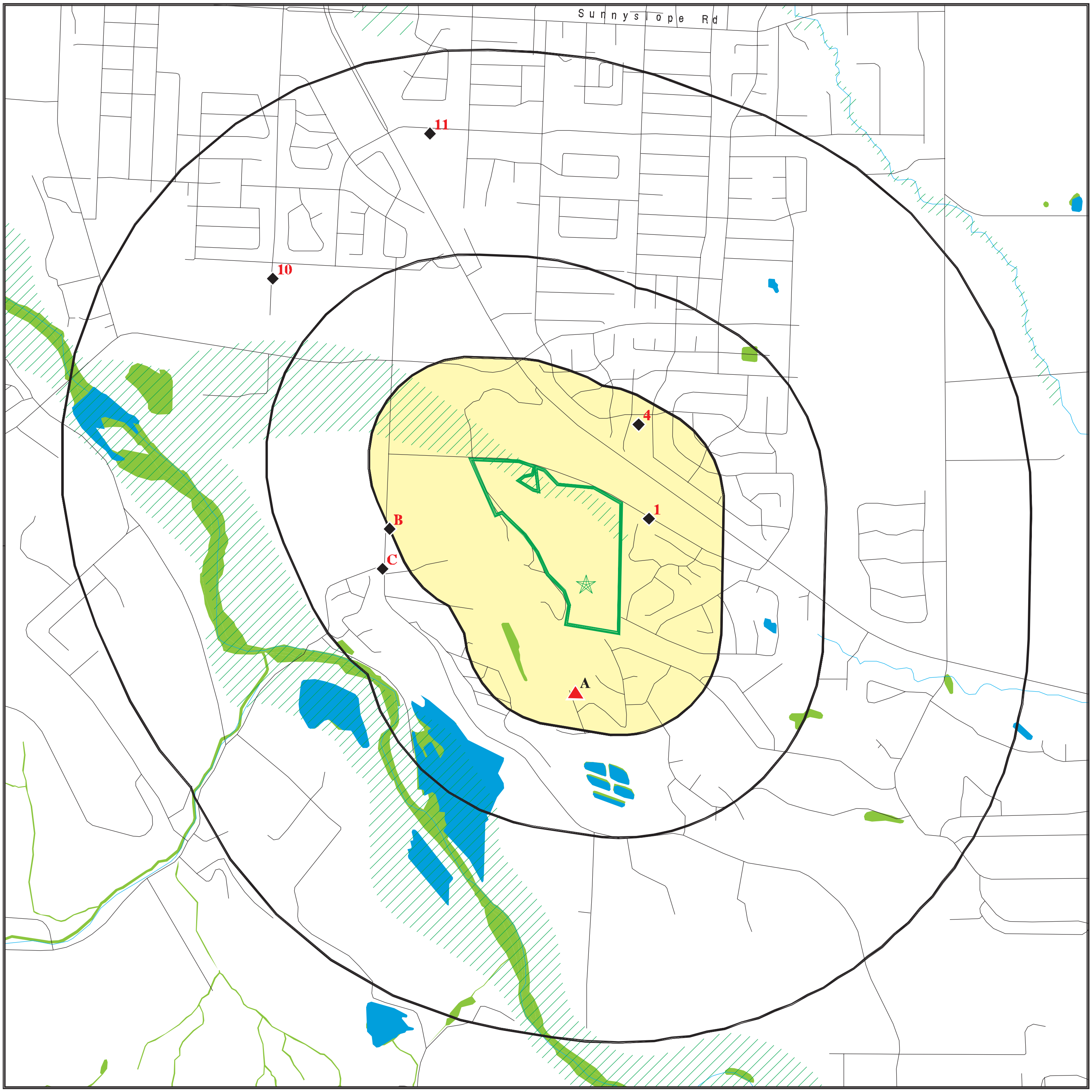
Lower Elevation	Address	Direction / Distance	Map ID	Page
HAZEL HAWKINS HOSPIT	*911 SUNSET DR*	*NNW 1/2 - 1 (0.802 mi.)*	*11*	*10*

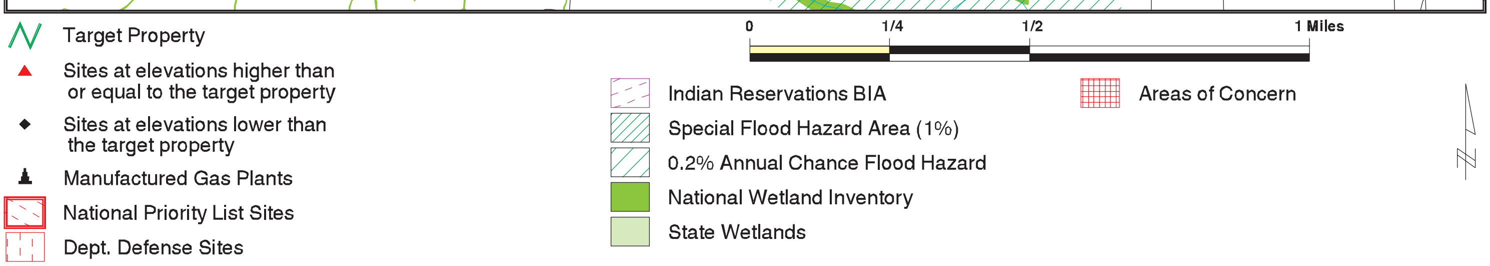
Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

OVERVIEW MAP - 5914923.2S

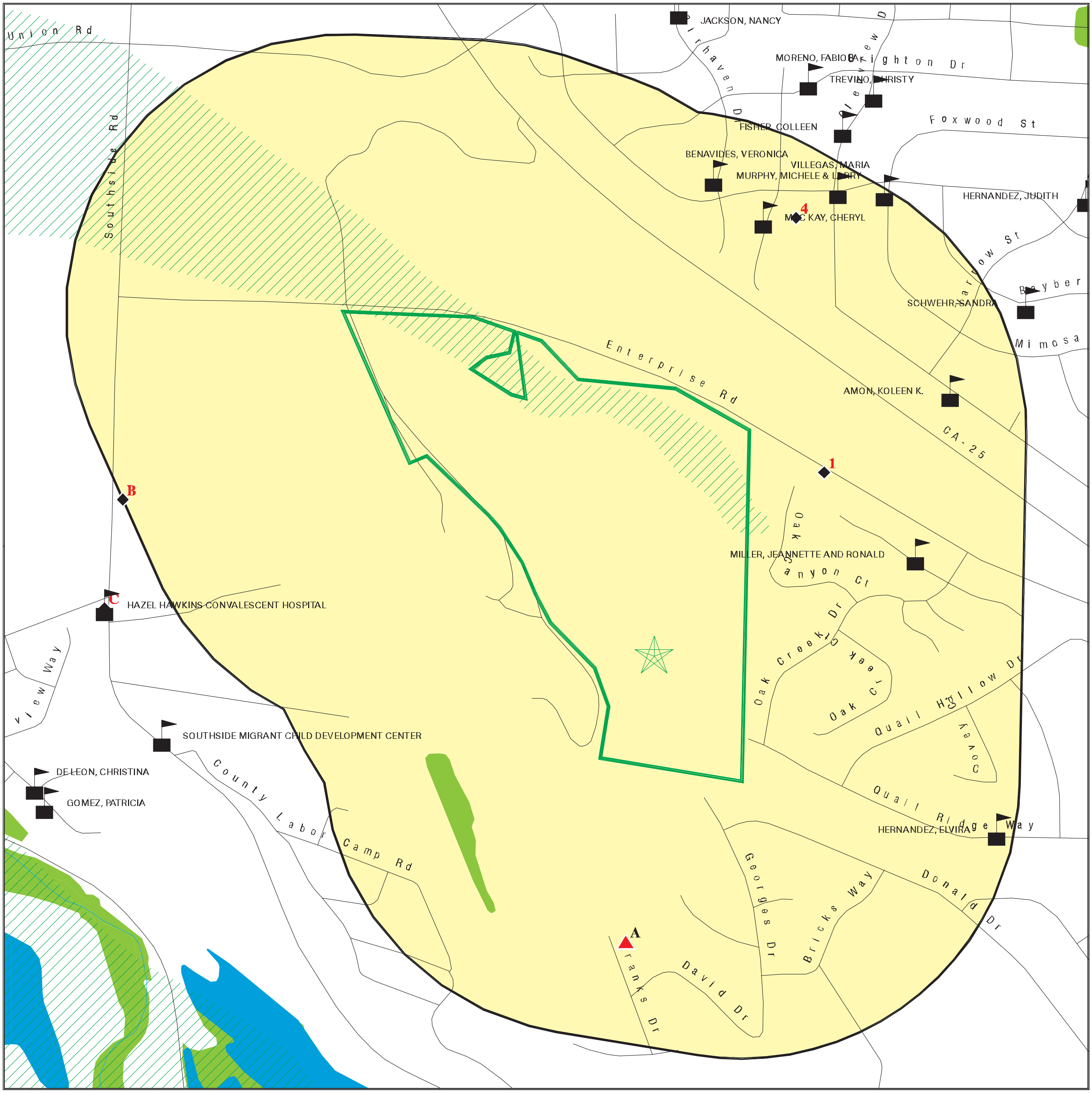




This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Vista Del Calabria Phase I ESA	CLIENT: Earth Systems Pacific, Northern CA
ADDRESS: Southside Rd/Enterprise Rd	CONTACT: David Teimoorian
Hollister CA 95023	INQUIRY #: 5914923.2s
LAT/LONG: 36.818916 / 121.379382	DATE: December 30, 2019 12:27 pm

DETAIL MAP - 5914923.2S



- 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
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

0 1/8 1/4 1/2 Miles

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:	Vista Del Calabria Phase I ESA	CLIENT:	Earth Systems Pacific, Northern CA
ADDRESS:	Southside Rd/Enterprise Rd Hollister CA 95023	CONTACT:	David Teimoorian
		INQUIRY #:	5914923.2s
LAT/LONG:	36.818916 / 121.379382	DATE:	December 30, 2019 12:28 pm

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	1.000		0	0	0	0	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	0	NR	0
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-VSQG	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	2	1	NR	3
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	0	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
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-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	0	NR	NR	NR	0
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	2	NR	NR	2
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	1	NR	NR	1
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
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	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
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
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		0	2	NR	NR	NR	2
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	1.000		0	0	0	0	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	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
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		1	3	NR	NR	NR	4

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
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
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	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
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	1	NR	1
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	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
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	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		0	NR	NR	NR	NR	0
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 --		0	1	5	5	2	0	13

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
1 **NE** **< 1/8** **0.068 mi.** **361 ft.** **Relative: Lower**	**ENTERPRISE WELL # 7** **600 ENTERPRISE RD** **HOLLISTER, CA 95023** Click here for full text details	**CUPA Listings** **CERS**	**S120050442** **N/A**
A2 **South** **1/8-1/4** **0.160 mi.** **844 ft.** **Relative: Higher**	**VERIZON WIRELESS HOLLISTER SOUTH** **25 FRANKS DR** **HOLLISTER, CA 95023** Click here for full text details	**CUPA Listings** **CERS**	**S120050465** **N/A**
A3 **South** **1/8-1/4** **0.160 mi.** **844 ft.** **Relative: Higher**	**AT&T MOBILITY - HILDEN HILLTOP (51620)** **25 FRANKS DR** **HOLLISTER, CA** Click here for full text details	**CUPA Listings**	**S120050195** **N/A**
4 **NNE** **1/8-1/4** **0.188 mi.** **991 ft.** **Relative: Lower**	**SEXTON TRUCKING** **2411 PARADISE CIRCLE** **HOLLISTER, CA 95023** Click here for full text details **RCRA NonGen / NLR** EPA Id CAR000182212	**RCRA NonGen / NLR**	**1010314115** **CAR000182212**
B5 **WNW** **1/8-1/4** **0.247 mi.** **1305 ft.** **Relative: Lower**	**K HOVNANIAN HOMES** **3061 SOUTHSIDE RD** **HOLLISTER, CA 95023** Click here for full text details **RCRA NonGen / NLR** EPA Id CAC002978541	**RCRA NonGen / NLR**	**1024758696** **CAC002978541**

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
B6 **WNW** **1/8-1/4** **0.250 mi.** **1320 ft.** **Relative: Lower**	**SUNNYSLOPE CWD SOUTHSIDE WELL #11** **2783 SOUTHSIDE RD** **HOLLISTER, CA 95023**	**CUPA Listings** **CERS**	**S120984096** **N/A**

Click here for full text details

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
B7 **WNW** **1/4-1/2** **0.251 mi.** **1326 ft.** **Relative: Lower**	**SUNNYSIDE ESTATES** **2780 SOUTHSIDE ROAD** **HOLLISTER, CA 95023**	**ENVIROSTOR** **VCP**	**S121475148** **N/A**

Click here for full text details

ENVIROSTOR
Status Active
Facility Id 60002575

VCP
Facility Id 60002575
Status Active

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
C8 **West** **1/4-1/2** **0.305 mi.** **1610 ft.** **Relative: Lower**	**SOUTHSIDE ROAD PROJECT AREA** **3110 SOUTHSIDE ROAD** **HOLLISTER, CA 95023**	**ENVIROSTOR** **VCP**	**S118353722** **N/A**

Click here for full text details

ENVIROSTOR
Status No Further Action
Facility Id 60002236

VCP
Facility Id 60002236
Status No Further Action

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
C9 **West** **1/4-1/2** **0.305 mi.** **1610 ft.** **Relative: Lower**	**SOUTHSIDE ROAD PROJECT AREA - COUNTY OF SAN BENITO** **3110 SOUTHSIDE ROAD** **HOLLISTER, CA 95023**	**US BROWNFIELDS**	**1019322169** **N/A**

Click here for full text details

US BROWNFIELDS
ACRES property ID 219288

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
10 **NW** **1/2-1** **0.655 mi.** **3456 ft.** **Relative: Lower**	**CAROLYN S HAMILTON** **161 LADD LANE** **HOLLISTER, CA 95023**	**ENVIROSTOR** **SCH** **HIST UST**	**S107736581** **N/A**

Click here for full text details

ENVIROSTOR
Status No Further Action
Facility Id 35010003

SCH
Facility Id 35010003
Status No Further Action

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
11 **NNW** **1/2-1** **0.802 mi.** **4232 ft.** **Relative: Lower**	**HAZEL HAWKINS HOSPITAL** **911 SUNSET DR** **HOLLISTER, CA 95023**	**LUST** **AST** **CERS HAZ WASTE** **CERS TANKS** **CUPA Listings** **HIST CORTESE** **NPDES** **Notify 65** **CIWQS** **CERS**	**S100231923** **N/A**

Click here for full text details

LUST
Status Case Closed
Status Completed - Case Closed
Global Id T0606900020
Global ID T0606900020

HIST CORTESE
Reg Id 61

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	09/23/2019	09/24/2019	11/06/2019
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	06/30/2018	07/16/2019	09/24/2019
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	08/14/2019	08/14/2019	08/21/2019
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	08/14/2019	08/14/2019	08/21/2019
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	08/14/2019	08/14/2019	08/21/2019
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	05/15/2019	06/24/2019	08/21/2019
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	09/03/2019	09/04/2019	11/05/2019
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	09/23/2019	09/24/2019	11/06/2019
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/06/2019
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	05/01/2019	05/14/2019	07/17/2019
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	10/31/2019	11/01/2019	12/11/2019
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	09/03/2019	09/04/2019	11/05/2019
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	08/28/2019	08/30/2019	10/29/2019
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	09/27/2019	10/01/2019	11/07/2019
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	09/06/2019	10/11/2019	12/12/2019
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2017	06/24/2019	08/22/2019
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	07/19/2019	07/22/2019	09/26/2019
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	07/19/2019	07/23/2019	09/30/2019
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	08/16/2019	08/20/2019	10/18/2019
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	03/26/2019	03/27/2019	04/30/2019
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2017	05/29/2019	07/22/2019
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	08/19/2019	08/20/2019	10/18/2019
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	10/07/2019	10/08/2019	11/07/2019
CA	ICE	ICE	Department of Toxic Subsances Control	08/19/2019	08/20/2019	10/18/2019
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	09/09/2019	09/09/2019	11/05/2019
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	08/29/2019	08/30/2019	10/29/2019
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	10/31/2019
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/05/2019
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	MINES	Mines Site Location Listing	Department of Conservation	09/09/2019	09/09/2019	11/05/2019
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	07/19/2019	09/04/2019	11/05/2019
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	09/16/2019	09/18/2019	11/06/2019
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	08/12/2019	08/13/2019	10/16/2019
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	09/03/2019	09/04/2019	11/05/2019
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	09/09/2019	09/09/2019	11/05/2019
CA	PROC	Certified Processors Database	Department of Conservation	09/09/2019	09/09/2019	11/05/2019
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	08/01/2019	08/02/2019	10/11/2019
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	08/12/2019	08/13/2019	10/09/2019
CA	SWRCY	Recycler Database	Department of Conservation	09/09/2019	09/09/2019	11/07/2019
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	08/20/2019	08/20/2019	11/18/2019
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	09/09/2019	09/09/2019	11/01/2019
CA	UST	Active UST Facilities	SWRCB	09/09/2019	09/09/2019	10/31/2019
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	09/06/2019	09/09/2019	10/31/2019
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	08/20/2019	09/09/2019	10/31/2019
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	07/29/2019	07/31/2019	10/08/2019
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	05/08/2018	07/11/2018	09/13/2018
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	09/09/2019	09/09/2019	11/06/2019
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	09/09/2019	09/09/2019	11/01/2019
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2019	09/10/2019	10/17/2019
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	09/30/2019	10/09/2019	12/20/2019
US	CORRACTS	Corrective Action Report	EPA	12/16/2019	12/16/2019	12/20/2019
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	07/01/2019	07/31/2019	10/24/2019
US	Delisted NPL	National Priority List Deletions	EPA	10/25/2019	11/07/2019	11/20/2019
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	07/06/2019	07/09/2019	10/02/2019
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	09/09/2019	09/09/2019	09/23/2019
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	04/03/2019	04/05/2019	05/14/2019
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FEMA UST	Underground Storage Tank Listing	FEMA	08/27/2019	08/28/2019	11/11/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	08/12/2019	09/04/2019	12/03/2019
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	05/15/2019	05/21/2019	08/08/2019
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	08/19/2019	08/20/2019	11/11/2019
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	06/24/2019	06/26/2019	09/23/2019
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/11/2019	07/29/2019	10/17/2019
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/16/2019	07/29/2019	10/17/2019
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	04/12/2019	07/29/2019	10/17/2019
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/08/2019	07/30/2019	10/17/2019
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	05/01/2019	07/29/2019	10/17/2019
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	07/02/2019	10/16/2019	10/24/2019
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	05/02/2019	10/22/2019	11/11/2019
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/08/2019	07/29/2019	10/17/2019
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/11/2019	07/30/2019	10/17/2019
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/16/2019	07/30/2019	10/17/2019
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	04/12/2019	07/29/2019	10/17/2019
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/08/2019	07/29/2019	10/17/2019
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	05/01/2019	07/29/2019	10/17/2019
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	05/02/2019	07/29/2019	10/17/2019
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	05/02/2019	10/22/2019	11/11/2019
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/08/2019	07/29/2019	10/17/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	10/25/2019	11/07/2019	11/20/2019
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	10/25/2019	11/07/2019	11/20/2019
US	LUCIS	Land Use Control Information System	Department of the Navy	08/13/2019	08/20/2019	08/26/2019
US	MINES MRDS	Mineral Resources Data System	USGS	04/06/2018	10/21/2019	10/24/2019
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	09/17/2019	09/18/2019	12/03/2019
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	06/20/2019	06/20/2019	08/08/2019
US	NPL	National Priority List	EPA	10/25/2019	11/07/2019	11/20/2019
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	10/09/2019	10/11/2019	12/20/2019
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	PRP	Potentially Responsible Parties	EPA	10/25/2019	11/07/2019	11/21/2019
US	Proposed NPL	Proposed National Priority List Sites	EPA	10/25/2019	11/07/2019	11/20/2019
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	12/16/2019	12/16/2019	12/20/2019
US	RMP	Risk Management Plans	Environmental Protection Agency	04/25/2019	05/02/2019	05/23/2019
US	ROD	Records Of Decision	EPA	10/25/2019	11/07/2019	11/20/2019
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	10/25/2019	11/07/2019	11/21/2019
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	10/25/2019	11/07/2019	11/21/2019
US	SSTS	Section 7 Tracking Systems	EPA	09/30/2018	04/24/2019	08/08/2019
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2017	11/16/2018	11/21/2019
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/01/2019	08/21/2019	11/11/2019
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	06/03/2019	06/04/2019	08/26/2019
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	09/23/2019	09/24/2019	12/20/2019
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	08/01/2019	08/27/2019	11/11/2019
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2017	01/17/2019	04/01/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	05/14/2019	05/14/2019	08/05/2019
NJ	NJ MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2018	04/10/2019	05/16/2019
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	01/01/2019	05/01/2019	06/21/2019
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	06/30/2018	07/19/2019	09/10/2019
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2018	10/02/2019	12/10/2019
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	05/31/2018	06/19/2019	09/03/2019
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
CA	Daycare Centers	Sensitive Receptor: Licensed Facilities	Department of Social Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
CA	State Wetlands	Wetland Inventory	Department of Fish and Wildlife			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		Endeavor Business Media			
US	Electric Power Transmission Line Data		Endeavor Business Media			

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

VISTA DEL CALABRIA PHASE I ESA
SOUTHSIDE RD/ENTERPRISE RD
HOLLISTER, CA 95023

TARGET PROPERTY COORDINATES

Latitude (North):	36.818916 - 36˚ 49’ 8.10’’
Longitude (West):	121.379382 - 121˚ 22’ 45.78’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	644546.4
UTM Y (Meters):	4075807.0
Elevation:	454 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619826 HOLLISTER, CA
Version Date:	2012
East Map:	5603776 TRES PINOS, 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 principle 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).

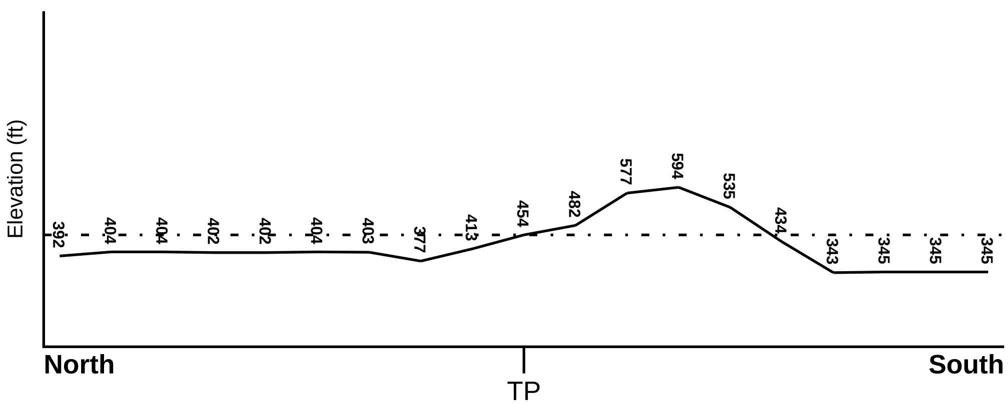
TOPOGRAPHIC INFORMATION

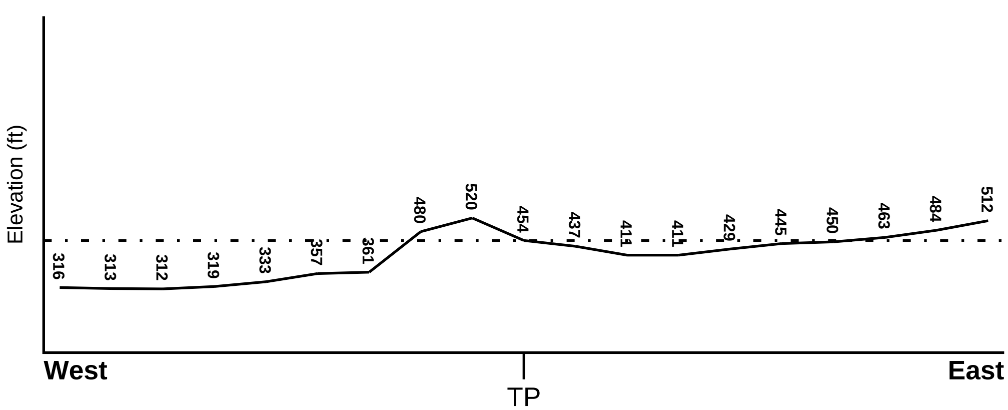
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

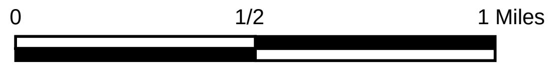
General Topographic Gradient: General North

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 454 ft.



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
06069C0185D	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06069C0205D	FEMA FIRM Flood data
06069C0195D	FEMA FIRM Flood data
06069C0215D	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
HOLLISTER	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		

* 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

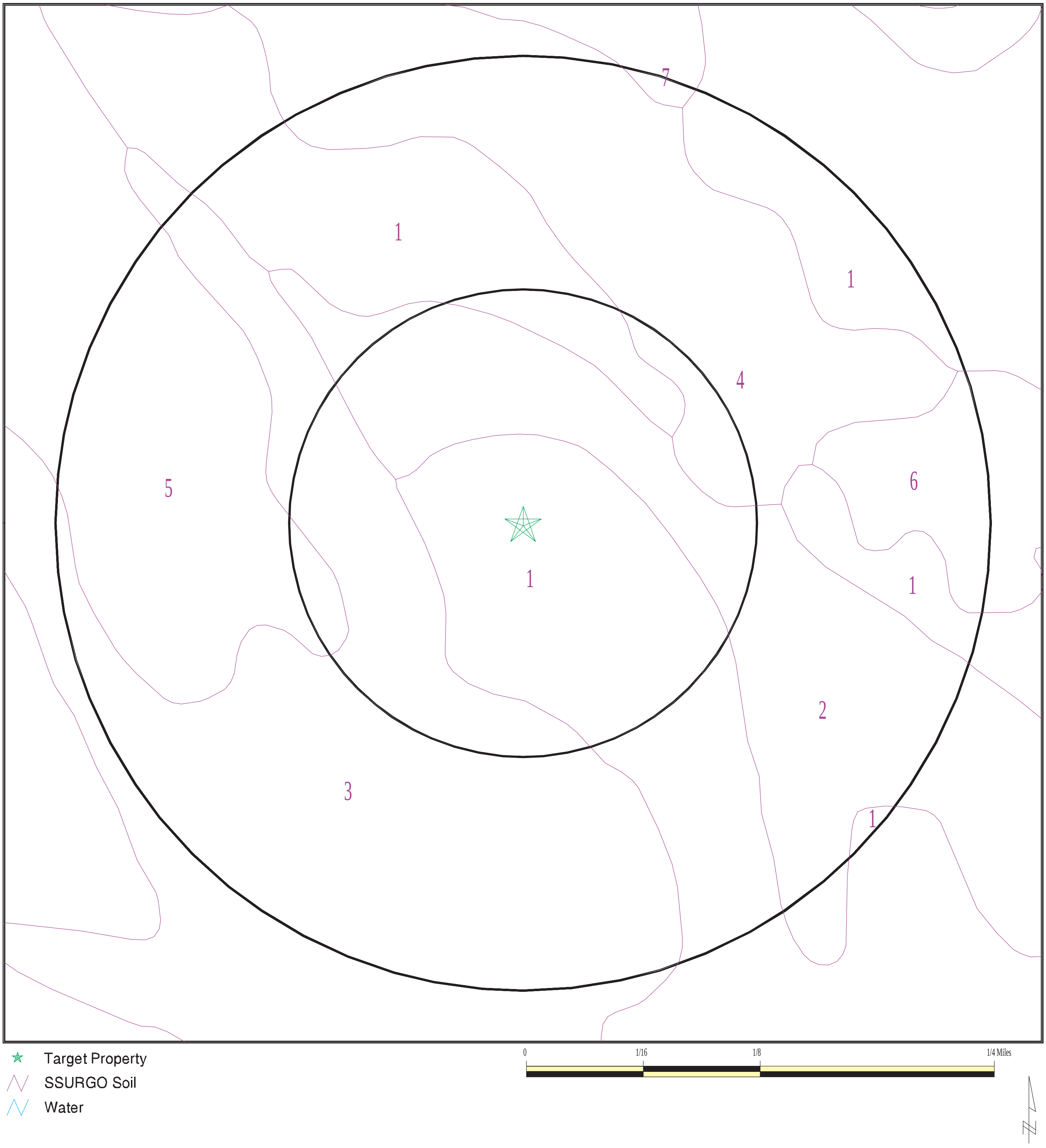
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

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 - 5914923.2s



SITE NAME:	Vista Del Calabria Phase I ESA	CLIENT:	Earth Systems Pacific, Northern CA
ADDRESS:	Southside Rd/Enterprise Rd Hollister CA 95023	CONTACT:	David Teimoorian
		INQUIRY #:	5914923.2s
LAT/LONG:	36.818916 / 121.379382	DATE:	December 30, 2019 12:28 pm

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: Antioch

Soil Surface Texture: 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: Moderately well drained

Hydric Status: Unknown

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	
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		**Soil Reaction (pH)**
1	0 inches	12 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	12 inches	37 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	37 inches	75 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 2

Soil Component Name: Antioch

Soil Surface Texture: 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: Moderately well drained

Hydric Status: Unknown

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**	
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		**Soil Reaction (pH)**
1	0 inches	5 inches	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: 8.4 Min: 7.4
2	5 inches	29 inches	clay	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: 8.4 Min: 7.4
3	29 inches	68 inches	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: 8.4 Min: 7.4

Soil Map ID: 3

Soil Component Name: Soper

Soil Surface Texture: gravelly 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: Unknown

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	
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		**Soil Reaction (pH)**
1	0 inches	16 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
2	16 inches	29 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
3	29 inches	35 inches	loamy sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
4	35 inches	40 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:

Soil Map ID: 4

Soil Component Name: Terrace escarpments

Soil Surface Texture: variable

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:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

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	59 inches	variable	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 5

Soil Component Name: Soper

Soil Surface Texture: gravelly 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: Unknown

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	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	16 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
2	16 inches	29 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
3	29 inches	35 inches	loamy sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:
4	35 inches	40 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 4 Min: 1.4	Max: Min:

Soil Map ID: 6

Soil Component Name: Antioch

Soil Surface Texture: clay 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: Moderately well drained

Hydric Status: Unknown

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	5 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	5 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	29 inches	68 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 7

Soil Component Name:	Rieff
Soil Surface Texture:	sandy loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained
Hydric Status: Unknown	
Corrosion Potential - Uncoated Steel:	Moderate
Depth to Bedrock Min:	> 0 inches
Depth to Watertable Min:	> 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information

Layer	Boundary		Soil Texture Class	Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	24 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 42 Min: 4	Max: 8.4 Min: 7.9
2	24 inches	42 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 42 Min: 4	Max: 8.4 Min: 7.9
3	42 inches	59 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 42 Min: 4	Max: 8.4 Min: 7.9

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 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000178177	1/8 - 1/4 Mile North
3	USGS40000178129	1/8 - 1/4 Mile NE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
7	USGS40000178097	1/4 - 1/2 Mile East
8	USGS40000178084	1/4 - 1/2 Mile WSW
9	USGS40000178124	1/4 - 1/2 Mile WNW
11	USGS40000178024	1/2 - 1 Mile SSW
B12	USGS40000178091	1/2 - 1 Mile East
C13	USGS40000178198	1/2 - 1 Mile NW
14	USGS40000178236	1/2 - 1 Mile North
C16	USGS40000178204	1/2 - 1 Mile NW
D17	USGS40000178008	1/2 - 1 Mile South
E18	USGS40000178069	1/2 - 1 Mile ESE
22	USGS40000177990	1/2 - 1 Mile South
23	USGS40000178220	1/2 - 1 Mile NW
25	USGS40000177972	1/2 - 1 Mile South
F26	USGS40000178028	1/2 - 1 Mile SW
27	USGS40000178281	1/2 - 1 Mile NNW
28	USGS40000177991	1/2 - 1 Mile SW
G29	USGS40000178230	1/2 - 1 Mile NW
G30	USGS40000178231	1/2 - 1 Mile NW
31	USGS40000178209	1/2 - 1 Mile ENE
H32	USGS40000178058	1/2 - 1 Mile WSW
H33	USGS40000178053	1/2 - 1 Mile WSW
I34	USGS40000177926	1/2 - 1 Mile SSE
37	USGS40000177987	1/2 - 1 Mile SE
38	USGS40000177911	1/2 - 1 Mile South
40	USGS40000178239	1/2 - 1 Mile NW

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.

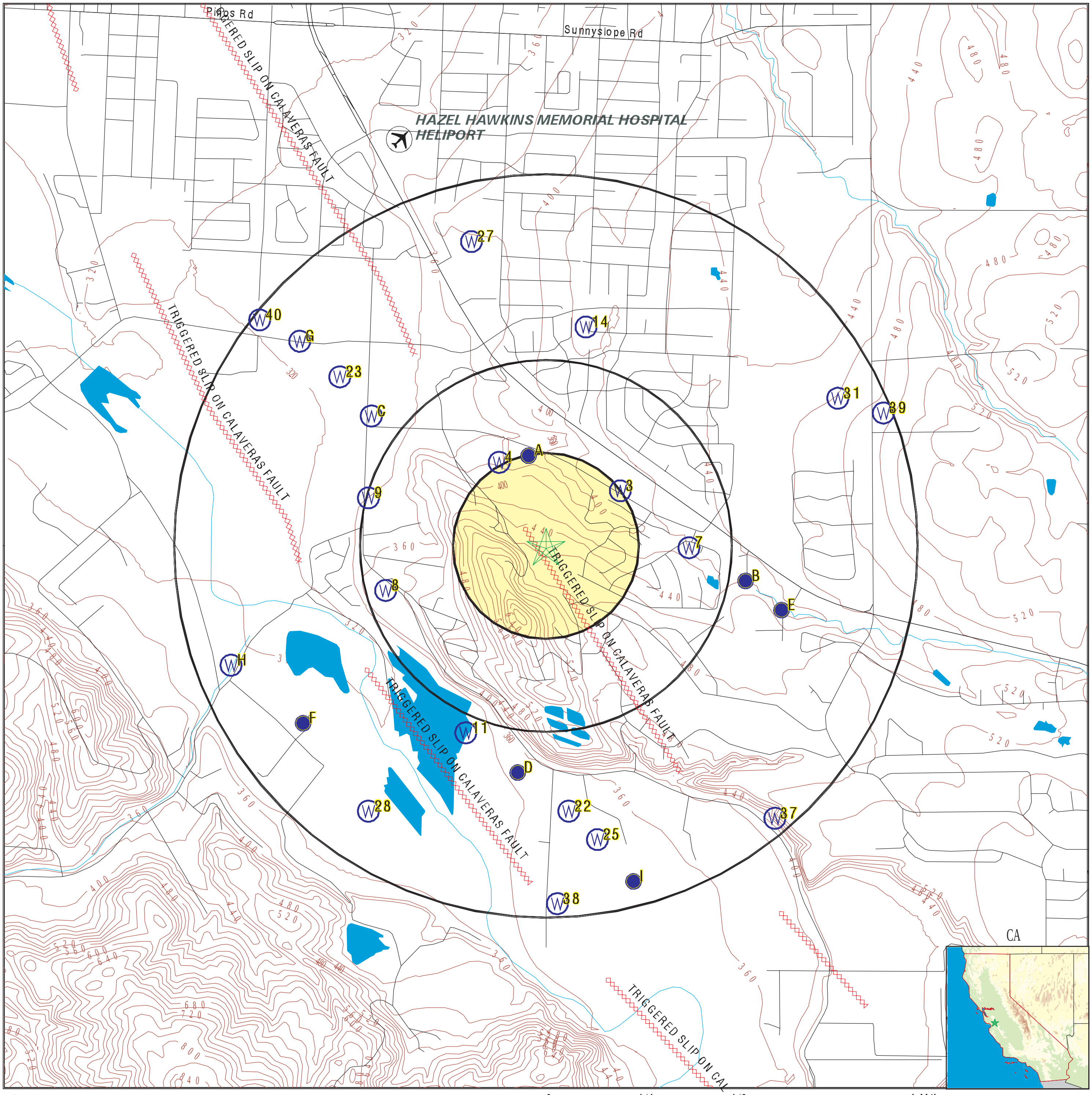
STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	11544	1/8 - 1/4 Mile North
4	11552	1/4 - 1/2 Mile NNW
A5	CADWR8000030230	1/4 - 1/2 Mile North
A6	CADWR8000030231	1/4 - 1/2 Mile NNW
B10	CADWR8000030157	1/2 - 1 Mile ESE
D15	CADWR8000030105	1/2 - 1 Mile South
E19	11545	1/2 - 1 Mile ESE
E20	11546	1/2 - 1 Mile ESE
E21	18666	1/2 - 1 Mile ESE
F24	CADWR8000030120	1/2 - 1 Mile SW
I35	CADWR8000030040	1/2 - 1 Mile SSE
I36	19862	1/2 - 1 Mile SSE

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
39	CADWR8000030238	1/2 - 1 Mile ENE

PHYSICAL SETTING SOURCE MAP - 5914923.2s



0 1/4 1/2 1 Miles

- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- 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:	Vista Del Calabria Phase I ESA	CLIENT:	Earth Systems Pacific, Northern CA
ADDRESS:	Southside Rd/Enterprise Rd	CONTACT:	David Teimoorian
	Hollister CA 95023	INQUIRY #:	5914923.2s
LAT/LONG:	36.818916 / 121.379382	DATE:	December 30, 2019 12:28 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
A1 **North** **1/8 - 1/4 Mile** **Lower**	Click here for full text details	**CA WELLS**	**11544**
A2 **North** **1/8 - 1/4 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178177**
3 **NE** **1/8 - 1/4 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178129**
4 **NNW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**CA WELLS**	**11552**
A5 **North** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADWR8000030230**
A6 **NNW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADWR8000030231**
7 **East** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178097**
8 **WSW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178084**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
9 **WNW** **1/4 - 1/2 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178124**
B10 **ESE** **1/2 - 1 Mile** **Higher**	**Click here for full text details**	**CA WELLS**	**CADWR8000030157**
11 **SSW** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178024**
B12 **East** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178091**
C13 **NW** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178198**
14 **North** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178236**
D15 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**CADWR8000030105**
C16 **NW** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178204**
D17 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178008**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
E18 **ESE** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000178069**
E19 **ESE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**11545**
E20 **ESE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**11546**
E21 **ESE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**18666**
22 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000177990**
23 **NW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178220**
F24 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADWR8000030120**
25 **South** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000177972**
F26 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178028**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
27 **NNW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178281**
28 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000177991**
G29 **NW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178230**
G30 **NW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178231**
31 **ENE** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000178209**
H32 **WSW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178058**
H33 **WSW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000178053**
I34 **SSE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000177926**
I35 **SSE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**CA WELLS**	**CADWR8000030040**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
I36 **SSE** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**CA WELLS**	**19862**
37 **SE** **1/2 - 1 Mile** **Higher**	**Click here for full text details**	**FED USGS**	**USGS40000177987**
38 **South** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000177911**
39 **ENE** **1/2 - 1 Mile** **Higher**	**Click here for full text details**	**CA WELLS**	**CADWR8000030238**
40 **NW** **1/2 - 1 Mile** **Lower**	**Click here for full text details**	**FED USGS**	**USGS40000178239**

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95023	13	0

Federal EPA Radon Zone for SAN BENITO 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 Zip Code: 95023

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.350 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

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.

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 and Wildlife
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.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
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.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
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.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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

APPENDIX F

AGRICHEMICAL ASSESSMENT – PHASE II ESA REPORT, 2014

ENGEO
Expect Excellence

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
11227.000.000

December 23, 2014

Mr. Chris Garwood
Pacific Union Land Company, Inc.
675 Hartz Avenue, Suite 300
Danville, CA 94526

Subject: 213 Enterprise Road
Hollister, California

AGRICHEMICAL ASSESSMENT – PHASE II ESA

Reference: ENGEO, Phase I Environmental Site Assessment, 213 Enterprise Road, Hollister, California, Project No. 11227.000.000, June 13, 2014.

Dear Mr. Garwood:

We are pleased to submit our agrichemical assessment conducted at the subject property (Property) in Hollister, California. While no Recognized Environmental Conditions (RECs) were identified within our reference Phase I ESA, a potential environmental condition was identified for a portion of the Property that was previously utilized for agriculture production. The purpose of this assessment was to determine if past agricultural uses have impacted site soils.

BACKGROUND

The Property is located at 213 Enterprise Road in Hollister, California (Figure 1). The Property is approximately 106 acres with Enterprise Road bisecting the Property. The northern area is currently occupied by orchards, farm fields, and related structures. The southern area is primarily open grassland, with orchards and structures limited to the northern corner. Historic agricultural activities occurred within the northern portion, with limited activity within the southern portion.

SCOPE OF FIELD EXPLORATION

The Property has historically been used for agricultural purposes. As such, agrichemicals may have been utilized for pest and weed control. A soil sampling and laboratory-testing program was implemented to evaluate the soil conditions. The scope of the work included:

- Recovery of 80 soil samples from approximately 3 to 9 inches below the ground surface.
- Laboratory analysis of 20 four-point composites for Organochlorine Pesticides.
- Laboratory analysis of 20 discrete samples for Arsenic.
- Analysis of laboratory data with an evaluation of our findings.

SAMPLING ACTIVITIES

On December 10, 2014, a total of 80 soil samples were collected from the Property where agricultural activities have been performed. Soil samples were collected from approximately 3 to 9 inches below the existing ground surface. Sample locations are shown on Figure 2.

Soil samples were recovered using laboratory provided glass jars. The samples were preserved in an ice chest and transported under documented chain-of-custody to California Laboratory Services, a fixed-base California-certified laboratory in Rancho Cordova, California.

ANALYTICAL RESULTS

The reported laboratory concentrations were compared to the applicable US Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) developed by the United States Environmental Protection Agency (EPA) assuming a residential land scenario.

Organochlorine pesticides were not detected (ND) in five of the composite samples. Organochlorine pesticides in the form of chlordane, dieldrin, DDT and DDE were detected in15 of the composite samples at low concentrations, below their respective RSLs. The detections were concentrated primarily in the western half of the northern portion of the site (north of Enterprise Road). The detection locations correspond to historically active agricultural areas indicated on the aerial photographs and topographic maps of the site.

Arsenic concentrations ranged from 2.3 to 9.2 mg/kg. These concentrations are above the EPA RSL but below typical background levels for California (Bradford, 1996). Laboratory reports are presented in Appendix A.

DISCUSSION

While analytes were detected in the soil samples, none of the reported concentrations exceeded the applicable screening levels or typical background levels for the area. Based on the independent laboratory results, it is our opinion that the Property has not been significantly impacted by past agricultural activities and is suitable for redevelopment.

If you have any questions regarding this report, please do not hesitate to contact us.

Sincerely,

ENGEO Incorporated

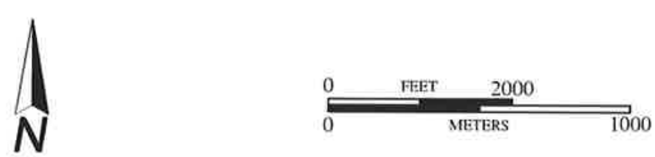
Scott Johns

Scott Johns, PE

Shawn Munger, CHG

CERTIFIED HYDROGEOLOGIST
SHAWN MUNGER
No. HG 413
CERTIFIED HYDROGEOLOGIST
Exp. 3/31/2015
STATE OF CALIFORNIA

Attachments: Figures
Appendix A – Laboratory Analysis Report

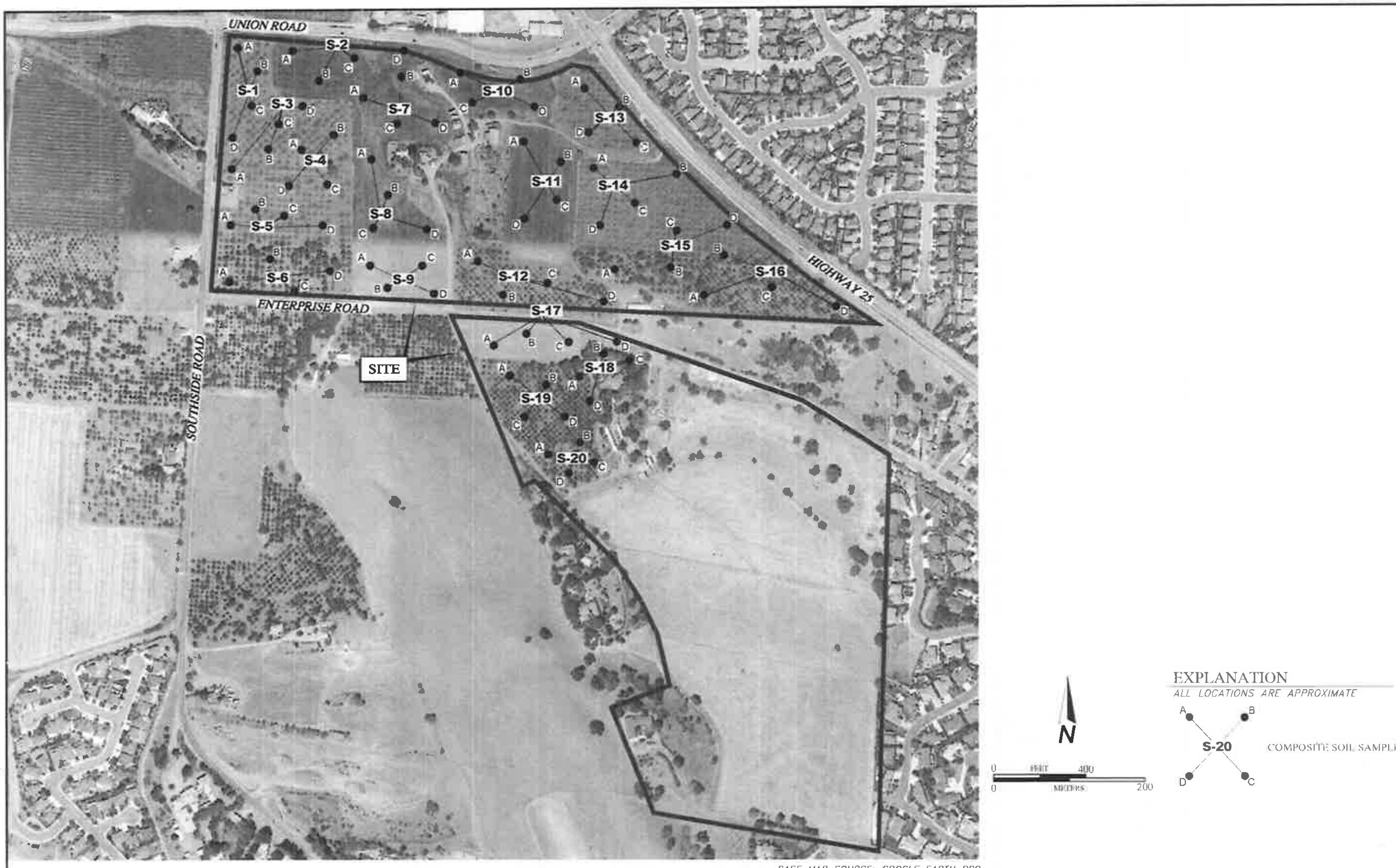


BASE MAP SOURCE: GOOGLE EARTH PRO

ENGEO Expect Excellence	VICINITY MAP 213 ENTERPRISE ROAD HOLLISTER, CALIFORNIA	PROJECT NO.: 11227.000.000 SCALE: AS SHOWN DRAWN BY: SRP CHECKED BY: SM	FIGURE NO. 1

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\11227\000\AG Sampling\11227000000-ESA-1-VicMap-1214.dwg Plot Date:12-12-14 :jlee

ORIGINAL FIGURE PRINTED IN COLOR



BASE MAP SOURCE: GOOGLE EARTH PRO

ENGEO
Expect Excellence

SITE PLAN
213 ENTERPRISE ROAD
HOLLISTER, CALIFORNIA

PROJECT NO.: 11227.000.000	
SCALE: AS SHOWN	
DRAWN BY: LL	CHECKED BY: BF

FIGURE NO. 2

ORIGINAL FIGURE PRINTED IN COLOR

APPENDIX A

Laboratory Analysis Report

11227.000.000
December 23, 2014

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

December 18, 2014

CLS Work Order #: CXL0724
COC #:

Shawn Munger
Engeo- San Ramon
2010 Crow Canyon Pl. suite 250
San Ramon, CA 94583

Project Name: Enterprise Road Hollister

Enclosed are the results of analyses for samples received by the laboratory on 12/11/14 16:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

12/18/14 14:01

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

CXL0724-1 pg 1 of 5

11227.000.000

CHAIN OF CUSTODY RECORD

PROJECT NUMBER: 000.000
PROJECT NAME: Enterprise Road Hollister
SAMPLED BY (SIGNATURE/PRINT): Connie Ing & Ian McGeeny
PROJECT MANAGER (SIGNATURE/PRINT): Shawn Munger
ROUTING E-MAIL: sjohns@engeo.com HARD COPY

SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	OCP (EPA 8081)	Arsenic (6010)	REMARKS REQUIRED DETECTION LIMITS
S1-A	12/10/14	9:00	Soil	1	8oz Jar	none/ice	X		
S1-B		9:10					X	X	
S1-C		9:15					X		
S1-D		9:20					X		
S2-A		9:50					X		
S2-B		9:55					X		
S2-C		10:00					X	X	
S2-D		10:05					X		
S3-A		9:25					X		
S3-B		9:30					X	X	
S3-C		9:35					X		
S3-D		9:45					X		
S4-A		11:15					X		
S4-B		11:20					X	X	
S4-C		11:25					X		
S4-D		11:30					X		

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ENGEO INCORPORATED

2010 CROW CANYON PLACE SUITE 250
SAN RAMON, CALIFORNIA 94583
(925) 866-9000 FAX (925) 866-0190
WWW.ENGEO.COM

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT, COPY TO PROJECT FIELD FILES

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

CXL0724-2 pg 2 of 5

11227.000.000

CHAIN OF CUSTODY RECORD

PROJECT NUMBER: 000.000
PROJECT NAME: Enterprise Road Hollister
SAMPLED BY (SIGNATURE/PRINT): Connie Ing & Ian McCreary
PROJECT MANAGER (SIGNATURE/PRINT): Shawn Munger
ROUTING EMAILS: johns@engeo.com HARD COPY

SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	OCP (EPA 8081)	Arsenic (6010)	REMARKS REQUIRED DETECTION LIMITS
S5-A	12/10/14	8:50	soil	1	8oz Jar	none/ice		X	
S5-B		8:55							
S5C		9:40							
S5-D		9:45							
S6-A		9:00						X	
S6-B		8:50							
S6-C		8:40							
S6-D		9:55							
S7-A		10:25							
S7-B		10:15							
S7-C		10:30						X	
S7-D		10:35 am							
S8-A		10:50							
S8-B		10:50							
S8-C		10:25						X	
S8-D		10:30							

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Engeo- San Ramon 2010 Crow Canyon Pl, suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	CLS Work Order #: CXL0724 COC #:

CXL0724-3 pg 3 of 5

CHAIN OF CUSTODY RECORD

PROJECT NUMBER: 11227.000.000
PROJECT NAME: Enterprise Road Hollister
SAMPLED BY (SIGNATURE/PRINT): Connie Ira & Ian McCreery
PROJECT MANAGER (SIGNATURE/PRINT): Shawn Munger
ROUTING E-MAIL: sjohns@engeo.com HARDCOPY

S20 A through D

SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	OCP (EPA 8081)	Arsenic (6010)	REMARKS REQUIRED DETECTION LIMITS
S20-A	12/10/14	1:55 PM	soil	1	8oz Jar	none/ice	X		
S20-B		2:00 PM					X		
S20-C		14:05					X		
S20-D		14:10					X	X	
S9-A		10:20					X		
S9-B		8:35					X	X	
S9-C		10:15					X		
S9-D		8:30					X		
S10-A		11:45					X		
S10-B		11:50					X	X	
S10-C		11:40					X		
S10-D		11:55					X		
S11-A		12:25					X		
S11-B		12:30					X		
S11-C		12:35					X		
S11-D		12:40					X	X	

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Engeo- San Ramon
2010 Crow Canyon Pl. suite 250
San Ramon, CA 94583

Project: Enterprise Road Hollister
Project Number: 11227.000.000
Project Manager: Shawn Munger

CLS Work Order #: CXL0724
COC #:

CXL0724-4 pg 4 of 5

CHAIN OF CUSTODY RECORD

PROJECT NUMBER: 11227.000.000
PROJECT NAME: Enterprise Road Hollister
SAMPLED BY (SIGNATURE/PRINT): Connie Ing & Ian McCreery
PROJECT MANAGER (SIGNATURE/PRINT): Shawn Munger
ROUTING E-MAIL: sjohns@engeo.com HARD COPY

SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	OCPC (EPA 8081)	Arsenic (6010)	REMARKS REQUIRED DETECTION LIMITS
S12-A	12/10/14	11:10	Soil	1	8oz Jar	none/ice	X		
S12-B	↓	11:25	↓	↓	↓	↓	X	X	
S12-C		11:30					X		
S12-D		11:40					X		
S13-A		12:00					X		
S13-B		12:05					X	X	
S13-C		12:10					X		
S13-D		12:15					X		
S14-A		1:10PM					X		
S14-B		13:00					X	X	
S14-C		13:10					X		
S14-D		1:05PM					X		
S15-A		11:50					X		
S15-B		12:00					X	X	
S15-C		12:10					X		
S15-D	↓	12:20	↓	↓	↓	↓	X		

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CXL0724-5 pg 5 of 5

CHAIN OF CUSTODY RECORD

PROJECT NUMBER: 11227.000.000
PROJECT NAME: Enterprise Road, Hollister
SAMPLED BY (SIGNATURE/PRINT): Connie Lee & Ian McCreary
PROJECT MANAGER (SIGNATURE/PRINT): Shawn Munger
ROUTING E-MAIL: sjohns@engeo.com HARD COPY

SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	OCP (LEH 8081)	Arsenic (6010)	REMARKS REQUIRED DETECTION LIMITS
S-16-A	12/10/14	12:30	soil	1	8 oz Jar	none/ice	X		
S16-B	↓	12:40	↓	↓	↓	↓	X		
S16-C		12:50					X		
S16-D		12:55					X	X	
S17-A		14:15					X		
S17-B		14:20					X	X	
S17-C		14:30					X		
S17-D		14:35					X		
S18-A		14:20					X		
S18-B		14:25					X		
S18-C		14:30					X	X	
S18-D		14:15					X		
S19-A		14:10					X		
S19-B		14:35					X		
S19-C		15:00					X	X	
S19-D	↓	14:40	↓	↓	↓	↓	X		

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Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Project Number: Project Manager:	Enterprise Road Hollister 11227.000.000 Shawn Munger	 **CLS Work Order #: CXL0724** COC #:

Metals by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S1 - B (CXL0724-02) Soil Sampled: 12/10/14 09:10 Received: 12/11/14 16:20									
Arsenic	**9.2**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S2 - C (CXL0724-08) Soil Sampled: 12/10/14 10:00 Received: 12/11/14 16:20									
Arsenic	**8.0**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S3 - B (CXL0724-12) Soil Sampled: 12/10/14 09:30 Received: 12/11/14 16:20									
Arsenic	**7.1**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S4 - B (CXL0724-17) Soil Sampled: 12/10/14 11:20 Received: 12/11/14 16:20									
Arsenic	**7.1**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S5 - A (CXL0724-21) Soil Sampled: 12/10/14 08:50 Received: 12/11/14 16:20									
Arsenic	**6.2**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S6 - A (CXL0724-26) Soil Sampled: 12/10/14 09:00 Received: 12/11/14 16:20									
Arsenic	**7.8**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S7 - C (CXL0724-33) Soil Sampled: 12/10/14 10:30 Received: 12/11/14 16:20									
Arsenic	**6.2**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S8 - C (CXL0724-38) Soil Sampled: 12/10/14 10:25 Received: 12/11/14 16:20									
Arsenic	**6.6**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S20 - D (CXL0724-44) Soil Sampled: 12/10/14 14:10 Received: 12/11/14 16:20									
Arsenic	**2.5**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	

Engeo- San Ramon
2010 Crow Canyon Pl. suite 250
San Ramon, CA 94583

Project: Enterprise Road Hollister
Project Number: 11227.000.000
Project Manager: Shawn Munger

CLS Work Order #: CXL0724
COC #:

Metals by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S9 - B (CXL0724-47) Soil Sampled: 12/10/14 08:35 Received: 12/11/14 16:20									
Arsenic	**4.9**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S10 - B (CXL0724-52) Soil Sampled: 12/10/14 11:50 Received: 12/11/14 16:20									
Arsenic	**2.6**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S11 - C (CXL0724-58) Soil Sampled: 12/10/14 12:35 Received: 12/11/14 16:20									
Arsenic	**3.1**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S12 - B (CXL0724-62) Soil Sampled: 12/10/14 11:25 Received: 12/11/14 16:20									
Arsenic	**5.6**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S13 - B (CXL0724-67) Soil Sampled: 12/10/14 12:05 Received: 12/11/14 16:20									
Arsenic	**2.9**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S14 - B (CXL0724-72) Soil Sampled: 12/10/14 13:00 Received: 12/11/14 16:20									
Arsenic	**4.1**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S15 - B (CXL0724-77) Soil Sampled: 12/10/14 12:00 Received: 12/11/14 16:20									
Arsenic	**2.3**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S16 - D (CXL0724-84) Soil Sampled: 12/10/14 12:55 Received: 12/11/14 16:20									
Arsenic	**3.2**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S17 - B (CXL0724-87) Soil Sampled: 12/10/14 14:20 Received: 12/11/14 16:20									
Arsenic	**3.5**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	

Engeo- San Ramon	Project:	Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number:	11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager:	Shawn Munger	COC #:

Metals by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S18 - C (CXL0724-93) Soil	**Sampled: 12/10/14 14:30**	**Received: 12/11/14 16:20**							
Arsenic	**2.7**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	
S19 - C (CXL0724-98) Soil	**Sampled: 12/10/14 14:00**	**Received: 12/11/14 16:20**							
Arsenic	**4.4**	1.0	mg/kg	10	CX08883	12/12/14	12/12/14	EPA 6020	

CALIFORNIA LABORATORY SERVICES

12/18/14 14:01

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S1 - A-D Composite (CXL0724-05) Soil	**Sampled: 12/10/14 09:00**	**Received: 12/11/14 16:20**							
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**110**	40	"	"	"	"	"	"	
4,4´-DDD	ND	15	"	"	"	"	"	"	
4,4´-DDE	**110**	38	"	5	"	"	"	"	
4,4´-DDT	ND	15	"	2	"	"	"	"	
Dieldrin	**2.2**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*50 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*34 %*	*52-141*		"	"	"	"	*QS-4*
S2 - A-D Composite (CXL0724-10) Soil	**Sampled: 12/10/14 09:50**	**Received: 12/11/14 16:20**							
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**260**	40	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Engeo- San Ramon	Project: Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number: 11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager: Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S2 - A-D Composite (CXL0724-10) Soil	**Sampled: 12/10/14 09:50**	**Received: 12/11/14 16:20**							
4,4′-DDD	ND	15	µg/kg	2	CX08894	"	12/15/14	EPA 8081A	
4,4′-DDE	**370**	150	"	20	"	"	"	"	
4,4′-DDT	**64**	15	"	2	"	"	"	"	
Dieldrin	**4.8**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*82 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*61 %*	*52-141*		"	"	"	"	
S3 - A-D Composite (CXL0724-15) Soil	**Sampled: 12/10/14 09:25**	**Received: 12/11/14 16:20**							
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**150**	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	**180**	75	"	10	"	"	"	"	
4,4′-DDT	**19**	15	"	2	"	"	"	"	
Dieldrin	**3.8**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

Engeo- San Ramon	Project: Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number: 11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager: Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S3 - A-D Composite (CXL0724-15) Soil	**Sampled: 12/10/14 09:25**	**Received: 12/11/14 16:20**							
Endosulfan sulfate	ND	30	μg/kg	2	CX08894	"	12/15/14	EPA 8081A	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*50 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*27 %*	*52-141*		"	"	"	"	*QS-4*
S4 - A-D Composite (CXL0724-20) Soil	**Sampled: 12/10/14 11:15**	**Received: 12/11/14 16:20**							
Aldrin	ND	2.0	μg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**160**	40	"	"	"	"	"	"	
4,4´-DDD	ND	15	"	"	"	"	"	"	
4,4´-DDE	**230**	75	"	10	"	"	"	"	
4,4´-DDT	**17**	15	"	2	"	"	"	"	
Dieldrin	**3.8**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	CLS Work Order #: CXL0724 COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S4 - A-D Composite (CXL0724-20) Soil	**Sampled: 12/10/14 11:15**	**Received: 12/11/14 16:20**							
Mirex	ND	20	µg/kg	2	CX08894	"	12/15/14	EPA 8081A	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*72 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*49 %*	*52-141*		"	"	"	"	*QS-4*
S5 - A-D Composite (CXL0724-25) Soil	**Sampled: 12/10/14 08:50**	**Received: 12/11/14 16:20**							
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**67**	40	"	"	"	"	"	"	
4,4´-DDD	ND	15	"	"	"	"	"	"	
4,4´-DDE	**140**	38	"	5	"	"	"	"	
4,4´-DDT	ND	15	"	2	"	"	"	"	
Dieldrin	**2.3**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*81 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*63 %*	*52-141*		"	"	"	"	

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	CLS Work Order #: CXL0724 COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S6 - A-D Composite (CXL0724-30) Soil Sampled: 12/10/14 08:40 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**41**	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	**100**	38	"	5	"	"	"	"	
4,4′-DDT	ND	15	"	2	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*61 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*29 %*	*52-141*		"	"	"	"	*QS-4*
S7 - A-D Composite (CXL0724-35) Soil Sampled: 12/10/14 10:15 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**93**	40	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	 **CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S7 - A-D Composite (CXL0724-35) Soil Sampled: 12/10/14 10:15 Received: 12/11/14 16:20									
4,4′-DDD	ND	15	µg/kg	2	CX08894	"	12/15/14	EPA 8081A	
4,4′-DDE	**82**	30	"	4	"	"	"	"	
4,4′-DDT	**17**	15	"	2	"	"	"	"	
Dieldrin	**3.4**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*79 %*		*46-139*	"	"	"	"	
Surrogate: Decachlorobiphenyl		*72 %*		*52-141*	"	"	"	"	
S8 - A-D Composite (CXL0724-40) Soil Sampled: 12/10/14 10:25 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**91**	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	**150**	38	"	5	"	"	"	"	
4,4′-DDT	ND	15	"	2	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S8 - A-D Composite (CXL0724-40) Soil Sampled: 12/10/14 10:25 Received: 12/11/14 16:20									
Endosulfan sulfate	ND	30	µg/kg	2	CX08894	"	12/15/14	EPA 8081A	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*80 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*58 %*	*52-141*		"	"	"	"	
S20 - A-D Composite (CXL0724-45) Soil Sampled: 12/10/14 13:55 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	**47**	15	"	"	"	"	"	"	
4,4′-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	**16**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	

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Engeo- San Ramon	Project:	Enterprise Road Hollister	
2010 Crow Canyon Pl, suite 250	Project Number:	11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager:	Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S20 - A-D Composite (CXL0724-45) Soil Sampled: 12/10/14 13:55 Received: 12/11/14 16:20									
Mirex	ND	20	μg/kg	2	CX08894	"	12/15/14	EPA 8081A	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*75 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*45 %*	*52 141*		"	"	"	"	*QS-4*
S9 - A-D Composite (CXL0724-50) Soil Sampled: 12/10/14 08:30 Received: 12/11/14 16:20									
Aldrin	ND	2.0	μg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**82**	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	**160**	75	"	10	"	"	"	"	
4,4′-DDT	ND	15	"	2	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*77 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*50 %*	*52-141*		"	"	"	"	*QS-4*

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S10 - A-D Composite (CXL0724-55) Soil Sampled: 12/10/14 11:40 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**100**	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	**64**	15	"	"	"	"	"	"	
4,4′-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	**28**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*84 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*66 %*	*52-141*		"	"	"	"	
S11 - A-D Composite (CXL0724-60) Soil Sampled: 12/10/14 12:25 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Engeo- San Ramon	Project: Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number: 11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager: Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S11 - A-D Composite (CXL0724-60) Soil Sampled: 12/10/14 12:25 Received: 12/11/14 16:20									
4,4´-DDD	ND	15	µg/kg	2	CX08894	"	12/15/14	EPA 8081A	
4,4´-DDE	**22**	15	"	"	"	"	"	"	
4,4´-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*75 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*50 %*	*52-141*		"	"	"	"	*QS-4*
S12 - A-D Composite (CXL0724-65) Soil Sampled: 12/10/14 11:10 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08894	12/12/14	12/15/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	**86**	40	"	"	"	"	"	"	
4,4´-DDD	ND	15	"	"	"	"	"	"	
4,4´-DDE	**250**	75	"	10	"	"	"	"	
4,4´-DDT	**34**	15	"	2	"	"	"	"	
Dieldrin	**4.7**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	CLS Work Order #: CXL0724 COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S12 - A-D Composite (CXL0724-65) Soil Sampled: 12/10/14 11:10 Received: 12/11/14 16:20									
Endosulfan sulfate	ND	30	µg/kg	2	CX08894	"	12/15/14	EPA 8081A	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*57 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*29 %*	*52-141*		"	"	"	"	*QS-4*
S13 - A-D Composite (CXL0724-70) Soil Sampled: 12/10/14 12:00 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08895	12/12/14	12/16/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	ND	15	"	"	"	"	"	"	
4,4′-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	

CALIFORNIA LABORATORY SERVICES

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Engeo- San Ramon	Project: Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number: 11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager: Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S13 - A-D Composite (CXL0724-70) Soil Sampled: 12/10/14 12:00 Received: 12/11/14 16:20									
Mirex	ND	20	µg/kg	2	CX08895	"	12/16/14	EPA 8081A	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*49 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*23 %*	*52-141*		"	"	"	"	*QS-4*
S14 - A-D Composite (CXL0724-75) Soil Sampled: 12/10/14 13:00 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08895	12/12/14	12/16/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	
4,4´-DDD	ND	15	"	"	"	"	"	"	
4,4´-DDE	**25**	15	"	"	"	"	"	"	
4,4´-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*50 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*29 %*	*52-141*		"	"	"	"	*QS-4*

Engeo- San Ramon 2010 Crow Canyon Pl, suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S15 - A-D Composite (CXL0724-80) Soil Sampled: 12/10/14 11:50 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08895	12/12/14	12/16/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	
4,4´-DDD	ND	15	"	"	"	"	"	"	
4,4´-DDE	ND	15	"	"	"	"	"	"	
4,4´-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*50 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*30 %*	*52-141*		"	"	"	"	*QS-4*
S16 - A-D Composite (CXL0724-85) Soil Sampled: 12/10/14 12:30 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08895	12/12/14	12/16/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	

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Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S16 - A-D Composite (CXL0724-85) Soil	**Sampled: 12/10/14 12:30**	**Received: 12/11/14 16:20**							
4,4′-DDD	ND	15	µg/kg	2	CX08895	"	12/16/14	EPA 8081A	
4,4′-DDE	ND	15	"	"	"	"	"	"	
4,4′-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*67 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*43 %*	*52-141*		"	"	"	"	*QS-4*
S17 - A-D Composite (CXL0724-90) Soil	**Sampled: 12/10/14 14:15**	**Received: 12/11/14 16:20**							
Aldrin	ND	2.0	µg/kg	2	CX08895	12/12/14	12/16/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	ND	15	"	"	"	"	"	"	
4,4′-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	ND	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	**CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S17 - A-D Composite (CXL0724-90) Soil	**Sampled: 12/10/14 14:15**	**Received: 12/11/14 16:20**							
Endosulfan sulfate	ND	30	µg/kg	2	CX08895	"	12/16/14	EPA 8081A	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*73 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*54 %*	*52-141*		"	"	"	"	
S18 - A-D Composite (CXL0724-95) Soil	**Sampled: 12/10/14 14:15**	**Received: 12/11/14 16:20**							
Aldrin	ND	2.0	µg/kg	2	CX08895	12/12/14	12/16/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	ND	15	"	"	"	"	"	"	
4,4′-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	**2.7**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	

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Engeo- San Ramon	Project:	Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number:	11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager:	Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
S18 - A-D Composite (CXL0724-95) Soil Sampled: 12/10/14 14:15 Received: 12/11/14 16:20									
Mirex	ND	20	µg/kg	2	CX08895	"	12/16/14	EPA 8081A	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*61 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*28 %*	*52-141*		"	"	"	"	*QS-1*
S19 - A-D Composite (CXL0724-AA) Soil Sampled: 12/10/14 14:00 Received: 12/11/14 16:20									
Aldrin	ND	2.0	µg/kg	2	CX08895	12/12/14	12/16/14	EPA 8081A	
alpha-BHC	ND	4.0	"	"	"	"	"	"	
beta-BHC	ND	20	"	"	"	"	"	"	
delta-BHC	ND	20	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	20	"	"	"	"	"	"	
Chlordane-technical	ND	40	"	"	"	"	"	"	
4,4′-DDD	ND	15	"	"	"	"	"	"	
4,4′-DDE	**18**	15	"	"	"	"	"	"	
4,4′-DDT	ND	15	"	"	"	"	"	"	
Dieldrin	**2.4**	2.0	"	"	"	"	"	"	
Endosulfan I	ND	30	"	"	"	"	"	"	
Endosulfan II	ND	30	"	"	"	"	"	"	
Endosulfan sulfate	ND	30	"	"	"	"	"	"	
Endrin	ND	30	"	"	"	"	"	"	
Endrin aldehyde	ND	30	"	"	"	"	"	"	
Heptachlor	ND	10	"	"	"	"	"	"	
Heptachlor epoxide	ND	4.0	"	"	"	"	"	"	
Methoxychlor	ND	30	"	"	"	"	"	"	
Mirex	ND	20	"	"	"	"	"	"	
Toxaphene	ND	40	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*65 %*	*46-139*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*43 %*	*52-141*		"	"	"	"	*QS-4*

Engeo- San Ramon	Project:	Enterprise Road Hollister	
2010 Crow Canyon Pl, suite 250	Project Number:	11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager:	Shawn Munger	COC #:

Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX08883 - EPA 3050B										
Blank (CX08883-BLK1)				Prepared & Analyzed: 12/12/14						
Arsenic	ND	0.10	mg/kg							
LCS (CX08883-BS1)				Prepared & Analyzed: 12/12/14						
Arsenic	8.55	0.10	mg/kg	10.0		85	75-125			
Matrix Spike (CX08883-MS1)	**Source: CXL0724-02**			Prepared & Analyzed: 12/12/14						
Arsenic	16.1	1.0	mg/kg	10.0	9.16	70	75-125			QM-5
Matrix Spike Dup (CX08883-MSD1)	**Source: CXL0724-02**			Prepared & Analyzed: 12/12/14						
Arsenic	16.1	1.0	mg/kg	10.0	9.16	69	75-125	0.5	30	QM-5

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Engeo- San Ramon	Project: Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number: 11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager: Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX08894 - LUFT-DHS GCNV										
Blank (CX08894-BLK1)				Prepared: 12/12/14 Analyzed: 12/15/14						
Aldrin	ND	1.0	µg/kg							
alpha-BHC	ND	2.0	"							
beta-BHC	ND	10	"							
delta-BHC	ND	10	"							
gamma-BHC (Lindane)	ND	10	"							
Chlordane-technical	ND	20	"							
4,4´-DDD	ND	7.5	"							
4,4´-DDE	ND	7.5	"							
4,4´-DDT	ND	7.5	"							
Dieldrin	ND	1.0	"							
Endosulfan I	ND	15	"							
Endosulfan II	ND	15	"							
Endosulfan sulfate	ND	15	"							
Endrin	ND	15	"							
Endrin aldehyde	ND	15	"							
Heptachlor	ND	5.0	"							
Heptachlor epoxide	ND	2.0	"							
Methoxychlor	ND	15	"							
Mirex	ND	10	"							
Toxaphene	ND	20	"							
Surrogate: Tetrachloro-meta-xylene	*7.23*		"	*8.33*		*87*	*46-139*			
Surrogate: Decachlorobiphenyl	*8.84*		"	*8.33*		*106*	*52-141*			
LCS (CX08894-BS1)				Prepared: 12/12/14 Analyzed: 12/15/14						
Aldrin	14.8	1.0	µg/kg	16.7		89	47-132			
gamma-BHC (Lindane)	14.8	10	"	16.7		89	56-133			
4,4´-DDT	17.1	7.5	"	16.7		103	46-137			
Dieldrin	15.7	1.0	"	16.7		94	44-143			
Endrin	16.1	15	"	16.7		97	30-147			
Heptachlor	15.8	5.0	"	16.7		95	33-148			
Surrogate: Tetrachloro-meta-xylene	*7.14*		"	*8.33*		*86*	*46-139*			

Engeo- San Ramon	Project: Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number: 11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager: Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX08894 - LUFT-DHS GCNV										
LCS (CX08894-BS1)				Prepared: 12/12/14 Analyzed: 12/15/14						
Surrogate: Decachlorobiphenyl	*8.61*		*μg kg*	*8.33*		*103*	*52-141*			
LCS Dup (CX08894-BSD1)				Prepared: 12/12/14 Analyzed: 12/15/14						
Aldrin	15.2	1.0	μg/kg	16.7		91	47-132	2	30	
gamma-BHC (Lindane)	15.1	10	"	16.7		90	56-133	2	30	
4,4'-DDT	17.3	7.5	"	16.7		104	46-137	0.9	30	
Dieldrin	15.7	1.0	"	16.7		94	44-143	0.04	30	
Endrin	15.9	15	"	16.7		95	30-147	1	30	
Heptachlor	15.9	5.0	"	16.7		95	33-148	0.9	30	
Surrogate: Tetrachloro-meta-xylene	*7.11*		"	*8.33*		*85*	*46-139*			
Surrogate: Decachlorobiphenyl	*8.71*		"	*8.33*		*104*	*52-141*			
Matrix Spike (CX08894-MS1)	**Source: CXL0726-28**			Prepared: 12/12/14 Analyzed: 12/15/14						
Aldrin	15.7	10	μg/kg	16.7	ND	94	47-138			
gamma-BHC (Lindane)	15.4	100	"	16.7	ND	92	38-144			
4,4'-DDT	20.0	75	"	16.7	3.47	99	41-157			
Dieldrin	17.1	10	"	16.7	ND	103	46-155			
Endrin	19.4	150	"	16.7	ND	116	34-149			
Heptachlor	14.0	50	"	16.7	ND	84	36-155			
Surrogate: Tetrachloro-meta-xylene	*18.7*		"	*20.8*		*90*	*46-139*			
Surrogate: Decachlorobiphenyl	*20.8*		"	*20.8*		*100*	*52-141*			
Matrix Spike Dup (CX08894-MSD1)	**Source: CXL0726-28**			Prepared: 12/12/14 Analyzed: 12/15/14						
Aldrin	14.4	10	μg/kg	16.7	ND	87	47-138	8	35	
gamma-BHC (Lindane)	14.0	100	"	16.7	ND	84	38-144	9	35	
4,4'-DDT	18.8	75	"	16.7	3.47	92	41-157	6	35	
Dieldrin	15.9	10	"	16.7	ND	95	46-155	8	35	
Endrin	17.3	150	"	16.7	ND	104	34-149	11	35	
Heptachlor	12.8	50	"	16.7	ND	77	36-155	9	35	
Surrogate: Tetrachloro-meta-xylene	*17.2*		"	*20.8*		*82*	*46-139*			
Surrogate: Decachlorobiphenyl	*18.5*		"	*20.8*		*89*	*52-141*			

Engeo- San Ramon	Project:	Enterprise Road Hollister	
2010 Crow Canyon Pl. suite 250	Project Number:	11227.000.000	**CLS Work Order #: CXL0724**
San Ramon, CA 94583	Project Manager:	Shawn Munger	COC #:

Organochlorine Pesticides by EPA Method 8081A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX08895 - LUFT-DHS GCNV										
Blank (CX08895-BLK1)				Prepared: 12/12/14 Analyzed: 12/16/14						
Aldrin	ND	1.0	µg/kg							
alpha-BHC	ND	2.0	"							
beta-BHC	ND	10	"							
delta-BHC	ND	10	"							
gamma-BHC (Lindane)	ND	10	"							
Chlordane-technical	ND	20	"							
4,4´-DDD	ND	7.5	"							
4,4´-DDE	ND	7.5	"							
4,4´-DDT	ND	7.5	"							
Dieldrin	ND	1.0	"							
Endosulfan I	ND	15	"							
Endosulfan II	ND	15	"							
Endosulfan sulfate	ND	15	"							
Endrin	ND	15	"							
Endrin aldehyde	ND	15	"							
Heptachlor	ND	5.0	"							
Heptachlor epoxide	ND	2.0	"							
Methoxychlor	ND	15	"							
Mirex	ND	10	"							
Toxaphene	ND	20	"							
Surrogate: Tetrachloro-meta-xylene	*7.13*		"	*8.33*		*86*	*46-139*			
Surrogate: Decachlorobiphenyl	*8.29*		"	*8.33*		*100*	*52-141*			
LCS (CX08895-BS1)				Prepared: 12/12/14 Analyzed: 12/16/14						
Aldrin	15.1	1.0	µg/kg	16.7		90	47-132			
gamma-BHC (Lindane)	14.9	10	"	16.7		90	56-133			
4,4´-DDT	16.6	7.5	"	16.7		100	46-137			
Dieldrin	16.2	1.0	"	16.7		97	44-143			
Endrin	17.2	15	"	16.7		103	30-147			
Heptachlor	15.8	5.0	"	16.7		95	33-148			
Surrogate: Tetrachloro-meta-xylene	*7.04*		"	*8.33*		*84*	*46-139*			

CALIFORNIA LABORATORY SERVICES

 12/18/14 14:01

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	 **CLS Work Order #: CXL0724** COC #:

Organochlorine Pesticides by EPA Method 8081A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX08895 - LUFT-DHS GCNV										
LCS (CX08895-BS1)				Prepared: 12/12/14 Analyzed: 12/16/14						
Surrogate: Decachlorobiphenyl	*9.04*		*µg kg*	*8.33*		*108*	*52-141*			
LCS Dup (CX08895-BSD1)				Prepared: 12/12/14 Analyzed: 12/16/14						
Aldrin	14.6	1.0	µg/kg	16.7		88	47-132	3	30	
gamma-BHC (Lindane)	14.2	10	"	16.7		85	56-133	5	30	
4,4´-DDT	13.7	7.5	"	16.7		82	46-137	19	30	
Dieldrin	15.5	1.0	"	16.7		93	44-143	4	30	
Endrin	14.5	15	"	16.7		87	30-147	17	30	
Heptachlor	14.1	5.0	"	16.7		84	33-148	12	30	
Surrogate: Tetrachloro-meta-xylene	*6.51*		"	*8.33*		*78*	*46-139*			
Surrogate: Decachlorobiphenyl	*9.06*		"	*8.33*		*109*	*52-141*			
Matrix Spike (CX08895-MS1)		**Source: CXL0724-75**		Prepared: 12/12/14 Analyzed: 12/16/14						
Aldrin	10.6	2.0	µg/kg	16.7	ND	63	47-138			
gamma-BHC (Lindane)	12.9	20	"	16.7	ND	77	38-144			
4,4´-DDT	13.3	15	"	16.7	3.53	58	41-157			
Dieldrin	12.3	2.0	"	16.7	ND	74	46-155			
Endrin	12.8	30	"	16.7	ND	77	34-149			
Heptachlor	10.0	10	"	16.7	ND	60	36-155			
Surrogate: Tetrachloro-meta-xylene	*13.1*		"	*20.8*		*63*	*46-139*			
Surrogate: Decachlorobiphenyl	*9.21*		"	*20.8*		*44*	*52-141*			*QS-4*
Matrix Spike Dup (CX08895-MSD1)		**Source: CXL0724-75**		Prepared: 12/12/14 Analyzed: 12/16/14						
Aldrin	10.4	2.0	µg/kg	16.7	ND	62	47-138	2	35	
gamma-BHC (Lindane)	12.8	20	"	16.7	ND	77	38-144	0.5	35	
4,4´-DDT	13.5	15	"	16.7	3.53	60	41-157	2	35	
Dieldrin	12.2	2.0	"	16.7	ND	73	46-155	0.9	35	
Endrin	13.0	30	"	16.7	ND	78	34-149	2	35	
Heptachlor	10.2	10	"	16.7	ND	61	36-155	1	35	
Surrogate: Tetrachloro-meta-xylene	*12.9*		"	*20.8*		*62*	*46-139*			
Surrogate: Decachlorobiphenyl	*9.14*		"	*20.8*		*44*	*52-141*			*QS-4*

Engeo- San Ramon 2010 Crow Canyon Pl. suite 250 San Ramon, CA 94583	Project: Enterprise Road Hollister Project Number: 11227.000.000 Project Manager: Shawn Munger	 **CLS Work Order #: CXL0724** COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

APPENDIX G

QUALIFICATIONS STATEMENT

EARTH SYSTEMS PACIFIC
QUALIFICATIONS STATEMENT FOR ENVIRONMENTAL WORK

The Environmental Professional who provided oversight for this project meets the qualifications specified by US EPA AAI and ASTM E1527-05. An EP is defined by US EPA AAI as “a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases (of hazardous substances) on, at, in, or to a property, sufficient to meet the objectives and performance factors (of the rule).” In addition, an environmental professional must have:

- A state, tribal, or territory-issued certification or license (Professional Engineer or Professional Geologist) and three years of relevant full-time work experience; or
- A Baccalaureate degree or higher in science or engineering and five years of relevant full-time work experience; or
- Ten years of relevant full-time work experience.

