Appendix A

Air Quality and Greenhouse Gas Emissions Calculations

Summary of Average Criteria Pollutant Emissions

Year	Total Work Days	NOx TPY	Avg. Pounds / Day
2019	65	1.5337	47.19

Year	Work Days	Tons per Year (TPY) ROG	Nox	CO	PM_{10} Exhaust	PM_{10} Fugitive	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Fugitive
2019	65	0.1323	1.5337	0.9933	0.0665	0.212	0.0612	0.091
		Average Pounds / Day						
		ROG	**Nox**	**CO**	**PM_{10} Exhaust**	**PM_{10} Fugitive**	**$PM_{2.5}$ Exhaust**	**$PM_{2.5}$ Fugitive**
2019		4.07	47.19	30.56	2.05	6.52	1.88	2.80

CALEEMOD modeling results for the proposed project are provided in Tons per Year (TPY). Average daily emissions in pounds per day are calculated using a conversion factor and by dividing the total emissions by the total number of construction work days in that year.

Arroyo Mocho - Medeiros Reach

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	40.00	Acre	40.00	1,742,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Following Revised ConstructionEquipment spreadsheet

Off-road Equipment - Matches revised equipment list

Off-road Equipment - Revised to Match Chapter 2, Project Description

Off-road Equipment - Matches Updated Equipment List

Off-road Equipment - Matches updated equipment list

Off-road Equipment - Matches revised equipment list

Off-road Equipment - Matches Revised Construction Equipment list

Trips and VMT - Truck Hauling trips based on a truck capacity of approximately 8 cubic yards and approximately 626 total trips for 2500 cubic yards of material. Assume that approximately 2/3 of trips would occur during trail creation and that 1/3 during grading.

Grading - Haul volume matches 11/21 emails

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstructionPhase	NumDays	30.00	5.00
tblConstructionPhase	NumDays	75.00	15.00
tblConstructionPhase	NumDays	75.00	30.00
tblConstructionPhase	NumDays	55.00	15.00
tblConstructionPhase	NumDays	55.00	10.00
tblGrading	MaterialExported	0.00	833.00
tblGrading	MaterialExported	0.00	1,667.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblTripsAndVMT	HaulingTripNumber	104.00	206.00
tblTripsAndVMT	HaulingTripNumber	208.00	420.00
tblTripsAndVMT	WorkerTripNumber	18.00	3.00
tblTripsAndVMT	WorkerTripNumber	18.00	3.00

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					
2019	0.1323	1.5337	0.9933	2.0000e-003	0.2120	0.0665	0.2785	0.0910	0.0612	0.1521	0.0000	181.5248	181.5248	0.0499	0.0000	182.7721
Maximum	**0.1323**	**1.5337**	**0.9933**	**2.0000e-003**	**0.2120**	**0.0665**	**0.2785**	**0.0910**	**0.0612**	**0.1521**	**0.0000**	**181.5248**	**181.5248**	**0.0499**	**0.0000**	**182.7721**

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					
2019	0.1323	1.5337	0.9933	2.0000e-003	0.2120	0.0665	0.2785	0.0910	0.0612	0.1521	0.0000	181.5247	181.5247	0.0499	0.0000	182.7720
Maximum	**0.1323**	**1.5337**	**0.9933**	**2.0000e-003**	**0.2120**	**0.0665**	**0.2785**	**0.0910**	**0.0612**	**0.1521**	**0.0000**	**181.5247**	**181.5247**	**0.0499**	**0.0000**	**182.7720**

	ROG	NOx	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	6-1-2019	8-31-2019	0.5840	0.5840
2	9-1-2019	9-30-2019	0.6517	0.6517
		Highest	0.6517	0.6517

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0164	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0859	0.5458	0.9172	3.0500e-003	0.2233	3.7000e-003	0.2270	0.0600	3.4900e-003	0.0635	0.0000	280.8558	280.8558	0.0132	0.0000	281.1865
Waste						0.0000	0.0000		0.0000	0.0000	0.6983	0.0000	0.6983	0.0413	0.0000	1.7300
Water						0.0000	0.0000		0.0000	0.0000	0.0000	48.5262	48.5262	2.1900e-003	4.5000e-004	48.7163
Total	**0.1023**	**0.5458**	**0.9175**	**3.0500e-003**	**0.2233**	**3.7000e-003**	**0.2270**	**0.0600**	**3.4900e-003**	**0.0635**	**0.6983**	**329.3827**	**330.0810**	**0.0567**	**4.5000e-004**	**331.6335**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0164	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0859	0.5458	0.9172	3.0500e-003	0.2233	3.7000e-003	0.2270	0.0600	3.4900e-003	0.0635	0.0000	280.8558	280.8558	0.0132	0.0000	281.1865
Waste						0.0000	0.0000		0.0000	0.0000	0.6983	0.0000	0.6983	0.0413	0.0000	1.7300
Water						0.0000	0.0000		0.0000	0.0000	0.0000	48.5262	48.5262	2.1900e-003	4.5000e-004	48.7163
Total	**0.1023**	**0.5458**	**0.9175**	**3.0500e-003**	**0.2233**	**3.7000e-003**	**0.2270**	**0.0600**	**3.4900e-003**	**0.0635**	**0.6983**	**329.3827**	**330.0810**	**0.0567**	**4.5000e-004**	**331.6335**

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

3.0 Construction Detail

Construction Phase

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2019	8/7/2019	5	5	
2	Grading - Lowered Levee/Trail	Grading	8/8/2019	8/28/2019	5	15	
3	OGNR Trail Creation and Grading	Grading	8/29/2019	10/9/2019	5	30	
4	Revegetation	Paving	11/1/2019	11/21/2019	5	15	
5	Demobilization/Cleanup	Paving	10/10/2019	10/23/2019	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading - Lowered Levee/Trail	Excavators	2	8.00	158	0.38
Grading - Lowered Levee/Trail	Graders	1	8.00	187	0.41
Grading - Lowered Levee/Trail	Pavers	2	8.00	130	0.42
Grading - Lowered Levee/Trail	Paving Equipment	2	8.00	132	0.36
Grading - Lowered Levee/Trail	Rollers	2	8.00	80	0.38
Grading - Lowered Levee/Trail	Rubber Tired Dozers	1	8.00	247	0.40
Grading - Lowered Levee/Trail	Scrapers	1	8.00	367	0.48
Grading - Lowered Levee/Trail	Tractors/Loaders/Backhoes	1	8.00	97	0.37
OGNR Trail Creation and Grading	Excavators	1	8.00	158	0.38
OGNR Trail Creation and Grading	Graders	1	8.00	187	0.41
OGNR Trail Creation and Grading	Rubber Tired Dozers	1	8.00	247	0.40
OGNR Trail Creation and Grading	Scrapers	2	8.00	367	0.48
OGNR Trail Creation and Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Revegetation	Skid Steer Loaders	1	8.00	65	0.37
Demobilization/Cleanup	Excavators	1	8.00	158	0.38
Revegetation	Pavers	2	8.00	130	0.42
Demobilization/Cleanup	Pavers	2	8.00	130	0.42
Revegetation	Paving Equipment	2	8.00	132	0.36
Demobilization/Cleanup	Paving Equipment	2	8.00	132	0.36
Revegetation	Rollers	2	8.00	80	0.38
Demobilization/Cleanup	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Lowered Levee/Trail	12	30.00	0.00	206.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
OGNR Trail Creation and Grading	7	18.00	0.00	420.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Revegetation	7	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demobilization/Cleanup	7	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4200e-003	0.0360	0.0165	3.0000e-005		1.8600e-003	1.8600e-003		1.7100e-003	1.7100e-003	0.0000	2.6149	2.6149	8.3000e-004	0.0000	2.6356
Total	**3.4200e-003**	**0.0360**	**0.0165**	**3.0000e-005**	**0.0151**	**1.8600e-003**	**0.0169**	**8.2800e-003**	**1.7100e-003**	**9.9900e-003**	**0.0000**	**2.6149**	**2.6149**	**8.3000e-004**	**0.0000**	**2.6356**

3.2 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	3.6000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0907	0.0907	0.0000	0.0000	0.0907
Total	**5.0000e-005**	**4.0000e-005**	**3.6000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0907**	**0.0907**	**0.0000**	**0.0000**	**0.0907**

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					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4200e-003	0.0360	0.0165	3.0000e-005		1.8600e-003	1.8600e-003		1.7100e-003	1.7100e-003	0.0000	2.6149	2.6149	8.3000e-004	0.0000	2.6356
Total	**3.4200e-003**	**0.0360**	**0.0165**	**3.0000e-005**	**0.0151**	**1.8600e-003**	**0.0169**	**8.2800e-003**	**1.7100e-003**	**9.9900e-003**	**0.0000**	**2.6149**	**2.6149**	**8.3000e-004**	**0.0000**	**2.6356**

3.2 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	3.6000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0907	0.0907	0.0000	0.0000	0.0907
Total	**5.0000e-005**	**4.0000e-005**	**3.6000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0907**	**0.0907**	**0.0000**	**0.0000**	**0.0907**

3.3 Grading - Lowered Levee/Trail - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0571	0.0000	0.0571	0.0261	0.0000	0.0261	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0367	0.4089	0.2826	5.0000e-004		0.0191	0.0191		0.0176	0.0176	0.0000	44.8353	44.8353	0.0142	0.0000	45.1900
Total	**0.0367**	**0.4089**	**0.2826**	**5.0000e-004**	**0.0571**	**0.0191**	**0.0762**	**0.0261**	**0.0176**	**0.0437**	**0.0000**	**44.8353**	**44.8353**	**0.0142**	**0.0000**	**45.1900**

3.3 Grading - Lowered Levee/Trail - 2019

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	9.4000e-004	0.0320	5.4700e-003	8.0000e-005	1.7400e-003	1.2000e-004	1.8600e-003	4.8000e-004	1.1000e-004	5.9000e-004	0.0000	7.9703	7.9703	4.1000e-004	0.0000	7.9807
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5000e-004	6.5000e-004	6.5600e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.6319	1.6319	5.0000e-005	0.0000	1.6331
Total	**1.7900e-003**	**0.0327**	**0.0120**	**1.0000e-004**	**3.5200e-003**	**1.3000e-004**	**3.6500e-003**	**9.5000e-004**	**1.2000e-004**	**1.0700e-003**	**0.0000**	**9.6022**	**9.6022**	**4.6000e-004**	**0.0000**	**9.6138**

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					0.0571	0.0000	0.0571	0.0261	0.0000	0.0261	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0367	0.4089	0.2826	5.0000e-004		0.0191	0.0191		0.0176	0.0176	0.0000	44.8353	44.8353	0.0142	0.0000	45.1899
Total	**0.0367**	**0.4089**	**0.2826**	**5.0000e-004**	**0.0571**	**0.0191**	**0.0762**	**0.0261**	**0.0176**	**0.0437**	**0.0000**	**44.8353**	**44.8353**	**0.0142**	**0.0000**	**45.1899**

3.3 Grading - Lowered Levee/Trail - 2019

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	9.4000e-004	0.0320	5.4700e-003	8.0000e-005	1.7400e-003	1.2000e-004	1.8600e-003	4.8000e-004	1.1000e-004	5.9000e-004	0.0000	7.9703	7.9703	4.1000e-004	0.0000	7.9807
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5000e-004	6.5000e-004	6.5600e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.6319	1.6319	5.0000e-005	0.0000	1.6331
Total	**1.7900e-003**	**0.0327**	**0.0120**	**1.0000e-004**	**3.5200e-003**	**1.3000e-004**	**3.6500e-003**	**9.5000e-004**	**1.2000e-004**	**1.0700e-003**	**0.0000**	**9.6022**	**9.6022**	**4.6000e-004**	**0.0000**	**9.6138**