The attached resume(s) describe the credentials of the environmental professionals who directed field work, research and/or report preparation work on the project.

BRETT FAUST Years of Experience: 26

Senior Geologist

QUALIFICATIONS

Professional Geologist, California, No. 7025
Certified Engineering Geologist, California, No. 2386
B.S. Geology, 1993, San Jose State University, (CA, USA)

PROFESSIONAL EXPERIENCE

Employed with Earth Systems Pacific Hollister Office, Mr. Faust is a professional geologist with more than 20 years' experience in managing environmental and engineering geologic projects and performing soils and materials testing. Specific experience includes: soil and ground water contamination studies measuring and modeling fate and transport, Phase I and II environmental site assessments, and geologic fault and landslide studies.

Association of Engineering Geologists, Member

Appendix H

Drainage Study

1171 Homestead Road., Suite 255
Santa Clara, CA 95050-5485
t. 408-246-4848
f. 408-246-5624
s&w@swsv.com

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

MEMORANDUM

TO:	Longreach Associates Inc.	DATE:	February 27, 2020
FROM:	Fidel Salamanca, PE Caitlin J. Gilmore, PE Katie Hogan, PE	JOB#:	LNGR.01.19
SUBJECT:	Lico South – Intravia Property Drainage Study		

Introduction

Longreach Associates, Inc with the assistance of San Benito Engineering intends to develop an approximately 49-acre portion of agricultural land into single family homes within unincorporated San Benito County near Hollister. The project area, hereafter referred to as Lico South, is partially shown on Figure 1 along with the existing flood hazards.

Longreach Associates has hired Schaaf & Wheeler to develop improvement options that can alleviate or remove existing flooding hazards within the project site. This memorandum has been developed to summarize the existing flooding conditions under the FEMA flood hazard maps and determine which alternatives could be implemented to remove the existing flooding from the Lico South site. The analysis performed as part of this study builds on the previous hydrologic modeling of the Enterprise watershed. Five (5) different alternatives were explored to determine the option that could potentially eliminate flooding within the Lico South site. A summary of the alternatives and their respective results and impacts are included as part of this drainage study.

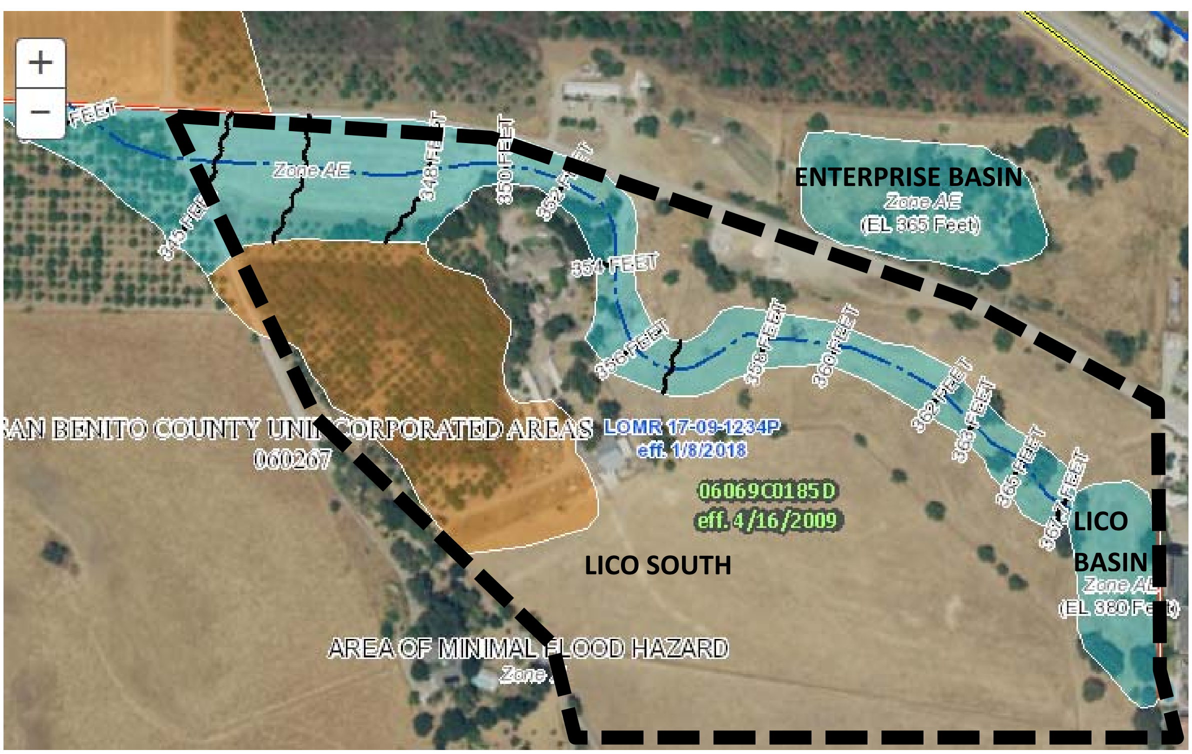

Figure 1: Existing FEMA Special Flood Hazard

The existing Lico South site has an existing FEMA Special Flood Hazard designation of Zone AE. The flood hazard is depicted in the FEMA Flood Insurance Rate Map (FIRM) for San Benito County, on Panel 185D, map 060267, a clip from that map is shown on Figure 1. This designation was concluded from a previous study submitted to FEMA in 2016 which incorporated the Enterprise sedimentation and drainage basin (Enterprise Basin) and the existing sedimentation and drainage basin within the Lico South property (Lico Basin). This study incorporates new as-built data obtained in 2019 and provides options for eliminating the existing special flood hazard from the Lico South site.

Existing Conditions

The drainage basins were delineated by Schaaf & Wheeler using ArcGIS for the development of the 2D mapping submittal to FEMA in 2016. It was determined that the Enterprise Basin and Lico Basin each route waters from approximately 4.2 square miles of upstream watershed. Water flows into the Lico basin through the Oak Canyon Ct. storm drain line, flows are then routed to the Enterprise basin through a 72-inch RCP under Enterprise Road. A spillway on the Lico Basin allows water to spill overland when the water surface in the basin reaches Elevation 372 –feet on the North American Vertical Datum of 1988, (NAVD). The peak inflow into the Lico Basin is approximately 691 cfs.

The Enterprise Basin receives water from the aforementioned 72-inch RCP under Enterprise Road which routes flows from the Lico Basin. Additional runoff from the Valley View development is also conveyed into the Enterprise Basin through a 48-inch RCP across Airport Highway. The peak inflow into the Enterprise Basin is approximately 471 cfs. The Enterprise Basin discharges through an outlet structure that utilizes a 72-inch RCP and has a spillway elevation of 365 NAVD88. The 72-inch RCP conveys flows from the Enterprise basin, down Enterprise Rd, picking up flows along the way and being upsized to an 84-inch RCP before discharging into the San Benito River (SBR). Figure 2 illustrates the existing configuration of the two basins.

The current configuration yields 100-year flooding within the Lico South site as depicted in Figure 1. This flooding results from water overtopping the Lico Basin spillway and flowing overland through the site. Portions of the existing flooding are over 1-ft in depth and are mapped as Zone AE on the FEMA Flood Hazard maps. The peak discharge over the Lico Basin spillway is 227 cfs, and the total volume spilled is approximately 38.5 acre-ft. The Lico Basin has approximately 10 acre-feet of storage. There is also an existing spill over the Enterprise Basin spillway during the 100yr-24hr storm event; however, the flood depth on average does not exceed 1-ft depth and is not included on the FEMA flood maps. The peak discharge from the Enterprise Basin discharge pipe is 462 cfs and the total volume is 527.3 acre-ft, all of which is diverted to SBR.

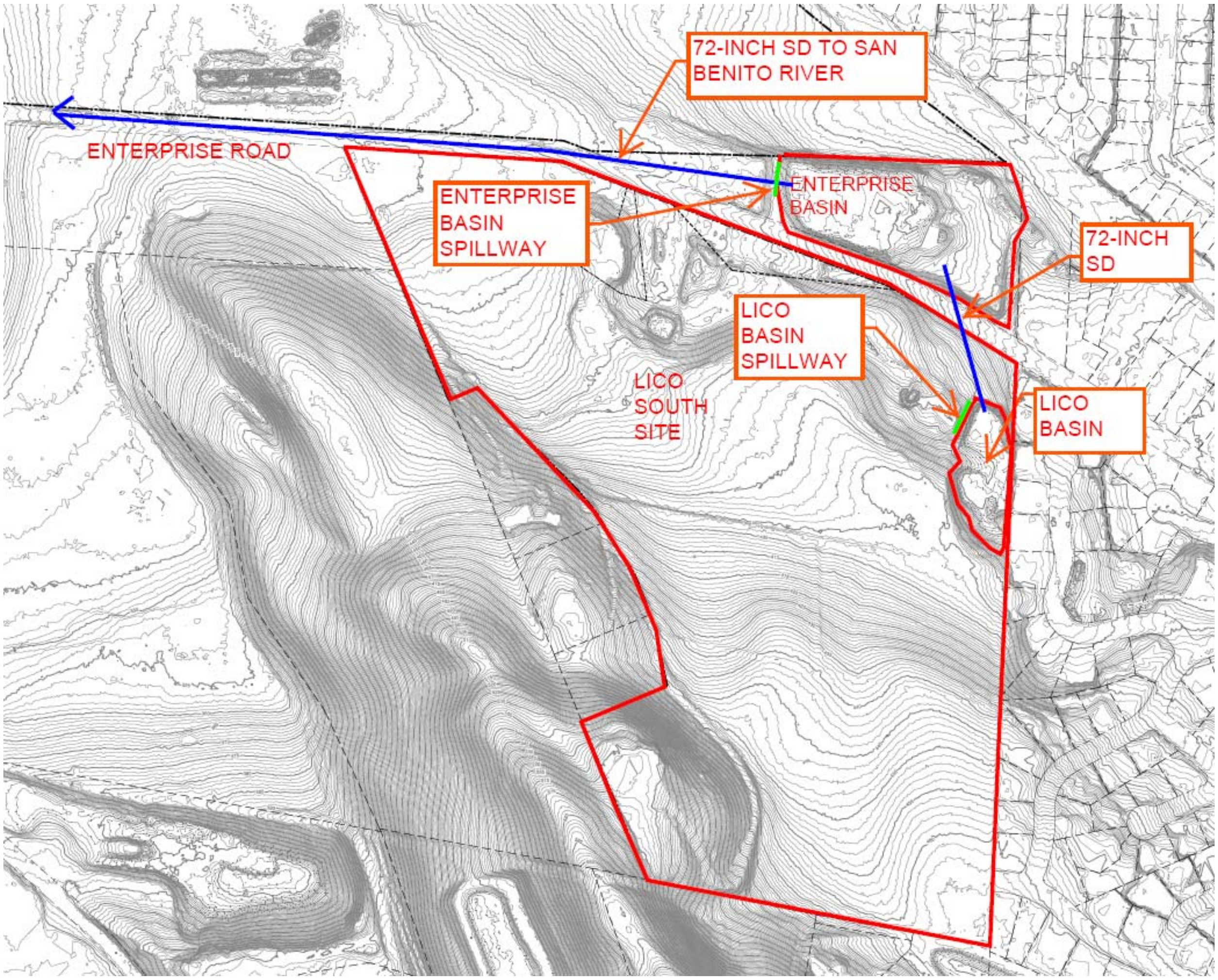

Figure 2: Existing Enterprise and Lico Basin Configuration

Proposed Improvements

Schaaf & Wheeler has developed alternatives that can eliminate flooding within the Lico South site. This section describes the four different scenarios whose flooding impacts were evaluated as potential alternatives to remove the existing flooding from the Lico South property.

Alternative 1: Double 72-inch Lico SD

Alternative 1 explores the addition of a new 72-inch pipe across Enterprise Road to increase discharge capacity from the Lico Basin into Enterprise Basin (configuration shown on Figure 3). The existing configuration has overflows from the Lico Basin Spillway, resulting in flooding within the Lico South site (as mapped by FEMA). The addition of a new 72-inch SD culvert would significantly reduce discharge from Lico Basin by conveying additional flows north. The new 72-inch RCP is proposed to follow the proposed development road alignment and the upstream invert elevation is to be set at a minimum of 368 feet (NAVD 88) or lower. The downstream invert elevation is to match existing (356 feet NAVD88).

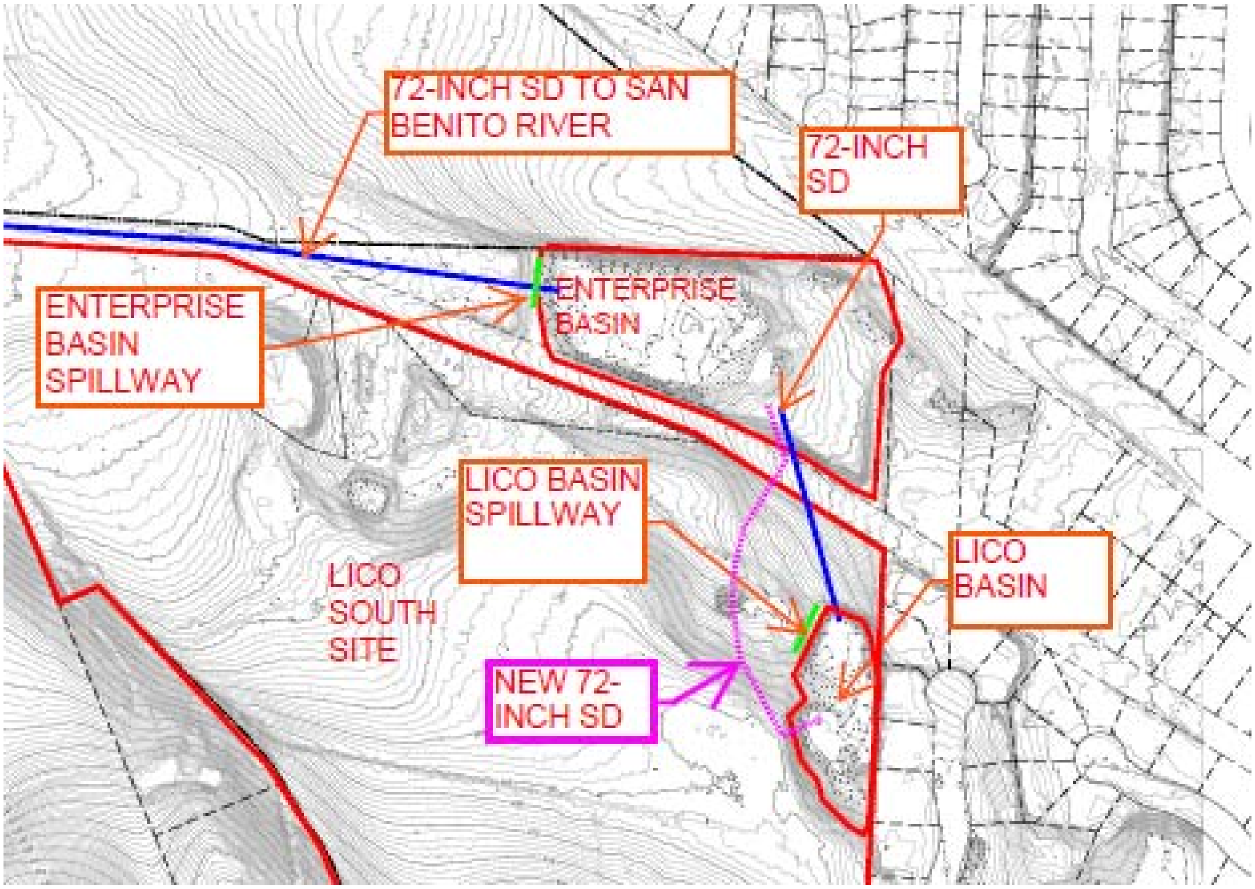

Figure 3: New 72-inch SD

Alternative 2: Lico Basin Floodwall

In this scenario, the incoming flow into Lico Basin was assumed to be contained by a floodwall set to elevation 389.4-ft (Figure 4). It was assumed that there was no flow via the spillway or the dam overtopping. The only outflow from the Lico Basin was assumed to be via the existing 72-inch pipe conveying water to the Enterprise Basin.

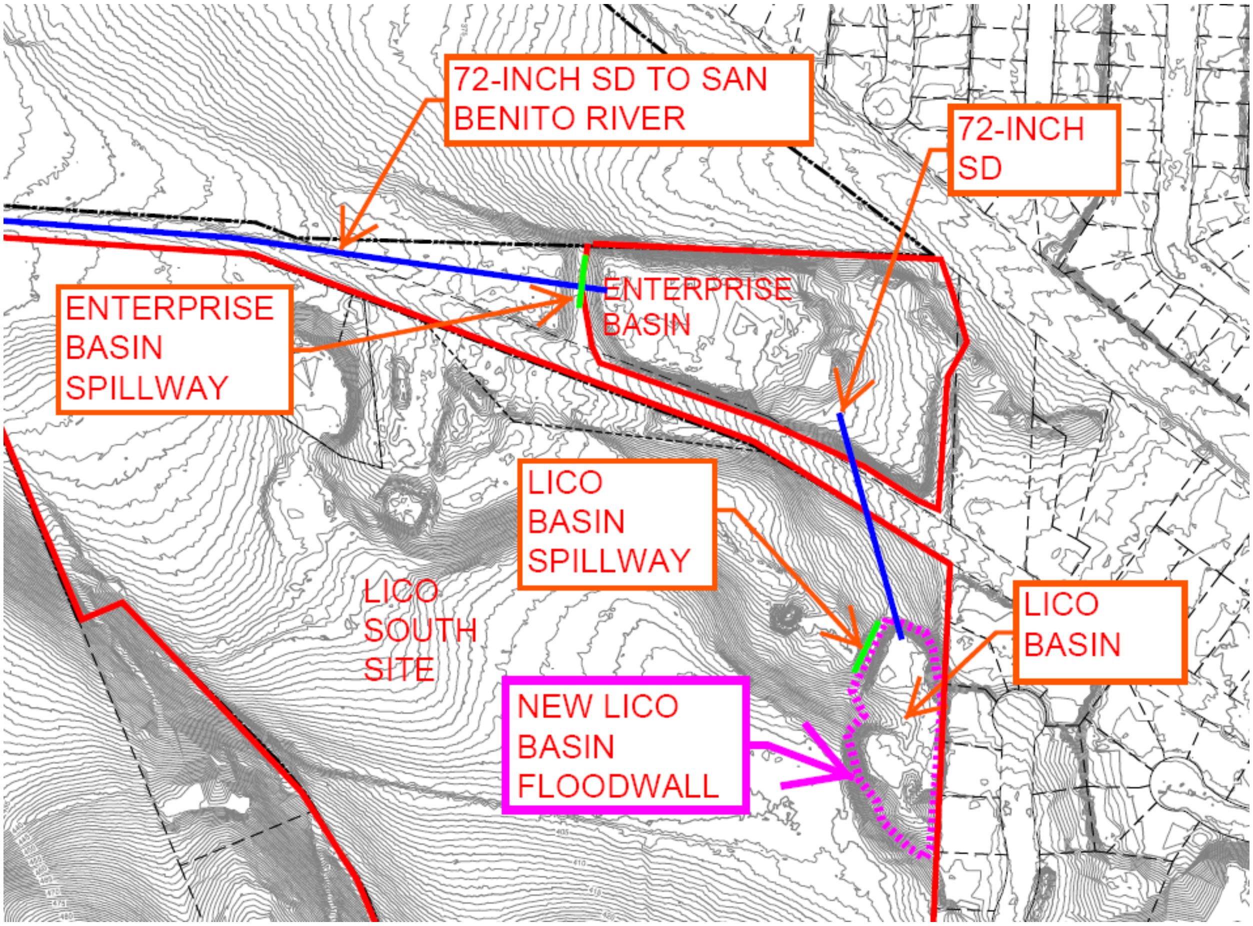

Figure 4: Lico Basin Floodwall

Alternative 3: Lico Basin Raised Crest and Spillway

In this scenario, the spillway was raised from existing 376.7-ft. to 381-ft. and top of dam was raised from 379.8-ft. to 383-ft (Figure 4). These elevations were chosen as the new spillway and crest elevations because they correspond to the low spot on the existing crest and the high spot on the existing crest respectively, and modifying the existing basin to meet these elevations would require relatively small changes to the existing basin footprint. This configuration would still have overtopping but the total volume of discharge is reduced.

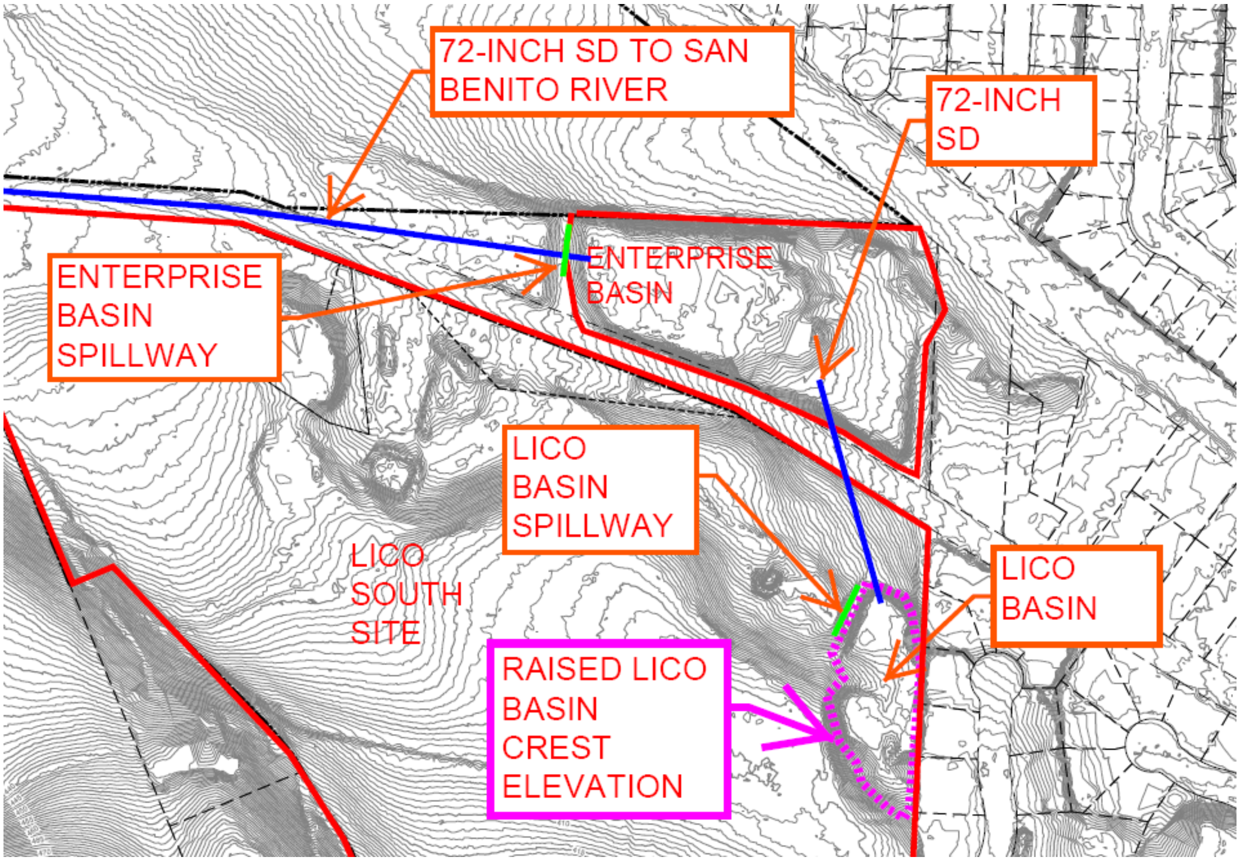

Figure 5: Raise Lico Basin Spillway and Crest

Alternative 4: Increase Lico South Basin and Raise Spillway Elevation

This scenario involves increasing the capacity of the Lico South Basin and raising the spillway to prevent overflow on the spillway. The spillway elevation would be increased to elevation 381 feet, and the dam elevation to 383 feet. The existing pond currently detains approximately 10 acre-feet.

Alternative 5: New Storage Facility Downstream of Lico South Basin

This scenario includes constructing a new storage facility downstream of the existing Lico Basin. The storage facility would capture the 225 cfs overflow (approximately 40 acre-ft) and release it to an outfall location where it can safely be conveyed without causing flooding.

Results

Alternative 1: Double 72-inch Lico SD

Adding a second 72-inch pipe to convey water to the Enterprise Pond detention basin eliminated any flow from the Lico Basin to the Lico South Property. As a result, flooding is greatly reduced in the Lico South property compared to the existing conditions. For most of the Lico South property, the flooding depth is less than 1-foot (Figure 6). Except for a small area immediately downstream of the Enterprise Pond detention basin, the flooding depth is less than 1-foot north of Enterprise Road. The additional pipe, however, causes the Enterprise basin water surface elevation to increase from 365 to 366.6 feet, and the discharge over the spillway increases from 0 cfs to 170 cfs downstream of the Enterprise Basin. Even though the floodplain is not required to be mapped as Zone AE, the 170 cfs over the Enterprise Basin spillway must be safely conveyed towards the San Benito River and not cause inundation of structures downstream. The flow path will follow along the north side of Enterprise Road where it joins with the existing conditions runoff from Lico South. This area will likely be mapped as a Zone X Shaded Area.

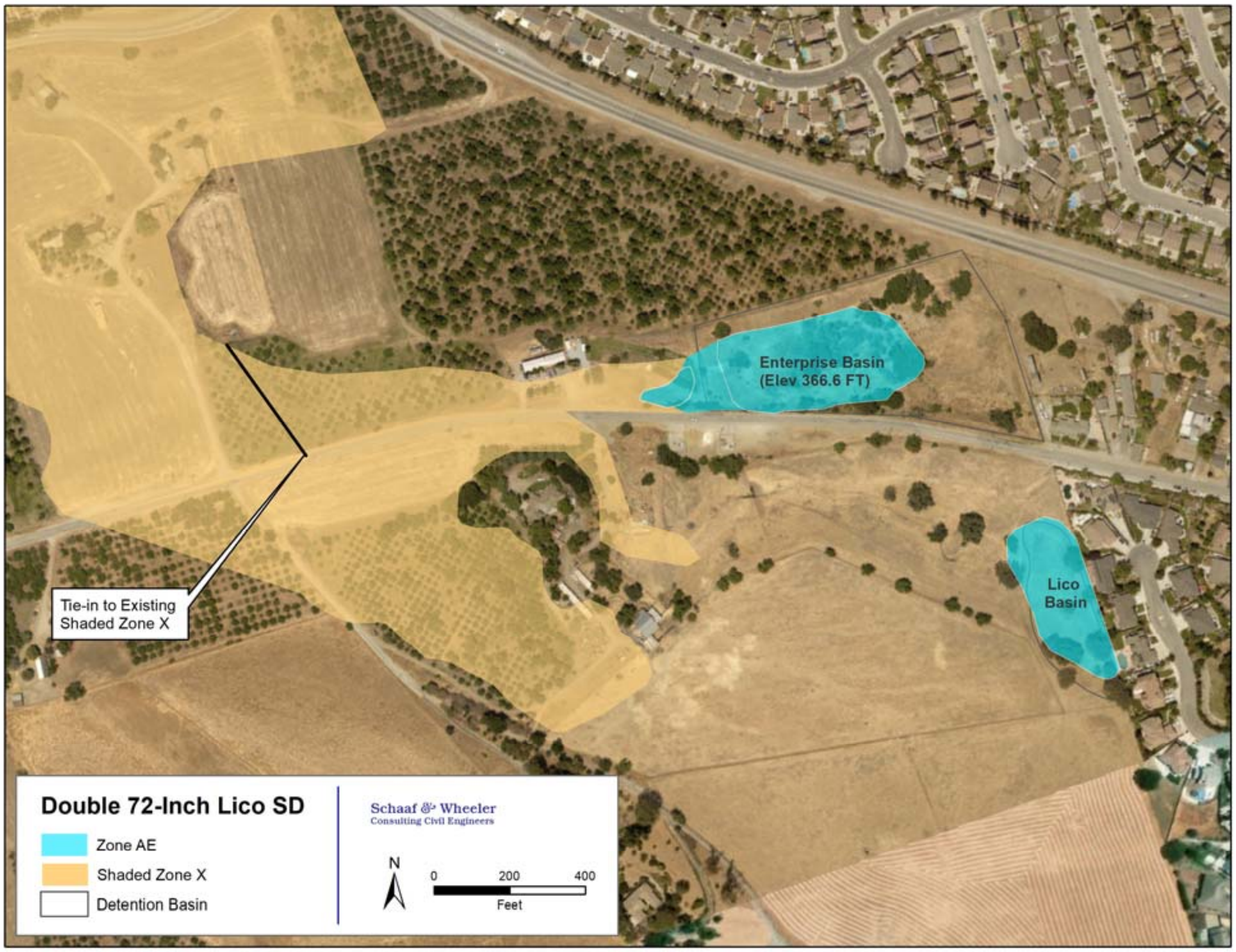

Figure 6: Results for Double 72-inch Lico SD

Alternative 2: Lico Basin Floodwall

Alternative 2 assumes that a vertical floodwall is erected to contain all the inflow to Lico Basin, this results in no flow entering the Lico South property. As a result, flooding is greatly reduced compared to existing conditions. This eliminates flooding at the site, and water is impounded to 388.2 feet NAVD88. As the water that was previously going to Lico South property is redirected towards the Enterprise Pond, flooding in the area downstream of the Enterprise pond is increased. Except for a small area immediately downstream of the Enterprise Pond detention basin, the flooding depth is less than 1-foot.

A more detailed assessment of the upstream storm drain system would need to be considered to verify that upstream storm drain lines are not adversely affected by this higher tailwater condition

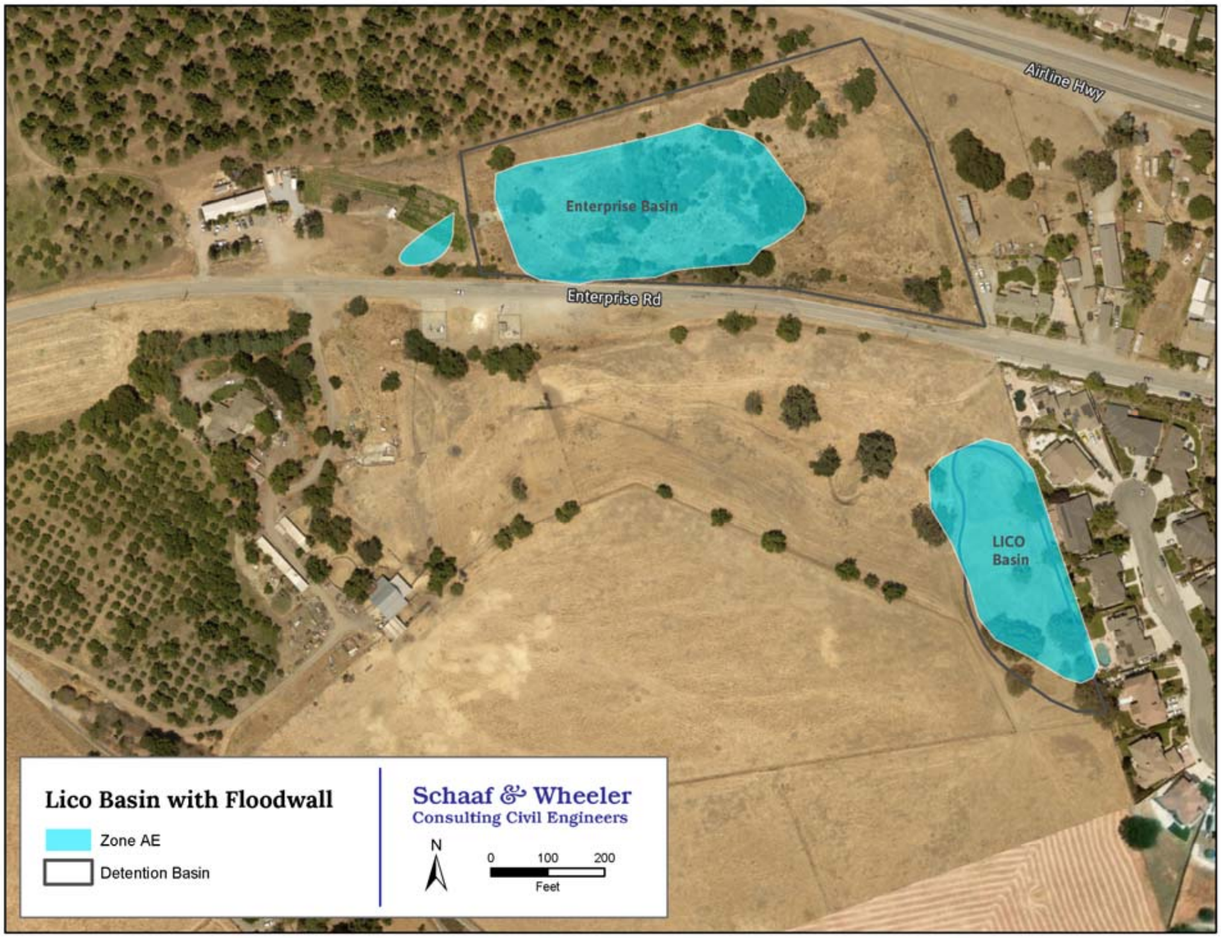

Figure 7: Results for Lico Basin with Floodwall

Alternative 3: Lico Basin Raised Crest and Spillway

Raising the spillway and dam overtopping elevation allowed more water to pass to the Enterprise Pond detention basin compared to the existing conditions. However, 18 ac-ft of flow still entered the Lico South property via the Lico Basin spillway and basin overtopping. The reduction in the level of flooding within the Lico South Property as a result of raising the spillway and dam overtopping elevation was not enough to remove the 1-ft of flooding within the Lico South property (Figure 8). In addition, the Lico Basin water surface elevation will increase and could have upstream impacts on the inflow storm drain system.

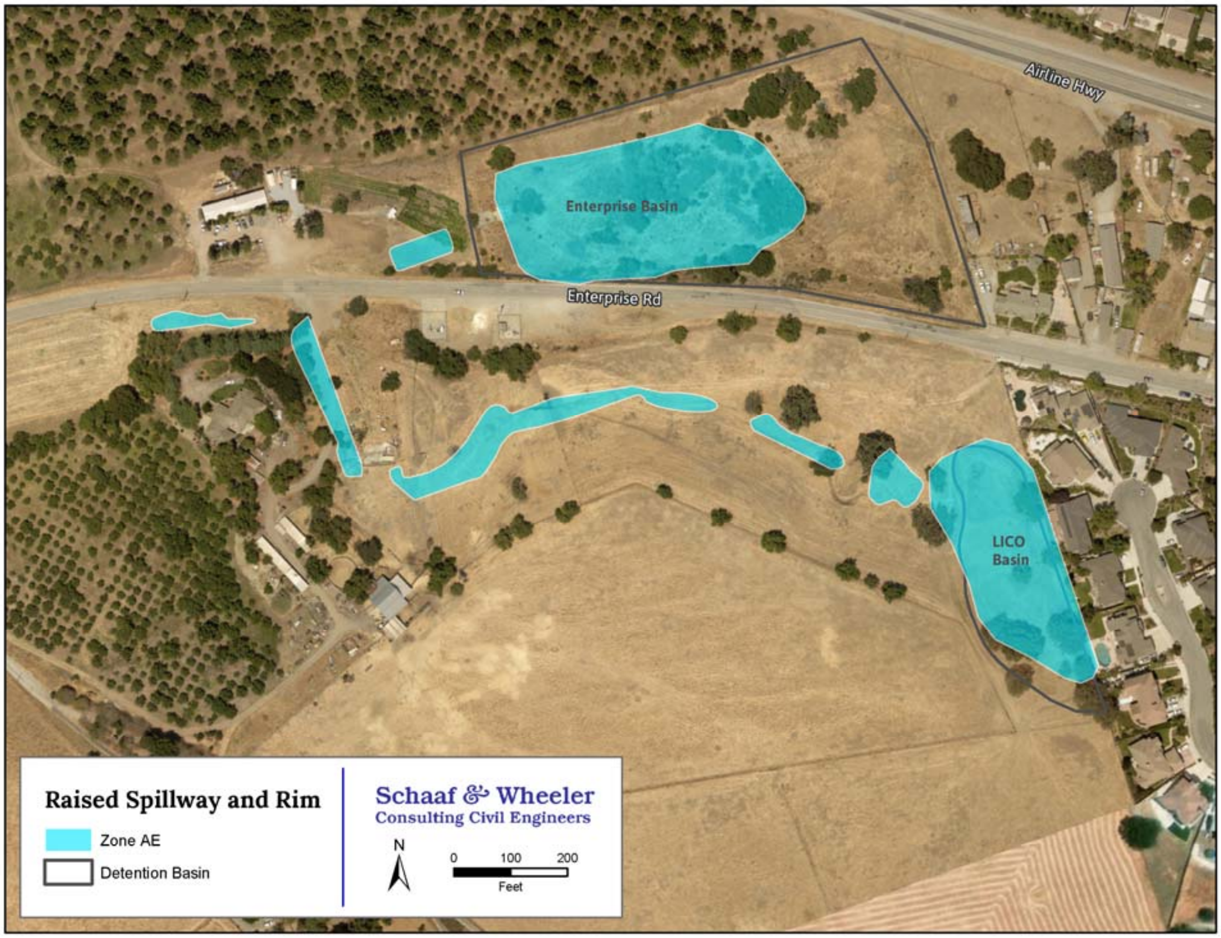

Figure 8: Results for Raised Spillway and Rim

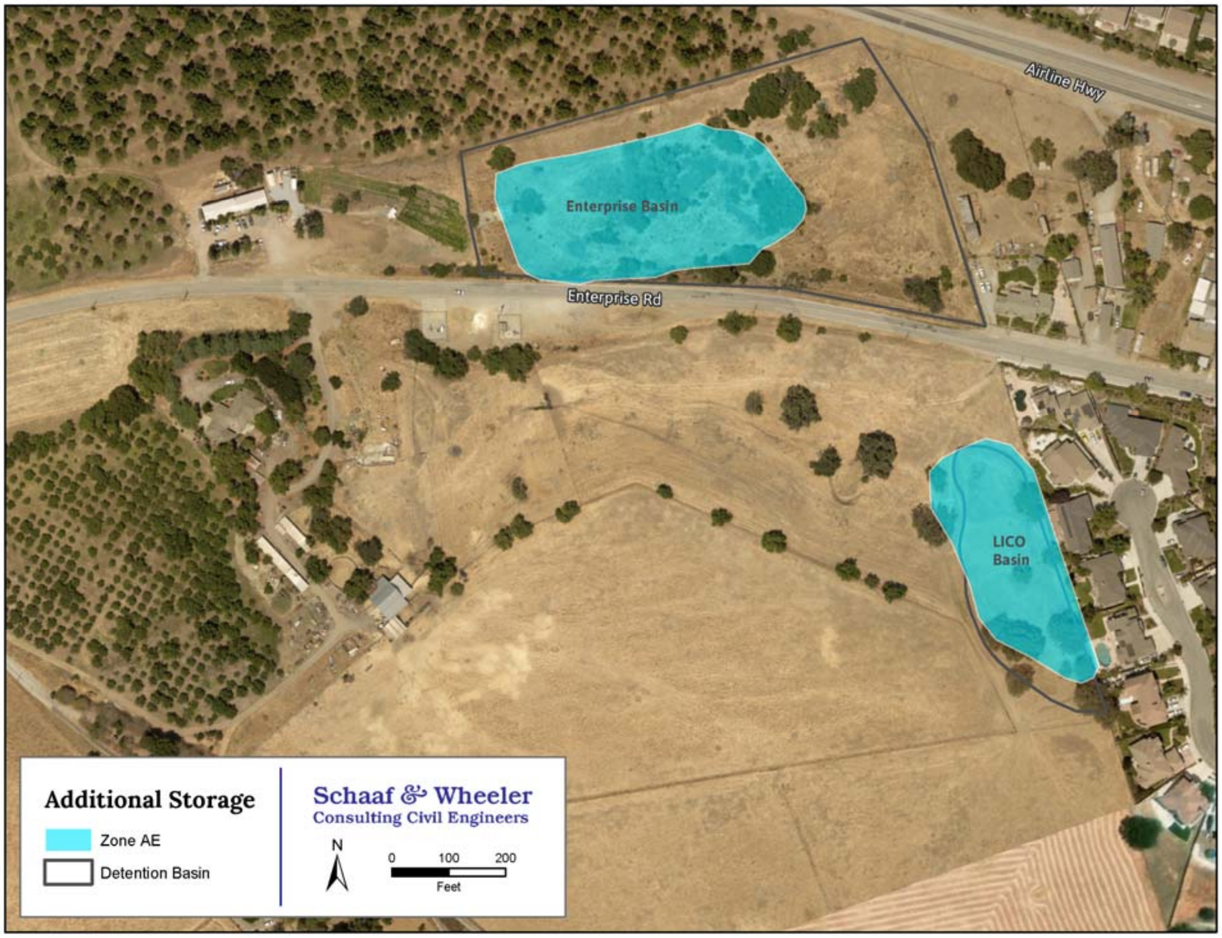

Figure 9: Results with Additional Storage

Alternative 4: Increase Lico South Basin and Raise Spillway

Increasing the size of the Existing Lico South Basin to capture the 38 acre-feet of overflow from the spillway would require the additional storage to be provided at the correct elevation (between 376.6 and 381) to maintain the existing pond water surface elevation. Two scenarios were investigated with this alternative. The first is if the storage was added below the existing spillway and the second is if the additional storage is added above the existing spillway elevation.

Adding storage below elevation 376.6 (spillway elevation) reduces the water surface in the basin causing the 72" RCP to release discharge at a slower rate than under existing conditions. Having a slower release rate increases the water volume is held in the pond, and some of the newly added storage ends up being filled before the peak runoff hits, this results in a total volume of 105 acre-ft being required if the basin is expanded. Adding approximately 40 acre-feet of storage above the spillway elevation, in contrast, would mimic the existing conditions timing of discharge release through the 72" RCP. But the surface area would be very large to maintain the water surface elevations in the basin at levels equal to or lower than the existing condition.

A comparison of the two described storage curves is provided in Figure 10, and the outflow curves are provided in Figure 11 to further illustrate the hydrograph timing. The storage added below the spillway results in approximately 105 acre-feet of storage to maintain the 380.4 feet pond water surface elevation.

The storage added above the spillway results in approximately 50.1 acre-feet of storage required at a peak elevation of 380.5 feet.

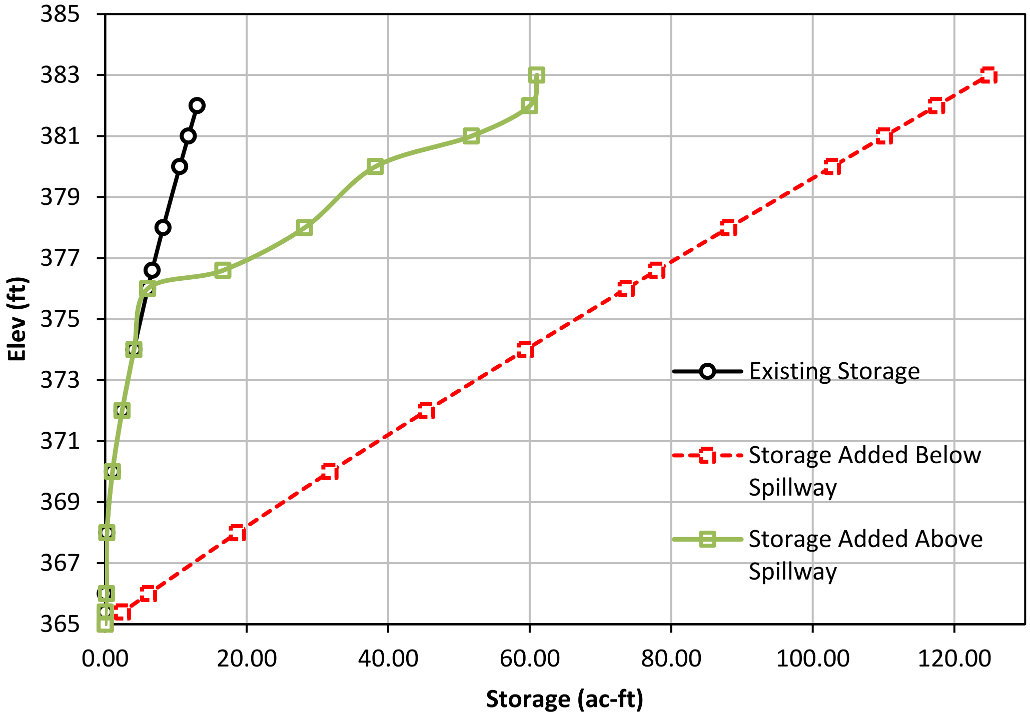

Figure 10: Storage Elevation Curves

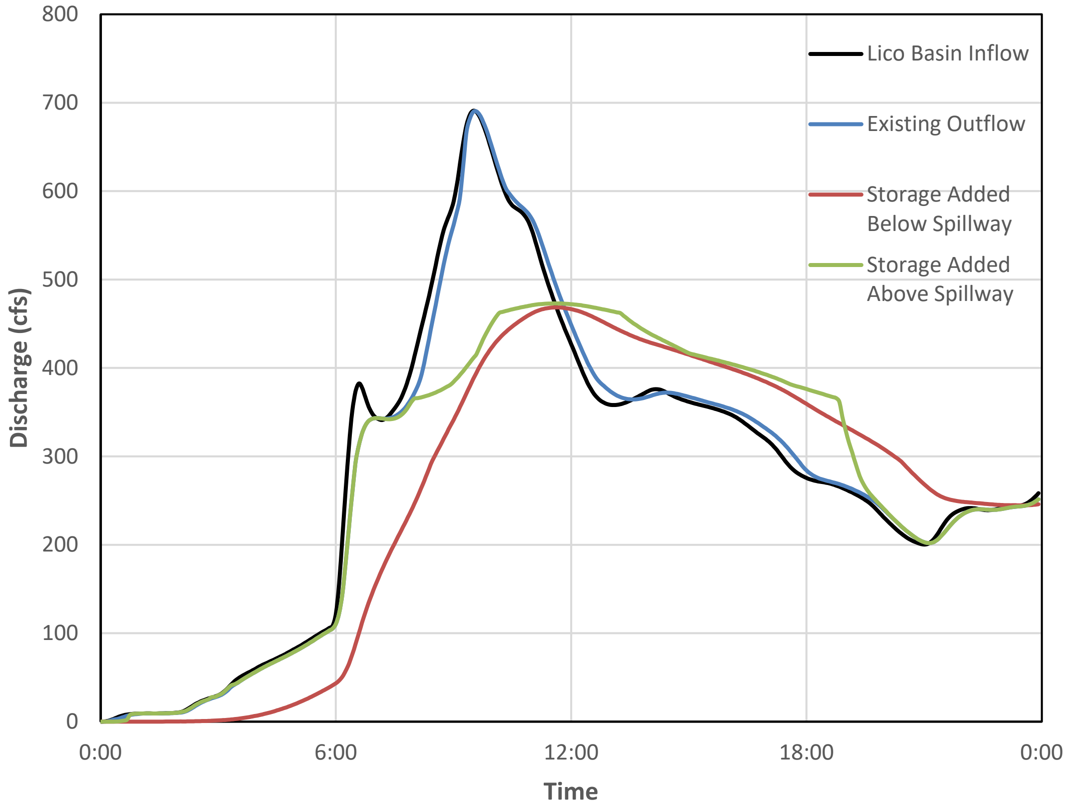

Figure 11: Outflow Discharge Curves

Alternative 5: New Storage Facility Downstream of Lico South Basin

All discharge from the existing Lico Basin is contained within a new detention pond or underground storage facility. All AE zones within the Lico South site are removed, except for the existing basin, and there are no impacts upstream or downstream (Figure 9). This alternative requires capturing the overflow volume downstream of the existing Lico Basin spillway and providing approximately 42 acre-feet of storage onsite separate from the Lico South Basin. The water surface elevation in the new storage facility should be lower than the Lico Basin Spillway elevation to avoid backwater conditions.

Conclusion

Five (5) potential improvement options were considered to eliminate flooding over 1-ft within the Lico South property. Of the alternatives explored, only Alternatives 4 and 5 remove flooding and do not impact upstream or downstream drainage. Alternative 1 impacts flood levels downstream and may require adding additional areas to the flood hazard map and overflow form the Enterprise Basin will need to be safely conveyed during the 100-year storm, although the additional mapping would be minimal (as shown on Figure 6). Alternative 2 may have impacts upstream due to a higher tailwater condition in the Lico South Basin. Alternative 4 requires potentially using developable area to provide the storage needed to maintain the existing pond water surface elevation. Alternative 4 also potentially requires more storage than Alternative 5, depending on where the additional storage is provided. Alternative 5 would reduce flooding onsite, but an outfall location would need to be identified to convey pond discharge. Table 1 summarizes the potential implications that should be considered for each of the alternatives explored.

Table 1: Alternative Analysis Summary

Alternative	Eliminates Flooding within Lico South Site?	Potential US Impact?	Potential DS Impact?	Potential Impacts usable space on site?
Double 72-inch Lico SD	Yes	No	Yes	No
Lico Basin Floodwall	Yes	Yes	Yes	No
Raise Lico Basin Spillway and Crest	Not without additional 18 acre-ft of storage	Yes	Yes	No
Increase storage at Lico Pond (up to 105 acre-ft)	Yes	No	No	Yes
New Basin with 42 Acre-ft of storage	Yes	No	No	Yes

As noted in Table 1, most of the options that are capable of eliminating flooding on-site without impacting the usable space but also have the potential for impacting upstream or downstream drainage systems. Alternative 1 does not require additional storage, uses the least amount of developable area, and has minimal impacts on the downstream FEMA Special Hazard Flood Zones. However, this alternative does cause the Enterprise Basin spillway to overtop during the 100-year storm. While the majority of the resulting flood depth downstream of the basin may be less than 1 foot deep, design should accommodate a safe discharge prevent downstream impacts. There would not be impacts on the upstream drainage system. If any of the above alternatives are constructed, a FEMA submittal will be required to remove the flood zone from within the Lico South site. Alternatives with potential upstream impacts would need to be further assessed to verify existing upstream systems are not significantly impacted.

Appendix I

Noise Measurements and Calculations

Data Logger 2
SET 3
A
SLOW
Range 40-100
L05 50.4
L10 49.5
L50 46.9
L90 44.3
L95 43.4
Max dB 65.6
2019/10/17 11:44:36
SEL 78.6
Leq 49.1

ST1

No.s	Date Time	dB
1	2019/10/17 11:44:15	48.6
2	2019/10/17 11:44:18	48.7
3	2019/10/17 11:44:21	47.8
4	2019/10/17 11:44:24	49.9
5	2019/10/17 11:44:27	57.3
6	2019/10/17 11:44:30	59.5
7	2019/10/17 11:44:33	63.7
8	2019/10/17 11:44:36	62.3
9	2019/10/17 11:44:39	61.2
10	2019/10/17 11:44:42	59.1
11	2019/10/17 11:44:45	57.2
12	2019/10/17 11:44:48	57.1
13	2019/10/17 11:44:51	53.9
14	2019/10/17 11:44:54	52.3
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Data Logger 2
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L10 59.1
L50 48.2
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Max dB 75.3
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SEL 88.9
Leq 59.3

ST2

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148	2019/10/17	12:28:19	65.9
149	2019/10/17	12:28:22	54.3
150	2019/10/17	12:28:25	48.4
151	2019/10/17	12:28:28	45.6
152	2019/10/17	12:28:31	47.0
153	2019/10/17	12:28:34	44.8
154	2019/10/17	12:28:37	44.5
155	2019/10/17	12:28:40	44.7
156	2019/10/17	12:28:43	46.1
157	2019/10/17	12:28:46	45.5
158	2019/10/17	12:28:49	46.1
159	2019/10/17	12:28:52	46.7
160	2019/10/17	12:28:55	47.6
161	2019/10/17	12:28:58	47.8
162	2019/10/17	12:29:01	48.0
163	2019/10/17	12:29:04	48.3
164	2019/10/17	12:29:07	48.3
165	2019/10/17	12:29:10	48.3
166	2019/10/17	12:29:13	48.3
167	2019/10/17	12:29:16	46.3
168	2019/10/17	12:29:19	46.5
169	2019/10/17	12:29:22	46.9
170	2019/10/17	12:29:25	47.0
171	2019/10/17	12:29:28	46.3
172	2019/10/17	12:29:31	46.9
173	2019/10/17	12:29:34	52.9
174	2019/10/17	12:29:37	73.0
175	2019/10/17	12:29:40	65.0
176	2019/10/17	12:29:43	58.4
177	2019/10/17	12:29:46	53.0
178	2019/10/17	12:29:49	49.6
179	2019/10/17	12:29:52	47.3
180	2019/10/17	12:29:55	47.1
181	2019/10/17	12:29:58	46.9
182	2019/10/17	12:30:01	44.7
183	2019/10/17	12:30:04	44.9
184	2019/10/17	12:30:07	44.9
185	2019/10/17	12:30:10	44.2
186	2019/10/17	12:30:13	42.6
187	2019/10/17	12:30:16	43.6
188	2019/10/17	12:30:19	43.8
189	2019/10/17	12:30:22	45.2
190	2019/10/17	12:30:25	45.3
191	2019/10/17	12:30:28	44.8
192	2019/10/17	12:30:31	43.9
193	2019/10/17	12:30:34	45.1
194	2019/10/17	12:30:37	46.3
195	2019/10/17	12:30:40	46.3
196	2019/10/17	12:30:43	45.5
197	2019/10/17	12:30:46	43.9
198	2019/10/17	12:30:49	43.8
199	2019/10/17	12:30:52	43.9
200	2019/10/17	12:30:55	44.6
201	2019/10/17	12:30:58	45.1

202	2019/10/17 12:31:01	44.8
203	2019/10/17 12:31:04	44.3
204	2019/10/17 12:31:07	45.4
205	2019/10/17 12:31:10	47.7
206	2019/10/17 12:31:13	47.9
207	2019/10/17 12:31:16	46.6
208	2019/10/17 12:31:19	46.6
209	2019/10/17 12:31:22	45.4
210	2019/10/17 12:31:25	46.7
211	2019/10/17 12:31:28	46.6
212	2019/10/17 12:31:31	47.8
213	2019/10/17 12:31:34	46.9
214	2019/10/17 12:31:37	45.9
215	2019/10/17 12:31:40	48.5
216	2019/10/17 12:31:43	48.2
217	2019/10/17 12:31:46	53.7
218	2019/10/17 12:31:49	64.7
219	2019/10/17 12:31:52	66.2
220	2019/10/17 12:31:55	54.8
221	2019/10/17 12:31:58	46.2
222	2019/10/17 12:32:01	43.4
223	2019/10/17 12:32:04	43.7
224	2019/10/17 12:32:07	45.0
225	2019/10/17 12:32:10	47.4
226	2019/10/17 12:32:13	47.9
227	2019/10/17 12:32:16	50.2
228	2019/10/17 12:32:19	53.8
229	2019/10/17 12:32:22	71.1
230	2019/10/17 12:32:25	62.1
231	2019/10/17 12:32:28	54.9
232	2019/10/17 12:32:31	52.5
233	2019/10/17 12:32:34	51.2
234	2019/10/17 12:32:37	50.1
235	2019/10/17 12:32:40	49.6
236	2019/10/17 12:32:43	48.2
237	2019/10/17 12:32:46	47.2
238	2019/10/17 12:32:49	46.4
239	2019/10/17 12:32:52	45.5
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244	2019/10/17 12:33:07	48.3
245	2019/10/17 12:33:10	47.8
246	2019/10/17 12:33:13	47.7
247	2019/10/17 12:33:16	46.7
248	2019/10/17 12:33:19	47.7
249	2019/10/17 12:33:22	49.3
250	2019/10/17 12:33:25	48.8
251	2019/10/17 12:33:28	47.6
252	2019/10/17 12:33:31	46.4
253	2019/10/17 12:33:34	45.5
254	2019/10/17 12:33:37	46.3
255	2019/10/17 12:33:40	47.3

256	2019/10/17 12:33:43	47.0
257	2019/10/17 12:33:46	46.8
258	2019/10/17 12:33:49	47.6
259	2019/10/17 12:33:52	47.6
260	2019/10/17 12:33:55	47.0
261	2019/10/17 12:33:58	47.3
262	2019/10/17 12:34:01	47.2
263	2019/10/17 12:34:04	47.3
264	2019/10/17 12:34:07	46.9
265	2019/10/17 12:34:10	46.7
266	2019/10/17 12:34:13	47.3
267	2019/10/17 12:34:16	46.5
268	2019/10/17 12:34:19	46.5
269	2019/10/17 12:34:22	46.4
270	2019/10/17 12:34:25	46.3
271	2019/10/17 12:34:28	48.0
272	2019/10/17 12:34:31	48.2
273	2019/10/17 12:34:34	46.4
274	2019/10/17 12:34:37	50.8
275	2019/10/17 12:34:40	55.4
276	2019/10/17 12:34:43	50.0
277	2019/10/17 12:34:46	49.1
278	2019/10/17 12:34:49	47.6
279	2019/10/17 12:34:52	46.6
280	2019/10/17 12:34:55	45.5
281	2019/10/17 12:34:58	45.5
282	2019/10/17 12:35:01	45.1
283	2019/10/17 12:35:04	43.9
284	2019/10/17 12:35:07	45.2
285	2019/10/17 12:35:10	44.5
286	2019/10/17 12:35:13	44.9
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291	2019/10/17 12:35:28	48.5
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293	2019/10/17 12:35:34	47.5
294	2019/10/17 12:35:37	46.9
295	2019/10/17 12:35:40	48.2
296	2019/10/17 12:35:43	65.7
297	2019/10/17 12:35:46	66.9
298	2019/10/17 12:35:49	58.5
299	2019/10/17 12:35:52	54.1
300	2019/10/17 12:35:55	52.5

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/17/2019
Case Description: Lico Subdivision

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-Family Resic	Residential	80	80	80

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	50	0
Dozer	No	40		81.7	50	0

		Calculated (dBA)	
Equipment		*Lmax	Leq
Front End Loader		79.1	75.1
Dozer		81.7	77.7
	Total	81.7	79.6

*Calculated Lmax is the Loudest value.

ELECTRICAL DATA

38HDR UNIT SIZE	V–PH–Hz	VOLTAGE RANGE*		COMPRESSOR		OUTDOOR FAN MOTOR			MIN CKT AMPS	FUSE/ HACR BKR AMPS
		Min	Max	RLA	LRA	FLA	NEC Hp	kW Out		
018	208/230–1–60	187	253	9.0	48.0	0.80	0.125	0.09	12.1	20
024	208/230–1–60	187	253	12.8	58.3	0.80	0.125	0.09	16.8	25
030	208/230–1–60	187	253	14.1	73.0	1.45	0.25	0.19	19.1	30
036	208/230–1–60	187	253	14.1	77.0	1.45	0.25	0.19	19.1	30
	208/230–3–60	187	253	9.0	71.0	1.45	0.25	0.19	12.7	20
	460–3–60	414	506	5.6	38.0	0.80	0.25	0.19	7.8	15
048	208/230–1–60	187	253	21.8	117.0	1.45	0.25	0.19	28.7	50
	208/230–3–60	187	253	13.7	83.1	1.45	0.25	0.19	18.6	30
	460–3–60	414	506	6.2	41.0	0.80	0.25	0.19	8.6	15
060	208/230–1–60	187	253	26.4	134.0	1.45	0.25	0.19	34.5	60
	208/230–3–60	187	253	16.0	110.0	1.45	0.25	0.19	21.5	35
	460–3–60	414	506	7.8	52.0	0.80	0.25	0.19	10.6	15

* Permissible limits of the voltage range at which the unit will operate satisfactorily

FLA – Full Load Amps
HACR – Heating, Air Conditininng, Refrigeration
LRA – Locked Rotor Amps
NEC – National Electrical Code
RLA – Rated Load Amps (compressor)

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit. All motors/compressors contain internal overload protection.

SOUND LEVEL

Unit Size	Standard Rating (dB)	Typical Octave Band Spectrum (dBA) (without tone adjustment)						
		125	250	500	1000	2000	4000	8000
018	68	52.0	57.5	60.5	63.5	60.5	57.5	46.5
024	69	57.5	61.5	63.0	61.0	60.0	56.0	45.0
030	72	56.5	63.0	65.0	66.0	64.0	62.5	57.0
036	72	65.0	61.5	63.5	65.0	64.5	61.0	54.5
048	72	58.5	61.0	64.0	67.5	66.0	64.0	57.0
060	72	63.0	61.5	64.0	66.5	66.0	64.5	55.5

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–VOLTAGE, SERIES	REQUIRED SUBCOOLING °F (°C)
018	12 (6.7)
024	12 (6.7)
030	12 (6.7)
036	12 (6.7)
048	12 (6.7)
060	12 (6.7)

Appendix J

Traffic Impact Analysis

Keith Higgins

Traffic Engineer

LICO SUBDIVISION
TRAFFIC IMPACT ANALYSIS

ADMINISTRATIVE DRAFT REPORT

SAN BENITO COUNTY, CALIFORNIA

Prepared for
TTI Developers, Inc.
Hollister, CA 95023

Prepared by
Keith Higgins, Traffic Engineer
Gilroy, CA 95020

November 14, 2019

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LIST OF EXHIBITS

LIST OF APPENDICES

1 INTRODUCTION

A 149-unit residential subdivision is proposed on the south side of Enterprise Road, between Airline Highway (State Route 25) and Southside Road, adjacent to the existing Oak Creek and Quail Hollow subdivisions and just south of Hollister, in San Benito County, California. The location of the project and study area are indicated on **Exhibit 1**. The site plan is shown on **Exhibit 2**.

This report presents the findings of an analysis of vehicular, pedestrian, bicycle and transit circulation at the project site and the immediately surrounding street network.

1.1 Scope of Work

This report addresses the following topics:

- Existing vehicular, pedestrian and bicycle circulation at the two project access points and the surrounding street network.
- Assessment of potential impacts to vehicular, pedestrian, bicycle and transit circulation due to the Project, and recommendations to minimize or alleviate those impacts.
- Assessment of potential Background and Cumulative traffic impacts with and without the project and recommendations to minimize or alleviate project impacts.
- Assessment of site access and on-site circulation.
- Estimate of vehicle-miles traveled for the project.

1.2 Study Network

The AM and PM peak periods are analyzed at the following intersections:

1. Ridgemark Drive - Fairview Road / Airline Highway (State Route 25)
2. Enterprise Road / Airline Highway (State Route 25)
3. Southside Road / Enterprise Road
4. Airline Highway (State Route 25) / Union Road
5. Southside Road / Union Road
6. San Benito Street / Union Road
7. Union Road – Mitchell Road / State Route 156
8. Airline Highway (State Route 25) – Pinnacles National Park Highway (State Route 25) / Tres Pinos Road – Sunnyslope Road
9. San Benito Street / Nash Road

1.3 Traffic Operation Evaluation Methodologies

Intersection traffic operations were evaluated based upon the level of service (LOS) concept. LOS is a qualitative description of an intersection's operations, ranging from LOS A to LOS F. Level of Service "A" represents free flow uncongested traffic conditions. Level of Service "F" represents highly congested traffic conditions with unacceptable delay to vehicles at intersections. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes. The analysis was performed using the *2010* and *2000 Highway Capacity Manual* methodologies. LOS descriptions for each type of existing traffic control at the study intersections (i.e., signal and one-way stop) are included as **Appendix A**.

Intersection traffic operations were evaluated using the Synchro© traffic analysis software (Version 10). The average delay is then correlated to a level of service. For two-way stop-controlled intersections, only the vehicle delay for side street traffic is analyzed. LOS for each side street movement is based on the distribution of gaps in the major street traffic stream and driver judgment in selecting gaps. For signalized intersections, the overall intersection delay is used to determine LOS.

1.4 Level of Service Standards

The study intersections are under the jurisdictions of San Benito County, the City of Hollister and Caltrans. San Benito County has jurisdiction over Intersections 3, 5 and 6. The City of Hollister has jurisdiction over Intersection 9. Caltrans has jurisdiction over Intersections 1, 2, 4, 7 and 8.

1.4.1 San Benito County

The overall standard for congestion levels in San Juan Bautista is LOS D. LOS D is also considered the maximum acceptable level of service for side-street operations at one- and two-way stop-controlled intersections.

1.4.2 City of Hollister

The overall standard for congestion levels in the City of Hollister is LOS C.

1.4.3 Caltrans

The Caltrans level of service standard is the transition from LOS C to LOS D (abbreviated as C-D in this report). This is essentially LOS C, which is identical to the City of Hollister level of service.

However, San Benito County General Plan Policy C-1.12 states that a standard of LOS D shall be used for all state highway facilities within the county, consistent with its countywide level of service standard. The following quote is from the *2035 San Benito County General Plan Update Revised Draft Environmental Impact Report,* EMC Planning Group, March 16, 2015:

> *As the LOS policy for such highways primarily affects local residents and local development, 2035 General Plan Policy C-1.12 proposes a LOS standard of D for state highway facilities within the County to accommodate expected development growth within the County while still providing reasonable operating conditions for auto traffic.*
>
> *In addition to the fact that the Board of Supervisors has indicated that it wants to use LOS D as its new roadway improvement for General Plan consistency purposes, the County believes that LOS D is an appropriate threshold of significance for CEQA purposes, particularly if development becomes denser in the Hollister area and in the northern parts of the County nearer the Bay Area. Use of LOS D as a CEQA threshold of significance is consistent with the practice of many other public agencies in California and it is the recommended threshold of significance by the County's traffic experts. Use of LOS C as a threshold of significance for CEQA purposes is also likely to result in mitigation measures that result in overbuilding roadway improvements based on the County's policy priorities. Roadway improvements necessary to meet an [sic] LOS C in the buildout condition are not considered fundable, necessary or desirable.*

For this reason, this report will apply a standard of LOS C to Caltrans intersections located in the City of Hollister (i.e., Intersection 8) and LOS D to Caltrans intersections located in unincorporated San Benito County (i.e., Intersections 1, 4, and 7). The San Benito County side-street LOS standard of LOS D will also apply to Caltrans intersections that have side-street stop control (i.e., Intersection 2).

1.5 Modeling of Right Turn on Red (RTOR)

All signalized study intersections allow right turns on red (RTOR), which generally reduce the overall intersection delay, thus improving the overall intersection level of service. There are several options to model right turns on red with different traffic analysis software packages, but the only method prescribed by the HCM for modeling RTOR is to reduce the input volumes to account for vehicles turning right on red. Where an exclusive right turn lane movement runs concurrent with a protected left turn phase from the cross street, the HCM allows for the right turn volume to be reduced by the number of simultaneous left turns. However, the length of the right turn lane affects the number of vehicles that can turn right on red. This is because a short right turn lane can result in right turning vehicles being trapped in the queue with vehicles in the through lane. For the purposes of this analysis, it is assumed that no vehicles would be able to turn right on red at any of the study intersections.

1.6 Significance Criteria

According to the California Environmental Quality Act (CEQA) guidelines, a project may have a significant effect on the environment if it would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. Neither San Benito County, the City of Hollister nor Caltrans have established formal significance criteria for roadways under their jurisdiction. Therefore, the following significance criteria have been used within this study, based upon the jurisdiction of each study intersection:

1.6.1 San Benito County

Signalized or All-Way Stop-Controlled Intersections (Intersections 5, 6):

An impact at a signalized or all-way stop-controlled intersection under San Benito County jurisdiction is defined to occur under the following conditions:

- A significant impact would occur if an intersection operating at LOS A, B, C or D degrades to LOS E or F due to the addition of project trips; or
- For intersections already operating at LOS E or F, a significant impact would occur if the addition of project trips causes the intersection delay to increase by more than 4.0 seconds.

One- or Two-Way Stop-Controlled Intersections (Intersection 3):

An impact at a one-way or two-way stop-controlled intersection under San Benito County jurisdiction is defined to occur under the following conditions:

- A significant impact would occur if side-street operations at an intersection operating at LOS A, B, C or D degrades to LOS E or F due to the addition of project trips and the traffic volumes with the addition of project trips are sufficiently high enough to satisfy the peak hour traffic signal warrant adopted by Caltrans in its Manual of Uniform Traffic Control Devices (CA MUTCD).
- For intersections with side-street operations already at E or F, a significant impact would occur if the project adds at least one trip to the intersection and the traffic volumes with the addition of project trips are sufficiently high enough to satisfy the peak hour traffic signal warrant adopted by Caltrans in its Manual of Uniform Traffic Control Devices (CA MUTCD).

1.6.2 City of Hollister

Signalized Intersections (Intersection 9):

An impact at a signalized intersection under the City of Hollister jurisdiction is defined to occur under the following conditions:

- A significant impact would occur if an intersection operating at LOS A, B or C degrades to LOS D, E or F due to the addition of project trips; or
- For intersections and roadway segments already operating at LOS D, E or F, a significant impact would occur if the addition of project trips causes the intersection delay to increase by more than 5.0 seconds.

1.6.3 Caltrans

The significance criteria of San Benito County apply to intersections under Caltrans jurisdiction if the intersection is located in unincorporated San Benito County (i.e., Intersections 1, 2, 4 and 7).

An impact at a signalized study intersection under Caltrans jurisdiction and located in the City of Hollister (i.e., Intersection 8) is defined to occur under the following conditions:

- A significant impact would occur if an intersection operating at LOS A, B, or C pre-project degrades to D, E or F due to the addition of project traffic; or
- For intersections already operating at LOS D, E or F, a significant impact would occur if the addition of project trips causes the overall intersection delay to increase by more than 1.0 seconds.

1.7 Regional Transportation Impact Mitigation Fee

The Council of San Benito County Governments (COG) administers the San Benito County Regional Transportation Impact Mitigation Fee (TIMF). This fee funds construction of traffic improvements on the regional highway system throughout northern San Benito County, including the following improvements in the study area (segment and intersection numbers are referenced from the TIMF study:

Segments:

1. Widen SR 156 to four lanes between The Alameda and Union Road.
4. Widen SR 25 to four lanes between Sunset Drive and Fairview Road.
5. estside Boulevard extension – Nash Road to Southside Road / San Benito Street intersection.
6. Widen Fairview Road between McCloskey Road and Airline Highway (SR 25).
8. Widen Union Road to four lanes between San Benito Street and Airline Highway (SR 25).
9. Widen Union Road to four lanes between San Benito Street and SR 156.
11. Widen SR 25 to four lanes between San Felipe Road and the Santa Clara County Line (Phases I and II).

<u>*Intersections:*</u>

4. Signalize the Fairview Road – Ridgemark Drive / Airline Highway (SR 25) intersection.
7. Signalize the Enterprise Road / Airline Highway (SR 25) intersection.
9. Convert the Rancho Drive / Nash Road – Tres Pinos Road intersection into a roundabout.
10. Signalize the future San Benito Street / Westside Boulevard – Southside Road intersection.

The TIMF is assessed based upon the square footage of the proposed building to be occupied by the Project. The Project's TIMF assessment will be determined by San Benito County, based upon the project definition and the fee rates established in *Regional Transportation Impact Mitigation Fee Nexus Study,* Michael Baker International, January 2016.

2 EXISTING TRAFFIC CONDITIONS

This chapter evaluates Existing traffic conditions and includes a description of the project setting.

2.1 Existing Traffic Network

The project site is located on the south side of Enterprise Road, between Southside Road and Airline Highway (State Route 25). Regional access to the project site is provided by State Route 25, State Route 156, Fairview Road and Union Road. Other roadways in the study area include Mitchell Road, Nash Road, Ridgemark Drive, San Benito Street, Southside Road, Sunnyslope Road, and Tres Pinos Road. The following is a brief description of each roadway in the study area.

State Route 25 (SR 25) is a two- to six-lane state highway in San Benito County, extending from US 101 south of Gilroy to Hollister, Pinnacles National Park, and State Route 198 in southern Monterey County. SR 25 is a major commute corridor between Hollister and Gilroy in route to San Jose and the greater San Francisco Bay Area. Within greater Hollister, SR 25 serves as the backbone for north-south intercity circulation, providing access to both residential neighborhoods and retail shopping areas. North of Tres Pinos Road – Sunnyslope Road, SR 25 is named **Pinnacles National Park Highway,** while south of Tres Pinos Road – Sunnyslope Road it is named **Airline Highway**. In the study area, the speed limit on SR 25 is 45 miles per hour (mph) north of Tres Pinos Road – Sunnyslope Road, 40 miles per hour (mph) between Tres Pinos Road – Sunnyslope Road and Sunset Drive, and 55 mph south of Sunset Drive.

State Route 156 (SR 156) is a two- to four-lane state highway in San Benito County, connecting US 101 west of San Juan Bautista with State Route 152 north of Hollister. Due to its connections, SR 156 is a major commercial corridor that facilitates connections between Monterey County and the Central Valley of California. It also serves as a major commute corridor for residents of Hollister and San Juan Bautista. In the study area, SR 156 is a two-lane highway. The speed limit on SR 156 is 55 miles per hour (mph).

Caltrans will begin construction of the widening of SR 156 to a four-lane expressway from The Alameda to 4th Street (San Juan Road) west of Hollister in 2020. Construction is scheduled for completion in 2022.

Enterprise Road is a two-lane, east-west roadway in San Benito County, south of Hollister, providing access to rural residences and urban neighborhoods. The speed limit on Enterprise Road is 45 mph west of the project site and 30 mph east of the project site.

Fairview Road is a two-lane, north-south major thoroughfare in San Benito County, on the eastern border of Hollister. Due to its connections to both SR 25 and SR 156, Fairview Road serves as both an eastern and northern bypass roadway of Hollister. It also provides access to various urban neighborhoods in Hollister and rural residences east of Hollister. The speed limit on Fairview Road is 55 mph.

Mitchell Road is a two-lane rural roadway connecting to the agricultural fields and orchards north of SR 156 between Hollister and San Juan Bautista. The presumed speed limit on Mitchell Road is 55 mph.

Nash Road is a two-lane, east-west collector street in southern Hollister. West of San Benito Street, Nash Road provides access to San Benito High School, residential neighborhoods in western Hollister, and rural residential areas southwest of Hollister. East of San Benito Street, Nash Road provides access to both residential neighborhoods and commercial uses. East of Rancho Drive, Nash Road becomes **Tres Pinos Road**. The speed limit on Nash Road in the study area 30 mph west of San Benito Street and 35 mph east of San Benito Street.

Ridgemark Drive is a two-lane roadway that provides access to the Ridgemark neighborhood and the Ridgemark Golf Club and Resort. The speed limit on Ridgemark Drive is 25 mph.

San Benito Street is a two- to four-lane, north-south street in central Hollister. San Benito Street extends from Union Road south of Hollister to Santa Ana Road in northern Hollister, passing through the central business district of the city. It is a collector street between Union Road and South Street, a major collector between South Street and Fourth Street, and a major arterial between Fourth Street and Santa Ana Road. North of Santa Ana Road, San Benito Street changes names to San Felipe Road, connecting to both SR 25 and SR 156. The speed limit on San Benito Street is 55 mph (presumed) south of Nash Road and 30 mph north of Nash Road.

Southside Road is a two-lane roadway in southern Hollister and San Benito County. North of Union Road, Southside Road provides direct access to residential neighborhoods in southern Hollister. South of Union Road, Southside Road provides access to both urban neighborhoods and rural residential areas in unincorporated San Benito County. The speed limit on Southside Road is 45 mph.

Sunnyslope Road is a two- to four-lane, east-west major collector street in southeastern Hollister, providing access to various residential neighborhoods. The speed limit on Sunnyslope Road is 35 mph.

Tres Pinos Road is a four-lane, east-west major collector street in southwestern Hollister, providing access to commercial areas and residential neighborhoods. West of Rancho Drive, Tres Pinos Road becomes **Nash Road**. The speed limit on Tres Pinos Road is 35 mph.

Union Road is a two-lane, east-west major thoroughfare in San Benito County, south of Hollister. Due to its connections to both SR 156 and SR 25, Union Road serves as a southern bypass of Hollister. Union Road also extends east of SR 25 as a four-lane collector street, providing access to residential neighborhoods in southeastern Hollister. The speed limit on Union Road is 55 mph west of SR 25 and 35 mph east of SR 25.

2.2 Existing Pedestrian Network

Sidewalks are not currently provided on either side of Enterprise Road along the project frontage, nor to the west of the project site. However, a sidewalk exists on the south side of Enterprise Road between the eastern boundary of the project site and Airline Highway (SR 25). This connects to sidewalks within the adjacent Oak Creek and Quail Hollow subdivision. Segments of sidewalk are also provided along the residences fronting the north side of Enterprise Road east of the project site between the project site and Airline Highway (SR 25).

Sidewalks also exist on streets in the City of Hollister including Nash Road, San Benito Street, Sunnyslope Road and Tres Pinos Road. However, they do not extend to the immediate project site.

There are no marked crosswalks at intersections near the project site, such as on Enterprise Road or Southside Road. Crosswalks are present at the Southside Road / Union Road intersection, but do not connect to any sidewalks on either street. All other study intersections in the City of Hollister have crosswalks which connect to sidewalks.

2.3 Existing Bicycle Network

There are four types of bicycle facilities defined by Caltrans. Each type is described below:

1. <u>Bike path (Class I)</u> – A separate right-of-way designed for the exclusive use of bicycle and pedestrian traffic with minimal cross-traffic.
2. <u>Bike lane (Class II)</u> – A striped lane for one-way bike travel on a street or highway, typically including signs placed along the street segment.
3. <u>Bike route (Class III)</u> – Provides a shared use with pedestrian or motor vehicle traffic. Typically, these facilities are city streets with signage designating the segment for Bike Route without additional striping or facilities.

4. Separated bikeways (Class IV) – A bikeway for the exclusive use of bicycles and includes a separation between the bikeway and the through vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible posts, inflexible barriers, or on-street parking.

According to the *San Benito County Bicycle and Pedestrian Master Plan,* Alta Planning + Design, December 2009, bicycle facilities are located on the following roadways:

Class II:

1. Nash Road, between Quail Run and Monterey Street (eastbound only).
2. Pinnacles National Park Highway (SR 25), between San Felipe Road and Tres Pinos Road (both directions).
3. San Benito Street, between Nash Road and Union Road (both directions).
4. Southside Road, between Carousel Drive and south of County Labor Camp Road (both directions).
5. Sunnyslope Road, between Airline Highway (SR 25) and Memorial Drive and between Cerra Vista Drive and Fairview Road (both directions).
6. Union Road, between Airline Highway (SR 25) and Calistoga Drive (both directions).

In addition, the shoulders of Airline Highway (SR 25) and SR 156 provide enough width to accommodate bicycle traffic.

2.4 Existing Transit Service

San Benito County Local Transportation Authority (LTA) provides fixed-route bus service in San Benito County. Operating as County Express, it provides three lines in Hollister, plus intra-county service to Gilroy via San Juan Bautista, Dial-a-Ride and Paratransit services.

There is no bus service to the immediate project vicinity. The nearest bus stop is located on Sunrise Drive east of Airline Highway (SR 25), an over 30-minute walks from the project site.

2.5 Existing Traffic Conditions

2.5.1 Vehicle Circulation

Intersection turning movement volumes including cars, trucks, buses, bicyclists, and pedestrians were collected on Wednesday, September 25, 2019 during the AM (7:00 – 9:00 AM) and PM (4:00 – 6:00) peak hours. From these counts, the AM and PM peak hour volumes were derived. **Appendix B** contains the new traffic count data collected at these study intersections.

Exhibit 3 depicts the AM and PM peak hour turning movement volumes for the study intersections under Existing Conditions.

Existing levels of service at the study intersections are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. The LOS calculation sheets for Existing conditions can be found in **Appendix C**.

Most of the study intersections currently operate at or better than their respective level of service standards. However, the following intersection currently has a deficient level of service:

1. Intersection 4: Airline Highway (SR 25) / Union Road – Overall LOS E (AM), which is below the County standard of LOS D.

2.5.2 Pedestrian Circulation

There is minimal pedestrian activity in most of the study area. The highest volume of intersection pedestrian crossings at most of the study intersection approaches was just one pedestrian during either peak hour. However, two intersections have much higher pedestrian crossings during the peak hours:

1. Airline Highway (State Route 25) – Pinnacles National Park Highway (State Route 25) / Tres Pinos Road – Sunnyslope Road: 48 crossings (AM), 17 crossings (PM).
2. San Benito Street / Nash Road: 217 crossings (AM), 38 crossings (PM).

These higher pedestrian crossing volumes are due to the proximity of these intersections to commercial shopping centers and Sunnyslope Elementary School (Intersection 1)and San Benito High School (Intersection 2).

2.5.3 Bicycle Circulation

Little to no bicycle traffic was counted at the study intersections during either of the peak periods. The highest number of bicyclists at any of the intersections was 7 bicyclists at the San Benito Street / Nash Road intersection during the PM peak hour.

3 EXISTING PLUS PROJECT CONDITIONS

3.1 Project Trip Generation

The project includes 149 single-family homes.

Trip generation for the project was estimated using trip rates published in *Trip Generation Manual,* Institute of Transportation Engineers (ITE), 10th Edition, 2017. This is the most recent version of the primary trip generation data source used by the traffic engineering and transportation planning industry.

Exhibit 5 summarizes the project trip generation. The project would generate an estimated 1,407 daily trips, with 110 trips (28 in, 82 out) during the AM peak hour and 148 trips (93 in, 85 out) during the PM peak hour.

3.2 Project Trip Distribution and Assignment

Exhibit 6 depicts the trip distribution for the project. This distribution was derived based upon existing traffic patterns at the study intersections as well as the locations of population subareas within commute distance of the project. The project trip distribution was combined with the project trip generation to estimate the project trip assignment depicted on **Exhibit 7**.

3.3 Existing Plus Project Traffic Conditions

3.3.1 Vehicle Circulation

The project would have three access points – two on Enterprise Road and one via an extension of Quail Ridge Way from the adjacent Oak Creek residential subdivision. The trip assignment was added to the existing traffic volumes in **Exhibit 3** to estimate Existing Plus Project volumes, which are depicted on **Exhibit 8**.

Existing Plus Project intersection levels of service are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. The LOS calculation sheets for Existing Plus Project conditions can be found in **Appendix D**.

Most of the study intersections under Existing Plus Project conditions would continue to operate at or better than their respective level of service standards. However, the following two intersections would operate at deficient levels of service under Existing Plus Project conditions:

1. Intersection 4: Airline Highway (SR 25) / Union Road – Overall LOS E (AM)
2. Intersection 7: Union Road – Mitchell Road / SR 156 – Overall LOS E (AM)

Below is a discussion of the recommended improvements at the study intersections operating with deficient operations under Existing Plus Project conditions. These improvements would be necessary to improve operations to acceptable or better level of service.

1. Intersection 4 – Airline Highway (SR 25) / Union Road:

   The overall level of service under AM conditions would be a deficient LOS E, compared to LOS E without the Project. Vehicle delays at this intersection would increase by 0.0 seconds (AM) with the addition of project traffic. Per the significance criteria in Section 1.6, the Project would not result in a significant impact at this intersection. The Project would not be responsible for any improvements at this intersection.

2. Intersection 7 – Union Road – Mitchell Road / SR 156:

   The overall level of service under AM conditions would be a deficient LOS E, compared to LOS D without the Project. Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

   - Recommendation: Implement the following, all of which are part of the San Benito County TIMF Segment 1 improvement:

     a. Add a second eastbound SR 156 through lane and a second westbound SR 156 through lane

     b. Widen and restripe northbound Union Road as two left turn lanes and one shared through/right turn lane

     c. Restripe southbound Mitchell Road as one left turn lane and one shared through/right turn lane.

     d. Add a westbound SR 156 right turn lane

     e. Convert the north/south (Union Road and Mitchell Road) left turn phasing to Protected phasing.

   - Operations after Implementation of Improvement: Overall LOS B (AM and PM).

   - Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards this improvement. Construction of this improvement is planned to be completed by 2022.

The following improvement is also recommended to improve intersection safety and overall circulation:

3. Intersection 3 – Southside Road / Enterprise Road:

   The left turn lane warrant is met for the southbound Southside Road left turn movement at this intersection. (See **Appendix I** for this warrant.)

   - Recommendation: Implement the following:
     a. Widen Southside Road at Enterprise Road to add a southbound left turn lane.
     b. As an alternative or interim improvement, convert the Southside Road / Enterprise Road intersection into an all-way stop-controlled intersection.
   - Operations after Implementation of Improvement:
     - Recommendation: Side-Street LOS B (AM) and LOS A (PM).
     - Alternative/Interim: Overall LOS A (AM and PM)
   - Responsibility for Improvement: The Project would be responsible for implementation of this improvement, subject to design approval by San Benito County.

3.3.2 Pedestrian Circulation

The lack of sidewalks near the project site – combined with no sidewalk connections to the City of Hollister – will result in minimal generation of pedestrian traffic from the project site. Therefore, the project would not represent a significant impact to pedestrian circulation. The project will construct a sidewalk along its entire Enterprise Road frontage.

3.3.3 Bicycle Circulation

The project is anticipated to generate minimal bicycle traffic. Therefore, the project would not represent a significant impact to bicycle circulation. Pavement widening along Enterprise Road as a part of standard frontage improvements will be constructed by the project that will be able to accommodate a future Class II bike lane.

3.3.4 Transit Circulation

The project would not increase transit usage, as there is no bus service within walking distance of the project site. Therefore, the project would not represent a significant impact to transit service.

3.3.5 Regional Transportation Impact Mitigation Fee

The project would be responsible for payment of the San Benito County Regional Transportation Impact Mitigation Fee (TIMF), which would represent the project's fair share contribution towards countywide roadway improvements funded by the fee program. San Benito County will determine the project's TIMF fee.

4 BACKGROUND CONDITIONS

This chapter describes Background Conditions, which represents traffic conditions with the additional traffic from land development that is approved but not yet built. This scenario does not include trips from the proposed project.

4.1 Background Traffic Volumes

Background traffic growth on the study street network was estimated based on traffic growth anticipated from approved projects throughout the study area and the adjacent City of Hollister. A list of approved residential and commercial projects in the City of Hollister – last updated by the City in July 2019 – was obtained from the City of Hollister web site – http://www.hollister.ca.gov/. The approved San Benito County projects in the immediate study area were estimated based on observations of developments currently under construction on Southside Road near the project. Background development includes about 2,600 dwelling units, which take approximately 10 years to be completed and occupied, or about the Year 2030. **Exhibits 9A and 9B** summarize the trip generation for these residential and commercial projects, respectively. Major Background projects in the study area include the following:

1. West of Fairview – 667-unit subdivision located on Fairview Road north of Airline Highway (SR 25).
2. Roberts Ranch – 241-unit subdivision located north of Airline Highway (SR 25) and east of Enterprise Road.
3. Fairview Corners – 220-unit subdivision located north of Airline Highway (SR 25) and east of Fairview Road.
4. Santana Ranch – over 1,000-unit subdivision, plus commercial retail and an elementary school. Partially constructed.
5. Sunnyside Estates – 200-unit subdivision located on Southside Road north of Hospital Road. Currently under construction.
6. Bennett Ranch – 84-unit subdivision located on Southside Road south of Enterprise Road. Currently under construction.
7. Bluffs at Ridgemark – 93-unit subdivision located adjacent to Southside Road south of Hospital Road but with vehicular access from Ridgemark Drive.
8. San Juan Oaks Specific Plan – nearly 1,200-unit senior housing development with a resort hotel, retail, office space and medical offices, located adjacent to and existing golf course.
9. Silver Oaks – 170-unit senior housing subdivision on Valley View Road north of Union Road.

10. <u>Los Pinars</u> – 85-unit subdivision located east of San Benito Street and south of Nash Road.
11. <u>Hawkins Companies (Hollister Farms)</u> – a nearly 166,000 square foot retail shopping center at west of Pinnacles National Park Highway (SR 25) and both north and south of Park Street. Under construction.

Background traffic growth in the study area was derived based on projected background project trip activity and growth trends from the traffic studies for these and other approved development projects. A full list of these traffic studies can be found in **Exhibits 9A and 9B.**

The Background traffic growth was added to the Existing traffic volumes on **Exhibit 3** to estimate the Background traffic volumes depicted in **Exhibit 10**.

4.2 Background Traffic Conditions

4.2.1 Vehicle Circulation

Background intersection levels of service are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. **Appendix E** contains the level of service calculations under Background conditions.

Some of the study intersections under Existing Plus Project conditions would continue to operate at or better than their respective level of service standards. However, the following six intersections would operate at deficient levels of service under Existing Plus Project conditions. Intersections 2, 4 5 and 7 have a County standard of LOS D. Intersections 8 and 9 have a City LOS standard of C.

1. Intersection 2: Enterprise Road / Airline Highway – Side-street LOS E (PM), whi
2. Intersection 4: Airline Highway (SR 25) / Union Road – Overall LOS F (AM and PM)
3. Intersection 5: Southside Road / Union Road – Overall LOS F (PM)
4. Intersection 7: Union Road – Mitchell Road / SR 156 – Overall LOS F (AM and PM)
5. Intersection 8: Airline Highway (SR 25) – Pinnacles National Park Highway (SR 25) / Tres Pinos Road – Sunnyslope Road – Overall LOS D (AM and PM)
6. Intersection 9: San Benito Street / Nash Road – Overall LOS E (AM and PM)

4.2.2 Pedestrian Circulation

Background pedestrian volumes are anticipated to be similar to existing conditions near the project site. Background projects will be required to provide frontage improvements including sidewalks to accommodate pedestrian traffic at each individual site. Background pedestrian traffic increases will not represent a significant impact to pedestrian circulation.

4.2.3 Bicycle Circulation

Background bicycle volumes are anticipated to be similar to existing conditions near the project site. Background projects will be required to provide frontage improvements including shoulder widening consistent with County and City requirements, which generally include bike lanes on collector and arterial streets. This will accommodate bicycle traffic at each individual site. Background bicycle traffic increases will not represent a significant impact to bicycle circulation.

4.2.4 Transit Circulation

Background projects are anticipated to generate a minimal increase in transit usage, although the lack of bus service to the southernmost study intersections will concentrate usage increases to within central Hollister. Therefore, background projects would not represent a significant demand for, or impact to, transit service to the project vicinity.

5 BACKGROUND PLUS PROJECT CONDITIONS

This chapter describes Background Conditions plus traffic from the proposed project.

5.1 Background Plus Project Traffic Volumes

Project trips (**Exhibit 7**) described in the Existing Plus Project development scenario included in Chapter 3 were added to the Background volumes (**Exhibit 10**) to estimate Background Plus Project volumes, which are shown in **Exhibit 11**.

5.2 Background Plus Project Conditions Traffic Conditions

5.2.1 Vehicle Circulation

Background Plus Project intersection levels of service are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. The LOS calculation sheets for Background Plus Project traffic conditions can be found in **Appendix F**.

Some of the study intersections under Background Plus Project conditions would continue to operate at or better than their respective level of service standards. However, the following six intersections would operate at deficient levels of service under Background Plus Project conditions. These are the same intersections that will operate deficiently under Background Without Project conditions. Intersections 2, 4 5 and 7 have a County standard of LOS D. Intersections 8 and 9 have a City standard of LOS C.

1. Intersection 2: Enterprise Road / Airline Highway – Side-street LOS E (PM)
2. Intersection 4: Airline Highway (SR 25) / Union Road – Overall LOS F (AM and PM)
3. Intersection 5: Southside Road / Union Road – Overall LOS F (PM)
4. Intersection 7: Union Road – Mitchell Road / SR 156 – Overall LOS F (AM and PM)
5. Intersection 8: Airline Highway (SR 25) – Pinnacles National Park Highway (SR 25) / Tres Pinos Road – Sunnyslope Road – Overall LOS D (AM) and LOS E (PM)
6. Intersection 9: San Benito Street / Nash Road – Overall LOS E (AM and PM)

Below is a discussion of the recommended improvements at the study intersections operating with deficient operations under Background Plus Project conditions. These improvements would be necessary to improve operations to acceptable or better level of service.

1. <u>Intersection 2 – Enterprise Road – Airline Highway (SR 25):</u>

   The northbound Enterprise Road side-street level of service under PM conditions would be a deficient LOS E, compared to LOS E without the Project. The Project would add 17 trips to the intersection during the PM peak hour. This intersection would also meet the Caltrans peak hour signal warrant. (See **Appendix I** for the warrant.) Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

- Recommendation: Implement the following:
  a. Signalize the intersection. This is the San Benito County TIMF Intersection 7 improvement.
  b. Add a second eastbound Airline Highway (SR 25) through lane and a second westbound Airline Highway (SR 25) through lane. This is a part of the San Benito County TIMF Segment 4 improvement.
- Operations after Implementation of Improvement: Overall LOS A (AM) and LOS B (PM).
- Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards improvement.

2. <u>Intersection 4 – Airline Highway (SR 25) / Union Road:</u>

   The overall level of service under AM conditions would be a deficient LOS F, compared to LOS F without the Project. Vehicle delays at this intersection would decrease by 0.5 seconds (AM) with the addition of project traffic. This is due to a peculiarity in the traffic analysis software. Essentially, the project will represent no increase in delay. Per the significance criteria in Section 1.6, the Project would <u>not</u> result in a significant impact at this intersection. The Project would <u>not</u> be responsible for any improvements at this intersection.

3. <u>Intersection 5 – Southside Road / Union Road:</u>

   The overall level of service under PM conditions would be a deficient LOS F, which is expected to be experienced under Background without Project conditions. Vehicle delays at this intersection would increase by 20.3 seconds (PM) with the addition of project traffic. Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

- Recommendation: Implement the following, all of which are part of the San Benito County TIMF Segment 8 improvement:
  a. Add a second eastbound Union Road through lane and a second westbound Union Road through lane
- Operations after Implementation of Improvement: LOS C (AM and PM).
- Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards improvement.

4. Intersection 7 – Union Road – Mitchell Road / SR 156:

   The overall level of service under AM and PM conditions would be a deficient LOS F, which is expected under Background condition without the Project. Vehicle delays at this intersection would increase by 4.5 seconds (AM) and 2.9 seconds (PM). Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

   - Recommendation: Implement the following, all of which are part of the San Benito County TIMF Segment 1 improvement:
     a. Add a second eastbound SR 156 through lane and a second westbound SR 156 through lane
     b. Widen and restripe northbound Union Road as two left turn lanes and one shared through/right turn lane
     c. Restripe southbound Mitchell Road as one left turn lane and one shared through/right turn lane.
     d. Add a westbound SR 156 right turn lane
     e. Convert the north/south (Union Road and Mitchell Road) left turn phasing to Protected phasing.
   - Operations after Implementation of Improvement: LOS C (AM and PM).
   - Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards improvement. Construction of this improvement will be completed by 2022.

5. Intersection 8 – Airline Highway (SR 25) – Pinnacles National Park Highway (SR 25) / Tres Pinos Road – Sunnyslope Road:

   The overall level of service would be a deficient LOS D (AM) and LOS E (PM), which is expected under Background conditions without the Project. Vehicle delays at this intersection would increase by 0.0 seconds (AM) and 4.6 seconds (PM) with the addition of Project traffic. Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

   - Recommendation: Implement the following:
     a. Optimize the intersection signal timing to better balance the lengths of the green times for all of the signal phases, including potential lengthening of the overall cycle length.

   b. Consider modifying the westbound Sunnyslope Road approach to add a second westbound left turn lane. This would require modifying the existing raised median and narrowing the travel lanes.

- Operations after Implementation of traffic signal optimization: Overall LOS C (AM and PM).
- Responsibility for Improvement: Caltrans would be responsible for implementation of this improvement, as part of its typical maintenance schedule for signal operations at this intersection.

6. <u>Intersection 9 – San Benito Street / Nash Road:</u>

The overall level of service would be a deficient LOS E (AM and PM), compared to LOS E without the Project. Vehicle delays at this intersection would decrease by 0.2 seconds (AM) and 0.3 seconds (PM) with the addition of project traffic. Per the significance criteria in Section 1.6, the Project would <u>not</u> result in a significant impact at this intersection. The Project would <u>not</u> be responsible for any improvements at this intersection. The Westside Boulevard extension – Nash Road to Southside Road / San Benito Street intersection (TIMF 5), would divert some traffic from this intersection which will result in some improvement in traffic operations. The following improvement is also recommended to improve intersection safety and overall circulation:

7. <u>Intersection 3 – Southside Road / Enterprise Road:</u>

   The left turn lane warrant is met for the southbound Southside Road movement at this intersection. (See **Appendix I** for this warrant.)

- Recommendation: Implement the following:
   a. Widen Southside Road at Enterprise Road to add a southbound left turn lane.
   b. As an alternative or interim improvement, convert the Southside Road / Enterprise Road intersection into an all-way stop-controlled intersection.
- Operations after Implementation of Improvement:
   - Recommendation: Side-Street LOS B (AM and PM).
   - Alternative/Interim: Overall LOS B (AM and PM)
- Responsibility for Improvement: The Project would be responsible for implementation of this improvement, pending design approval by San Benito County.

5.2.2 Pedestrian Circulation

Pedestrian traffic under Background Plus Project conditions is not anticipated to significantly increase over Existing Plus Project conditions. Therefore, the project would not represent a significant impact to pedestrian circulation under Background Plus Project conditions. The project will construct a sidewalk along its entire Enterprise Road frontage.

5.2.3 Bicycle Circulation

Bicycle traffic under Background Plus Project conditions is not anticipated to significantly increase over Existing Plus Project conditions. Therefore, the project would not represent a significant impact to bicycle circulation under Background Plus Project conditions. . Pavement widening along Enterprise Road as a part of standard frontage improvements will be constructed by the project that will be able to accommodate a future Class II bike lane.

5.2.4 Transit Circulation

Transit demand under Background Plus Project conditions is not anticipated to significantly increase over Existing Plus Project conditions. Therefore, the project would not represent a significant impact to transit circulation under Background Plus Project conditions.

6 CUMULATIVE WITHOUT PROJECT CONDITIONS

This chapter describes Cumulative Conditions which represent traffic operations anticipated in the Year 2035, or later, which is about 16 years or more in the future.

6.1 Cumulative Without Project Traffic Volumes

Exhibit 12 depicts the Cumulative Without Project condition traffic volumes at the study intersections. These traffic volumes include the previously described background traffic growth plus additional future traffic growth in the study network, based on projections from the traffic analyses for the background projects cited on **Exhibits 9A and 9B.** Overall, these forecasts represent approximately the Year 2035, the buildout year of the San Benito County General Plan.

6.2 Cumulative Without Project Traffic Conditions

6.2.1 Vehicle Circulation

Exhibit 5A summarizes the levels of service of the study intersections under Cumulative Without Project conditions. Recommended intersection improvements are summarized on **Exhibit 5B**. **Appendix G** contains the level of service calculations under Cumulative Without Project conditions.

Some of the study intersections under Cumulative Without Project conditions would continue to operate at or better than their respective level of service standards. However, the following six intersections would operate at deficient levels of service under Cumulative Without Project conditions.

1. Intersection 2: Enterprise Road / Airline Highway – Side-street LOS E (AM), LOS F (PM)
2. Intersection 4: Airline Highway (SR 25) / Union Road – Overall LOS F (AM and PM)
3. Intersection 5: Southside Road / Union Road – Overall LOS E (AM), LOS F (PM)
4. Intersection 7: Union Road – Mitchell Road / SR 156 – Overall LOS F (AM and PM)
5. Intersection 8: Airline Highway (SR 25) – Pinnacles National Park Highway (SR 25) / Tres Pinos Road – Sunnyslope Road – Overall LOS D (AM) and LOS F (PM)
6. Intersection 9: San Benito Street / Nash Road – Overall LOS F (AM and PM)

6.2.2 Pedestrian Circulation

Sidewalks will be constructed as standard frontage improvements for all development in the City of Hollister and for County projects as determined by San Benito County. If segments are missing because older land uses did not include sidewalk construction at the time they were developed, they should be constructed.

6.2.3 Bicycle Circulation

According to the *San Benito County Bicycle and Pedestrian Master Plan,* Alta Planning + Design, December 2009, the following bicycle infrastructure improvements are proposed in the study area:

Class I (Bike Path):

1. U-38: Southside Road, between Carousel Drive and south of County Labor Camp Road (east frontage of street).

Class II (Bike Lanes):

1. H-3 and U-3: Airline Highway (SR 25), between Sunset Drive and Fairview Road (both directions).
2. U-8: Fairview Road, between Spring Grove Road and Airline Highway (SR 25) (both directions).
3. U-11: SR 156, between The Alameda and Buena Vista Road (both directions).
4. U-21: Union Road, between San Benito Street and Airline Highway (SR 25) (both directions).
5. U-22: Union Road, between Calistoga Road and Fairview Road (both directions).
6. H-24: Sunnyslope Road, between Memorial Drive and Cerra Vista Drive (both directions).
7. H-25: Nash Road and Tres Pinos Road, between west of Westside Boulevard and Airline Highway (SR 25) (both directions).

Class III (Bike Route):

1. U-35: Union Road, between SR 156 and San Benito Street (both directions).

These bicycle improvements will be constructed as funding becomes available.

6.2.4 Transit Circulation

San Benito County Local Transportation Authority (LTA) should consider extending bus service into southern Hollister. This would provide improved transit access to the vicinity of the project site.

7 CUMULATIVE PLUS PROJECT CONDITIONS

This section describes anticipated traffic conditions with the addition of Project traffic to Cumulative Without Project traffic volumes.

7.1 Derivation of Cumulative Plus Project Condition Traffic Volumes

The project trip assignment depicted on **Exhibit 7** was combined with the Cumulative Without Project volumes (**Exhibit 12**) to forecast Cumulative Plus Project volumes, which are depicted on **Exhibit 13**.

7.2 Cumulative Plus Project Traffic Conditions

7.2.1 Vehicle Circulation

Cumulative Plus Project AM and PM intersection levels of service are summarized on **Exhibit 4A**. Recommended intersection improvements are summarized on **Exhibit 4B**. The LOS calculation sheets for Cumulative Plus Project traffic conditions can be found in **Appendix H**.

Some of the study intersections under Cumulative Plus Project conditions would continue to operate at or better than their respective level of service standards. However, the following six intersections would operate at deficient levels of service under Cumulative Plus Project conditions These are the same intersections that will operate deficiently under Background Without Project conditions. Intersections 2, 4 5 and 7 have a County standard of LOS D. Intersections 8 and 9 have a City standard of LOS C.

1. Intersection 2: Enterprise Road / Airline Highway – Side-street LOS E (AM), LOS F (PM)
2. Intersection 4: Airline Highway (SR 25) / Union Road – Overall LOS F (AM and PM)
3. Intersection 5: Southside Road / Union Road – Overall LOS E (AM), LOS F (PM)
4. Intersection 7: Union Road – Mitchell Road / SR 156 – Overall LOS F (AM and PM)
5. Intersection 8: Airline Highway (SR 25) – Pinnacles National Park Highway (SR 25) / Tres Pinos Road – Sunnyslope Road – Overall LOS D (AM) and LOS F (PM)
6. Intersection 9: San Benito Street / Nash Road – Overall LOS F (AM and PM)

Below is a discussion of the recommended improvements at the study intersections operating with deficient operations under Background Plus Project conditions. These improvements would be necessary to improve operations to acceptable or better level of service.

1. Intersection 2 – Enterprise Road – Airline Highway (SR 25):

   The northbound Enterprise Road side-street level of service would be a deficient LOS E (AM) and LOS F (PM), compared to LOS E (AM) and LOS F (PM) without the Project. The Project would add 12 trips (AM) and 17 trips (PM) to the intersection. This intersection would also meet the Caltrans peak hour signal warrant. (See **Appendix I** for the warrant.) Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

   - Recommendation: Implement the following:
     a. Signalize the intersection. This is the San Benito County TIMF Intersection 7 improvement.
     b. Add a second eastbound Airline Highway (SR 25) through lane and a second westbound Airline Highway (SR 25) through lane. This is the San Benito County TIMF Segment 4 improvement.
   - Operations after Implementation of Improvement: Overall LOS B (AM and PM).
   - Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards improvement.

2. Intersection 4 – Airline Highway (SR 25) / Union Road:

   The overall level of service would be a deficient LOS F (AM and PM), compared to LOS F (AM and PM) without the Project. Vehicle delays at this intersection would decrease by 0.5 seconds (AM) and increase by 16.1 second (PM) with the addition of project traffic. Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

   - Recommendation: Implement the following, all of which are San Benito County TIMF Segment 4 and 8 improvements:
     a. Add a second eastbound Union Road through lane and a second westbound Union Road through lane.
     b. Add a second northbound Airline Highway (SR 25) through lane and a second southbound Airline Highway (SR 25) through lane.
   - Operations after Implementation of Improvement: Overall LOS D (AM and PM).
   - Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards improvement.

3. <u>Intersection 5 – Southside Road / Union Road:</u>

   The overall level of service would be a deficient LOS E (AM) and LOS F (PM), compared to LOS E (AM) and LOS F (PM) without the Project. Vehicle delays at this intersection would increase by 3.0 seconds (AM) and 19.3 seconds (PM) with the addition of project traffic. Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

   - Recommendation: Implement the following, all of which are part of the San Benito County TIMF Segment 8 improvement:

     a. Add a second eastbound Union Road through lane and a second westbound Union Road through lane

   - Operations after Implementation of Improvement: LOS C (AM and PM).
   - Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards improvement.

4. <u>Intersection 7 – Union Road – Mitchell Road / SR 156:</u>

   The overall level of service under AM and PM conditions would be a deficient LOS F, compared to LOS F without the Project. Vehicle delays at this intersection would increase by 4.1 seconds (AM) and 3.1 seconds (PM). Per the significance criteria in Section 1.6, the Project would result in a significant impact at this intersection.

   - Recommendation: Implement the following, all of which are part of the San Benito County TIMF Segment 1 improvement:

     a. Add a second eastbound SR 156 through lane and a second westbound SR 156 through lane
     b. Widen and restripe northbound Union Road as two left turn lanes and one shared through/right turn lane
     c. Restripe southbound Mitchell Road as one left turn lane and one shared through/right turn lane.
     d. Add a westbound SR 156 right turn lane
     e. Convert the north/south (Union Road and Mitchell Road) left turn phasing to Protected phasing.

   - Operations after Implementation of Improvement: LOS C (AM) and LOS D (PM).

- Responsibility for Improvement: Payment of San Benito County TIMF would constitute Project's responsibility towards improvement. Construction of this improvement is planned to be completed by 2022.

5. <u>Intersection 8 – Airline Highway (SR 25) – Pinnacles National Park Highway (SR 25) / Tres Pinos Road – Sunnyslope Road:</u>

   The overall level of service would be a deficient LOS D (AM) and LOS F (PM), compared to LOS D (AM) and LOS F(PM) without the Project. Vehicle delays at this intersection would decrease by 0.1 seconds (AM) and 0.2 seconds (PM) with the addition of Project traffic. Per the significance criteria in Section 1.6, the Project, the Project would <u>not</u> result in a significant impact at this intersection. The Project would <u>not</u> be responsible for any improvements at this intersection.

6. <u>Intersection 9 – San Benito Street / Nash Road:</u>

   The overall level of service would be a deficient LOS F (AM and PM), compared to LOS F without the Project. Vehicle delays at this intersection would decrease by 0.8 seconds (AM) and 1.5 seconds (PM) with the addition of Project traffic. Per the significance criteria in Section 1.6, the Project would <u>not</u> result in a significant impact at this intersection. The Project would <u>not</u> be responsible for any improvements at this intersection. The Westside Boulevard extension – Nash Road to Southside Road / San Benito Street intersection (TIMF 5), would divert some traffic from this intersection which will result in some improvement in traffic operations.

The following improvement is also recommended to improve intersection safety and overall circulation:

7. <u>Intersection 3 – Southside Road / Enterprise Road:</u>

   The left turn lane warrant is met for the southbound Southside Road movement at this intersection. (See **Appendix I** for this warrant.)

   - Recommendation: Implement the following:

     a. Widen Southside Road at Enterprise Road to add a southbound left turn lane.

     b. As an alternative or interim improvement, convert the Southside Road / Enterprise Road intersection into an all-way stop-controlled intersection.

   - Operations after Implementation of Improvement:

     - Recommendation: Side-Street LOS B (AM and PM).
     - Alternative/Interim: Overall LOS B (AM and PM)

- Responsibility for Improvement: The Project would be responsible for implementation of this improvement, pending design approval by San Benito County.

7.2.2 Pedestrian Circulation

The Project will not noticeably increase pedestrian activity above levels expected under Cumulative Without Project conditions. Therefore, the Project would not represent a significant contribution to Cumulative Plus Project impacts to pedestrian circulation.

7.2.3 Bicycle Circulation

The Project will not noticeably increase bicycle activity above levels expected under Cumulative Without Project conditions. Therefore, the Project would not represent a significant contribution to Cumulative Plus Project impacts to bicycle circulation.

7.2.4 Transit Circulation

The Project will not noticeably increase transit demand above levels expected under Cumulative Plus Project conditions. The Project would therefore not represent a significant contribution to Cumulative Plus Project transit demand. However, the City of Hollister should coordinate with the San Benito County Local Transportation Authority (LTA) regarding extending transit service to southern Hollister. This would add transit service as an option to southern Hollister and place transit service closer to the Project site.

8 SITE ACCESS AND INTERNAL CIRCULATION

This section summarizes the site access and internal circulation analysis, including operations of the Project driveway operations.

8.1 Site Access

8.1.1 Project Access Operations

The project site plan depicted on **Exhibit 2** proposes two project access points onto Enterprise Road – one on the northwest side of the project site ("Project Access West") and one on the northeast side ("Project Access East). Due to the relatively modest traffic volumes on Enterprise Road, these driveways will operate acceptably through Cumulative Plus Project conditions. Left turn warrant evaluations at both project access points on Enterprise Road indicate that left turn lanes will not be warranted at either project access.

8.1.2 Project Access Sight Distance

The available vehicle sight distance at both project access points to Enterprise Road was evaluated. The signed speed limit on Enterprise Road is 45 mph, hence a design speed of 50 mph was used for this evaluation. For a design speed of 50 mph, Caltrans sight distance standard standards require a minimum stopping sight distance of 430 feet.

At the Project Access West, the available sight distance towards the east and west is approximately 500 feet, exceeding the minimum standard,.

At the Project Access East, the available sight distance to the east and west is also 500 feet.

1. There are no sight distance deficiencies. However, all fences, retaining walls, sound walls, entry signs and vegetation over three feet in height above the pavement elevation of either project access points shall be located no closer than 15 feet from the shoulder edge line on Enterprise Road.

8.2 Internal Circulation

The project also proposes a connection to Quail Ridge Way at the southeastern corner of the project site. This street extension would also allow project traffic to travel into and out of the adjacent Oak Creek and Quail Hollow subdivisions. However, due to the slightly more circuitous access to Enterprise Road through those subdivisions compared to the project's more direct internal street circulation, few project trips are expected to use Quail Ridge Way to access the project site. About 15 homes in the southwestern corner of the existing Oak Creek and Quail Hollow residents may also use the easterly project access point on Enterprise Road while in transit to and from their homes, again because the project internal street system will provide a slightly more directly route to and from Enterprise Road than from within their own subdivision. Overall, the net traffic intrusion from the project into the Oak Creek and Quail Hollow subdivisions (and vice versa) will be minimal.

The internal street circulation will adequately serve the projected traffic demand. The internal street along the project's easterly boundary will provide the primary internal circulation. The proposed roundabout midway on this roadway will discourage higher travel speeds. The maximum volume on this street will be about 1,300 vehicles per day at its connection with Enterprise Road. Also, this section of street will have no residential driveway access. This volume is below thresholds where traffic calming could be considered. The volume is well within acceptable levels. The first section of this street that will have direct residential driveway access is south of the proposed roundabout. This section is expected to carry about 600 vehicles per day, which is well within acceptable levels for a local residential street.

The roundabout should have signs to indicate the circulation pattern around it and include either a mountable apron or mountable island to accommodate the wider turn radii of typical delivery and moving trucks. The entry vehicle deflections and signs for a standard roundabout would not be necessary for a traffic circle.

The project site plan proposes sidewalks along all of the internal streets. This will accommodate all internal pedestrian activity and connections into the adjacent Oak Creek and Quail Hollow neighborhoods. A sidewalk is also recommended along the project's Enterprise Road frontage.

The internal project streets will also provide for good internal circulation for bicycles within the project site. Vehicles will need to share the roadway with bicycles, which is typical of residential streets.

9 PROJECT VEHICLE MILES TRAVELED

Exhibit 14 summarizes the total Vehicle Miles Traveled (VMT) for the Project. The VMT was calculated using the project trip generation (**Exhibit 6**) and project trip distribution (**Exhibit 7**), as well as the approximate distances between the project site and the destinations of the residents traveling to and from the project site. These distances and the percentage of project trips traveling to/from those locations are also shown on **Exhibit 14**.

The Project would have an estimated VMT of 12.0 miles per vehicle. This is slightly higher than the estimated 11.7 VMT per household for San Benito County as whole, per 2017 California Emissions Estimator Model (CalEEMod) data. The higher VMT for the project is due to the project's distance from the more-developed areas of Hollister, which will require more longer vehicle trips for work, school and shopping.

10 SUMMARY OF PROJECT RESPONSIBILITIES

1. Pay the San Benito County Regional Transportation Impact Mitigation Fee (TIMF). San Benito County will determine the Project's TIMF fee.
2. Widen Southside Road to add a southbound left turn lane. An alternative or interim improvement would be to convert the Southside Road / Enterprise Road intersection into an all-way stop-controlled intersection. This improvement will require design approval by San Benito County.
3. To prevent sight distance deficiencies at both project access points to Enterprise Road, implement the following:
    a. All fences, retaining walls, sound walls, entry monument signs and vegetation over three feet in height above the pavement elevation of either project access points shall be located no closer than 15 feet from the shoulder edge line on Enterprise Road.
4. Incorporate the following elements into the design of the roundabout to be constructed inside the project site:
    a. Add signs to indicate the circulation pattern around the traffic circle
    b. Incorporate either a mountable apron or mountable island to accommodate the wider turn radii of typical delivery and moving trucks.
5. Construct a sidewalk along the project's Enterprise Road frontage.

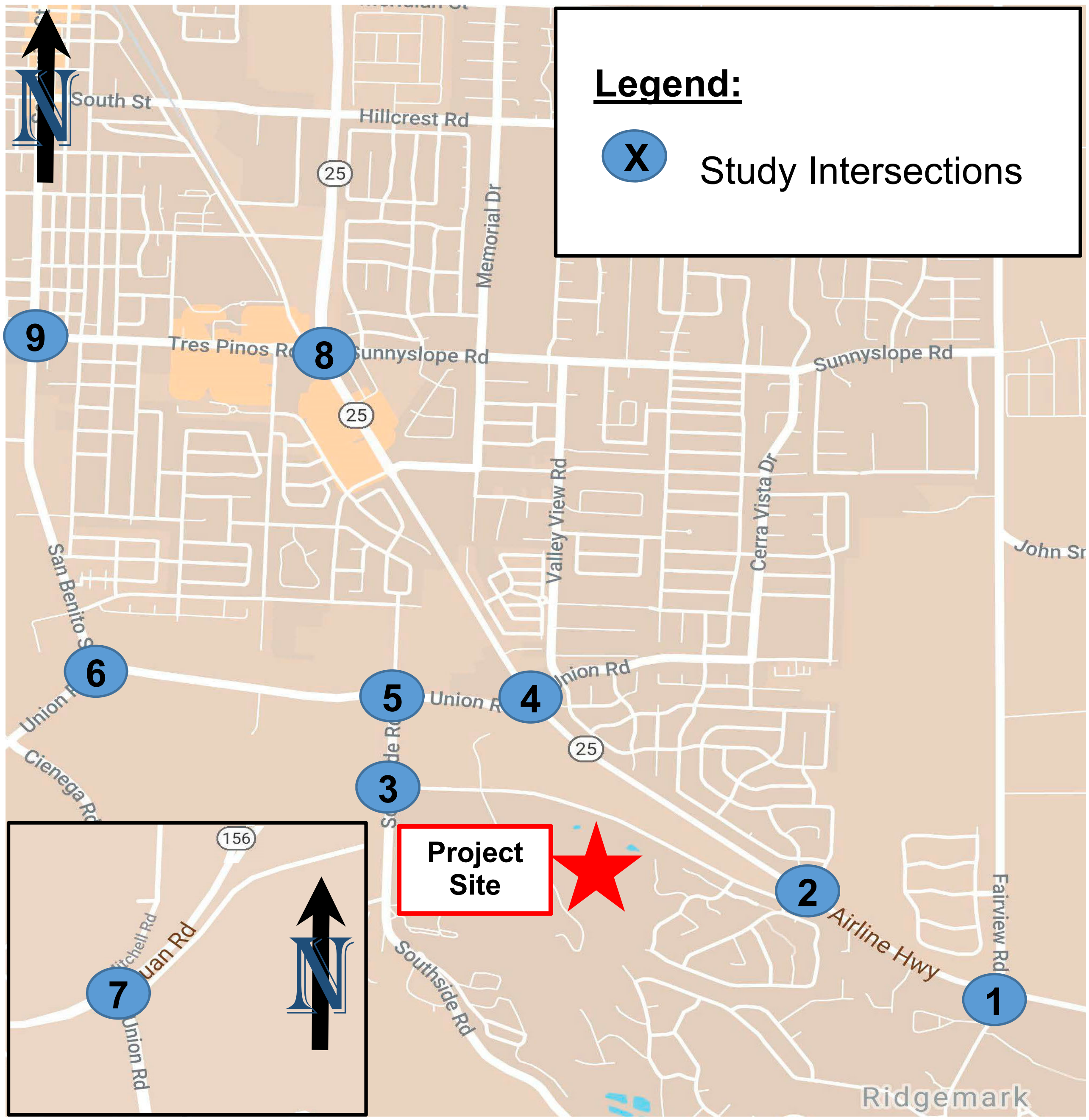
11 REFERENCES

11.1 List of References

1. *2000 Highway Capacity Manual,* Transportation Research Board, 2000.
2. *2010 Highway Capacity Manual,* Transportation Research Board, 2010.
3. *2035 San Benito County General Plan Update Revised Draft Environmental Impact Report,* EMC Planning Group, March 16, 2015.
4. *Guide for the Preparation of Traffic Impact Studies,* California Department of Transportation (Caltrans), December 2002.
5. *Regional Transportation Impact Mitigation Fee Nexus Study,* Michael Baker International, January 2016.
6. *San Benito County Bicycle and Pedestrian Master Plan,* Alta Planning + Design, December 2009.
7. San Benito County Express web site, http://www.sanbenitocountyexpress.org/. Accessed November 4, 2019.
8. *Highway Design Manual,* California Department of Transportation, Updated December 2018.
9. *Trip Generation Manual,* 10th Edition, Institute of Transportation Engineers, 2017.
10. City of Hollister web site, http://www.hollister.ca.gov/. Accessed October 30, 2019.
11. Google Maps web site, http://www.google.com/maps/. Accessed November 12, 2019.
12. *California Emissions Estimator Model - Appendix D - Default Data Tables,* BREEZE Software in collaboration with South Coast Air Quality Management District and the California Air Districts, October 2017.
13. Traffic Impact Analyses in the Hollister vicinity listed on Exhibits 9A and9B.

11.2 List of Contacts

1. Ty Intravia, TTI Developers, Inc., Hollister, California.
2. Anne Hall, San Benito Engineering & Surveying, Inc., Hollister, California



Basemap Source: Google Maps, 2019.

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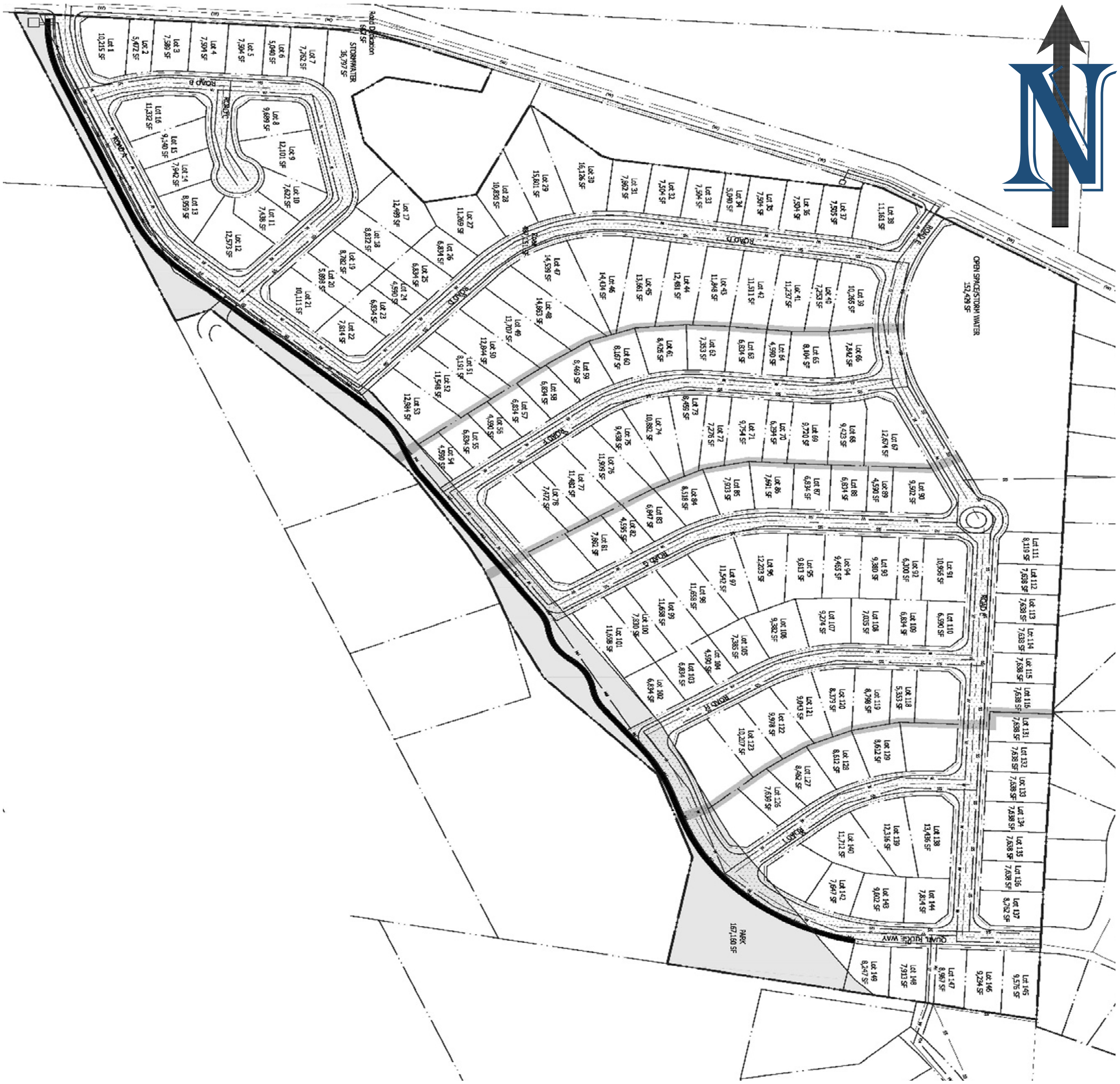
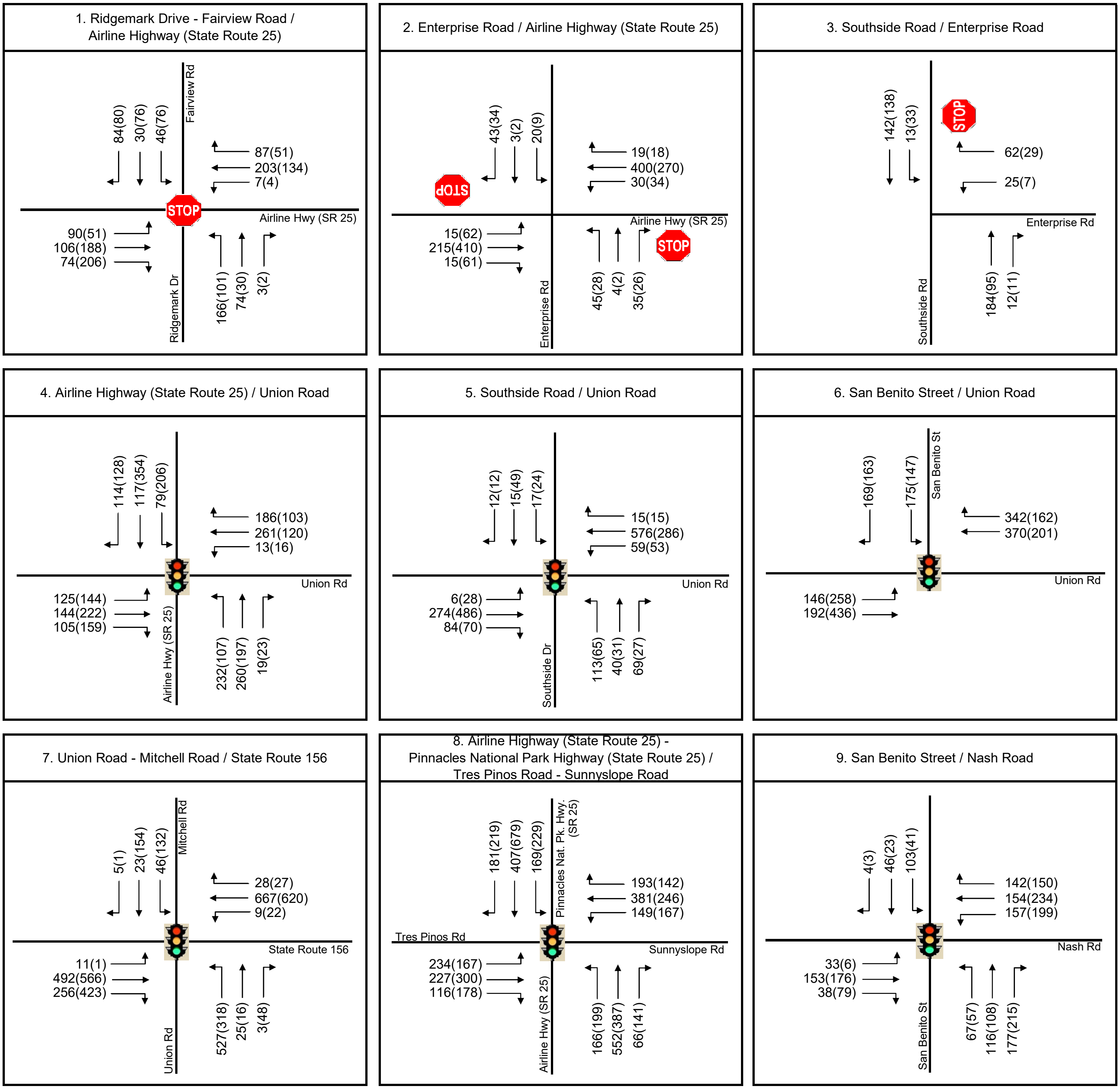
Exhibit 1
Project Location Map and Study Area



Source: Sen Benito Engineering and Surveying, November 12, 2019.



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Traffic Engineer

Exhibit 3

Existing Conditions

AM & PM Peak Hour Volumes

	N-S Street	E-W Street	Jurisdiction	Existing Lane Configuration	Existing Intersection Control	LOS Standard[3]	Peak Hour	Existing Conditions		Existing Plus Project Conditions		Background Conditions		Background Plus Project Conditions		Cumulative Without Project Conditions		Cumulative Plus Project Conditions	
								Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Ridgemark Drive - Fairview Road	Airline Highway (State Route 25)	Caltrans	NB 1-L, 1-T/R SB 1-L, 1-T, 1-R EB 1-L, 1-T, 1-R	All-Way Stop	D	AM	12.8	B	12.9	B	15.7	C	15.9	C	21.9	C	22.3	C
							PM	11.4	B	11.5	B	13.9	B	14.0	B	21.9	C	22.5	C
2	Enterprise Road	Airline Highway (State Route 25)	Caltrans	NB 1-L, 1-T, 1-R SB 1-L, 1-T, 1-R EB 1-L, 1-T, 1-R WB 1-L, 1-T, 1-R	Two-Way Stop	D/D	AM	15.8/13.6	C/B	15.3/13.8	C/B	24.6/17.7	C/C	23.7/17.3	C/C	41.1/22.6	E/C	40.0/23.1	E/C
							PM	18.1/13.1	C/B	17.9/13.4	C/B	38.5/19.8	E/C	38.5/20.7	E/C	105.5/40.5	F/E	107.1/42.5	F/E
					With Improvement		*AM*							*9.7*	*A*			*10.0*	*B*
							PM							*10.8*	*B*			*10.9*	*B*
3	Southside Road	Enterprise Road	San Benito County	NB 1-T/R SB 1-L/T WB 1-L/R	One-Way Stop	D	AM	10.8	B	11.6	B	12.9	B	14.3	B	14.0	B	14.9	B
							PM	9.4	A	9.8	A	12.1	B	13.0	B	12.6	B	13.9	B
					With Improvement		*AM*			*11.6*	*B*			*14.3*	*B*			*14.9*	*B*
							PM			*9.8*	*A*			*13.0*	*B*			*13.7*	*B*
					Alternate/Interim Improvement		*AM*			*9.5*	*A*			*11.8*	*B*			*12.2*	*B*
							PM			*8.9*	*A*			*11.6*	*B*			*12.3*	*B*
4	Airline Highway (State Route 25)	Union Road	Caltrans	NB 1-L, 1-T, 1-R SB 1-L, 1-T, 1-R EB 1-L, 1-T/R WB 1-L, 1-T/R	Signal	D	AM	67.3	E	67.3	E	142.5	F	142.0	F	195.5	F	195.0	F
							PM	50.2	D	50.7	D	158.2	F	158.3	F	234.5	F	250.6	F
					With Improvement		*AM*											*53.8*	*D*
							PM											*53.2*	*D*
5	Southside Road	Union Road	San Benito County	NB 1-L/T/R SB 1-L/T/R EB 1-L, 1-T/R WB 1-L, 1-T/R	Signal	D	AM	20.7	C	21.3	C	31.9	C	35.1	D	69.5	E	72.5	E
							PM	25.6	C	34.7	C	97.3	F	117.6	F	142.5	F	161.8	F
					With Improvement		*AM*							*20.7*	*C*			*26.5*	*C*
							PM							*26.6*	*C*			*31.5*	*C*
6	San Benito Street	Union Road	San Benito County	SB 1-L, 1-R EB 1-L, 1-T WB 1-T, 1-R	Signal	D	AM	16.6	B	17.1	B	22.7	C	23.7	C	41.2	D	44.0	D
							PM	14.3	B	14.5	B	17.1	B	17.5	B	23.6	C	24.4	C
7	Union Road - Mitchell Road	State Route 156	Caltrans	NB 1-L/T, 1-R SB 1-L/T, 1-R EB 1-L, 1-T, 1-R WB 1-L, 1-T/R	Signal	D	AM	53.4	D	55.3	E	114.4	F	118.9	F	201.9	F	206.0	F
							PM	50.0	D	51.3	D	118.0	F	120.9	F	183.1	F	186.3	F
					With Improvement		*AM*			*16.8*	*B*			*22.9*	*C*			*28.8*	*C*
							PM			*20.0*	*B*			*30.8*	*C*			*39.8*	*D*
8	Airline Highway (State Route 25) - Pinnacles National Park Hwy. (State Route 25)	Tres Pinos Road - Sunnyslope Road	Caltrans	NB 2-L, 2-T, 1-T/R SB 2-L, 3-T, 1-R EB 2-L, 2-T, 1-R WB 1-L, 2-T, 1-R	Signal	C	AM	26.9	C	26.9	C	38.0	D	38.0	D	53.7	D	53.6	D
							PM	22.5	C	22.5	C	54.1	D	58.7	E	86.3	F	86.1	F
					With Improvement		*AM*							*32.2*	*C*				
							PM							*31.7*	*C*				
9	San Benito Street	Nash Road	City of Hollister	NB 1-L, 1-T, 1-R SB 1-L, 1-T/R WB 1-L, 1-T/R	Signal	C	AM	33.4	C	33.4	C	56.6	E	56.4	E	124.8	F	124.0	F
							PM	28.3	C	28.4	C	65.3	E	65.0	E	186.1	F	184.6	F

Notes:

1. L, T, R = Left, Through, Right.
2. NB, SB, EB, WB = Left, Through, Right, Northbound, Southbound, Eastbound, Westbound.
3. Overall and side-street level of service standard for San Benito County is LOS D. Overall and side-street level of service standard for the City of Hollister is LOS C. Per the San Benito County General Plan, all Caltrans intersections in unincorporated San Benito County also have the same level of service standards as San Benito County, namely LOS D. Overall Caltrans level of service standard in the City of Hollister is the transition between LOS C and LOS D, abbreviated as "LOS C-D".
4. For signalized and all-way stop intersection analysis, delay is average overall delay in seconds per vehicle (sec/veh). For one- and two-way stop intersections, delays are side-street approach operations, also in seconds per vehicle (sec/veh).
5. Analysis performed using 2000 and 2010 Highway Capacity Manual methodologies.
6. Level of service calculations can be found in **Appendices C through H.**
7. LOS highlighted in red indicates intersection operating below level of service standard.
8. LOS with a thick black border represents a significant impact. Resulting levels of service with recommended improvements noted under "With Improvements". A list of applied improvements can be found on **Exhibit 4B**.

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Exhibit 4A
Intersection Levels of Service

	N-S Street	E-W Street	Existing Intersection Control	Existing Plus Project Conditions	Background Plus Project Conditions	Cumulative Plus Project Conditions
1	Ridgemark Drive - Fairview Road	Airline Highway (State Route 25)	All-Way Stop	None Required	None Required	None Required
2	Enterprise Road	Airline Highway (State Route 25)	Two-Way Stop	None Required	a. Signalize Intersection b. Add 2nd EB T, 2nd WB T (TIMF Intersection 7 and Segment 4)	a. Signalize Intersection b. Add 2nd EB T, 2nd WB T (TIMF Intersection 7 and Segment 4)
3	Southside Road	Enterprise Road	One-Way Stop	Add SB L (OR, Convert to All-Way Stop-Controlled Intersection)	Add SB L (OR, Convert to All-Way Stop-Controlled Intersection)	Add SB L (OR, Convert to All-Way Stop-Controlled Intersection)
4	Airline Highway (State Route 25)	Union Road	Signal	None Required	None Required	a. Add 2nd EB T, 2nd WB T b. Add 2nd NB T, 2nd SB T c. Add EB R d. Convert E/W Left Turn Phasing to Protected (all are TIMF Segment 4 or TIMF Segment 8)
5	Southside Road	Union Road	Signal	None Required	Add 2nd EB T, 2nd WB T (TIMF Intersection 8)	Add 2nd EB T, 2nd WB T (TIMF Intersection 8)
6	San Benito Street	Union Road	Signal	None Required	None Required	None Required
7	Union Road - Mitchell Road	State Route 156	Signal	a. Add 2nd EB T, 2nd WB T b. Widen and restripe NB as 2-L, 1-T/R c. Restripe SB as 1-L, 1-T/R d. Add WB R e. Convert N/S Left Turn Phasing to Protected (all are TIMF Segment 1)	a. Add 2nd EB T, 2nd WB T b. Widen and restripe NB as 2-L, 1-T/R c. Restripe SB as 1-L, 1-T/R d. Add WB R e. Convert N/S Left Turn Phasing to Protected (all are TIMF Segment 1)	a. Add 2nd EB T, 2nd WB T b. Widen and restripe NB as 2-L, 1-T/R c. Restripe SB as 1-L, 1-T/R d. Add WB R e. Convert N/S Left Turn Phasing to Protected (all are TIMF Segment 1)
8	Airline Highway (State Route 25) - Pinnacles National Park Hwy. (State Route 25)	Tres Pinos Road - Sunnyslope Road	Signal	None Required	Optimize Intersection Signal Timing	None Required
9	San Benito Street	Nash Road	Signal	None Required	None Required	None Required

1. L, T, R = Left, Through, Right.
2. NB, SB, EB, WB, N/S, E/W = Northbound, Southbound, Eastbound, Westbound, North/South, East/West.
3. TIMF - San Benito County Regional Transportation Impact Mitigation Fee.

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Exhibit 4B
Recommended
Intersection Improvements

TRIP GENERATION RATES	ITE LAND USE CODE	DAILY TRIP RATE	AM PEAK HOUR PEAK HOUR RATE	AM PEAK HOUR % OF ADT	AM PEAK HOUR % IN	AM PEAK HOUR % OUT	PM PEAK HOUR PEAK HOUR RATE	PM PEAK HOUR % OF ADT	PM PEAK HOUR % IN	PM PEAK HOUR % OUT
Single-Family Dwelling Unit (per unit)	210	9.44	0.74	8%	25%	75%	0.99	10%	63%	37%

LICO SUBDIVISION	PROJECT SITE	DAILY TRIPS	AM PEAK HOUR PEAK HOUR TRIPS	AM PEAK HOUR % OF ADT	AM PEAK HOUR TRIPS IN	AM PEAK HOUR TRIPS OUT	PM PEAK HOUR PEAK HOUR TRIPS	PM PEAK HOUR % OF ADT	PM PEAK HOUR TRIPS IN	PM PEAK HOUR TRIPS OUT
Single-Family Dwelling Units	149 homes	1,407	110	8%	28	82	148	11%	93	55

Note:
1. Trip generation rates from Institute of Transportation Engineers (ITE), *Trip Generation Manual* , 10th Edition, 2017.

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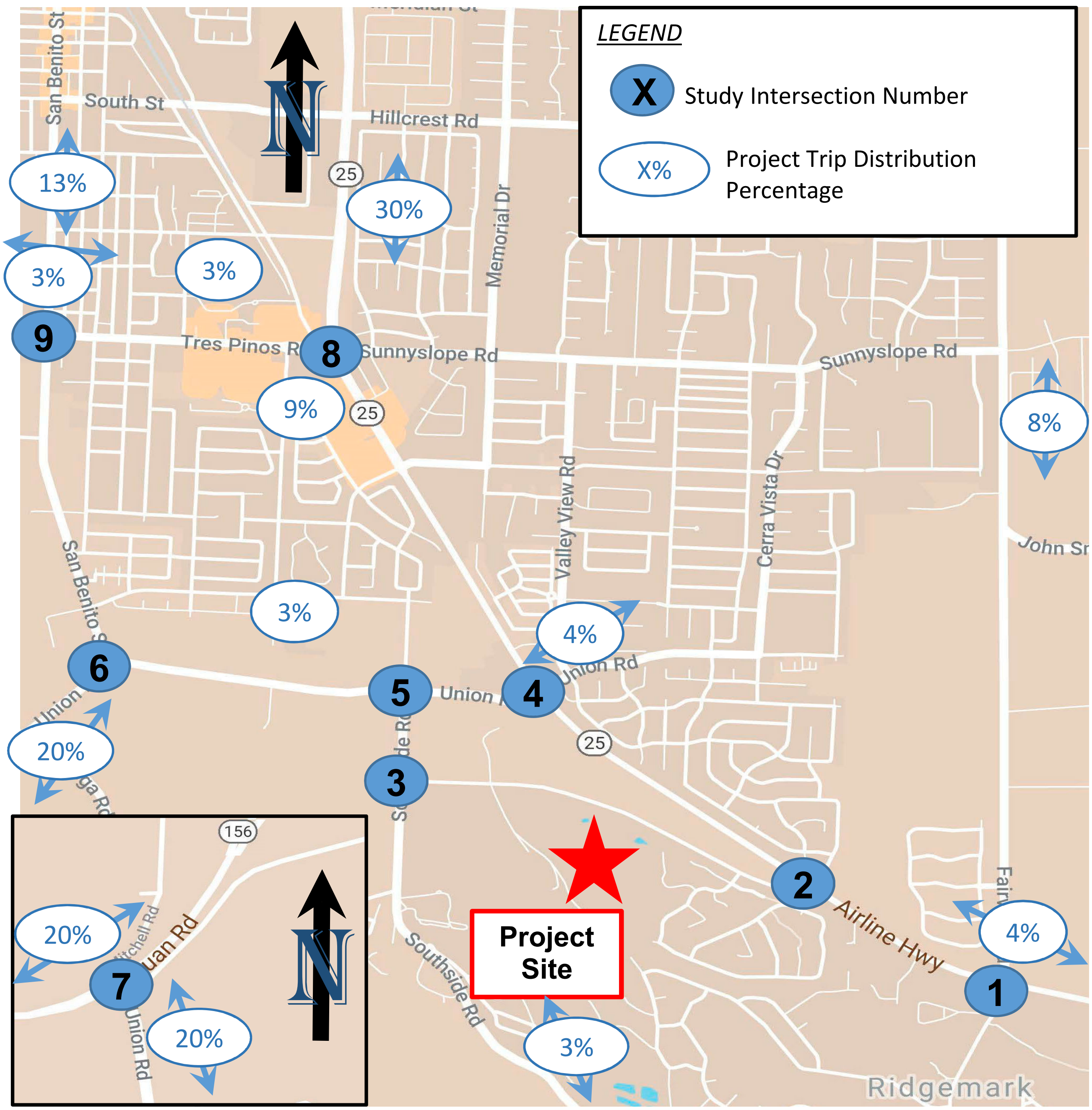
Exhibit 5
Project Trip Generation



Basemap Source: Google Maps, 2019.

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Exhibit 6
Project Trip Distribution

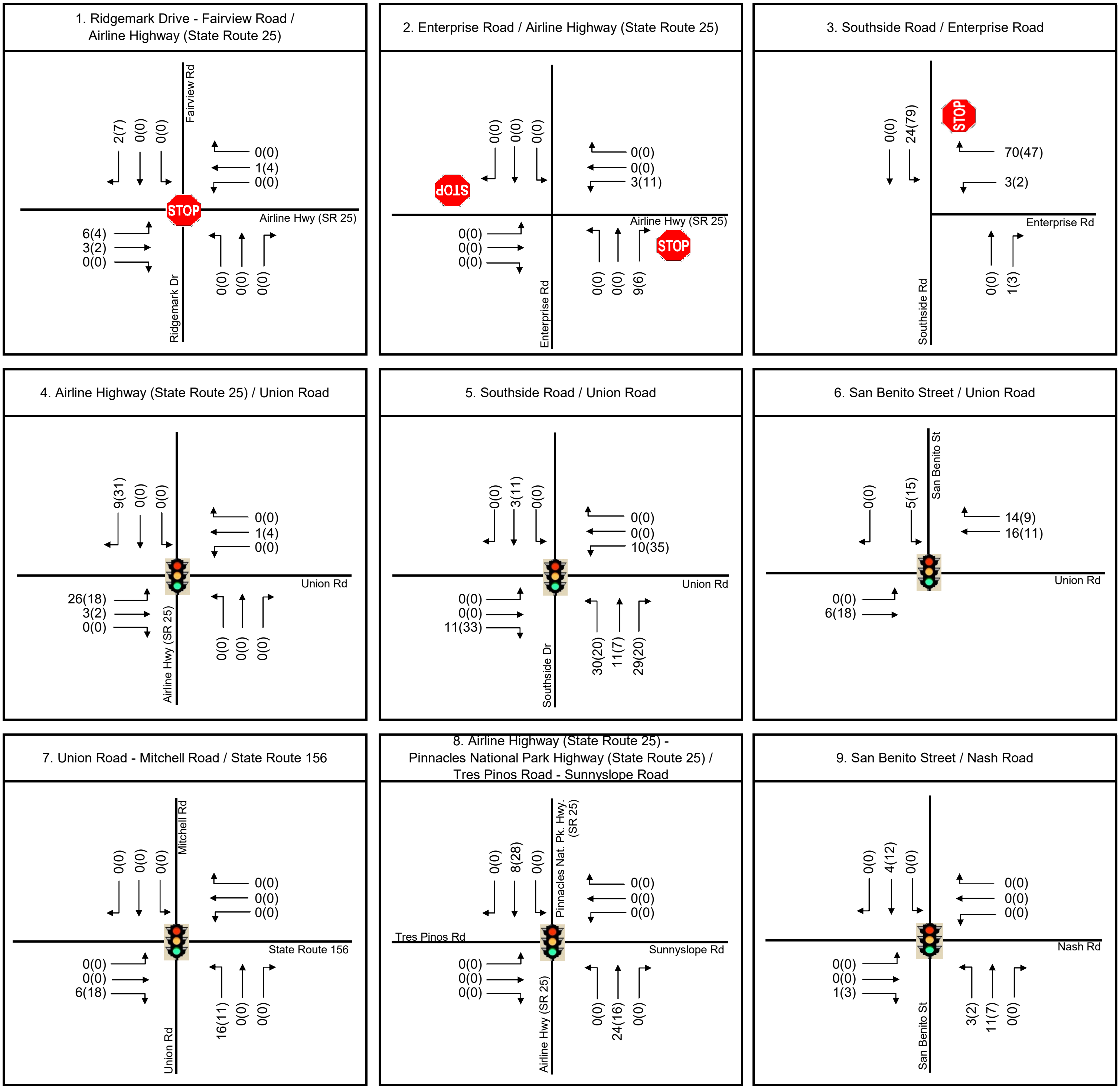

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Exhibit 7
Project Trip Assignment
AM & PM Peak Hour Volumes

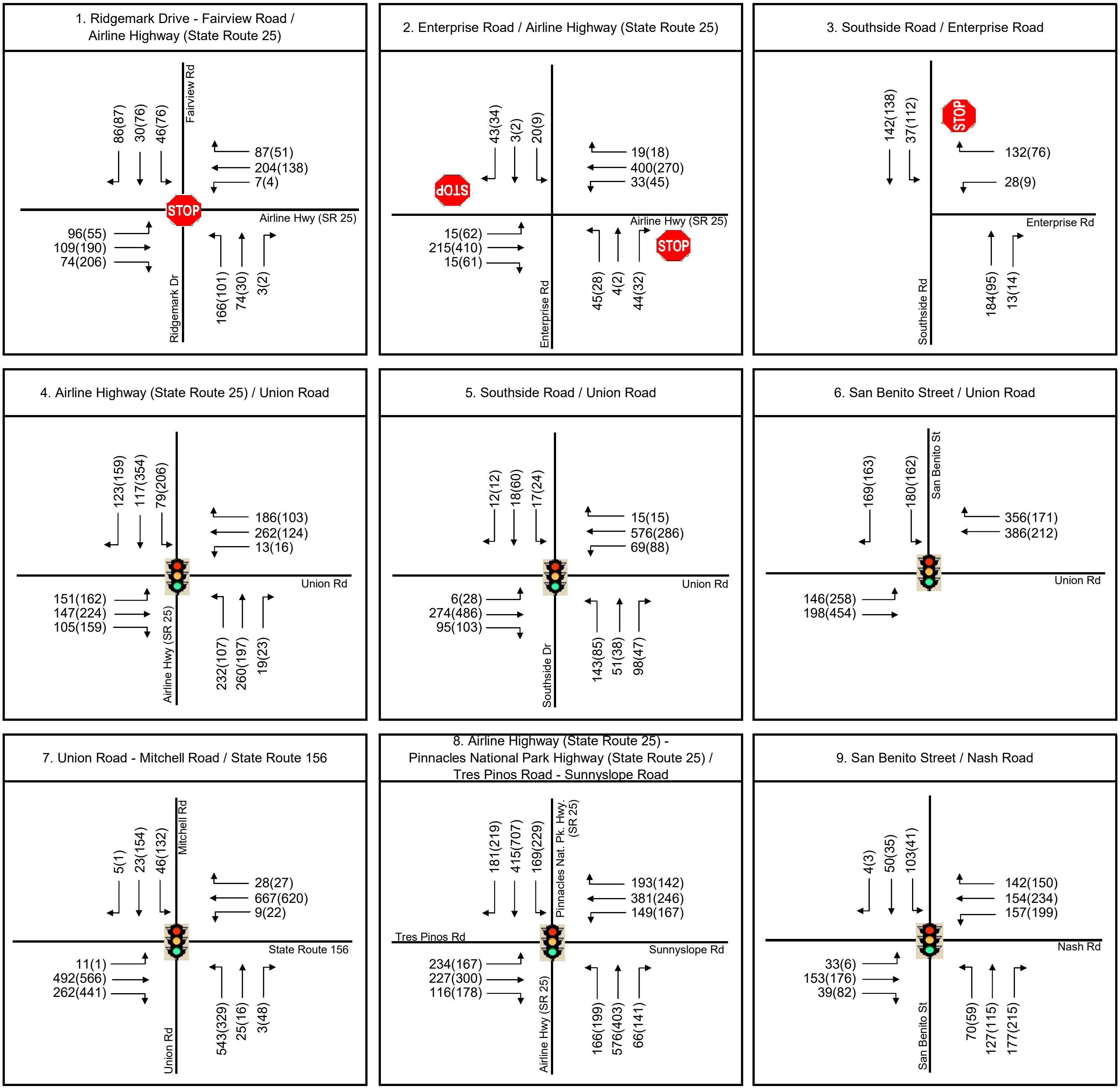

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Exhibit 8
Existing Plus Project Conditions
AM & PM Peak Hour Volumes

List of Approved Projects - Residential

PROJECT NAME	PROJECT SIZE	DAILY TRIPS	AM PEAK HOUR: PEAK HOUR TRIPS	AM PEAK HOUR: % OF ADT	AM PEAK HOUR: TRIPS IN	AM PEAK HOUR: TRIPS OUT	PM PEAK HOUR: PEAK HOUR TRIPS	PM PEAK HOUR: % OF ADT	PM PEAK HOUR: TRIPS IN	PM PEAK HOUR: TRIPS OUT
1. West of Fairview										
Single-Family Units	507 units	4,786	375	8%	94	281	502	10%	316	186
Duet Units	60 units	439	28	6%	6	22	34	8%	21	13
Multi-Family Units	100 units	544	36	7%	9	27	44	8%	27	17
2. Silver Oaks	170 units	726	41	6%	14	27	51	7%	31	20
3. Bella Serra	63 units	461	29	6%	7	22	35	8%	22	13
4. Cerrato	241 units	2,275	178	8%	45	133	239	11%	151	88
5. Orchard Park	81 units	765	60	8%	15	45	80	10%	50	30
6. 540 Line St	7 units	51	3	6%	1	2	4	8%	3	1
7. The Cottages	39 units	368	29	8%	7	22	39	11%	25	14
8. El Cerro	22 units	208	16	8%	4	12	22	11%	14	8
9. Farmstead	13 units	123	10	8%	3	7	13	11%	8	5
10. James Mathews	8 units	76	6	8%	2	4	8	11%	5	3
11. Sandra Cross	3 units	28	2	7%	1	1	3	11%	2	1
12. Hillcrest Meadows	49 units	463	36	8%	9	27	49	11%	31	18
13. Falconi Way	3 units	28	2	7%	1	1	3	11%	2	1
14. Allendale										
Single-Family Units	279 units	2,634	206	8%	52	154	276	10%	174	102
Multi-Family Units	60 units	439	28	6%	6	22	34	8%	21	13
15. Los Pinars										
Single-Family Units	15 units	142	11	8%	3	8	15	11%	9	6
Multi-Family Units	44 units	322	20	6%	5	15	25	8%	16	9
Attached Single-Family Units	26 units	245	19	8%	5	14	26	11%	16	10
16. CHISPA Sunrise Senior Apartments	49 units	181	10	6%	4	6	13	7%	7	6
17. Pine Drive	3 units	22	1	5%	0	1	2	9%	1	1
18. Roberts Ranch[4]										
Single-Family Units	192 units	1,828	144	8%	36	108	192	11%	121	71
Multi-Family Units	49 units	203	15	7%	3	12	18	9%	12	6
19. Lynn Lake	5 units	47	4	9%	1	3	5	11%	3	2
20. Solorio Park I	76 units	717	56	8%	14	42	75	10%	47	28
21. Solorio Park II	25 units	236	19	8%	5	14	25	11%	16	9
22. Mirabella II										
Single-Family Units	157 units	1,482	116	8%	29	87	155	10%	98	57
Multi-Family Units	26 units	190	12	6%	3	9	15	8%	9	6
23. 240 Sally St	1 units	7	0	0%	0	0	1	14%	1	0
24. 811 Santa Ana Rd										
Single-Family Units	9 units	85	7	8%	2	5	9	11%	6	3
Multi-Family Units	3 units	22	1	5%	0	1	2	9%	1	1
25. 221 Hawkins St	3 units	28	2	7%	1	1	3	11%	2	1
26. Maple Park	49 units	463	36	8%	9	27	49	11%	31	18
27. 400 Block	22 units	161	10	6%	2	8	12	7%	8	4
28. Trillo Apartments	2 units	15	1	7%	0	1	1	7%	1	0
29. 638 Line St	2 units	15	1	7%	0	1	1	7%	1	0
30. Maggie Lesende	4 units	29	2	7%	0	2	2	7%	1	1
31. Bennet Ranch[5]	84 units	895	69	8%	17	52	90	10%	57	33
32. Sunnyside Estates[6]	200 units	1,904	150	8%	38	112	200	11%	126	74
33. Bluffs at Ridgemark[9]	93 units	885	70	8%	17	53	93	11%	59	34
34. Santana Ranch[10]										
Single-Family Units (remainder)	369 units	3,483	273	8%	68	205	365	10%	230	135
Mulit-Family Units	318 units	3,002	235	8%	59	176	315	10%	198	117
Elementary School	700 students	1,323	469	35%	253	216	119	9%	57	62
35. Fairview Corners[11]	220 units	2,105	165	8%	41	124	222	11%	140	82
36. San Juan Oaks[12]										
Senior Adult Housing	1,017 units	3,725	203	5%	71	132	256	7%	156	100
Single-Family Units	67 units	727	57	8%	14	43	73	10%	46	27
Resort Hotel	200 rooms	1,600	62	4%	45	17	84	5%	36	48
Assisted Living	100 beds	266	14	5%	9	5	22	8%	10	12
Total Residential Background Trips:		**40,769**	**3,339**		**1,030**	**2,309**	**3,921**		**2,425**	**1,496**

Notes:
1. Trip generation rates published by Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition, 2017, unless otherwise noted.
2. sq. ft. = square feet.
3. Source for city-approved projects: *Residential-Commercial Project List July 2019,* City of Hollister, July 2019.
   Source for county-approved projects: Observations and aerial review of under-construction projects, other research by Keith Higgins Traffic Engineer.
4. Trip generation source: *Roberts Ranch Property Residential Development,* Hexagon Transportation Consultants, November 22, 2016.
5. Trip generation source: *Bennett Ranch Project - 3061 Southside Road Initial Study / Mitigated Negative Declaration,* FirstCarbon Solutions, no date available.
6. Trip generation source: *Sunnyside Estates Residential Subdivision Transportation Impact Study,* Wood Rodgers, October 2015.
7. Trip generation source: *Riverview II Subdivision, San Benito County, California,* Keith Higgins Traffic Engineer, Fehr & Peers, June 21, 2019.
8. Trip generation source: *Ridgemark Assisted Care Community Traffic Impact Analysis,* Pinnacle Traffic Engineering, August 3, 2018.
9. Trip generation source: *The Bluffs at Ridgemark Residential Subdivision Transportation Impact Analysis,* Hexagon Transportation Consultants, October 21, 2016.
10. Project Definition Source: *Santana Ranch Specific Plan,* Ruggeri-Jensen-Azar, November 6, 2009. Constructed units removed from total definition, based on review of Google Earth aerials.
11. Trip generation source: *Fairview Corners Residential,* Hexagon Transportation Consultants, April 29, 2011.
12. Trip generation source: *San Juan Oaks Specific Plan Draft Transportation Impact Analysis,* Fehr & Peers, June 2015.

List of Approved Projects - Commercial

PROJECT NAME	PROJECT SIZE	DAILY TRIPS	AM PEAK HOUR: PEAK HOUR TRIPS	AM PEAK HOUR: % OF ADT	AM PEAK HOUR: TRIPS IN	AM PEAK HOUR: TRIPS OUT	PM PEAK HOUR: PEAK HOUR TRIPS	PM PEAK HOUR: % OF ADT	PM PEAK HOUR: TRIPS IN	PM PEAK HOUR: TRIPS OUT
1. Robert Cain	1,350 sq. ft.	39	4	10%	3	1	5	13%	2	3
2. Pride Conveyance, Inc.	12,000 sq. ft.	60	8	13%	7	1	8	13%	1	7
3. Rong Chang USA/John Wynn	151,200 sq. ft.	750	266	35%	234	32	95	13%	12	83
4. Hawkins Companies/Christian Samples, AICP	165,533 sq. ft.	6,249	156	2%	97	59	631	10%	303	328
5. Randy Griffith	5.5 acres	297	42	14%	37	5	38	13%	5	33
6. Anthony Gaetani/Gery Gaetani	7,700 sq. ft.	38	5	13%	4	1	5	13%	1	4
7. Lynn Lake	2,183 sq. ft.	82	2	2%	1	1	8	10%	4	4
8. Gleanomic, LLC	79,400 sq. ft.	2,997	75	3%	47	28	303	10%	145	158
9. San Felipe Storage	16,000 sq. ft.	24	2	8%	1	1	3	13%	1	2
10. Robert Enz	15,000 sq. ft.	26	3	12%	2	1	3	12%	1	2
11. American Casting	21,200 sq. ft.	105	15	14%	13	2	13	12%	2	11
12. RSI Group/Nina Raey/Panera Bread	3,851 sq. ft.	1,214	8	1%	5	3	54	4%	30	24
13. DelCurto Brothers Construction	8,846 sq. ft.	334	8	2%	5	3	34	10%	16	18
14. Community Foundation	10,858 sq. ft.	313	19	6%	13	6	25	8%	12	13
15. Hawkins Companies/Brandon Whallon	5,495 sq. ft.	2,588	221	9%	113	108	180	7%	94	86
16. Clearist Park, LLC[4]	207 acres	2,388	396	17%	323	73	374	16%	92	282
17. L.A. Hearn	15,000 sq. ft.	26	3	12%	2	1	3	12%	0	3
18. Hollister Paint Co.	3,135 sq. ft.	5	1	20%	1	0	1	20%	0	1
19. Steel Solutions (Gillian Enz)	22,800 sq. ft.	113	16	14%	14	2	14	12%	2	12
20. Jose Rodriguez	10,000 sq. ft.	17	2	12%	2	0	2	12%	1	1
21. RSI Group/Nina Raey/Denny's	4,331 sq. ft.	486	43	9%	24	19	42	9%	26	16
22. Geary Coats	2,400 sq. ft.	91	2	2%	1	1	9	10%	4	5
23. Brandon Whallon/Hawkins Companies	9,017 sq. ft.	314	25	8%	20	5	31	10%	9	22
24. INCO Investments, LLC	19,200 sq. ft.	33	3	9%	2	1	4	12%	1	3
25. Amanda Thai Bach/Victor Pascua	13,752 sq. ft.	3,475	144	4%	81	63	300	9%	150	150
26. Carl Wood/Dollar General	9,100 sq. ft.	578	29	5%	17	12	62	11%	32	30
27. Santana Ranch (Commercial)[5]	65,000 sq. ft.	2,454	61	2%	38	23	248	10%	119	129
28. San Juan Oaks (Commercial)[6]										
Commercial/Retail	50,000 sq. ft.	2,216	48	2%	30	18	141	6%	62	79
Office	7,500 sq. ft.	183	24	13%	21	3	87	48%	15	72
Medical Office	7,500 sq. ft.	92	18	20%	14	4	27	29%	8	19
Total Commercial Background Trips:		**27,587**	**1,649**		**1,172**	**477**	**2,750**		**1,150**	**1,600**
Total Residential Background Trips (from Exhibit 9A):		**40,769**	**3,339**		**1,030**	**2,309**	**3,921**		**2,425**	**1,496**
Total Background Trips (Residential and Commercial):		**68,356**	**4,988**		**2,202**	**2,786**	**6,671**		**3,575**	**3,096**

Notes:
1. Trip generation rates published by Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition, 2017, unless otherwise noted.
2. sq. ft. = square feet.
3. Source for city-approved projects: *Residential-Commercial Project List July 2019,* City of Hollister, July 2019.
   Source for county-approved projects: Observations and aerial review of under-construction projects, other research by Keith Higgins Traffic Engineer staff.
4. Trip generation source: *Traffic Impact Analysis - 156 Business Parkway Project,* Michael Baker International, January 15, 2019.
5. Project Definition Source: *Santana Ranch Specific Plan,* Ruggeri-Jensen-Azar, November 6, 2009.
6. Trip generation source: *San Juan Oaks Specific Plan Draft Transportation Impact Analysis,* Fehr & Peers, June 2015.