3.4 OGNR Trail Creation and Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1302	0.0000	0.1302	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0672	0.7776	0.4517	8.5000e-004		0.0338	0.0338		0.0311	0.0311	0.0000	76.5967	76.5967	0.0242	0.0000	77.2026
Total	**0.0672**	**0.7776**	**0.4517**	**8.5000e-004**	**0.1302**	**0.0338**	**0.1640**	**0.0540**	**0.0311**	**0.0851**	**0.0000**	**76.5967**	**76.5967**	**0.0242**	**0.0000**	**77.2026**

3.4 OGNR Trail Creation and Grading - 2019

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	1.9100e-003	0.0653	0.0111	1.7000e-004	3.5600e-003	2.4000e-004	3.7900e-003	9.8000e-004	2.3000e-004	1.2000e-003	0.0000	16.2502	16.2502	8.5000e-004	0.0000	16.2713
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0200e-003	7.8000e-004	7.8700e-003	2.0000e-005	2.1300e-003	2.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.9583	1.9583	6.0000e-005	0.0000	1.9597
Total	**2.9300e-003**	**0.0660**	**0.0190**	**1.9000e-004**	**5.6900e-003**	**2.6000e-004**	**5.9400e-003**	**1.5500e-003**	**2.4000e-004**	**1.7800e-003**	**0.0000**	**18.2085**	**18.2085**	**9.1000e-004**	**0.0000**	**18.2310**

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					0.1302	0.0000	0.1302	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0672	0.7776	0.4517	8.5000e-004		0.0338	0.0338		0.0311	0.0311	0.0000	76.5966	76.5966	0.0242	0.0000	77.2025
Total	**0.0672**	**0.7776**	**0.4517**	**8.5000e-004**	**0.1302**	**0.0338**	**0.1640**	**0.0540**	**0.0311**	**0.0851**	**0.0000**	**76.5966**	**76.5966**	**0.0242**	**0.0000**	**77.2025**

3.4 OGNR Trail Creation and Grading - 2019

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	1.9100e-003	0.0653	0.0111	1.7000e-004	3.5600e-003	2.4000e-004	3.7900e-003	9.8000e-004	2.3000e-004	1.2000e-003	0.0000	16.2502	16.2502	8.5000e-004	0.0000	16.2713
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0200e-003	7.8000e-004	7.8700e-003	2.0000e-005	2.1300e-003	2.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.9583	1.9583	6.0000e-005	0.0000	1.9597
Total	**2.9300e-003**	**0.0660**	**0.0190**	**1.9000e-004**	**5.6900e-003**	**2.6000e-004**	**5.9400e-003**	**1.5500e-003**	**2.4000e-004**	**1.7800e-003**	**0.0000**	**18.2085**	**18.2085**	**9.1000e-004**	**0.0000**	**18.2310**

3.5 Revegetation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0115	0.1228	0.1204	1.9000e-004		6.5700e-003	6.5700e-003		6.0500e-003	6.0500e-003	0.0000	16.7486	16.7486	5.3000e-003	0.0000	16.8810
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0115**	**0.1228**	**0.1204**	**1.9000e-004**		**6.5700e-003**	**6.5700e-003**		**6.0500e-003**	**6.0500e-003**	**0.0000**	**16.7486**	**16.7486**	**5.3000e-003**	**0.0000**	**16.8810**

3.5 Revegetation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1632	0.1632	0.0000	0.0000	0.1633
Total	**9.0000e-005**	**6.0000e-005**	**6.6000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1632**	**0.1632**	**0.0000**	**0.0000**	**0.1633**

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	0.0115	0.1228	0.1204	1.9000e-004		6.5700e-003	6.5700e-003		6.0500e-003	6.0500e-003	0.0000	16.7485	16.7485	5.3000e-003	0.0000	16.8810
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0115**	**0.1228**	**0.1204**	**1.9000e-004**		**6.5700e-003**	**6.5700e-003**		**6.0500e-003**	**6.0500e-003**	**0.0000**	**16.7485**	**16.7485**	**5.3000e-003**	**0.0000**	**16.8810**

3.5 Revegetation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1632	0.1632	0.0000	0.0000	0.1633
Total	**9.0000e-005**	**6.0000e-005**	**6.6000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1632**	**0.1632**	**0.0000**	**0.0000**	**0.1633**

3.6 Demobilization/Cleanup - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.5800e-003	0.0896	0.0896	1.4000e-004		4.7700e-003	4.7700e-003		4.3900e-003	4.3900e-003	0.0000	12.5560	12.5560	3.9700e-003	0.0000	12.6553
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.5800e-003**	**0.0896**	**0.0896**	**1.4000e-004**		**4.7700e-003**	**4.7700e-003**		**4.3900e-003**	**4.3900e-003**	**0.0000**	**12.5560**	**12.5560**	**3.9700e-003**	**0.0000**	**12.6553**

3.6 Demobilization/Cleanup - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.4000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1088	0.1088	0.0000	0.0000	0.1089
Total	**6.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.0000**	**0.1089**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.5800e-003	0.0896	0.0896	1.4000e-004		4.7700e-003	4.7700e-003		4.3900e-003	4.3900e-003	0.0000	12.5560	12.5560	3.9700e-003	0.0000	12.6553
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.5800e-003**	**0.0896**	**0.0896**	**1.4000e-004**		**4.7700e-003**	**4.7700e-003**		**4.3900e-003**	**4.3900e-003**	**0.0000**	**12.5560**	**12.5560**	**3.9700e-003**	**0.0000**	**12.6553**

3.6 Demobilization/Cleanup - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.4000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1088	0.1088	0.0000	0.0000	0.1089
Total	**6.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1088**	**0.1088**	**0.0000**	**0.0000**	**0.1089**

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	0.0859	0.5458	0.9172	3.0500e-003	0.2233	3.7000e-003	0.2270	0.0600	3.4900e-003	0.0635	0.0000	280.8558	280.8558	0.0132	0.0000	281.1865
Unmitigated	0.0859	0.5458	0.9172	3.0500e-003	0.2233	3.7000e-003	0.2270	0.0600	3.4900e-003	0.0635	0.0000	280.8558	280.8558	0.0132	0.0000	281.1865

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	75.60	910.00	669.60	597,027	597,027
Total	75.60	910.00	669.60	597,027	597,027

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	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0164	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Unmitigated	0.0164	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0164					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Total	**0.0164**	**0.0000**	**3.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**0.0000**	**7.6000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0164					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.1000e-004	7.1000e-004	0.0000	0.0000	7.6000e-004
Total	**0.0164**	**0.0000**	**3.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**0.0000**	**7.6000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	48.5262	2.1900e-003	4.5000e-004	48.7163
Unmitigated	48.5262	2.1900e-003	4.5000e-004	48.7163

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 47.6593	48.5262	2.1900e-003	4.5000e-004	48.7163
Total		**48.5262**	**2.1900e-003**	**4.5000e-004**	**48.7163**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 47.6593	48.5262	2.1900e-003	4.5000e-004	48.7163
Total		**48.5262**	**2.1900e-003**	**4.5000e-004**	**48.7163**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.6983	0.0413	0.0000	1.7300
Unmitigated	0.6983	0.0413	0.0000	1.7300

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	3.44	0.6983	0.0413	0.0000	1.7300
Total		**0.6983**	**0.0413**	**0.0000**	**1.7300**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	3.44	0.6983	0.0413	0.0000	1.7300
Total		**0.6983**	**0.0413**	**0.0000**	**1.7300**

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

Arroyo Mocho - Medeiros Reach

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	40.00	Acre	40.00	1,742,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Following Revised ConstructionEquipment spreadsheet

Off-road Equipment - Matches revised equipment list

Off-road Equipment - Revised to Match Chapter 2, Project Description

Off-road Equipment - Matches Updated Equipment List

Off-road Equipment - Matches updated equipment list

Off-road Equipment - Matches revised equipment list

Off-road Equipment - Matches Revised Construction Equipment list

Trips and VMT - Truck Hauling trips based on a truck capacity of approximately 8 cubic yards and approximately 626 total trips for 2500 cubic yards of material. Assume that approximately 2/3 of trips would occur during trail creation and that 1/3 during grading.

Grading - Haul volume matches 11/21 emails

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstructionPhase	NumDays	30.00	5.00
tblConstructionPhase	NumDays	75.00	15.00
tblConstructionPhase	NumDays	75.00	30.00
tblConstructionPhase	NumDays	55.00	15.00
tblConstructionPhase	NumDays	55.00	10.00
tblGrading	MaterialExported	0.00	833.00
tblGrading	MaterialExported	0.00	1,667.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblTripsAndVMT	HaulingTripNumber	104.00	206.00
tblTripsAndVMT	HaulingTripNumber	208.00	420.00
tblTripsAndVMT	WorkerTripNumber	18.00	3.00
tblTripsAndVMT	WorkerTripNumber	18.00	3.00

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					
2019	5.1390	58.7719	39.3293	0.0803	9.0726	2.5622	11.3425	3.7039	2.3578	5.9721	0.0000	8,028.6967	8,028.6967	2.1512	0.0000	8,082.4765
Maximum	**5.1390**	**58.7719**	**39.3293**	**0.0803**	**9.0726**	**2.5622**	**11.3425**	**3.7039**	**2.3578**	**5.9721**	**0.0000**	**8,028.6967**	**8,028.6967**	**2.1512**	**0.0000**	**8,082.4765**

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					
2019	5.1390	58.7719	39.3293	0.0803	9.0726	2.5622	11.3425	3.7039	2.3578	5.9721	0.0000	8,028.6967	8,028.6967	2.1512	0.0000	8,082.4765
Maximum	**5.1390**	**58.7719**	**39.3293**	**0.0803**	**9.0726**	**2.5622**	**11.3425**	**3.7039**	**2.3578**	**5.9721**	**0.0000**	**8,028.6967**	**8,028.6967**	**2.1512**	**0.0000**	**8,082.4765**

	ROG	NOx	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	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.7580	9.5159	16.7920	0.0576	4.1447	0.0659	4.2106	1.1107	0.0622	1.1728		5,846.0114	5,846.0114	0.2585		5,852.4741
Total	**1.8481**	**9.5159**	**16.7961**	**0.0576**	**4.1447**	**0.0659**	**4.2106**	**1.1107**	**0.0622**	**1.1729**		**5,846.0202**	**5,846.0202**	**0.2585**	**0.0000**	**5,852.4835**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.7580	9.5159	16.7920	0.0576	4.1447	0.0659	4.2106	1.1107	0.0622	1.1728		5,846.0114	5,846.0114	0.2585		5,852.4741
Total	**1.8481**	**9.5159**	**16.7961**	**0.0576**	**4.1447**	**0.0659**	**4.2106**	**1.1107**	**0.0622**	**1.1729**		**5,846.0202**	**5,846.0202**	**0.2585**	**0.0000**	**5,852.4835**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2019	8/7/2019	5	5	
2	Grading - Lowered Levee/Trail	Grading	8/8/2019	8/28/2019	5	15	
3	OGNR Trail Creation and Grading	Grading	8/29/2019	10/9/2019	5	30	
4	Revegetation	Paving	11/1/2019	11/21/2019	5	15	
5	Demobilization/Cleanup	Paving	10/10/2019	10/23/2019	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Arroyo Mocho - Medeiros Reach - Alameda County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading - Lowered Levee/Trail	Excavators	2	8.00	158	0.38
Grading - Lowered Levee/Trail	Graders	1	8.00	187	0.41
Grading - Lowered Levee/Trail	Pavers	2	8.00	130	0.42
Grading - Lowered Levee/Trail	Paving Equipment	2	8.00	132	0.36
Grading - Lowered Levee/Trail	Rollers	2	8.00	80	0.38
Grading - Lowered Levee/Trail	Rubber Tired Dozers	1	8.00	247	0.40
Grading - Lowered Levee/Trail	Scrapers	1	8.00	367	0.48
Grading - Lowered Levee/Trail	Tractors/Loaders/Backhoes	1	8.00	97	0.37
OGNR Trail Creation and Grading	Excavators	1	8.00	158	0.38
OGNR Trail Creation and Grading	Graders	1	8.00	187	0.41
OGNR Trail Creation and Grading	Rubber Tired Dozers	1	8.00	247	0.40
OGNR Trail Creation and Grading	Scrapers	2	8.00	367	0.48
OGNR Trail Creation and Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Revegetation	Skid Steer Loaders	1	8.00	65	0.37
Demobilization/Cleanup	Excavators	1	8.00	158	0.38
Revegetation	Pavers	2	8.00	130	0.42
Demobilization/Cleanup	Pavers	2	8.00	130	0.42
Revegetation	Paving Equipment	2	8.00	132	0.36
Demobilization/Cleanup	Paving Equipment	2	8.00	132	0.36
Revegetation	Rollers	2	8.00	80	0.38
Demobilization/Cleanup	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Lowered Levee/Trail	12	30.00	0.00	206.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
OGNR Trail Creation and Grading	7	18.00	0.00	420.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Revegetation	7	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demobilization/Cleanup	7	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3674	14.4118	6.5868	0.0116		0.7448	0.7448		0.6852	0.6852		1,152.9703	1,152.9703	0.3648		1,162.0900
Total	**1.3674**	**14.4118**	**6.5868**	**0.0116**	**6.0221**	**0.7448**	**6.7669**	**3.3102**	**0.6852**	**3.9954**		**1,152.9703**	**1,152.9703**	**0.3648**		**1,162.0900**

3.2 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0200	0.0127	0.1585	4.3000e-004	0.0411	2.8000e-004	0.0414	0.0109	2.6000e-004	0.0112		43.0995	43.0995	1.2200e-003		43.1299
Total	**0.0200**	**0.0127**	**0.1585**	**4.3000e-004**	**0.0411**	**2.8000e-004**	**0.0414**	**0.0109**	**2.6000e-004**	**0.0112**		**43.0995**	**43.0995**	**1.2200e-003**		**43.1299**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3674	14.4118	6.5868	0.0116		0.7448	0.7448		0.6852	0.6852	0.0000	1,152.9703	1,152.9703	0.3648		1,162.0900
Total	**1.3674**	**14.4118**	**6.5868**	**0.0116**	**6.0221**	**0.7448**	**6.7669**	**3.3102**	**0.6852**	**3.9954**	**0.0000**	**1,152.9703**	**1,152.9703**	**0.3648**		**1,162.0900**

3.2 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0200	0.0127	0.1585	4.3000e-004	0.0411	2.8000e-004	0.0414	0.0109	2.6000e-004	0.0112		43.0995	43.0995	1.2200e-003		43.1299
Total	**0.0200**	**0.0127**	**0.1585**	**4.3000e-004**	**0.0411**	**2.8000e-004**	**0.0414**	**0.0109**	**2.6000e-004**	**0.0112**		**43.0995**	**43.0995**	**1.2200e-003**		**43.1299**

3.3 Grading - Lowered Levee/Trail - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6191	0.0000	7.6191	3.4829	0.0000	3.4829			0.0000			0.0000
Off-Road	4.8953	54.5130	37.6775	0.0666		2.5452	2.5452		2.3416	2.3416		6,589.6656	6,589.6656	2.0849		6,641.7881
Total	**4.8953**	**54.5130**	**37.6775**	**0.0666**	**7.6191**	**2.5452**	**10.1643**	**3.4829**	**2.3416**	**5.8245**		**6,589.6656**	**6,589.6656**	**2.0849**		**6,641.7881**

3.3 Grading - Lowered Levee/Trail - 2019

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	0.1237	4.1825	0.7008	0.0111	0.2404	0.0153	0.2558	0.0659	0.0147	0.0806		1,180.4344	1,180.4344	0.0590		1,181.9092
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1201	0.0764	0.9510	2.6000e-003	0.2464	1.6900e-003	0.2481	0.0654	1.5600e-003	0.0669		258.5967	258.5967	7.3000e-003		258.7792
Total	**0.2438**	**4.2589**	**1.6518**	**0.0137**	**0.4869**	**0.0170**	**0.5039**	**0.1313**	**0.0162**	**0.1475**		**1,439.0311**	**1,439.0311**	**0.0663**		**1,440.6883**

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					7.6191	0.0000	7.6191	3.4829	0.0000	3.4829			0.0000			0.0000
Off-Road	4.8953	54.5130	37.6775	0.0666		2.5452	2.5452		2.3416	2.3416	0.0000	6,589.6656	6,589.6656	2.0849		6,641.7881
Total	**4.8953**	**54.5130**	**37.6775**	**0.0666**	**7.6191**	**2.5452**	**10.1643**	**3.4829**	**2.3416**	**5.8245**	**0.0000**	**6,589.6656**	**6,589.6656**	**2.0849**		**6,641.7881**

3.3 Grading - Lowered Levee/Trail - 2019

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	0.1237	4.1825	0.7008	0.0111	0.2404	0.0153	0.2558	0.0659	0.0147	0.0806		1,180.4344	1,180.4344	0.0590		1,181.9092
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1201	0.0764	0.9510	2.6000e-003	0.2464	1.6900e-003	0.2481	0.0654	1.5600e-003	0.0669		258.5967	258.5967	7.3000e-003		258.7792
Total	**0.2438**	**4.2589**	**1.6518**	**0.0137**	**0.4869**	**0.0170**	**0.5039**	**0.1313**	**0.0162**	**0.1475**		**1,439.0311**	**1,439.0311**	**0.0663**		**1,440.6883**

3.4 OGNR Trail Creation and Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6796	0.0000	8.6796	3.5975	0.0000	3.5975			0.0000			0.0000
Off-Road	4.4782	51.8383	30.1136	0.0568		2.2533	2.2533		2.0731	2.0731		5,628.8939	5,628.8939	1.7809		5,673.4170
Total	**4.4782**	**51.8383**	**30.1136**	**0.0568**	**8.6796**	**2.2533**	**10.9329**	**3.5975**	**2.0731**	**5.6705**		**5,628.8939**	**5,628.8939**	**1.7809**		**5,673.4170**

3.4 OGNR Trail Creation and Grading - 2019

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	0.1261	4.2637	0.7144	0.0113	0.2451	0.0156	0.2607	0.0672	0.0150	0.0822		1,203.3555	1,203.3555	0.0601		1,204.8589
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0720	0.0458	0.5706	1.5600e-003	0.1479	1.0100e-003	0.1489	0.0392	9.3000e-004	0.0402		155.1580	155.1580	4.3800e-003		155.2675
Total	**0.1981**	**4.3095**	**1.2850**	**0.0129**	**0.3930**	**0.0167**	**0.4096**	**0.1064**	**0.0159**	**0.1223**		**1,358.5135**	**1,358.5135**	**0.0645**		**1,360.1264**

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					8.6796	0.0000	8.6796	3.5975	0.0000	3.5975			0.0000			0.0000
Off-Road	4.4782	51.8383	30.1136	0.0568		2.2533	2.2533		2.0731	2.0731	0.0000	5,628.8939	5,628.8939	1.7809		5,673.4170
Total	**4.4782**	**51.8383**	**30.1136**	**0.0568**	**8.6796**	**2.2533**	**10.9329**	**3.5975**	**2.0731**	**5.6705**	**0.0000**	**5,628.8939**	**5,628.8939**	**1.7809**		**5,673.4170**

3.4 OGNR Trail Creation and Grading - 2019

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	0.1261	4.2637	0.7144	0.0113	0.2451	0.0156	0.2607	0.0672	0.0150	0.0822		1,203.3555	1,203.3555	0.0601		1,204.8589
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0720	0.0458	0.5706	1.5600e-003	0.1479	1.0100e-003	0.1489	0.0392	9.3000e-004	0.0402		155.1580	155.1580	4.3800e-003		155.2675
Total	**0.1981**	**4.3095**	**1.2850**	**0.0129**	**0.3930**	**0.0167**	**0.4096**	**0.1064**	**0.0159**	**0.1223**		**1,358.5135**	**1,358.5135**	**0.0645**		**1,360.1264**

3.5 Revegetation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5390	16.3706	16.0550	0.0249		0.8762	0.8762		0.8061	0.8061		2,461.6152	2,461.6152	0.7788		2,481.0859
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5390**	**16.3706**	**16.0550**	**0.0249**		**0.8762**	**0.8762**		**0.8061**	**0.8061**		**2,461.6152**	**2,461.6152**	**0.7788**		**2,481.0859**

3.5 Revegetation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0120	7.6400e-003	0.0951	2.6000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		25.8597	25.8597	7.3000e-004		25.8779
Total	**0.0120**	**7.6400e-003**	**0.0951**	**2.6000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**25.8597**	**25.8597**	**7.3000e-004**		**25.8779**

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	1.5390	16.3706	16.0550	0.0249		0.8762	0.8762		0.8061	0.8061	0.0000	2,461.6152	2,461.6152	0.7788		2,481.0859
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5390**	**16.3706**	**16.0550**	**0.0249**		**0.8762**	**0.8762**		**0.8061**	**0.8061**	**0.0000**	**2,461.6152**	**2,461.6152**	**0.7788**		**2,481.0859**

3.5 Revegetation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0120	7.6400e-003	0.0951	2.6000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		25.8597	25.8597	7.3000e-004		25.8779
Total	**0.0120**	**7.6400e-003**	**0.0951**	**2.6000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**25.8597**	**25.8597**	**7.3000e-004**		**25.8779**

3.6 Demobilization/Cleanup - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7152	17.9259	17.9281	0.0280		0.9539	0.9539		0.8776	0.8776		2,768.1281	2,768.1281	0.8758		2,790.0232
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7152**	**17.9259**	**17.9281**	**0.0280**		**0.9539**	**0.9539**		**0.8776**	**0.8776**		**2,768.1281**	**2,768.1281**	**0.8758**		**2,790.0232**

3.6 Demobilization/Cleanup - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0120	7.6400e-003	0.0951	2.6000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		25.8597	25.8597	7.3000e-004		25.8779
Total	**0.0120**	**7.6400e-003**	**0.0951**	**2.6000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**25.8597**	**25.8597**	**7.3000e-004**		**25.8779**

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	1.7152	17.9259	17.9281	0.0280		0.9539	0.9539		0.8776	0.8776	0.0000	2,768.1281	2,768.1281	0.8758		2,790.0232
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7152**	**17.9259**	**17.9281**	**0.0280**		**0.9539**	**0.9539**		**0.8776**	**0.8776**	**0.0000**	**2,768.1281**	**2,768.1281**	**0.8758**		**2,790.0232**

3.6 Demobilization/Cleanup - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0120	7.6400e-003	0.0951	2.6000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		25.8597	25.8597	7.3000e-004		25.8779
Total	**0.0120**	**7.6400e-003**	**0.0951**	**2.6000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**25.8597**	**25.8597**	**7.3000e-004**		**25.8779**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7580	9.5159	16.7920	0.0576	4.1447	0.0659	4.2106	1.1107	0.0622	1.1728		5,846.0114	5,846.0114	0.2585		5,852.4741
Unmitigated	1.7580	9.5159	16.7920	0.0576	4.1447	0.0659	4.2106	1.1107	0.0622	1.1728		5,846.0114	5,846.0114	0.2585		5,852.4741

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	75.60	910.00	669.60	597,027	597,027
Total	75.60	910.00	669.60	597,027	597,027

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	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Unmitigated	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0898					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.9000e-004	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Total	**0.0902**	**4.0000e-005**	**4.1100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.7500e-003**	**8.7500e-003**	**2.0000e-005**		**9.3400e-003**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0898					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.9000e-004	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Total	**0.0902**	**4.0000e-005**	**4.1100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.7500e-003**	**8.7500e-003**	**2.0000e-005**		**9.3400e-003**

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

Arroyo Mocho - Medeiros Reach

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	40.00	Acre	40.00	1,742,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Following Revised ConstructionEquipment spreadsheet

Off-road Equipment - Matches revised equipment list

Off-road Equipment - Revised to Match Chapter 2, Project Description

Off-road Equipment - Matches Updated Equipment List

Off-road Equipment - Matches updated equipment list

Off-road Equipment - Matches revised equipment list

Off-road Equipment - Matches Revised Construction Equipment list

Trips and VMT - Truck Hauling trips based on a truck capacity of approximately 8 cubic yards and approximately 626 total trips for 2500 cubic yards of material. Assume that approximately 2/3 of trips would occur during trail creation and that 1/3 during grading.