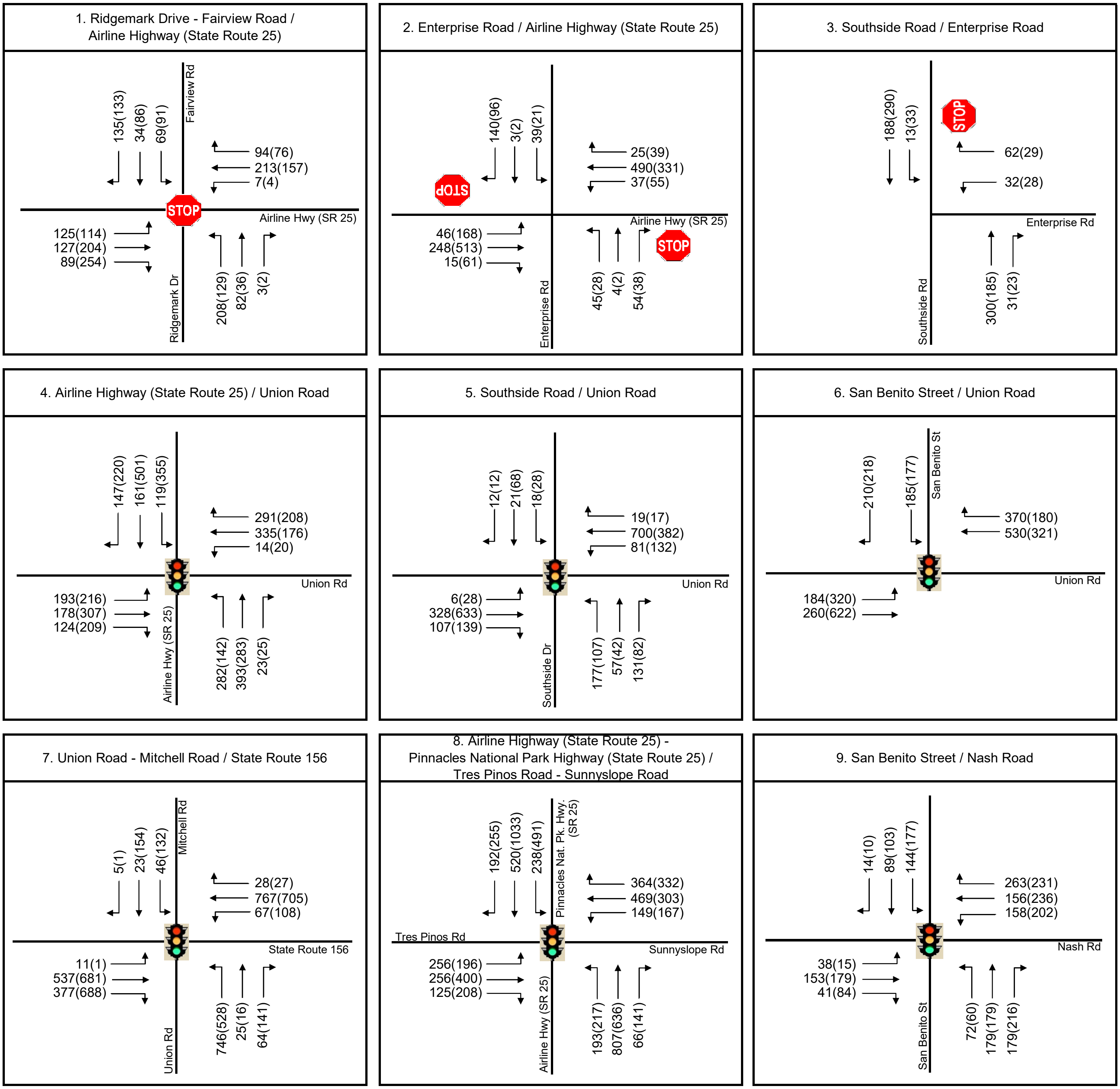
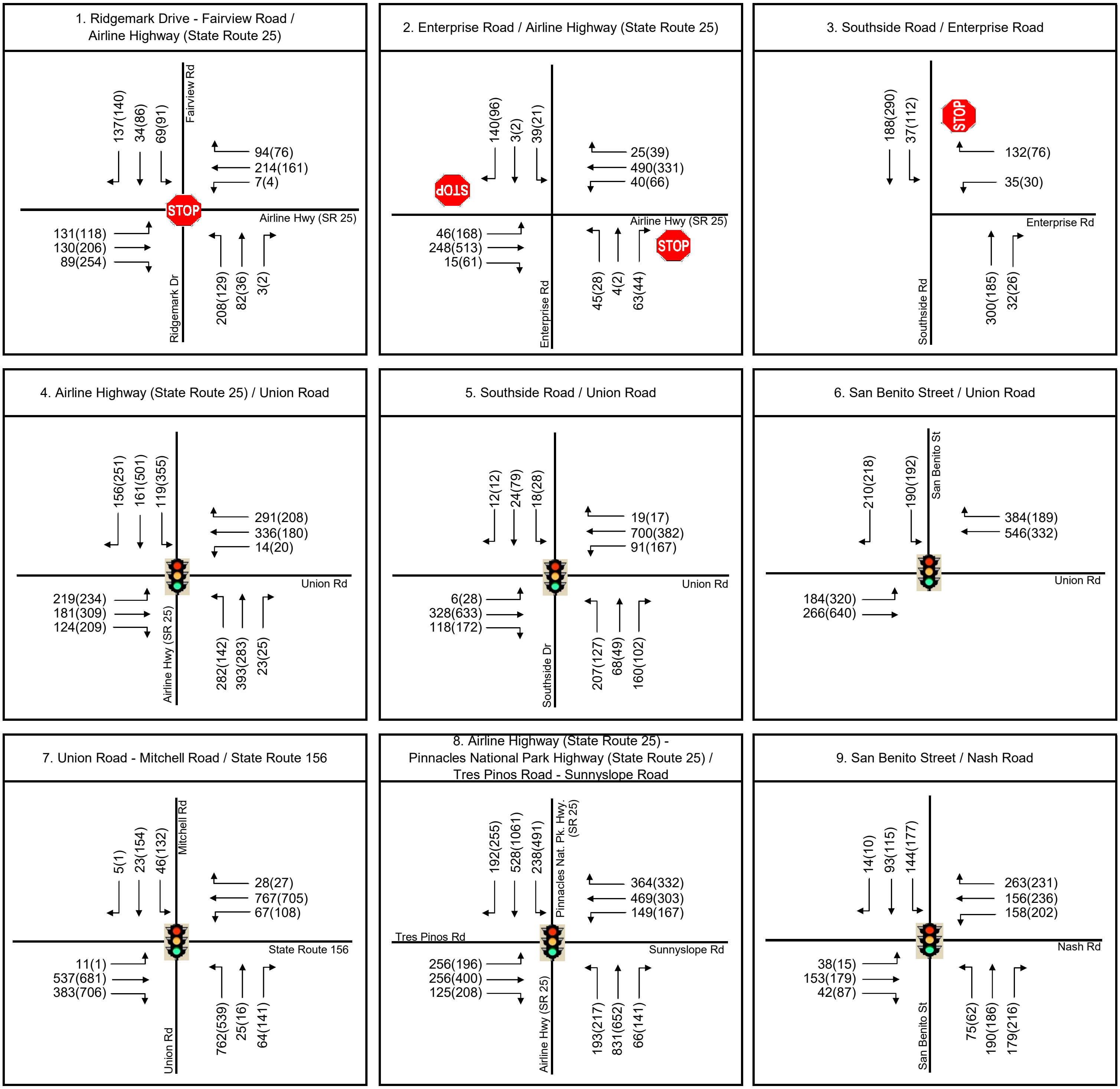


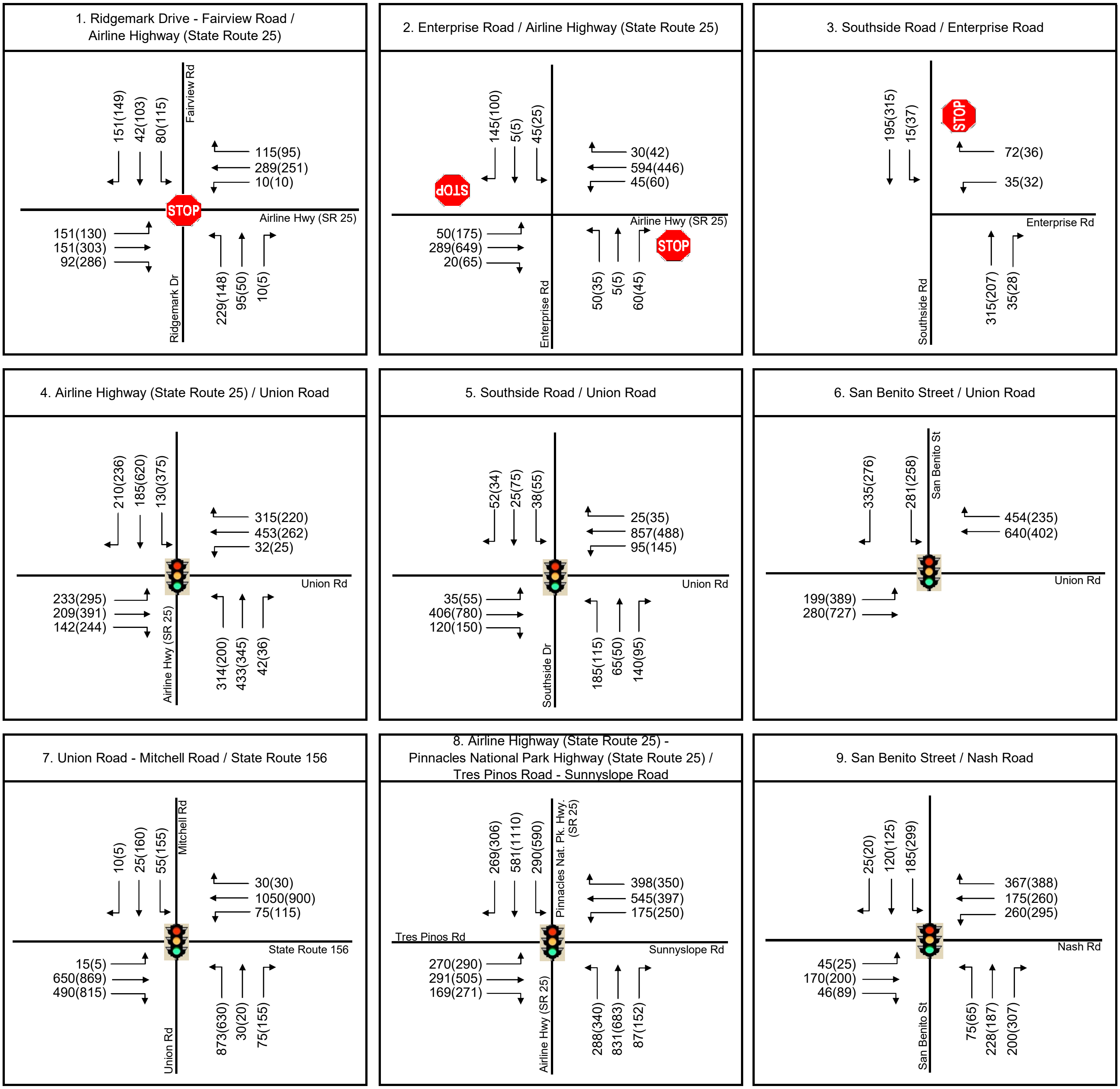
Exhibit 10
Background Conditions
AM & PM Peak Hour Volumes

Keith Higgins
Traffic Engineer



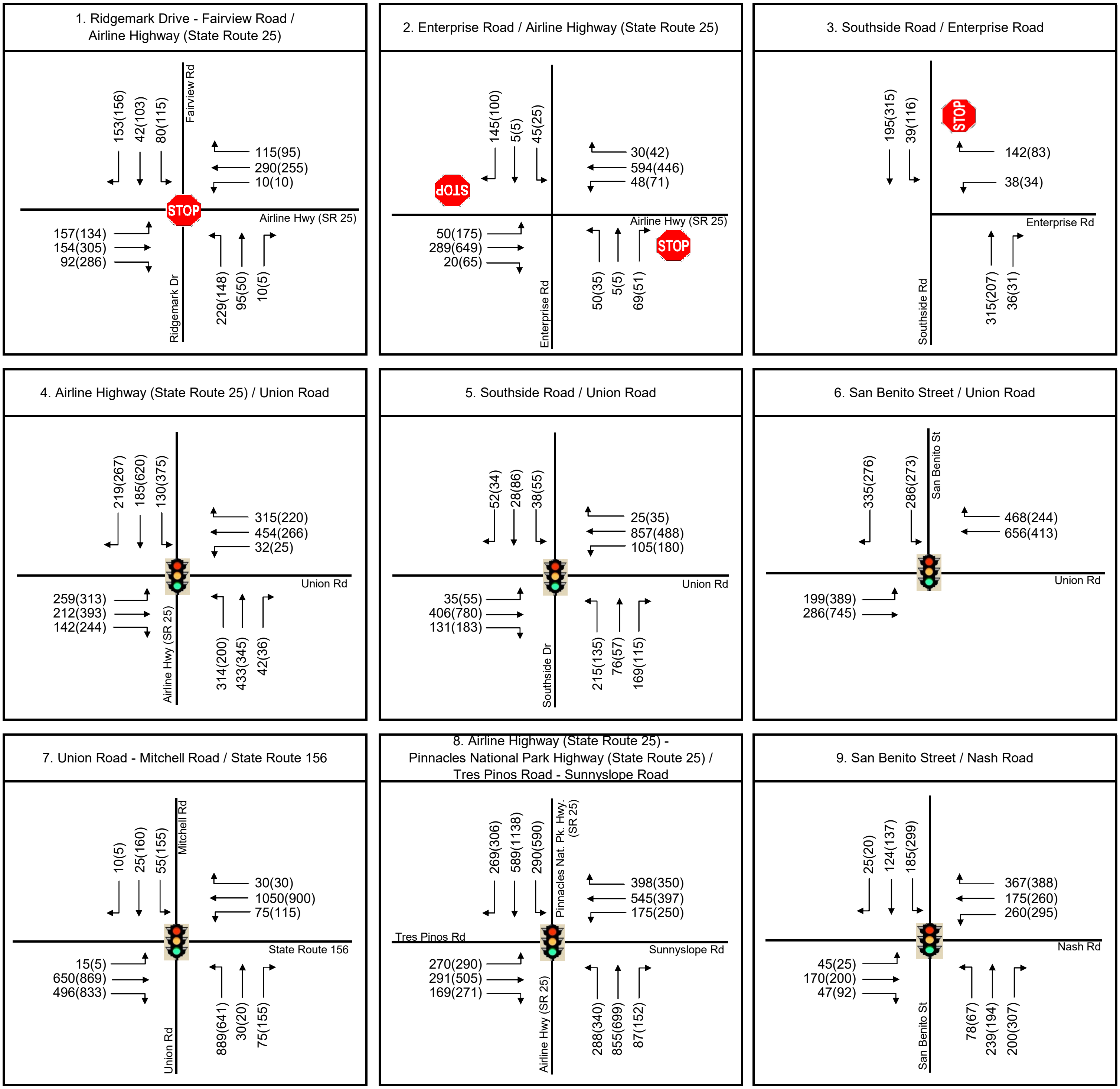
Keith Higgins
Traffic Engineer

Exhibit 11
Background Plus Project Conditions
AM & PM Peak Hour Volumes



Keith Higgins
Traffic Engineer

Exhibit 12
Cumulative Without Project Conditions
AM & PM Peak Hour Volumes



Keith Higgins
Traffic Engineer

Exhibit 13
Cumulative Plus Project Conditions
AM & PM Peak Hour Volumes

Location	Percent of Net Project Traffic	Daily Project Traffic	Distance from Project (miles)	Vehicle Miles Traveled
Hollister	50%	704	3.4	2,394
Gilroy	12%	169	18.9	3,194
Tres Pinos	7%	98	4.2	412
Salinas	6%	84	29.7	2,495
Prunedale	3%	42	22.5	945
San Juan Bautista	5%	70	10.0	700
Morgan Hill	11%	155	30.0	4,650
Watsonville	6%	84	25.3	2,125
Total:	**100%**	**1,406**		**16,914**

Project Vehicle Miles Traveled (miles):	**12.0**

Average Vehicle Miles Traveled per Household (San Benito Co.):	**11.7**

Notes:

1. Total daily project trips cited from trip generation on **Exhibit 5**.
2. Trip destinations derived from project trip distribution on **Exhibit 6**.
3. Average vehicle-miles traveled for San Benito County quantified using data from *California Emissions Estimator Model - Appendix D - Default Data Tables,* BREEZE Software in collaboration with South Coast Air Quality Management District and the California Air Districts, October 2017.

Exhibit 14
Project Vehicle Miles Traveled Calculation

Appendix A

Level of Service

Descriptions

APPENDIX A1

LEVEL OF SERVICE (LOS) DESCRIPTION
SIGNALIZED INTERSECTIONS

The capacity of an urban street is related primarily to the signal timing and the geometric characteristics of the facility as well as to the composition of traffic on the facility. Geometrics are a fixed characteristic of a facility. Thus, while traffic composition may vary somewhat over time, the capacity of a facility is generally a stable value that can be significantly improved only by initiating geometric improvements. A traffic signal essentially allocates time among conflicting traffic movements that seek to use the same space. The way in which time is allocated significantly affects the operation and the capacity of the intersection and its approaches.

The methodology for signalized intersection is designed to consider individual intersection approaches and individual lane groups within approaches. A lane group consists of one or more lanes on an intersection approach. The outputs from application of the method described in the HCM 2010 and 2000are reported on the basis of each lane. For a given lane group at a signalized intersection, three indications are displayed: green, yellow and red. The red indication may include a short period during which all indications are red, referred to as an all-red interval and the yellow indication forms the change and clearance interval between two green phases.

The methodology for analyzing the capacity and level of service must consider a wide variety of prevailing conditions, including the amount and distribution of traffic movements, traffic composition, geometric characteristics, and details of intersection signalization. The methodology addresses the capacity, LOS, and other performance measures for lane groups and the intersection approaches and the LOS for the intersection as a whole.

Capacity is evaluated in terms of the ratio of demand flow rate to capacity (v/c ratio), whereas LOS is evaluated on the basis of control delay per vehicle (in seconds per vehicle). The methodology does not take into account the potential impact of downstream congestion on intersection operation, nor does the methodology detect and adjust for the impacts of turn-pocket overflows on through traffic and intersection operation.

LEVEL OF SERVICE (LOS) CRITERIA FOR SIGNALIZED INTERSECTIONS

(Reference 2010 and 2000 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	<10
B	>10 - 20
C	>20 - 35
D	>35 - 55
E	>55 - 80
F	>80

APPENDIX A2

LEVEL OF SERVICE (LOS) DESCRIPTION
UNSIGNALIZED INTERSECTIONS WITH ALL-WAY STOP CONTROL (AWSC)

AWSC intersections require every vehicle to stop at the intersection before proceeding. Since each driver must stop, the judgement as to whether to proceed into the intersection is a function of traffic conditions on the other approaches. While giving priority to the driver on the right is a recognized rule in some areas, it is not a good descriptor of actual intersection operations. What happens is the development of a consensus of right-of-way that alternates between the drivers on the intersection approaches, a consensus that depends primarily on the intersection geometry and the arrival patterns at the stop line.

If no traffic is present on the other approaches, a driver can proceed immediately after the stop is made. If there is traffic on one or more of the other approaches, a driver proceeds only after determining that there are no vehicles currently in the intersection and that it is the driver's turn to proceed. Since no traffic signal controls the stream movement or allocates the right-of-way to each conflicting stream, the rate of departure is controlled by the interaction between the traffic streams themselves.

For AWSC intersections, the average control delay (in seconds per vehicle) is used as the primary measure of performance. Control delay is the increased time of travel for a vehicle approaching and passing through an AWSC intersection, compared with a free-flow vehicle if it were not required to slow down or stop at the intersection.

The criteria for AWSC intersections have different threshold values than do those for signalized intersections, primarily because drivers expect different levels of performance from different kinds of traffic control devices (i.e., traffic signals, two way stop or all way stop, etc.). The expectation is that a signalized intersection is designed to carry higher traffic volumes than an AWSC intersection and a higher level of control delay is acceptable at a signalized intersection for the same LOS.

For AWSC analysis using the HCM 2010 method, the LOS shown reflects the weighted average of the delay on each of the approaches.

LEVEL OF SERVICE (LOS) CRITERIA FOR AWSC INTERSECTIONS
(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

APPENDIX A3

LEVEL OF SERVICE (LOS) DESCRIPTION
UNSIGNALIZED INTERSECTIONS WITH TWO-WAY STOP CONTROL (TWSC)

TWSC intersections are widely used and stop signs are used to control vehicle movements at such intersections. At TWSC intersections, the stop-controlled approaches are referred to as the minor street approaches; they can be either public streets or private driveways. The intersection approaches that are not controlled by stop signs are referred to as the major street approaches. A three-leg intersection is considered to be a standard type of TWSC intersection if the single minor street approach (i.e. the stem of the T configuration) is controlled by a stop sign. Three-leg intersections where two of the three approaches are controlled by stop signs are a special form of unsignalized intersection control.

At TWSC intersections, drivers on the controlled approaches are required to select gaps in the major street flow through which to execute crossing or turning maneuvers on the basis of judgment. In the presence of a queue, each driver on the controlled approach must use some time to move into the front-of-queue position and prepare to evaluate gaps in the major street flow. Capacity analysis at TWSC intersections depends on a clear description and understanding of the interaction of drivers on the minor or stop-controlled approach with drivers on the major street. Both gap acceptance and empirical models have been developed to describe this interaction.

Thus, the capacity of the controlled legs is based on three factors:

- the distribution of gaps in the major street traffic stream;
- driver judgment in selecting gaps through which to execute the desired maneuvers; and
- the follow-up time required by each driver in a queue.

The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incident, control, traffic or geometric delay. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation and referred to as level of service.

LEVEL OF SERVICE (LOS) CRITERIA FOR TWSC INTERSECTIONS

(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Appendix B

Intersection

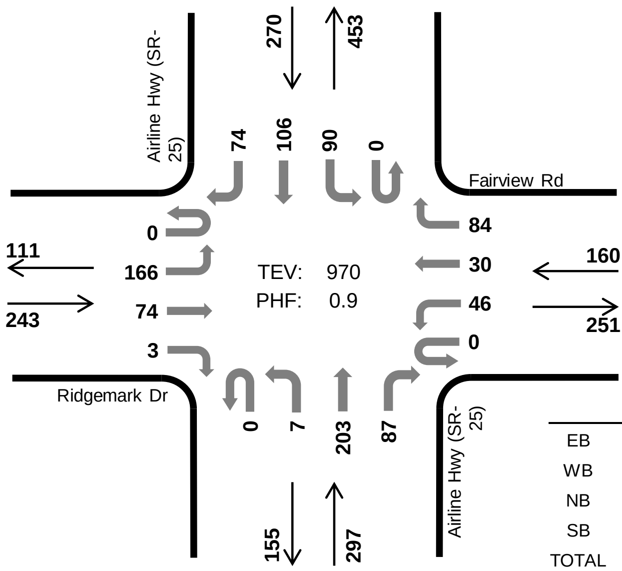
Traffic Volume

Counts

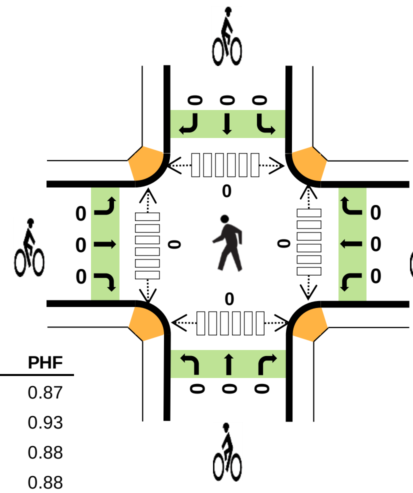
Airline Hwy (SR-25)
Ridgemark Dr

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

Peak Hour



	HV %:	PHF
EB	1.6%	0.87
WB	6.3%	0.93
NB	5.4%	0.88
SB	7.0%	0.88
TOTAL	5.1%	0.90



Two-Hour Count Summaries

Interval Start		Ridgemark Dr				Fairview Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	34	16	0	0	1	8	18	0	1	51	16	0	12	20	12	189	0
7:15 AM		0	41	16	1	0	8	8	26	0	1	55	16	0	9	29	14	224	0
7:30 AM		**0**	**29**	**21**	**0**	**0**	**9**	**5**	**23**	**0**	**0**	**49**	**23**	**0**	**25**	**27**	**23**	**234**	0
7:45 AM		**0**	**39**	**25**	**2**	**0**	**14**	**8**	**21**	**0**	**2**	**54**	**28**	**0**	**30**	**26**	**21**	**270**	917
8:00 AM		**0**	**39**	**17**	**1**	**0**	**15**	**7**	**17**	**0**	**3**	**56**	**14**	**0**	**18**	**22**	**16**	**225**	953
8:15 AM		**0**	**59**	**11**	**0**	**0**	**8**	**10**	**23**	**0**	**2**	**44**	**22**	**0**	**17**	**31**	**14**	**241**	**970**
8:30 AM		0	34	9	0	0	6	5	14	0	1	36	12	0	8	30	21	176	912
8:45 AM		0	31	12	1	0	8	9	21	0	1	27	25	0	9	25	26	195	837
Count Total		0	306	127	5	0	69	60	163	0	11	372	156	0	128	210	147	1,754	0
Peak Hour	**All**	**0**	**166**	**74**	**3**	**0**	**46**	**30**	**84**	**0**	**7**	**203**	**87**	**0**	**90**	**106**	**74**	**970**	**0**
	HV	**0**	**3**	**0**	**1**	**0**	**7**	**1**	**2**	**0**	**0**	**12**	**4**	**0**	**5**	**10**	**4**	**49**	**0**
	HV%	**-**	**2%**	**0%**	**33%**	**-**	**15%**	**3%**	**2%**	**-**	**0%**	**6%**	**5%**	**-**	**6%**	**9%**	**5%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	1	3	3	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	1	0	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**0**	**2**	**2**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**2**	**6**	**6**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**3**	**3**	**6**	**7**	***19***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**1**	**3**	**2**	**2**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	1	5	3	4	*13*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	1	0	3	6	*10*	0	0	0	1	*1*	0	0	0	0	*0*
Count Total	8	17	25	33	*83*	0	0	0	1	*1*	0	0	0	0	*0*
Peak Hour	**4**	**10**	**16**	**19**	***49***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Ridgemark Dr				Fairview Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	0	0	0	0	1	0	0	2	1	0	2	0	1	9	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**1**	**8**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**2**	**3**	**1**	**14**	33
8:00 AM	**0**	**2**	**0**	**1**	**0**	**2**	**1**	**0**	**0**	**0**	**3**	**3**	**0**	**3**	**2**	**2**	**19**	43
8:15 AM	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**8**	**49**
8:30 AM	0	1	0	0	0	2	0	3	0	1	2	0	0	1	2	1	13	54
8:45 AM	0	0	0	1	0	0	0	0	0	0	1	2	0	0	5	1	10	50
Count Total	0	6	0	2	0	10	1	6	0	1	17	7	0	8	17	8	83	0
Peak Hour	**0**	**3**	**0**	**1**	**0**	**7**	**1**	**2**	**0**	**0**	**12**	**4**	**0**	**5**	**10**	**4**	**49**	**0**

Two-Hour Count Summaries - Bikes

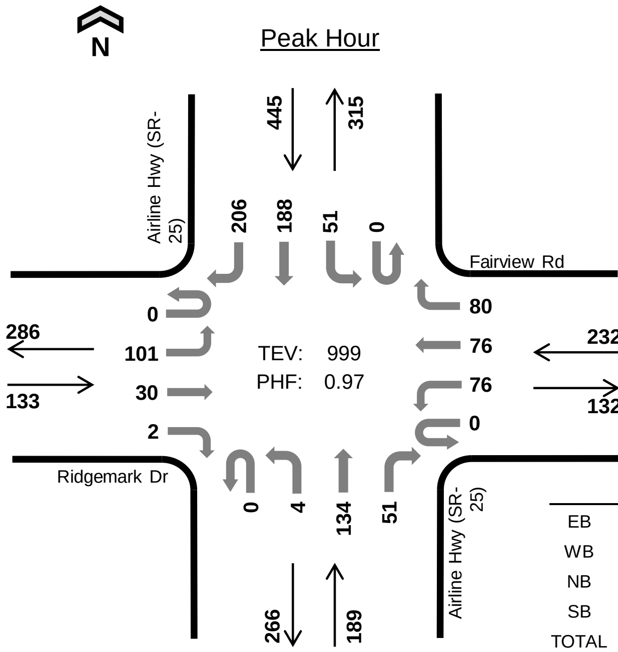
Interval Start	Ridgemark Dr			Fairview Rd			Airline Hwy (SR-25)			Airline Hwy (SR-25)			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**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
8:00 AM	**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**
8:30 AM	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	1	0	1	1
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

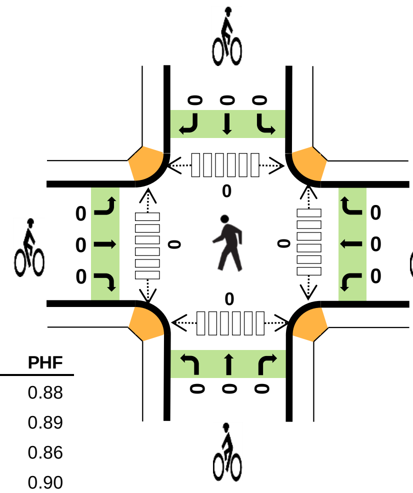
Airline Hwy (SR-25)
Ridgemark Dr

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Peak Hour



	HV %:	PHF
EB	0.8%	0.88
WB	1.7%	0.89
NB	0.0%	0.86
SB	0.7%	0.90
TOTAL	0.8%	0.97



Two-Hour Count Summaries

Interval Start	Ridgemark Dr Eastbound UT	LT	TH	RT	Fairview Rd Westbound UT	LT	TH	RT	Airline Hwy (SR-25) Northbound UT	LT	TH	RT	Airline Hwy (SR-25) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	17	10	2	0	11	13	9	0	2	41	8	0	12	38	44	207	0
4:15 PM	0	19	6	1	0	22	7	16	0	1	28	17	0	14	44	42	217	0
4:30 PM	0	22	6	3	0	22	7	18	0	1	38	16	0	11	39	37	220	0
4:45 PM	**0**	**22**	**7**	**0**	**0**	**22**	**16**	**27**	**0**	**1**	**27**	**13**	**0**	**14**	**48**	**47**	**244**	888
5:00 PM	**0**	**29**	**8**	**0**	**0**	**17**	**13**	**16**	**0**	**0**	**42**	**13**	**0**	**10**	**50**	**46**	**244**	925
5:15 PM	**0**	**29**	**8**	**1**	**0**	**18**	**16**	**24**	**0**	**3**	**33**	**15**	**0**	**12**	**41**	**54**	**254**	962
5:30 PM	**0**	**21**	**7**	**1**	**0**	**19**	**31**	**13**	**0**	**0**	**32**	**10**	**0**	**15**	**49**	**59**	**257**	**999**
5:45 PM	0	27	9	2	0	15	18	18	0	2	30	13	0	15	34	46	229	984
Count Total	0	186	61	10	0	146	121	141	0	10	271	105	0	103	343	375	1,872	0
Peak Hour All	**0**	**101**	**30**	**2**	**0**	**76**	**76**	**80**	**0**	**4**	**134**	**51**	**0**	**51**	**188**	**206**	**999**	**0**
Peak Hour HV	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**8**	**0**
Peak Hour HV%	**-**	**1%**	**0%**	**0%**	**-**	**3%**	**0%**	**3%**	**-**	**0%**	**0%**	**0%**	**-**	**2%**	**1%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	2	1	2	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	1	2	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	1	3	0	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**0**	**1**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**1**	**1**	**0**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**2**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	0	1	0	4	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	6	10	4	13	*33*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**1**	**4**	**0**	**3**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Ridgemark Dr Eastbound				Fairview Rd Westbound				Airline Hwy (SR-25) Northbound				Airline Hwy (SR-25) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	1	0	0	0	1	0	0	1	1	0	0	1	1	7	0
4:15 PM	0	2	0	0	0	1	0	0	0	0	1	1	0	0	0	0	5	0
4:30 PM	0	1	0	0	0	2	0	1	0	0	0	0	0	1	1	2	8	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	22
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	16
5:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	14
5:30 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**8**
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	3	1	0	5	11
Count Total	0	4	1	1	0	5	0	5	0	0	2	2	0	5	4	4	33	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**8**	**0**

Two-Hour Count Summaries - Bikes

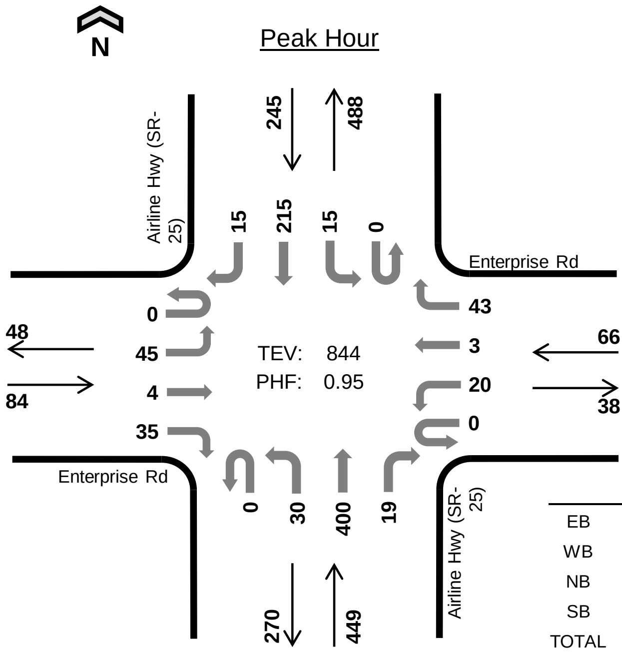
Interval Start	Ridgemark Dr Eastbound			Fairview Rd Westbound			Airline Hwy (SR-25) Northbound			Airline Hwy (SR-25) Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**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
5:30 PM	**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
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

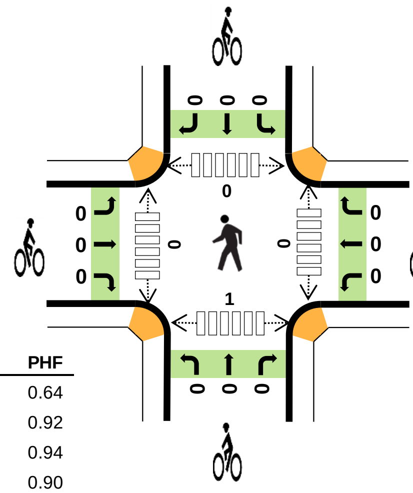
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Airline Hwy (SR-25)
Enterprise Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

Peak Hour





	HV %:	PHF
EB	2.4%	0.64
WB	3.0%	0.92
NB	3.8%	0.94
SB	8.2%	0.90
TOTAL	4.9%	0.95

Two-Hour Count Summaries

Interval Start	Enterprise Rd Eastbound UT	LT	TH	RT	Enterprise Rd Westbound UT	LT	TH	RT	Airline Hwy (SR-25) Northbound UT	LT	TH	RT	Airline Hwy (SR-25) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	8	1	6	0	3	0	17	0	5	94	1	0	1	40	1	177	0
7:15 AM	0	4	1	3	0	3	0	18	0	6	115	3	0	3	51	2	209	0
7:30 AM	**0**	**12**	**3**	**7**	**0**	**5**	**0**	**12**	**0**	**9**	**89**	**3**	**0**	**8**	**58**	**2**	**208**	0
7:45 AM	**0**	**19**	**0**	**14**	**0**	**6**	**1**	**11**	**0**	**10**	**100**	**4**	**0**	**1**	**55**	**1**	**222**	816
8:00 AM	**0**	**7**	**0**	**5**	**0**	**4**	**1**	**11**	**0**	**8**	**102**	**5**	**0**	**1**	**47**	**5**	**196**	835
8:15 AM	**0**	**7**	**1**	**9**	**0**	**5**	**1**	**9**	**0**	**3**	**109**	**7**	**0**	**5**	**55**	**7**	**218**	**844**
8:30 AM	0	7	0	2	0	2	1	14	0	4	83	4	0	6	55	5	183	819
8:45 AM	0	8	1	2	0	4	1	3	0	4	74	2	0	5	52	9	165	762
Count Total	0	72	7	48	0	32	5	95	0	49	766	29	0	30	413	32	1,578	0
Peak Hour All	**0**	**45**	**4**	**35**	**0**	**20**	**3**	**43**	**0**	**30**	**400**	**19**	**0**	**15**	**215**	**15**	**844**	**0**
Peak Hour HV	**0**	**0**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**2**	**14**	**1**	**0**	**0**	**19**	**1**	**41**	**0**
Peak Hour HV%	**-**	**0%**	**25%**	**3%**	**-**	**10%**	**0%**	**0%**	**-**	**7%**	**4%**	**5%**	**-**	**0%**	**9%**	**7%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	1	0	5	2	*8*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	0	0	3	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**0**	**0**	**3**	**4**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**1**	**1**	**5**	**4**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**1**	**6**	**9**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:15 AM	**1**	**0**	**3**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	0	1	6	3	*10*	0	0	0	1	*1*	0	0	0	0	*0*
8:45 AM	0	0	1	6	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	3	29	34	*70*	0	0	0	1	*1*	0	0	0	1	*1*
Peak Hour	**2**	**2**	**17**	**20**	***41***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Enterprise Rd Eastbound				Enterprise Rd Westbound				Airline Hwy (SR-25) Northbound				Airline Hwy (SR-25) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	0	2	0	8	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	4	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**7**	0
7:45 AM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**4**	**0**	**11**	30
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**8**	**1**	**16**	38
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**7**	**41**
8:30 AM	0	0	0	0	0	0	0	1	0	1	5	0	0	0	3	0	10	44
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	1	7	40
Count Total	0	0	2	2	0	2	0	1	0	3	25	1	0	1	30	3	70	0
Peak Hour	**0**	**0**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**2**	**14**	**1**	**0**	**0**	**19**	**1**	**41**	**0**

Two-Hour Count Summaries - Bikes

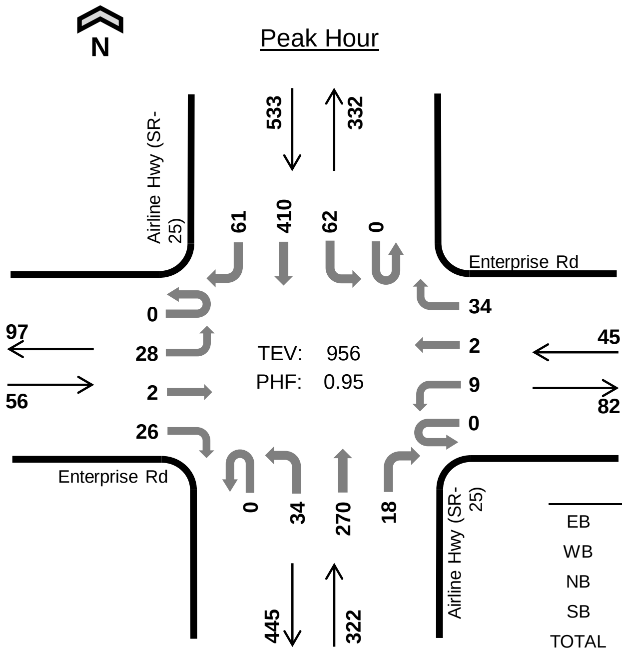
Interval Start	Enterprise Rd Eastbound			Enterprise Rd Westbound			Airline Hwy (SR-25) Northbound			Airline Hwy (SR-25) Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**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
8:00 AM	**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**
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

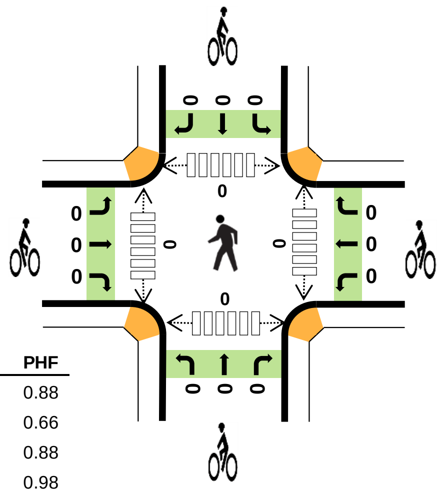
Airline Hwy (SR-25)
Enterprise Rd

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

Peak Hour



	HV %:	PHF
EB	1.8%	0.88
WB	0.0%	0.66
NB	0.9%	0.88
SB	1.3%	0.98
TOTAL	1.2%	0.95



Two-Hour Count Summaries

Interval Start	Enterprise Rd				Enterprise Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	0	10	0	4	1	8	0	4	68	1	0	13	78	13	204	0
4:15 PM	0	8	1	9	0	4	0	13	0	5	52	6	0	15	92	13	218	0
4:30 PM	0	6	1	5	0	0	2	4	0	3	71	6	0	9	74	14	195	0
4:45 PM	0	4	0	5	0	5	1	8	0	7	66	5	0	10	101	10	222	839
5:00 PM	**0**	**6**	**0**	**8**	**0**	**4**	**1**	**5**	**0**	**3**	**77**	**3**	**0**	**19**	**96**	**18**	**240**	875
5:15 PM	**0**	**8**	**0**	**4**	**0**	**0**	**1**	**10**	**0**	**13**	**69**	**10**	**0**	**15**	**109**	**12**	**251**	908
5:30 PM	**0**	**7**	**1**	**8**	**0**	**4**	**0**	**13**	**0**	**4**	**62**	**3**	**0**	**8**	**116**	**12**	**238**	951
5:45 PM	**0**	**7**	**1**	**6**	**0**	**1**	**0**	**6**	**0**	**14**	**62**	**2**	**0**	**20**	**89**	**19**	**227**	**956**
Count Total	0	50	4	55	0	22	6	67	0	53	527	36	0	109	755	111	1,795	0
Peak Hour All	**0**	**28**	**2**	**26**	**0**	**9**	**2**	**34**	**0**	**34**	**270**	**18**	**0**	**62**	**410**	**61**	**956**	**0**
Peak Hour HV	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**6**	**1**	**11**	**0**
Peak Hour HV%	**-**	**4%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**6%**	**0%**	**0%**	**-**	**0%**	**1%**	**2%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	4	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	3	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	2	2	2	1	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	1	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**1**	**0**	**1**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**0**	**0**	**1**	**4**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	4	3	13	10	*30*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**1**	**0**	**3**	**7**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Enterprise Rd				Enterprise Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	1	0	0	0	0	4	0	0	0	0	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0	4	0
4:30 PM	0	0	0	2	0	0	1	1	0	0	2	0	0	0	1	0	7	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	19
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	15
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	13
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	8
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**5**	**11**
Count Total	0	1	0	3	0	1	1	1	0	3	10	0	0	0	9	1	30	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**6**	**1**	**11**	**0**

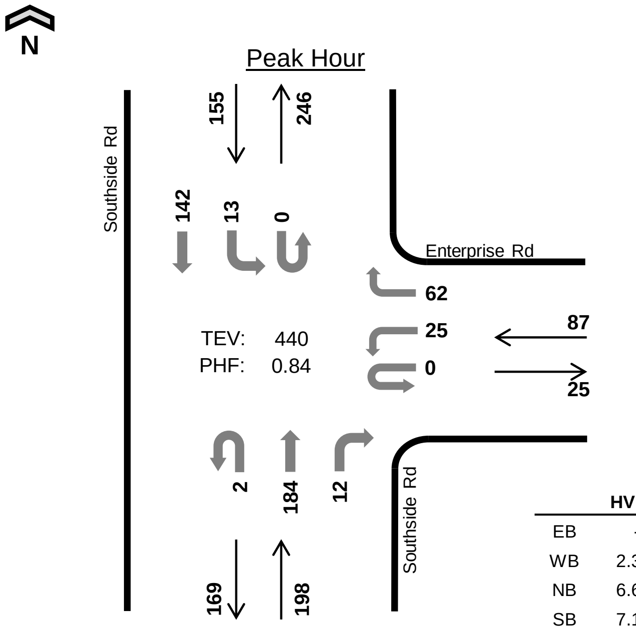
Two-Hour Count Summaries - Bikes

Interval Start	Enterprise Rd			Enterprise Rd			Airline Hwy (SR-25)			Airline Hwy (SR-25)			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	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
4:30 PM	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
5:00 PM	**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
5:30 PM	**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**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

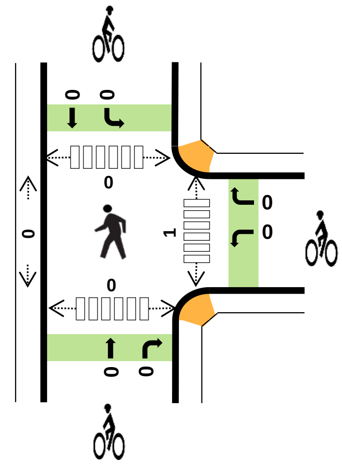
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Southside Rd
Enterprise Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	-	-
WB	2.3%	0.87
NB	6.6%	0.77
SB	7.1%	0.79
TOTAL	5.9%	0.84



Two-Hour Count Summaries

Interval Start		n/a Eastbound UT	LT	TH	RT	Enterprise Rd Westbound UT	LT	TH	RT	Southside Rd Northbound UT	LT	TH	RT	Southside Rd Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM		0	0	0	0	0	5	0	7	0	0	28	1	0	3	31	0	75	0
7:15 AM		**0**	**0**	**0**	**0**	**0**	**5**	**0**	**20**	**1**	**0**	**45**	**0**	**0**	**3**	**27**	**0**	**101**	0
7:30 AM		**0**	**0**	**0**	**0**	**0**	**7**	**0**	**17**	**0**	**0**	**39**	**0**	**0**	**3**	**46**	**0**	**112**	0
7:45 AM		**0**	**0**	**0**	**0**	**0**	**11**	**0**	**10**	**1**	**0**	**57**	**6**	**0**	**3**	**43**	**0**	**131**	419
8:00 AM		**0**	**0**	**0**	**0**	**0**	**2**	**0**	**15**	**0**	**0**	**43**	**6**	**0**	**4**	**26**	**0**	**96**	**440**
8:15 AM		0	0	0	0	0	3	0	17	0	0	34	3	0	5	19	0	81	420
8:30 AM		0	0	0	0	0	1	0	13	0	0	18	1	0	4	20	0	57	365
8:45 AM		0	0	0	0	0	0	0	3	0	0	23	1	0	7	21	0	55	289
Count Total		0	0	0	0	0	34	0	102	2	0	287	18	0	32	233	0	708	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**25**	**0**	**62**	**2**	**0**	**184**	**12**	**0**	**13**	**142**	**0**	**440**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**11**	**1**	**0**	**0**	**11**	**0**	**26**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**3%**	**50%**	**-**	**6%**	**8%**	**-**	**0%**	**8%**	**-**	**6%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	0	2	4	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**0**	**0**	**5**	**2**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**0**	**1**	**1**	**4**	***6***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
7:45 AM	**0**	**0**	**5**	**3**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**1**	**2**	**2**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	0	1	3	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	2	1	1	*4*	0	1	0	0	*1*	0	0	0	0	*0*
8:45 AM	0	0	4	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	5	23	21	*49*	0	1	0	0	*1*	1	0	0	0	*1*
Peak Hr	**0**	**2**	**13**	**11**	***26***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***

Two-Hour Count Summaries - Heavy Vehicles

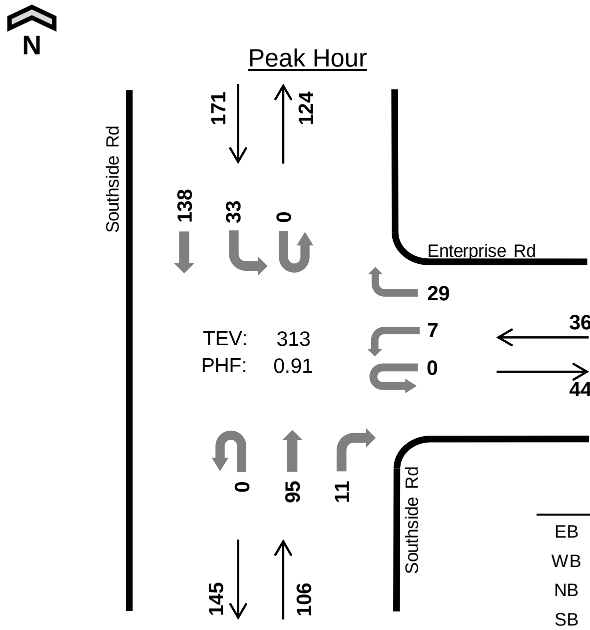
Interval Start	n/a				Enterprise Rd				Southside Rd				Southside Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	4	0	6	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**7**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**6**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	**1**	**0**	**0**	**3**	**0**	**8**	27
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**5**	**26**
8:15 AM	0	0	0	0	0	1	0	0	0	0	3	0	0	0	2	0	6	25
8:30 AM	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	0	4	23
8:45 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	3	0	7	22
Count Total	0	0	0	0	0	2	0	3	1	0	18	4	0	0	21	0	49	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**11**	**1**	**0**	**0**	**11**	**0**	**26**	**0**

Two-Hour Count Summaries - Bikes

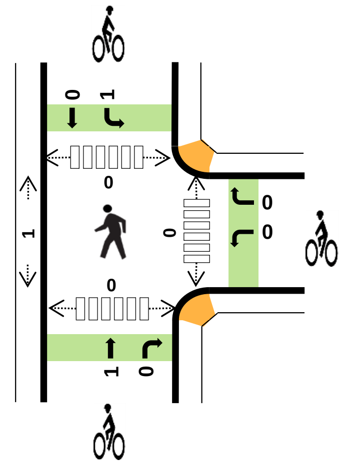
Interval Start	n/a			Enterprise Rd			Southside Rd			Southside Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**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
8:00 AM	**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
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Southside Rd
Enterprise Rd



Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	-	-
WB	5.6%	0.64
NB	1.9%	0.74
SB	3.5%	0.84
TOTAL	3.2%	0.91

Two-Hour Count Summaries

Interval Start	n/a Eastbound UT	LT	TH	RT	Enterprise Rd Westbound UT	LT	TH	RT	Southside Rd Northbound UT	LT	TH	RT	Southside Rd Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	0	2	0	9	0	0	33	4	0	10	36	0	94	0
4:15 PM	0	0	0	0	0	3	0	3	0	0	28	5	0	9	32	0	80	0
4:30 PM	0	0	0	0	0	0	0	5	0	0	23	3	0	4	29	0	64	0
4:45 PM	0	0	0	0	0	2	0	6	0	0	16	1	0	11	24	0	60	298
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**30**	**6**	**0**	**4**	**24**	**0**	**69**	**273**
5:15 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**20**	**1**	**0**	**11**	**40**	**0**	**79**	**272**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**21**	**2**	**0**	**7**	**39**	**0**	**79**	**287**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**9**	**0**	**0**	**24**	**2**	**0**	**11**	**35**	**0**	**86**	**313**
Count Total	0	0	0	0	0	14	0	52	0	0	195	24	0	67	259	0	611	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**29**	**0**	**0**	**95**	**11**	**0**	**33**	**138**	**0**	**313**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**6**	**0**	**10**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**29%**	**-**	**0%**	**-**	**-**	**2%**	**0%**	**-**	**0%**	**4%**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	0	3	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	1	1	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	3	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**0**	**0**	**3**	***3***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**0**	**1**	**1**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
Count Total	0	3	9	11	*23*	0	0	1	1	*2*	0	1	0	0	*1*
Peak Hr	**0**	**2**	**2**	**6**	***10***	**0**	**0**	**1**	**1**	***2***	**0**	**1**	**0**	**0**	*1*

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	n/a				Enterprise Rd				Southside Rd				Southside Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	4	0
4:15 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	4	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	4	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	13
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	10
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	7
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	6
5:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**5**	**10**
Count Total	0	0	0	0	0	3	0	0	0	0	7	2	0	0	11	0	23	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**6**	**0**	**10**	**0**

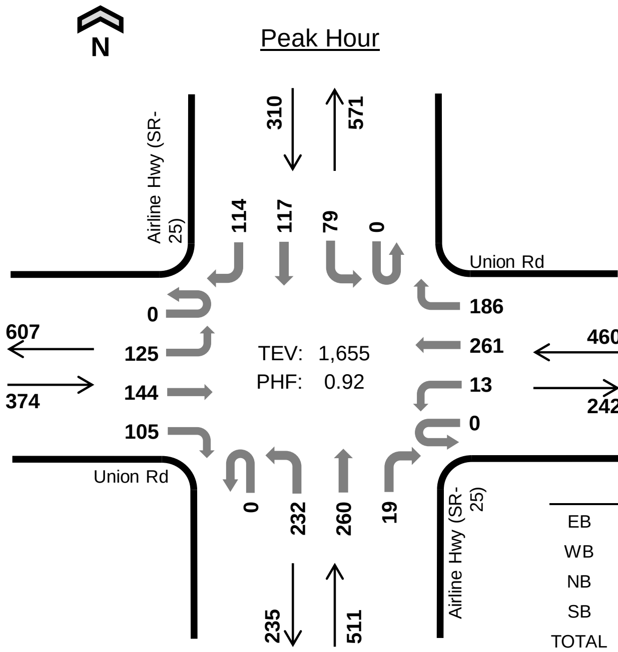
Two-Hour Count Summaries - Bikes

Interval Start	n/a			Enterprise Rd			Southside Rd			Southside Rd			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	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
4:30 PM	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
5:00 PM	**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**	**1**	**0**	**0**	**1**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	2
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Count Total	0	0	0	0	0	0	0	1	0	1	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	**0**

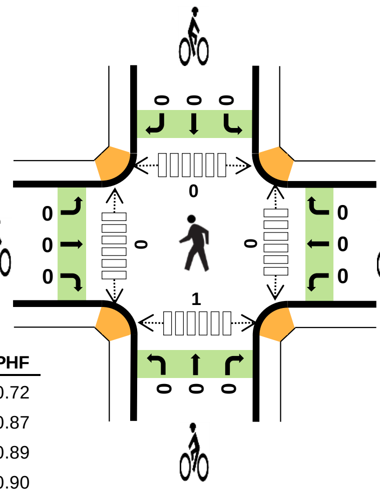
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Airline Hwy (SR-25)
Union Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	7.0%	0.72
WB	0.7%	0.87
NB	2.2%	0.89
SB	4.2%	0.90
TOTAL	3.2%	0.92



Two-Hour Count Summaries

Interval Start	Union Rd Eastbound				Union Rd Westbound				Airline Hwy (SR-25) Northbound				Airline Hwy (SR-25) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	18	13	20	0	1	70	28	0	56	54	2	0	11	22	38	333	0
7:15 AM	**0**	**23**	**23**	**31**	**0**	**2**	**101**	**29**	**0**	**87**	**57**	**0**	**0**	**12**	**23**	**24**	**412**	0
7:30 AM	**0**	**31**	**67**	**31**	**0**	**3**	**65**	**56**	**0**	**42**	**53**	**12**	**0**	**24**	**34**	**28**	**446**	0
7:45 AM	**0**	**43**	**36**	**23**	**0**	**7**	**67**	**56**	**0**	**49**	**81**	**6**	**0**	**24**	**28**	**31**	**451**	1,642
8:00 AM	**0**	**28**	**18**	**20**	**0**	**1**	**28**	**45**	**0**	**54**	**69**	**1**	**0**	**19**	**32**	**31**	**346**	**1,655**
8:15 AM	0	27	19	22	0	5	57	56	0	56	65	2	0	12	43	27	391	1,634
8:30 AM	0	24	26	21	0	1	55	29	0	43	65	3	0	33	43	29	372	1,560
8:45 AM	0	23	16	21	0	5	18	31	0	20	67	1	0	20	37	32	291	1,400
Count Total	0	217	218	189	0	25	461	330	0	407	511	27	0	155	262	240	3,042	0
Peak Hour All	**0**	**125**	**144**	**105**	**0**	**13**	**261**	**186**	**0**	**232**	**260**	**19**	**0**	**79**	**117**	**114**	**1,655**	**0**
Peak Hour HV	**0**	**8**	**5**	**13**	**0**	**0**	**3**	**0**	**0**	**8**	**2**	**1**	**0**	**1**	**7**	**5**	**53**	**0**
Peak Hour HV%	**-**	**6%**	**3%**	**12%**	**-**	**0%**	**1%**	**0%**	**-**	**3%**	**1%**	**5%**	**-**	**1%**	**6%**	**4%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	0	5	4	*11*	0	0	0	2	*2*	0	1	0	1	*2*
7:15 AM	**6**	**1**	**1**	**4**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**3**	**1**	**2**	**4**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
7:45 AM	**6**	**0**	**5**	**3**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**11**	**1**	**3**	**2**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	3	2	3	4	*12*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	2	2	6	3	*13*	0	1	0	0	*1*	0	0	0	0	*0*
8:45 AM	6	0	2	5	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	39	7	27	29	*102*	0	1	0	2	*3*	0	1	0	2	*3*
Peak Hour	**26**	**3**	**11**	**13**	***53***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Union Rd				Union Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	2	0	0	0	0	0	2	3	0	0	0	0	4	11	0
7:15 AM	**0**	**3**	**2**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**2**	**1**	**12**	0
7:30 AM	**0**	**1**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**2**	**10**	0
7:45 AM	**0**	**2**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**1**	**0**	**0**	**1**	**2**	**14**	47
8:00 AM	**0**	**2**	**2**	**7**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**2**	**0**	**17**	**53**
8:15 AM	0	1	1	1	0	0	1	1	0	3	0	0	0	1	2	1	12	53
8:30 AM	0	1	1	0	0	0	2	0	0	1	5	0	0	0	2	1	13	56
8:45 AM	0	1	1	4	0	0	0	0	0	1	1	0	0	0	3	2	13	55
Count Total	0	11	8	20	0	0	6	1	0	15	11	1	0	2	14	13	102	0
Peak Hour	**0**	**8**	**5**	**13**	**0**	**0**	**3**	**0**	**0**	**8**	**2**	**1**	**0**	**1**	**7**	**5**	**53**	**0**

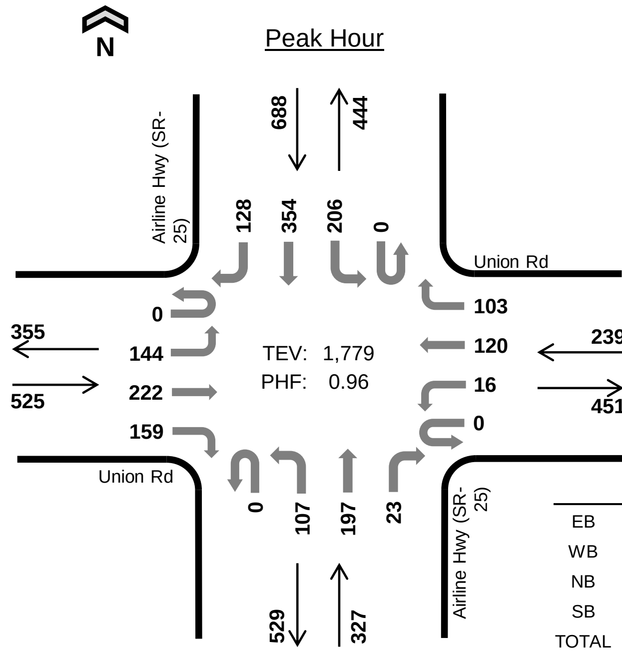
Two-Hour Count Summaries - Bikes

Interval Start	Union Rd			Union Rd			Airline Hwy (SR-25)			Airline Hwy (SR-25)			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	2	0
7:15 AM	**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
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:00 AM	**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
8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	1	0	0	0	0	0	0	0	2	3	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

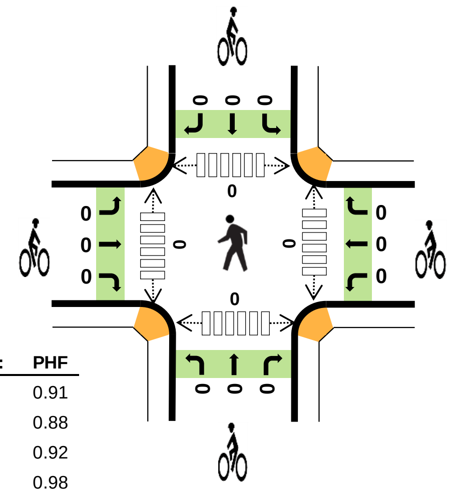
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Airline Hwy (SR-25)
Union Rd

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	1.9%	0.91
WB	1.7%	0.88
NB	0.6%	0.92
SB	0.3%	0.98
TOTAL	1.0%	0.96



Two-Hour Count Summaries

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	Airline Hwy (SR-25) Northbound UT	LT	TH	RT	Airline Hwy (SR-25) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	39	51	25	0	2	17	30	0	27	52	4	0	44	80	29	400	0
4:15 PM	0	35	47	34	0	4	19	26	0	22	48	2	0	44	94	38	413	0
4:30 PM	0	50	60	21	0	10	27	21	0	28	46	6	0	61	64	36	430	0
4:45 PM	0	36	47	39	0	5	21	28	0	27	50	3	0	43	90	31	420	1,663
5:00 PM	**0**	**42**	**45**	**37**	**0**	**2**	**25**	**21**	**0**	**22**	**54**	**6**	**0**	**56**	**88**	**31**	**429**	1,692
5:15 PM	**0**	**30**	**71**	**43**	**0**	**6**	**22**	**28**	**0**	**30**	**50**	**9**	**0**	**58**	**88**	**30**	**465**	1,744
5:30 PM	**0**	**36**	**53**	**40**	**0**	**6**	**31**	**30**	**0**	**23**	**52**	**5**	**0**	**43**	**88**	**41**	**448**	1,762
5:45 PM	**0**	**36**	**53**	**39**	**0**	**2**	**42**	**24**	**0**	**32**	**41**	**3**	**0**	**49**	**90**	**26**	**437**	**1,779**
Count Total	0	304	427	278	0	37	204	208	0	211	393	38	0	398	682	262	3,442	0
Peak Hour All	**0**	**144**	**222**	**159**	**0**	**16**	**120**	**103**	**0**	**107**	**197**	**23**	**0**	**206**	**354**	**128**	**1,779**	**0**
Peak Hour HV	**0**	**3**	**3**	**4**	**0**	**1**	**3**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**18**	**0**
Peak Hour HV%	**-**	**2%**	**1%**	**3%**	**-**	**6%**	**3%**	**0%**	**-**	**0%**	**1%**	**4%**	**-**	**0%**	**1%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	5	2	4	1	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	1	0	2	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	2	1	3	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	2	0	1	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**2**	**0**	**0**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**3**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**1**	**2**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**5**	**1**	**0**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	20	7	12	6	*45*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**10**	**4**	**2**	**2**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	Airline Hwy (SR-25) Northbound UT	LT	TH	RT	Airline Hwy (SR-25) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	3	2	0	0	0	1	1	0	2	2	0	0	1	0	0	12	0
4:15 PM	0	0	0	1	0	0	0	0	0	2	0	0	0	0	1	1	5	0
4:30 PM	0	1	1	0	0	0	0	1	0	1	1	1	0	0	0	0	6	0
4:45 PM	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	1	4	27
5:00 PM	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	18
5:15 PM	**0**	**1**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	18
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**3**	15
5:45 PM	**0**	**1**	**1**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**7**	**18**
Count Total	0	8	6	6	0	1	4	2	0	5	5	2	0	1	3	2	45	0
Peak Hour	**0**	**3**	**3**	**4**	**0**	**1**	**3**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**18**	**0**

Two-Hour Count Summaries - Bikes

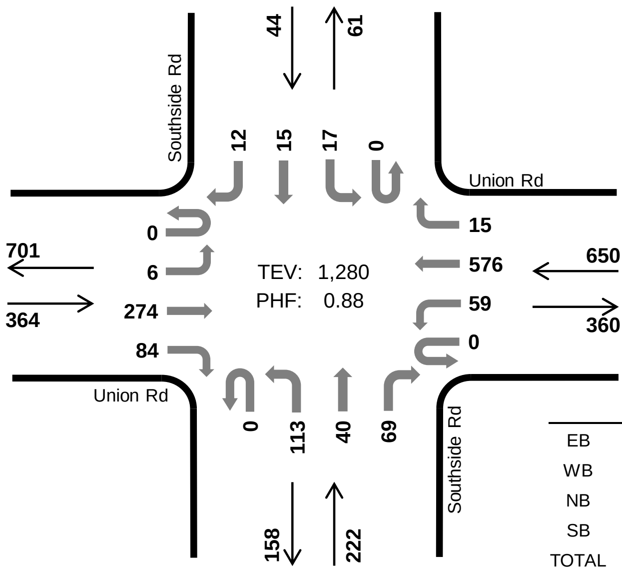
Interval Start	Union Rd Eastbound LT	TH	RT	Union Rd Westbound LT	TH	RT	Airline Hwy (SR-25) Northbound LT	TH	RT	Airline Hwy (SR-25) Southbound LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**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
5:30 PM	**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**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

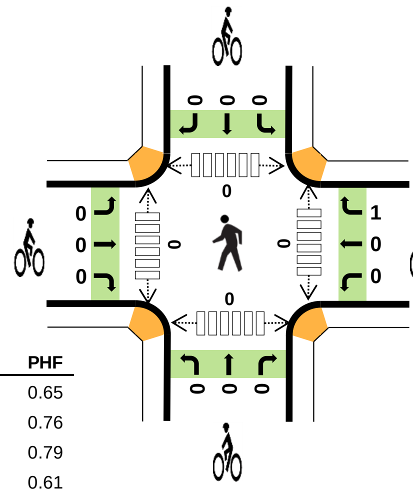
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Southside Rd
Union Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM

Peak Hour





	HV %:	PHF
EB	4.1%	0.65
WB	2.8%	0.76
NB	5.0%	0.79
SB	6.8%	0.61
TOTAL	3.7%	0.88

Two-Hour Count Summaries

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	Southside Rd Northbound UT	LT	TH	RT	Southside Rd Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	**0**	**1**	**45**	**23**	**0**	**13**	**144**	**3**	**0**	**18**	**9**	**8**	**0**	**0**	**1**	**1**	**266**	0
7:15 AM	**0**	**1**	**59**	**14**	**0**	**9**	**201**	**4**	**0**	**49**	**5**	**13**	**0**	**3**	**2**	**4**	**364**	0
7:30 AM	**0**	**3**	**108**	**29**	**0**	**18**	**114**	**2**	**0**	**22**	**11**	**17**	**0**	**7**	**7**	**4**	**342**	0
7:45 AM	**0**	**1**	**62**	**18**	**0**	**19**	**117**	**6**	**0**	**24**	**15**	**31**	**0**	**7**	**5**	**3**	**308**	**1,280**
8:00 AM	0	8	47	15	0	12	102	4	0	24	18	17	0	3	4	5	259	1,273
8:15 AM	0	5	50	9	0	6	111	20	0	21	18	13	0	7	7	1	268	1,177
8:30 AM	0	3	52	12	0	11	105	12	0	18	8	6	0	8	8	5	248	1,083
8:45 AM	0	1	42	13	0	3	69	2	0	7	8	9	0	9	5	4	172	947
Count Total	0	23	465	133	0	91	963	53	0	183	92	114	0	44	39	27	2,227	0
Peak Hour All	**0**	**6**	**274**	**84**	**0**	**59**	**576**	**15**	**0**	**113**	**40**	**69**	**0**	**17**	**15**	**12**	**1,280**	**0**
Peak Hour HV	**0**	**0**	**11**	**4**	**0**	**9**	**9**	**0**	**0**	**4**	**1**	**6**	**0**	**2**	**1**	**0**	**47**	**0**
Peak Hour HV%	**-**	**0%**	**4%**	**5%**	**-**	**15%**	**2%**	**0%**	**-**	**4%**	**3%**	**9%**	**-**	**12%**	**7%**	**0%**	**4%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	**3**	**6**	**1**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:15 AM	**3**	**3**	**5**	**1**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**4**	**5**	**2**	**1**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**5**	**4**	**3**	**1**	***13***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
8:00 AM	9	4	2	1	*16*	0	0	0	0	*0*	1	0	0	0	*1*
8:15 AM	2	4	3	0	*9*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	3	5	1	1	*10*	0	0	1	0	*1*	1	0	0	0	*1*
8:45 AM	4	3	2	2	*11*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	33	34	19	7	*93*	0	1	1	0	*2*	2	0	0	0	*2*
Peak Hour	**15**	**18**	**11**	**3**	***47***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	Southside Rd Northbound UT	LT	TH	RT	Southside Rd Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	**0**	**0**	**2**	**1**	**0**	**4**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**10**	0
7:15 AM	**0**	**0**	**3**	**0**	**0**	**2**	**1**	**0**	**0**	**2**	**0**	**3**	**0**	**1**	**0**	**0**	**12**	0
7:30 AM	**0**	**0**	**2**	**2**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**12**	0
7:45 AM	**0**	**0**	**4**	**1**	**0**	**1**	**3**	**0**	**0**	**2**	**0**	**1**	**0**	**1**	**0**	**0**	**13**	**47**
8:00 AM	0	0	8	1	0	1	3	0	0	0	1	1	0	1	0	0	16	53
8:15 AM	0	0	2	0	0	1	3	0	0	1	1	1	0	0	0	0	9	50
8:30 AM	0	0	2	1	0	0	4	1	0	0	0	1	0	1	0	0	10	48
8:45 AM	0	0	3	1	0	1	2	0	0	1	0	1	0	2	0	0	11	46
Count Total	0	0	26	7	0	12	21	1	0	6	3	10	0	6	1	0	93	0
Peak Hour	**0**	**0**	**11**	**4**	**0**	**9**	**9**	**0**	**0**	**4**	**1**	**6**	**0**	**2**	**1**	**0**	**47**	**0**

Two-Hour Count Summaries - Bikes

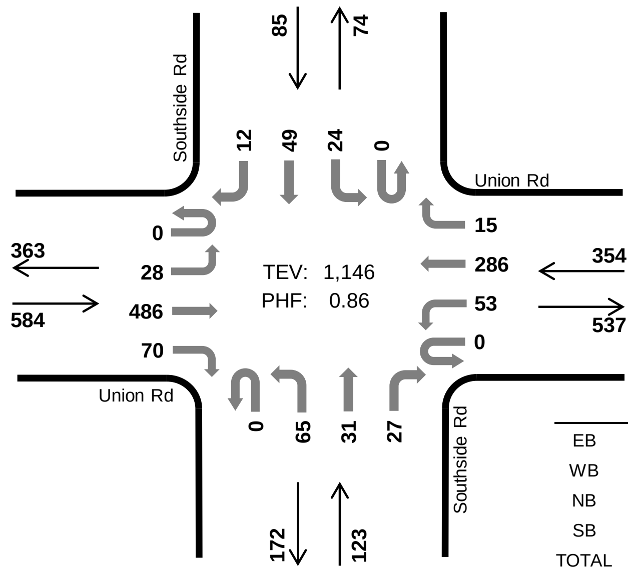
Interval Start	Union Rd Eastbound LT	TH	RT	Union Rd Westbound LT	TH	RT	Southside Rd Northbound LT	TH	RT	Southside Rd Southbound LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	1	0	1	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

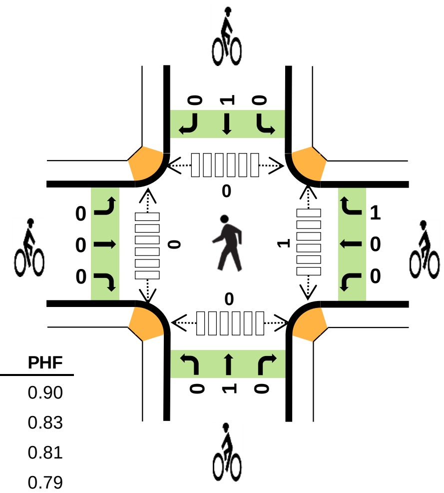
Southside Rd
Union Rd

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

Peak Hour



	HV %:	PHF
EB	1.7%	0.90
WB	0.8%	0.83
NB	1.6%	0.81
SB	3.5%	0.79
TOTAL	1.6%	0.86



Two-Hour Count Summaries

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	Southside Rd Northbound UT	LT	TH	RT	Southside Rd Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	10	86	15	0	9	57	5	0	20	10	10	0	15	20	3	260	0
4:15 PM	0	7	102	27	0	10	71	1	0	11	8	12	0	9	6	2	266	0
4:30 PM	0	5	110	11	0	8	71	6	0	14	8	9	0	10	15	9	276	0
4:45 PM	0	12	100	8	0	13	69	5	0	4	11	6	0	10	13	2	253	1,055
5:00 PM	**0**	**8**	**118**	**10**	**0**	**13**	**58**	**3**	**0**	**15**	**6**	**12**	**0**	**6**	**9**	**3**	**261**	1,056
5:15 PM	**0**	**7**	**126**	**22**	**0**	**13**	**64**	**7**	**0**	**13**	**9**	**4**	**0**	**7**	**15**	**3**	**290**	1,080
5:30 PM	**0**	**4**	**110**	**17**	**0**	**16**	**70**	**4**	**0**	**12**	**6**	**8**	**0**	**6**	**9**	**0**	**262**	1,066
5:45 PM	**0**	**9**	**132**	**21**	**0**	**11**	**94**	**1**	**0**	**25**	**10**	**3**	**0**	**5**	**16**	**6**	**333**	**1,146**
Count Total	0	62	884	131	0	93	554	32	0	114	68	64	0	68	103	28	2,201	0
Peak Hour All	**0**	**28**	**486**	**70**	**0**	**53**	**286**	**15**	**0**	**65**	**31**	**27**	**0**	**24**	**49**	**12**	**1,146**	**0**
Peak Hour HV	**0**	**0**	**8**	**2**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**3**	**0**	**18**	**0**
Peak Hour HV%	**-**	**0%**	**2%**	**3%**	**-**	**4%**	**0%**	**0%**	**-**	**0%**	**0%**	**7%**	**-**	**0%**	**6%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	3	3	2	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	2	1	1	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	2	2	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**1**	**0**	**1**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**3**	**1**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**1**	**1**	**0**	**1**	***3***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**5**	**1**	**1**	**2**	***9***	**0**	**1**	**1**	**0**	***2***	**1**	**0**	**0**	**0**	*1*
Count Total	20	11	7	5	*43*	0	1	1	1	*3*	1	0	0	0	*1*
Peak Hour	**10**	**3**	**2**	**3**	***18***	**0**	**1**	**1**	**1**	***3***	**1**	**0**	**0**	**0**	***1***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	Southside Rd Northbound UT	LT	TH	RT	Southside Rd Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	3	0	0	0	3	0	0	0	0	2	0	0	1	0	9	0
4:15 PM	0	0	0	2	0	0	2	0	0	1	0	0	0	1	0	0	6	0
4:30 PM	0	0	2	1	0	0	1	1	0	1	0	1	0	0	0	0	7	0
4:45 PM	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3	25
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	18
5:15 PM	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	16
5:30 PM	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	12
5:45 PM	**0**	**0**	**4**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**9**	**18**
Count Total	0	1	14	5	0	3	7	1	0	2	0	5	0	1	4	0	43	0
Peak Hour	**0**	**0**	**8**	**2**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**3**	**0**	**18**	**0**

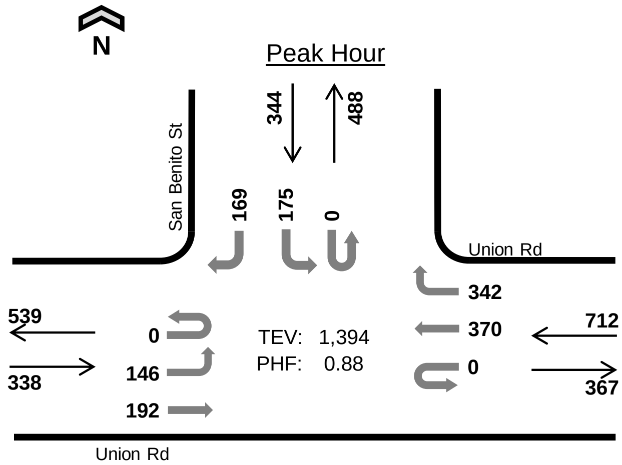
Two-Hour Count Summaries - Bikes

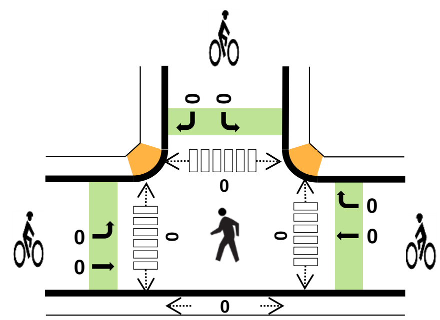
Interval Start	Union Rd Eastbound LT	TH	RT	Union Rd Westbound LT	TH	RT	Southside Rd Northbound LT	TH	RT	Southside Rd Southbound LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**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
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	1
5:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**3**
Count Total	0	0	0	0	0	1	0	1	0	0	1	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**3**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

San Benito St
Union Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM





	HV %:	PHF
EB	5.3%	0.80
WB	1.7%	0.72
NB	-	-
SB	1.7%	0.67
TOTAL	2.6%	0.88

Two-Hour Count Summaries

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	n/a Northbound UT	LT	TH	RT	San Benito St Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	33	43	0	0	0	107	49	0	0	0	0	0	24	0	55	311	0
7:15 AM	0	34	38	0	0	0	81	167	0	0	0	0	0	36	0	42	398	0
7:30 AM	0	49	56	0	0	0	85	75	0	0	0	0	0	90	0	39	394	0
7:45 AM	0	30	55	0	0	0	97	51	0	0	0	0	0	25	0	33	291	1,394
8:00 AM	0	49	45	0	0	0	80	50	0	0	0	0	0	22	0	28	274	1,357
8:15 AM	0	46	38	0	0	0	63	77	0	0	0	0	0	25	0	34	283	1,242
8:30 AM	0	37	39	0	0	0	62	63	0	0	0	0	0	35	0	41	277	1,125
8:45 AM	0	31	35	0	0	0	59	21	0	0	0	0	0	15	0	30	191	1,025
Count Total	0	309	349	0	0	0	634	553	0	0	0	0	0	272	0	302	2,419	0
Peak Hour All	0	146	192	0	0	0	370	342	0	0	0	0	0	175	0	169	1,394	0
Peak Hour HV	0	4	14	0	0	0	9	3	0	0	0	0	0	3	0	3	36	0
Peak Hour HV%	-	3%	7%	-	-	-	2%	1%	-	-	-	-	-	2%	-	2%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	2	0	1	5	0	0	0	0	0	0	0	0	0	0
7:15 AM	3	3	0	3	9	0	0	0	0	0	0	0	0	0	0
7:30 AM	5	2	0	1	8	0	0	0	0	0	0	0	0	0	0
7:45 AM	8	5	0	1	14	0	0	0	0	0	0	0	0	0	0
8:00 AM	7	3	0	2	12	0	0	0	1	1	0	0	0	0	0
8:15 AM	4	5	0	1	10	0	0	0	0	0	0	0	0	0	0
8:30 AM	3	4	0	2	9	0	0	0	0	0	0	0	0	0	0
8:45 AM	6	3	0	2	11	0	0	0	0	0	0	0	0	0	0
Count Total	38	27	0	13	78	0	0	0	1	1	0	0	0	0	0
Peak Hr	18	12	0	6	36	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	n/a Northbound UT	LT	TH	RT	San Benito St Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	0
7:15 AM	**0**	**1**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**9**	0
7:30 AM	**0**	**2**	**3**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	0
7:45 AM	**0**	**1**	**7**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**14**	**36**
8:00 AM	0	2	5	0	0	0	2	1	0	0	0	0	0	2	0	0	12	43
8:15 AM	0	3	1	0	0	0	2	3	0	0	0	0	0	1	0	0	10	44
8:30 AM	0	0	3	0	0	0	3	1	0	0	0	0	0	0	0	2	9	45
8:45 AM	0	2	4	0	0	0	2	1	0	0	0	0	0	0	0	2	11	42
Count Total	0	11	27	0	0	0	18	9	0	0	0	0	0	6	0	7	78	0
Peak Hour	**0**	**4**	**14**	**0**	**0**	**0**	**9**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	**36**	**0**