Grading - Haul volume matches 11/21 emails

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstructionPhase	NumDays	30.00	5.00
tblConstructionPhase	NumDays	75.00	15.00
tblConstructionPhase	NumDays	75.00	30.00
tblConstructionPhase	NumDays	55.00	15.00
tblConstructionPhase	NumDays	55.00	10.00
tblGrading	MaterialExported	0.00	833.00
tblGrading	MaterialExported	0.00	1,667.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblTripsAndVMT	HaulingTripNumber	104.00	206.00
tblTripsAndVMT	HaulingTripNumber	208.00	420.00
tblTripsAndVMT	WorkerTripNumber	18.00	3.00
tblTripsAndVMT	WorkerTripNumber	18.00	3.00

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					
2019	5.1479	58.8915	39.3472	0.0799	9.0726	2.5625	11.3428	3.7039	2.3581	5.9723	0.0000	7,986.6541	7,986.6541	2.1553	0.0000	8,040.5373
Maximum	**5.1479**	**58.8915**	**39.3472**	**0.0799**	**9.0726**	**2.5625**	**11.3428**	**3.7039**	**2.3581**	**5.9723**	**0.0000**	**7,986.6541**	**7,986.6541**	**2.1553**	**0.0000**	**8,040.5373**

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					
2019	5.1479	58.8915	39.3472	0.0799	9.0726	2.5625	11.3428	3.7039	2.3581	5.9723	0.0000	7,986.6541	7,986.6541	2.1553	0.0000	8,040.5373
Maximum	**5.1479**	**58.8915**	**39.3472**	**0.0799**	**9.0726**	**2.5625**	**11.3428**	**3.7039**	**2.3581**	**5.9723**	**0.0000**	**7,986.6541**	**7,986.6541**	**2.1553**	**0.0000**	**8,040.5373**

	ROG	NOx	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	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.5264	9.8780	17.3349	0.0540	4.1447	0.0665	4.2112	1.1107	0.0628	1.1734		5,477.8538	5,477.8538	0.2707		5,484.6224
Total	**1.6166**	**9.8781**	**17.3390**	**0.0540**	**4.1447**	**0.0665**	**4.2113**	**1.1107**	**0.0628**	**1.1734**		**5,477.8626**	**5,477.8626**	**0.2708**	**0.0000**	**5,484.6317**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.5264	9.8780	17.3349	0.0540	4.1447	0.0665	4.2112	1.1107	0.0628	1.1734		5,477.8538	5,477.8538	0.2707		5,484.6224
Total	**1.6166**	**9.8781**	**17.3390**	**0.0540**	**4.1447**	**0.0665**	**4.2113**	**1.1107**	**0.0628**	**1.1734**		**5,477.8626**	**5,477.8626**	**0.2708**	**0.0000**	**5,484.6317**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2019	8/7/2019	5	5	
2	Grading - Lowered Levee/Trail	Grading	8/8/2019	8/28/2019	5	15	
3	OGNR Trail Creation and Grading	Grading	8/29/2019	10/9/2019	5	30	
4	Revegetation	Paving	11/1/2019	11/21/2019	5	15	
5	Demobilization/Cleanup	Paving	10/10/2019	10/23/2019	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Arroyo Mocho - Medeiros Reach - Alameda County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading - Lowered Levee/Trail	Excavators	2	8.00	158	0.38
Grading - Lowered Levee/Trail	Graders	1	8.00	187	0.41
Grading - Lowered Levee/Trail	Pavers	2	8.00	130	0.42
Grading - Lowered Levee/Trail	Paving Equipment	2	8.00	132	0.36
Grading - Lowered Levee/Trail	Rollers	2	8.00	80	0.38
Grading - Lowered Levee/Trail	Rubber Tired Dozers	1	8.00	247	0.40
Grading - Lowered Levee/Trail	Scrapers	1	8.00	367	0.48
Grading - Lowered Levee/Trail	Tractors/Loaders/Backhoes	1	8.00	97	0.37
OGNR Trail Creation and Grading	Excavators	1	8.00	158	0.38
OGNR Trail Creation and Grading	Graders	1	8.00	187	0.41
OGNR Trail Creation and Grading	Rubber Tired Dozers	1	8.00	247	0.40
OGNR Trail Creation and Grading	Scrapers	2	8.00	367	0.48
OGNR Trail Creation and Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Revegetation	Skid Steer Loaders	1	8.00	65	0.37
Demobilization/Cleanup	Excavators	1	8.00	158	0.38
Revegetation	Pavers	2	8.00	130	0.42
Demobilization/Cleanup	Pavers	2	8.00	130	0.42
Revegetation	Paving Equipment	2	8.00	132	0.36
Demobilization/Cleanup	Paving Equipment	2	8.00	132	0.36
Revegetation	Rollers	2	8.00	80	0.38
Demobilization/Cleanup	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading - Lowered Levee/Trail	12	30.00	0.00	206.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
OGNR Trail Creation and Grading	7	18.00	0.00	420.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Revegetation	7	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demobilization/Cleanup	7	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3674	14.4118	6.5868	0.0116		0.7448	0.7448		0.6852	0.6852		1,152.9703	1,152.9703	0.3648		1,162.0900
Total	**1.3674**	**14.4118**	**6.5868**	**0.0116**	**6.0221**	**0.7448**	**6.7669**	**3.3102**	**0.6852**	**3.9954**		**1,152.9703**	**1,152.9703**	**0.3648**		**1,162.0900**

3.2 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0209	0.0158	0.1504	4.0000e-004	0.0411	2.8000e-004	0.0414	0.0109	2.6000e-004	0.0112		39.6626	39.6626	1.1500e-003		39.6912
Total	**0.0209**	**0.0158**	**0.1504**	**4.0000e-004**	**0.0411**	**2.8000e-004**	**0.0414**	**0.0109**	**2.6000e-004**	**0.0112**		**39.6626**	**39.6626**	**1.1500e-003**		**39.6912**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.3674	14.4118	6.5868	0.0116		0.7448	0.7448		0.6852	0.6852	0.0000	1,152.9703	1,152.9703	0.3648		1,162.0900
Total	**1.3674**	**14.4118**	**6.5868**	**0.0116**	**6.0221**	**0.7448**	**6.7669**	**3.3102**	**0.6852**	**3.9954**	**0.0000**	**1,152.9703**	**1,152.9703**	**0.3648**		**1,162.0900**

3.2 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0209	0.0158	0.1504	4.0000e-004	0.0411	2.8000e-004	0.0414	0.0109	2.6000e-004	0.0112		39.6626	39.6626	1.1500e-003		39.6912
Total	**0.0209**	**0.0158**	**0.1504**	**4.0000e-004**	**0.0411**	**2.8000e-004**	**0.0414**	**0.0109**	**2.6000e-004**	**0.0112**		**39.6626**	**39.6626**	**1.1500e-003**		**39.6912**

3.3 Grading - Lowered Levee/Trail - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6191	0.0000	7.6191	3.4829	0.0000	3.4829			0.0000			0.0000
Off-Road	4.8953	54.5130	37.6775	0.0666		2.5452	2.5452		2.3416	2.3416		6,589.6656	6,589.6656	2.0849		6,641.7881
Total	**4.8953**	**54.5130**	**37.6775**	**0.0666**	**7.6191**	**2.5452**	**10.1643**	**3.4829**	**2.3416**	**5.8245**		**6,589.6656**	**6,589.6656**	**2.0849**		**6,641.7881**

3.3 Grading - Lowered Levee/Trail - 2019

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	0.1272	4.2835	0.7675	0.0109	0.2404	0.0156	0.2560	0.0659	0.0149	0.0809		1,159.0131	1,159.0131	0.0636		1,160.6018
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1254	0.0950	0.9022	2.3900e-003	0.2464	1.6900e-003	0.2481	0.0654	1.5600e-003	0.0669		237.9753	237.9753	6.8800e-003		238.1473
Total	**0.2526**	**4.3785**	**1.6697**	**0.0133**	**0.4869**	**0.0173**	**0.5042**	**0.1313**	**0.0165**	**0.1478**		**1,396.9884**	**1,396.9884**	**0.0704**		**1,398.7491**

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					7.6191	0.0000	7.6191	3.4829	0.0000	3.4829			0.0000			0.0000
Off-Road	4.8953	54.5130	37.6775	0.0666		2.5452	2.5452		2.3416	2.3416	0.0000	6,589.6656	6,589.6656	2.0849		6,641.7881
Total	**4.8953**	**54.5130**	**37.6775**	**0.0666**	**7.6191**	**2.5452**	**10.1643**	**3.4829**	**2.3416**	**5.8245**	**0.0000**	**6,589.6656**	**6,589.6656**	**2.0849**		**6,641.7881**

3.3 Grading - Lowered Levee/Trail - 2019

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	0.1272	4.2835	0.7675	0.0109	0.2404	0.0156	0.2560	0.0659	0.0149	0.0809		1,159.0131	1,159.0131	0.0636		1,160.6018
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1254	0.0950	0.9022	2.3900e-003	0.2464	1.6900e-003	0.2481	0.0654	1.5600e-003	0.0669		237.9753	237.9753	6.8800e-003		238.1473
Total	**0.2526**	**4.3785**	**1.6697**	**0.0133**	**0.4869**	**0.0173**	**0.5042**	**0.1313**	**0.0165**	**0.1478**		**1,396.9884**	**1,396.9884**	**0.0704**		**1,398.7491**

3.4 OGNR Trail Creation and Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6796	0.0000	8.6796	3.5975	0.0000	3.5975			0.0000			0.0000
Off-Road	4.4782	51.8383	30.1136	0.0568		2.2533	2.2533		2.0731	2.0731		5,628.8939	5,628.8939	1.7809		5,673.4170
Total	**4.4782**	**51.8383**	**30.1136**	**0.0568**	**8.6796**	**2.2533**	**10.9329**	**3.5975**	**2.0731**	**5.6705**		**5,628.8939**	**5,628.8939**	**1.7809**		**5,673.4170**

3.4 OGNR Trail Creation and Grading - 2019

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	0.1297	4.3667	0.7824	0.0111	0.2451	0.0159	0.2610	0.0672	0.0152	0.0824		1,181.5182	1,181.5182	0.0648		1,183.1378
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0570	0.5413	1.4300e-003	0.1479	1.0100e-003	0.1489	0.0392	9.3000e-004	0.0402		142.7852	142.7852	4.1300e-003		142.8884
Total	**0.2049**	**4.4237**	**1.3237**	**0.0126**	**0.3930**	**0.0169**	**0.4099**	**0.1064**	**0.0162**	**0.1226**		**1,324.3034**	**1,324.3034**	**0.0689**		**1,326.0262**

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					8.6796	0.0000	8.6796	3.5975	0.0000	3.5975			0.0000			0.0000
Off-Road	4.4782	51.8383	30.1136	0.0568		2.2533	2.2533		2.0731	2.0731	0.0000	5,628.8939	5,628.8939	1.7809		5,673.4170
Total	**4.4782**	**51.8383**	**30.1136**	**0.0568**	**8.6796**	**2.2533**	**10.9329**	**3.5975**	**2.0731**	**5.6705**	**0.0000**	**5,628.8939**	**5,628.8939**	**1.7809**		**5,673.4170**

3.4 OGNR Trail Creation and Grading - 2019

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	0.1297	4.3667	0.7824	0.0111	0.2451	0.0159	0.2610	0.0672	0.0152	0.0824		1,181.5182	1,181.5182	0.0648		1,183.1378
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0570	0.5413	1.4300e-003	0.1479	1.0100e-003	0.1489	0.0392	9.3000e-004	0.0402		142.7852	142.7852	4.1300e-003		142.8884
Total	**0.2049**	**4.4237**	**1.3237**	**0.0126**	**0.3930**	**0.0169**	**0.4099**	**0.1064**	**0.0162**	**0.1226**		**1,324.3034**	**1,324.3034**	**0.0689**		**1,326.0262**

3.5 Revegetation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5390	16.3706	16.0550	0.0249		0.8762	0.8762		0.8061	0.8061		2,461.6152	2,461.6152	0.7788		2,481.0859
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5390**	**16.3706**	**16.0550**	**0.0249**		**0.8762**	**0.8762**		**0.8061**	**0.8061**		**2,461.6152**	**2,461.6152**	**0.7788**		**2,481.0859**

3.5 Revegetation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0125	9.5000e-003	0.0902	2.4000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		23.7975	23.7975	6.9000e-004		23.8147
Total	**0.0125**	**9.5000e-003**	**0.0902**	**2.4000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**23.7975**	**23.7975**	**6.9000e-004**		**23.8147**

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	1.5390	16.3706	16.0550	0.0249		0.8762	0.8762		0.8061	0.8061	0.0000	2,461.6152	2,461.6152	0.7788		2,481.0859
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5390**	**16.3706**	**16.0550**	**0.0249**		**0.8762**	**0.8762**		**0.8061**	**0.8061**	**0.0000**	**2,461.6152**	**2,461.6152**	**0.7788**		**2,481.0859**

3.5 Revegetation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0125	9.5000e-003	0.0902	2.4000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		23.7975	23.7975	6.9000e-004		23.8147
Total	**0.0125**	**9.5000e-003**	**0.0902**	**2.4000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**23.7975**	**23.7975**	**6.9000e-004**		**23.8147**

3.6 Demobilization/Cleanup - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7152	17.9259	17.9281	0.0280		0.9539	0.9539		0.8776	0.8776		2,768.1281	2,768.1281	0.8758		2,790.0232
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7152**	**17.9259**	**17.9281**	**0.0280**		**0.9539**	**0.9539**		**0.8776**	**0.8776**		**2,768.1281**	**2,768.1281**	**0.8758**		**2,790.0232**

3.6 Demobilization/Cleanup - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0125	9.5000e-003	0.0902	2.4000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		23.7975	23.7975	6.9000e-004		23.8147
Total	**0.0125**	**9.5000e-003**	**0.0902**	**2.4000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**23.7975**	**23.7975**	**6.9000e-004**		**23.8147**

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	1.7152	17.9259	17.9281	0.0280		0.9539	0.9539		0.8776	0.8776	0.0000	2,768.1281	2,768.1281	0.8758		2,790.0232
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7152**	**17.9259**	**17.9281**	**0.0280**		**0.9539**	**0.9539**		**0.8776**	**0.8776**	**0.0000**	**2,768.1281**	**2,768.1281**	**0.8758**		**2,790.0232**

3.6 Demobilization/Cleanup - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0125	9.5000e-003	0.0902	2.4000e-004	0.0246	1.7000e-004	0.0248	6.5400e-003	1.6000e-004	6.6900e-003		23.7975	23.7975	6.9000e-004		23.8147
Total	**0.0125**	**9.5000e-003**	**0.0902**	**2.4000e-004**	**0.0246**	**1.7000e-004**	**0.0248**	**6.5400e-003**	**1.6000e-004**	**6.6900e-003**		**23.7975**	**23.7975**	**6.9000e-004**		**23.8147**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5264	9.8780	17.3349	0.0540	4.1447	0.0665	4.2112	1.1107	0.0628	1.1734		5,477.8538	5,477.8538	0.2707		5,484.6224
Unmitigated	1.5264	9.8780	17.3349	0.0540	4.1447	0.0665	4.2112	1.1107	0.0628	1.1734		5,477.8538	5,477.8538	0.2707		5,484.6224

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	75.60	910.00	669.60	597,027	597,027
Total	75.60	910.00	669.60	597,027	597,027

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	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.558186	0.040947	0.190770	0.110456	0.017401	0.005228	0.022658	0.042795	0.002118	0.002805	0.005569	0.000308	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Unmitigated	0.0902	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0898					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.9000e-004	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Total	**0.0902**	**4.0000e-005**	**4.1100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.7500e-003**	**8.7500e-003**	**2.0000e-005**		**9.3400e-003**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0898					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.9000e-004	4.0000e-005	4.1100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.7500e-003	8.7500e-003	2.0000e-005		9.3400e-003
Total	**0.0902**	**4.0000e-005**	**4.1100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.7500e-003**	**8.7500e-003**	**2.0000e-005**		**9.3400e-003**

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

Appendix B

Biological Resources Information

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Diablo (3712178) OR Tassajara (3712177) OR Byron Hot Springs (3712176) OR Dublin (3712168) OR Livermore (3712167) OR Altamont (3712166) OR Niles (3712158) OR La Costa Valley (3712157) OR Mendenhall Springs (3712156))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Alkali Meadow Alkali Meadow	CTT45310CA	None	None	G3	S2.1	
Alkali Seep Alkali Seep	CTT45320CA	None	None	G3	S2.1	
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Amsinckia grandiflora large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	G1	S1	1B.1
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos auriculata Mt. Diablo manzanita	PDERI04040	None	None	G2	S2	1B.3
Arctostaphylos manzanita ssp. laevigata Contra Costa manzanita	PDERI04273	None	None	G5T2	S2	1B.2
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T2	S2	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Atriplex minuscula lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Branchinecta longiantenna longhorn fairy shrimp	ICBRA03020	Endangered	None	G1	S1S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Callophrys mossii bayensis San Bruno elfin butterfly	IILEPE2202	Endangered	None	G4T1	S1	
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Campanula exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Chloropyron molle ssp. hispidum hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
Chloropyron palmatum palmate-bracted salty bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Circus cyaneus northern harrier	ABNKC11010	None	None	G5	S3	SSC
Cismontane Alkali Marsh Cismontane Alkali Marsh	CTT52310CA	None	None	G1	S1.1	
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Deinandra bacigalupii Livermore tarplant	PDAST4R0V0	None	Endangered	G1	S1	1B.1
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G3G4T1	S1	
Efferia antiochi Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eriogonum truncatum Mt. Diablo buckwheat	PDPGN085Z0	None	None	G1	S1	1B.1
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Eryngium spinosepalum spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	G2	S2	1B.2
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3	4.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
Hesperolinon breweri Brewer's western flax	PDLIN01030	None	None	G2?	S2?	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hygrotus curvipes curved-foot hygrotus diving beetle	IICOL38030	None	None	G1	S1	
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Malacothamnus hallii Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
Masticophis flagellum ruddocki San Joaquin coachwhip	ARADB21021	None	None	G5T2T3	S2?	SSC
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2?	S2S3	SSC
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Navarretia nigelliformis ssp. radians shining navarretia	PDPLM0C0J2	None	None	G4T2	S2	1B.2
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.1
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Phacelia phacelioides Mt. Diablo phacelia	PDHYD0C3Q0	None	None	G2	S2	1B.2
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GH	SH	1A

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Streptanthus hispidus Mt. Diablo jewelflower	PDBRA2G0M0	None	None	G2	S2	1B.3
Stuckenia filiformis ssp. alpina slender-leaved pondweed	PMPOT03091	None	None	G5T5	S3	2B.2
Suaeda californica California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
Sycamore Alluvial Woodland Sycamore Alluvial Woodland	CTT62100CA	None	None	G1	S1.1	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Tropidocarpum capparideum caper-fruited tropidocarpum	PDBRA2R010	None	None	G1	S1	1B.1
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Valley Sink Scrub Valley Sink Scrub	CTT36210CA	None	None	G1	S1.1	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 101

CNPS California Native Plant Society

Plant List

Inventory of Rare and Endangered Plants

62 matches found. Click on scientific name for details

Search Criteria

Found in Quads 3712178, 3712177, 3712176, 3712168, 3712167, 3712166, 3712158 3712157 and 3712156;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Acanthomintha lanceolata	Santa Clara thorn-mint	Lamiaceae	annual herb	Mar-Jun	4.2	S4	G4
Amsinckia grandiflora	large-flowered fiddleneck	Boraginaceae	annual herb	(Mar)Apr-May	1B.1	S1	G1
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	1B.2	S2S3	G2G3
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	Mar-Jun	4.2	S3S4	G5?T3T4
Anomobryum julaceum	slender silver moss	Bryaceae	moss		4.2	S2	G5?
Arctostaphylos auriculata	Mt. Diablo manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar	1B.3	S2	G2
Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar(Apr)	1B.2	S2	G5T2
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2	S2	G2T2
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G3T2
Atriplex coronata var. coronata	crownscale	Chenopodiaceae	annual herb	Mar-Oct	4.2	S3	G4T3
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	1B.1	S2	G2
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	Jul-Oct	1B.1	S2	G2
Calochortus pulchellus	Mt. Diablo fairy-lantern	Liliaceae	perennial bulbiferous herb	Apr-Jun	1B.2	S2	G2
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	4.2	S3?	G3?
Campanula exigua	chaparral harebell	Campanulaceae	annual herb	May-Jun	1B.2	S2	G2
Centromadia parryi ssp. congdonii	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	1B.1	S2	G3T2
Chloropyron molle ssp. hispidum	hispid bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	1B.1	S1	G2T1

Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	1B.1	S1	G1
Clarkia concinna ssp. automixa	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	4.3	S3	G5?T3
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	4.2	S4	G4
Deinandra bacigalupii	Livermore tarplant	Asteraceae	annual herb	Jun-Oct	1B.1	S1	G1
Delphinium californicum ssp. interius	Hospital Canyon larkspur	Ranunculaceae	perennial herb	Apr-Jun	1B.2	S3	G3T3
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Dirca occidentalis	western leatherwood	Thymelaeaceae	perennial deciduous shrub	Jan-Mar(Apr)	1B.2	S2	G2
Eriogonum truncatum	Mt. Diablo buckwheat	Polygonaceae	annual herb	Apr-Sep(Nov-Dec)	1B.1	S1	G1
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	4.3	S3	G3
Eryngium jepsonii	Jepson's coyote thistle	Apiaceae	perennial herb	Apr-Aug	1B.2	S2?	G2?
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual / perennial herb	Apr-Jun	1B.2	S2	G2
Eschscholzia rhombipetala	diamond-petaled California poppy	Papaveraceae	annual herb	Mar-Apr	1B.1	S1	G1
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	4.2	S3	G3
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2	G2
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	4.2	S3	G3
Hesperolinon breweri	Brewer's western flax	Linaceae	annual herb	May-Jul	1B.2	S2?	G2?
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G1
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	1B.1	S2	G2
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	4.2	S3	G3
Leptosiphon ambiguus	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	4.2	S4	G4
Leptosyne hamiltonii	Mt. Hamilton coreopsis	Asteraceae	annual herb	Mar-May	1B.2	S2	G2
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	perennial evergreen shrub	(Apr)May-Sep(Oct)	1B.2	S2	G2
Monardella antonina ssp. antonina	San Antonio Hills monardella	Lamiaceae	perennial rhizomatous herb	Jun-Aug	3	S1S3	G4T1T3Q
Monolopia gracilens	woodland woolythreads	Asteraceae	annual herb	(Feb)Mar-Jul	1B.2	S3	G3
Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	Mar-Jun	3.1	S2	G5T2Q
Navarretia nigelliformis ssp. nigelliformis	adobe navarretia	Polemoniaceae	annual herb	Apr-Jun	4.2	S3	G4T3