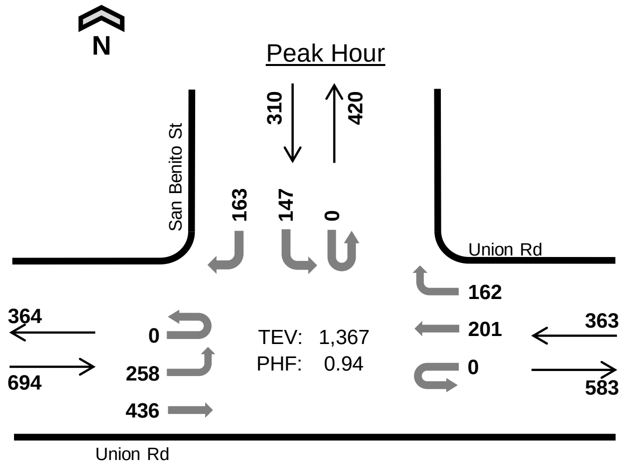
Two-Hour Count Summaries - Bikes

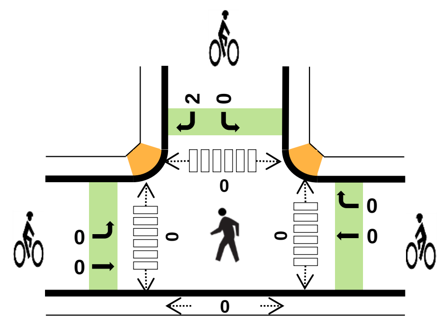
Interval Start	Union Rd Eastbound LT	TH	RT	Union Rd Westbound LT	TH	RT	n/a Northbound LT	TH	RT	San Benito St Southbound LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**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**
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	1
8:15 AM	0	0	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	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

San Benito St
Union Rd

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	1.2%	0.96
WB	0.3%	0.74
NB	-	-
SB	0.6%	0.90
TOTAL	0.8%	0.94

Two-Hour Count Summaries

Interval Start		Union Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	n/a Northbound UT	LT	TH	RT	San Benito St Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		0	54	92	0	0	0	51	24	0	0	0	0	0	20	0	43	284	0
4:15 PM		0	47	103	0	0	0	55	28	0	0	0	0	0	36	0	35	304	0
4:30 PM		0	91	112	0	0	0	58	30	0	0	0	0	0	17	0	28	336	0
4:45 PM		0	63	84	0	0	0	51	38	0	0	0	0	0	29	0	25	290	1,214
5:00 PM		**0**	**68**	**109**	**0**	**0**	**0**	**48**	**32**	**0**	**0**	**0**	**0**	**0**	**37**	**0**	**48**	**342**	1,272
5:15 PM		**0**	**62**	**107**	**0**	**0**	**0**	**45**	**33**	**0**	**0**	**0**	**0**	**0**	**38**	**0**	**48**	**333**	1,301
5:30 PM		**0**	**71**	**110**	**0**	**0**	**0**	**50**	**33**	**0**	**0**	**0**	**0**	**0**	**28**	**0**	**36**	**328**	1,293
5:45 PM		**0**	**57**	**110**	**0**	**0**	**0**	**58**	**64**	**0**	**0**	**0**	**0**	**0**	**44**	**0**	**31**	**364**	**1,367**
Count Total		0	513	827	0	0	0	416	282	0	0	0	0	0	249	0	294	2,581	0
Peak Hour	**All**	**0**	**258**	**436**	**0**	**0**	**0**	**201**	**162**	**0**	**0**	**0**	**0**	**0**	**147**	**0**	**163**	**1,367**	**0**
	HV	**0**	**0**	**8**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**11**	**0**
	HV%	**-**	**0%**	**2%**	**-**	**-**	**-**	**0%**	**0%**	**-**	**-**	**-**	**-**	**-**	**1%**	**-**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	2	3	0	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	3	0	3	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	1	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**2**	**0**	**0**	**1**	***3***	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**4**	**1**	**0**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	17	9	0	8	*34*	0	0	0	2	*2*	0	0	0	0	*0*
Peak Hr	**8**	**1**	**0**	**2**	***11***	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Union Rd				Union Rd				n/a				San Benito St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	0	2	1	0	0	0	0	0	1	0	1	7	0
4:15 PM	0	2	0	0	0	0	2	1	0	0	0	0	0	2	0	1	8	0
4:30 PM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	1	5	0
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	23
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	17
5:15 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	12
5:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	8
5:45 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**6**	**11**
Count Total	0	2	15	0	0	0	7	2	0	0	0	0	0	5	0	3	34	0
Peak Hour	**0**	**0**	**8**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**11**	**0**

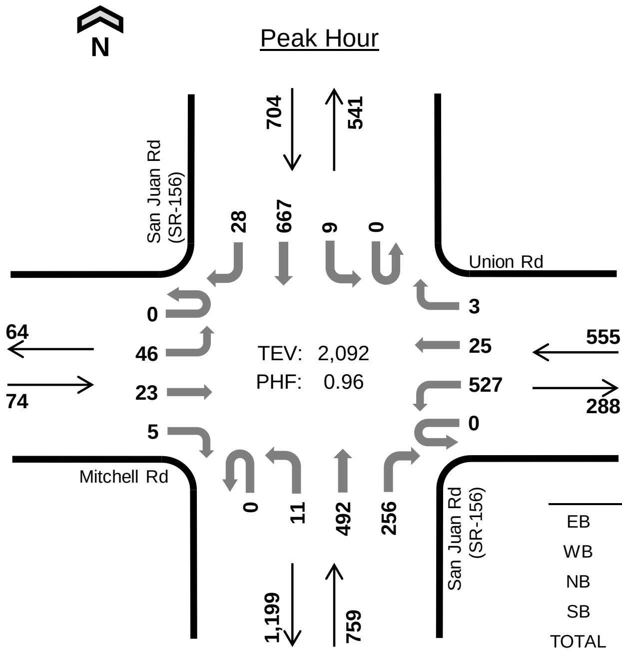
Two-Hour Count Summaries - Bikes

Interval Start	Union Rd			Union Rd			n/a			San Benito St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	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
4:30 PM	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
5:00 PM	**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**	**2**	**2**	2
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Count Total	0	0	0	0	0	0	0	0	0	0	0	2	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**

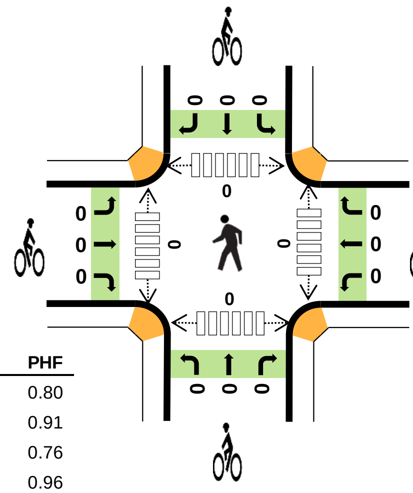
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

San Juan Rd (SR-156)
Mitchell Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	5.4%	0.80
WB	2.2%	0.91
NB	12.1%	0.76
SB	16.8%	0.96
TOTAL	10.8%	0.96



Two-Hour Count Summaries

Interval Start	Mitchell Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	San Juan Rd (SR-156) Northbound UT	LT	TH	RT	San Juan Rd (SR-156) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	13	3	2	0	143	5	1	0	2	97	57	0	1	168	11	503	0
7:15 AM	0	6	9	1	0	147	3	1	0	2	102	68	0	2	174	7	522	0
7:30 AM	0	10	7	0	0	144	9	0	0	3	124	54	0	5	161	7	524	0
7:45 AM	0	17	4	2	0	93	8	1	0	4	169	77	0	1	164	3	543	2,092
8:00 AM	0	8	5	0	0	121	9	2	0	2	113	48	0	6	160	5	479	2,068
8:15 AM	0	10	1	0	0	123	0	7	0	0	114	49	0	0	155	8	467	2,013
8:30 AM	0	8	7	0	0	89	5	3	0	0	111	50	0	2	122	6	403	1,892
8:45 AM	0	6	3	0	0	79	2	8	0	0	134	53	0	2	164	4	455	1,804
Count Total	0	78	39	5	0	939	41	23	0	13	964	456	0	19	1,268	51	3,896	0
Peak Hour All	0	46	23	5	0	527	25	3	0	11	492	256	0	9	667	28	2,092	0
Peak Hour HV	0	3	1	0	0	10	2	0	0	1	74	17	0	0	115	3	226	0
Peak Hour HV%	-	7%	4%	0%	-	2%	8%	0%	-	9%	15%	7%	-	0%	17%	11%	11%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	4	13	29	48	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	24	31	56	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	4	20	26	51	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	3	35	32	71	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	5	28	31	65	0	1	0	0	1	0	0	0	0	0
8:15 AM	3	3	27	30	63	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	5	24	25	54	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	6	30	31	68	0	0	0	0	0	0	0	0	0	0
Count Total	9	31	201	235	476	0	1	0	0	1	0	0	0	0	0
Peak Hour	4	12	92	118	226	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Mitchell Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	San Juan Rd (SR-156) Northbound UT	LT	TH	RT	San Juan Rd (SR-156) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	**0**	**2**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**10**	**3**	**0**	**0**	**28**	**1**	**48**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**19**	**4**	**0**	**0**	**30**	**1**	**56**	0
7:30 AM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**16**	**4**	**0**	**0**	**25**	**1**	**51**	0
7:45 AM	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**29**	**6**	**0**	**0**	**32**	**0**	**71**	**226**
8:00 AM	0	0	1	0	0	5	0	0	0	1	24	3	0	3	28	0	65	243
8:15 AM	0	2	1	0	0	3	0	0	0	0	24	3	0	0	28	2	63	250
8:30 AM	0	0	0	0	0	4	1	0	0	0	21	3	0	0	24	1	54	253
8:45 AM	0	0	1	0	0	3	1	2	0	0	25	5	0	0	31	0	68	250
Count Total	0	5	4	0	0	25	4	2	0	2	168	31	0	3	226	6	476	0
Peak Hour	**0**	**3**	**1**	**0**	**0**	**10**	**2**	**0**	**0**	**1**	**74**	**17**	**0**	**0**	**115**	**3**	**226**	**0**

Two-Hour Count Summaries - Bikes

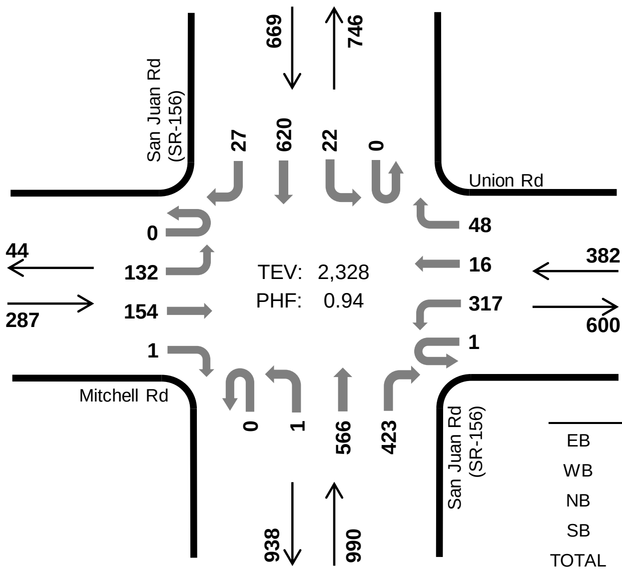
Interval Start	Mitchell Rd Eastbound LT	TH	RT	Union Rd Westbound LT	TH	RT	San Juan Rd (SR-156) Northbound LT	TH	RT	San Juan Rd (SR-156) Southbound LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:30 AM	**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**
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
8:15 AM	0	0	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	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

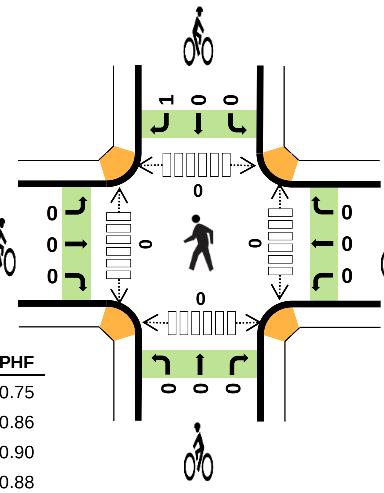
San Juan Rd (SR-156)
Mitchell Rd

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Peak Hour



	HV %:	PHF
EB	1.0%	0.75
WB	1.6%	0.86
NB	7.3%	0.90
SB	13.9%	0.88
TOTAL	7.5%	0.94



Two-Hour Count Summaries

Interval Start	Mitchell Rd Eastbound UT	LT	TH	RT	Union Rd Westbound UT	LT	TH	RT	San Juan Rd (SR-156) Northbound UT	LT	TH	RT	San Juan Rd (SR-156) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	34	22	1	0	79	6	13	0	0	140	100	0	1	146	4	546	0
4:15 PM	0	36	32	0	0	80	3	12	0	0	123	100	0	5	137	5	533	0
4:30 PM	0	24	21	1	0	98	3	25	0	0	139	99	0	2	160	2	574	0
4:45 PM	**0**	**21**	**13**	**0**	**0**	**91**	**3**	**17**	**0**	**1**	**154**	**108**	**0**	**5**	**165**	**6**	**584**	2,237
5:00 PM	**0**	**34**	**34**	**0**	**0**	**70**	**5**	**9**	**0**	**0**	**162**	**113**	**0**	**4**	**176**	**9**	**616**	2,307
5:15 PM	**0**	**34**	**54**	**1**	**1**	**88**	**3**	**8**	**0**	**0**	**114**	**80**	**0**	**7**	**142**	**5**	**537**	2,311
5:30 PM	**0**	**43**	**53**	**0**	**0**	**68**	**5**	**14**	**0**	**0**	**136**	**122**	**0**	**6**	**137**	**7**	**591**	**2,328**
5:45 PM	0	42	53	0	0	66	2	6	0	1	132	82	0	7	123	3	517	2,261
Count Total	0	268	282	3	1	640	30	104	0	2	1,100	804	0	37	1,186	41	4,498	0
Peak Hour All	**0**	**132**	**154**	**1**	**1**	**317**	**16**	**48**	**0**	**1**	**566**	**423**	**0**	**22**	**620**	**27**	**2,328**	**0**
Peak Hour HV	**0**	**2**	**1**	**0**	**0**	**6**	**0**	**0**	**0**	**1**	**67**	**4**	**0**	**1**	**92**	**0**	**174**	**0**
Peak Hour HV%	**-**	**2%**	**1%**	**0%**	**0%**	**2%**	**0%**	**0%**	**-**	**100%**	**12%**	**1%**	**-**	**5%**	**15%**	**0%**	**7%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	2	5	22	26	*55*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	5	18	37	*62*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	1	20	37	*61*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**2**	**1**	**19**	**32**	***54***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**2**	**20**	**21**	***44***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**2**	**17**	**21**	***40***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**1**	**16**	**19**	***36***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	1	1	18	21	*41*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	11	18	150	214	*393*	0	0	0	1	*1*	0	0	0	0	*0*
Peak Hour	**3**	**6**	**72**	**93**	***174***	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Mitchell Rd Eastbound				Union Rd Westbound				San Juan Rd (SR-156) Northbound				San Juan Rd (SR-156) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	1	0	2	0	3	0	0	21	1	0	0	25	1	55	0
4:15 PM	0	2	0	0	0	4	0	1	0	0	16	2	0	0	36	1	62	0
4:30 PM	0	2	1	0	0	1	0	0	0	0	18	2	0	0	37	0	61	0
4:45 PM	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**17**	**1**	**0**	**0**	**32**	**0**	**54**	232
5:00 PM	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**21**	**0**	**44**	221
5:15 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**15**	**2**	**0**	**0**	**21**	**0**	**40**	199
5:30 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**15**	**1**	**0**	**1**	**18**	**0**	**36**	**174**
5:45 PM	0	0	1	0	0	1	0	0	0	0	16	2	0	0	21	0	41	161
Count Total	0	7	3	1	0	14	0	4	0	1	138	11	0	1	211	2	393	0
Peak Hour	**0**	**2**	**1**	**0**	**0**	**6**	**0**	**0**	**0**	**1**	**67**	**4**	**0**	**1**	**92**	**0**	**174**	**0**

Two-Hour Count Summaries - Bikes

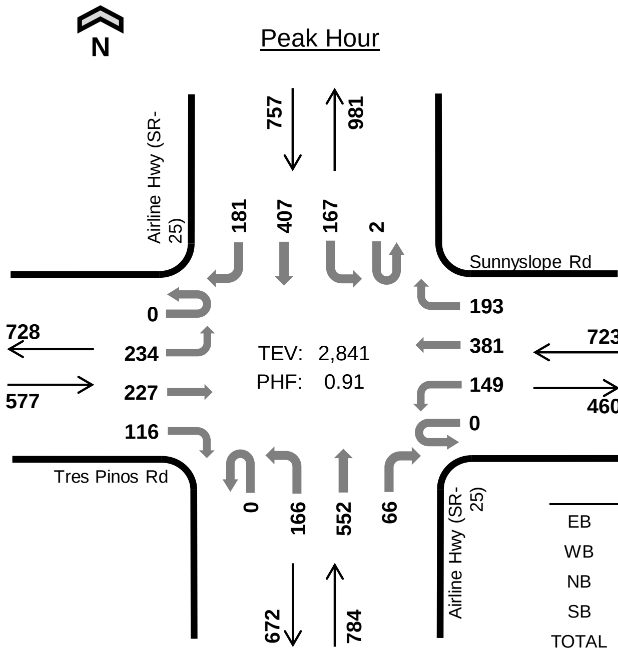
Interval Start	Mitchell Rd Eastbound			Union Rd Westbound			San Juan Rd (SR-156) Northbound			San Juan Rd (SR-156) Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:15 PM	**0**	**0**	**0**	**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**	**1**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

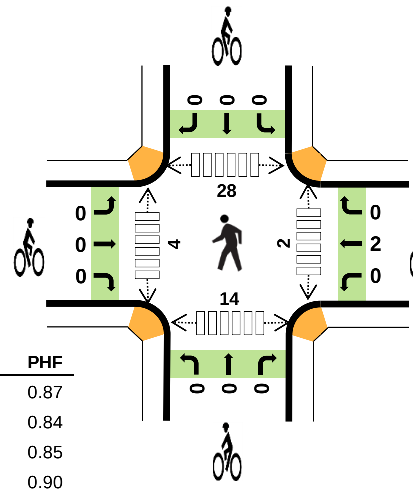
Airline Hwy (SR-25)
Tres Pinos Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

Peak Hour



	HV %:	PHF
EB	1.4%	0.87
WB	0.7%	0.84
NB	1.7%	0.85
SB	3.3%	0.90
TOTAL	1.8%	0.91



Two-Hour Count Summaries

Interval Start	Tres Pinos Rd Eastbound UT	LT	TH	RT	Sunnyslope Rd Westbound UT	LT	TH	RT	Airline Hwy (SR-25) Northbound UT	LT	TH	RT	Airline Hwy (SR-25) Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	26	21	19	0	27	74	27	0	21	89	7	0	13	50	16	390	0
7:15 AM	0	39	45	18	0	22	136	41	0	24	87	12	0	14	63	26	527	0
7:30 AM	0	62	68	32	0	25	55	49	0	27	108	16	0	40	85	12	579	0
7:45 AM	**0**	**47**	**54**	**30**	**0**	**28**	**56**	**57**	**0**	**46**	**164**	**21**	**0**	**44**	**94**	**36**	**677**	2,173
8:00 AM	**0**	**61**	**56**	**27**	**0**	**46**	**92**	**57**	**0**	**34**	**115**	**11**	**0**	**43**	**76**	**43**	**661**	2,444
8:15 AM	**0**	**58**	**56**	**23**	**0**	**36**	**132**	**48**	**0**	**55**	**140**	**18**	**2**	**39**	**116**	**54**	**777**	2,694
8:30 AM	**0**	**68**	**61**	**36**	**0**	**39**	**101**	**31**	**0**	**31**	**133**	**16**	**0**	**41**	**121**	**48**	**726**	**2,841**
8:45 AM	0	55	38	46	0	29	57	25	0	26	94	16	1	24	83	22	516	2,680
Count Total	0	416	399	231	0	252	703	335	0	264	930	117	3	258	688	257	4,853	0
Peak Hour All	**0**	**234**	**227**	**116**	**0**	**149**	**381**	**193**	**0**	**166**	**552**	**66**	**2**	**167**	**407**	**181**	**2,841**	**0**
Peak Hour HV	**0**	**6**	**0**	**2**	**0**	**1**	**2**	**2**	**0**	**2**	**11**	**0**	**0**	**1**	**11**	**13**	**51**	**0**
Peak Hour HV%	**-**	**3%**	**0%**	**2%**	**-**	**1%**	**1%**	**1%**	**-**	**1%**	**2%**	**0%**	**0%**	**1%**	**3%**	**7%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	1	0	7	7	*15*	0	0	0	0	*0*	0	0	2	4	*6*
7:15 AM	0	1	1	8	*10*	0	0	0	0	*0*	1	0	4	6	*11*
7:30 AM	1	5	1	5	*12*	0	0	0	0	*0*	0	1	1	1	*3*
7:45 AM	**2**	**1**	**2**	**8**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**3**	**0**	*4*
8:00 AM	**3**	**1**	**2**	**3**	***9***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**10**	**5**	*16*
8:15 AM	**2**	**2**	**4**	**8**	***16***	**0**	**1**	**0**	**0**	***1***	**0**	**3**	**14**	**9**	*26*
8:30 AM	**1**	**1**	**5**	**6**	***13***	**0**	**1**	**0**	**0**	***1***	**0**	**1**	**1**	**0**	*2*
8:45 AM	1	0	2	4	*7*	0	0	0	0	*0*	2	2	4	1	*9*
Count Total	11	11	24	49	*95*	0	2	0	0	*2*	5	7	39	26	*77*
Peak Hour	**8**	**5**	**13**	**25**	***51***	**0**	**2**	**0**	**0**	***2***	**2**	**4**	**28**	**14**	***48***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Tres Pinos Rd				Sunnyslope Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	0	0	0	0	0	0	1	5	1	0	0	6	1	15	0
7:15 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	1	4	3	10	0
7:30 AM	0	0	0	1	0	1	3	1	0	0	1	0	0	0	2	3	12	0
7:45 AM	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**5**	**3**	**13**	50
8:00 AM	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**9**	44
8:15 AM	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**1**	**3**	**0**	**0**	**0**	**4**	**4**	**16**	50
8:30 AM	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**1**	**1**	**4**	**13**	**51**
8:45 AM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	1	7	45
Count Total	0	7	1	3	0	2	6	3	0	3	20	1	0	2	26	21	95	0
Peak Hour	**0**	**6**	**0**	**2**	**0**	**1**	**2**	**2**	**0**	**2**	**11**	**0**	**0**	**1**	**11**	**13**	**51**	**0**

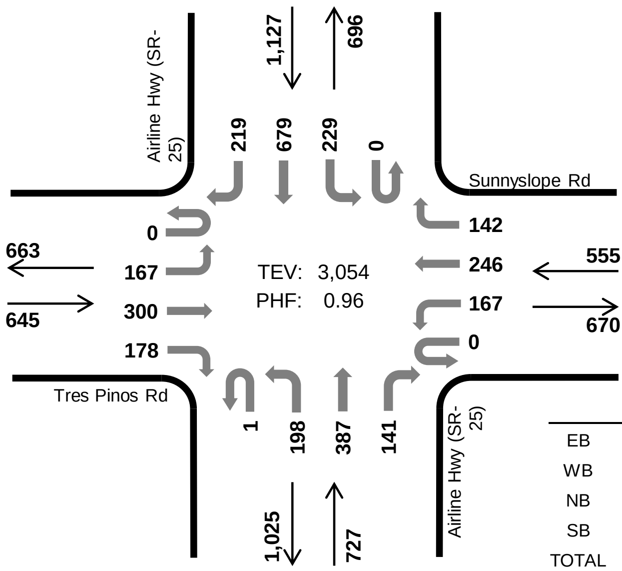
Two-Hour Count Summaries - Bikes

Interval Start	Tres Pinos Rd			Sunnyslope Rd			Airline Hwy (SR-25)			Airline Hwy (SR-25)			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	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
7:30 AM	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
8:00 AM	**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**	**1**	1
8:30 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	2	0	0	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**

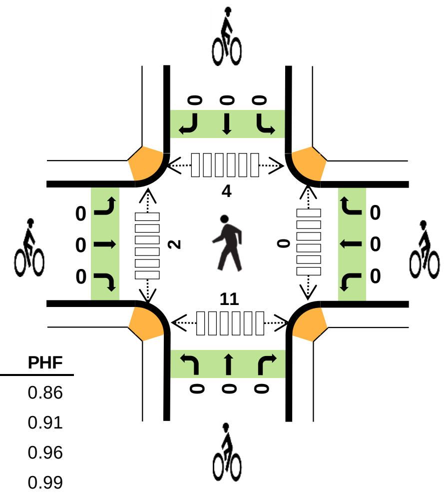
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Airline Hwy (SR-25)
Tres Pinos Rd

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.6%	0.86
WB	0.5%	0.91
NB	0.6%	0.96
SB	0.4%	0.99
TOTAL	0.5%	0.96



Two-Hour Count Summaries

Interval Start	Tres Pinos Rd				Sunnyslope Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	56	77	45	0	28	65	21	0	38	129	26	0	48	179	47	759	0
4:15 PM	0	38	57	40	0	40	70	32	0	59	98	37	0	47	176	43	737	0
4:30 PM	0	29	77	47	0	38	51	34	0	38	105	37	0	55	168	46	725	0
4:45 PM	**0**	**33**	**75**	**48**	**0**	**50**	**65**	**37**	**0**	**52**	**101**	**37**	**0**	**57**	**177**	**52**	**784**	3,005
5:00 PM	**0**	**50**	**85**	**52**	**0**	**40**	**65**	**41**	**0**	**56**	**85**	**44**	**0**	**58**	**168**	**51**	**795**	3,041
5:15 PM	**0**	**43**	**68**	**38**	**0**	**30**	**53**	**30**	**1**	**47**	**104**	**28**	**0**	**58**	**154**	**66**	**720**	3,024
5:30 PM	**0**	**41**	**72**	**40**	**0**	**47**	**63**	**34**	**0**	**43**	**97**	**32**	**0**	**56**	**180**	**50**	**755**	**3,054**
5:45 PM	0	48	82	36	0	37	83	51	0	44	90	24	0	59	158	65	777	3,047
Count Total	0	338	593	346	0	310	515	280	1	377	809	265	0	438	1,360	420	6,052	0
Peak Hour All	**0**	**167**	**300**	**178**	**0**	**167**	**246**	**142**	**1**	**198**	**387**	**141**	**0**	**229**	**679**	**219**	**3,054**	**0**
Peak Hour HV	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**2**	**2**	**0**	**3**	**0**	**2**	**16**	**0**
Peak Hour HV%	**-**	**1%**	**1%**	**0%**	**-**	**0%**	**1%**	**1%**	**0%**	**0%**	**1%**	**1%**	**-**	**1%**	**0%**	**1%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	4	0	*6*	0	0	0	0	*0*	1	0	3	6	*10*
4:15 PM	3	2	1	4	*10*	0	0	0	0	*0*	2	0	1	2	*5*
4:30 PM	1	0	2	0	*3*	0	0	0	0	*0*	0	0	4	5	*9*
4:45 PM	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**2**	*3*
5:00 PM	**0**	**1**	**2**	**2**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**1**	*2*
5:15 PM	**0**	**1**	**2**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**6**	*7*
5:30 PM	**2**	**1**	**0**	**2**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**3**	**2**	*5*
5:45 PM	0	0	1	0	*1*	0	0	0	0	*0*	2	0	2	5	*9*
Count Total	9	6	12	9	*36*	0	0	0	0	*0*	5	2	14	29	*50*
Peak Hour	**4**	**3**	**4**	**5**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**4**	**11**	***17***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Tres Pinos Rd				Sunnyslope Rd				Airline Hwy (SR-25)				Airline Hwy (SR-25)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	1	0	0	0	3	1	0	0	0	0	6	0
4:15 PM	0	2	1	0	0	0	2	0	0	0	1	0	0	0	4	0	10	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	3	0
4:45 PM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	21
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**1**	**5**	20
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**4**	14
5:30 PM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**5**	**16**
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	15
Count Total	0	5	3	1	0	0	5	1	0	0	8	4	0	3	4	2	36	0
Peak Hour	**0**	**2**	**2**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**2**	**2**	**0**	**3**	**0**	**2**	**16**	**0**

Two-Hour Count Summaries - Bikes

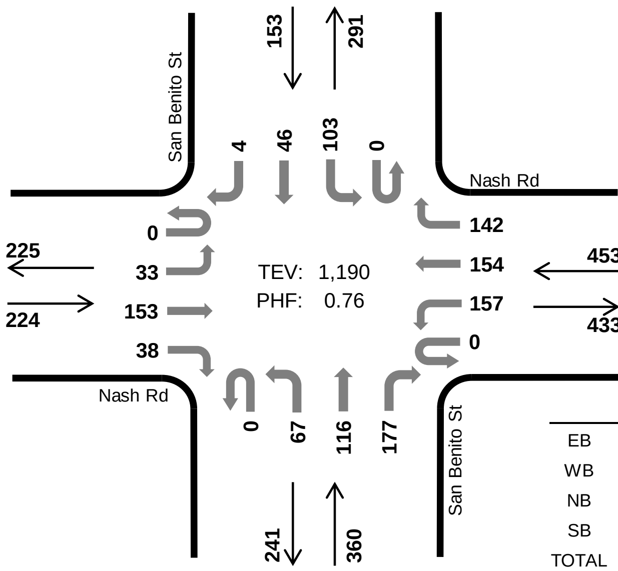
Interval Start	Tres Pinos Rd			Sunnyslope Rd			Airline Hwy (SR-25)			Airline Hwy (SR-25)			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	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
5:00 PM	**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
5:30 PM	**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
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

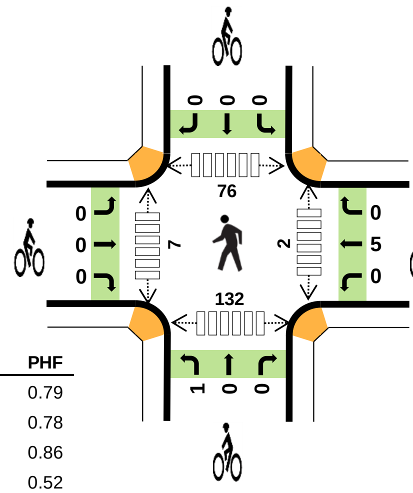
San Benito St
Nash Rd

Date: 09-25-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM

Peak Hour



	HV %:	PHF
EB	1.3%	0.79
WB	0.7%	0.78
NB	1.4%	0.86
SB	0.0%	0.52
TOTAL	0.9%	0.76



Two-Hour Count Summaries

Interval Start	Nash Rd Eastbound UT	LT	TH	RT	Nash Rd Westbound UT	LT	TH	RT	San Benito St Northbound UT	LT	TH	RT	San Benito St Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	15	8	0	34	33	20	0	7	16	22	0	7	2	1	165	0
7:15 AM	0	9	32	11	0	62	70	44	0	25	24	17	0	35	16	1	346	0
7:30 AM	0	20	35	17	0	40	43	31	0	17	33	38	0	41	26	1	342	0
7:45 AM	0	1	33	2	0	24	25	25	0	12	22	38	0	15	8	0	205	1,058
8:00 AM	**0**	**0**	**28**	**4**	**0**	**23**	**32**	**23**	**0**	**18**	**26**	**50**	**0**	**8**	**5**	**0**	**217**	1,110
8:15 AM	**0**	**7**	**37**	**15**	**0**	**58**	**46**	**42**	**0**	**21**	**33**	**49**	**0**	**25**	**12**	**0**	**345**	1,109
8:30 AM	**0**	**15**	**47**	**9**	**0**	**44**	**58**	**42**	**0**	**22**	**36**	**47**	**0**	**46**	**25**	**3**	**394**	1,161
8:45 AM	**0**	**11**	**41**	**10**	**0**	**32**	**18**	**35**	**0**	**6**	**21**	**31**	**0**	**24**	**4**	**1**	**234**	**1,190**
Count Total	0	63	268	76	0	317	325	262	0	128	211	292	0	201	98	7	2,248	0
Peak Hour All	**0**	**33**	**153**	**38**	**0**	**157**	**154**	**142**	**0**	**67**	**116**	**177**	**0**	**103**	**46**	**4**	**1,190**	**0**
Peak Hour HV	**0**	**0**	**2**	**1**	**0**	**2**	**0**	**1**	**0**	**1**	**1**	**3**	**0**	**0**	**0**	**0**	**11**	**0**
Peak Hour HV%	**-**	**0%**	**1%**	**3%**	**-**	**1%**	**0%**	**1%**	**-**	**1%**	**1%**	**2%**	**-**	**0%**	**0%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	1	1	0	*2*	0	0	0	0	*0*	1	1	3	6	*11*
7:15 AM	0	3	2	2	*7*	0	2	0	1	*3*	0	10	14	30	*54*
7:30 AM	0	3	2	0	*5*	0	0	1	0	*1*	0	2	12	12	*26*
7:45 AM	1	1	3	1	*6*	0	0	0	1	*1*	0	0	5	8	*13*
8:00 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**5**	**23**	*29*
8:15 AM	**2**	**0**	**3**	**0**	***5***	**0**	**4**	**0**	**0**	***4***	**0**	**1**	**40**	**40**	*81*
8:30 AM	**0**	**1**	**1**	**0**	***2***	**0**	**1**	**1**	**0**	***2***	**2**	**5**	**29**	**61**	*97*
8:45 AM	**1**	**2**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**8**	*10*
Count Total	4	11	13	3	*31*	0	7	2	2	*11*	3	20	110	188	*321*
Peak Hour	**3**	**3**	**5**	**0**	***11***	**0**	**5**	**1**	**0**	***6***	**2**	**7**	**76**	**132**	***217***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Nash Rd Eastbound				Nash Rd Westbound				San Benito St Northbound				San Benito St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0
7:15 AM	0	0	0	0	0	3	0	0	0	0	1	1	0	0	1	1	7	0
7:30 AM	0	0	0	0	0	0	2	1	0	0	1	1	0	0	0	0	5	0
7:45 AM	0	0	1	0	0	1	0	0	0	0	1	2	0	1	0	0	6	20
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	18
8:15 AM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**5**	16
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	13
8:45 AM	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**11**
Count Total	0	0	3	1	0	6	2	3	0	1	5	7	0	1	1	1	31	0
Peak Hour	**0**	**0**	**2**	**1**	**0**	**2**	**0**	**1**	**0**	**1**	**1**	**3**	**0**	**0**	**0**	**0**	**11**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Nash Rd Eastbound			Nash Rd Westbound			San Benito St Northbound			San Benito St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	2	0	0	0	0	0	1	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	5
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	5
8:15 AM	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	6
8:30 AM	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	7
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**
Count Total	0	0	0	0	7	0	1	0	1	0	1	1	11	0
Peak Hour	**0**	**0**	**0**	**0**	**5**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**6**	**0**

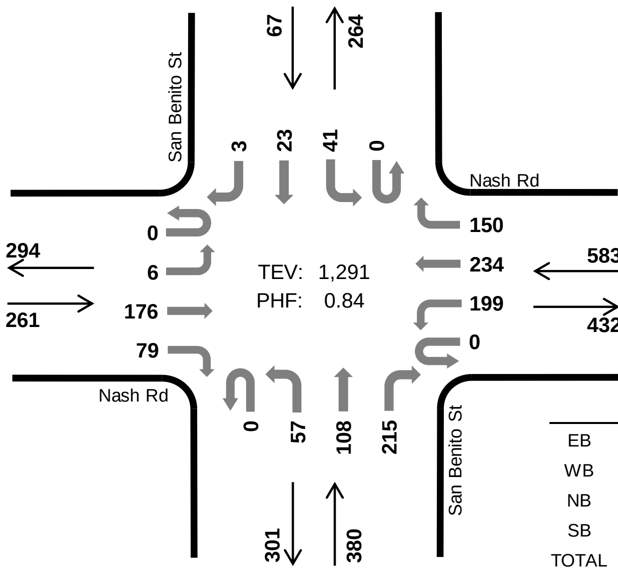
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

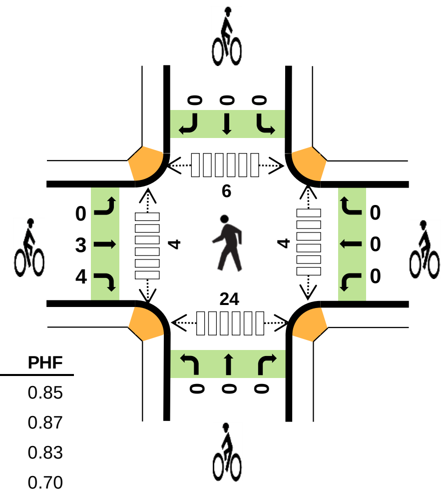
San Benito St
Nash Rd

N

Peak Hour

Date: 09-25-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	0.4%	0.85
WB	0.3%	0.87
NB	0.5%	0.83
SB	0.0%	0.70
TOTAL	0.4%	0.84

Two-Hour Count Summaries

Interval Start	Nash Rd Eastbound				Nash Rd Westbound				San Benito St Northbound				San Benito St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	8	40	10	0	42	42	41	0	7	25	48	0	10	3	1	277	0
4:15 PM	0	1	33	16	0	36	41	35	0	9	16	35	0	12	3	1	238	0
4:30 PM	0	1	33	12	0	40	39	31	0	11	23	55	0	10	2	0	257	0
4:45 PM	0	2	30	16	0	33	50	33	0	14	22	38	0	6	2	1	247	1,019
5:00 PM	**0**	**0**	**43**	**23**	**0**	**36**	**57**	**42**	**0**	**18**	**18**	**48**	**0**	**4**	**6**	**0**	**295**	1,037
5:15 PM	**0**	**0**	**42**	**13**	**0**	**55**	**50**	**47**	**0**	**13**	**20**	**53**	**0**	**15**	**7**	**1**	**316**	1,115
5:30 PM	**0**	**2**	**39**	**22**	**0**	**47**	**53**	**29**	**0**	**15**	**34**	**46**	**0**	**7**	**2**	**1**	**297**	1,155
5:45 PM	**0**	**4**	**52**	**21**	**0**	**61**	**74**	**32**	**0**	**11**	**36**	**68**	**0**	**15**	**8**	**1**	**383**	**1,291**
Count Total	0	18	312	133	0	350	406	290	0	98	194	391	0	79	33	6	2,310	0
Peak Hour All	**0**	**6**	**176**	**79**	**0**	**199**	**234**	**150**	**0**	**57**	**108**	**215**	**0**	**41**	**23**	**3**	**1,291**	**0**
Peak Hour HV	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**1%**	**-**	**1%**	**0%**	**1%**	**-**	**0%**	**0%**	**1%**	**-**	**0%**	**0%**	**0%**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	2	1	0	*3*	0	0	0	0	*0*	0	1	10	6	*17*
4:15 PM	2	2	1	0	*5*	0	0	0	0	*0*	0	1	1	7	*9*
4:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	2	2	*4*
4:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	2	2	*4*
5:00 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	*2*
5:15 PM	**0**	**1**	**0**	**0**	***1***	**2**	**0**	**0**	**0**	***2***	**4**	**1**	**2**	**10**	*17*
5:30 PM	**0**	**0**	**1**	**0**	***1***	**3**	**0**	**0**	**0**	***3***	**0**	**0**	**0**	**3**	*3*
5:45 PM	**1**	**1**	**0**	**0**	***2***	**2**	**0**	**0**	**0**	***2***	**0**	**3**	**2**	**11**	***16***
Count Total	4	7	4	0	*15*	7	0	0	0	*7*	4	6	21	41	*72*
Peak Hour	**1**	**2**	**2**	**0**	***5***	**7**	**0**	**0**	**0**	***7***	**4**	**4**	**6**	**24**	***38***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Nash Rd Eastbound UT	LT	TH	RT	Nash Rd Westbound UT	LT	TH	RT	San Benito St Northbound UT	LT	TH	RT	San Benito St Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	3	0
4:15 PM	0	0	0	2	0	1	0	1	0	0	0	1	0	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	10
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	8
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	4
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	5
5:45 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**5**
Count Total	0	0	0	4	0	4	1	2	0	0	0	4	0	0	0	0	15	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Nash Rd Eastbound LT	TH	RT	Nash Rd Westbound LT	TH	RT	San Benito St Northbound LT	TH	RT	San Benito St Southbound LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	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
4:30 PM	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
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	2
5:30 PM	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	5
5:45 PM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**7**
Count Total	0	3	4	0	0	0	0	0	0	0	0	0	7	0
Peak Hour	**0**	**3**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix C

Level of Service

Calculations

Existing

Conditions

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	106	74	7	203	87	166	74	3	46	30	84
Future Vol, veh/h	90	106	74	7	203	87	166	74	3	46	30	84
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
Heavy Vehicles, %	7	7	7	5	5	5	2	2	2	6	6	6
Mvmt Flow	100	118	82	8	226	97	184	82	3	51	33	93
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	11.7	13.8	13.8	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	96%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	4%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	166	77	90	106	74	7	203	87	46	30	84
LT Vol	166	0	90	0	0	7	0	0	46	0	0
Through Vol	0	74	0	106	0	0	203	0	0	30	0
RT Vol	0	3	0	0	74	0	0	87	0	0	84
Lane Flow Rate	184	86	100	118	82	8	226	97	51	33	93
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.388	0.167	0.213	0.235	0.148	0.016	0.444	0.171	0.114	0.069	0.176
Departure Headway (Hd)	7.568	7.041	7.679	7.172	6.463	7.595	7.089	6.358	7.995	7.491	6.785
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	478	512	468	501	555	473	510	565	449	478	528
Service Time	5.28	4.753	5.419	4.913	4.204	5.31	4.804	4.096	5.74	5.236	4.53
HCM Lane V/C Ratio	0.385	0.168	0.214	0.236	0.148	0.017	0.443	0.172	0.114	0.069	0.176
HCM Control Delay	15	11.2	12.5	12.1	10.3	10.4	15.4	10.4	11.8	10.8	11
HCM Lane LOS	B	B	B	B	B	B	C	B	B	B	B
HCM 95th-tile Q	1.8	0.6	0.8	0.9	0.5	0	2.3	0.6	0.4	0.2	0.6

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	215	15	30	400	19	45	4	35	20	3	43
Future Vol, veh/h	15	215	15	30	400	19	45	4	35	20	3	43
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	4	4	4	2	2	2	3	3	3
Mvmt Flow	16	226	16	32	421	20	47	4	37	21	3	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	441	0	0	243	0	0	778	764	227	772	760	421
Stage 1	-	-	-	-	-	-	259	259	-	485	485	-
Stage 2	-	-	-	-	-	-	519	505	-	287	275	-
Critical Hdwy	4.18	-	-	4.14	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.272	-	-	2.236	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	1088	-	-	1312	-	-	314	334	812	315	334	630
Stage 1	-	-	-	-	-	-	746	694	-	561	550	-
Stage 2	-	-	-	-	-	-	540	540	-	718	681	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1088	-	-	1311	-	-	280	321	811	289	321	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	280	321	-	289	321	-
Stage 1	-	-	-	-	-	-	734	683	-	553	537	-
Stage 2	-	-	-	-	-	-	486	527	-	671	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.5	15.8	13.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	280	321	811	1088	-	-	1311	-	-	289	321	630
HCM Lane V/C Ratio	0.169	0.013	0.045	0.015	-	-	0.024	-	-	0.073	0.01	0.072
HCM Control Delay (s)	20.5	16.4	9.7	8.4	-	-	7.8	-	-	18.4	16.3	11.2
HCM Lane LOS	C	C	A	A	-	-	A	-	-	C	C	B
HCM 95th %tile Q(veh)	0.6	0	0.1	0	-	-	0.1	-	-	0.2	0	0.2

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	62	184	12	13	142
Future Vol, veh/h	25	62	184	12	13	142
Conflicting Peds, #/hr	0	0	0	1	1	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	84	84	84	84	84	84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	30	74	219	14	15	169

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	426	227	0	0	234	0
Stage 1	227	-	-	-	-	-
Stage 2	199	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	585	812	-	-	1305	-
Stage 1	811	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	577	811	-	-	1304	-
Mov Cap-2 Maneuver	577	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	835	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	10.8		0		0.7	
HCM LOS	B					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	726	1304	-
HCM Lane V/C Ratio	-	-	0.143	0.012	-
HCM Control Delay (s)	-	-	10.8	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	144	105	13	261	186	232	260	19	79	117	114
Future Volume (veh/h)	125	144	105	13	261	186	232	260	19	79	117	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1900	1863	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	136	157	114	14	284	202	252	283	21	86	127	124
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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, %	7	7	7	2	2	2	2	2	2	4	4	4
Cap, veh/h	316	179	130	439	251	178	258	558	474	109	396	337
Arrive On Green	0.19	0.19	0.19	0.25	0.25	0.25	0.15	0.30	0.30	0.06	0.22	0.22
Sat Flow, veh/h	1691	956	694	1774	1014	721	1774	1863	1583	1740	1827	1553
Grp Volume(v), veh/h	136	0	271	14	0	486	252	283	21	86	127	124
Grp Sat Flow(s),veh/h/ln	1691	0	1651	1774	0	1735	1774	1863	1583	1740	1827	1553
Q Serve(g_s), s	6.3	0.0	14.1	0.5	0.0	21.9	12.5	11.1	0.8	4.3	5.2	6.0
Cycle Q Clear(g_c), s	6.3	0.0	14.1	0.5	0.0	21.9	12.5	11.1	0.8	4.3	5.2	6.0
Prop In Lane	1.00		0.42	1.00		0.42	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	0	309	439	0	429	258	558	474	109	396	337
V/C Ratio(X)	0.43	0.00	0.88	0.03	0.00	1.13	0.98	0.51	0.04	0.79	0.32	0.37
Avail Cap(c_a), veh/h	344	0	336	439	0	429	258	558	474	143	396	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	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	31.8	0.0	35.0	25.3	0.0	33.3	37.7	25.6	22.0	40.9	29.2	29.5
Incr Delay (d2), s/veh	0.9	0.0	21.1	0.0	0.0	84.8	48.9	3.3	0.2	18.8	2.1	3.1
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	3.0	0.0	8.2	0.3	0.0	20.5	9.6	6.2	0.4	2.7	2.8	2.9
LnGrp Delay(d),s/veh	32.8	0.0	56.1	25.3	0.0	118.1	86.6	28.9	22.2	59.8	31.3	32.6
LnGrp LOS	C		E	C		F	F	C	C	E	C	C
Approach Vol, veh/h		407			500			556			337	
Approach Delay, s/veh		48.3			115.5			54.8			39.0	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	31.0		21.1	17.4	23.7		26.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.3	24.8		18.0	12.9	19.2		21.9
Max Q Clear Time (g_c+I1), s	6.3	13.1		16.1	14.5	8.0		23.9
Green Ext Time (p_c), s	0.0	1.3		0.4	0.0	0.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	67.3
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	274	84	59	576	15	113	40	69	17	15	12
Future Volume (veh/h)	6	274	84	59	576	15	113	40	69	17	15	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	7	311	95	67	655	17	128	45	78	19	17	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	16	494	151	101	745	19	321	119	155	248	213	145
Arrive On Green	0.01	0.37	0.37	0.06	0.42	0.42	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1740	1344	411	1757	1790	46	670	356	463	477	635	433
Grp Volume(v), veh/h	7	0	406	67	0	672	251	0	0	50	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1754	1757	0	1836	1489	0	0	1545	0	0
Q Serve(g_s), s	0.2	0.0	10.7	2.1	0.0	19.0	5.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	10.7	2.1	0.0	19.0	7.4	0.0	0.0	1.1	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.03	0.51		0.31	0.38		0.28
Lane Grp Cap(c), veh/h	16	0	645	101	0	764	596	0	0	606	0	0
V/C Ratio(X)	0.44	0.00	0.63	0.66	0.00	0.88	0.42	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	157	0	800	215	0	896	596	0	0	606	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.8	0.0	14.7	26.0	0.0	15.2	14.8	0.0	0.0	12.8	0.0	0.0
Incr Delay (d2), s/veh	17.6	0.0	1.1	7.2	0.0	9.0	2.2	0.0	0.0	0.3	0.0	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	0.2	0.0	5.4	1.2	0.0	11.4	3.4	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	45.4	0.0	15.7	33.2	0.0	24.1	17.0	0.0	0.0	13.1	0.0	0.0
LnGrp LOS	D		B	C		C	B			B		
Approach Vol, veh/h		413			739			251			50	
Approach Delay, s/veh		16.2			25.0			17.0			13.1	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	7.7	25.2		23.4	5.0	28.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	6.9	25.7		18.9	5.1	27.5
Max Q Clear Time (g_c+I1), s		9.4	4.1	12.7		3.1	2.2	21.0
Green Ext Time (p_c), s		1.0	0.0	2.1		0.1	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	146	192	370	342	175	169		
Future Volume (veh/h)	146	192	370	342	175	169		
Number	7	4	8	18	1	16		
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		
Adj Sat Flow, veh/h/ln	1810	1810	1863	1863	1863	1863		
Adj Flow Rate, veh/h	166	218	420	389	199	192		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88		
Percent Heavy Veh, %	5	5	2	2	2	2		
Cap, veh/h	213	970	596	507	494	441		
Arrive On Green	0.12	0.54	0.32	0.32	0.28	0.28		
Sat Flow, veh/h	1723	1810	1863	1583	1774	1583		
Grp Volume(v), veh/h	166	218	420	389	199	192		
Grp Sat Flow(s),veh/h/ln	1723	1810	1863	1583	1774	1583		
Q Serve(g_s), s	4.5	3.1	9.6	10.7	4.4	4.8		
Cycle Q Clear(g_c), s	4.5	3.1	9.6	10.7	4.4	4.8		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	213	970	596	507	494	441		
V/C Ratio(X)	0.78	0.22	0.70	0.77	0.40	0.44		
Avail Cap(c_a), veh/h	408	1398	825	702	494	441		
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	20.6	5.9	14.5	14.9	14.2	14.4		
Incr Delay (d2), s/veh	6.1	0.1	1.6	3.4	2.4	3.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.5	1.5	5.2	5.1	2.5	4.8		
LnGrp Delay(d),s/veh	26.7	6.0	16.1	18.3	16.7	17.5		
LnGrp LOS	C	A	B	B	B	B		
Approach Vol, veh/h		384	809		391			
Approach Delay, s/veh		15.0	17.2		17.1			
Approach LOS		B	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				30.5		18.0	10.5	20.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	11.5	21.5
Max Q Clear Time (g_c+I1), s				5.1		6.8	6.5	12.7
Green Ext Time (p_c), s				1.3		0.7	0.2	2.8

Intersection Summary		
HCM 2010 Ctrl Delay		16.6
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	492	256	9	667	28	527	25	3	46	23	5
Future Volume (vph)	11	492	256	9	667	28	527	25	3	46	23	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (prot)	1612	1696	1442	1543	1614			1778	1583		1751	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (perm)	1612	1696	1442	1543	1614			1778	1583		1751	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	512	267	9	695	29	549	26	3	48	24	5
RTOR Reduction (vph)	0	0	147	0	1	0	0	0	2	0	0	5
Lane Group Flow (vph)	11	513	120	9	723	0	0	575	1	0	72	0
Heavy Vehicles (%)	12%	12%	12%	17%	17%	17%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	0.9	51.7	51.7	0.9	51.7			38.6	38.6		5.5	5.5
Effective Green, g (s)	0.9	51.7	51.7	0.9	51.7			38.6	38.6		5.5	5.5
Actuated g/C Ratio	0.01	0.45	0.45	0.01	0.45			0.34	0.34		0.05	0.05
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	12	764	649	12	727			598	532		83	73
v/s Ratio Prot	c0.01	0.30		0.01	c0.45			c0.32			c0.04	
v/s Ratio Perm			0.08						0.00			0.00
v/c Ratio	0.92	0.67	0.19	0.75	0.99			0.96	0.00		0.87	0.00
Uniform Delay, d1	56.9	24.8	18.9	56.8	31.4			37.3	25.3		54.2	52.0
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	212.2	4.7	0.6	128.3	32.0			27.3	0.0		56.5	0.0
Delay (s)	269.0	29.5	19.5	185.1	63.4			64.6	25.3		110.8	52.0
Level of Service	F	C	B	F	E			E	C		F	D
Approach Delay (s)		29.4			64.9			64.4			107.0	
Approach LOS		C			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	114.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	227	116	149	381	193	166	552	66	169	407	181
Future Volume (veh/h)	234	227	116	149	381	193	166	552	66	169	407	181
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1845	1845
Adj Flow Rate, veh/h	257	249	127	164	419	212	182	607	73	186	447	199
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	3	3	3
Cap, veh/h	307	796	477	161	802	346	277	1406	167	280	1546	619
Arrive On Green	0.09	0.23	0.23	0.09	0.23	0.23	0.08	0.31	0.31	0.08	0.31	0.31
Sat Flow, veh/h	3442	3539	1554	1774	3539	1525	3442	4607	548	3408	5036	1562
Grp Volume(v), veh/h	257	249	127	164	419	212	182	445	235	186	447	199
Grp Sat Flow(s),veh/h/ln	1721	1770	1554	1774	1770	1525	1721	1695	1765	1704	1679	1562
Q Serve(g_s), s	4.5	3.6	3.7	5.5	6.3	7.6	3.1	6.4	6.5	3.2	4.1	5.3
Cycle Q Clear(g_c), s	4.5	3.6	3.7	5.5	6.3	7.6	3.1	6.4	6.5	3.2	4.1	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	307	796	477	161	802	346	277	1034	539	280	1546	619
V/C Ratio(X)	0.84	0.31	0.27	1.02	0.52	0.61	0.66	0.43	0.44	0.66	0.29	0.32
Avail Cap(c_a), veh/h	307	1051	589	161	1057	455	284	1034	539	281	1546	619
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	27.2	19.6	15.9	27.6	20.6	21.1	27.1	16.8	16.9	27.0	16.0	12.7
Incr Delay (d2), s/veh	18.2	0.2	0.3	76.0	0.5	1.8	5.3	1.3	2.6	5.7	0.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	1.8	1.6	6.0	3.1	3.3	1.7	3.2	3.5	1.7	2.0	2.5
LnGrp Delay(d),s/veh	45.4	19.8	16.2	103.8	21.1	22.8	32.4	18.2	19.5	32.7	16.5	14.0
LnGrp LOS	D	B	B	F	C	C	C	B	B	C	B	B
Approach Vol, veh/h		633			795			862			832	
Approach Delay, s/veh		29.5			38.6			21.5			19.5	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	10.0	18.1	9.4	23.1	9.9	18.2
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	5.0	18.5	5.5	18.0	5.0	18.5	5.4	18.1
Max Q Clear Time (g_c+I1), s	5.2	8.5	7.5	5.7	5.1	7.3	6.5	9.6
Green Ext Time (p_c), s	0.0	3.1	0.0	1.6	0.0	2.8	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	153	38	157	154	142	67	116	177	103	46	4
Future Volume (veh/h)	33	153	38	157	154	142	67	116	177	103	46	4
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.73	1.00		0.89	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	43	201	50	207	203	187	88	153	233	136	61	5
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	332	82	236	286	263	113	492	416	167	500	41
Arrive On Green	0.04	0.25	0.25	0.13	0.34	0.34	0.06	0.26	0.26	0.09	0.29	0.29
Sat Flow, veh/h	1774	1332	331	1774	838	772	1774	1863	1574	1774	1697	139
Grp Volume(v), veh/h	43	0	251	207	0	390	88	153	233	136	0	66
Grp Sat Flow(s),veh/h/ln	1774	0	1664	1774	0	1611	1774	1863	1574	1774	0	1836
Q Serve(g_s), s	1.6	0.0	9.2	7.9	0.0	14.6	3.4	4.6	8.8	5.2	0.0	1.8
Cycle Q Clear(g_c), s	1.6	0.0	9.2	7.9	0.0	14.6	3.4	4.6	8.8	5.2	0.0	1.8
Prop In Lane	1.00		0.20	1.00		0.48	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	72	0	414	236	0	550	113	492	416	167	0	541
V/C Ratio(X)	0.60	0.00	0.61	0.88	0.00	0.71	0.78	0.31	0.56	0.82	0.00	0.12
Avail Cap(c_a), veh/h	131	0	433	236	0	550	159	492	416	167	0	541
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	0.00	1.00
Uniform Delay (d), s/veh	32.7	0.0	23.0	29.5	0.0	19.8	31.9	20.4	22.0	30.8	0.0	17.9
Incr Delay (d2), s/veh	7.7	0.0	2.3	29.1	0.0	4.2	14.8	1.6	5.4	26.0	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	1.0	0.0	4.5	5.8	0.0	7.0	2.1	2.6	4.4	3.7	0.0	1.0
LnGrp Delay(d),s/veh	40.3	0.0	25.3	58.5	0.0	24.1	46.7	22.0	27.3	56.8	0.0	18.3
LnGrp LOS	D		C	E		C	D	C	C	E		B
Approach Vol, veh/h		294			597			474			202	
Approach Delay, s/veh		27.5			36.0			29.2			44.2	
Approach LOS		C			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	22.8	13.7	21.7	8.9	24.9	7.3	28.1				
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	6.5	18.3	9.2	18.0	6.2	18.6	5.1	22.1				
Max Q Clear Time (g_c+I1), s	7.2	10.8	9.9	11.2	5.4	3.8	3.6	16.6				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.8	0.0	0.2	0.0	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			33.4									
HCM 2010 LOS			C									

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	188	206	4	134	51	101	30	2	76	76	80
Future Vol, veh/h	51	188	206	4	134	51	101	30	2	76	76	80
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	194	212	4	138	53	104	31	2	78	78	82
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	11.6	11.4	11.8	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	94%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	6%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	101	32	51	188	206	4	134	51	76	76	80
LT Vol	101	0	51	0	0	4	0	0	76	0	0
Through Vol	0	30	0	188	0	0	134	0	0	76	0
RT Vol	0	2	0	0	206	0	0	51	0	0	80
Lane Flow Rate	104	33	53	194	212	4	138	53	78	78	82
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.216	0.063	0.1	0.342	0.333	0.008	0.263	0.09	0.159	0.148	0.14
Departure Headway (Hd)	7.465	6.921	6.861	6.357	5.651	7.37	6.864	6.157	7.32	6.818	6.116
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	479	515	521	564	633	483	521	578	488	523	583
Service Time	5.24	4.696	4.624	4.12	3.414	5.147	4.641	3.934	5.093	4.591	3.888
HCM Lane V/C Ratio	0.217	0.064	0.102	0.344	0.335	0.008	0.265	0.092	0.16	0.149	0.141
HCM Control Delay	12.3	10.2	10.4	12.4	11.2	10.2	12.1	9.5	11.5	10.8	9.9
HCM Lane LOS	B	B	B	B	B	B	B	A	B	B	A
HCM 95th-tile Q	0.8	0.2	0.3	1.5	1.5	0	1	0.3	0.6	0.5	0.5

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	410	61	34	270	18	28	2	26	9	2	34
Future Vol, veh/h	62	410	61	34	270	18	28	2	26	9	2	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	432	64	36	284	19	29	2	27	9	2	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	303	0	0	496	0	0	947	937	432	965	982	284
Stage 1	-	-	-	-	-	-	562	562	-	356	356	-
Stage 2	-	-	-	-	-	-	385	375	-	609	626	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1258	-	-	1068	-	-	241	265	624	234	249	755
Stage 1	-	-	-	-	-	-	512	510	-	661	629	-
Stage 2	-	-	-	-	-	-	638	617	-	482	477	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1258	-	-	1068	-	-	213	243	624	208	228	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	213	243	-	208	228	-
Stage 1	-	-	-	-	-	-	485	483	-	627	608	-
Stage 2	-	-	-	-	-	-	585	596	-	435	452	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.9	18.1	13.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	213	243	624	1258	-	-	1068	-	-	208	228	755
HCM Lane V/C Ratio	0.138	0.009	0.044	0.052	-	-	0.034	-	-	0.046	0.009	0.047
HCM Control Delay (s)	24.6	19.9	11	8	-	-	8.5	-	-	23.1	20.9	10
HCM Lane LOS	C	C	B	A	-	-	A	-	-	C	C	B
HCM 95th %tile Q(veh)	0.5	0	0.1	0.2	-	-	0.1	-	-	0.1	0	0.1

Intersection						
Int Delay, s/veh	1.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	29	95	11	33	138
Future Vol, veh/h	7	29	95	11	33	138
Conflicting Peds, #/hr	1	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	91	91	91	91	91	91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	8	32	104	12	36	152

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	335	110	0	0	116	0
Stage 1	110	-	-	-	-	-
Stage 2	225	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	652	933	-	-	1466	-
Stage 1	905	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	634	933	-	-	1466	-
Mov Cap-2 Maneuver	634	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	855	1466	-
HCM Lane V/C Ratio	-	-	0.046	0.025	-
HCM Control Delay (s)	-	-	9.4	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	222	159	16	120	103	107	197	23	206	354	128
Future Volume (veh/h)	144	222	159	16	120	103	107	197	23	206	354	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	150	231	166	17	125	107	111	205	24	215	369	133
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	426	242	174	218	114	97	141	479	407	248	592	503
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.08	0.26	0.26	0.14	0.32	0.32
Sat Flow, veh/h	1774	1009	725	1774	928	794	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	150	0	397	17	0	232	111	205	24	215	369	133
Grp Sat Flow(s),veh/h/ln	1774	0	1735	1774	0	1723	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.3	0.0	16.9	0.6	0.0	9.2	4.6	6.9	0.9	8.9	12.6	4.7
Cycle Q Clear(g_c), s	5.3	0.0	16.9	0.6	0.0	9.2	4.6	6.9	0.9	8.9	12.6	4.7
Prop In Lane	1.00		0.42	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	416	218	0	211	141	479	407	248	592	503
V/C Ratio(X)	0.35	0.00	0.95	0.08	0.00	1.10	0.79	0.43	0.06	0.87	0.62	0.26
Avail Cap(c_a), veh/h	426	0	416	218	0	211	177	479	407	248	592	503
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	23.7	0.0	28.1	29.1	0.0	32.9	33.9	23.2	21.0	31.6	21.8	19.1
Incr Delay (d2), s/veh	0.5	0.0	32.3	0.2	0.0	90.6	16.5	2.8	0.3	25.8	4.9	1.3
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	2.6	0.0	11.8	0.3	0.0	9.7	2.9	3.9	0.4	6.1	7.3	2.2
LnGrp Delay(d),s/veh	24.2	0.0	60.4	29.3	0.0	123.5	50.4	26.0	21.3	57.4	26.7	20.3
LnGrp LOS	C		E	C		F	D	C	C	E	C	C
Approach Vol, veh/h		547			249			340			717	
Approach Delay, s/veh		50.5			117.0			33.6			34.7	
Approach LOS		D			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	23.8		22.5	10.5	28.3		13.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.5	19.3		18.0	7.5	22.3		9.2
Max Q Clear Time (g_c+I1), s	10.9	8.9		18.9	6.6	14.6		11.2
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	1.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.2
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	486	70	53	286	15	65	31	27	24	49	12
Future Volume (veh/h)	28	486	70	53	286	15	65	31	27	24	49	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	33	565	81	62	333	17	76	36	31	28	57	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	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	4	4	4
Cap, veh/h	63	609	87	97	705	36	333	155	108	191	355	77
Arrive On Green	0.04	0.38	0.38	0.05	0.40	0.40	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	1594	229	1774	1757	90	720	472	330	337	1079	233
Grp Volume(v), veh/h	33	0	646	62	0	350	143	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1822	1774	0	1847	1522	0	0	1650	0	0
Q Serve(g_s), s	1.1	0.0	19.5	2.0	0.0	8.1	1.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	19.5	2.0	0.0	8.1	3.6	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.05	0.53		0.22	0.28		0.14
Lane Grp Cap(c), veh/h	63	0	696	97	0	741	596	0	0	622	0	0
V/C Ratio(X)	0.52	0.00	0.93	0.64	0.00	0.47	0.24	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	170	0	713	157	0	741	596	0	0	622	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.2	0.0	17.0	26.6	0.0	12.7	14.1	0.0	0.0	13.7	0.0	0.0
Incr Delay (d2), s/veh	6.5	0.0	18.2	6.8	0.0	0.5	1.0	0.0	0.0	0.5	0.0	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	0.6	0.0	13.2	1.1	0.0	4.2	1.8	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	33.8	0.0	35.2	33.5	0.0	13.2	15.1	0.0	0.0	14.3	0.0	0.0
LnGrp LOS	C		D	C		B	B			B		
Approach Vol, veh/h		679			412			143			99	
Approach Delay, s/veh		35.1			16.2			15.1			14.3	
Approach LOS		D			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	7.6	26.5		23.4	6.5	27.6
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9	5.5	22.1
Max Q Clear Time (g_c+I1), s		5.6	4.0	21.5		4.3	3.1	10.1
Green Ext Time (p_c), s		0.6	0.0	0.4		0.4	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	258	436	201	162	147	163
Future Volume (veh/h)	258	436	201	162	147	163
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	274	464	214	172	156	173
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	352	896	333	283	553	493
Arrive On Green	0.20	0.48	0.18	0.18	0.31	0.31
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	274	464	214	172	156	173
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	6.3	7.5	4.6	4.3	2.9	3.7
Cycle Q Clear(g_c), s	6.3	7.5	4.6	4.3	2.9	3.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	352	896	333	283	553	493
V/C Ratio(X)	0.78	0.52	0.64	0.61	0.28	0.35
Avail Cap(c_a), veh/h	757	1612	623	530	553	493
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	16.5	7.8	16.5	16.4	11.3	11.5
Incr Delay (d2), s/veh	3.7	0.5	2.1	2.1	1.3	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.9	2.6	2.0	1.6	3.8
LnGrp Delay(d),s/veh	20.2	8.2	18.6	18.5	12.5	13.5
LnGrp LOS	C	A	B	B	B	B
Approach Vol, veh/h		738	386		329	
Approach Delay, s/veh		12.7	18.6		13.0	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				25.3		18.0	13.1	12.2
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	18.5	14.5
Max Q Clear Time (g_c+I1), s				9.5		5.7	8.3	6.6
Green Ext Time (p_c), s				3.1		0.7	0.6	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	566	423	22	620	27	318	16	48	132	154	1
Future Volume (vph)	1	566	423	22	620	27	318	16	48	132	154	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1687	1776	1509	1583	1656			1778	1583		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1687	1776	1509	1583	1656			1778	1583		1821	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	602	450	23	660	29	338	17	51	140	164	1
RTOR Reduction (vph)	0	0	259	0	1	0	0	0	40	0	0	1
Lane Group Flow (vph)	1	602	191	23	688	0	0	355	11	0	304	0
Heavy Vehicles (%)	7%	7%	7%	14%	14%	14%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	0.9	45.4	45.4	1.9	46.4			22.2	22.2		19.7	19.7
Effective Green, g (s)	0.9	45.4	45.4	1.9	46.4			22.2	22.2		19.7	19.7
Actuated g/C Ratio	0.01	0.42	0.42	0.02	0.43			0.21	0.21		0.18	0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	14	752	639	28	716			368	327		334	290
v/s Ratio Prot	0.00	0.34		c0.01	c0.42			c0.20			c0.17	
v/s Ratio Perm			0.13						0.01			0.00
v/c Ratio	0.07	0.80	0.30	0.82	0.96			0.96	0.03		0.91	0.00
Uniform Delay, d1	52.7	27.0	20.4	52.5	29.5			42.1	33.9		42.9	35.7
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	8.8	1.2	96.0	25.3			37.3	0.0		27.7	0.0
Delay (s)	54.9	35.7	21.6	148.4	54.8			79.4	34.0		70.6	35.7
Level of Service	D	D	C	F	D			E	C		E	D
Approach Delay (s)		29.7			57.8			73.7			70.5	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	107.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	300	178	167	246	142	199	387	141	229	679	219
Future Volume (veh/h)	167	300	178	167	246	142	199	387	141	229	679	219
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	174	312	185	174	256	148	207	403	147	239	707	228
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	273	631	418	216	782	348	307	1150	401	339	1618	628
Arrive On Green	0.08	0.18	0.18	0.12	0.22	0.22	0.09	0.31	0.31	0.10	0.32	0.32
Sat Flow, veh/h	3442	3539	1554	1774	3539	1575	3442	3724	1299	3442	5085	1580
Grp Volume(v), veh/h	174	312	185	174	256	148	207	365	185	239	707	228
Grp Sat Flow(s),veh/h/ln	1721	1770	1554	1774	1770	1575	1721	1695	1633	1721	1695	1580
Q Serve(g_s), s	3.0	4.9	6.1	5.9	3.7	5.0	3.6	5.1	5.4	4.1	6.8	6.3
Cycle Q Clear(g_c), s	3.0	4.9	6.1	5.9	3.7	5.0	3.6	5.1	5.4	4.1	6.8	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	273	631	418	216	782	348	307	1047	504	339	1618	628
V/C Ratio(X)	0.64	0.49	0.44	0.80	0.33	0.43	0.67	0.35	0.37	0.70	0.44	0.36
Avail Cap(c_a), veh/h	419	1035	596	245	1093	486	363	1047	504	363	1618	628
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	27.5	22.8	18.7	26.3	20.1	20.6	27.2	16.5	16.6	26.9	16.6	13.1
Incr Delay (d2), s/veh	2.5	0.6	0.7	15.8	0.2	0.8	3.9	0.9	2.1	5.6	0.9	1.6
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	1.5	2.4	2.7	3.8	1.8	2.2	1.9	2.5	2.7	2.2	3.3	3.0
LnGrp Delay(d),s/veh	29.9	23.4	19.5	42.2	20.4	21.4	31.0	17.4	18.6	32.5	17.5	14.7
LnGrp LOS	C	C	B	D	C	C	C	B	B	C	B	B
Approach Vol, veh/h		671			578			757			1174	
Approach Delay, s/veh		24.0			27.2			21.4			20.0	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	23.5	12.0	15.5	10.0	24.1	9.4	18.1
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	6.5	19.0	8.5	18.0	6.5	19.0	7.5	19.0
Max Q Clear Time (g_c+I1), s	6.1	7.4	7.9	8.1	5.6	8.8	5.0	7.0
Green Ext Time (p_c), s	0.0	2.8	0.0	1.9	0.1	4.1	0.1	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	176	79	199	234	150	57	108	215	41	23	3
Future Volume (veh/h)	6	176	79	199	234	150	57	108	215	41	23	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	7	210	94	237	279	179	68	129	256	49	27	4
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	16	269	120	281	396	254	97	548	463	80	452	67
Arrive On Green	0.01	0.22	0.22	0.16	0.37	0.37	0.05	0.29	0.29	0.05	0.29	0.29
Sat Flow, veh/h	1774	1197	536	1774	1058	679	1774	1863	1573	1774	1585	235
Grp Volume(v), veh/h	7	0	304	237	0	458	68	129	256	49	0	31
Grp Sat Flow(s),veh/h/ln	1774	0	1733	1774	0	1738	1774	1863	1573	1774	0	1819
Q Serve(g_s), s	0.3	0.0	10.7	8.4	0.0	14.5	2.4	3.4	8.9	1.8	0.0	0.8
Cycle Q Clear(g_c), s	0.3	0.0	10.7	8.4	0.0	14.5	2.4	3.4	8.9	1.8	0.0	0.8
Prop In Lane	1.00		0.31	1.00		0.39	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	16	0	389	281	0	650	97	548	463	80	0	519
V/C Ratio(X)	0.43	0.00	0.78	0.84	0.00	0.71	0.70	0.24	0.55	0.61	0.00	0.06
Avail Cap(c_a), veh/h	137	0	481	287	0	650	137	548	463	137	0	519
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	0.00	1.00
Uniform Delay (d), s/veh	32.0	0.0	23.7	26.5	0.0	17.3	30.2	17.4	19.3	30.4	0.0	16.9
Incr Delay (d2), s/veh	17.1	0.0	6.6	19.6	0.0	3.5	9.0	1.0	4.7	7.3	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	0.2	0.0	5.8	5.6	0.0	7.5	1.4	1.9	4.4	1.0	0.0	0.4
LnGrp Delay(d),s/veh	49.1	0.0	30.2	46.1	0.0	20.7	39.1	18.4	24.0	37.7	0.0	17.1
LnGrp LOS	D		C	D		C	D	B	C	D		B
Approach Vol, veh/h		311			695			453			80	
Approach Delay, s/veh		30.6			29.4			24.7			29.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	23.6	14.8	19.1	8.0	23.0	5.1	28.8
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	5.0	18.5	10.5	18.0	5.0	18.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	3.8	10.9	10.4	12.7	4.4	2.8	2.3	16.5
Green Ext Time (p_c), s	0.0	1.0	0.0	0.8	0.0	0.1	0.0	1.7

Intersection Summary		
HCM 2010 Ctrl Delay		28.3
HCM 2010 LOS		C

Appendix D

Level of Service

Calculations

Existing Plus Project

Conditions

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	96	109	74	7	204	87	166	74	3	46	30	86
Future Vol, veh/h	96	109	74	7	204	87	166	74	3	46	30	86
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
Heavy Vehicles, %	7	7	7	5	5	5	2	2	2	6	6	6
Mvmt Flow	107	121	82	8	227	97	184	82	3	51	33	96
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	11.9	13.9	13.9	11.3
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	96%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	4%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	166	77	96	109	74	7	204	87	46	30	86
LT Vol	166	0	96	0	0	7	0	0	46	0	0
Through Vol	0	74	0	109	0	0	204	0	0	30	0
RT Vol	0	3	0	0	74	0	0	87	0	0	86
Lane Flow Rate	184	86	107	121	82	8	227	97	51	33	96
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.389	0.169	0.228	0.242	0.148	0.016	0.448	0.172	0.114	0.07	0.181
Departure Headway (Hd)	7.594	7.098	7.705	7.199	6.49	7.622	7.115	6.407	8.046	7.542	6.836
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	474	508	466	499	553	470	508	561	446	475	525
Service Time	5.325	4.798	5.441	4.934	4.225	5.354	4.847	4.139	5.785	5.281	4.575
HCM Lane V/C Ratio	0.388	0.169	0.23	0.242	0.148	0.017	0.447	0.173	0.114	0.069	0.183
HCM Control Delay	15.1	11.2	12.7	12.2	10.4	10.5	15.5	10.5	11.8	10.9	11.1
HCM Lane LOS	C	B	B	B	B	B	C	B	B	B	B
HCM 95th-tile Q	1.8	0.6	0.9	0.9	0.5	0	2.3	0.6	0.4	0.2	0.7

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	215	15	33	400	19	45	4	44	20	3	43
Future Vol, veh/h	15	215	15	33	400	19	45	4	44	20	3	43
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	4	4	4	2	2	2	3	3	3
Mvmt Flow	16	226	16	35	421	20	47	4	46	21	3	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	441	0	0	243	0	0	784	770	227	782	766	421
Stage 1	-	-	-	-	-	-	259	259	-	491	491	-
Stage 2	-	-	-	-	-	-	525	511	-	291	275	-
Critical Hdwy	4.18	-	-	4.14	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.272	-	-	2.236	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	1088	-	-	1312	-	-	311	331	812	310	332	630
Stage 1	-	-	-	-	-	-	746	694	-	557	546	-
Stage 2	-	-	-	-	-	-	536	537	-	715	681	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1088	-	-	1311	-	-	277	317	811	280	318	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	277	317	-	280	318	-
Stage 1	-	-	-	-	-	-	734	683	-	549	531	-
Stage 2	-	-	-	-	-	-	481	523	-	660	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.6	15.3	13.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	277	317	811	1088	-	-	1311	-	-	280	318	630
HCM Lane V/C Ratio	0.171	0.013	0.057	0.015	-	-	0.026	-	-	0.075	0.01	0.072
HCM Control Delay (s)	20.7	16.5	9.7	8.4	-	-	7.8	-	-	18.9	16.4	11.2
HCM Lane LOS	C	C	A	A	-	-	A	-	-	C	C	B
HCM 95th %tile Q(veh)	0.6	0	0.2	0	-	-	0.1	-	-	0.2	0	0.2

Intersection						
Int Delay, s/veh	4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	132	184	13	37	142
Future Vol, veh/h	28	132	184	13	37	142
Conflicting Peds, #/hr	0	0	0	1	1	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	84	84	84	84	84	84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	33	157	219	15	44	169

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	485	228	0	0	235	0
Stage 1	228	-	-	-	-	-
Stage 2	257	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	541	811	-	-	1303	-
Stage 1	810	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	520	810	-	-	1302	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	786	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	738	1302	-
HCM Lane V/C Ratio	-	-	0.258	0.034	-
HCM Control Delay (s)	-	-	11.6	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	147	105	13	262	186	232	260	19	79	117	123
Future Volume (veh/h)	151	147	105	13	262	186	232	260	19	79	117	123
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1900	1863	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	164	160	114	14	285	202	252	283	21	86	127	134
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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, %	7	7	7	2	2	2	2	2	2	4	4	4
Cap, veh/h	319	182	130	438	251	178	258	557	473	109	395	336
Arrive On Green	0.19	0.19	0.19	0.25	0.25	0.25	0.15	0.30	0.30	0.06	0.22	0.22
Sat Flow, veh/h	1691	965	687	1774	1016	720	1774	1863	1583	1740	1827	1553
Grp Volume(v), veh/h	164	0	274	14	0	487	252	283	21	86	127	134
Grp Sat Flow(s),veh/h/ln	1691	0	1652	1774	0	1736	1774	1863	1583	1740	1827	1553
Q Serve(g_s), s	7.7	0.0	14.3	0.5	0.0	21.9	12.6	11.1	0.8	4.3	5.2	6.6
Cycle Q Clear(g_c), s	7.7	0.0	14.3	0.5	0.0	21.9	12.6	11.1	0.8	4.3	5.2	6.6
Prop In Lane	1.00		0.42	1.00		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	319	0	311	438	0	428	258	557	473	109	395	336
V/C Ratio(X)	0.51	0.00	0.88	0.03	0.00	1.14	0.98	0.51	0.04	0.79	0.32	0.40
Avail Cap(c_a), veh/h	343	0	335	438	0	428	258	557	473	143	395	336
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	32.4	0.0	35.0	25.4	0.0	33.4	37.8	25.7	22.1	41.0	29.3	29.8
Incr Delay (d2), s/veh	1.3	0.0	21.6	0.0	0.0	86.4	49.5	3.3	0.2	18.9	2.1	3.5
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	3.7	0.0	8.4	0.3	0.0	20.6	9.6	6.2	0.4	2.7	2.8	3.2
LnGrp Delay(d),s/veh	33.6	0.0	56.6	25.4	0.0	119.8	87.2	29.0	22.3	59.9	31.4	33.3
LnGrp LOS	C		E	C		F	F	C	C	E	C	C
Approach Vol, veh/h		438			501			556			347	
Approach Delay, s/veh		48.0			117.2			55.1			39.2	
Approach LOS		D			F			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	31.0		21.2	17.4	23.7		26.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.3	24.8		18.0	12.9	19.2		21.9
Max Q Clear Time (g_c+I1), s	6.3	13.1		16.3	14.6	8.6		23.9
Green Ext Time (p_c), s	0.0	1.3		0.4	0.0	0.8		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		67.3
HCM 2010 LOS		E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	274	95	69	576	15	143	51	98	17	18	12
Future Volume (veh/h)	6	274	95	69	576	15	143	51	98	17	18	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	7	311	108	78	655	17	162	58	111	19	20	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	16	470	163	110	745	19	310	118	168	230	229	134
Arrive On Green	0.01	0.36	0.36	0.06	0.42	0.42	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1740	1297	450	1757	1790	46	640	351	500	428	684	399
Grp Volume(v), veh/h	7	0	419	78	0	672	331	0	0	53	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1747	1757	0	1836	1491	0	0	1511	0	0
Q Serve(g_s), s	0.2	0.0	11.3	2.5	0.0	19.0	8.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	11.3	2.5	0.0	19.0	10.5	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.03	0.49		0.34	0.36		0.26
Lane Grp Cap(c), veh/h	16	0	634	110	0	764	595	0	0	593	0	0
V/C Ratio(X)	0.44	0.00	0.66	0.71	0.00	0.88	0.56	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	157	0	797	215	0	896	595	0	0	593	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.8	0.0	15.1	25.9	0.0	15.2	15.8	0.0	0.0	12.9	0.0	0.0
Incr Delay (d2), s/veh	17.6	0.0	1.4	8.1	0.0	9.0	3.7	0.0	0.0	0.3	0.0	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	0.2	0.0	5.7	1.4	0.0	11.4	4.9	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	45.4	0.0	16.5	34.1	0.0	24.1	19.6	0.0	0.0	13.2	0.0	0.0
LnGrp LOS	D		B	C		C	B			B		
Approach Vol, veh/h		426			750			331			53	
Approach Delay, s/veh		16.9			25.2			19.6			13.2	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	8.0	24.9		23.4	5.0	28.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	6.9	25.7		18.9	5.1	27.5
Max Q Clear Time (g_c+I1), s		12.5	4.5	13.3		3.2	2.2	21.0
Green Ext Time (p_c), s		1.1	0.0	2.1		0.2	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	146	198	386	356	180	169
Future Volume (veh/h)	146	198	386	356	180	169
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1810	1810	1863	1863	1863	1863
Adj Flow Rate, veh/h	166	225	439	405	205	192
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	5	5	2	2	2	2
Cap, veh/h	213	983	611	520	486	434
Arrive On Green	0.12	0.54	0.33	0.33	0.27	0.27
Sat Flow, veh/h	1723	1810	1863	1583	1774	1583
Grp Volume(v), veh/h	166	225	439	405	205	192
Grp Sat Flow(s),veh/h/ln	1723	1810	1863	1583	1774	1583
Q Serve(g_s), s	4.6	3.2	10.2	11.4	4.7	4.9
Cycle Q Clear(g_c), s	4.6	3.2	10.2	11.4	4.7	4.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	213	983	611	520	486	434
V/C Ratio(X)	0.78	0.23	0.72	0.78	0.42	0.44
Avail Cap(c_a), veh/h	403	1378	813	691	486	434
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	20.9	5.9	14.5	14.9	14.7	14.8
Incr Delay (d2), s/veh	6.1	0.1	2.1	4.1	2.7	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	1.6	5.5	5.5	2.6	4.9
LnGrp Delay(d),s/veh	27.0	6.0	16.6	19.1	17.3	18.0
LnGrp LOS	C	A	B	B	B	B
Approach Vol, veh/h		391	844		397	
Approach Delay, s/veh		14.9	17.8		17.7	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				31.2		18.0	10.6	20.7
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	11.5	21.5
Max Q Clear Time (g_c+I1), s				5.2		6.9	6.6	13.4
Green Ext Time (p_c), s				1.4		0.7	0.2	2.8