Navarretia nigelliformis ssp. radians	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	1B.2	S2	G4T2
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G2
Phacelia phacelioides	Mt. Diablo phacelia	Hydrophyllaceae	annual herb	Apr-May	1B.2	S2	G2
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	1A	SH	GH
Polemonium carneum	Oregon polemonium	Polemoniaceae	perennial herb	Apr-Sep	2B.2	S2	G3G4
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3
Sanicula saxatilis	rock sanicle	Apiaceae	perennial herb	Apr-May	1B.2	S2	G2
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	2B.2	S2	G3
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	1B.2	S2	G2T2
Streptanthus hispidus	Mt. Diablo jewelflower	Brassicaceae	annual herb	Mar-Jun	1B.3	S2	G2
Stuckenia filiformis ssp. alpina	slender-leaved pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	2B.2	S3	G5T5
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2
Triquetrella californica	coastal triquetrella	Pottiaceae	moss		1B.2	S2	G2
Tropidocarpum capparideum	caper-fruited tropidocarpum	Brassicaceae	annual herb	Mar-Apr	1B.1	S1	G1
Viburnum ellipticum	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	May-Jun	2B.3	S3?	G4G5

Suggested Citation

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IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

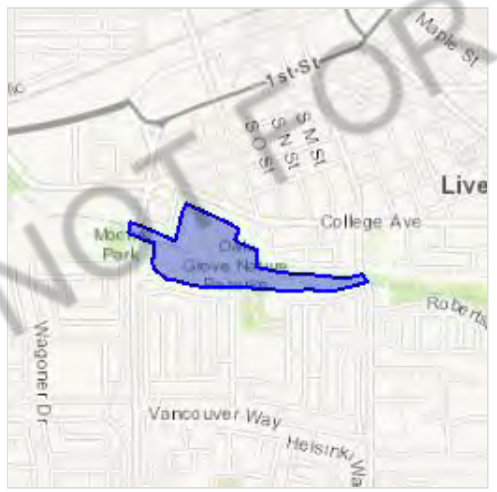
Project information

NAME

Arroyo Mocho Floodplain and Riparian Forest Restoration Project – Medeiros Reach

LOCATION

Alameda County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS

California Least Tern Sterna antillarum browni No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
San Bruno Elfin Butterfly Callophrys mossii bayensis There is **proposed** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3394	Endangered

Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Palmate-bracted Bird's Beak Cordylanthus palmatus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1616	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the E-bird data mapping tool (search for the name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain timeframe) and the E-bird Explore Data Tool (perform a query to see a list of all birds sighted in your county or region and within a certain timeframe). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15

Ashy Storm-petrel Oceanodroma homochroa — Breeds May 1 to Jan 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/7237

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black Oystercatcher Haematopus bachmani — Breeds Apr 15 to Oct 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9591

Black Rail Laterallus jamaicensis — Breeds Mar 1 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/7717

Black Skimmer Rynchops niger — Breeds May 20 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

Black Swift Cypseloides niger — Breeds Jun 15 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8878

Black Turnstone Arenaria melanocephala — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Burrowing Owl Athene cunicularia — Breeds Mar 15 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9737

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe *Aechmophorus clarkii* — Breeds Jan 1 to Dec 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Costa's Hummingbird *Calypte costae* — Breeds Jan 15 to Jun 10

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9470

Golden Eagle *Aquila chrysaetos* — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch *Carduelis lawrencei* — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker *Melanerpes lewis* — Breeds Apr 20 to Sep 30

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-billed Curlew *Numenius americanus* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Marbled Godwit *Limosa fedoa* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker *Picoides nuttallii* — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse *Baeolophus inornatus* — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10
Yellow Rail Coturnicops noveboracensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9476	Breeds elsewhere
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

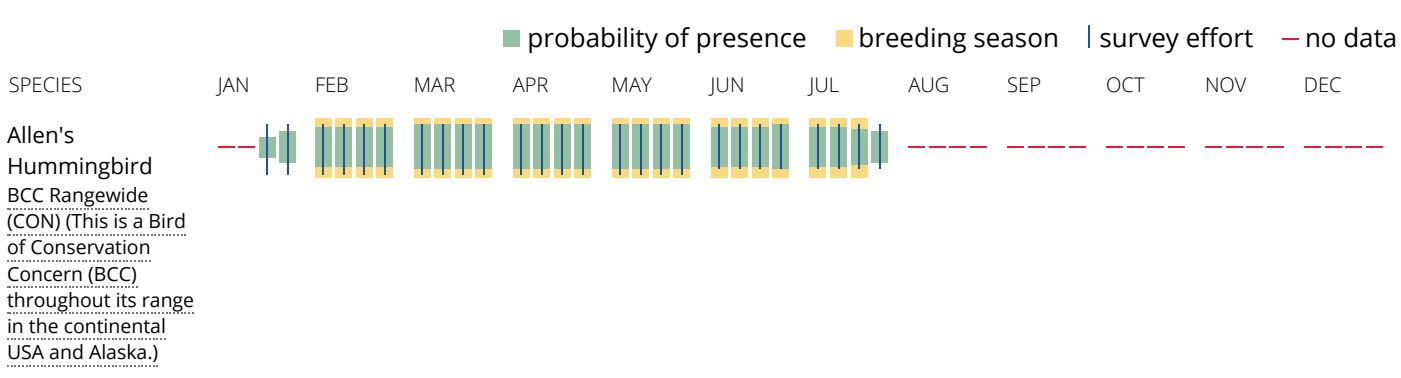
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

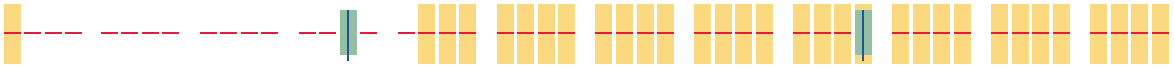
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

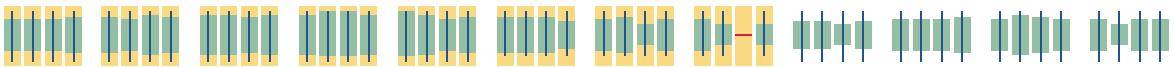
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information.



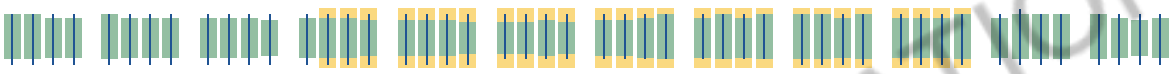
Ashy Storm-petrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

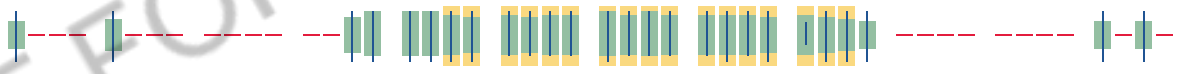


Black Oystercatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Black Rail
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

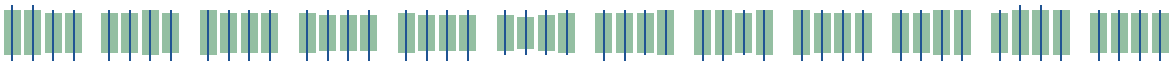
Black Skimmer
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



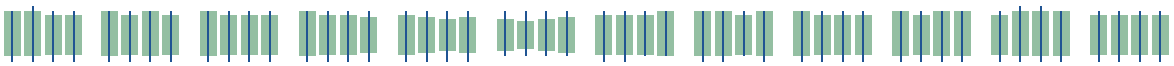
Black Swift
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Black Turnstone
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

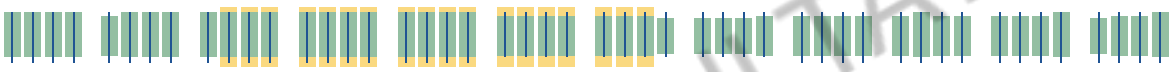


Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



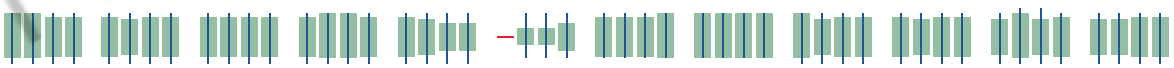
Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

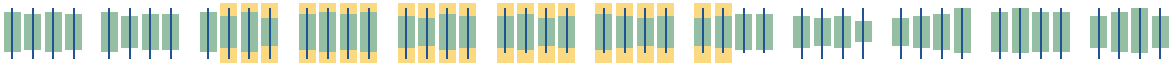


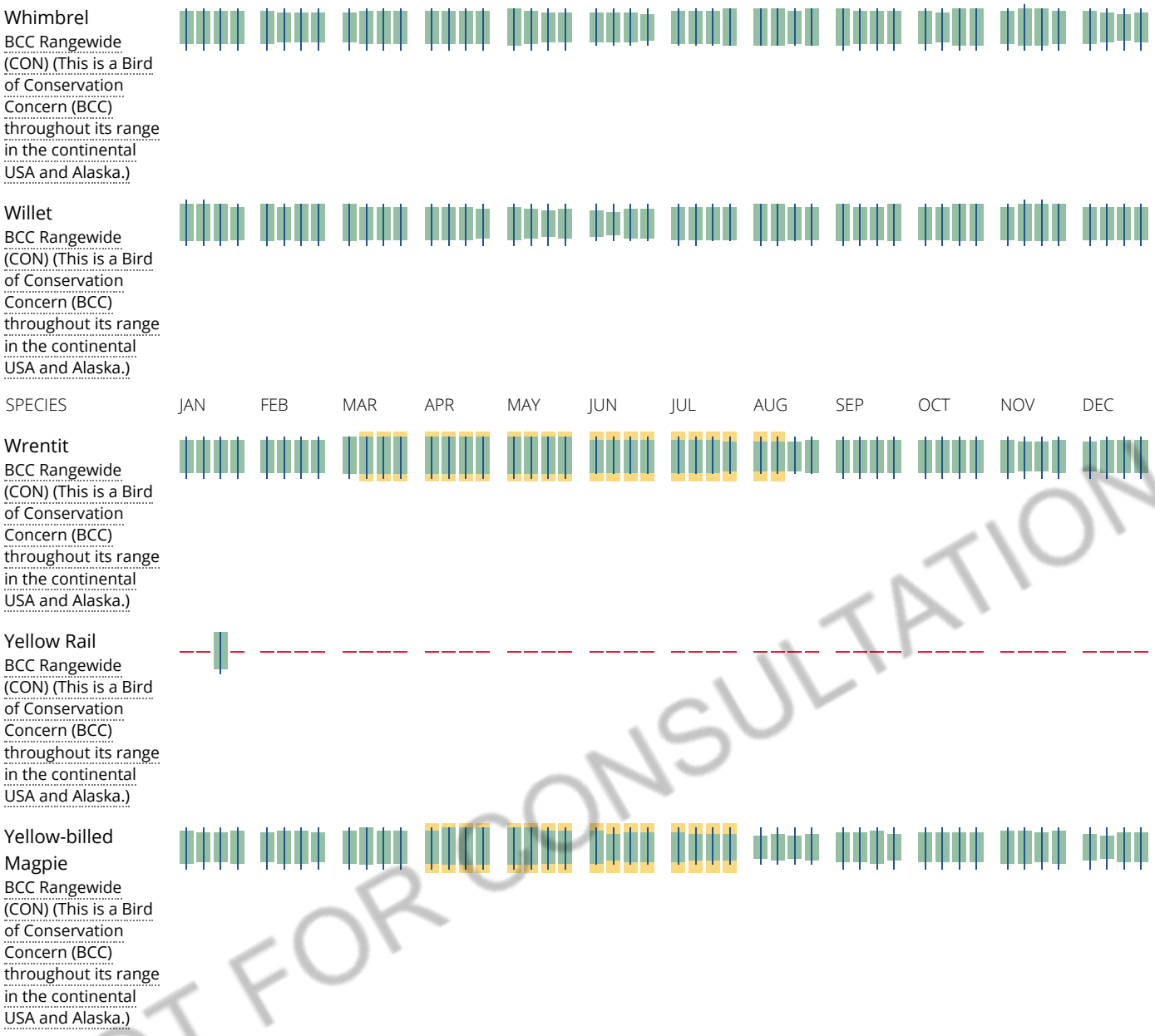
Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the counties which your project

intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird entry on your migratory bird species list indicates a breeding season, it is probable that the bird breeds in your project's counties at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the BGEPA should such impacts occur.