Intersection Summary			
HCM 2010 Ctrl Delay			17.1
HCM 2010 LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	492	262	9	667	28	543	25	3	46	23	5
Future Volume (vph)	11	492	262	9	667	28	543	25	3	46	23	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (prot)	1612	1696	1442	1543	1614			1778	1583		1751	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (perm)	1612	1696	1442	1543	1614			1778	1583		1751	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	512	273	9	695	29	566	26	3	48	24	5
RTOR Reduction (vph)	0	0	150	0	1	0	0	0	2	0	0	5
Lane Group Flow (vph)	11	513	123	9	723	0	0	592	1	0	72	0
Heavy Vehicles (%)	12%	12%	12%	17%	17%	17%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	0.9	51.7	51.7	0.9	51.7			38.6	38.6		5.5	5.5
Effective Green, g (s)	0.9	51.7	51.7	0.9	51.7			38.6	38.6		5.5	5.5
Actuated g/C Ratio	0.01	0.45	0.45	0.01	0.45			0.34	0.34		0.05	0.05
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	12	764	649	12	727			598	532		83	73
v/s Ratio Prot	c0.01	0.30		0.01	c0.45			c0.33			c0.04	
v/s Ratio Perm			0.09						0.00			0.00
v/c Ratio	0.92	0.67	0.19	0.75	0.99			0.99	0.00		0.87	0.00
Uniform Delay, d1	56.9	24.8	18.9	56.8	31.4			37.9	25.3		54.2	52.0
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	212.2	4.7	0.6	128.3	32.0			33.8	0.0		56.5	0.0
Delay (s)	269.0	29.5	19.6	185.1	63.4			71.7	25.3		110.8	52.0
Level of Service	F	C	B	F	E			E	C		F	D
Approach Delay (s)		29.4			64.9			71.5			107.0	
Approach LOS		C			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	55.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	114.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	227	116	149	381	193	166	576	66	169	415	181
Future Volume (veh/h)	234	227	116	149	381	193	166	576	66	169	415	181
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1845	1845
Adj Flow Rate, veh/h	257	249	127	164	419	212	182	633	73	186	456	199
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	3	3	3
Cap, veh/h	307	796	477	161	802	346	277	1413	161	280	1546	619
Arrive On Green	0.09	0.23	0.23	0.09	0.23	0.23	0.08	0.31	0.31	0.08	0.31	0.31
Sat Flow, veh/h	3442	3539	1554	1774	3539	1525	3442	4630	529	3408	5036	1562
Grp Volume(v), veh/h	257	249	127	164	419	212	182	462	244	186	456	199
Grp Sat Flow(s),veh/h/ln	1721	1770	1554	1774	1770	1525	1721	1695	1768	1704	1679	1562
Q Serve(g_s), s	4.5	3.6	3.7	5.5	6.3	7.6	3.1	6.6	6.7	3.2	4.2	5.3
Cycle Q Clear(g_c), s	4.5	3.6	3.7	5.5	6.3	7.6	3.1	6.6	6.7	3.2	4.2	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	307	796	477	161	802	346	277	1034	540	280	1546	619
V/C Ratio(X)	0.84	0.31	0.27	1.02	0.52	0.61	0.66	0.45	0.45	0.66	0.29	0.32
Avail Cap(c_a), veh/h	307	1051	589	161	1057	455	284	1034	540	281	1546	619
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	27.2	19.6	15.9	27.6	20.6	21.1	27.1	16.9	17.0	27.0	16.0	12.7
Incr Delay (d2), s/veh	18.2	0.2	0.3	76.0	0.5	1.8	5.3	1.4	2.7	5.7	0.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	1.8	1.6	6.0	3.1	3.3	1.7	3.3	3.7	1.7	2.0	2.5
LnGrp Delay(d),s/veh	45.4	19.8	16.2	103.8	21.1	22.8	32.4	18.3	19.7	32.7	16.5	14.0
LnGrp LOS	D	B	B	F	C	C	C	B	B	C	B	B
Approach Vol, veh/h		633			795			888			841	
Approach Delay, s/veh		29.5			38.6			21.6			19.5	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	10.0	18.1	9.4	23.1	9.9	18.2
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	5.0	18.5	5.5	18.0	5.0	18.5	5.4	18.1
Max Q Clear Time (g_c+I1), s	5.2	8.7	7.5	5.7	5.1	7.3	6.5	9.6
Green Ext Time (p_c), s	0.0	3.2	0.0	1.6	0.0	2.9	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	153	39	157	154	142	70	127	177	103	50	4
Future Volume (veh/h)	33	153	39	157	154	142	70	127	177	103	50	4
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.73	1.00		0.89	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	43	201	51	207	203	187	92	167	233	136	66	5
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	330	84	236	286	264	118	492	416	167	498	38
Arrive On Green	0.04	0.25	0.25	0.13	0.34	0.34	0.07	0.26	0.26	0.09	0.29	0.29
Sat Flow, veh/h	1774	1325	336	1774	838	772	1774	1863	1574	1774	1709	129
Grp Volume(v), veh/h	43	0	252	207	0	390	92	167	233	136	0	71
Grp Sat Flow(s),veh/h/ln	1774	0	1661	1774	0	1611	1774	1863	1574	1774	0	1838
Q Serve(g_s), s	1.7	0.0	9.3	7.9	0.0	14.6	3.5	5.0	8.8	5.2	0.0	2.0
Cycle Q Clear(g_c), s	1.7	0.0	9.3	7.9	0.0	14.6	3.5	5.0	8.8	5.2	0.0	2.0
Prop In Lane	1.00		0.20	1.00		0.48	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	72	0	413	236	0	550	118	492	416	167	0	536
V/C Ratio(X)	0.60	0.00	0.61	0.88	0.00	0.71	0.78	0.34	0.56	0.82	0.00	0.13
Avail Cap(c_a), veh/h	131	0	432	236	0	550	159	492	416	167	0	536
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	0.00	1.00
Uniform Delay (d), s/veh	32.7	0.0	23.0	29.5	0.0	19.8	31.8	20.6	22.0	30.8	0.0	18.1
Incr Delay (d2), s/veh	7.7	0.0	2.3	29.1	0.0	4.2	15.9	1.9	5.4	26.1	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	1.0	0.0	4.5	5.8	0.0	7.0	2.3	2.8	4.4	3.7	0.0	1.1
LnGrp Delay(d),s/veh	40.3	0.0	25.3	58.6	0.0	24.0	47.7	22.4	27.4	56.8	0.0	18.6
LnGrp LOS	D		C	E		C	D	C	C	E		B
Approach Vol, veh/h		295			597			492			207	
Approach Delay, s/veh		27.5			36.0			29.5			43.7	
Approach LOS		C			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	22.8	13.7	21.7	9.1	24.7	7.3	28.1
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	6.5	18.3	9.2	18.0	6.2	18.6	5.1	22.1
Max Q Clear Time (g_c+I1), s	7.2	10.8	9.9	11.3	5.5	4.0	3.7	16.6
Green Ext Time (p_c), s	0.0	1.1	0.0	0.8	0.0	0.2	0.0	1.2

Intersection Summary		
HCM 2010 Ctrl Delay		33.4
HCM 2010 LOS		C

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	190	206	4	138	51	101	30	2	76	76	87
Future Vol, veh/h	55	190	206	4	138	51	101	30	2	76	76	87
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	57	196	212	4	142	53	104	31	2	78	78	90
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	11.8	11.5	11.9	10.8
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	94%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	6%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	101	32	55	190	206	4	138	51	76	76	87
LT Vol	101	0	55	0	0	4	0	0	76	0	0
Through Vol	0	30	0	190	0	0	138	0	0	76	0
RT Vol	0	2	0	0	206	0	0	51	0	0	87
Lane Flow Rate	104	33	57	196	212	4	142	53	78	78	90
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.217	0.064	0.109	0.348	0.336	0.008	0.273	0.091	0.16	0.149	0.153
Departure Headway (Hd)	7.519	6.975	6.904	6.399	5.694	7.416	6.911	6.203	7.359	6.858	6.155
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	475	511	518	560	629	480	518	574	485	520	579
Service Time	5.299	4.755	4.668	4.163	3.457	5.196	4.69	3.983	5.137	4.636	3.933
HCM Lane V/C Ratio	0.219	0.065	0.11	0.35	0.337	0.008	0.274	0.092	0.161	0.15	0.155
HCM Control Delay	12.4	10.2	10.5	12.6	11.3	10.3	12.3	9.6	11.5	10.8	10.1
HCM Lane LOS	B	B	B	B	B	B	B	A	B	B	B
HCM 95th-tile Q	0.8	0.2	0.4	1.5	1.5	0	1.1	0.3	0.6	0.5	0.5

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	410	61	45	270	18	28	2	32	9	2	34
Future Vol, veh/h	62	410	61	45	270	18	28	2	32	9	2	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	432	64	47	284	19	29	2	34	9	2	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	303	0	0	496	0	0	969	959	432	990	1004	284
Stage 1	-	-	-	-	-	-	562	562	-	378	378	-
Stage 2	-	-	-	-	-	-	407	397	-	612	626	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1258	-	-	1068	-	-	233	257	624	225	242	755
Stage 1	-	-	-	-	-	-	512	510	-	644	615	-
Stage 2	-	-	-	-	-	-	621	603	-	480	477	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1258	-	-	1068	-	-	205	233	624	196	219	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	205	233	-	196	219	-
Stage 1	-	-	-	-	-	-	485	483	-	611	588	-
Stage 2	-	-	-	-	-	-	564	576	-	429	452	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	1.2	17.9	13.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	205	233	624	1258	-	-	1068	-	-	196	219	755
HCM Lane V/C Ratio	0.144	0.009	0.054	0.052	-	-	0.044	-	-	0.048	0.01	0.047
HCM Control Delay (s)	25.5	20.6	11.1	8	-	-	8.5	-	-	24.3	21.6	10
HCM Lane LOS	D	C	B	A	-	-	A	-	-	C	C	B
HCM 95th %tile Q(veh)	0.5	0	0.2	0.2	-	-	0.1	-	-	0.2	0	0.1

Intersection						
Int Delay, s/veh	3.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	76	95	14	112	138
Future Vol, veh/h	9	76	95	14	112	138
Conflicting Peds, #/hr	1	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	91	91	91	91	91	91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	10	84	104	15	123	152

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	511	112	0	0	119	0
Stage 1	112	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	516	930	-	-	1463	-
Stage 1	903	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	468	930	-	-	1463	-
Mov Cap-2 Maneuver	468	-	-	-	-	-
Stage 1	820	-	-	-	-	-
Stage 2	668	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	842	1463	-
HCM Lane V/C Ratio	-	-	0.111	0.084	-
HCM Control Delay (s)	-	-	9.8	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	224	159	16	124	103	107	197	23	206	354	159
Future Volume (veh/h)	162	224	159	16	124	103	107	197	23	206	354	159
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	169	233	166	17	129	107	111	205	24	215	369	166
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	426	243	173	218	116	96	141	479	407	248	592	503
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.08	0.26	0.26	0.14	0.32	0.32
Sat Flow, veh/h	1774	1013	722	1774	943	782	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	169	0	399	17	0	236	111	205	24	215	369	166
Grp Sat Flow(s),veh/h/ln	1774	0	1735	1774	0	1725	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	6.0	0.0	17.0	0.6	0.0	9.2	4.6	6.9	0.9	8.9	12.6	6.0
Cycle Q Clear(g_c), s	6.0	0.0	17.0	0.6	0.0	9.2	4.6	6.9	0.9	8.9	12.6	6.0
Prop In Lane	1.00		0.42	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	416	218	0	212	141	479	407	248	592	503
V/C Ratio(X)	0.40	0.00	0.96	0.08	0.00	1.12	0.79	0.43	0.06	0.87	0.62	0.33
Avail Cap(c_a), veh/h	426	0	416	218	0	212	177	479	407	248	592	503
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	23.9	0.0	28.1	29.1	0.0	32.9	33.9	23.2	21.0	31.6	21.8	19.5
Incr Delay (d2), s/veh	0.6	0.0	33.3	0.2	0.0	96.3	16.5	2.8	0.3	25.8	4.9	1.8
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	3.0	0.0	11.9	0.3	0.0	10.0	2.9	3.9	0.4	6.1	7.3	2.9
LnGrp Delay(d),s/veh	24.5	0.0	61.5	29.3	0.0	129.2	50.4	26.0	21.3	57.4	26.7	21.3
LnGrp LOS	C		E	C		F	D	C	C	E	C	C
Approach Vol, veh/h		568			253			340			750	
Approach Delay, s/veh		50.5			122.5			33.6			34.3	
Approach LOS		D			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	23.8		22.5	10.5	28.3		13.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.5	19.3		18.0	7.5	22.3		9.2
Max Q Clear Time (g_c+I1), s	10.9	8.9		19.0	6.6	14.6		11.2
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	1.7		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		50.7
HCM 2010 LOS		D

Existing Plus Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	486	103	88	286	15	85	38	47	24	60	12
Future Volume (veh/h)	28	486	103	88	286	15	85	38	47	24	60	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	33	565	120	102	333	17	99	44	55	28	70	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	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	4	4	4
Cap, veh/h	63	566	120	130	734	37	304	138	135	166	374	66
Arrive On Green	0.04	0.38	0.38	0.07	0.42	0.42	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1774	1490	317	1774	1757	90	667	432	422	284	1173	208
Grp Volume(v), veh/h	33	0	685	102	0	350	198	0	0	112	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1807	1774	0	1847	1521	0	0	1664	0	0
Q Serve(g_s), s	1.1	0.0	22.4	3.3	0.0	8.1	2.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	22.4	3.3	0.0	8.1	5.6	0.0	0.0	2.7	0.0	0.0
Prop In Lane	1.00		0.18	1.00		0.05	0.50		0.28	0.25		0.12
Lane Grp Cap(c), veh/h	63	0	686	130	0	772	576	0	0	607	0	0
V/C Ratio(X)	0.53	0.00	1.00	0.78	0.00	0.45	0.34	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	165	0	686	153	0	772	576	0	0	607	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.1	0.0	18.4	27.0	0.0	12.4	15.5	0.0	0.0	14.7	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.0	33.9	19.9	0.0	0.4	1.6	0.0	0.0	0.7	0.0	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	0.6	0.0	17.5	2.4	0.0	4.2	2.7	0.0	0.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	34.8	0.0	52.3	46.8	0.0	12.8	17.2	0.0	0.0	15.3	0.0	0.0
LnGrp LOS	C		D	D		B	B			B		
Approach Vol, veh/h		718			452			198			112	
Approach Delay, s/veh		51.5			20.5			17.2			15.3	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.4	8.9	27.0		23.4	6.6	29.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9	5.5	22.1				
Max Q Clear Time (g_c+I1), s		7.6	5.3	24.4		4.7	3.1	10.1				
Green Ext Time (p_c), s		0.8	0.0	0.0		0.4	0.0	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			34.7									
HCM 2010 LOS			C									

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	258	454	212	171	162	163
Future Volume (veh/h)	258	454	212	171	162	163
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	274	483	226	182	172	173
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	351	905	344	293	547	488
Arrive On Green	0.20	0.49	0.18	0.18	0.31	0.31
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	274	483	226	182	172	173
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	6.4	7.9	4.9	4.6	3.2	3.7
Cycle Q Clear(g_c), s	6.4	7.9	4.9	4.6	3.2	3.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	351	905	344	293	547	488
V/C Ratio(X)	0.78	0.53	0.66	0.62	0.31	0.35
Avail Cap(c_a), veh/h	750	1596	617	525	547	488
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	16.6	7.8	16.5	16.4	11.6	11.7
Incr Delay (d2), s/veh	3.8	0.5	2.1	2.2	1.5	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	4.1	2.7	2.2	1.8	3.8
LnGrp Delay(d),s/veh	20.4	8.3	18.7	18.6	13.1	13.8
LnGrp LOS	C	A	B	B	B	B
Approach Vol, veh/h		757	408		345	
Approach Delay, s/veh		12.7	18.6		13.4	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				25.8		18.0	13.2	12.6
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	18.5	14.5
Max Q Clear Time (g_c+I1), s				9.9		5.7	8.4	6.9
Green Ext Time (p_c), s				3.3		0.7	0.6	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	566	441	22	620	27	329	16	48	132	154	1
Future Volume (vph)	1	566	441	22	620	27	329	16	48	132	154	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1687	1776	1509	1583	1656			1778	1583		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1687	1776	1509	1583	1656			1778	1583		1821	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	602	469	23	660	29	350	17	51	140	164	1
RTOR Reduction (vph)	0	0	270	0	1	0	0	0	40	0	0	1
Lane Group Flow (vph)	1	602	199	23	688	0	0	367	11	0	304	0
Heavy Vehicles (%)	7%	7%	7%	14%	14%	14%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	0.9	45.4	45.4	1.9	46.4			22.2	22.2		19.7	19.7
Effective Green, g (s)	0.9	45.4	45.4	1.9	46.4			22.2	22.2		19.7	19.7
Actuated g/C Ratio	0.01	0.42	0.42	0.02	0.43			0.21	0.21		0.18	0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	14	752	639	28	716			368	327		334	290
v/s Ratio Prot	0.00	0.34		c0.01	c0.42			c0.21			c0.17	
v/s Ratio Perm			0.13						0.01			0.00
v/c Ratio	0.07	0.80	0.31	0.82	0.96			1.00	0.03		0.91	0.00
Uniform Delay, d1	52.7	27.0	20.5	52.5	29.5			42.5	33.9		42.9	35.7
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	8.8	1.3	96.0	25.3			45.9	0.0		27.7	0.0
Delay (s)	54.9	35.7	21.8	148.4	54.8			88.3	34.0		70.6	35.7
Level of Service	D	D	C	F	D			F	C		E	D
Approach Delay (s)		29.6			57.8			81.7			70.5	
Approach LOS		C			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	107.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	300	178	167	246	142	199	403	141	229	707	219
Future Volume (veh/h)	167	300	178	167	246	142	199	403	141	229	707	219
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	174	312	185	174	256	148	207	420	147	239	736	228
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	273	631	418	216	782	348	307	1162	390	339	1618	628
Arrive On Green	0.08	0.18	0.18	0.12	0.22	0.22	0.09	0.31	0.31	0.10	0.32	0.32
Sat Flow, veh/h	3442	3539	1554	1774	3539	1575	3442	3765	1265	3442	5085	1580
Grp Volume(v), veh/h	174	312	185	174	256	148	207	376	191	239	736	228
Grp Sat Flow(s),veh/h/ln	1721	1770	1554	1774	1770	1575	1721	1695	1640	1721	1695	1580
Q Serve(g_s), s	3.0	4.9	6.1	5.9	3.7	5.0	3.6	5.3	5.6	4.1	7.1	6.3
Cycle Q Clear(g_c), s	3.0	4.9	6.1	5.9	3.7	5.0	3.6	5.3	5.6	4.1	7.1	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	273	631	418	216	782	348	307	1047	506	339	1618	628
V/C Ratio(X)	0.64	0.49	0.44	0.80	0.33	0.43	0.67	0.36	0.38	0.70	0.45	0.36
Avail Cap(c_a), veh/h	419	1035	596	245	1093	486	363	1047	506	363	1618	628
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	27.5	22.8	18.7	26.3	20.1	20.6	27.2	16.5	16.6	26.9	16.7	13.1
Incr Delay (d2), s/veh	2.5	0.6	0.7	15.8	0.2	0.8	3.9	1.0	2.1	5.6	0.9	1.6
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	1.5	2.4	2.7	3.8	1.8	2.2	1.9	2.6	2.8	2.2	3.4	3.0
LnGrp Delay(d),s/veh	29.9	23.4	19.5	42.2	20.4	21.4	31.0	17.5	18.8	32.5	17.7	14.7
LnGrp LOS	C	C	B	D	C	C	C	B	B	C	B	B
Approach Vol, veh/h		671			578			774			1203	
Approach Delay, s/veh		24.0			27.2			21.4			20.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	23.5	12.0	15.5	10.0	24.1	9.4	18.1
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	6.5	19.0	8.5	18.0	6.5	19.0	7.5	19.0
Max Q Clear Time (g_c+I1), s	6.1	7.6	7.9	8.1	5.6	9.1	5.0	7.0
Green Ext Time (p_c), s	0.0	2.8	0.0	1.9	0.1	4.1	0.1	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	176	82	199	234	150	59	115	215	41	35	3
Future Volume (veh/h)	6	176	82	199	234	150	59	115	215	41	35	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	7	210	98	237	279	179	70	137	256	49	42	4
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	16	267	124	281	397	255	98	548	462	80	475	45
Arrive On Green	0.01	0.23	0.23	0.16	0.38	0.38	0.06	0.29	0.29	0.05	0.28	0.28
Sat Flow, veh/h	1774	1179	550	1774	1058	679	1774	1863	1573	1774	1674	159
Grp Volume(v), veh/h	7	0	308	237	0	458	70	137	256	49	0	46
Grp Sat Flow(s),veh/h/ln	1774	0	1729	1774	0	1738	1774	1863	1573	1774	0	1833
Q Serve(g_s), s	0.3	0.0	10.9	8.5	0.0	14.6	2.5	3.7	8.9	1.8	0.0	1.2
Cycle Q Clear(g_c), s	0.3	0.0	10.9	8.5	0.0	14.6	2.5	3.7	8.9	1.8	0.0	1.2
Prop In Lane	1.00		0.32	1.00		0.39	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	16	0	391	281	0	652	98	548	462	80	0	521
V/C Ratio(X)	0.43	0.00	0.79	0.84	0.00	0.70	0.72	0.25	0.55	0.61	0.00	0.09
Avail Cap(c_a), veh/h	136	0	478	286	0	652	136	548	462	136	0	521
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	0.00	1.00
Uniform Delay (d), s/veh	32.1	0.0	23.7	26.6	0.0	17.3	30.3	17.5	19.4	30.5	0.0	17.1
Incr Delay (d2), s/veh	17.1	0.0	7.0	19.8	0.0	3.4	10.2	1.1	4.7	7.4	0.0	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	0.2	0.0	6.0	5.7	0.0	7.5	1.5	2.0	4.4	1.0	0.0	0.6
LnGrp Delay(d),s/veh	49.2	0.0	30.8	46.4	0.0	20.6	40.5	18.6	24.1	37.9	0.0	17.5
LnGrp LOS	D		C	D		C	D	B	C	D		B
Approach Vol, veh/h		315			695			463			95	
Approach Delay, s/veh		31.2			29.4			25.0			28.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	23.7	14.8	19.2	8.1	23.0	5.1	28.9
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	5.0	18.5	10.5	18.0	5.0	18.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	3.8	10.9	10.5	12.9	4.5	3.2	2.3	16.6
Green Ext Time (p_c), s	0.0	1.0	0.0	0.8	0.0	0.1	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	132	184	13	37	142
Future Vol, veh/h	28	132	184	13	37	142
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	33	157	219	15	44	169

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	485	228	0	0	235	0
Stage 1	228	-	-	-	-	-
Stage 2	257	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	541	811	-	-	1303	-
Stage 1	810	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	522	810	-	-	1302	-
Mov Cap-2 Maneuver	522	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	786	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	739	1302	-
HCM Lane V/C Ratio	-	-	0.258	0.034	-
HCM Control Delay (s)	-	-	11.6	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1	0.1	-

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	132	184	13	37	142
Future Vol, veh/h	28	132	184	13	37	142
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	33	157	219	15	44	169
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9	9.8	9.7
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	17%	21%
Vol Thru, %	93%	0%	79%
Vol Right, %	7%	82%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	197	160	179
LT Vol	0	28	37
Through Vol	184	0	142
RT Vol	13	132	0
Lane Flow Rate	235	190	213
Geometry Grp	1	1	1
Degree of Util (X)	0.304	0.239	0.282
Departure Headway (Hd)	4.671	4.516	4.772
Convergence, Y/N	Yes	Yes	Yes
Cap	767	792	750
Service Time	2.715	2.556	2.817
HCM Lane V/C Ratio	0.306	0.24	0.284
HCM Control Delay	9.8	9	9.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.3	0.9	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	492	262	9	667	28	543	25	3	46	23	5
Future Volume (vph)	11	492	262	9	667	28	543	25	3	46	23	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	3223	1442	1543	3085	1380	3433	1834		1719	1763	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1612	3223	1442	1543	3085	1380	3433	1834		1719	1763	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	512	273	9	695	29	566	26	3	48	24	5
RTOR Reduction (vph)	0	0	172	0	0	18	0	2	0	0	5	0
Lane Group Flow (vph)	11	513	101	9	695	11	566	27	0	48	24	0
Heavy Vehicles (%)	12%	12%	12%	17%	17%	17%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	0.7	18.2	18.2	0.7	18.2	18.2	11.6	8.8		3.7	0.9	
Effective Green, g (s)	0.7	18.2	18.2	0.7	18.2	18.2	11.6	8.8		3.7	0.9	
Actuated g/C Ratio	0.01	0.37	0.37	0.01	0.37	0.37	0.23	0.18		0.07	0.02	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	22	1187	531	21	1136	508	806	326		128	32	
v/s Ratio Prot	c0.01	0.16		0.01	c0.23		c0.16	0.01		0.03	c0.01	
v/s Ratio Perm			0.07			0.01						
v/c Ratio	0.50	0.43	0.19	0.43	0.61	0.02	0.70	0.08		0.38	0.75	
Uniform Delay, d1	24.2	11.7	10.6	24.2	12.7	9.9	17.3	16.9		21.7	24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.8	1.1	0.8	13.4	2.5	0.1	2.8	0.1		1.8	65.7	
Delay (s)	40.9	12.9	11.4	37.6	15.2	10.0	20.1	17.0		23.6	89.8	
Level of Service	D	B	B	D	B	B	C	B		C	F	
Approach Delay (s)		12.7			15.3			20.0			48.5	
Approach LOS		B			B			B			D	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	76	95	14	112	138
Future Vol, veh/h	9	76	95	14	112	138
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	10	84	104	15	123	152

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	511	112	0	0	119	0
Stage 1	112	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	516	930	-	-	1463	-
Stage 1	903	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	472	930	-	-	1463	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	668	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	843	1463	-
HCM Lane V/C Ratio	-	-	0.111	0.084	-
HCM Control Delay (s)	-	-	9.8	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.3	-

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	76	95	14	112	138
Future Vol, veh/h	9	76	95	14	112	138
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	10	84	104	15	123	152
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.9	8.1	9.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	11%	45%
Vol Thru, %	87%	0%	55%
Vol Right, %	13%	89%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	109	85	250
LT Vol	0	9	112
Through Vol	95	0	138
RT Vol	14	76	0
Lane Flow Rate	120	93	275
Geometry Grp	1	1	1
Degree of Util (X)	0.145	0.113	0.328
Departure Headway (Hd)	4.358	4.368	4.297
Convergence, Y/N	Yes	Yes	Yes
Cap	826	824	824
Service Time	2.368	2.375	2.392
HCM Lane V/C Ratio	0.145	0.113	0.334
HCM Control Delay	8.1	7.9	9.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.4	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	566	441	22	620	27	329	16	48	132	154	1
Future Volume (vph)	1	566	441	22	620	27	329	16	48	132	154	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1687	3374	1509	1583	3167	1417	3433	1653		1770	1861	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1687	3374	1509	1583	3167	1417	3433	1653		1770	1861	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	602	469	23	660	29	350	17	51	140	164	1
RTOR Reduction (vph)	0	0	311	0	0	19	0	44	0	0	0	0
Lane Group Flow (vph)	1	602	158	23	660	10	350	24	0	140	165	0
Heavy Vehicles (%)	7%	7%	7%	14%	14%	14%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4			8						
Actuated Green, G (s)	0.8	18.2	18.2	0.8	18.2	18.2	9.0	7.2		9.8	8.0	
Effective Green, g (s)	0.8	18.2	18.2	0.8	18.2	18.2	9.0	7.2		9.8	8.0	
Actuated g/C Ratio	0.01	0.34	0.34	0.01	0.34	0.34	0.17	0.13		0.18	0.15	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	24	1137	508	23	1067	477	572	220		321	275	
v/s Ratio Prot	0.00	0.18		c0.01	c0.21		c0.10	0.01		0.08	c0.09	
v/s Ratio Perm			0.10			0.01						
v/c Ratio	0.04	0.53	0.31	1.00	0.62	0.02	0.61	0.11		0.44	0.60	
Uniform Delay, d1	26.2	14.4	13.3	26.6	15.0	11.9	20.9	20.6		19.6	21.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.8	1.6	187.7	2.7	0.1	1.9	0.2		1.0	3.5	
Delay (s)	26.9	16.2	14.8	214.3	17.7	12.0	22.8	20.8		20.6	25.0	
Level of Service	C	B	B	F	B	B	C	C		C	C	
Approach Delay (s)		15.6			23.8			22.5			23.0	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Appendix E

Level of Service

Calculations

Background

Conditions

Intersection	
Intersection Delay, s/veh	15.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	127	89	7	213	94	208	82	3	69	34	135
Future Vol, veh/h	125	127	89	7	213	94	208	82	3	69	34	135
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
Heavy Vehicles, %	7	7	7	5	5	5	2	2	2	6	6	6
Mvmt Flow	139	141	99	8	237	104	231	91	3	77	38	150
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	14.1	17.1	18	13.5
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	96%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	4%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	208	85	125	127	89	7	213	94	69	34	135
LT Vol	208	0	125	0	0	7	0	0	69	0	0
Through Vol	0	82	0	127	0	0	213	0	0	34	0
RT Vol	0	3	0	0	89	0	0	94	0	0	135
Lane Flow Rate	231	94	139	141	99	8	237	104	77	38	150
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.533	0.204	0.328	0.313	0.2	0.018	0.527	0.212	0.187	0.087	0.315
Departure Headway (Hd)	8.3	7.775	8.496	7.987	7.273	8.527	8.017	7.304	8.774	8.268	7.558
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	460	422	449	491	418	447	489	408	432	474
Service Time	6.071	5.547	6.275	5.765	5.051	6.305	5.795	5.081	6.556	6.049	5.34
HCM Lane V/C Ratio	0.532	0.204	0.329	0.314	0.202	0.019	0.53	0.213	0.189	0.088	0.316
HCM Control Delay	20.2	12.5	15.4	14.4	11.9	11.5	19.5	12.1	13.6	11.8	13.8
HCM Lane LOS	C	B	C	B	B	B	C	B	B	B	B
HCM 95th-tile Q	3.1	0.8	1.4	1.3	0.7	0.1	3	0.8	0.7	0.3	1.3

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	248	15	37	490	25	45	4	54	39	3	140
Future Vol, veh/h	46	248	15	37	490	25	45	4	54	39	3	140
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	4	4	4	2	2	2	3	3	3
Mvmt Flow	48	261	16	39	516	26	47	4	57	41	3	147

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	542	0	0	278	0	0	1040	978	262	990	968	516
Stage 1	-	-	-	-	-	-	358	358	-	594	594	-
Stage 2	-	-	-	-	-	-	682	620	-	396	374	-
Critical Hdwy	4.18	-	-	4.14	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.272	-	-	2.236	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	997	-	-	1273	-	-	208	250	777	224	253	557
Stage 1	-	-	-	-	-	-	660	628	-	490	491	-
Stage 2	-	-	-	-	-	-	440	480	-	627	616	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	997	-	-	1272	-	-	142	231	776	193	233	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	231	-	193	233	-
Stage 1	-	-	-	-	-	-	628	597	-	466	476	-
Stage 2	-	-	-	-	-	-	312	465	-	549	586	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.5	24.6	17.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	142	231	776	997	-	-	1272	-	-	193	233	557
HCM Lane V/C Ratio	0.334	0.018	0.073	0.049	-	-	0.031	-	-	0.213	0.014	0.265
HCM Control Delay (s)	42.5	20.9	10	8.8	-	-	7.9	-	-	28.6	20.7	13.8
HCM Lane LOS	E	C	B	A	-	-	A	-	-	D	C	B
HCM 95th %tile Q(veh)	1.3	0.1	0.2	0.2	-	-	0.1	-	-	0.8	0	1.1

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	62	300	31	13	188
Future Vol, veh/h	32	62	300	31	13	188
Conflicting Peds, #/hr	0	0	0	1	1	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	84	84	84	84	84	84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	38	74	357	37	15	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	631	377	0	0	395	0
Stage 1	377	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	445	670	-	-	1137	-
Stage 1	694	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	438	669	-	-	1136	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	567	1136	-
HCM Lane V/C Ratio	-	-	0.197	0.014	-
HCM Control Delay (s)	-	-	12.9	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	178	124	14	335	291	282	393	23	119	161	147
Future Volume (veh/h)	193	178	124	14	335	291	282	393	23	119	161	147
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1900	1863	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	210	193	135	15	364	316	307	427	25	129	175	160
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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, %	7	7	7	2	2	2	2	2	2	4	4	4
Cap, veh/h	338	195	136	432	224	195	254	513	436	141	390	331
Arrive On Green	0.20	0.20	0.20	0.24	0.24	0.24	0.14	0.28	0.28	0.08	0.21	0.21
Sat Flow, veh/h	1691	973	681	1774	922	800	1774	1863	1583	1740	1827	1553
Grp Volume(v), veh/h	210	0	328	15	0	680	307	427	25	129	175	160
Grp Sat Flow(s),veh/h/ln	1691	0	1654	1774	0	1722	1774	1863	1583	1740	1827	1553
Q Serve(g_s), s	10.2	0.0	17.8	0.6	0.0	21.9	12.9	19.4	1.0	6.6	7.5	8.1
Cycle Q Clear(g_c), s	10.2	0.0	17.8	0.6	0.0	21.9	12.9	19.4	1.0	6.6	7.5	8.1
Prop In Lane	1.00		0.41	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	338	0	331	432	0	419	254	513	436	141	390	331
V/C Ratio(X)	0.62	0.00	0.99	0.03	0.00	1.62	1.21	0.83	0.06	0.91	0.45	0.48
Avail Cap(c_a), veh/h	338	0	331	432	0	419	254	513	436	141	390	331
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	32.9	0.0	35.9	26.0	0.0	34.1	38.5	30.6	24.0	41.0	30.8	31.0
Incr Delay (d2), s/veh	3.5	0.0	47.2	0.0	0.0	291.2	124.3	14.6	0.3	50.8	3.7	5.0
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	5.1	0.0	12.4	0.3	0.0	44.2	15.1	12.0	0.5	5.2	4.2	3.9
LnGrp Delay(d),s/veh	36.3	0.0	83.1	26.0	0.0	325.3	162.8	45.2	24.2	91.8	34.5	36.0
LnGrp LOS	D		F	C		F	F	D	C	F	C	D
Approach Vol, veh/h		538			695			759			464	
Approach Delay, s/veh		64.8			318.8			92.1			51.0	
Approach LOS		E			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.8	29.3		22.5	17.4	23.7		26.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.3	24.8		18.0	12.9	19.2		21.9
Max Q Clear Time (g_c+I1), s	8.6	21.4		19.8	14.9	10.1		23.9
Green Ext Time (p_c), s	0.0	0.9		0.0	0.0	1.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	142.5
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	328	107	81	700	19	177	57	131	18	21	12
Future Volume (veh/h)	6	328	107	81	700	19	177	57	131	18	21	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	7	373	122	92	795	22	201	65	149	20	24	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	16	524	171	118	813	22	299	86	166	200	223	109
Arrive On Green	0.01	0.40	0.40	0.07	0.45	0.45	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1740	1319	432	1757	1786	49	674	274	531	382	713	349
Grp Volume(v), veh/h	7	0	495	92	0	817	415	0	0	58	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1751	1757	0	1836	1479	0	0	1444	0	0
Q Serve(g_s), s	0.2	0.0	14.4	3.1	0.0	26.4	14.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	14.4	3.1	0.0	26.4	16.1	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.25	1.00		0.03	0.48		0.36	0.34		0.24
Lane Grp Cap(c), veh/h	16	0	695	118	0	835	551	0	0	532	0	0
V/C Ratio(X)	0.44	0.00	0.71	0.78	0.00	0.98	0.75	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	147	0	744	201	0	835	551	0	0	532	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.8	0.0	15.3	27.8	0.0	16.2	19.7	0.0	0.0	14.8	0.0	0.0
Incr Delay (d2), s/veh	17.8	0.0	3.0	10.7	0.0	25.8	9.2	0.0	0.0	0.4	0.0	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	0.2	0.0	7.4	1.9	0.0	19.1	8.0	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	47.6	0.0	18.3	38.5	0.0	42.0	28.9	0.0	0.0	15.2	0.0	0.0
LnGrp LOS	D		B	D		D	C			B		
Approach Vol, veh/h		502			909			415			58	
Approach Delay, s/veh		18.7			41.6			28.9			15.2	
Approach LOS		B			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.4	8.5	28.5		23.4	5.1	32.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.9	6.9	25.7		18.9	5.1	27.5				
Max Q Clear Time (g_c+I1), s		18.1	5.1	16.4		3.5	2.2	28.4				
Green Ext Time (p_c), s		0.2	0.0	2.2		0.2	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			31.9									
HCM 2010 LOS			C									

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	184	260	530	370	185	210		
Future Volume (veh/h)	184	260	530	370	185	210		
Number	7	4	8	18	1	16		
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		
Adj Sat Flow, veh/h/ln	1810	1810	1863	1863	1863	1863		
Adj Flow Rate, veh/h	209	295	602	420	210	239		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88		
Percent Heavy Veh, %	5	5	2	2	2	2		
Cap, veh/h	259	1078	680	578	430	384		
Arrive On Green	0.15	0.60	0.36	0.36	0.24	0.24		
Sat Flow, veh/h	1723	1810	1863	1583	1774	1583		
Grp Volume(v), veh/h	209	295	602	420	210	239		
Grp Sat Flow(s),veh/h/ln	1723	1810	1863	1583	1774	1583		
Q Serve(g_s), s	6.5	4.4	16.9	12.8	5.7	7.5		
Cycle Q Clear(g_c), s	6.5	4.4	16.9	12.8	5.7	7.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	259	1078	680	578	430	384		
V/C Ratio(X)	0.81	0.27	0.89	0.73	0.49	0.62		
Avail Cap(c_a), veh/h	356	1219	719	611	430	384		
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	22.9	5.4	16.6	15.3	18.1	18.8		
Incr Delay (d2), s/veh	9.3	0.1	12.3	4.1	3.9	7.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.7	2.2	10.9	6.1	3.2	7.2		
LnGrp Delay(d),s/veh	32.2	5.6	28.9	19.4	22.0	26.2		
LnGrp LOS	C	A	C	B	C	C		
Approach Vol, veh/h		504	1022		449			
Approach Delay, s/veh		16.6	25.0		24.3			
Approach LOS		B	C		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				37.7		18.0	12.9	24.8
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	11.5	21.5
Max Q Clear Time (g_c+I1), s				6.4		9.5	8.5	18.9
Green Ext Time (p_c), s				1.9		0.6	0.2	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	537	377	67	767	28	746	25	64	46	23	5
Future Volume (vph)	11	537	377	67	767	28	746	25	64	46	23	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (prot)	1612	1696	1442	1543	1615			1777	1583		1751	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (perm)	1612	1696	1442	1543	1615			1777	1583		1751	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	559	393	70	799	29	777	26	67	48	24	5
RTOR Reduction (vph)	0	0	216	0	1	0	0	0	46	0	0	5
Lane Group Flow (vph)	11	559	177	70	827	0	0	803	21	0	72	0
Heavy Vehicles (%)	12%	12%	12%	17%	17%	17%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	1.0	55.2	55.2	5.0	59.2			38.6	38.6		5.5	5.5
Effective Green, g (s)	1.0	55.2	55.2	5.0	59.2			38.6	38.6		5.5	5.5
Actuated g/C Ratio	0.01	0.45	0.45	0.04	0.48			0.32	0.32		0.04	0.04
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	13	765	650	63	781			560	499		78	69
v/s Ratio Prot	0.01	0.33		c0.05	c0.51			c0.45			c0.04	
v/s Ratio Perm			0.12						0.01			0.00
v/c Ratio	0.85	0.73	0.27	1.11	1.06			1.43	0.04		0.92	0.00
Uniform Delay, d1	60.6	27.5	21.0	58.6	31.5			41.8	29.0		58.2	55.8
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	166.4	6.1	1.0	147.1	48.9			205.4	0.0		75.7	0.0
Delay (s)	227.0	33.5	22.0	205.8	80.5			247.2	29.1		133.9	55.8
Level of Service	F	C	C	F	F			F	C		F	E
Approach Delay (s)		31.1			90.2			230.4			128.9	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	114.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	122.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	256	125	149	469	364	193	807	66	238	520	192
Future Volume (veh/h)	256	256	125	149	469	364	193	807	66	238	520	192
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1845	1845
Adj Flow Rate, veh/h	281	281	137	164	515	400	212	887	73	262	571	211
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	3	3	3
Cap, veh/h	286	980	554	150	986	428	265	1363	112	262	1433	575
Arrive On Green	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28
Sat Flow, veh/h	3442	3539	1559	1774	3539	1536	3442	4790	393	3408	5036	1561
Grp Volume(v), veh/h	281	281	137	164	515	400	212	627	333	262	571	211
Grp Sat Flow(s),veh/h/ln	1721	1770	1559	1774	1770	1536	1721	1695	1792	1704	1679	1561
Q Serve(g_s), s	5.3	4.1	4.0	5.5	8.0	16.5	3.9	10.6	10.6	5.0	5.9	6.4
Cycle Q Clear(g_c), s	5.3	4.1	4.0	5.5	8.0	16.5	3.9	10.6	10.6	5.0	5.9	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	286	980	554	150	986	428	265	965	510	262	1433	575
V/C Ratio(X)	0.98	0.29	0.25	1.09	0.52	0.94	0.80	0.65	0.65	1.00	0.40	0.37
Avail Cap(c_a), veh/h	286	980	554	150	986	428	265	965	510	262	1433	575
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	29.8	18.5	14.9	29.7	19.8	22.9	29.5	20.4	20.4	30.0	18.8	15.0
Incr Delay (d2), s/veh	48.3	0.2	0.2	100.4	0.5	27.9	16.0	3.4	6.4	55.4	0.8	1.8
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	4.4	2.0	1.7	6.9	3.9	10.3	2.4	5.3	6.1	4.3	2.9	3.0
LnGrp Delay(d),s/veh	78.1	18.6	15.1	130.1	20.3	50.8	45.5	23.8	26.8	85.4	19.6	16.8
LnGrp LOS	E	B	B	F	C	D	D	C	C	F	B	B
Approach Vol, veh/h		699			1079			1172			1044	
Approach Delay, s/veh		41.8			48.3			28.6			35.5	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	10.0	22.5	9.5	23.0	9.9	22.6
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	5.0	18.5	5.5	18.0	5.0	18.5	5.4	18.1
Max Q Clear Time (g_c+I1), s	7.0	12.6	7.5	6.1	5.9	8.4	7.3	18.5
Green Ext Time (p_c), s	0.0	3.0	0.0	1.8	0.0	3.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	153	41	158	156	263	72	179	179	144	89	14
Future Volume (veh/h)	38	153	41	158	156	263	72	179	179	144	89	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.74	1.00		0.89	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	50	201	54	208	205	346	95	236	236	189	117	18
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	325	87	236	194	327	122	492	416	166	456	70
Arrive On Green	0.04	0.25	0.25	0.13	0.34	0.34	0.07	0.26	0.26	0.09	0.29	0.29
Sat Flow, veh/h	1774	1303	350	1774	575	970	1774	1863	1574	1774	1574	242
Grp Volume(v), veh/h	50	0	255	208	0	551	95	236	236	189	0	135
Grp Sat Flow(s),veh/h/ln	1774	0	1653	1774	0	1545	1774	1863	1574	1774	0	1817
Q Serve(g_s), s	1.9	0.0	9.5	8.0	0.0	23.4	3.7	7.4	9.0	6.5	0.0	4.0
Cycle Q Clear(g_c), s	1.9	0.0	9.5	8.0	0.0	23.4	3.7	7.4	9.0	6.5	0.0	4.0
Prop In Lane	1.00		0.21	1.00		0.63	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	79	0	412	236	0	521	122	492	416	166	0	526
V/C Ratio(X)	0.63	0.00	0.62	0.88	0.00	1.06	0.78	0.48	0.57	1.14	0.00	0.26
Avail Cap(c_a), veh/h	131	0	429	236	0	521	159	492	416	166	0	526
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	0.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	23.1	29.5	0.0	22.9	31.7	21.5	22.1	31.4	0.0	18.9
Incr Delay (d2), s/veh	8.0	0.0	2.5	29.9	0.0	55.4	16.7	3.3	5.5	110.7	0.0	1.2
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	1.1	0.0	4.6	5.8	0.0	17.9	2.4	4.3	4.5	8.3	0.0	2.2
LnGrp Delay(d),s/veh	40.6	0.0	25.6	59.4	0.0	78.3	48.4	24.8	27.6	142.1	0.0	20.1
LnGrp LOS	D		C	E		F	D	C	C	F		C
Approach Vol, veh/h		305			759			567			324	
Approach Delay, s/veh		28.1			73.1			29.9			91.3	
Approach LOS		C			E			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	22.8	13.7	21.8	9.3	24.5	7.6	27.9
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	6.5	18.3	9.2	18.0	6.2	18.6	5.1	22.1
Max Q Clear Time (g_c+I1), s	8.5	11.0	10.0	11.5	5.7	6.0	3.9	25.4
Green Ext Time (p_c), s	0.0	1.3	0.0	0.8	0.0	0.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	56.6
HCM 2010 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	114	204	254	4	157	76	129	36	2	91	86	133
Future Vol, veh/h	114	204	254	4	157	76	129	36	2	91	86	133
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	118	210	262	4	162	78	133	37	2	94	89	137
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	14.5	13.7	14.2	12.6
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	95%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	5%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	38	114	204	254	4	157	76	91	86	133
LT Vol	129	0	114	0	0	4	0	0	91	0	0
Through Vol	0	36	0	204	0	0	157	0	0	86	0
RT Vol	0	2	0	0	254	0	0	76	0	0	133
Lane Flow Rate	133	39	118	210	262	4	162	78	94	89	137
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.311	0.086	0.25	0.418	0.469	0.01	0.354	0.156	0.214	0.19	0.267
Departure Headway (Hd)	8.429	7.892	7.656	7.15	6.441	8.381	7.872	7.161	8.221	7.718	7.012
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	426	453	469	503	558	427	456	500	436	465	511
Service Time	6.188	5.651	5.404	4.898	4.188	6.138	5.63	4.918	5.977	5.473	4.768
HCM Lane V/C Ratio	0.312	0.086	0.252	0.417	0.47	0.009	0.355	0.156	0.216	0.191	0.268
HCM Control Delay	15	11.4	13	15	14.8	11.2	14.9	11.2	13.2	12.3	12.3
HCM Lane LOS	B	B	B	B	B	B	B	B	B	B	B
HCM 95th-tile Q	1.3	0.3	1	2	2.5	0	1.6	0.5	0.8	0.7	1.1

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	168	513	61	55	331	39	28	2	38	21	2	96
Future Vol, veh/h	168	513	61	55	331	39	28	2	38	21	2	96
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	177	540	64	58	348	41	29	2	40	22	2	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	389	0	0	604	0	0	1430	1399	540	1411	1422	348
Stage 1	-	-	-	-	-	-	894	894	-	464	464	-
Stage 2	-	-	-	-	-	-	536	505	-	947	958	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1170	-	-	974	-	-	112	141	542	116	136	695
Stage 1	-	-	-	-	-	-	336	360	-	578	564	-
Stage 2	-	-	-	-	-	-	529	540	-	314	336	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1170	-	-	974	-	-	80	113	542	90	109	695
Mov Cap-2 Maneuver	-	-	-	-	-	-	80	113	-	90	109	-
Stage 1	-	-	-	-	-	-	285	306	-	491	530	-
Stage 2	-	-	-	-	-	-	423	508	-	245	285	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	1.2	38.5	19.8
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	80	113	542	1170	-	-	974	-	-	90	109	695
HCM Lane V/C Ratio	0.368	0.019	0.074	0.151	-	-	0.059	-	-	0.246	0.019	0.145
HCM Control Delay (s)	74.2	37.5	12.2	8.6	-	-	8.9	-	-	57.6	38.7	11.1
HCM Lane LOS	F	E	B	A	-	-	A	-	-	F	E	B
HCM 95th %tile Q(veh)	1.4	0.1	0.2	0.5	-	-	0.2	-	-	0.9	0.1	0.5

Intersection						
Int Delay, s/veh	1.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	29	185	23	33	290
Future Vol, veh/h	28	29	185	23	33	290
Conflicting Peds, #/hr	1	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	91	91	91	91	91	91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	31	32	203	25	36	319

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	608	216	0	0	228	0
Stage 1	216	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	452	814	-	-	1334	-
Stage 1	811	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	437	814	-	-	1334	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	673	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	572	1334	-
HCM Lane V/C Ratio	-	-	0.11	0.027	-
HCM Control Delay (s)	-	-	12.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	307	209	20	176	208	142	283	25	355	501	220
Future Volume (veh/h)	216	307	209	20	176	208	142	283	25	355	501	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	225	320	218	21	183	217	148	295	26	370	522	229
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	426	248	169	218	95	113	177	479	407	248	554	471
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.10	0.26	0.26	0.14	0.30	0.30
Sat Flow, veh/h	1774	1034	704	1774	778	922	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	225	0	538	21	0	400	148	295	26	370	522	229
Grp Sat Flow(s),veh/h/ln	1774	0	1738	1774	0	1700	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	8.3	0.0	18.0	0.8	0.0	9.2	6.1	10.5	0.9	10.5	20.5	8.9
Cycle Q Clear(g_c), s	8.3	0.0	18.0	0.8	0.0	9.2	6.1	10.5	0.9	10.5	20.5	8.9
Prop In Lane	1.00		0.41	1.00		0.54	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	417	218	0	209	177	479	407	248	554	471
V/C Ratio(X)	0.53	0.00	1.29	0.10	0.00	1.92	0.83	0.62	0.06	1.49	0.94	0.49
Avail Cap(c_a), veh/h	426	0	417	218	0	209	177	479	407	248	554	471
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	24.8	0.0	28.5	29.2	0.0	32.9	33.1	24.6	21.0	32.3	25.7	21.6
Incr Delay (d2), s/veh	1.2	0.0	147.3	0.2	0.0	430.5	27.6	5.8	0.3	240.6	26.4	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	4.2	0.0	25.6	0.4	0.0	29.2	4.4	6.1	0.4	21.7	14.5	4.3
LnGrp Delay(d),s/veh	26.0	0.0	175.8	29.4	0.0	463.4	60.7	30.4	21.3	272.8	52.1	25.2
LnGrp LOS	C		F	C		F	E	C	C	F	D	C
Approach Vol, veh/h		763			421			469			1121	
Approach Delay, s/veh		131.6			441.7			39.5			119.5	
Approach LOS		F			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	23.8		22.5	12.0	26.8		13.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.5	19.3		18.0	7.5	22.3		9.2
Max Q Clear Time (g_c+I1), s	12.5	12.5		20.0	8.1	22.5		11.2
Green Ext Time (p_c), s	0.0	1.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	158.2
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	633	139	132	382	17	107	42	82	28	68	12
Future Volume (veh/h)	28	633	139	132	382	17	107	42	82	28	68	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	33	736	162	153	444	20	124	49	95	33	79	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	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	4	4	4
Cap, veh/h	63	555	122	151	751	34	278	119	170	173	373	59
Arrive On Green	0.04	0.38	0.38	0.09	0.42	0.42	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1774	1480	326	1774	1769	80	605	378	539	308	1185	187
Grp Volume(v), veh/h	33	0	898	153	0	464	268	0	0	126	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1805	1774	0	1849	1522	0	0	1679	0	0
Q Serve(g_s), s	1.1	0.0	22.5	5.1	0.0	11.6	5.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	22.5	5.1	0.0	11.6	8.4	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.18	1.00		0.04	0.46		0.35	0.26		0.11
Lane Grp Cap(c), veh/h	63	0	677	151	0	785	567	0	0	605	0	0
V/C Ratio(X)	0.53	0.00	1.33	1.01	0.00	0.59	0.47	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	163	0	677	151	0	785	567	0	0	605	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.5	0.0	18.8	27.5	0.0	13.3	16.8	0.0	0.0	15.1	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.0	157.0	77.2	0.0	1.2	2.8	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	40.6	5.7	0.0	6.1	4.1	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	35.2	0.0	175.8	104.8	0.0	14.4	19.6	0.0	0.0	15.9	0.0	0.0
LnGrp LOS	D		F	F		B	B			B		
Approach Vol, veh/h		931			617			268			126	
Approach Delay, s/veh		170.8			36.8			19.6			15.9	
Approach LOS		F			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4	6.6	30.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9	5.5	22.1
Max Q Clear Time (g_c+I1), s		10.4	7.1	24.5		5.1	3.1	13.6
Green Ext Time (p_c), s		1.0	0.0	0.0		0.5	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	97.3
HCM 2010 LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	320	622	321	180	177	218
Future Volume (veh/h)	320	622	321	180	177	218
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	340	662	341	191	188	232
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	412	1031	432	367	475	424
Arrive On Green	0.23	0.55	0.23	0.23	0.27	0.27
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	340	662	341	191	188	232
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	9.2	12.4	8.7	5.3	4.4	6.3
Cycle Q Clear(g_c), s	9.2	12.4	8.7	5.3	4.4	6.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	412	1031	432	367	475	424
V/C Ratio(X)	0.82	0.64	0.79	0.52	0.40	0.55
Avail Cap(c_a), veh/h	651	1386	536	455	475	424
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	18.4	7.8	18.2	16.9	15.1	15.8
Incr Delay (d2), s/veh	4.9	0.7	6.3	1.1	2.5	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	6.4	5.2	2.4	2.5	6.2
LnGrp Delay(d),s/veh	23.2	8.5	24.5	18.0	17.6	20.8
LnGrp LOS	C	A	C	B	B	C
Approach Vol, veh/h		1002	532		420	
Approach Delay, s/veh		13.5	22.2		19.4	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.4		18.0	16.2	16.2
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	18.5	14.5
Max Q Clear Time (g_c+I1), s				14.4		8.3	11.2	10.7
Green Ext Time (p_c), s				4.8		0.7	0.6	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	681	688	108	705	27	528	16	141	132	154	1
Future Volume (vph)	1	681	688	108	705	27	528	16	141	132	154	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1687	1776	1509	1583	1657			1777	1583		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1687	1776	1509	1583	1657			1777	1583		1821	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	724	732	115	750	29	562	17	150	140	164	1
RTOR Reduction (vph)	0	0	379	0	1	0	0	0	84	0	0	1
Lane Group Flow (vph)	1	724	353	115	778	0	0	579	66	0	304	0
Heavy Vehicles (%)	7%	7%	7%	14%	14%	14%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		19.9	19.9
Effective Green, g (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		19.9	19.9
Actuated g/C Ratio	0.01	0.43	0.43	0.04	0.46			0.20	0.20		0.18	0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	14	755	641	69	763			347	309		320	278
v/s Ratio Prot	0.00	0.41		c0.07	c0.47			c0.33			c0.17	
v/s Ratio Perm			0.23						0.04			0.00
v/c Ratio	0.07	0.96	0.55	1.67	1.02			1.67	0.21		0.95	0.00
Uniform Delay, d1	55.6	31.5	24.4	54.0	30.5			45.5	38.2		46.1	38.4
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	24.1	3.4	355.1	37.6			313.3	0.3		36.7	0.0
Delay (s)	57.8	55.7	27.8	409.1	68.1			358.8	38.6		82.8	38.4
Level of Service	E	E	C	F	E			F	D		F	D
Approach Delay (s)		41.7			112.0			292.9			82.7	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	118.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	113.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	103.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	400	208	167	303	332	217	636	141	491	1033	255
Future Volume (veh/h)	196	400	208	167	303	332	217	636	141	491	1033	255
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	204	417	217	174	316	346	226	662	147	511	1076	266
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	300	792	496	214	910	405	319	1196	262	337	1482	599
Arrive On Green	0.09	0.22	0.22	0.12	0.26	0.26	0.09	0.29	0.29	0.10	0.29	0.29
Sat Flow, veh/h	3442	3539	1560	1774	3539	1576	3442	4177	915	3442	5085	1580
Grp Volume(v), veh/h	204	417	217	174	316	346	226	536	273	511	1076	266
Grp Sat Flow(s),veh/h/ln	1721	1770	1560	1774	1770	1576	1721	1695	1701	1721	1695	1580
Q Serve(g_s), s	3.8	6.9	7.3	6.3	4.8	13.9	4.2	8.9	9.1	6.5	12.6	8.3
Cycle Q Clear(g_c), s	3.8	6.9	7.3	6.3	4.8	13.9	4.2	8.9	9.1	6.5	12.6	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.54	1.00		1.00
Lane Grp Cap(c), veh/h	300	792	496	214	910	405	319	971	487	337	1482	599
V/C Ratio(X)	0.68	0.53	0.44	0.81	0.35	0.85	0.71	0.55	0.56	1.52	0.73	0.44
Avail Cap(c_a), veh/h	389	960	570	227	1013	451	337	971	487	337	1482	599
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	29.4	22.7	18.0	28.4	20.1	23.5	29.2	20.1	20.1	29.9	21.1	15.4
Incr Delay (d2), s/veh	3.2	0.5	0.6	18.8	0.2	13.6	6.3	2.3	4.6	246.9	3.1	2.4
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	1.9	3.4	3.2	4.2	2.4	7.5	2.3	4.5	4.9	14.6	6.3	4.0
LnGrp Delay(d),s/veh	32.5	23.2	18.6	47.2	20.3	37.1	35.5	22.3	24.8	276.8	24.3	17.8
LnGrp LOS	C	C	B	D	C	D	D	C	C	F	C	B
Approach Vol, veh/h		838			836			1035			1853	
Approach Delay, s/veh		24.3			32.8			25.9			93.0	
Approach LOS		C			C			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	23.5	12.5	19.3	10.7	23.8	10.3	21.6
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	6.5	19.0	8.5	18.0	6.5	19.0	7.5	19.0
Max Q Clear Time (g_c+I1), s	8.5	11.1	8.3	9.3	6.2	14.6	5.8	15.9
Green Ext Time (p_c), s	0.0	3.2	0.0	2.3	0.0	3.0	0.1	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	54.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	179	84	202	236	231	60	179	216	177	103	10
Future Volume (veh/h)	15	179	84	202	236	231	60	179	216	177	103	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	18	213	100	240	281	275	71	213	257	211	123	12
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	265	125	277	311	305	97	513	433	132	493	48
Arrive On Green	0.02	0.23	0.23	0.16	0.36	0.36	0.05	0.28	0.28	0.07	0.30	0.30
Sat Flow, veh/h	1774	1176	552	1774	863	844	1774	1863	1572	1774	1670	163
Grp Volume(v), veh/h	18	0	313	240	0	556	71	213	257	211	0	135
Grp Sat Flow(s),veh/h/ln	1774	0	1729	1774	0	1707	1774	1863	1572	1774	0	1833
Q Serve(g_s), s	0.7	0.0	11.5	8.9	0.0	20.7	2.6	6.3	9.5	5.0	0.0	3.8
Cycle Q Clear(g_c), s	0.7	0.0	11.5	8.9	0.0	20.7	2.6	6.3	9.5	5.0	0.0	3.8
Prop In Lane	1.00		0.32	1.00		0.49	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	38	0	390	277	0	616	97	513	433	132	0	541
V/C Ratio(X)	0.48	0.00	0.80	0.87	0.00	0.90	0.73	0.42	0.59	1.60	0.00	0.25
Avail Cap(c_a), veh/h	132	0	463	277	0	616	132	513	433	132	0	541
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	0.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	24.6	27.6	0.0	20.3	31.3	19.9	21.1	31.1	0.0	18.0
Incr Delay (d2), s/veh	9.1	0.0	8.4	23.6	0.0	16.7	12.6	2.5	5.9	301.3	0.0	1.1
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	0.4	0.0	6.4	6.2	0.0	12.6	1.6	3.5	4.8	13.5	0.0	2.1
LnGrp Delay(d),s/veh	41.6	0.0	33.0	51.3	0.0	37.0	43.9	22.4	26.9	332.4	0.0	19.1
LnGrp LOS	D		C	D		D	D	C	C	F		B
Approach Vol, veh/h		331			796			541			346	
Approach Delay, s/veh		33.5			41.3			27.4			210.1	
Approach LOS		C			D			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	15.0	19.6	8.2	24.3	5.9	28.7
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	5.0	18.5	10.5	18.0	5.0	18.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	7.0	11.5	10.9	13.5	4.6	5.8	2.7	22.7
Green Ext Time (p_c), s	0.0	1.3	0.0	0.7	0.0	0.5	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	65.3
HCM 2010 LOS	E

Appendix F

Level of Service

Calculations

Background Plus Project

Conditions

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	130	89	7	214	94	208	82	3	69	34	137
Future Vol, veh/h	131	130	89	7	214	94	208	82	3	69	34	137
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
Heavy Vehicles, %	7	7	7	5	5	5	2	2	2	6	6	6
Mvmt Flow	146	144	99	8	238	104	231	91	3	77	38	152
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	14.4	17.3	18.1	13.6
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	96%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	4%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	208	85	131	130	89	7	214	94	69	34	137
LT Vol	208	0	131	0	0	7	0	0	69	0	0
Through Vol	0	82	0	130	0	0	214	0	0	34	0
RT Vol	0	3	0	0	89	0	0	94	0	0	137
Lane Flow Rate	231	94	146	144	99	8	238	104	77	38	152
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.536	0.205	0.345	0.322	0.201	0.019	0.533	0.213	0.188	0.087	0.322
Departure Headway (Hd)	8.353	7.828	8.528	8.019	7.305	8.579	8.07	7.356	8.829	8.322	7.613
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	430	457	421	446	490	416	445	486	405	429	470
Service Time	6.127	5.602	6.306	5.796	5.082	6.358	5.848	5.135	6.612	6.105	5.395
HCM Lane V/C Ratio	0.537	0.206	0.347	0.323	0.202	0.019	0.535	0.214	0.19	0.089	0.323
HCM Control Delay	20.4	12.6	15.8	14.6	11.9	11.5	19.8	12.1	13.7	11.9	14
HCM Lane LOS	C	B	C	B	B	B	C	B	B	B	B
HCM 95th-tile Q	3.1	0.8	1.5	1.4	0.7	0.1	3.1	0.8	0.7	0.3	1.4

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	248	15	40	490	25	45	4	63	39	3	140
Future Vol, veh/h	46	248	15	40	490	25	45	4	63	39	3	140
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	4	4	4	2	2	2	3	3	3
Mvmt Flow	48	261	16	42	516	26	47	4	66	41	3	147

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	542	0	0	278	0	0	1046	984	262	1000	974	516
Stage 1	-	-	-	-	-	-	358	358	-	600	600	-
Stage 2	-	-	-	-	-	-	688	626	-	400	374	-
Critical Hdwy	4.18	-	-	4.14	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.272	-	-	2.236	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	997	-	-	1273	-	-	206	248	777	221	251	557
Stage 1	-	-	-	-	-	-	660	628	-	486	488	-
Stage 2	-	-	-	-	-	-	436	477	-	624	616	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	997	-	-	1272	-	-	141	228	776	187	231	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	228	-	187	231	-
Stage 1	-	-	-	-	-	-	628	597	-	463	472	-
Stage 2	-	-	-	-	-	-	308	461	-	539	586	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.6	23.7	17.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	141	228	776	997	-	-	1272	-	-	187	231	557
HCM Lane V/C Ratio	0.336	0.018	0.085	0.049	-	-	0.033	-	-	0.22	0.014	0.265
HCM Control Delay (s)	42.9	21.1	10.1	8.8	-	-	7.9	-	-	29.6	20.8	13.8
HCM Lane LOS	E	C	B	A	-	-	A	-	-	D	C	B
HCM 95th %tile Q(veh)	1.4	0.1	0.3	0.2	-	-	0.1	-	-	0.8	0	1.1

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	132	300	32	37	188
Future Vol, veh/h	35	132	300	32	37	188
Conflicting Peds, #/hr	0	0	0	1	1	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	84	84	84	84	84	84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	42	157	357	38	44	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	689	377	0	0	396	0
Stage 1	377	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	412	670	-	-	1136	-
Stage 1	694	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	393	669	-	-	1135	-
Mov Cap-2 Maneuver	393	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	583	1135	-
HCM Lane V/C Ratio	-	-	0.341	0.039	-
HCM Control Delay (s)	-	-	14.3	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	181	124	14	336	291	282	393	23	119	161	156
Future Volume (veh/h)	219	181	124	14	336	291	282	393	23	119	161	156
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1900	1863	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	238	197	135	15	365	316	307	427	25	129	175	170
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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, %	7	7	7	2	2	2	2	2	2	4	4	4
Cap, veh/h	338	196	135	432	225	194	254	513	436	141	390	331
Arrive On Green	0.20	0.20	0.20	0.24	0.24	0.24	0.14	0.28	0.28	0.08	0.21	0.21
Sat Flow, veh/h	1691	982	673	1774	923	799	1774	1863	1583	1740	1827	1553
Grp Volume(v), veh/h	238	0	332	15	0	681	307	427	25	129	175	170
Grp Sat Flow(s),veh/h/ln	1691	0	1655	1774	0	1722	1774	1863	1583	1740	1827	1553
Q Serve(g_s), s	11.8	0.0	18.0	0.6	0.0	21.9	12.9	19.4	1.0	6.6	7.5	8.7
Cycle Q Clear(g_c), s	11.8	0.0	18.0	0.6	0.0	21.9	12.9	19.4	1.0	6.6	7.5	8.7
Prop In Lane	1.00		0.41	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	338	0	331	432	0	419	254	513	436	141	390	331
V/C Ratio(X)	0.70	0.00	1.00	0.03	0.00	1.63	1.21	0.83	0.06	0.91	0.45	0.51
Avail Cap(c_a), veh/h	338	0	331	432	0	419	254	513	436	141	390	331
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	33.5	0.0	36.0	26.0	0.0	34.1	38.5	30.6	24.0	41.0	30.8	31.3
Incr Delay (d2), s/veh	6.5	0.0	50.2	0.0	0.0	292.2	124.3	14.6	0.3	50.8	3.7	5.6
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	6.1	0.0	12.8	0.3	0.0	44.4	15.1	12.0	0.5	5.2	4.2	4.2
LnGrp Delay(d),s/veh	40.0	0.0	86.2	26.0	0.0	326.3	162.8	45.2	24.2	91.8	34.5	36.9
LnGrp LOS	D		F	C		F	F	D	C	F	C	D
Approach Vol, veh/h		570			696			759			474	
Approach Delay, s/veh		66.9			319.8			92.1			50.9	
Approach LOS		E			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.8	29.3		22.5	17.4	23.7		26.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.3	24.8		18.0	12.9	19.2		21.9
Max Q Clear Time (g_c+I1), s	8.6	21.4		20.0	14.9	10.7		23.9
Green Ext Time (p_c), s	0.0	0.9		0.0	0.0	1.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	142.0
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	328	118	91	700	19	207	68	160	18	24	12
Future Volume (veh/h)	6	328	118	91	700	19	207	68	160	18	24	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	7	373	134	103	795	22	235	77	182	20	27	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	16	500	179	132	813	22	302	78	171	188	235	102
Arrive On Green	0.01	0.39	0.39	0.07	0.45	0.45	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1740	1284	461	1757	1786	49	685	251	546	349	750	327
Grp Volume(v), veh/h	7	0	507	103	0	817	494	0	0	61	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1746	1757	0	1836	1482	0	0	1427	0	0
Q Serve(g_s), s	0.2	0.0	15.1	3.5	0.0	26.4	17.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	15.1	3.5	0.0	26.4	18.9	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.03	0.48		0.37	0.33		0.23
Lane Grp Cap(c), veh/h	16	0	679	132	0	835	551	0	0	525	0	0
V/C Ratio(X)	0.44	0.00	0.75	0.78	0.00	0.98	0.90	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	147	0	742	201	0	835	551	0	0	525	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.8	0.0	15.9	27.5	0.0	16.2	21.2	0.0	0.0	14.8	0.0	0.0
Incr Delay (d2), s/veh	17.8	0.0	3.8	10.5	0.0	25.8	19.8	0.0	0.0	0.4	0.0	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	0.2	0.0	7.9	2.1	0.0	19.1	11.1	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	47.6	0.0	19.7	38.0	0.0	42.0	41.0	0.0	0.0	15.3	0.0	0.0
LnGrp LOS	D		B	D		D	D			B		
Approach Vol, veh/h		514			920			494			61	
Approach Delay, s/veh		20.1			41.5			41.0			15.3	
Approach LOS		C			D			D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	9.0	28.0		23.4	5.1	32.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	6.9	25.7		18.9	5.1	27.5
Max Q Clear Time (g_c+I1), s		20.9	5.5	17.1		3.5	2.2	28.4
Green Ext Time (p_c), s		0.0	0.0	2.2		0.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.1
HCM 2010 LOS	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	184	266	546	384	190	210
Future Volume (veh/h)	184	266	546	384	190	210
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1810	1810	1863	1863	1863	1863
Adj Flow Rate, veh/h	209	302	620	436	216	239
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	5	5	2	2	2	2
Cap, veh/h	258	1085	688	585	426	381
Arrive On Green	0.15	0.60	0.37	0.37	0.24	0.24
Sat Flow, veh/h	1723	1810	1863	1583	1774	1583
Grp Volume(v), veh/h	209	302	620	436	216	239
Grp Sat Flow(s),veh/h/ln	1723	1810	1863	1583	1774	1583
Q Serve(g_s), s	6.6	4.5	17.7	13.5	5.9	7.6
Cycle Q Clear(g_c), s	6.6	4.5	17.7	13.5	5.9	7.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	258	1085	688	585	426	381
V/C Ratio(X)	0.81	0.28	0.90	0.75	0.51	0.63
Avail Cap(c_a), veh/h	353	1208	713	606	426	381
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	5.4	16.7	15.4	18.4	19.1
Incr Delay (d2), s/veh	9.6	0.1	14.3	4.8	4.2	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	2.2	11.7	6.6	3.4	7.4
LnGrp Delay(d),s/veh	32.7	5.5	31.1	20.3	22.7	26.7
LnGrp LOS	C	A	C	C	C	C
Approach Vol, veh/h		511	1056		455	
Approach Delay, s/veh		16.6	26.6		24.8	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				38.2		18.0	12.9	25.2
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	11.5	21.5
Max Q Clear Time (g_c+I1), s				6.5		9.6	8.6	19.7
Green Ext Time (p_c), s				1.9		0.6	0.2	1.1

Intersection Summary		
HCM 2010 Ctrl Delay		23.7
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	537	383	67	767	28	762	25	64	46	23	5
Future Volume (vph)	11	537	383	67	767	28	762	25	64	46	23	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (prot)	1612	1696	1442	1543	1615			1777	1583		1751	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (perm)	1612	1696	1442	1543	1615			1777	1583		1751	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	559	399	70	799	29	794	26	67	48	24	5
RTOR Reduction (vph)	0	0	219	0	1	0	0	0	46	0	0	5
Lane Group Flow (vph)	11	559	180	70	827	0	0	820	21	0	72	0
Heavy Vehicles (%)	12%	12%	12%	17%	17%	17%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	1.0	55.2	55.2	5.0	59.2			38.6	38.6		5.5	5.5
Effective Green, g (s)	1.0	55.2	55.2	5.0	59.2			38.6	38.6		5.5	5.5
Actuated g/C Ratio	0.01	0.45	0.45	0.04	0.48			0.32	0.32		0.04	0.04
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	13	765	650	63	781			560	499		78	69
v/s Ratio Prot	0.01	0.33		c0.05	c0.51			c0.46			c0.04	
v/s Ratio Perm			0.12						0.01			0.00
v/c Ratio	0.85	0.73	0.28	1.11	1.06			1.46	0.04		0.92	0.00
Uniform Delay, d1	60.6	27.5	21.0	58.6	31.5			41.8	29.0		58.2	55.8
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	166.4	6.1	1.1	147.1	48.9			218.6	0.0		75.7	0.0
Delay (s)	227.0	33.5	22.1	205.8	80.5			260.5	29.1		133.9	55.8
Level of Service	F	C	C	F	F			F	C		F	E
Approach Delay (s)		31.0			90.2			243.0			128.9	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	118.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	122.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	107.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	256	125	149	469	364	193	831	66	238	528	192
Future Volume (veh/h)	256	256	125	149	469	364	193	831	66	238	528	192
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1845	1845
Adj Flow Rate, veh/h	281	281	137	164	515	400	212	913	73	262	580	211
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	3	3	3
Cap, veh/h	286	980	554	150	986	428	265	1367	109	262	1433	575
Arrive On Green	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28
Sat Flow, veh/h	3442	3539	1559	1774	3539	1536	3442	4802	383	3408	5036	1561
Grp Volume(v), veh/h	281	281	137	164	515	400	212	644	342	262	580	211
Grp Sat Flow(s),veh/h/ln	1721	1770	1559	1774	1770	1536	1721	1695	1794	1704	1679	1561
Q Serve(g_s), s	5.3	4.1	4.0	5.5	8.0	16.5	3.9	10.9	11.0	5.0	6.1	6.4
Cycle Q Clear(g_c), s	5.3	4.1	4.0	5.5	8.0	16.5	3.9	10.9	11.0	5.0	6.1	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	286	980	554	150	986	428	265	965	511	262	1433	575
V/C Ratio(X)	0.98	0.29	0.25	1.09	0.52	0.94	0.80	0.67	0.67	1.00	0.40	0.37
Avail Cap(c_a), veh/h	286	980	554	150	986	428	265	965	511	262	1433	575
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	29.8	18.5	14.9	29.7	19.8	22.9	29.5	20.5	20.6	30.0	18.8	15.0
Incr Delay (d2), s/veh	48.3	0.2	0.2	100.4	0.5	27.9	16.0	3.7	6.8	55.4	0.9	1.8
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	4.4	2.0	1.7	6.9	3.9	10.3	2.4	5.6	6.4	4.3	2.9	3.0
LnGrp Delay(d),s/veh	78.1	18.6	15.1	130.1	20.3	50.8	45.5	24.2	27.4	85.4	19.6	16.8
LnGrp LOS	E	B	B	F	C	D	D	C	C	F	B	B
Approach Vol, veh/h		699			1079			1198			1053	
Approach Delay, s/veh		41.8			48.3			28.9			35.4	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	10.0	22.5	9.5	23.0	9.9	22.6
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	5.0	18.5	5.5	18.0	5.0	18.5	5.4	18.1
Max Q Clear Time (g_c+I1), s	7.0	13.0	7.5	6.1	5.9	8.4	7.3	18.5
Green Ext Time (p_c), s	0.0	3.0	0.0	1.8	0.0	3.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	153	42	158	156	263	75	190	179	144	93	14
Future Volume (veh/h)	38	153	42	158	156	263	75	190	179	144	93	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.74	1.00		0.89	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	50	201	55	208	205	346	99	250	236	189	122	18
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	323	88	236	194	327	127	492	416	166	454	67
Arrive On Green	0.04	0.25	0.25	0.13	0.34	0.34	0.07	0.26	0.26	0.09	0.29	0.29
Sat Flow, veh/h	1774	1296	355	1774	575	970	1774	1863	1574	1774	1584	234
Grp Volume(v), veh/h	50	0	256	208	0	551	99	250	236	189	0	140
Grp Sat Flow(s),veh/h/ln	1774	0	1650	1774	0	1545	1774	1863	1574	1774	0	1818
Q Serve(g_s), s	1.9	0.0	9.5	8.0	0.0	23.4	3.8	7.9	9.0	6.5	0.0	4.1
Cycle Q Clear(g_c), s	1.9	0.0	9.5	8.0	0.0	23.4	3.8	7.9	9.0	6.5	0.0	4.1
Prop In Lane	1.00		0.21	1.00		0.63	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	79	0	411	236	0	521	127	492	416	166	0	521
V/C Ratio(X)	0.63	0.00	0.62	0.88	0.00	1.06	0.78	0.51	0.57	1.14	0.00	0.27
Avail Cap(c_a), veh/h	131	0	429	236	0	521	159	492	416	166	0	521
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	0.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	23.1	29.5	0.0	22.9	31.6	21.7	22.1	31.4	0.0	19.1
Incr Delay (d2), s/veh	8.0	0.0	2.6	30.0	0.0	55.3	17.7	3.7	5.5	110.8	0.0	1.3
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	1.1	0.0	4.6	5.8	0.0	17.9	2.5	4.5	4.5	8.3	0.0	2.2
LnGrp Delay(d),s/veh	40.6	0.0	25.7	59.5	0.0	78.2	49.3	25.4	27.6	142.2	0.0	20.4
LnGrp LOS	D		C	E		F	D	C	C	F		C
Approach Vol, veh/h		306			759			585			329	
Approach Delay, s/veh		28.1			73.1			30.3			90.3	
Approach LOS		C			E			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	22.8	13.7	21.8	9.4	24.4	7.6	27.9
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	6.5	18.3	9.2	18.0	6.2	18.6	5.1	22.1
Max Q Clear Time (g_c+I1), s	8.5	11.0	10.0	11.5	5.8	6.1	3.9	25.4
Green Ext Time (p_c), s	0.0	1.4	0.0	0.8	0.0	0.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	56.4
HCM 2010 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	118	206	254	4	161	76	129	36	2	91	86	140
Future Vol, veh/h	118	206	254	4	161	76	129	36	2	91	86	140
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	122	212	262	4	166	78	133	37	2	94	89	144
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	14.7	13.9	14.3	12.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	95%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	5%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	38	118	206	254	4	161	76	91	86	140
LT Vol	129	0	118	0	0	4	0	0	91	0	0
Through Vol	0	36	0	206	0	0	161	0	0	86	0
RT Vol	0	2	0	0	254	0	0	76	0	0	140
Lane Flow Rate	133	39	122	212	262	4	166	78	94	89	144
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.314	0.087	0.26	0.425	0.472	0.01	0.366	0.157	0.215	0.191	0.283
Departure Headway (Hd)	8.493	7.957	7.707	7.201	6.491	8.438	7.93	7.218	8.268	7.765	7.059
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	423	450	466	499	555	424	453	496	433	462	508
Service Time	6.252	5.716	5.457	4.95	4.241	6.196	5.687	4.975	6.027	5.523	4.818
HCM Lane V/C Ratio	0.314	0.087	0.262	0.425	0.472	0.009	0.366	0.157	0.217	0.193	0.283
HCM Control Delay	15.1	11.5	13.2	15.2	15	11.3	15.2	11.3	13.3	12.4	12.6
HCM Lane LOS	C	B	B	C	B	B	C	B	B	B	B
HCM 95th-tile Q	1.3	0.3	1	2.1	2.5	0	1.7	0.6	0.8	0.7	1.2