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PSSA

A full description for each wetland code can be found at the National Wetlands Inventory website: https://ecos.fws.gov/ipac/wetlands/decoder

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Arroyo Mocho Species List

The potential for each species to occur in the Arroyo Mocho project area was assessed using the criteria outlined below.

None: the area contains a complete lack of suitable habitat, the local range for the species is restricted, and/or the species is extirpated in this region.

Not Expected: suitable habitat or key habitat elements might be present but might be of poor quality or isolated from the nearest extant occurrences, and/or the species is not known to occur in the area.

Possible: presence of suitable habitat or key habitat elements that potentially support the species.

Present: the species was either observed directly or its presence was confirmed by field investigations or in previous studies in the area.

Table C-1. Special Status Plants with Potential to Occur in the Arroyo Mocho Project Area

Name	Listing status* (Federal/ State/CNPS)	Habitat and Flowering Period	Potential to Occur in the Project
Acanthomintha lanceolata Santa Clara thorn-mint	- / - / 4.2	Chaparral, cismontane woodland, coastal scrub. Shale scree and serpentine. 80-1200 meters. Blooms March through June.	**None.** Suitable habitat is not present in the Project.
Amsinckia grandiflora large-flowered fiddleneck	FE / SE / 1B.1	Cismontane woodland, valley and foothill grassland. Annual grassland in various soils. 275-550 meters. Blooms April through May.	**None.** The Project is not within the elevation range for this species.
Amsinckia lunaris bent-flowered fiddleneck	- / - / 1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. 3-795 meters. Blooms March through June.	**Not expected.** Marginally suitable habitat is present in the Project.
Androsace elongata ssp. *acuta* California androsace	- / - / 4.2	Chaparral, cismontane woodland, coastal sage scrub, valley and foothill grassland, meadows and seeps, pinyon and juniper woodland. Highly localized and often overlooked little plant. 150-1200 meters. Blooms March through June.	**Not expected.** Marginally suitable habitat is present in the Project.
Anomobryum julaceum slender silver moss	- / - / 4.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest. Moss which grows on damp rocks and soil; acidic substrates. Usually seen on roadcuts. 100-1000 meters.	**None.** Suitable habitat is not present in the Project.
Arctostaphylos auriculata Mt. Diablo manzanita	- / - / 1B.3	Chaparral, cismontane woodland. In canyons and on slopes. On sandstone. 180-565 meters. Blooms January through March.	**None.** Suitable habitat is not present in the Project.
Arctostaphylos manzanita ssp. *laevigata* Contra Costa manzanita	- / - / 1B.2	Chaparral. Rocky slopes. 150-610 meters. Blooms January through March.	**None.** Suitable habitat is not present in the Project.
Astragalus tener var. *tener* alkali milk-vetch	- / - / 1B.2	Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-168 meters.Blooms March through June.	**None.** Suitable habitat is not present in the Project.
Atriplex cordulata var. *cordulata* heartscale	- / - / 1B.2	Chenopod scrub, valley and foothill grassland, meadows and seeps. Alkaline flats and scalds in the Central Valley, sandy soils. 3-275 meters. Blooms April through October.	**None.** Suitable habitat is not present in the Project.
Atriplex coronata var. *coronata* crownscale	- / - / 4.2	Chenopod scrub, valley and foothill grassland, vernal pools. Fine, alkaline soils, and clay soils. 1-590 meters. Blooms March through October.	**None.** Suitable habitat is not present in the Project.

Name	Listing status* (Federal/ State/CNPS)	Habitat and Flowering Period	Potential to Occur in the Project
Atriplex depressa brittlescale	- / - / 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Usually in alkali scalds or alkaline clay in meadows or annual grassland; rarely associated with riparian, marshes, or vernal pools. 1-325 meters. Blooms April through October.	**None.** Suitable habitat is not present in the Project.
Atriplex minuscula lesser saltscale	- / - / 1B.1	Chenopod scrub, playas, valley and foothill grassland. In alkali sink and grassland in sandy, alkaline soils. 0-225 meters. Blooms May through October.	**None.** Suitable habitat is not present in the Project.
Balsamorhiza macrolepis big-scale balsamroot	- / - / 1B.2	Chaparral, valley and foothill grassland, cismontane woodland. Sometimes on serpentine. 35-1465 meters. Blooms March through June.	**Not expected.** Marginally suitable habitat is present in the Project.
Blepharizonia plumosa big tarplant	- / - / 1B.1	Valley and foothill grassland. Dry hills & plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 30-505 meters. Blooms July through October.	**Not expected.** Marginally suitable habitat is present in the Project.
Calochortus pulchellus Mt. Diablo fairy-lantern	- / - / 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. On wooded and brushy slopes. 30-915 meters. Blooms April through June.	**None.** Suitable habitat is not present in the Project.
Calochortus umbellatus Oakland star-tulip	- / - / 4.2	Chaparral, lower montane coniferous forest, broadleafed upland forest, valley and foothill grassland, cismontane woodland. Often on serpentine. 100-700 meters. Blooms March through May.	**None.** Suitable habitat is not present in the Project.
Campanula exigua chaparral harebell	- / - / 1B.2	Chaparral. Rocky sites, usually on serpentine in chaparral. 90-1375 meters. Blooms May through June.	**None.** Suitable habitat is not present in the Project.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	- / - / 1B.1	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 0-230 meters. Blooms May through October.	**None.** Suitable habitat is not present in the Project.
Chloropyron molle ssp. *hispidum* hispid salty bird's-beak	- / - / 1B.1	Meadows and seeps, playas, valley and foothill grassland. In damp alkaline soils, especially in alkaline meadows and alkali sinks with Distichlis. 5-155 meters. Blooms June through September.	**None.** Suitable habitat is not present in the Project.
Chloropyron palmatum palmate-bracted salty bird's-beak	FE / SE / 1B.1	Chenopod scrub, valley and foothill grassland. Usually on Pescadero silty clay which is alkaline, with *Distichlis, Frankenia*, etc. 5-155 meters. Blooms May through October.	**None.** Suitable habitat is not present in the Project.
Clarkia concinna ssp. *automixa* Santa Clara red ribbons	- / - / 4.3	Cismontane woodland, chaparral. On slopes and near drainages. 90-1500 meters. Blooms May through June.	**None.** Suitable habitat is not present in the Project.
Convolvulus simulans small-flowered morning-glory	- / - / 4.2	Chaparral, coastal scrub, valley and foothill grassland. Wet clay, serpentine ridges. 30-700 meters. Blooms March through July.	**None.** Suitable habitat is not present in the Project.

Name	Listing status* (Federal/ State/CNPS)	Habitat and Flowering Period	Potential to Occur in the Project
Deinandra bacigalupii Livermore tarplant	- / SE / 1B.1	Meadows and seeps. Alkaline meadows. 155-200 meters. Blooms June through October.	**None.** Suitable habitat is not present in the Project.
Delphinium californicum ssp. *interius* Hospital Canyon larkspur	- / - / 1B.2	Cismontane woodland, chaparral, coastal scrub. In wet, boggy meadows, openings in chaparral and in canyons. 195-1095 meters. Blooms April through June.	**None.** Suitable habitat is not present in the Project.
Delphinium recurvatum recurved larkspur	- / - / 1B.2	Chenopod scrub, valley and foothill grassland, cismontane woodland. On alkaline soils; often in valley saltbush or valley chenopod scrub. 3-790 meters. Blooms March through June.	**None.** Suitable habitat is not present in the Project.
Dirca occidentalis western leatherwood	- / - / 1B.2	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 25-425 meters. Blooms January through March.	**Not expected.** Marginally suitable habitat is present in the Project.
Eriogonum truncatum Mt. Diablo buckwheat	- / - / 1B.1	Chaparral, coastal scrub, valley and foothill grassland. Dry, exposed clay or sandy substrates. 105-350 meters. Blooms April through September.	**None.** Suitable habitat is not present in the Project.
Eriophyllum jepsonii Jepson's woolly sunflower	- / - / 4.3	Coastal scrub, chaparral, cismontane woodland. Sometimes on serpentine. 200-1025 meters. Blooms April through June.	**None.** Suitable habitat is not present in the Project.
Eryngium jepsonii Jepson's coyote-thistle	- / - / 1B.2	Vernal pools, valley and foothill grassland. Clay. 3-305 meters. Blooms April through August.	**None.** Suitable habitat is not present in the Project.
Eryngium spinosepalum spiny-sepaled button-celery	- / - / 1B.2	Vernal pools, valley and foothill grassland. Some sites on clay soil of granitic origin; vernal pools, within grassland. 15-1270 meters. Blooms April through June.	**None.** Suitable habitat is not present in the Project.
Eschscholzia rhombipetala diamond-petaled California poppy	- / - / 1B.1	Valley and foothill grassland. Alkaline, clay slopes and flats. 30-625 meters. Blooms March through April.	**None.** Suitable habitat is not present in the Project.
Extriplex joaquinana San Joaquin spearscale	- / - / 1B.2	Chenopod scrub, alkali meadow, playas, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with *Distichlis spicata, Frankenia*, etc. 0-840 meters. Blooms April through October.	**None.** Suitable habitat is not present in the Project.

Name	Listing status* (Federal/ State/CNPS)	Habitat and Flowering Period	Potential to Occur in the Project
Fritillaria agrestis stinkbells	- / - / 4.2	Cismontane woodland, chaparral, valley and foothill grassland, pinyon and juniper woodland. Sometimes on serpentine; mostly found in nonnative grassland or in grassy openings in clay soil. 10-1555 meters. Blooms March through June.	**Not expected.** Marginally suitable habitat is present in the Project.
Fritillaria liliacea fragrant fritillary	- / - / 1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. 3-400 meters. Blooms February through April.	**None.** Suitable habitat is not present in the Project.
Helianthella castanea Diablo helianthella	- / - / 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. 45-1070 meters. Blooms March through June.	**Not expected.** Marginally suitable habitat is present in the Project.
Hesperevax caulescens hogwallow starfish	- / - / 4.2	Valley and foothill grassland, vernal pools. Clay soils; mesic sites. 0-505 meters. Blooms March through June.	**None.** Suitable habitat is not present in the Project.
Hesperolinon breweri Brewer's western flax	- / - / 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Often in rocky serpentine soil in serpentine chaparral and serpentine grassland. 195-885 meters. Blooms May through July.	**None.** The Project is not within the elevation range for this species.
Lasthenia conjugens Contra Costa goldfields	FE / - / 1B.1	Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland. Vernal pools, swales, low depressions, in open grassy areas. 1-450 meters. Blooms March through June.	**None.** Suitable habitat is not present in the Project.
Legenere limosa legenere	- / - / 1B.1	Vernal pools. In beds of vernal pools. 1-1005 meters. Blooms April through June.	**None.** Suitable habitat is not present in the Project.
Leptosiphon acicularis bristly leptosiphon	- / - / 4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Grassy areas, woodland, chaparral. 55-1500 meters. Blooms April through July.	**Not expected.** Marginally suitable habitat is present in the Project.
Leptosiphon ambiguus serpentine leptosiphon	- / - / 4.2	Cismontane woodland, coastal scrub, valley and foothill grassland (margin with chaparral). Grassy areas on serpentine soil. 120-1130 meters. Blooms March through June.	**None.** Suitable habitat is not present in the Project.