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	168	513	61	66	331	39	28	2	44	21	2	96
Future Vol, veh/h	168	513	61	66	331	39	28	2	44	21	2	96
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	177	540	64	69	348	41	29	2	46	22	2	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	389	0	0	604	0	0	1452	1421	540	1436	1444	348
Stage 1	-	-	-	-	-	-	894	894	-	486	486	-
Stage 2	-	-	-	-	-	-	558	527	-	950	958	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1170	-	-	974	-	-	108	136	542	111	132	695
Stage 1	-	-	-	-	-	-	336	360	-	563	551	-
Stage 2	-	-	-	-	-	-	514	528	-	312	336	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1170	-	-	974	-	-	76	107	542	84	104	695
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	107	-	84	104	-
Stage 1	-	-	-	-	-	-	285	306	-	478	512	-
Stage 2	-	-	-	-	-	-	406	491	-	241	285	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	1.4	38.5	20.7
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	76	107	542	1170	-	-	974	-	-	84	104	695
HCM Lane V/C Ratio	0.388	0.02	0.085	0.151	-	-	0.071	-	-	0.263	0.02	0.145
HCM Control Delay (s)	79.7	39.3	12.3	8.6	-	-	9	-	-	62.5	40.3	11.1
HCM Lane LOS	F	E	B	A	-	-	A	-	-	F	E	B
HCM 95th %tile Q(veh)	1.5	0.1	0.3	0.5	-	-	0.2	-	-	1	0.1	0.5

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	76	185	26	112	290
Future Vol, veh/h	30	76	185	26	112	290
Conflicting Peds, #/hr	1	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	91	91	91	91	91	91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	33	84	203	29	123	319

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	784	218	0	0	232	0
Stage 1	218	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	356	812	-	-	1330	-
Stage 1	809	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	316	812	-	-	1330	-
Mov Cap-2 Maneuver	316	-	-	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	559	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1330	-
HCM Lane V/C Ratio	-	-	0.207	0.093	-
HCM Control Delay (s)	-	-	13.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	309	209	20	180	208	142	283	25	355	501	251
Future Volume (veh/h)	234	309	209	20	180	208	142	283	25	355	501	251
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	244	322	218	21	188	217	148	295	26	370	522	261
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	426	249	168	218	97	112	177	479	407	248	554	471
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.10	0.26	0.26	0.14	0.30	0.30
Sat Flow, veh/h	1774	1037	702	1774	790	912	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	244	0	540	21	0	405	148	295	26	370	522	261
Grp Sat Flow(s),veh/h/ln	1774	0	1739	1774	0	1702	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	9.1	0.0	18.0	0.8	0.0	9.2	6.1	10.5	0.9	10.5	20.5	10.4
Cycle Q Clear(g_c), s	9.1	0.0	18.0	0.8	0.0	9.2	6.1	10.5	0.9	10.5	20.5	10.4
Prop In Lane	1.00		0.40	1.00		0.54	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	417	218	0	209	177	479	407	248	554	471
V/C Ratio(X)	0.57	0.00	1.29	0.10	0.00	1.94	0.83	0.62	0.06	1.49	0.94	0.55
Avail Cap(c_a), veh/h	426	0	417	218	0	209	177	479	407	248	554	471
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	25.1	0.0	28.5	29.2	0.0	32.9	33.1	24.6	21.0	32.3	25.7	22.2
Incr Delay (d2), s/veh	1.9	0.0	149.1	0.2	0.0	440.1	27.6	5.8	0.3	240.6	26.4	4.6
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	4.6	0.0	25.9	0.4	0.0	29.8	4.4	6.1	0.4	21.7	14.5	5.1
LnGrp Delay(d),s/veh	27.0	0.0	177.6	29.4	0.0	473.0	60.7	30.4	21.3	272.8	52.1	26.8
LnGrp LOS	C		F	C		F	E	C	C	F	D	C
Approach Vol, veh/h		784			426			469			1153	
Approach Delay, s/veh		130.7			451.2			39.5			117.2	
Approach LOS		F			F			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	23.8		22.5	12.0	26.8		13.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.5	19.3		18.0	7.5	21.9		9.2				
Max Q Clear Time (g_c+I1), s	12.5	12.5		20.0	8.1	22.5		11.2				
Green Ext Time (p_c), s	0.0	1.0		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			158.3									
HCM 2010 LOS			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	633	172	167	382	17	127	49	102	28	79	12
Future Volume (veh/h)	28	633	172	167	382	17	127	49	102	28	79	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	33	736	200	194	444	20	148	57	119	33	92	14
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	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	4	4	4
Cap, veh/h	63	529	144	151	751	34	278	113	176	159	395	54
Arrive On Green	0.04	0.38	0.38	0.09	0.42	0.42	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1774	1411	384	1774	1769	80	604	358	559	268	1254	170
Grp Volume(v), veh/h	33	0	936	194	0	464	324	0	0	139	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1795	1774	0	1849	1521	0	0	1692	0	0
Q Serve(g_s), s	1.1	0.0	22.5	5.1	0.0	11.6	7.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	22.5	5.1	0.0	11.6	10.7	0.0	0.0	3.4	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.04	0.46		0.37	0.24		0.10
Lane Grp Cap(c), veh/h	63	0	673	151	0	785	567	0	0	607	0	0
V/C Ratio(X)	0.53	0.00	1.39	1.29	0.00	0.59	0.57	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	163	0	673	151	0	785	567	0	0	607	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.5	0.0	18.8	27.5	0.0	13.3	17.6	0.0	0.0	15.3	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.0	184.8	169.7	0.0	1.2	4.2	0.0	0.0	0.9	0.0	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	0.6	0.0	45.6	9.6	0.0	6.1	5.2	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	35.2	0.0	203.5	197.1	0.0	14.4	21.7	0.0	0.0	16.1	0.0	0.0
LnGrp LOS	D		F	F		B	C			B		
Approach Vol, veh/h		969			658			324			139	
Approach Delay, s/veh		197.8			68.3			21.7			16.1	
Approach LOS		F			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4	6.6	30.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9	5.5	22.1
Max Q Clear Time (g_c+I1), s		12.7	7.1	24.5		5.4	3.1	13.6
Green Ext Time (p_c), s		1.0	0.0	0.0		0.6	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	117.6
HCM 2010 LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	320	640	332	189	192	218
Future Volume (veh/h)	320	640	332	189	192	218
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	340	681	353	201	204	232
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	412	1038	441	375	471	420
Arrive On Green	0.23	0.56	0.24	0.24	0.27	0.27
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	340	681	353	201	204	232
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	9.3	13.0	9.1	5.6	4.9	6.4
Cycle Q Clear(g_c), s	9.3	13.0	9.1	5.6	4.9	6.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	412	1038	441	375	471	420
V/C Ratio(X)	0.83	0.66	0.80	0.54	0.43	0.55
Avail Cap(c_a), veh/h	646	1374	531	452	471	420
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	18.5	7.8	18.3	17.0	15.5	16.1
Incr Delay (d2), s/veh	5.0	0.7	7.2	1.2	2.9	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	6.8	5.5	2.6	2.8	6.2
LnGrp Delay(d),s/veh	23.6	8.6	25.4	18.1	18.4	21.2
LnGrp LOS	C	A	C	B	B	C
Approach Vol, veh/h		1021	554		436	
Approach Delay, s/veh		13.6	22.8		19.9	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.8		18.0	16.3	16.5
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	18.5	14.5
Max Q Clear Time (g_c+I1), s				15.0		8.4	11.3	11.1
Green Ext Time (p_c), s				5.0		0.7	0.6	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	681	706	108	705	27	539	16	141	132	154	1
Future Volume (vph)	1	681	706	108	705	27	539	16	141	132	154	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1687	1776	1509	1583	1657			1776	1583		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1687	1776	1509	1583	1657			1776	1583		1821	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	724	751	115	750	29	573	17	150	140	164	1
RTOR Reduction (vph)	0	0	379	0	1	0	0	0	84	0	0	1
Lane Group Flow (vph)	1	724	372	115	778	0	0	590	66	0	304	0
Heavy Vehicles (%)	7%	7%	7%	14%	14%	14%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		19.9	19.9
Effective Green, g (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		19.9	19.9
Actuated g/C Ratio	0.01	0.43	0.43	0.04	0.46			0.20	0.20		0.18	0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	14	755	641	69	763			347	309		320	278
v/s Ratio Prot	0.00	0.41		c0.07	c0.47			c0.33			c0.17	
v/s Ratio Perm			0.25						0.04			0.00
v/c Ratio	0.07	0.96	0.58	1.67	1.02			1.70	0.21		0.95	0.00
Uniform Delay, d1	55.6	31.5	24.8	54.0	30.5			45.5	38.2		46.1	38.4
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	24.1	3.8	355.1	37.6			327.3	0.3		36.7	0.0
Delay (s)	57.8	55.7	28.6	409.1	68.1			372.8	38.6		82.8	38.4
Level of Service	E	E	C	F	E			F	D		F	D
Approach Delay (s)		41.9			112.0			305.0			82.7	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	120.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	113.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	400	208	167	303	332	491	1061	255	217	652	141
Future Volume (veh/h)	196	400	208	167	303	332	491	1061	255	217	652	141
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	204	417	217	174	316	346	511	1105	266	226	679	147
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	300	792	504	214	910	405	337	1193	287	319	1456	591
Arrive On Green	0.09	0.22	0.22	0.12	0.26	0.26	0.10	0.29	0.29	0.09	0.29	0.29
Sat Flow, veh/h	3442	3539	1560	1774	3539	1576	3442	4094	985	3442	5085	1580
Grp Volume(v), veh/h	204	417	217	174	316	346	511	915	456	226	679	147
Grp Sat Flow(s),veh/h/ln	1721	1770	1560	1774	1770	1576	1721	1695	1689	1721	1695	1580
Q Serve(g_s), s	3.8	6.9	7.3	6.3	4.8	13.9	6.5	17.4	17.4	4.2	7.3	4.3
Cycle Q Clear(g_c), s	3.8	6.9	7.3	6.3	4.8	13.9	6.5	17.4	17.4	4.2	7.3	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.58	1.00		1.00
Lane Grp Cap(c), veh/h	300	792	504	214	910	405	337	988	492	319	1456	591
V/C Ratio(X)	0.68	0.53	0.43	0.81	0.35	0.85	1.52	0.93	0.93	0.71	0.47	0.25
Avail Cap(c_a), veh/h	389	960	578	227	1013	451	337	988	492	337	1456	591
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	29.4	22.7	17.7	28.4	20.1	23.5	29.9	22.8	22.8	29.2	19.5	14.4
Incr Delay (d2), s/veh	3.2	0.5	0.6	18.8	0.2	13.6	246.9	15.5	25.8	6.3	1.1	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	1.9	3.4	3.2	4.2	2.4	7.5	14.6	10.3	11.6	2.3	3.5	2.0
LnGrp Delay(d),s/veh	32.5	23.2	18.3	47.2	20.3	37.1	276.8	38.3	48.6	35.5	20.6	15.4
LnGrp LOS	C	C	B	D	C	D	F	D	D	D	C	B
Approach Vol, veh/h		838			836			1882			1052	
Approach Delay, s/veh		24.2			32.8			105.6			23.1	
Approach LOS		C			C			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	23.8	12.5	19.3	11.0	23.5	10.3	21.6
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	6.5	19.0	8.5	18.0	6.5	19.0	7.5	19.0
Max Q Clear Time (g_c+I1), s	6.2	19.4	8.3	9.3	8.5	9.3	5.8	15.9
Green Ext Time (p_c), s	0.0	0.0	0.0	2.3	0.0	3.6	0.1	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	58.7
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	179	87	202	236	231	62	186	216	177	115	10
Future Volume (veh/h)	15	179	87	202	236	231	62	186	216	177	115	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	18	213	104	240	281	275	74	221	257	211	137	12
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	264	129	277	312	306	99	512	432	132	495	43
Arrive On Green	0.02	0.23	0.23	0.16	0.36	0.36	0.06	0.27	0.27	0.07	0.29	0.29
Sat Flow, veh/h	1774	1160	566	1774	863	844	1774	1863	1572	1774	1688	148
Grp Volume(v), veh/h	18	0	317	240	0	556	74	221	257	211	0	149
Grp Sat Flow(s),veh/h/ln	1774	0	1726	1774	0	1707	1774	1863	1572	1774	0	1835
Q Serve(g_s), s	0.7	0.0	11.7	8.9	0.0	20.7	2.8	6.6	9.5	5.0	0.0	4.2
Cycle Q Clear(g_c), s	0.7	0.0	11.7	8.9	0.0	20.7	2.8	6.6	9.5	5.0	0.0	4.2
Prop In Lane	1.00		0.33	1.00		0.49	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	38	0	392	277	0	618	99	512	432	132	0	539
V/C Ratio(X)	0.48	0.00	0.81	0.87	0.00	0.90	0.75	0.43	0.59	1.60	0.00	0.28
Avail Cap(c_a), veh/h	132	0	462	277	0	618	132	512	432	132	0	539
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	0.00	1.00
Uniform Delay (d), s/veh	32.6	0.0	24.6	27.7	0.0	20.3	31.3	20.1	21.1	31.1	0.0	18.3
Incr Delay (d2), s/veh	9.1	0.0	8.9	24.0	0.0	16.2	15.0	2.6	5.9	302.8	0.0	1.3
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	0.4	0.0	6.5	6.2	0.0	12.5	1.8	3.8	4.8	13.5	0.0	2.3
LnGrp Delay(d),s/veh	41.7	0.0	33.5	51.7	0.0	36.5	46.3	22.7	27.1	334.0	0.0	19.5
LnGrp LOS	D		C	D		D	D	C	C	F		B
Approach Vol, veh/h		335			796			552			360	
Approach Delay, s/veh		34.0			41.1			27.9			203.8	
Approach LOS		C			D			C			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	23.0	15.0	19.8	8.2	24.3	5.9	28.9				
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	5.0	18.5	10.5	18.0	5.0	18.5	5.0	23.5				
Max Q Clear Time (g_c+I1), s	7.0	11.5	10.9	13.7	4.8	6.2	2.7	22.7				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.7	0.0	0.6	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			65.0									
HCM 2010 LOS			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	248	15	40	490	25	45	4	63	39	3	140
Future Volume (veh/h)	46	248	15	40	490	25	45	4	63	39	3	140
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1759	1759	1759	1827	1827	1827	1863	1863	1863	1845	1845	1845
Adj Flow Rate, veh/h	48	261	16	42	516	26	47	4	66	41	3	147
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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, %	8	8	8	4	4	4	2	2	2	3	3	3
Cap, veh/h	93	1017	454	86	1036	463	465	325	276	478	322	274
Arrive On Green	0.06	0.30	0.30	0.05	0.30	0.30	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1675	3343	1493	1740	3471	1553	1232	1863	1583	1312	1845	1568
Grp Volume(v), veh/h	48	261	16	42	516	26	47	4	66	41	3	147
Grp Sat Flow(s),veh/h/ln	1675	1671	1493	1740	1736	1553	1232	1863	1583	1312	1845	1568
Q Serve(g_s), s	0.8	1.7	0.2	0.7	3.5	0.3	0.9	0.1	1.0	0.8	0.0	2.4
Cycle Q Clear(g_c), s	0.8	1.7	0.2	0.7	3.5	0.3	1.0	0.1	1.0	0.8	0.0	2.4
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	93	1017	454	86	1036	463	465	325	276	478	322	274
V/C Ratio(X)	0.52	0.26	0.04	0.49	0.50	0.06	0.10	0.01	0.24	0.09	0.01	0.54
Avail Cap(c_a), veh/h	380	2276	1017	395	2364	1058	1132	1334	1134	1189	1321	1123
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	13.2	7.5	7.0	13.3	8.3	7.2	10.2	9.8	10.2	10.1	9.8	10.8
Incr Delay (d2), s/veh	4.4	0.1	0.0	4.2	0.4	0.0	0.1	0.0	0.4	0.1	0.0	1.6
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	0.5	0.8	0.1	0.4	1.7	0.2	0.3	0.0	0.5	0.3	0.0	1.2
LnGrp Delay(d),s/veh	17.5	7.6	7.0	17.4	8.6	7.2	10.3	9.8	10.6	10.2	9.8	12.4
LnGrp LOS	B	A	A	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h		325			584			117			191	
Approach Delay, s/veh		9.1			9.2			10.4			11.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.5	5.9	13.2		9.5	6.1	13.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.5	6.5	19.5		20.5	6.5	19.5
Max Q Clear Time (g_c+I1), s		3.0	2.7	3.7		4.4	2.8	5.5
Green Ext Time (p_c), s		0.3	0.0	1.5		0.5	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	132	300	32	37	188
Future Vol, veh/h	35	132	300	32	37	188
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	42	157	357	38	44	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	689	377	0	0	396	0
Stage 1	377	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	412	670	-	-	1136	-
Stage 1	694	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	396	669	-	-	1135	-
Mov Cap-2 Maneuver	396	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	585	1135	-
HCM Lane V/C Ratio	-	-	0.34	0.039	-
HCM Control Delay (s)	-	-	14.3	8.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0.1	-

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	132	300	32	37	188
Future Vol, veh/h	35	132	300	32	37	188
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	42	157	357	38	44	224
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.1	13.1	11.1
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	21%	16%
Vol Thru, %	90%	0%	84%
Vol Right, %	10%	79%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	332	167	225
LT Vol	0	35	37
Through Vol	300	0	188
RT Vol	32	132	0
Lane Flow Rate	395	199	268
Geometry Grp	1	1	1
Degree of Util (X)	0.526	0.278	0.374
Departure Headway (Hd)	4.793	5.033	5.022
Convergence, Y/N	Yes	Yes	Yes
Cap	747	706	710
Service Time	2.866	3.119	3.102
HCM Lane V/C Ratio	0.529	0.282	0.377
HCM Control Delay	13.1	10.1	11.1
HCM Lane LOS	B	B	B
HCM 95th-tile Q	3.1	1.1	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	328	118	91	700	19	207	68	160	18	24	12
Future Volume (veh/h)	6	328	118	91	700	19	207	68	160	18	24	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	7	373	134	103	795	22	235	77	182	20	27	14
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	16	574	203	131	1023	28	385	125	239	259	328	147
Arrive On Green	0.01	0.23	0.23	0.07	0.29	0.29	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	1740	2514	891	1757	3484	96	646	285	543	381	746	336
Grp Volume(v), veh/h	7	256	251	103	400	417	494	0	0	61	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1670	1757	1752	1828	1475	0	0	1463	0	0
Q Serve(g_s), s	0.2	7.0	7.2	3.0	10.9	10.9	13.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	7.0	7.2	3.0	10.9	10.9	14.6	0.0	0.0	1.1	0.0	0.0
Prop In Lane	1.00		0.53	1.00		0.05	0.48		0.37	0.33		0.23
Lane Grp Cap(c), veh/h	16	396	381	131	515	537	749	0	0	734	0	0
V/C Ratio(X)	0.44	0.65	0.66	0.79	0.78	0.78	0.66	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	166	597	574	185	619	646	749	0	0	734	0	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)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.8	18.3	18.3	23.8	16.9	16.9	12.2	0.0	0.0	8.5	0.0	0.0
Incr Delay (d2), s/veh	17.4	1.8	1.9	13.6	5.2	5.0	4.5	0.0	0.0	0.2	0.0	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	0.2	3.5	3.5	2.0	6.0	6.2	6.8	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	43.2	20.1	20.3	37.4	22.1	21.9	16.8	0.0	0.0	8.8	0.0	0.0
LnGrp LOS	D	C	C	D	C	C	B			A		
Approach Vol, veh/h		514			920			494			61	
Approach Delay, s/veh		20.5			23.7			16.8			8.8	
Approach LOS		C			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.5	8.4	16.5		27.5	5.0	19.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		23.0	5.5	18.0		23.0	5.0	18.5
Max Q Clear Time (g_c+I1), s		16.6	5.0	9.2		3.1	2.2	12.9
Green Ext Time (p_c), s		1.7	0.0	2.1		0.2	0.0	2.4

Intersection Summary		
HCM 2010 Ctrl Delay		20.7
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	537	383	67	767	28	762	25	64	46	23	5
Future Volume (veh/h)	11	537	383	67	767	28	762	25	64	46	23	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1696	1696	1696	1624	1624	1624	1863	1863	1900	1810	1810	1900
Adj Flow Rate, veh/h	11	559	399	70	799	29	794	26	67	48	24	5
Adj No. of Lanes	1	2	1	1	2	1	2	1	0	1	1	0
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, %	12	12	12	17	17	17	2	2	2	5	5	5
Cap, veh/h	23	976	815	89	1068	478	903	119	306	143	114	24
Arrive On Green	0.01	0.30	0.30	0.06	0.35	0.35	0.26	0.26	0.26	0.08	0.08	0.08
Sat Flow, veh/h	1616	3223	1442	1547	3085	1380	3442	462	1191	1723	1453	303
Grp Volume(v), veh/h	11	559	399	70	799	29	794	0	93	48	0	29
Grp Sat Flow(s),veh/h/ln	1616	1612	1442	1547	1543	1380	1721	0	1653	1723	0	1756
Q Serve(g_s), s	0.4	8.8	10.0	2.7	13.7	0.8	13.3	0.0	2.7	1.6	0.0	0.9
Cycle Q Clear(g_c), s	0.4	8.8	10.0	2.7	13.7	0.8	13.3	0.0	2.7	1.6	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.72	1.00		0.17
Lane Grp Cap(c), veh/h	23	976	815	89	1068	478	903	0	425	143	0	138
V/C Ratio(X)	0.49	0.57	0.49	0.79	0.75	0.06	0.88	0.00	0.22	0.33	0.00	0.21
Avail Cap(c_a), veh/h	134	976	815	136	1068	478	945	0	476	178	0	204
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.4	17.7	7.9	28.0	17.3	13.1	21.3	0.0	17.6	26.0	0.0	26.0
Incr Delay (d2), s/veh	15.4	2.4	2.1	15.5	4.8	0.2	9.3	0.0	0.3	1.4	0.0	0.8
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	0.3	4.2	4.4	1.5	6.5	0.3	7.5	0.0	1.2	0.8	0.0	0.5
LnGrp Delay(d),s/veh	44.8	20.1	10.0	43.5	22.2	13.4	30.6	0.0	17.8	27.4	0.0	26.7
LnGrp LOS	D	C	A	D	C	B	C		B	C		C
Approach Vol, veh/h		969			898			887			77	
Approach Delay, s/veh		16.2			23.5			29.3			27.1	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	20.0	7.9	22.7	20.3	9.2	5.3	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	6.2	17.3	5.3	18.2	16.5	7.0	5.0	18.5
Max Q Clear Time (g_c+I1), s	3.6	4.7	4.7	12.0	15.3	2.9	2.4	15.7
Green Ext Time (p_c), s	0.0	0.3	0.0	2.8	0.5	0.0	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	256	125	149	469	364	193	831	66	238	528	192
Future Volume (veh/h)	256	256	125	149	469	364	193	831	66	238	528	192
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1845	1845
Adj Flow Rate, veh/h	281	281	137	164	515	400	212	913	73	262	580	211
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	3	3	3
Cap, veh/h	373	918	529	202	938	406	273	1314	105	319	1451	620
Arrive On Green	0.11	0.26	0.26	0.11	0.26	0.26	0.08	0.27	0.27	0.09	0.29	0.29
Sat Flow, veh/h	3442	3539	1558	1774	3539	1533	3442	4802	383	3408	5036	1561
Grp Volume(v), veh/h	281	281	137	164	515	400	212	644	342	262	580	211
Grp Sat Flow(s),veh/h/ln	1721	1770	1558	1774	1770	1533	1721	1695	1794	1704	1679	1561
Q Serve(g_s), s	5.5	4.4	4.4	6.3	8.7	18.0	4.2	11.8	11.9	5.2	6.4	6.5
Cycle Q Clear(g_c), s	5.5	4.4	4.4	6.3	8.7	18.0	4.2	11.8	11.9	5.2	6.4	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	373	918	529	202	938	406	273	928	491	319	1451	620
V/C Ratio(X)	0.75	0.31	0.26	0.81	0.55	0.98	0.78	0.69	0.70	0.82	0.40	0.34
Avail Cap(c_a), veh/h	401	918	529	217	938	406	273	928	491	319	1451	620
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	30.0	20.7	16.7	30.0	21.9	25.4	31.4	22.6	22.6	30.9	19.9	14.6
Incr Delay (d2), s/veh	7.3	0.2	0.3	19.1	0.7	40.4	13.3	4.3	8.0	15.6	0.8	1.5
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	3.0	2.2	1.9	4.1	4.3	12.1	2.5	6.1	7.0	3.2	3.1	3.1
LnGrp Delay(d),s/veh	37.3	20.9	16.9	49.1	22.6	65.8	44.6	26.9	30.6	46.5	20.7	16.1
LnGrp LOS	D	C	B	D	C	E	D	C	C	D	C	B
Approach Vol, veh/h		699			1079			1198			1053	
Approach Delay, s/veh		26.7			42.7			31.1			26.2	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	23.5	12.4	22.5	10.0	24.5	12.0	22.9
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	6.5	19.0	8.5	18.0	5.5	20.0	8.1	18.4
Max Q Clear Time (g_c+I1), s	7.2	13.9	8.3	6.4	6.2	8.5	7.5	20.0
Green Ext Time (p_c), s	0.0	2.8	0.0	1.7	0.0	3.7	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	168	513	61	66	331	39	28	2	44	21	2	96
Future Volume (veh/h)	168	513	61	66	331	39	28	2	44	21	2	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	177	540	64	69	348	41	29	2	46	22	2	101
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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	233	1091	488	129	885	396	455	312	265	466	312	265
Arrive On Green	0.13	0.31	0.31	0.07	0.25	0.25	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1286	1863	1583	1352	1863	1583
Grp Volume(v), veh/h	177	540	64	69	348	41	29	2	46	22	2	101
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1286	1863	1583	1352	1863	1583
Q Serve(g_s), s	2.9	3.7	0.9	1.1	2.4	0.6	0.6	0.0	0.7	0.4	0.0	1.7
Cycle Q Clear(g_c), s	2.9	3.7	0.9	1.1	2.4	0.6	0.6	0.0	0.7	0.4	0.0	1.7
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	233	1091	488	129	885	396	455	312	265	466	312	265
V/C Ratio(X)	0.76	0.49	0.13	0.53	0.39	0.10	0.06	0.01	0.17	0.05	0.01	0.38
Avail Cap(c_a), veh/h	623	2592	1160	392	2131	953	1014	1121	953	1053	1121	953
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	12.5	8.4	7.5	13.4	9.3	8.6	10.6	10.4	10.7	10.6	10.4	11.1
Incr Delay (d2), s/veh	5.1	0.3	0.1	3.4	0.3	0.1	0.1	0.0	0.3	0.0	0.0	0.9
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	1.7	1.9	0.4	0.7	1.2	0.3	0.2	0.0	0.3	0.2	0.0	0.8
LnGrp Delay(d),s/veh	17.6	8.8	7.6	16.7	9.6	8.7	10.7	10.4	11.0	10.6	10.4	12.0
LnGrp LOS	B	A	A	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		781			458			77			125	
Approach Delay, s/veh		10.7			10.6			10.9			11.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.5	6.7	13.7		9.5	8.4	12.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.0	6.6	21.9		18.0	10.5	18.0
Max Q Clear Time (g_c+I1), s		2.7	3.1	5.7		3.7	4.9	4.4
Green Ext Time (p_c), s		0.1	0.0	3.5		0.3	0.2	2.0

Intersection Summary		
HCM 2010 Ctrl Delay		10.8
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	76	185	26	112	290
Future Vol, veh/h	30	76	185	26	112	290
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	33	84	203	29	123	319

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	784	218	0	0	232	0
Stage 1	218	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	356	812	-	-	1330	-
Stage 1	809	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	323	812	-	-	1330	-
Mov Cap-2 Maneuver	323	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	559	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	568	1330	-
HCM Lane V/C Ratio	-	-	0.205	0.093	-
HCM Control Delay (s)	-	-	13	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.3	-

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	76	185	26	112	290
Future Vol, veh/h	30	76	185	26	112	290
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	33	84	203	29	123	319
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.2	9.7	13.3
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	28%	28%
Vol Thru, %	88%	0%	72%
Vol Right, %	12%	72%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	211	106	402
LT Vol	0	30	112
Through Vol	185	0	290
RT Vol	26	76	0
Lane Flow Rate	232	116	442
Geometry Grp	1	1	1
Degree of Util (X)	0.299	0.166	0.56
Departure Headway (Hd)	4.645	5.128	4.564
Convergence, Y/N	Yes	Yes	Yes
Cap	770	695	786
Service Time	2.693	3.188	2.605
HCM Lane V/C Ratio	0.301	0.167	0.562
HCM Control Delay	9.7	9.2	13.3
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1.3	0.6	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	633	172	167	382	17	127	49	102	28	79	12
Future Volume (veh/h)	28	633	172	167	382	17	127	49	102	28	79	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	33	736	200	194	444	20	148	57	119	33	92	14
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	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	4	4	4
Cap, veh/h	63	836	227	239	1390	63	287	121	185	166	415	57
Arrive On Green	0.04	0.30	0.30	0.13	0.40	0.40	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	2752	748	1774	3450	155	596	363	557	272	1251	171
Grp Volume(v), veh/h	33	473	463	194	227	237	324	0	0	139	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1731	1774	1770	1835	1516	0	0	1693	0	0
Q Serve(g_s), s	1.1	14.9	14.9	6.2	5.2	5.2	7.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	14.9	14.9	6.2	5.2	5.2	10.3	0.0	0.0	3.3	0.0	0.0
Prop In Lane	1.00		0.43	1.00		0.08	0.46		0.37	0.24		0.10
Lane Grp Cap(c), veh/h	63	538	526	239	713	740	592	0	0	638	0	0
V/C Ratio(X)	0.52	0.88	0.88	0.81	0.32	0.32	0.55	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	163	557	545	257	713	740	592	0	0	638	0	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)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.9	19.4	19.4	24.7	12.0	12.0	16.4	0.0	0.0	14.2	0.0	0.0
Incr Delay (d2), s/veh	6.6	14.7	15.0	16.8	0.3	0.2	3.6	0.0	0.0	0.8	0.0	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	0.6	9.4	9.3	4.2	2.6	2.7	5.0	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	34.5	34.2	34.4	41.5	12.3	12.3	20.0	0.0	0.0	15.0	0.0	0.0
LnGrp LOS	C	C	C	D	B	B	B			B		
Approach Vol, veh/h		969			658			324			139	
Approach Delay, s/veh		34.3			20.9			20.0			15.0	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.0	12.4	22.4		24.0	6.6	28.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.5	8.5	18.5		19.5	5.4	21.6
Max Q Clear Time (g_c+I1), s		12.3	8.2	16.9		5.3	3.1	7.2
Green Ext Time (p_c), s		1.2	0.0	0.9		0.6	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	681	706	108	705	27	539	16	141	132	154	1
Future Volume (veh/h)	1	681	706	108	705	27	539	16	141	132	154	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1776	1667	1667	1667	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	1	724	751	115	750	29	573	17	150	140	164	1
Adj No. of Lanes	1	2	1	1	2	1	2	1	0	1	1	0
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, %	7	7	7	14	14	14	2	2	2	2	2	2
Cap, veh/h	3	947	741	142	1167	522	725	36	320	198	227	1
Arrive On Green	0.00	0.28	0.28	0.09	0.37	0.37	0.21	0.22	0.22	0.11	0.12	0.12
Sat Flow, veh/h	1691	3374	1509	1587	3167	1417	3442	164	1444	1774	1849	11
Grp Volume(v), veh/h	1	724	751	115	750	29	573	0	167	140	0	165
Grp Sat Flow(s),veh/h/ln	1691	1687	1509	1587	1583	1417	1721	0	1608	1774	0	1861
Q Serve(g_s), s	0.0	11.9	17.0	4.3	11.9	0.8	9.6	0.0	5.5	4.6	0.0	5.2
Cycle Q Clear(g_c), s	0.0	11.9	17.0	4.3	11.9	0.8	9.6	0.0	5.5	4.6	0.0	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.90	1.00		0.01
Lane Grp Cap(c), veh/h	3	947	741	142	1167	522	725	0	356	198	0	228
V/C Ratio(X)	0.36	0.76	1.01	0.81	0.64	0.06	0.79	0.00	0.47	0.71	0.00	0.72
Avail Cap(c_a), veh/h	140	947	741	170	1167	522	994	0	435	354	0	338
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.2	20.0	15.4	27.1	15.8	12.3	22.7	0.0	20.5	26.0	0.0	25.6
Incr Delay (d2), s/veh	63.7	5.9	36.4	21.5	2.7	0.2	3.1	0.0	1.0	4.6	0.0	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	0.1	6.3	19.6	2.7	5.5	0.3	4.8	0.0	2.5	2.5	0.0	2.9
LnGrp Delay(d),s/veh	93.9	25.8	51.8	48.6	18.6	12.5	25.7	0.0	21.4	30.5	0.0	29.9
LnGrp LOS	F	C	F	D	B	B	C		C	C		C
Approach Vol, veh/h		1476			894			740			305	
Approach Delay, s/veh		39.1			22.2			24.7			30.2	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	17.9	9.9	21.5	17.3	11.9	4.6	26.8
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	12.1	16.4	6.5	17.0	17.5	11.0	5.0	18.5
Max Q Clear Time (g_c+I1), s	6.6	7.5	6.3	19.0	11.6	7.2	2.0	13.9
Green Ext Time (p_c), s	0.2	0.6	0.0	0.0	1.2	0.3	0.0	2.1

Intersection Summary		
HCM 2010 Ctrl Delay		30.8
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	400	208	167	303	332	491	1061	255	217	652	141
Future Volume (veh/h)	196	400	208	167	303	332	491	1061	255	217	652	141
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	204	417	217	174	316	346	511	1105	266	226	679	147
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	288	761	612	212	888	396	601	1387	334	311	1293	534
Arrive On Green	0.08	0.22	0.22	0.12	0.25	0.25	0.17	0.34	0.34	0.09	0.25	0.25
Sat Flow, veh/h	3442	3539	1559	1774	3539	1576	3442	4094	985	3442	5085	1580
Grp Volume(v), veh/h	204	417	217	174	316	346	511	915	456	226	679	147
Grp Sat Flow(s),veh/h/ln	1721	1770	1559	1774	1770	1576	1721	1695	1689	1721	1695	1580
Q Serve(g_s), s	4.4	8.0	7.5	7.3	5.6	16.1	11.0	18.6	18.6	4.9	8.8	5.2
Cycle Q Clear(g_c), s	4.4	8.0	7.5	7.3	5.6	16.1	11.0	18.6	18.6	4.9	8.8	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.58	1.00		1.00
Lane Grp Cap(c), veh/h	288	761	612	212	888	396	601	1148	572	311	1293	534
V/C Ratio(X)	0.71	0.55	0.35	0.82	0.36	0.87	0.85	0.80	0.80	0.73	0.53	0.28
Avail Cap(c_a), veh/h	330	836	645	245	985	439	655	1148	572	348	1293	534
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	34.0	26.6	16.5	32.7	23.5	27.4	30.5	22.8	22.8	33.7	24.4	18.4
Incr Delay (d2), s/veh	5.8	0.6	0.3	17.4	0.2	16.5	9.7	5.8	11.0	6.6	1.5	1.3
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	3.9	3.3	4.6	2.8	8.7	6.0	9.6	10.4	2.6	4.3	2.5
LnGrp Delay(d),s/veh	39.8	27.2	16.8	50.1	23.7	43.8	40.1	28.6	33.8	40.3	26.0	19.7
LnGrp LOS	D	C	B	D	C	D	D	C	C	D	C	B
Approach Vol, veh/h		838			836			1882			1052	
Approach Delay, s/veh		27.6			37.5			33.0			28.2	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	30.3	13.6	20.9	17.8	23.9	10.9	23.6
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	7.7	25.8	10.5	18.0	14.5	19.0	7.3	21.2
Max Q Clear Time (g_c+I1), s	6.9	20.6	9.3	10.0	13.0	10.8	6.4	18.1
Green Ext Time (p_c), s	0.1	3.6	0.1	2.2	0.4	3.2	0.1	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	31.7
HCM 2010 LOS	C

Appendix G

Level of Service

Calculations

Cumulative Without Project

Conditions

Intersection	
Intersection Delay, s/veh	21.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	151	151	92	10	289	115	229	95	10	80	42	151
Future Vol, veh/h	151	151	92	10	289	115	229	95	10	80	42	151
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
Heavy Vehicles, %	7	7	7	5	5	5	2	2	2	6	6	6
Mvmt Flow	164	164	100	11	314	125	249	103	11	87	46	164
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	17.4	29.2	23.1	16
HCM LOS	C	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	90%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	10%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	229	105	151	151	92	10	289	115	80	42	151
LT Vol	229	0	151	0	0	10	0	0	80	0	0
Through Vol	0	95	0	151	0	0	289	0	0	42	0
RT Vol	0	10	0	0	92	0	0	115	0	0	151
Lane Flow Rate	249	114	164	164	100	11	314	125	87	46	164
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.638	0.275	0.432	0.409	0.229	0.028	0.771	0.282	0.238	0.118	0.393
Departure Headway (Hd)	9.233	8.666	9.481	8.968	8.249	9.352	8.839	8.122	9.852	9.342	8.628
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	391	414	379	402	435	383	408	443	364	383	417
Service Time	6.986	6.419	7.238	6.725	6.006	7.107	6.594	5.876	7.614	7.104	6.389
HCM Lane V/C Ratio	0.637	0.275	0.433	0.408	0.23	0.029	0.77	0.282	0.239	0.12	0.393
HCM Control Delay	27	14.7	19.3	17.8	13.5	12.4	35.8	14.1	15.7	13.4	16.9
HCM Lane LOS	D	B	C	C	B	B	E	B	C	B	C
HCM 95th-tile Q	4.3	1.1	2.1	1.9	0.9	0.1	6.5	1.1	0.9	0.4	1.8

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	289	20	45	594	30	50	5	60	45	5	145
Future Vol, veh/h	50	289	20	45	594	30	50	5	60	45	5	145
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	4	4	4	2	2	2	3	3	3
Mvmt Flow	53	304	21	47	625	32	53	5	63	47	5	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	657	0	0	326	0	0	1225	1162	305	1174	1151	625
Stage 1	-	-	-	-	-	-	411	411	-	719	719	-
Stage 2	-	-	-	-	-	-	814	751	-	455	432	-
Critical Hdwy	4.18	-	-	4.14	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.272	-	-	2.236	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	903	-	-	1222	-	-	156	195	735	168	197	483
Stage 1	-	-	-	-	-	-	618	595	-	418	431	-
Stage 2	-	-	-	-	-	-	372	418	-	583	581	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	903	-	-	1221	-	-	97	176	734	139	178	483
Mov Cap-2 Maneuver	-	-	-	-	-	-	97	176	-	139	178	-
Stage 1	-	-	-	-	-	-	581	559	-	393	415	-
Stage 2	-	-	-	-	-	-	242	402	-	497	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.5	41.1	22.6
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	97	176	734	903	-	-	1221	-	-	139	178	483
HCM Lane V/C Ratio	0.543	0.03	0.086	0.058	-	-	0.039	-	-	0.341	0.03	0.316
HCM Control Delay (s)	79.4	26.1	10.4	9.2	-	-	8.1	-	-	43.7	25.8	15.9
HCM Lane LOS	F	D	B	A	-	-	A	-	-	E	D	C
HCM 95th %tile Q(veh)	2.5	0.1	0.3	0.2	-	-	0.1	-	-	1.4	0.1	1.3

Intersection						
Int Delay, s/veh	2.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	72	315	35	15	195
Future Vol, veh/h	35	72	315	35	15	195
Conflicting Peds, #/hr	0	0	0	1	1	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	86	86	86	25	86	86
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	41	84	366	140	17	227

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	698	437	0	0	507	0
Stage 1	437	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	407	620	-	-	1033	-
Stage 1	651	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	399	619	-	-	1032	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	524	1032	-
HCM Lane V/C Ratio	-	-	0.237	0.017	-
HCM Control Delay (s)	-	-	14	8.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	209	142	32	453	315	314	433	42	130	185	210
Future Volume (veh/h)	233	209	142	32	453	315	314	433	42	130	185	210
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1900	1863	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	248	222	151	34	482	335	334	461	45	138	197	223
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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, %	7	7	7	2	2	2	2	2	2	4	4	4
Cap, veh/h	338	197	134	432	249	173	254	513	436	141	390	331
Arrive On Green	0.20	0.20	0.20	0.24	0.24	0.24	0.14	0.28	0.28	0.08	0.21	0.21
Sat Flow, veh/h	1691	985	670	1774	1025	712	1774	1863	1583	1740	1827	1553
Grp Volume(v), veh/h	248	0	373	34	0	817	334	461	45	138	197	223
Grp Sat Flow(s),veh/h/ln	1691	0	1655	1774	0	1737	1774	1863	1583	1740	1827	1553
Q Serve(g_s), s	12.4	0.0	18.0	1.3	0.0	21.9	12.9	21.4	1.9	7.1	8.6	11.9
Cycle Q Clear(g_c), s	12.4	0.0	18.0	1.3	0.0	21.9	12.9	21.4	1.9	7.1	8.6	11.9
Prop In Lane	1.00		0.40	1.00		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	338	0	331	432	0	423	254	513	436	141	390	331
V/C Ratio(X)	0.73	0.00	1.13	0.08	0.00	1.93	1.31	0.90	0.10	0.98	0.51	0.67
Avail Cap(c_a), veh/h	338	0	331	432	0	423	254	513	436	141	390	331
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	33.7	0.0	36.0	26.3	0.0	34.1	38.5	31.4	24.3	41.3	31.2	32.5
Incr Delay (d2), s/veh	8.0	0.0	88.2	0.1	0.0	428.4	166.2	21.2	0.5	68.8	4.6	10.4
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	6.5	0.0	16.3	0.7	0.0	60.8	18.0	14.0	0.9	6.1	4.8	6.0
LnGrp Delay(d),s/veh	41.7	0.0	124.2	26.3	0.0	462.5	204.8	52.5	24.8	110.1	35.8	43.0
LnGrp LOS	D		F	C		F	F	D	C	F	D	D
Approach Vol, veh/h		621			851			840			558	
Approach Delay, s/veh		91.3			445.1			111.6			57.0	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.8	29.3		22.5	17.4	23.7		26.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.3	24.8		18.0	12.9	19.2		21.9
Max Q Clear Time (g_c+I1), s	9.1	23.4		20.0	14.9	13.9		23.9
Green Ext Time (p_c), s	0.0	0.4		0.0	0.0	0.9		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		195.5
HCM 2010 LOS		F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	406	120	95	857	25	185	65	140	38	25	52
Future Volume (veh/h)	35	406	120	95	857	25	185	65	140	38	25	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	39	451	133	106	952	28	206	72	156	42	28	58
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	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, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	69	547	161	135	786	23	290	85	163	184	129	195
Arrive On Green	0.04	0.40	0.40	0.08	0.44	0.44	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1740	1356	400	1757	1783	52	675	281	536	353	425	645
Grp Volume(v), veh/h	39	0	584	106	0	980	434	0	0	128	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1756	1757	0	1835	1492	0	0	1423	0	0
Q Serve(g_s), s	1.4	0.0	18.5	3.7	0.0	27.5	14.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	18.5	3.7	0.0	27.5	17.7	0.0	0.0	3.7	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.03	0.47		0.36	0.33		0.45
Lane Grp Cap(c), veh/h	69	0	708	135	0	809	538	0	0	508	0	0
V/C Ratio(X)	0.57	0.00	0.82	0.78	0.00	1.21	0.81	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	142	0	724	194	0	809	538	0	0	508	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.4	0.0	16.6	28.3	0.0	17.4	21.0	0.0	0.0	16.4	0.0	0.0
Incr Delay (d2), s/veh	7.2	0.0	7.6	12.2	0.0	106.2	12.3	0.0	0.0	1.2	0.0	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	0.8	0.0	10.4	2.3	0.0	37.6	9.1	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	36.7	0.0	24.2	40.5	0.0	123.6	33.3	0.0	0.0	17.6	0.0	0.0
LnGrp LOS	D		C	D		F	C			B		
Approach Vol, veh/h		623			1086			434			128	
Approach Delay, s/veh		25.0			115.5			33.3			17.6	
Approach LOS		C			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	9.3	29.6		23.4	7.0	32.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	6.9	25.7		18.9	5.1	27.5
Max Q Clear Time (g_c+I1), s		19.7	5.7	20.5		5.7	3.4	29.5
Green Ext Time (p_c), s		0.0	0.0	1.8		0.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	69.5
HCM 2010 LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	199	280	640	454	281	335		
Future Volume (veh/h)	199	280	640	454	281	335		
Number	7	4	8	18	1	16		
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		
Adj Sat Flow, veh/h/ln	1810	1810	1863	1863	1863	1863		
Adj Flow Rate, veh/h	221	311	711	504	312	372		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	5	5	2	2	2	2		
Cap, veh/h	270	1102	696	592	416	372		
Arrive On Green	0.16	0.61	0.37	0.37	0.23	0.23		
Sat Flow, veh/h	1723	1810	1863	1583	1774	1583		
Grp Volume(v), veh/h	221	311	711	504	312	372		
Grp Sat Flow(s),veh/h/ln	1723	1810	1863	1583	1774	1583		
Q Serve(g_s), s	7.1	4.7	21.5	16.8	9.4	13.5		
Cycle Q Clear(g_c), s	7.1	4.7	21.5	16.8	9.4	13.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	270	1102	696	592	416	372		
V/C Ratio(X)	0.82	0.28	1.02	0.85	0.75	1.00		
Avail Cap(c_a), veh/h	345	1180	696	592	416	372		
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	23.5	5.3	18.0	16.5	20.4	22.0		
Incr Delay (d2), s/veh	11.5	0.1	39.5	11.4	11.7	46.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.2	2.3	18.5	9.2	5.9	15.3		
LnGrp Delay(d),s/veh	35.0	5.5	57.5	28.0	32.1	68.9		
LnGrp LOS	C	A	F	C	C	F		
Approach Vol, veh/h		532	1215		684			
Approach Delay, s/veh		17.7	45.3		52.1			
Approach LOS		B	D		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				39.5		18.0	13.5	26.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	11.5	21.5
Max Q Clear Time (g_c+I1), s				6.7		15.5	9.1	23.5
Green Ext Time (p_c), s				2.0		0.0	0.1	0.0
Intersection Summary								
HCM 2010 Ctrl Delay			41.2					
HCM 2010 LOS			D					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	650	490	75	1050	30	873	30	75	55	25	10
Future Volume (vph)	15	650	490	75	1050	30	873	30	75	55	25	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (prot)	1612	1696	1442	1543	1617			1777	1583		1749	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (perm)	1612	1696	1442	1543	1617			1777	1583		1749	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	677	510	78	1094	31	909	31	78	57	26	10
RTOR Reduction (vph)	0	0	285	0	1	0	0	0	54	0	0	9
Lane Group Flow (vph)	16	677	225	78	1124	0	0	940	24	0	83	1
Heavy Vehicles (%)	12%	12%	12%	17%	17%	17%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	2.0	54.2	54.2	5.0	57.2			38.5	38.5		7.0	7.0
Effective Green, g (s)	2.0	54.2	54.2	5.0	57.2			38.5	38.5		7.0	7.0
Actuated g/C Ratio	0.02	0.44	0.44	0.04	0.47			0.31	0.31		0.06	0.06
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	26	749	636	62	753			557	496		99	87
v/s Ratio Prot	0.01	0.40		c0.05	c0.70			c0.53			c0.05	
v/s Ratio Perm			0.16						0.02			0.00
v/c Ratio	0.62	0.90	0.35	1.26	1.49			1.69	0.05		0.84	0.01
Uniform Delay, d1	60.0	31.8	22.7	58.9	32.8			42.1	29.3		57.3	54.6
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	36.3	16.4	1.5	198.8	229.0			317.2	0.0		43.1	0.0
Delay (s)	96.2	48.2	24.2	257.7	261.8			359.3	29.4		100.4	54.6
Level of Service	F	D	C	F	F			F	C		F	D
Approach Delay (s)		38.7			261.5			334.0			95.5	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	201.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	122.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	126.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	291	169	175	545	398	288	831	87	290	581	269
Future Volume (veh/h)	270	291	169	175	545	398	288	831	87	290	581	269
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1845	1845
Adj Flow Rate, veh/h	290	313	182	188	586	428	310	894	94	312	625	289
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	3	3	3
Cap, veh/h	286	980	554	150	986	428	265	1331	139	262	1433	575
Arrive On Green	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28
Sat Flow, veh/h	3442	3539	1559	1774	3539	1536	3442	4675	490	3408	5036	1561
Grp Volume(v), veh/h	290	313	182	188	586	428	310	647	341	312	625	289
Grp Sat Flow(s),veh/h/ln	1721	1770	1559	1774	1770	1536	1721	1695	1775	1704	1679	1561
Q Serve(g_s), s	5.4	4.6	5.5	5.5	9.3	18.1	5.0	11.0	11.0	5.0	6.6	9.3
Cycle Q Clear(g_c), s	5.4	4.6	5.5	5.5	9.3	18.1	5.0	11.0	11.0	5.0	6.6	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	286	980	554	150	986	428	265	965	505	262	1433	575
V/C Ratio(X)	1.01	0.32	0.33	1.25	0.59	1.00	1.17	0.67	0.67	1.19	0.44	0.50
Avail Cap(c_a), veh/h	286	980	554	150	986	428	265	965	505	262	1433	575
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	29.8	18.6	15.4	29.7	20.3	23.4	30.0	20.6	20.6	30.0	19.0	15.9
Incr Delay (d2), s/veh	56.9	0.2	0.3	156.7	1.0	43.8	109.6	3.7	7.0	117.0	1.0	3.1
Initial Q Delay(d3),s/veh	0.1	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	4.8	2.2	2.4	9.2	4.7	12.8	6.4	5.6	6.4	6.6	3.1	4.5
LnGrp Delay(d),s/veh	86.8	18.8	15.7	186.5	21.2	67.2	139.6	24.3	27.6	147.0	20.0	19.1
LnGrp LOS	F	B	B	F	C	F	F	C	C	F	B	B
Approach Vol, veh/h		785			1202			1298			1226	
Approach Delay, s/veh		43.2			63.5			52.7			52.1	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	10.0	22.5	9.5	23.0	9.9	22.6
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	5.0	18.5	5.5	18.0	5.0	18.5	5.4	18.1
Max Q Clear Time (g_c+I1), s	7.0	13.0	7.5	7.5	7.0	11.3	7.4	20.1
Green Ext Time (p_c), s	0.0	2.9	0.0	2.0	0.0	3.1	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		53.7
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	170	46	260	175	367	75	228	200	185	120	25
Future Volume (veh/h)	45	170	46	260	175	367	75	228	200	185	120	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.74	1.00		0.89	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	57	215	58	329	222	465	95	289	253	234	152	32
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	326	88	235	165	345	122	491	415	166	430	91
Arrive On Green	0.05	0.25	0.25	0.13	0.33	0.33	0.07	0.26	0.26	0.09	0.29	0.29
Sat Flow, veh/h	1774	1302	351	1774	492	1031	1774	1863	1574	1774	1489	314
Grp Volume(v), veh/h	57	0	273	329	0	687	95	289	253	234	0	184
Grp Sat Flow(s),veh/h/ln	1774	0	1653	1774	0	1523	1774	1863	1574	1774	0	1803
Q Serve(g_s), s	2.2	0.0	10.3	9.2	0.0	23.2	3.7	9.4	9.8	6.5	0.0	5.6
Cycle Q Clear(g_c), s	2.2	0.0	10.3	9.2	0.0	23.2	3.7	9.4	9.8	6.5	0.0	5.6
Prop In Lane	1.00		0.21	1.00		0.68	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	85	0	414	235	0	510	122	491	415	166	0	521
V/C Ratio(X)	0.67	0.00	0.66	1.40	0.00	1.35	0.78	0.59	0.61	1.41	0.00	0.35
Avail Cap(c_a), veh/h	130	0	429	235	0	510	159	491	415	166	0	521
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	0.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	23.3	30.1	0.0	23.1	31.8	22.2	22.4	31.4	0.0	19.5
Incr Delay (d2), s/veh	8.7	0.0	3.5	202.9	0.0	168.6	16.7	5.1	6.5	215.3	0.0	1.9
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	1.3	0.0	5.1	17.7	0.0	33.5	2.4	5.5	5.0	13.1	0.0	3.0
LnGrp Delay(d),s/veh	41.2	0.0	26.9	233.0	0.0	191.7	48.5	27.3	28.9	246.7	0.0	21.4
LnGrp LOS	D		C	F		F	D	C	C	F		C
Approach Vol, veh/h		330			1016			637			418	
Approach Delay, s/veh		29.4			205.1			31.1			147.5	
Approach LOS		C			F			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	22.8	13.7	21.9	9.3	24.5	7.8	27.7
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	6.5	18.3	9.2	18.0	6.2	18.6	5.1	22.1
Max Q Clear Time (g_c+I1), s	8.5	11.8	11.2	12.3	5.7	7.6	4.2	25.2
Green Ext Time (p_c), s	0.0	1.5	0.0	0.8	0.0	0.7	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	124.8
HCM 2010 LOS	F

Intersection	
Intersection Delay, s/veh	21.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	303	286	10	251	95	148	50	5	115	103	149
Future Vol, veh/h	130	303	286	10	251	95	148	50	5	115	103	149
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	134	312	295	10	259	98	153	52	5	119	106	154
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	24.8	24	18.2	16.2
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	91%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	9%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	148	55	130	303	286	10	251	95	115	103	149
LT Vol	148	0	130	0	0	10	0	0	115	0	0
Through Vol	0	50	0	303	0	0	251	0	0	103	0
RT Vol	0	5	0	0	286	0	0	95	0	0	149
Lane Flow Rate	153	57	134	312	295	10	259	98	119	106	154
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.421	0.148	0.331	0.728	0.629	0.028	0.661	0.231	0.32	0.272	0.363
Departure Headway (Hd)	9.939	9.375	8.904	8.393	7.678	9.711	9.198	8.481	9.723	9.215	8.503
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	362	382	403	431	469	368	393	423	370	390	422
Service Time	7.702	7.139	6.659	6.148	5.432	7.474	6.961	6.243	7.487	6.978	6.266
HCM Lane V/C Ratio	0.423	0.149	0.333	0.724	0.629	0.027	0.659	0.232	0.322	0.272	0.365
HCM Control Delay	19.8	13.8	16	30.7	22.6	12.8	28.3	13.8	17	15.4	16.1
HCM Lane LOS	C	B	C	D	C	B	D	B	C	C	C
HCM 95th-tile Q	2	0.5	1.4	5.7	4.2	0.1	4.6	0.9	1.4	1.1	1.6

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	175	649	95	60	446	42	35	5	45	25	5	100
Future Vol, veh/h	175	649	95	60	446	42	35	5	45	25	5	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	184	683	100	63	469	44	37	5	47	26	5	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	783	0	0	1723	1690	683	1722	1746	469
Stage 1	-	-	-	-	-	-	1051	1051	-	595	595	-
Stage 2	-	-	-	-	-	-	672	639	-	1127	1151	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1052	-	-	835	-	-	70	93	449	70	86	594
Stage 1	-	-	-	-	-	-	274	304	-	491	492	-
Stage 2	-	-	-	-	-	-	445	470	-	249	272	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1052	-	-	835	-	-	44	71	449	48	66	594
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	71	-	48	66	-
Stage 1	-	-	-	-	-	-	226	251	-	405	455	-
Stage 2	-	-	-	-	-	-	335	435	-	180	224	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	1.1	105.5	40.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	44	71	449	1052	-	-	835	-	-	48	66	594
HCM Lane V/C Ratio	0.837	0.074	0.105	0.175	-	-	0.076	-	-	0.548	0.08	0.177
HCM Control Delay (s)	229.6	59.7	14	9.1	-	-	9.7	-	-	148.2	64.2	12.4
HCM Lane LOS	F	F	B	A	-	-	A	-	-	F	F	B
HCM 95th %tile Q(veh)	3.3	0.2	0.4	0.6	-	-	0.2	-	-	2.1	0.3	0.6

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	36	207	28	37	315
Future Vol, veh/h	32	36	207	28	37	315
Conflicting Peds, #/hr	1	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	93	93	93	93	93	93
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	34	39	223	30	40	339

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	658	238	0	0	253	0
Stage 1	238	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	423	791	-	-	1306	-
Stage 1	792	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	407	791	-	-	1306	-
Mov Cap-2 Maneuver	407	-	-	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	548	1306	-
HCM Lane V/C Ratio	-	-	0.133	0.03	-
HCM Control Delay (s)	-	-	12.6	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	391	244	25	262	220	200	345	36	375	620	236
Future Volume (veh/h)	295	391	244	25	262	220	200	345	36	375	620	236
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	307	407	254	26	273	229	208	359	38	391	646	246
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	426	258	161	218	115	96	177	479	407	248	554	471
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.10	0.26	0.26	0.14	0.30	0.30
Sat Flow, veh/h	1774	1074	670	1774	938	786	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	307	0	661	26	0	502	208	359	38	391	646	246
Grp Sat Flow(s),veh/h/ln	1774	0	1744	1774	0	1724	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	11.9	0.0	18.0	1.0	0.0	9.2	7.5	13.3	1.4	10.5	22.3	9.7
Cycle Q Clear(g_c), s	11.9	0.0	18.0	1.0	0.0	9.2	7.5	13.3	1.4	10.5	22.3	9.7
Prop In Lane	1.00		0.38	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	419	218	0	211	177	479	407	248	554	471
V/C Ratio(X)	0.72	0.00	1.58	0.12	0.00	2.37	1.17	0.75	0.09	1.57	1.17	0.52
Avail Cap(c_a), veh/h	426	0	419	218	0	211	177	479	407	248	554	471
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	26.2	0.0	28.5	29.3	0.0	32.9	33.8	25.6	21.2	32.3	26.4	21.9
Incr Delay (d2), s/veh	5.9	0.0	271.7	0.2	0.0	632.6	121.6	10.3	0.5	277.0	93.2	4.1
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	6.5	0.0	40.2	0.5	0.0	41.5	9.6	8.1	0.7	24.2	25.7	4.8
LnGrp Delay(d),s/veh	32.1	0.0	300.2	29.5	0.0	665.5	155.4	35.9	21.6	309.2	119.5	26.0
LnGrp LOS	C		F	C		F	F	D	C	F	F	C
Approach Vol, veh/h		968			528			605			1283	
Approach Delay, s/veh		215.2			634.2			76.1			159.4	
Approach LOS		F			F			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	23.8		22.5	12.0	26.8		13.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.5	19.3		18.0	7.5	22.3		9.2
Max Q Clear Time (g_c+I1), s	12.5	15.3		20.0	9.5	24.3		11.2
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	234.5
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	780	150	145	488	35	115	50	95	55	75	34
Future Volume (veh/h)	55	780	150	145	488	35	115	50	95	55	75	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	62	886	170	165	555	40	131	57	108	62	85	39
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	95	570	109	151	698	50	269	126	178	210	269	106
Arrive On Green	0.05	0.38	0.38	0.09	0.41	0.41	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1774	1520	292	1774	1717	124	581	400	564	413	854	336
Grp Volume(v), veh/h	62	0	1056	165	0	595	296	0	0	186	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1811	1774	0	1841	1544	0	0	1602	0	0
Q Serve(g_s), s	2.1	0.0	22.5	5.1	0.0	17.0	4.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	22.5	5.1	0.0	17.0	9.1	0.0	0.0	4.9	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.07	0.44		0.36	0.33		0.21
Lane Grp Cap(c), veh/h	95	0	679	151	0	748	573	0	0	585	0	0
V/C Ratio(X)	0.65	0.00	1.55	1.09	0.00	0.80	0.52	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	163	0	679	151	0	748	573	0	0	585	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.8	0.0	18.8	27.5	0.0	15.6	17.0	0.0	0.0	15.7	0.0	0.0
Incr Delay (d2), s/veh	7.3	0.0	256.8	100.7	0.0	6.0	3.3	0.0	0.0	1.4	0.0	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	1.2	0.0	59.6	6.7	0.0	9.8	4.6	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	35.1	0.0	275.6	128.2	0.0	21.6	20.3	0.0	0.0	17.2	0.0	0.0
LnGrp LOS	D		F	F		C	C			B		
Approach Vol, veh/h		1118			760			296			186	
Approach Delay, s/veh		262.2			44.7			20.3			17.2	
Approach LOS		F			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4	7.7	28.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9	5.5	22.1
Max Q Clear Time (g_c+I1), s		11.1	7.1	24.5		6.9	4.1	19.0
Green Ext Time (p_c), s		1.1	0.0	0.0		0.8	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	142.5
HCM 2010 LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	389	727	402	235	258	276
Future Volume (veh/h)	389	727	402	235	258	276
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	405	757	419	245	269	288
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	467	1115	475	403	428	382
Arrive On Green	0.26	0.60	0.25	0.25	0.24	0.24
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	405	757	419	245	269	288
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	12.2	15.4	12.1	7.6	7.6	9.5
Cycle Q Clear(g_c), s	12.2	15.4	12.1	7.6	7.6	9.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	467	1115	475	403	428	382
V/C Ratio(X)	0.87	0.68	0.88	0.61	0.63	0.75
Avail Cap(c_a), veh/h	586	1247	482	410	428	382
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	19.7	7.6	20.1	18.4	19.0	19.7
Incr Delay (d2), s/veh	11.0	1.3	17.1	2.5	6.9	13.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	8.2	8.4	3.6	4.6	5.5
LnGrp Delay(d),s/veh	30.7	8.9	37.2	20.9	25.9	32.7
LnGrp LOS	C	A	D	C	C	C
Approach Vol, veh/h		1162	664		557	
Approach Delay, s/veh		16.5	31.2		29.4	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				38.0		18.0	19.2	18.8
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	18.5	14.5
Max Q Clear Time (g_c+I1), s				17.4		11.5	14.2	14.1
Green Ext Time (p_c), s				5.5		0.5	0.6	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	869	815	115	900	30	630	20	155	155	160	5
Future Volume (vph)	5	869	815	115	900	30	630	20	155	155	160	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1687	1776	1509	1583	1659			1777	1583		1818	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1687	1776	1509	1583	1659			1777	1583		1818	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	905	849	120	938	31	656	21	161	161	167	5
RTOR Reduction (vph)	0	0	378	0	1	0	0	0	84	0	0	4
Lane Group Flow (vph)	5	905	471	120	968	0	0	677	77	0	328	1
Heavy Vehicles (%)	7%	7%	7%	14%	14%	14%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		20.4	20.4
Effective Green, g (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		20.4	20.4
Actuated g/C Ratio	0.01	0.42	0.42	0.04	0.46			0.19	0.19		0.18	0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	14	751	638	69	760			345	307		326	284
v/s Ratio Prot	0.00	0.51		c0.08	c0.58			c0.38			c0.18	
v/s Ratio Perm			0.31						0.05			0.00
v/c Ratio	0.36	1.21	0.74	1.74	1.27			1.96	0.25		1.01	0.00
Uniform Delay, d1	56.0	32.8	27.5	54.3	30.7			45.7	38.7		46.6	38.3
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	14.9	104.7	7.5	385.6	133.3			443.4	0.4		51.4	0.0
Delay (s)	70.9	137.4	34.9	439.9	164.0			489.2	39.2		98.0	38.3
Level of Service	E	F	C	F	F			F	D		F	D
Approach Delay (s)		87.8			194.4			402.7			97.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	183.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	121.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	290	505	271	250	397	350	340	683	152	590	1110	306
Future Volume (veh/h)	290	505	271	250	397	350	340	683	152	590	1110	306
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	302	526	282	260	414	365	354	711	158	615	1156	319
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	374	875	535	218	927	413	324	1148	252	324	1398	606
Arrive On Green	0.11	0.25	0.25	0.12	0.26	0.26	0.09	0.28	0.28	0.09	0.28	0.28
Sat Flow, veh/h	3442	3539	1562	1774	3539	1576	3442	4174	917	3442	5085	1580
Grp Volume(v), veh/h	302	526	282	260	414	365	354	576	293	615	1156	319
Grp Sat Flow(s),veh/h/ln	1721	1770	1562	1774	1770	1576	1721	1695	1701	1721	1695	1580
Q Serve(g_s), s	5.9	9.1	10.0	8.5	6.8	15.4	6.5	10.3	10.4	6.5	14.7	10.8
Cycle Q Clear(g_c), s	5.9	9.1	10.0	8.5	6.8	15.4	6.5	10.3	10.4	6.5	14.7	10.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.54	1.00		1.00
Lane Grp Cap(c), veh/h	374	875	535	218	927	413	324	932	468	324	1398	606
V/C Ratio(X)	0.81	0.60	0.53	1.19	0.45	0.88	1.09	0.62	0.63	1.90	0.83	0.53
Avail Cap(c_a), veh/h	374	922	556	218	973	433	324	932	468	324	1398	606
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	30.1	23.0	18.3	30.3	21.3	24.5	31.3	21.9	21.9	31.3	23.5	16.4
Incr Delay (d2), s/veh	12.4	1.0	0.8	122.2	0.3	18.5	77.4	3.1	6.2	416.1	5.7	3.2
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	3.5	4.6	4.4	11.5	3.3	8.8	6.5	5.2	5.7	21.8	7.6	5.2
LnGrp Delay(d),s/veh	42.5	24.0	19.1	152.5	21.7	43.0	108.6	24.9	28.2	447.4	29.2	19.7
LnGrp LOS	D	C	B	F	C	D	F	C	C	F	C	B
Approach Vol, veh/h		1110			1039			1223			2090	
Approach Delay, s/veh		27.8			61.9			49.9			150.8	
Approach LOS		C			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	23.5	13.0	21.6	11.0	23.5	12.0	22.6
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	6.5	19.0	8.5	18.0	6.5	19.0	7.5	19.0
Max Q Clear Time (g_c+I1), s	8.5	12.4	10.5	12.0	8.5	16.7	7.9	17.4
Green Ext Time (p_c), s	0.0	3.0	0.0	2.3	0.0	1.7	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	86.3
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	200	89	295	260	388	65	187	307	299	125	20
Future Volume (veh/h)	25	200	89	295	260	388	65	187	307	299	125	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	29	233	103	343	302	451	76	217	357	348	145	23
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	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	55	281	124	275	240	359	100	508	429	131	455	72
Arrive On Green	0.03	0.23	0.23	0.15	0.36	0.36	0.06	0.27	0.27	0.07	0.29	0.29
Sat Flow, veh/h	1774	1203	532	1774	673	1005	1774	1863	1572	1774	1568	249
Grp Volume(v), veh/h	29	0	336	343	0	753	76	217	357	348	0	168
Grp Sat Flow(s),veh/h/ln	1774	0	1735	1774	0	1677	1774	1863	1572	1774	0	1817
Q Serve(g_s), s	1.1	0.0	12.5	10.5	0.0	24.2	2.9	6.5	14.5	5.0	0.0	4.9
Cycle Q Clear(g_c), s	1.1	0.0	12.5	10.5	0.0	24.2	2.9	6.5	14.5	5.0	0.0	4.9
Prop In Lane	1.00		0.31	1.00		0.60	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	55	0	405	275	0	599	100	508	429	131	0	527
V/C Ratio(X)	0.53	0.00	0.83	1.25	0.00	1.26	0.76	0.43	0.83	2.66	0.00	0.32
Avail Cap(c_a), veh/h	131	0	460	275	0	599	131	508	429	131	0	527
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	0.00	1.00
Uniform Delay (d), s/veh	32.4	0.0	24.7	28.7	0.0	21.8	31.6	20.3	23.2	31.4	0.0	18.8
Incr Delay (d2), s/veh	7.6	0.0	10.9	138.7	0.0	128.7	17.3	2.6	17.1	769.2	0.0	1.6
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	0.6	0.0	7.2	15.6	0.0	32.4	1.9	3.7	8.3	30.3	0.0	2.7
LnGrp Delay(d),s/veh	40.0	0.0	35.6	167.4	0.0	150.5	48.8	22.9	40.3	800.7	0.0	20.4
LnGrp LOS	D		D	F		F	D	C	D	F		C
Approach Vol, veh/h		365			1096			650			516	
Approach Delay, s/veh		35.9			155.8			35.5			546.6	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	15.0	20.3	8.3	24.2	6.6	28.7
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	5.0	18.5	10.5	18.0	5.0	18.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	7.0	16.5	12.5	14.5	4.9	6.9	3.1	26.2
Green Ext Time (p_c), s	0.0	0.6	0.0	0.7	0.0	0.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	186.1
HCM 2010 LOS	F

Appendix H

Level of Service

Calculations

Cumulative Plus Project

Conditions

Intersection	
Intersection Delay, s/veh	22.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	157	154	92	10	290	115	229	95	10	80	42	153
Future Vol, veh/h	157	154	92	10	290	115	229	95	10	80	42	153
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
Heavy Vehicles, %	7	7	7	5	5	5	2	2	2	6	6	6
Mvmt Flow	171	167	100	11	315	125	249	103	11	87	46	166
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	17.8	29.9	23.4	16.2
HCM LOS	C	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	90%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	10%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	229	105	157	154	92	10	290	115	80	42	153
LT Vol	229	0	157	0	0	10	0	0	80	0	0
Through Vol	0	95	0	154	0	0	290	0	0	42	0
RT Vol	0	10	0	0	92	0	0	115	0	0	153
Lane Flow Rate	249	114	171	167	100	11	315	125	87	46	166
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.643	0.277	0.451	0.419	0.23	0.028	0.779	0.284	0.239	0.119	0.401
Departure Headway (Hd)	9.293	8.727	9.521	9.007	8.288	9.413	8.9	8.182	9.915	9.405	8.69
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	388	412	379	400	433	380	407	439	362	381	414
Service Time	7.047	6.481	7.279	6.765	6.046	7.17	6.657	5.939	7.68	7.169	6.454
HCM Lane V/C Ratio	0.642	0.277	0.451	0.417	0.231	0.029	0.774	0.285	0.24	0.121	0.401
HCM Control Delay	27.4	14.8	19.9	18.1	13.5	12.4	36.8	14.2	15.8	13.4	17.2
HCM Lane LOS	D	B	C	C	B	B	E	B	C	B	C
HCM 95th-tile Q	4.3	1.1	2.3	2	0.9	0.1	6.6	1.2	0.9	0.4	1.9

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	289	20	48	594	30	50	5	69	45	5	145
Future Vol, veh/h	50	289	20	48	594	30	50	5	69	45	5	145
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	4	4	4	2	2	2	3	3	3
Mvmt Flow	53	304	21	51	625	32	53	5	73	47	5	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	657	0	0	326	0	0	1233	1170	305	1187	1159	625
Stage 1	-	-	-	-	-	-	411	411	-	727	727	-
Stage 2	-	-	-	-	-	-	822	759	-	460	432	-
Critical Hdwy	4.18	-	-	4.14	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.272	-	-	2.236	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	903	-	-	1222	-	-	154	193	735	165	195	483
Stage 1	-	-	-	-	-	-	618	595	-	414	428	-
Stage 2	-	-	-	-	-	-	368	415	-	579	581	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	903	-	-	1221	-	-	95	174	734	134	176	483
Mov Cap-2 Maneuver	-	-	-	-	-	-	95	174	-	134	176	-
Stage 1	-	-	-	-	-	-	581	559	-	390	410	-
Stage 2	-	-	-	-	-	-	238	398	-	486	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.6	40	23.1
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	95	174	734	903	-	-	1221	-	-	134	176	483
HCM Lane V/C Ratio	0.554	0.03	0.099	0.058	-	-	0.041	-	-	0.353	0.03	0.316
HCM Control Delay (s)	82.3	26.3	10.4	9.2	-	-	8.1	-	-	45.9	26.1	15.9
HCM Lane LOS	F	D	B	A	-	-	A	-	-	E	D	C
HCM 95th %tile Q(veh)	2.5	0.1	0.3	0.2	-	-	0.1	-	-	1.4	0.1	1.3

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	142	315	36	39	195
Future Vol, veh/h	38	142	315	36	39	195
Conflicting Peds, #/hr	0	0	0	1	1	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	86	86	86	86	86	86
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	44	165	366	42	45	227

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	705	388	0	0	409	0
Stage 1	388	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	403	660	-	-	1123	-
Stage 1	686	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	384	659	-	-	1122	-
Mov Cap-2 Maneuver	384	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	572	1122	-
HCM Lane V/C Ratio	-	-	0.366	0.04	-
HCM Control Delay (s)	-	-	14.9	8.3	0
HCM Lane LOS	-	-	B	A	A
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)	259	212	142	32	454	315	314	433	42	130	185	219
Future Volume (veh/h)	259	212	142	32	454	315	314	433	42	130	185	219
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1900	1863	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	276	226	151	34	483	335	334	461	45	138	197	233
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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, %	7	7	7	2	2	2	2	2	2	4	4	4
Cap, veh/h	338	199	133	432	250	173	254	513	436	141	390	331
Arrive On Green	0.20	0.20	0.20	0.24	0.24	0.24	0.14	0.28	0.28	0.08	0.21	0.21
Sat Flow, veh/h	1691	993	664	1774	1026	711	1774	1863	1583	1740	1827	1553
Grp Volume(v), veh/h	276	0	377	34	0	818	334	461	45	138	197	233
Grp Sat Flow(s),veh/h/ln	1691	0	1657	1774	0	1737	1774	1863	1583	1740	1827	1553
Q Serve(g_s), s	14.0	0.0	18.0	1.3	0.0	21.9	12.9	21.4	1.9	7.1	8.6	12.5
Cycle Q Clear(g_c), s	14.0	0.0	18.0	1.3	0.0	21.9	12.9	21.4	1.9	7.1	8.6	12.5
Prop In Lane	1.00		0.40	1.00		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	338	0	331	432	0	423	254	513	436	141	390	331
V/C Ratio(X)	0.82	0.00	1.14	0.08	0.00	1.94	1.31	0.90	0.10	0.98	0.51	0.70
Avail Cap(c_a), veh/h	338	0	331	432	0	423	254	513	436	141	390	331
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	34.4	0.0	36.0	26.3	0.0	34.1	38.5	31.4	24.3	41.3	31.2	32.8
Incr Delay (d2), s/veh	14.3	0.0	92.2	0.1	0.0	429.4	166.2	21.2	0.5	68.8	4.6	11.8
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	7.9	0.0	16.7	0.7	0.0	60.9	18.0	14.0	0.9	6.1	4.8	6.5
LnGrp Delay(d),s/veh	48.7	0.0	128.2	26.3	0.0	463.5	204.8	52.5	24.8	110.1	35.8	44.6
LnGrp LOS	D		F	C		F	F	D	C	F	D	D
Approach Vol, veh/h		653			852			840			568	
Approach Delay, s/veh		94.6			446.0			111.6			57.5	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.8	29.3		22.5	17.4	23.7		26.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.3	24.8		18.0	12.9	19.2		21.9
Max Q Clear Time (g_c+I1), s	9.1	23.4		20.0	14.9	14.5		23.9
Green Ext Time (p_c), s	0.0	0.4		0.0	0.0	0.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	195.0
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	406	131	105	857	25	215	76	169	38	28	52
Future Volume (veh/h)	35	406	131	105	857	25	215	76	169	38	28	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	39	451	146	117	952	28	239	84	188	42	31	58
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	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, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	69	523	169	149	786	23	293	78	167	179	137	190
Arrive On Green	0.04	0.40	0.40	0.08	0.44	0.44	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1740	1323	428	1757	1783	52	686	259	550	339	451	627
Grp Volume(v), veh/h	39	0	597	117	0	980	511	0	0	131	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1751	1757	0	1835	1495	0	0	1416	0	0
Q Serve(g_s), s	1.4	0.0	19.5	4.1	0.0	27.5	15.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	19.5	4.1	0.0	27.5	18.9	0.0	0.0	3.8	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.03	0.47		0.37	0.32		0.44
Lane Grp Cap(c), veh/h	69	0	693	149	0	809	538	0	0	506	0	0
V/C Ratio(X)	0.57	0.00	0.86	0.79	0.00	1.21	0.95	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	142	0	722	194	0	809	538	0	0	506	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.4	0.0	17.3	28.0	0.0	17.4	22.5	0.0	0.0	16.5	0.0	0.0
Incr Delay (d2), s/veh	7.2	0.0	10.1	14.4	0.0	106.2	28.2	0.0	0.0	1.2	0.0	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	0.8	0.0	11.2	2.6	0.0	37.6	12.9	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	36.7	0.0	27.4	42.4	0.0	123.6	50.7	0.0	0.0	17.7	0.0	0.0
LnGrp LOS	D		C	D		F	D			B		
Approach Vol, veh/h		636			1097			511			131	
Approach Delay, s/veh		28.0			115.0			50.7			17.7	
Approach LOS		C			F			D			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.4	9.8	29.2		23.4	7.0	32.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.9	6.9	25.7		18.9	5.1	27.5				
Max Q Clear Time (g_c+I1), s		20.9	6.1	21.5		5.8	3.4	29.5				
Green Ext Time (p_c), s		0.0	0.0	1.5		0.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			72.5									
HCM 2010 LOS			E									

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	199	286	656	468	286	335
Future Volume (veh/h)	199	286	656	468	286	335
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1810	1810	1863	1863	1863	1863
Adj Flow Rate, veh/h	221	318	729	520	318	372
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	5	2	2	2	2
Cap, veh/h	270	1102	696	592	416	372
Arrive On Green	0.16	0.61	0.37	0.37	0.23	0.23
Sat Flow, veh/h	1723	1810	1863	1583	1774	1583
Grp Volume(v), veh/h	221	318	729	520	318	372
Grp Sat Flow(s),veh/h/ln	1723	1810	1863	1583	1774	1583
Q Serve(g_s), s	7.1	4.8	21.5	17.6	9.6	13.5
Cycle Q Clear(g_c), s	7.1	4.8	21.5	17.6	9.6	13.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	270	1102	696	592	416	372
V/C Ratio(X)	0.82	0.29	1.05	0.88	0.76	1.00
Avail Cap(c_a), veh/h	345	1180	696	592	416	372
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	23.5	5.3	18.0	16.8	20.5	22.0
Incr Delay (d2), s/veh	11.5	0.1	47.0	14.1	12.5	46.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	2.4	19.9	10.0	6.1	15.3
LnGrp Delay(d),s/veh	35.0	5.5	65.0	30.9	33.0	68.9
LnGrp LOS	C	A	F	C	C	F
Approach Vol, veh/h		539	1249		690	
Approach Delay, s/veh		17.6	50.8		52.4	
Approach LOS		B	D		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				39.5		18.0	13.5	26.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	11.5	21.5
Max Q Clear Time (g_c+I1), s				6.8		15.5	9.1	23.5
Green Ext Time (p_c), s				2.0		0.0	0.1	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		44.0
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	650	496	75	1050	30	889	30	75	55	25	10
Future Volume (vph)	15	650	496	75	1050	30	889	30	75	55	25	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (prot)	1612	1696	1442	1543	1617			1777	1583		1749	1538
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	1.00
Satd. Flow (perm)	1612	1696	1442	1543	1617			1777	1583		1749	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	677	517	78	1094	31	926	31	78	57	26	10
RTOR Reduction (vph)	0	0	289	0	1	0	0	0	54	0	0	9
Lane Group Flow (vph)	16	677	228	78	1124	0	0	957	24	0	83	1
Heavy Vehicles (%)	12%	12%	12%	17%	17%	17%	2%	2%	2%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	2.0	54.2	54.2	5.0	57.2			38.5	38.5		7.0	7.0
Effective Green, g (s)	2.0	54.2	54.2	5.0	57.2			38.5	38.5		7.0	7.0
Actuated g/C Ratio	0.02	0.44	0.44	0.04	0.47			0.31	0.31		0.06	0.06
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	26	749	636	62	753			557	496		99	87
v/s Ratio Prot	0.01	0.40		c0.05	c0.70			c0.54			c0.05	
v/s Ratio Perm			0.16						0.02			0.00
v/c Ratio	0.62	0.90	0.36	1.26	1.49			1.72	0.05		0.84	0.01
Uniform Delay, d1	60.0	31.8	22.7	58.9	32.8			42.1	29.3		57.3	54.6
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	36.3	16.4	1.6	198.8	229.0			330.7	0.0		43.1	0.0
Delay (s)	96.2	48.2	24.3	257.7	261.8			372.8	29.4		100.4	54.6
Level of Service	F	D	C	F	F			F	C		F	D
Approach Delay (s)		38.6			261.5			346.9			95.5	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	206.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	122.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	127.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	291	169	175	545	398	288	855	87	290	589	269
Future Volume (veh/h)	270	291	169	175	545	398	288	855	87	290	589	269
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1845	1845
Adj Flow Rate, veh/h	290	313	182	188	586	428	310	919	94	312	633	289
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	3	3	3
Cap, veh/h	286	980	554	150	986	428	265	1335	136	262	1433	575
Arrive On Green	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.28	0.28
Sat Flow, veh/h	3442	3539	1559	1774	3539	1536	3442	4689	478	3408	5036	1561
Grp Volume(v), veh/h	290	313	182	188	586	428	310	664	349	312	633	289
Grp Sat Flow(s),veh/h/ln	1721	1770	1559	1774	1770	1536	1721	1695	1777	1704	1679	1561
Q Serve(g_s), s	5.4	4.6	5.5	5.5	9.3	18.1	5.0	11.3	11.4	5.0	6.7	9.3
Cycle Q Clear(g_c), s	5.4	4.6	5.5	5.5	9.3	18.1	5.0	11.3	11.4	5.0	6.7	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	286	980	554	150	986	428	265	965	506	262	1433	575
V/C Ratio(X)	1.01	0.32	0.33	1.25	0.59	1.00	1.17	0.69	0.69	1.19	0.44	0.50
Avail Cap(c_a), veh/h	286	980	554	150	986	428	265	965	506	262	1433	575
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	29.8	18.6	15.4	29.7	20.3	23.4	30.0	20.7	20.7	30.0	19.0	15.9
Incr Delay (d2), s/veh	56.9	0.2	0.3	156.7	1.0	43.8	109.6	4.0	7.5	117.0	1.0	3.1
Initial Q Delay(d3),s/veh	0.1	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	4.8	2.2	2.4	9.2	4.7	12.8	6.4	5.8	6.6	6.6	3.2	4.5
LnGrp Delay(d),s/veh	86.8	18.8	15.7	186.5	21.2	67.2	139.6	24.7	28.2	147.0	20.0	19.1
LnGrp LOS	F	B	B	F	C	F	F	C	C	F	C	B
Approach Vol, veh/h		785			1202			1323			1234	
Approach Delay, s/veh		43.2			63.5			52.5			51.9	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	10.0	22.5	9.5	23.0	9.9	22.6
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	5.0	18.5	5.5	18.0	5.0	18.5	5.4	18.1
Max Q Clear Time (g_c+I1), s	7.0	13.4	7.5	7.5	7.0	11.3	7.4	20.1
Green Ext Time (p_c), s	0.0	2.8	0.0	2.0	0.0	3.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	53.6
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	170	47	260	175	367	78	239	200	185	124	25
Future Volume (veh/h)	45	170	47	260	175	367	78	239	200	185	124	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.74	1.00		0.89	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	57	215	59	329	222	465	99	303	253	234	157	32
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	324	89	235	165	345	127	491	415	166	429	87
Arrive On Green	0.05	0.25	0.25	0.13	0.34	0.34	0.07	0.26	0.26	0.09	0.29	0.29
Sat Flow, veh/h	1774	1295	355	1774	492	1031	1774	1863	1574	1774	1499	306
Grp Volume(v), veh/h	57	0	274	329	0	687	99	303	253	234	0	189
Grp Sat Flow(s),veh/h/ln	1774	0	1650	1774	0	1523	1774	1863	1574	1774	0	1804
Q Serve(g_s), s	2.2	0.0	10.4	9.2	0.0	23.2	3.8	9.9	9.8	6.5	0.0	5.8
Cycle Q Clear(g_c), s	2.2	0.0	10.4	9.2	0.0	23.2	3.8	9.9	9.8	6.5	0.0	5.8
Prop In Lane	1.00		0.22	1.00		0.68	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	85	0	413	235	0	510	127	491	415	166	0	516
V/C Ratio(X)	0.67	0.00	0.66	1.40	0.00	1.35	0.78	0.62	0.61	1.41	0.00	0.37
Avail Cap(c_a), veh/h	130	0	428	235	0	510	159	491	415	166	0	516
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	0.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	23.4	30.1	0.0	23.1	31.7	22.5	22.4	31.4	0.0	19.7
Incr Delay (d2), s/veh	8.7	0.0	3.6	203.0	0.0	168.5	17.7	5.7	6.5	215.4	0.0	2.0
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	1.3	0.0	5.1	17.7	0.0	33.5	2.5	5.8	5.0	13.1	0.0	3.2
LnGrp Delay(d),s/veh	41.2	0.0	27.0	233.1	0.0	191.5	49.4	28.2	28.9	246.8	0.0	21.7
LnGrp LOS	D		C	F		F	D	C	C	F		C
Approach Vol, veh/h		331			1016			655			423	
Approach Delay, s/veh		29.4			205.0			31.7			146.2	
Approach LOS		C			F			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	22.8	13.7	21.9	9.5	24.3	7.8	27.7
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	6.5	18.3	9.2	18.0	6.2	18.6	5.1	22.1
Max Q Clear Time (g_c+I1), s	8.5	11.9	11.2	12.4	5.8	7.8	4.2	25.2
Green Ext Time (p_c), s	0.0	1.5	0.0	0.8	0.0	0.7	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	124.0
HCM 2010 LOS	F

Intersection	
Intersection Delay, s/veh	22.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	134	305	286	10	255	95	148	50	5	115	103	156
Future Vol, veh/h	134	305	286	10	255	95	148	50	5	115	103	156
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	138	314	295	10	263	98	153	52	5	119	106	161
Number of Lanes	1	1	1	1	1	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	3	3
HCM Control Delay	25.5	24.9	18.3	16.5
HCM LOS	D	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	91%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	9%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	148	55	134	305	286	10	255	95	115	103	156
LT Vol	148	0	134	0	0	10	0	0	115	0	0
Through Vol	0	50	0	305	0	0	255	0	0	103	0
RT Vol	0	5	0	0	286	0	0	95	0	0	156
Lane Flow Rate	153	57	138	314	295	10	263	98	119	106	161
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.425	0.149	0.344	0.739	0.634	0.028	0.677	0.233	0.322	0.274	0.383
Departure Headway (Hd)	10.02	9.457	8.969	8.458	7.742	9.782	9.269	8.551	9.788	9.28	8.567
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	359	379	401	428	466	366	389	419	368	387	420
Service Time	7.787	7.224	6.727	6.216	5.499	7.549	7.036	6.318	7.554	7.045	6.332
HCM Lane V/C Ratio	0.426	0.15	0.344	0.734	0.633	0.027	0.676	0.234	0.323	0.274	0.383
HCM Control Delay	20	13.9	16.4	31.7	23.1	12.8	29.5	13.9	17.2	15.5	16.6
HCM Lane LOS	C	B	C	D	C	B	D	B	C	C	C
HCM 95th-tile Q	2.1	0.5	1.5	5.9	4.3	0.1	4.8	0.9	1.4	1.1	1.8

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	175	649	65	71	446	42	35	5	51	25	5	100
Future Vol, veh/h	175	649	65	71	446	42	35	5	51	25	5	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	320	-	505	360	-	195	60	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	184	683	68	75	469	44	37	5	54	26	5	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	751	0	0	1747	1714	683	1734	1738	469
Stage 1	-	-	-	-	-	-	1051	1051	-	619	619	-
Stage 2	-	-	-	-	-	-	696	663	-	1115	1119	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1052	-	-	858	-	-	67	90	449	69	87	594
Stage 1	-	-	-	-	-	-	274	304	-	476	480	-
Stage 2	-	-	-	-	-	-	432	459	-	252	282	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1052	-	-	858	-	-	42	68	449	46	66	594
Mov Cap-2 Maneuver	-	-	-	-	-	-	42	68	-	46	66	-
Stage 1	-	-	-	-	-	-	226	251	-	393	438	-
Stage 2	-	-	-	-	-	-	320	419	-	179	233	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	1.2	107.1	42.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	42	68	449	1052	-	-	858	-	-	46	66	594
HCM Lane V/C Ratio	0.877	0.077	0.12	0.175	-	-	0.087	-	-	0.572	0.08	0.177
HCM Control Delay (s)	249.1	62.3	14.1	9.1	-	-	9.6	-	-	158.5	64.2	12.4
HCM Lane LOS	F	F	B	A	-	-	A	-	-	F	F	B
HCM 95th %tile Q(veh)	3.4	0.2	0.4	0.6	-	-	0.3	-	-	2.1	0.3	0.6

Intersection						
Int Delay, s/veh	3.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	83	207	31	116	315
Future Vol, veh/h	34	83	207	31	116	315
Conflicting Peds, #/hr	1	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	93	93	93	93	93	93
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	37	89	223	33	125	339

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	830	240	0	0	256	0
Stage 1	240	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	335	789	-	-	1303	-
Stage 1	791	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	789	-	-	1303	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	531	1303	-
HCM Lane V/C Ratio	-	-	0.237	0.096	-
HCM Control Delay (s)	-	-	13.9	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	393	244	25	266	220	200	645	36	375	620	267
Future Volume (veh/h)	313	393	244	25	266	220	200	645	36	375	620	267
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	326	409	254	26	277	229	208	672	38	391	646	278
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	426	258	160	218	116	96	177	479	407	248	554	471
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.10	0.26	0.26	0.14	0.30	0.30
Sat Flow, veh/h	1774	1076	668	1774	944	781	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	326	0	663	26	0	506	208	672	38	391	646	278
Grp Sat Flow(s),veh/h/ln	1774	0	1745	1774	0	1725	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	12.8	0.0	18.0	1.0	0.0	9.2	7.5	19.3	1.4	10.5	22.3	11.2
Cycle Q Clear(g_c), s	12.8	0.0	18.0	1.0	0.0	9.2	7.5	19.3	1.4	10.5	22.3	11.2
Prop In Lane	1.00		0.38	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	419	218	0	212	177	479	407	248	554	471
V/C Ratio(X)	0.77	0.00	1.58	0.12	0.00	2.39	1.17	1.40	0.09	1.57	1.17	0.59
Avail Cap(c_a), veh/h	426	0	419	218	0	212	177	479	407	248	554	471
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	26.5	0.0	28.5	29.3	0.0	32.9	33.8	27.9	21.2	32.3	26.4	22.5
Incr Delay (d2), s/veh	8.1	0.0	273.7	0.2	0.0	640.4	121.6	193.1	0.5	277.0	93.2	5.4
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	7.2	0.0	40.4	0.5	0.0	42.0	9.6	35.6	0.7	24.2	25.7	5.6
LnGrp Delay(d),s/veh	34.7	0.0	302.2	29.5	0.0	673.3	155.4	221.0	21.6	309.2	119.5	27.8
LnGrp LOS	C		F	C		F	F	F	C	F	F	C
Approach Vol, veh/h		989			532			918			1315	
Approach Delay, s/veh		214.0			641.8			197.9			156.5	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	23.8		22.5	12.0	26.8		13.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	10.5	19.3		18.0	7.5	22.3		9.2
Max Q Clear Time (g_c+I1), s	12.5	21.3		20.0	9.5	24.3		11.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	250.6
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	780	183	180	488	35	135	57	115	55	86	34
Future Volume (veh/h)	55	780	183	180	488	35	135	57	115	55	86	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	62	886	208	205	555	40	153	65	131	62	98	39
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	95	547	128	151	698	50	274	117	183	195	285	98
Arrive On Green	0.05	0.38	0.38	0.09	0.41	0.41	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1774	1460	343	1774	1717	124	597	370	581	369	905	311
Grp Volume(v), veh/h	62	0	1094	205	0	595	349	0	0	199	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1802	1774	0	1841	1549	0	0	1585	0	0
Q Serve(g_s), s	2.1	0.0	22.5	5.1	0.0	17.0	6.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	22.5	5.1	0.0	17.0	11.3	0.0	0.0	5.4	0.0	0.0
Prop In Lane	1.00		0.19	1.00		0.07	0.44		0.38	0.31		0.20
Lane Grp Cap(c), veh/h	95	0	676	151	0	748	574	0	0	578	0	0
V/C Ratio(X)	0.65	0.00	1.62	1.36	0.00	0.80	0.61	0.00	0.00	0.34	0.00	0.00
Avail Cap(c_a), veh/h	163	0	676	151	0	748	574	0	0	578	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.8	0.0	18.8	27.5	0.0	15.6	17.7	0.0	0.0	15.9	0.0	0.0
Incr Delay (d2), s/veh	7.3	0.0	285.2	198.5	0.0	6.0	4.7	0.0	0.0	1.6	0.0	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	1.2	0.0	64.6	10.8	0.0	9.8	5.8	0.0	0.0	2.8	0.0	0.0
LnGrp Delay(d),s/veh	35.1	0.0	304.0	226.0	0.0	21.6	22.4	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	D		F	F		C	C			B		
Approach Vol, veh/h		1156			800			349			199	
Approach Delay, s/veh		289.5			74.0			22.4			17.5	
Approach LOS		F			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	9.6	27.0		23.4	7.7	28.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.9	5.1	22.5		18.9	5.5	22.1
Max Q Clear Time (g_c+I1), s		13.3	7.1	24.5		7.4	4.1	19.0
Green Ext Time (p_c), s		1.1	0.0	0.0		0.8	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	161.8
HCM 2010 LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	389	745	413	244	273	276
Future Volume (veh/h)	389	745	413	244	273	276
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	405	776	430	254	284	288
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	466	1118	480	408	425	380
Arrive On Green	0.26	0.60	0.26	0.26	0.24	0.24
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	405	776	430	254	284	288
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583
Q Serve(g_s), s	12.3	16.1	12.5	8.0	8.2	9.5
Cycle Q Clear(g_c), s	12.3	16.1	12.5	8.0	8.2	9.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	466	1118	480	408	425	380
V/C Ratio(X)	0.87	0.69	0.90	0.62	0.67	0.76
Avail Cap(c_a), veh/h	583	1241	480	408	425	380
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	19.8	7.7	20.2	18.5	19.4	19.9
Incr Delay (d2), s/veh	11.2	1.5	19.2	2.9	8.1	13.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	8.4	9.0	3.8	4.9	9.3
LnGrp Delay(d),s/veh	31.0	9.2	39.4	21.4	27.4	33.2
LnGrp LOS	C	A	D	C	C	C
Approach Vol, veh/h		1181	684		572	
Approach Delay, s/veh		16.7	32.7		30.3	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				38.3		18.0	19.3	19.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				37.5		13.5	18.5	14.5
Max Q Clear Time (g_c+I1), s				18.1		11.5	14.3	14.5
Green Ext Time (p_c), s				5.7		0.5	0.6	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		24.4
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	869	833	115	900	30	641	20	155	155	160	5
Future Volume (vph)	5	869	833	115	900	30	641	20	155	155	160	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1687	1776	1509	1583	1659			1777	1583		1818	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1687	1776	1509	1583	1659			1777	1583		1818	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	905	868	120	938	31	668	21	161	161	167	5
RTOR Reduction (vph)	0	0	378	0	1	0	0	0	84	0	0	4
Lane Group Flow (vph)	5	905	490	120	968	0	0	689	77	0	328	1
Heavy Vehicles (%)	7%	7%	7%	14%	14%	14%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		5	5		6	6	
Permitted Phases			4						5			6
Actuated Green, G (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		20.4	20.4
Effective Green, g (s)	1.0	48.1	48.1	5.0	52.1			22.1	22.1		20.4	20.4
Actuated g/C Ratio	0.01	0.42	0.42	0.04	0.46			0.19	0.19		0.18	0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	14	751	638	69	760			345	307		326	284
v/s Ratio Prot	0.00	0.51		c0.08	c0.58			c0.39			c0.18	
v/s Ratio Perm			0.32						0.05			0.00
v/c Ratio	0.36	1.21	0.77	1.74	1.27			2.00	0.25		1.01	0.00
Uniform Delay, d1	56.0	32.8	28.0	54.3	30.7			45.7	38.7		46.6	38.3
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	14.9	104.7	8.6	385.6	133.3			458.9	0.4		51.4	0.0
Delay (s)	70.9	137.4	36.6	439.9	164.0			504.7	39.2		98.0	38.3
Level of Service	E	F	D	F	F			F	D		F	D
Approach Delay (s)		88.0			194.4			416.5			97.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	186.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	290	505	271	250	397	350	340	699	152	590	1138	306
Future Volume (veh/h)	290	505	271	250	397	350	340	699	152	590	1138	306
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	302	526	282	260	414	365	354	728	158	615	1185	319
Adj No. of Lanes	2	2	1	1	2	1	2	3	0	2	3	1
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	374	875	535	218	927	413	324	1153	248	324	1398	606
Arrive On Green	0.11	0.25	0.25	0.12	0.26	0.26	0.09	0.28	0.28	0.09	0.28	0.28
Sat Flow, veh/h	3442	3539	1562	1774	3539	1576	3442	4194	900	3442	5085	1580
Grp Volume(v), veh/h	302	526	282	260	414	365	354	587	299	615	1185	319
Grp Sat Flow(s),veh/h/ln	1721	1770	1562	1774	1770	1576	1721	1695	1704	1721	1695	1580
Q Serve(g_s), s	5.9	9.1	10.0	8.5	6.8	15.4	6.5	10.5	10.7	6.5	15.2	10.8
Cycle Q Clear(g_c), s	5.9	9.1	10.0	8.5	6.8	15.4	6.5	10.5	10.7	6.5	15.2	10.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.53	1.00		1.00
Lane Grp Cap(c), veh/h	374	875	535	218	927	413	324	932	469	324	1398	606
V/C Ratio(X)	0.81	0.60	0.53	1.19	0.45	0.88	1.09	0.63	0.64	1.90	0.85	0.53
Avail Cap(c_a), veh/h	374	922	556	218	973	433	324	932	469	324	1398	606
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	30.1	23.0	18.3	30.3	21.3	24.5	31.3	22.0	22.0	31.3	23.7	16.4
Incr Delay (d2), s/veh	12.4	1.0	0.8	122.2	0.3	18.5	77.4	3.2	6.5	416.1	6.5	3.2
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	3.5	4.6	4.4	11.5	3.3	8.8	6.5	5.3	5.8	21.8	8.0	5.2
LnGrp Delay(d),s/veh	42.5	24.0	19.1	152.5	21.7	43.0	108.6	25.2	28.5	447.4	30.2	19.7
LnGrp LOS	D	C	B	F	C	D	F	C	C	F	C	B
Approach Vol, veh/h		1110			1039			1240			2119	
Approach Delay, s/veh		27.8			61.9			49.8			149.7	
Approach LOS		C			E			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	23.5	13.0	21.6	11.0	23.5	12.0	22.6
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	6.5	19.0	8.5	18.0	6.5	19.0	7.5	19.0
Max Q Clear Time (g_c+I1), s	8.5	12.7	10.5	12.0	8.5	17.2	7.9	17.4
Green Ext Time (p_c), s	0.0	3.0	0.0	2.3	0.0	1.4	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	86.1
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	200	92	295	260	388	67	194	307	299	137	20
Future Volume (veh/h)	25	200	92	295	260	388	67	194	307	299	137	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	29	233	107	343	302	451	78	226	357	348	159	23
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	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	55	279	128	274	241	360	101	507	428	130	460	66
Arrive On Green	0.03	0.24	0.24	0.15	0.36	0.36	0.06	0.27	0.27	0.07	0.29	0.29
Sat Flow, veh/h	1774	1187	545	1774	673	1005	1774	1863	1572	1774	1590	230
Grp Volume(v), veh/h	29	0	340	343	0	753	78	226	357	348	0	182
Grp Sat Flow(s),veh/h/ln	1774	0	1732	1774	0	1677	1774	1863	1572	1774	0	1820
Q Serve(g_s), s	1.1	0.0	12.7	10.5	0.0	24.4	2.9	6.8	14.5	5.0	0.0	5.4
Cycle Q Clear(g_c), s	1.1	0.0	12.7	10.5	0.0	24.4	2.9	6.8	14.5	5.0	0.0	5.4
Prop In Lane	1.00		0.31	1.00		0.60	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	55	0	407	274	0	601	101	507	428	130	0	526
V/C Ratio(X)	0.53	0.00	0.83	1.25	0.00	1.25	0.78	0.45	0.83	2.67	0.00	0.35
Avail Cap(c_a), veh/h	130	0	459	274	0	601	130	507	428	130	0	526
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	0.00	1.00
Uniform Delay (d), s/veh	32.4	0.0	24.7	28.7	0.0	21.8	31.6	20.5	23.3	31.5	0.0	19.1
Incr Delay (d2), s/veh	7.6	0.0	11.5	139.8	0.0	126.7	19.2	2.8	17.3	771.8	0.0	1.8
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	0.6	0.0	7.3	15.7	0.0	32.4	2.0	3.9	8.3	30.4	0.0	2.9
LnGrp Delay(d),s/veh	40.1	0.0	36.2	168.6	0.0	148.5	50.9	23.3	40.6	803.3	0.0	20.9
LnGrp LOS	D		D	F		F	D	C	D	F		C
Approach Vol, veh/h		369			1096			661			530	
Approach Delay, s/veh		36.5			154.8			35.9			534.6	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	23.0	15.0	20.5	8.4	24.1	6.6	28.9
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	5.0	18.5	10.5	18.0	5.0	18.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	7.0	16.5	12.5	14.7	4.9	7.4	3.1	26.4
Green Ext Time (p_c), s	0.0	0.6	0.0	0.6	0.0	0.7	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		184.6
HCM 2010 LOS		F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	289	20	48	594	30	50	5	69	45	5	145
Future Volume (veh/h)	50	289	20	48	594	30	50	5	69	45	5	145
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1759	1759	1759	1827	1827	1827	1863	1863	1863	1845	1845	1845
Adj Flow Rate, veh/h	53	304	21	51	625	32	53	5	73	47	5	153
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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, %	8	8	8	4	4	4	2	2	2	3	3	3
Cap, veh/h	99	1108	495	100	1145	512	442	321	273	456	318	270
Arrive On Green	0.06	0.33	0.33	0.06	0.33	0.33	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1675	3343	1493	1740	3471	1553	1223	1863	1583	1303	1845	1568
Grp Volume(v), veh/h	53	304	21	51	625	32	53	5	73	47	5	153
Grp Sat Flow(s),veh/h/ln	1675	1671	1493	1740	1736	1553	1223	1863	1583	1303	1845	1568
Q Serve(g_s), s	0.9	2.1	0.3	0.9	4.5	0.4	1.2	0.1	1.2	1.0	0.1	2.8
Cycle Q Clear(g_c), s	0.9	2.1	0.3	0.9	4.5	0.4	1.2	0.1	1.2	1.0	0.1	2.8
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	99	1108	495	100	1145	512	442	321	273	456	318	270
V/C Ratio(X)	0.53	0.27	0.04	0.51	0.55	0.06	0.12	0.02	0.27	0.10	0.02	0.57
Avail Cap(c_a), veh/h	354	2117	946	367	2199	984	1046	1241	1054	1099	1228	1044
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	14.1	7.6	7.0	14.1	8.4	7.1	11.1	10.6	11.0	11.0	10.6	11.7
Incr Delay (d2), s/veh	4.4	0.1	0.0	4.0	0.4	0.1	0.1	0.0	0.5	0.1	0.0	1.9
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	0.5	0.9	0.1	0.5	2.2	0.2	0.4	0.0	0.6	0.4	0.0	1.3
LnGrp Delay(d),s/veh	18.5	7.7	7.0	18.1	8.8	7.1	11.2	10.6	11.6	11.1	10.6	13.5
LnGrp LOS	B	A	A	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		378			708			131			205	
Approach Delay, s/veh		9.2			9.4			11.4			12.9	
Approach LOS		A			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.8	6.3	14.7		9.8	6.3	14.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		20.5	6.5	19.5		20.5	6.5	19.5				
Max Q Clear Time (g_c+I1), s		3.2	2.9	4.1		4.8	2.9	6.5				
Green Ext Time (p_c), s		0.3	0.0	1.7		0.6	0.0	3.6				
Intersection Summary												
HCM 2010 Ctrl Delay			10.0									
HCM 2010 LOS			B									

Intersection						
Int Delay, s/veh	3.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	142	315	36	39	195
Future Vol, veh/h	38	142	315	36	39	195
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	44	165	366	42	45	227

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	705	388	0	0	409	0
Stage 1	388	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.17	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.263	-
Pot Cap-1 Maneuver	403	660	-	-	1123	-
Stage 1	686	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	386	659	-	-	1122	-
Mov Cap-2 Maneuver	386	-	-	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	573	1122	-
HCM Lane V/C Ratio	-	-	0.365	0.04	-
HCM Control Delay (s)	-	-	14.9	8.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.1	-

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	142	315	36	39	195
Future Vol, veh/h	38	142	315	36	39	195
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	7	7	7	7
Mvmt Flow	44	165	366	42	45	227
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.3	13.7	11.3
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	21%	17%
Vol Thru, %	90%	0%	83%
Vol Right, %	10%	79%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	351	180	234
LT Vol	0	38	39
Through Vol	315	0	195
RT Vol	36	142	0
Lane Flow Rate	408	209	272
Geometry Grp	1	1	1
Degree of Util (X)	0.547	0.295	0.383
Departure Headway (Hd)	4.829	5.078	5.072
Convergence, Y/N	Yes	Yes	Yes
Cap	739	699	702
Service Time	2.907	3.17	3.16
HCM Lane V/C Ratio	0.552	0.299	0.387
HCM Control Delay	13.7	10.3	11.3
HCM Lane LOS	B	B	B
HCM 95th-tile Q	3.4	1.2	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	212	142	32	454	315	314	433	42	130	185	219
Future Volume (veh/h)	259	212	142	32	454	315	314	433	42	130	185	219
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1776	1863	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	276	226	151	34	483	335	334	461	45	138	197	233
Adj No. of Lanes	1	2	1	1	2	0	1	2	1	1	2	1
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, %	7	7	7	2	2	2	2	2	2	4	4	4
Cap, veh/h	306	1273	881	85	489	338	366	1083	484	168	681	305
Arrive On Green	0.18	0.38	0.38	0.05	0.24	0.24	0.21	0.31	0.31	0.10	0.20	0.20
Sat Flow, veh/h	1691	3374	1508	1774	2003	1385	1774	3539	1583	1740	3471	1553
Grp Volume(v), veh/h	276	226	151	34	427	391	334	461	45	138	197	233
Grp Sat Flow(s),veh/h/ln	1691	1687	1508	1774	1770	1618	1774	1770	1583	1740	1736	1553
Q Serve(g_s), s	16.7	4.7	4.8	1.9	25.1	25.2	19.2	10.9	2.1	8.1	5.1	14.8
Cycle Q Clear(g_c), s	16.7	4.7	4.8	1.9	25.1	25.2	19.2	10.9	2.1	8.1	5.1	14.8
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	306	1273	881	85	432	395	366	1083	484	168	681	305
V/C Ratio(X)	0.90	0.18	0.17	0.40	0.99	0.99	0.91	0.43	0.09	0.82	0.29	0.76
Avail Cap(c_a), veh/h	348	1314	899	107	432	395	416	1083	484	273	681	305
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	41.9	21.7	10.1	48.3	39.4	39.4	40.5	28.9	25.9	46.3	35.8	39.7
Incr Delay (d2), s/veh	23.6	0.1	0.1	3.0	40.0	42.9	22.4	1.2	0.4	9.8	1.1	16.6
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	9.8	2.2	2.0	1.0	17.0	15.9	11.7	5.5	1.0	4.4	2.5	7.7
LnGrp Delay(d),s/veh	65.5	21.8	10.2	51.3	79.4	82.3	63.0	30.2	26.3	56.1	36.9	56.3
LnGrp LOS	E	C	B	D	E	F	E	C	C	E	D	E
Approach Vol, veh/h		653			852			840			568	
Approach Delay, s/veh		37.6			79.6			43.0			49.5	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	36.5	9.5	43.9	26.1	25.0	23.4	30.0
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	16.4	28.6	6.3	40.7	24.5	20.5	21.5	25.5
Max Q Clear Time (g_c+I1), s	10.1	12.9	3.9	6.8	21.2	16.8	18.7	27.2
Green Ext Time (p_c), s	0.2	2.9	0.0	2.1	0.3	0.7	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	53.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	406	131	105	857	25	215	76	169	38	28	52
Future Volume (veh/h)	35	406	131	105	857	25	215	76	169	38	28	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1810	1900	1900	1776	1900
Adj Flow Rate, veh/h	39	451	146	117	952	28	239	84	188	42	31	58
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	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, %	4	4	4	3	3	3	5	5	5	7	7	7
Cap, veh/h	69	701	225	149	1100	32	360	118	228	232	177	264
Arrive On Green	0.04	0.27	0.27	0.08	0.32	0.32	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1740	2586	830	1757	3477	102	647	279	539	365	419	623
Grp Volume(v), veh/h	39	302	295	117	480	500	511	0	0	131	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1680	1757	1752	1827	1466	0	0	1406	0	0
Q Serve(g_s), s	1.3	9.4	9.5	4.0	15.8	15.8	15.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.3	9.4	9.5	4.0	15.8	15.8	18.6	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		0.49	1.00		0.06	0.47		0.37	0.32		0.44
Lane Grp Cap(c), veh/h	69	470	455	149	554	578	707	0	0	673	0	0
V/C Ratio(X)	0.57	0.64	0.65	0.78	0.87	0.87	0.72	0.00	0.00	0.19	0.00	0.00
Avail Cap(c_a), veh/h	145	522	505	207	587	612	707	0	0	673	0	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)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.9	19.7	19.7	27.4	19.7	19.7	15.3	0.0	0.0	11.1	0.0	0.0
Incr Delay (d2), s/veh	7.1	2.3	2.5	12.4	12.4	11.9	6.3	0.0	0.0	0.6	0.0	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	0.8	4.7	4.7	2.4	9.5	9.8	8.8	0.0	0.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	36.0	22.0	22.2	39.8	32.1	31.6	21.6	0.0	0.0	11.7	0.0	0.0
LnGrp LOS	D	C	C	D	C	C	C			B		
Approach Vol, veh/h		636			1097			511			131	
Approach Delay, s/veh		22.9			32.7			21.6			11.7	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.4	9.7	21.1		30.4	6.9	23.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		25.9	7.2	18.4		25.9	5.1	20.5
Max Q Clear Time (g_c+I1), s		20.6	6.0	11.5		5.0	3.3	17.8
Green Ext Time (p_c), s		1.6	0.0	2.1		0.7	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	26.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	650	496	75	1050	30	889	30	75	55	25	10
Future Volume (veh/h)	15	650	496	75	1050	30	889	30	75	55	25	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1696	1696	1696	1624	1624	1624	1863	1863	1900	1810	1810	1900
Adj Flow Rate, veh/h	16	677	517	78	1094	31	926	31	78	57	26	10
Adj No. of Lanes	1	2	1	1	2	1	2	1	0	1	1	0
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, %	12	12	12	17	17	17	2	2	2	5	5	5
Cap, veh/h	30	1185	958	96	1269	568	1021	139	350	103	74	28
Arrive On Green	0.02	0.37	0.37	0.06	0.41	0.41	0.30	0.30	0.30	0.06	0.06	0.06
Sat Flow, veh/h	1616	3223	1442	1547	3085	1380	3442	470	1184	1723	1246	479
Grp Volume(v), veh/h	16	677	517	78	1094	31	926	0	109	57	0	36
Grp Sat Flow(s),veh/h/ln	1616	1612	1442	1547	1543	1380	1721	0	1654	1723	0	1725
Q Serve(g_s), s	0.8	14.1	15.7	4.2	27.1	1.1	21.7	0.0	4.2	2.7	0.0	1.7
Cycle Q Clear(g_c), s	0.8	14.1	15.7	4.2	27.1	1.1	21.7	0.0	4.2	2.7	0.0	1.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.72	1.00		0.28
Lane Grp Cap(c), veh/h	30	1185	958	96	1269	568	1021	0	490	103	0	102
V/C Ratio(X)	0.53	0.57	0.54	0.81	0.86	0.05	0.91	0.00	0.22	0.55	0.00	0.35
Avail Cap(c_a), veh/h	96	1185	958	199	1269	568	1087	0	497	150	0	123
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.8	21.2	7.4	38.8	22.5	14.9	28.4	0.0	22.3	38.4	0.0	37.9
Incr Delay (d2), s/veh	13.9	2.0	2.2	14.7	7.9	0.2	10.6	0.0	0.2	4.6	0.0	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	0.5	6.5	6.8	2.2	12.8	0.5	11.8	0.0	1.9	1.4	0.0	0.9
LnGrp Delay(d),s/veh	54.7	23.2	9.6	53.6	30.4	15.1	39.0	0.0	22.5	43.0	0.0	40.0
LnGrp LOS	D	C	A	D	C	B	D		C	D		D
Approach Vol, veh/h		1210			1203			1035			93	
Approach Delay, s/veh		17.8			31.5			37.2			41.8	
Approach LOS		B			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	29.3	9.7	35.3	29.4	9.5	6.1	39.0
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	7.3	25.2	10.8	28.7	26.5	6.0	5.0	34.5
Max Q Clear Time (g_c+I1), s	4.7	6.2	6.2	17.7	23.7	3.7	2.8	29.1
Green Ext Time (p_c), s	0.0	0.5	0.1	5.1	1.2	0.0	0.0	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	649	65	71	446	42	35	5	51	25	5	100
Future Volume (veh/h)	175	649	65	71	446	42	35	5	51	25	5	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	184	683	68	75	469	44	37	5	54	26	5	105
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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	242	1242	555	135	1028	460	418	289	245	428	289	245
Arrive On Green	0.14	0.35	0.35	0.08	0.29	0.29	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1278	1863	1583	1338	1863	1583
Grp Volume(v), veh/h	184	683	68	75	469	44	37	5	54	26	5	105
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1278	1863	1583	1338	1863	1583
Q Serve(g_s), s	3.2	5.0	0.9	1.3	3.5	0.7	0.8	0.1	1.0	0.5	0.1	1.9
Cycle Q Clear(g_c), s	3.2	5.0	0.9	1.3	3.5	0.7	0.9	0.1	1.0	0.6	0.1	1.9
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	242	1242	555	135	1028	460	418	289	245	428	289	245
V/C Ratio(X)	0.76	0.55	0.12	0.56	0.46	0.10	0.09	0.02	0.22	0.06	0.02	0.43
Avail Cap(c_a), veh/h	577	2380	1065	374	1974	883	933	1039	883	967	1039	883
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	13.4	8.4	7.1	14.4	9.4	8.4	11.9	11.6	11.9	11.8	11.6	12.3
Incr Delay (d2), s/veh	4.9	0.4	0.1	3.6	0.3	0.1	0.1	0.0	0.4	0.1	0.0	1.2
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	1.9	2.4	0.4	0.8	1.7	0.3	0.3	0.0	0.4	0.2	0.0	0.9
LnGrp Delay(d),s/veh	18.3	8.8	7.2	18.0	9.7	8.4	12.0	11.6	12.4	11.9	11.6	13.5
LnGrp LOS	B	A	A	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		935			588			96			136	
Approach Delay, s/veh		10.6			10.6			12.2			13.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.5	6.9	15.8		9.5	8.9	13.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.0	6.8	21.7		18.0	10.5	18.0
Max Q Clear Time (g_c+I1), s		3.0	3.3	7.0		3.9	5.2	5.5
Green Ext Time (p_c), s		0.2	0.0	4.3		0.3	0.2	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	83	207	31	116	315
Future Vol, veh/h	34	83	207	31	116	315
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	37	89	223	33	125	339

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	830	240	0	0	256	0
Stage 1	240	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.13	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.227	-
Pot Cap-1 Maneuver	335	789	-	-	1303	-
Stage 1	791	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	303	789	-	-	1303	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	538	1303	-
HCM Lane V/C Ratio	-	-	0.234	0.096	-
HCM Control Delay (s)	-	-	13.7	8.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.3	-

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	83	207	31	116	315
Future Vol, veh/h	34	83	207	31	116	315
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	6	6	2	2	3	3
Mvmt Flow	37	89	223	33	125	339
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.5	10.1	14.3
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	29%	27%
Vol Thru, %	87%	0%	73%
Vol Right, %	13%	71%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	238	117	431
LT Vol	0	34	116
Through Vol	207	0	315
RT Vol	31	83	0
Lane Flow Rate	256	126	463
Geometry Grp	1	1	1
Degree of Util (X)	0.334	0.183	0.595
Departure Headway (Hd)	4.702	5.238	4.623
Convergence, Y/N	Yes	Yes	Yes
Cap	760	679	779
Service Time	2.758	3.309	2.671
HCM Lane V/C Ratio	0.337	0.186	0.594
HCM Control Delay	10.1	9.5	14.3
HCM Lane LOS	B	A	B
HCM 95th-tile Q	1.5	0.7	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	393	244	25	266	220	200	645	36	375	620	267
Future Volume (veh/h)	313	393	244	25	266	220	200	645	36	375	620	267
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	326	409	254	26	277	229	208	672	38	391	646	278
Adj No. of Lanes	1	2	1	1	2	0	1	2	1	1	2	1
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	359	1016	670	88	252	202	241	865	387	424	1230	550
Arrive On Green	0.20	0.29	0.29	0.05	0.13	0.13	0.14	0.24	0.24	0.24	0.35	0.35
Sat Flow, veh/h	1774	3539	1583	1774	1870	1498	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	326	409	254	26	262	244	208	672	38	391	646	278
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1598	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	18.0	9.3	11.1	1.4	13.5	13.5	11.5	17.7	1.9	21.6	14.6	13.9
Cycle Q Clear(g_c), s	18.0	9.3	11.1	1.4	13.5	13.5	11.5	17.7	1.9	21.6	14.6	13.9
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	1016	670	88	238	215	241	865	387	424	1230	550
V/C Ratio(X)	0.91	0.40	0.38	0.29	1.10	1.13	0.86	0.78	0.10	0.92	0.53	0.51
Avail Cap(c_a), veh/h	398	1066	692	103	238	215	292	865	387	469	1230	550
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	39.1	28.8	19.9	45.9	43.4	43.4	42.4	35.3	29.3	37.2	26.1	25.9
Incr Delay (d2), s/veh	22.9	0.3	0.4	1.8	86.9	102.4	19.5	6.8	0.5	22.6	1.6	3.3
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	11.1	4.6	4.9	0.7	12.3	12.0	7.0	9.5	0.9	13.2	7.4	6.6
LnGrp Delay(d),s/veh	62.0	29.1	20.2	47.7	130.3	145.8	61.9	42.1	29.8	59.8	27.7	29.2
LnGrp LOS	E	C	C	D	F	F	E	D	C	E	C	C
Approach Vol, veh/h		989			532			918			1315	
Approach Delay, s/veh		37.6			133.4			46.1			37.6	
Approach LOS		D			F			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.5	29.0	9.5	33.3	18.1	39.3	24.8	18.0				
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	26.5	24.5	5.8	30.2	16.5	34.5	22.5	13.5				
Max Q Clear Time (g_c+I1), s	23.6	19.7	3.4	13.1	13.5	16.6	20.0	15.5				
Green Ext Time (p_c), s	0.4	2.0	0.0	3.3	0.2	5.2	0.3	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			53.2									
HCM 2010 LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	780	183	180	488	35	135	57	115	55	86	34
Future Volume (veh/h)	55	780	183	180	488	35	135	57	115	55	86	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1827	1900
Adj Flow Rate, veh/h	62	886	208	205	555	40	153	65	131	62	98	39
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	92	948	222	248	1410	101	272	116	185	192	282	98
Arrive On Green	0.05	0.33	0.33	0.14	0.42	0.42	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1774	2847	668	1774	3349	241	603	365	582	373	889	307
Grp Volume(v), veh/h	62	551	543	205	293	302	349	0	0	199	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1745	1774	1770	1820	1549	0	0	1569	0	0
Q Serve(g_s), s	2.2	19.4	19.5	7.2	7.4	7.4	6.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	19.4	19.5	7.2	7.4	7.4	12.1	0.0	0.0	5.8	0.0	0.0
Prop In Lane	1.00		0.38	1.00		0.13	0.44		0.38	0.31		0.20
Lane Grp Cap(c), veh/h	92	589	581	248	745	766	573	0	0	572	0	0
V/C Ratio(X)	0.67	0.93	0.94	0.83	0.39	0.39	0.61	0.00	0.00	0.35	0.00	0.00
Avail Cap(c_a), veh/h	181	590	581	261	745	766	573	0	0	572	0	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)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.0	20.8	20.8	27.0	13.0	13.0	18.9	0.0	0.0	16.9	0.0	0.0
Incr Delay (d2), s/veh	8.2	22.2	22.6	18.4	0.3	0.3	4.8	0.0	0.0	1.7	0.0	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	1.3	13.1	13.0	4.8	3.6	3.8	6.1	0.0	0.0	3.0	0.0	0.0
LnGrp Delay(d),s/veh	38.2	43.0	43.4	45.4	13.3	13.3	23.7	0.0	0.0	18.6	0.0	0.0
LnGrp LOS	D	D	D	D	B	B	C			B		
Approach Vol, veh/h		1156			800			349			199	
Approach Delay, s/veh		43.0			21.5			23.7			18.6	
Approach LOS		D			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.0	13.5	26.0		25.0	7.9	31.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.5	9.5	21.5		20.5	6.6	24.4
Max Q Clear Time (g_c+I1), s		14.1	9.2	21.5		7.8	4.2	9.4
Green Ext Time (p_c), s		1.2	0.0	0.0		0.9	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	869	833	115	900	30	641	20	155	155	160	5
Future Volume (veh/h)	5	869	833	115	900	30	641	20	155	155	160	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1776	1776	1776	1667	1667	1667	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	5	905	868	120	938	31	668	21	161	161	167	5
Adj No. of Lanes	1	2	1	1	2	1	2	1	0	1	1	0
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, %	7	7	7	14	14	14	2	2	2	2	2	2
Cap, veh/h	11	1034	807	147	1243	556	786	43	328	209	215	6
Arrive On Green	0.01	0.31	0.31	0.09	0.39	0.39	0.23	0.23	0.23	0.12	0.12	0.12
Sat Flow, veh/h	1691	3374	1509	1587	3167	1417	3442	186	1425	1774	1799	54
Grp Volume(v), veh/h	5	905	868	120	938	31	668	0	182	161	0	172
Grp Sat Flow(s),veh/h/ln	1691	1687	1509	1587	1583	1417	1721	0	1611	1774	0	1853
Q Serve(g_s), s	0.2	18.1	21.8	5.3	18.2	1.0	13.2	0.0	7.0	6.3	0.0	6.4
Cycle Q Clear(g_c), s	0.2	18.1	21.8	5.3	18.2	1.0	13.2	0.0	7.0	6.3	0.0	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.88	1.00		0.03
Lane Grp Cap(c), veh/h	11	1034	807	147	1243	556	786	0	370	209	0	221
V/C Ratio(X)	0.45	0.88	1.08	0.82	0.75	0.06	0.85	0.00	0.49	0.77	0.00	0.78
Avail Cap(c_a), veh/h	119	1034	807	149	1243	556	914	0	381	292	0	250
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.2	23.4	16.6	31.7	18.6	13.4	26.3	0.0	23.8	30.4	0.0	30.4
Incr Delay (d2), s/veh	25.5	10.3	54.0	27.9	4.3	0.2	6.8	0.0	1.0	7.9	0.0	12.8
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	0.2	9.9	27.6	3.4	8.7	0.4	7.1	0.0	3.2	3.5	0.0	4.1
LnGrp Delay(d),s/veh	60.7	33.7	70.5	59.5	22.9	13.6	33.1	0.0	24.8	38.4	0.0	43.2
LnGrp LOS	E	C	F	E	C	B	C		C	D		D
Approach Vol, veh/h		1778			1089			850			333	
Approach Delay, s/veh		51.8			26.7			31.3			40.9	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	20.8	11.1	26.3	20.7	13.0	5.0	32.4
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	11.7	16.8	6.7	21.8	18.9	9.6	5.0	23.5
Max Q Clear Time (g_c+I1), s	8.3	9.0	7.3	23.8	15.2	8.4	2.2	20.2
Green Ext Time (p_c), s	0.1	0.6	0.0	0.0	1.0	0.1	0.0	2.0

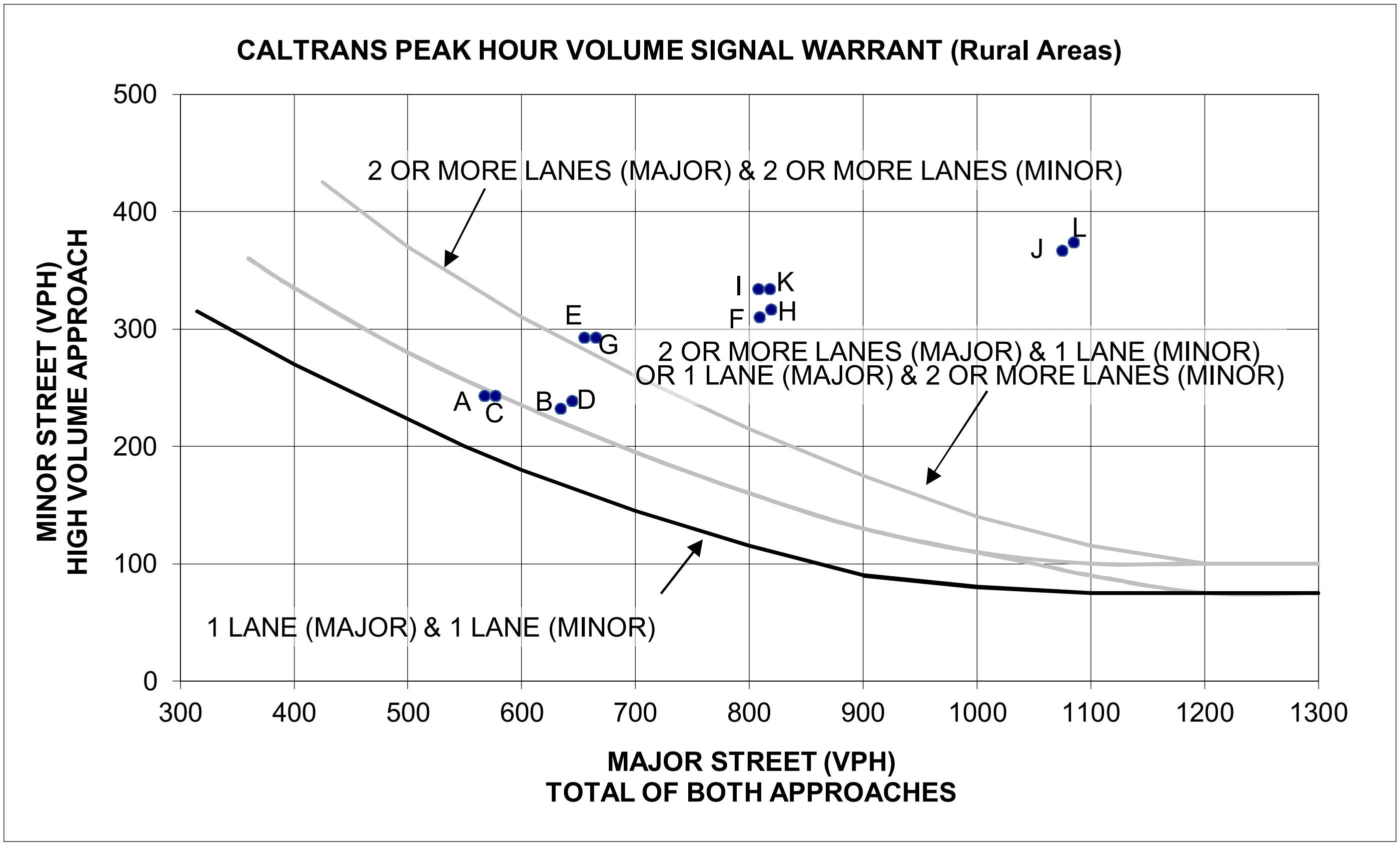
Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Appendix I

Warrant

Worksheets

Intersection #1
Ridgemark Drive - Fairview Road / Airline Highway (State Route 25)



Scenario	Airline-SR 25	Ridge.-Fair.	Warrant
	East/West	North/South	Met?
	(Major)	(Minor)	(Yes/No)
A. Exist AM	567	243	Yes
B. Exist PM	634	232	Yes
C. Ex+Pro AM	577	243	Yes
D. Ex+Pro PM	644	239	Yes
E. Bkgnd AM	655	293	Yes
F. Bkgnd PM	809	310	Yes
G. Bk+Pro AM	665	293	Yes
H. Bk+Pro PM	819	317	Yes
I. CumNoPro AM	808	334	Yes
J. CumNoPro PM	1075	367	Yes
K. Cum+Pro AM	818	334	Yes
L. Cum+Pro PM	1085	374	Yes

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

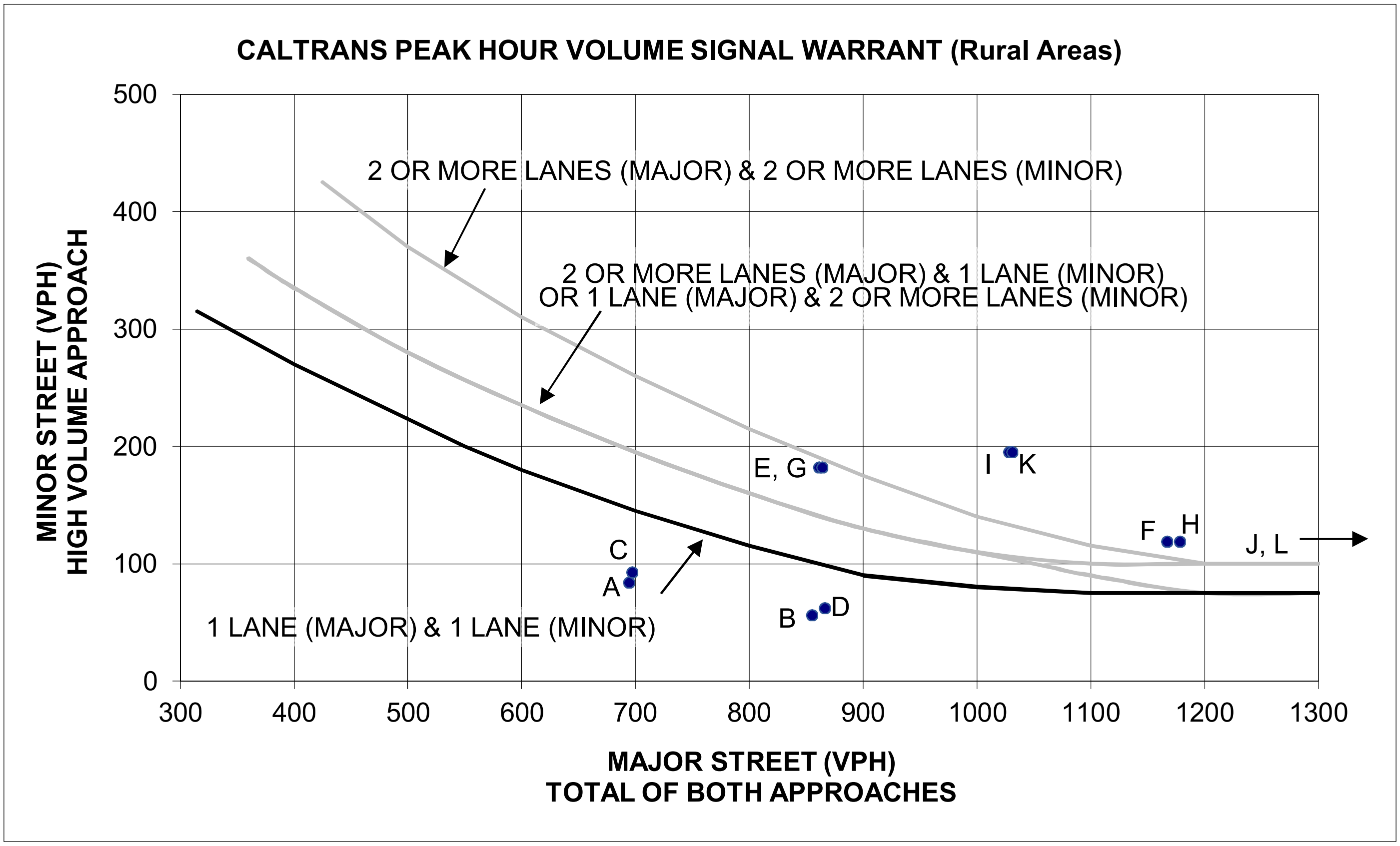
Warrant 3 (Part B) - Peak Hour Delay
#1 - Ridgemark Drive - Fairview Road / Airline Highway (State Route 25)

Number of Approaches to Intersection:		4 approaches		**Minimum Entering Vehicles:**	**800 vehicles**
Number of Approach Lanes:	NB Ridgemark:	1 lanes			
	SB Fairview:	1 lanes			
Total Entering Volumes:	Existing AM:	970 vehicles		Back+Proj AM:	1,198 vehicles
	Existing PM:	999 vehicles		Back+Proj PM:	1,303 vehicles
	Exist+Proj AM:	982 vehicles		CumNoPro AM:	1,415 vehicles
	Exist+Proj PM:	1,016 vehicles		CumNoPro PM:	1,645 vehicles
	Background AM:	1,186 vehicles		Cum+Proj AM:	1,427 vehicles
	Background PM:	1,286 vehicles		Cum+Proj PM:	1,662 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. Approach Delay? 4 Veh-Hrs (One-Lane)	Min. Approach Delay? 5 Veh-Hrs (Two-Lane)	Min. Approach Vols? 100 Veh (One-Lane)	Min. Approach Vols? 150 Veh (Two-Lane)	At least 800 Veh? (Intersection)	Warrant Met?
Ridgemark	NB	Existing	AM	243	13.8	3,353	0.93	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Existing	AM	160	11.2	1,792	0.50	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Existing	PM	133	11.8	1,569	0.44	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Existing	PM	232	10.7	2,482	0.69	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Exist+Proj	AM	243	13.9	3,378	0.94	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Exist+Proj	AM	162	11.3	1,831	0.51	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Exist+Proj	PM	133	11.9	1,583	0.44	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Exist+Proj	PM	239	10.8	2,581	0.72	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Background	AM	293	18.0	5,274	1.47	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Background	AM	238	13.5	3,213	0.89	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Background	PM	167	14.2	2,371	0.66	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Background	PM	310	12.6	3,906	1.09	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Back+Proj	AM	293	18.1	5,303	1.47	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Back+Proj	AM	240	13.6	3,264	0.91	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Back+Proj	PM	167	14.3	2,388	0.66	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Back+Proj	PM	317	12.7	4,026	1.12	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	CumNoPro	AM	334	23.1	7,715	2.14	NO	N/A	YES	N/A	YES	NO
Fairview	SB	CumNoPro	AM	273	16.0	4,368	1.21	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	CumNoPro	PM	203	18.2	3,695	1.03	NO	N/A	YES	N/A	YES	NO
Fairview	SB	CumNoPro	PM	367	16.2	5,945	1.65	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Cum+Proj	AM	334	23.4	7,816	2.17	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Cum+Proj	AM	275	16.2	4,455	1.24	NO	N/A	YES	N/A	YES	NO
Ridgemark	NB	Cum+Proj	PM	203	18.3	3,715	1.03	NO	N/A	YES	N/A	YES	NO
Fairview	SB	Cum+Proj	PM	374	16.5	6,171	1.71	NO	N/A	YES	N/A	YES	NO

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. N/A = Not Applicable - this evaluation does not apply to that approach.

Intersection #2
Enterprise Road / Airline Highway (State Route 25)



Scenario	Airline-SR 25 East/West (Major)	Enterprise North/South (Minor)	Warrant Met? (Yes/No)
A. Exist AM	694	84	No
B. Exist PM	855	56	No
C. Ex+Pro AM	697	93	No
D. Ex+Pro PM	866	62	No
E. Bkgnd AM	861	182	Yes
F. Bkgnd PM	1167	119	Yes
G. Bk+Pro AM	864	182	Yes
H. Bk+Pro PM	1178	119	Yes
I. CumNoPro AM	1028	195	Yes
J. CumNoPro PM	1437	130	Yes
K. Cum+Pro AM	1031	195	Yes
L. Cum+Pro PM	1448	130	Yes

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Warrant 3 (Part B) - Peak Hour Delay
#2 - Enterprise Road / Airline Highway (State Route 25)

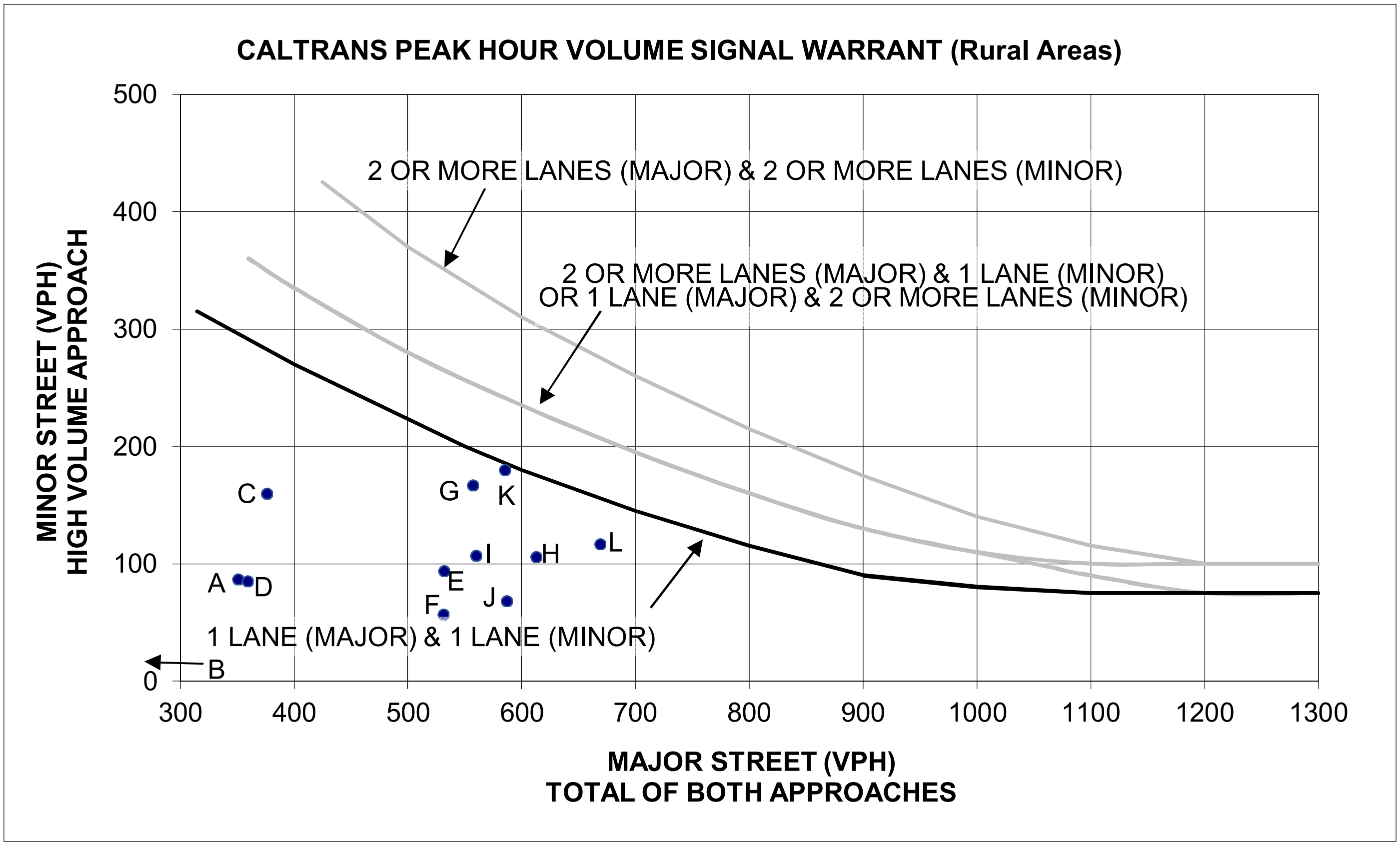
Number of Approaches to Intersection:		4 approaches	**Minimum Entering Vehicles:**	**800 vehicles**
Number of Approach Lanes:	NB Enterprise:	1 lanes		
	SB Enterprise:	1 lanes		

Total Entering Volumes:	Existing AM:	844 vehicles	Back+Proj AM:	1,158 vehicles
	Existing PM:	956 vehicles	Back+Proj PM:	1,371 vehicles
	Exist+Proj AM:	856 vehicles	CumNoPro AM:	1,338 vehicles
	Exist+Proj PM:	973 vehicles	CumNoPro PM:	1,652 vehicles
	Background AM:	1,146 vehicles	Cum+Proj AM:	1,350 vehicles
	Background PM:	1,354 vehicles	Cum+Proj PM:	1,669 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. Approach Delay? 4 Veh-Hrs (One-Lane)	Min. Approach Delay? 5 Veh-Hrs (Two-Lane)	Min. Approach Vols? 100 Veh (One-Lane)	Min. Approach Vols? 150 Veh (Two-Lane)	At least 800 Veh? (Intersection)	Warrant Met?
Enterprise	NB	Existing	AM	84	15.8	1,327	0.37	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	Existing	AM	66	13.6	898	0.25	NO	N/A	NO	N/A	YES	NO
Enterprise	NB	Existing	PM	56	18.1	1,014	0.28	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	Existing	PM	45	13.1	590	0.16	NO	N/A	NO	N/A	YES	NO
Enterprise	NB	Exist+Proj	AM	93	15.3	1,423	0.40	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	Exist+Proj	AM	66	13.8	911	0.25	NO	N/A	NO	N/A	YES	NO
Enterprise	NB	Exist+Proj	PM	62	17.9	1,110	0.31	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	Exist+Proj	PM	45	13.4	603	0.17	NO	N/A	NO	N/A	YES	NO
Enterprise	NB	Background	AM	103	24.6	2,534	0.70	NO	N/A	YES	N/A	YES	NO
Enterprise	SB	Background	AM	182	17.7	3,221	0.89	NO	N/A	YES	N/A	YES	NO
Enterprise	NB	Background	PM	68	38.5	2,618	0.73	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	Background	PM	119	19.8	2,356	0.65	NO	N/A	YES	N/A	YES	NO
Enterprise	NB	Back+Proj	AM	112	23.7	2,654	0.74	NO	N/A	YES	N/A	YES	NO
Enterprise	SB	Back+Proj	AM	182	17.3	3,149	0.87	NO	N/A	YES	N/A	YES	NO
Enterprise	NB	Back+Proj	PM	74	38.5	2,849	0.79	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	Back+Proj	PM	119	20.7	2,463	0.68	NO	N/A	YES	N/A	YES	NO
Enterprise	NB	CumNoPro	AM	115	41.1	4,727	1.31	NO	N/A	YES	N/A	YES	NO
Enterprise	SB	CumNoPro	AM	195	22.6	4,407	1.22	NO	N/A	YES	N/A	YES	NO
Enterprise	NB	CumNoPro	PM	85	105.5	8,968	2.49	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	CumNoPro	PM	130	40.5	5,265	1.46	NO	N/A	YES	N/A	YES	NO
Enterprise	NB	Cum+Proj	AM	124	40.0	4,960	1.38	NO	N/A	YES	N/A	YES	NO
Enterprise	SB	Cum+Proj	AM	195	23.1	4,505	1.25	NO	N/A	YES	N/A	YES	NO
Enterprise	NB	Cum+Proj	PM	91	107.1	9,746	2.71	NO	N/A	NO	N/A	YES	NO
Enterprise	SB	Cum+Proj	PM	130	42.5	5,525	1.53	NO	N/A	YES	N/A	YES	NO

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. N/A = Not Applicable - this evaluation does not apply to that approach.

Intersection #3
Southside Road / Enterprise Road



Scenario	Southside	Enterprise	Warrant
	North/South	East/West	Met?
	(Major)	(Minor)	(Yes/No)
A. Exist AM	351	87	No
B. Exist PM	277	36	No
C. Ex+Pro AM	376	160	No
D. Ex+Pro PM	359	85	No
E. Bkgnd AM	532	94	No
F. Bkgnd PM	531	57	No
G. Bk+Pro AM	557	167	No
H. Bk+Pro PM	613	106	No
I. CumNoPro AM	560	107	No
J. CumNoPro PM	587	68	No
K. Cum+Pro AM	585	180	No
L. Cum+Pro PM	669	117	No

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 75 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Warrant 3 (Part B) - Peak Hour Delay
#3 - Southside Road / Enterprise Road

Number of Approaches to Intersection: 3 approaches
Number of Approach Lanes: WB Enterprise: 1 lanes

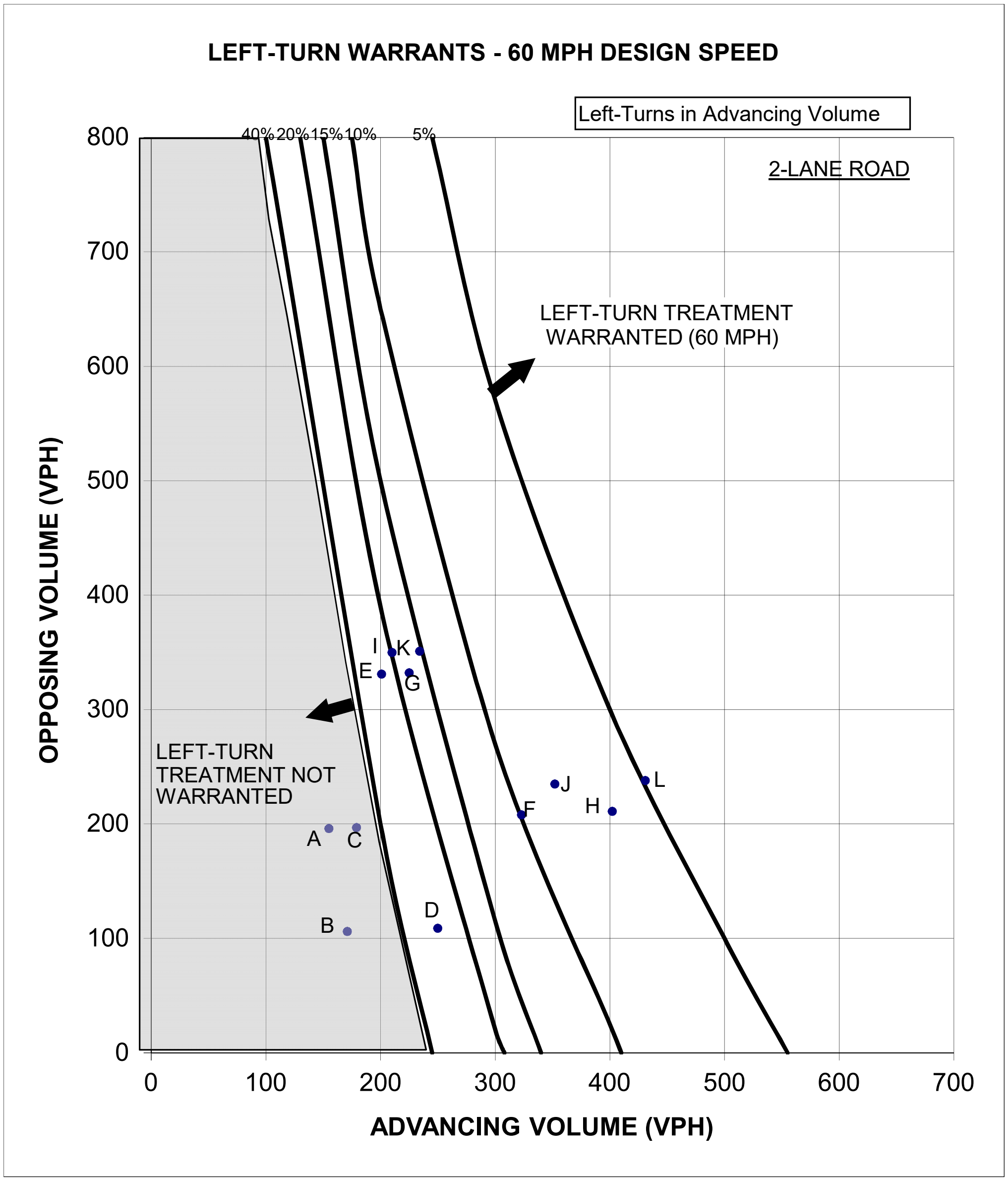
Minimum Entering Vehicles: 650 vehicles

Total Entering Volumes:				
	Existing AM:	438 vehicles	Back+Proj AM:	724 vehicles
	Existing PM:	313 vehicles	Back+Proj PM:	719 vehicles
	Exist+Proj AM:	536 vehicles	CumNoPro AM:	667 vehicles
	Exist+Proj PM:	444 vehicles	CumNoPro PM:	655 vehicles
	Background AM:	626 vehicles	Cum+Proj AM:	765 vehicles
	Background PM:	588 vehicles	Cum+Proj PM:	786 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. Approach Delay? 4 Veh-Hrs (One-Lane)	Min. Approach Delay? 5 Veh-Hrs (Two-Lane)	Min. Approach Vols? 100 Veh (One-Lane)	Min. Approach Vols? 150 Veh (Two-Lane)	At least 650 Veh? (Intersection)	Warrant Met?
El Rancho	WB	Existing	AM	87	10.8	940	0.26	NO	N/A	NO	N/A	NO	NO
El Rancho	WB	Existing	PM	36	9.4	338	0.09	NO	N/A	NO	N/A	NO	NO
El Rancho	WB	Exist+Proj	AM	160	11.6	1,856	0.52	NO	N/A	YES	N/A	NO	NO
El Rancho	WB	Exist+Proj	PM	85	9.8	833	0.23	NO	N/A	NO	N/A	NO	NO
El Rancho	WB	Background	AM	94	12.9	1,213	0.34	NO	N/A	NO	N/A	NO	NO
El Rancho	WB	Background	PM	57	12.1	690	0.19	NO	N/A	NO	N/A	NO	NO
El Rancho	WB	Back+Proj	AM	167	14.3	2,388	0.66	NO	N/A	YES	N/A	YES	NO
El Rancho	WB	Back+Proj	PM	106	13.0	1,378	0.38	NO	N/A	YES	N/A	YES	NO
El Rancho	WB	CumNoPro	AM	107	14.0	1,498	0.42	NO	N/A	YES	N/A	YES	NO
El Rancho	WB	CumNoPro	PM	68	12.6	857	0.24	NO	N/A	NO	N/A	YES	NO
El Rancho	WB	Cum+Proj	AM	180	14.9	2,682	0.75	NO	N/A	YES	N/A	YES	NO
El Rancho	WB	Cum+Proj	PM	117	13.9	1,626	0.45	NO	N/A	YES	N/A	YES	NO

Notes:
1. Warrant based on level of service calculations.
2. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound.
3. N/A = Not Applicable - this evaluation does not apply to that approach.

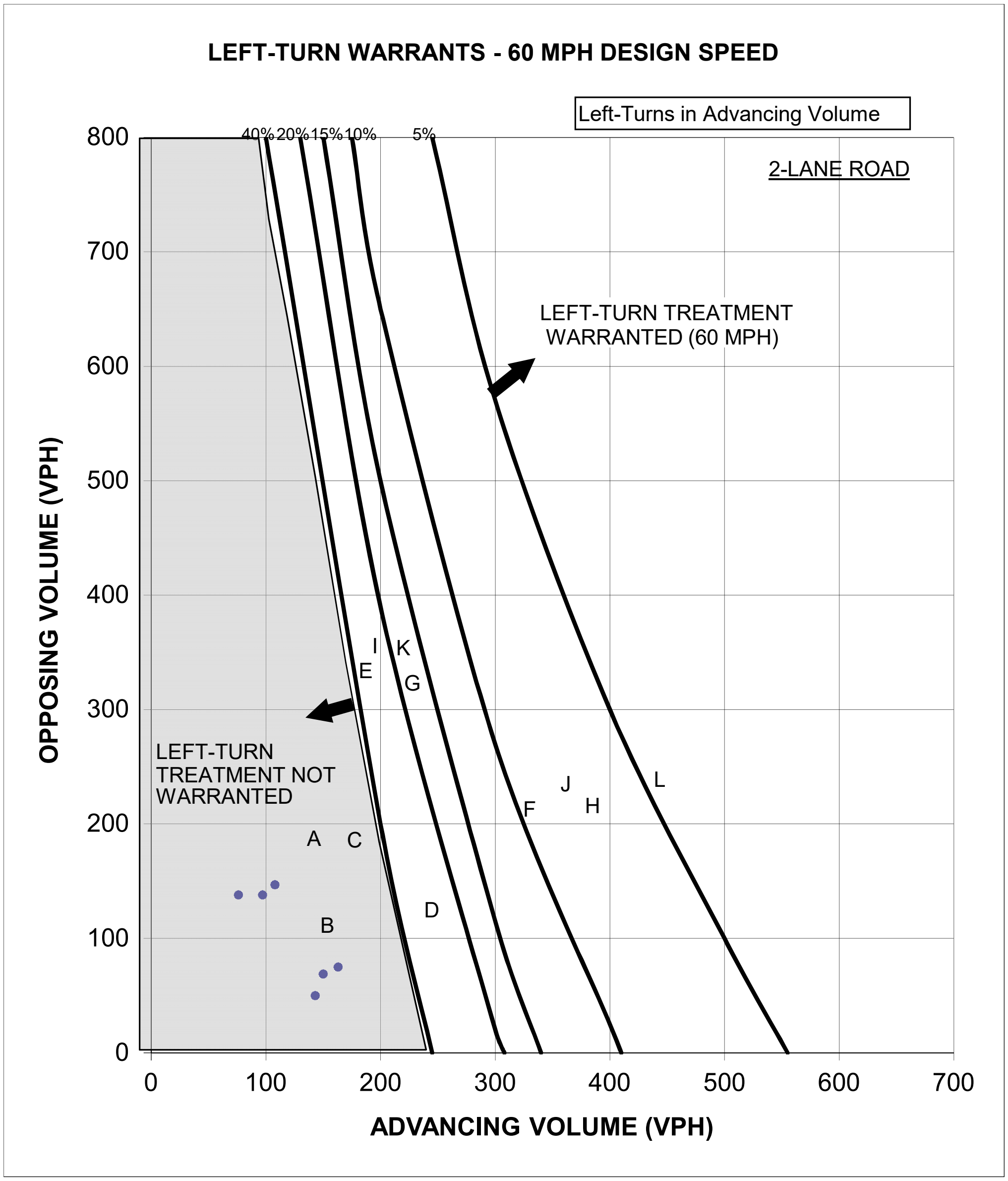
Intersection #3
Southside Road / Enterprise Road
Southbound Approach



Scenario	Advancing	Opposing	% Left-Turn	Warrant Met?
A. Existing AM	155	196	8%	No
B. Existing PM	171	106	19%	No
C. Ex+Pro AM	179	197	21%	No
D. Ex+Pro PM	250	109	45%	Yes
E. Bkgnd AM	201	331	6%	No
F. Bkgnd PM	323	208	10%	Yes
G. Bk+Pro AM	225	332	16%	No
H. Bk+Pro PM	402	211	28%	Yes
I. CumNoPro AM	210	350	7%	No
J CumNoPro PM	352	235	11%	Yes
K Cum+Pro AM	234	351	17%	No
L Cum+Pro PM	431	238	27%	Yes

Source: Transportation Research Board,
"Intersection Channelization Guide",
NCHRP Report 279, November, 1985

Intersection #10
Project Access West / Enterprise Road
Westbound Approach

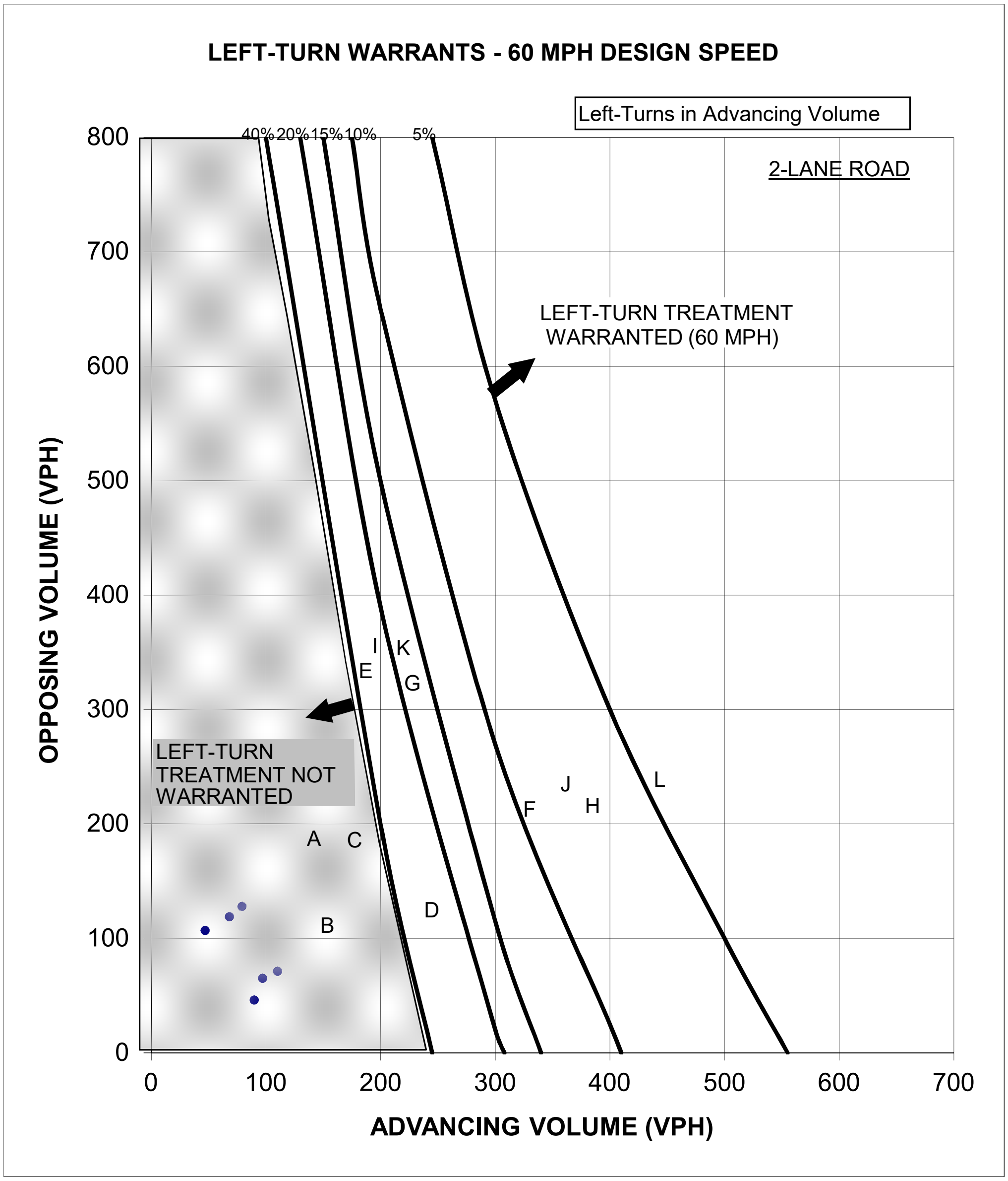


Scenario	Advancing	Opposing	% Left-Turn	Warrant Met?
A. Ex+Pro AM	143	50	1%	No
B. Ex+Pro PM	76	138	4%	No
C. Bk+Pro AM	150	69	1%	No
D. Bk+Pro PM	97	138	3%	No
E. Cum+Pro AM	163	75	1%	No
F. Cum+Pro PM	108	147	3%	No

Source: Transportation Research Board, "Intersection Channelization Guide", NCHRP Report 279, November, 1985

Keith Higgins
Traffic Engineer

Intersection #11
Project Access East / Enterprise Road
Westbound Approach



Scenario	Advancing	Opposing	% Left-Turn	Warrant Met?
A. Ex+Pro AM	90	46	2%	No
B. Ex+Pro PM	47	107	17%	No
C. Bk+Pro AM	97	65	2%	No
D. Bk+Pro PM	68	119	12%	No
E. Cum+Pro AM	110	71	2%	No
F. Cum+Pro PM	79	128	10%	No

Source: Transportation Research Board, "Intersection Channelization Guide", NCHRP Report 279, November, 1985

Appendix K

Will Serve Letter

Sunnyslope County Water District

3570 Airline Highway
Hollister, California 95023-9702

Phone (831) 637-4670
Fax (831) 637-1399

November 26, 2019

San Benito Engineering & Surveying, Inc.
Attn. Anne Hall
502 Monterey St.
Hollister, CA, 95023

Re: Letter of Intent to Provide Water and Sanitary Sewer Service to Proposed Vista Del Calabria Development on Enterprise Road

Ms. Hall:

The Sunnyslope County Water District intends to provide water service to the proposed Vista Del Calabria development south of Enterprise Road and east of the existing Oak Creek subdivision. This is within the District boundary and adjacent to existing District water distribution pipelines. The District currently has the water supplies and infrastructure necessary to serve additional development within the Hollister Urban Area defined in the Hollister Urban Area Water and Wastewater Master Plan (HUAWWMP) including this development, especially as it was specifically anticipated in this plan's update in 2017.

Additionally, Sunnyslope County Water District intends to provide sanitary sewer service for this development as it lies within the District's sanitary sewer service area identified in the HUAWWMP. There is sufficient capacity at the District's Ridgemark Wastewater Treatment Plant to serve this development. However, the developer is required to ensure that the existing collections system has capacity to properly serve the development and shall be responsible for upsizing any sewer lines if needed.

Sunnyslope County Water District shall review, comment, and sign the development Improvement Plans prior start of construction. Additionally the developer must enter into a Facilities and Service Agreement with the District further dictating the specific terms and conditions of water and wastewater service for the development .The District may rescind or withdraw its intent to serve this Development if emergency drought measures require the cessation of new water meter connections within the District, or if other unforeseen circumstances limit either the capacity or ability for the District to provide water services.

Please do not hesitate to give me a call at 831-637-4670 if you have any clarifying questions. Thank you.

Sincerely,

Rob Hillebrecht, P.E.

Rob Hillebrecht