Name	Listing status* (Federal/ State/CNPS)	Habitat and Flowering Period	Potential to Occur in the Project
Leptosyne hamiltonii Mt. Hamilton coreopsis	- / - / 1B.2	Cismontane woodland. On steep shale talus with open southwestern exposure. 535-1280 meters. Blooms March through May.	**None.** Suitable habitat is not present in the Project.
Malacothamnus hallii Hall's bush-mallow	- / - / 1B.2	Chaparral, coastal scrub. Some populations on serpentine. 10-735 meters. Blooms May through September.	**None.** Suitable habitat is not present in the Project.
Monardella antonina ssp. *antonina* San Antonio Hills monardella	- / - / 3	Cismontane woodland, chaparral. 320-1000 meters. Blooms June through August.	**None.** Suitable habitat is not present in the Project.
Monolopia gracilens woodland woollythreads	- / - / 1B.2	Chaparral, valley and foothill grassland, cismontane woodland, broadleafed upland forest, North Coast coniferous forest. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns, but may have only weak affinity to serpentine. 120-975 meters. Blooms March through July.	**None.** Suitable habitat is not present in the Project.
Myosurus minimus ssp. *apus* little mousetail	- / - / 3.1	Vernal pools, valley and foothill grassland. This subspecies has taxonomic problems. Alkaline soils. 20-640 meters. Blooms March through June.	**None.** Suitable habitat is not present in the Project.
Navarretia nigelliformis ssp. *nigelliformis* adobe navarretia	- / - / 4.2	Valley and foothill grassland, vernal pools. Clay soils; sometimes on serpentine. 100-1000 meters. Blooms April through June.	**None.** Suitable habitat is not present in the Project.
Navarretia nigelliformis ssp. *radians* shining navarretia	- / - / 1B.2	Cismontane woodland, valley and foothill grassland, vernal pools. Apparently in grassland, and not necessarily in vernal pools. 60-975 meters. Blooms April through July.	**Not expected.** Marginally suitable habitat is present in the Project.
Navarretia prostrata prostrate vernal pool navarretia	- / - / 1B.1	Coastal scrub, valley and foothill grassland, vernal pools, meadows and seeps. Alkaline soils in grassland, or in vernal pools. Mesic, alkaline sites. 3-1235 meters. Blooms April through July.	**None.** Suitable habitat is not present in the Project.
Phacelia phacelioides Mt. Diablo phacelia	- / - / 1B.2	Chaparral, cismontane woodland. Adjacent to trails, on rock outcrops and talus slopes; sometimes on serpentine. 605-1345 meters. Blooms April through May.	**None.** Suitable habitat is not present in the Project.
Plagiobothrys glaber hairless popcornflower	- / - / 1A	Meadows and seeps, marshes and swamps. Coastal salt marshes and alkaline meadows. 5-125 meters. Blooms March through May.	**None.** Suitable habitat is not present in the Project.

Name	Listing status* (Federal/ State/CNPS)	Habitat and Flowering Period	Potential to Occur in the Project
Polemonium carneum Oregon polemonium	- / - / 2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. 0-1830 meters. Blooms April through September.	**None.** Suitable habitat is not present in the Project.
Puccinellia simplex California alkali grass	- / - / 1B.2	Meadows and seeps, chenopod scrub, valley and foothill grasslands, vernal pools. Alkaline, vernally mesic. Sinks, flats, and lake margins. 1-915 meters. Blooms March through May.	**None.** Suitable habitat is not present in the Project.
Sanicula saxatilis rock sanicle	- / Rare / 1B.2	Broadleafed upland forest, chaparral, valley and foothill grassland. Bedrock outcrops and talus slopes in chaparral or oak woodland habitat. 670-1250 meters. Blooms April through May.	**None.** Suitable habitat is not present in the Project.
Senecio aphanactis chaparral ragwort	- / - / 2B.2	Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. 20-855 meters. Blooms January through April.	**None.** Suitable habitat is not present in the Project.
Spergularia macrotheca var. *longistyla* long-styled sand-spurrey	- / - / 1B.2	Marshes and swamps, meadows and seeps. Alkaline. 0-255 meters. Blooms February through May.	**None.** Suitable habitat is not present in the Project.
Streptanthus albidus ssp. *peramoenus* most beautiful jewelflower	- / - / 1B.2	Chaparral, valley and foothill grassland, cismontane woodland. Serpentine outcrops, on ridges and slopes. 90-1040 meters. Blooms April through September.	**None.** Suitable habitat is not present in the Project.
Streptanthus hispidus Mt. Diablo jewelflower	- / - / 1B.3	Valley and foothill grassland, chaparral. Talus or rocky outcrops. 245-975 meters. Blooms March through June.	**None.** Suitable habitat is not present in the Project.
Stuckenia filiformis ssp. *alpina* slender-leaved pondweed	- / - / 2B.2	Marshes and swamps. Shallow, clear water of lakes and drainage channels. 300-2150 meters. Blooms May through July.	**None.** The Project is not within the elevation range for this species.
Suaeda californica California seablite	FE / - / 1B.1	Marshes and swamps. Margins of coastal salt marshes. 0-5 meters. Blooms July through October.	**None.** Suitable habitat is not present in the Project.
Trifolium hydrophilum saline clover	- / - / 1B.2	Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 1-335 meters. Blooms April through June.	**None.** Suitable habitat is not present in the Project.
Triquetrella californica coastal triquetrella	- / - / 1B.2	Coastal bluff scrub, coastal scrub. Grows within 30m from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. 10-100 meters.	**None.** Suitable habitat is not present in the Project.

Name	Listing status* (Federal/ State/CNPS)	Habitat and Flowering Period	Potential to Occur in the Project
Tropidocarpum capparideum caper-fruited tropidocarpum	- / - / 1B.1	Valley and foothill grassland. Alkaline clay. 0-360 meters. Blooms March through April.	**None.** Suitable habitat is not present in the Project.
Viburnum ellipticum oval-leaved viburnum	- / - / 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1400 meters. Blooms May through June.	**None.** Suitable habitat is not present in the Project.

*** List of Abbreviations for Federal and State Species Status follow below:**
FE = Federal endangered
FT = Federal threatened
SE = State endangered
ST = State threatened
SR = State rare

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Table C-2. Special-status Animal Species with Potential to Occur in the Arroyo Mocho Project Area

Scientific name	Listing status* (Federal/ State)	Habitat	Potential to Occur in the Project
Invertebrates			
Branchinecta longiantenna longhorn fairy shrimp	FE/-	Endemic to the eastern margin of the Central Coast mountains in seasonally astatic grassland vernal pools. Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	**None.** Suitable habitat is not present in the Project.
Branchinecta lynchi vernal pool fairy shrimp	FT/-	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**None.** Suitable habitat is not present in the Project.
Callophrys mossii bayensis San Bruno elfin butterfly	FE/-	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*.	**None.** Suitable habitat is not present in the Project.
Lepidurus packardi vernal pool tadpole shrimp	FE/-	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**None.** Suitable habitat is not present in the Project.
Amphibians and Reptiles			
Ambystoma californiense California tiger salamander	FT/ST	Central Valley DPS federally listed as threatened. Santa Barbara and Sonoma counties DPS federally listed as endangered. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	**Not expected.** Marginally suitable upland habitat is present in the Project. No breeding habitat is present.
Emys marmorata western pond turtle	-/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Possible.** Potentially suitable habitat is present in the Project.
Masticophis flagellum ruddocki San Joaquin coachwhip	-/SSC	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley. Needs mammal burrows for refuge and oviposition sites.	**Not expected.** Marginally suitable habitat is present in the Project.

Scientific name	Listing status* (Federal/ State)	Habitat	Potential to Occur in the Project
Masticophis lateralis euryxanthus Alameda whipsnake	FT/ST	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	**None.** Suitable habitat is not present in the Project.
Phrynosoma blainvillii coast horned lizard	-/SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	**Not expected.** Marginally suitable habitat is present in the Project.
Rana boylii foothill yellow-legged frog	-/Candidate ST, SSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**None.** Suitable habitat is not present in the Project.
Rana draytonii California red-legged frog	FT/SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**Not expected.** Marginally suitable habitat is present in the Project. No breeding habitat is present.
Spea hammondii western spadefoot	-/SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	**None.** Suitable habitat is not present in the Project.
Fish			
Oncorhynchus mykiss irideus steelhead - central California coast DPS	FT/-	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins.	**None.** The Project is upstream of a complete passage barrier.
Birds			
Agelaius tricolor tricolored blackbird	-/ST	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**Not expected.** Marginally suitable habitat is present in the Project. No breeding habitat is present.
Ammodramus savannarum grasshopper sparrow	-/SSC	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	**None.** Suitable habitat is not present in the Project.
Aquila chrysaetos golden eagle	-/FP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**None.** Suitable habitat is not present in the Project.

Scientific name	Listing status* (Federal/ State)	Habitat	Potential to Occur in the Project
Athene cunicularia burrowing owl	-/SSC	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.	**Not expected.** Marginally suitable habitat is present in the Project.
Buteo swainsoni Swainson's hawk	-/ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Not expected.** Marginally suitable habitat is present in the Project.
Circus cyaneus northern harrier	-/SSC	Coastal salt & freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**None.** Suitable habitat is not present in the Project.
Elanus leucurus white-tailed kite	-/FP	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Possible.** Potentially suitable habitat is present in the Project.
Falco peregrinus anatum American peregrine falcon	Delisted/Delisted, FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	**None.** Suitable habitat is not present in the Project.
Haliaeetus leucocephalus bald eagle	Delisted/SE, FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	**None.** Suitable habitat is not present in the Project.
Lanius ludovicianus loggerhead shrike	-/SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Not expected.** Marginally suitable habitat is present in the Project.
Laterallus jamaicensis coturniculus California black rail	-/ST	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	**None.** Suitable habitat is not present in the Project.
Melospiza melodia pusillula Alameda song sparrow	-/SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in *Salicornia*.	**None.** Suitable habitat is not present in the Project.
Mammals			
Antrozous pallidus pallid bat	-/SSC	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Not expected.** Marginally suitable habitat is present in the Project.

Scientific name	Listing status* (Federal/ State)	Habitat	Potential to Occur in the Project
Corynorhinus townsendii Townsend's big-eared bat	-/SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	**None.** Suitable habitat is not present in the Project
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	-/SSC	Forest habitats of moderate canopy & moderate to dense understory. May prefer chaparral & redwood habitats. Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.	**Not expected.** Marginally suitable habitat is present in the Project.
Taxidea taxus American badger	-/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Not expected.** Marginally suitable habitat is present in the Project.
Vulpes macrotis mutica San Joaquin kit fox	FE/ST	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**Not expected.** Marginally suitable habitat is present in the Project.

*** List of Abbreviations for Federal and State Species Status follow below:**
FE = Federal endangered
FT = Federal threatened
SE = State endangered
ST = State threatened
SSC = Species of special concern
FP = State fully protected

Table C-3. Plant and Animal Species Observed on the Project Site during H. T. Harvey & Associates' Reconnaissance-Level Surveys

Common Name	Scientific Name
Plants	
almond tree	*Prunus dulcis*
annual bluegrass	*Poa annua*
bicolored lupine	*Lupinus bicolor*
blue elderberry	*Sambucus nigra*
Blue gum eucalyptus	*Eucalyptus globulus*
bull mallow	*Malva nicaeensis*
California buckeye	*Aesculus californica*
California manroot	*Marah fabacea*
California plantain	*Plantago erecta*
California poppy	*Eschscholzia californica*
California sagebrush	*Artemisia californica*
California sycamore	*Platanus racemosa*
cherry	*Prunus* sp.
cleavers	*Galium aparine*
coast live oak	*Quercus agrifolia*
cotoneaster	*Cotoneaster* sp.
coyotebrush	*Baccharis pilularis*
cut leaved geranium	*Geranium dissectum*
date palm	*Phoenix dactylifera*
European olive	*Olea europea*
fennel	*Foeniculum vulgare*
fiddleneck	*Amsinckia* sp.
Fremont cottonwood	*Populus fremontii*
goldenrain tree	*Koelreuteria paniculata*
grindelia	*Grindelia* sp.
Himalayan blackberry	*Rubus armeniacus*
Italian ryegrass	*Festuca perennis*
lotus	*Acmispon* sp.
lupine	*Lupinus* sp.
milk thistle	*Silybum marinum*
mulefat	*Baccharis salicifolia*
mustard	*Brassica* sp.
Peruvian pepper tree	*Schinus mollis*

Common Name	Scientific Name
poison hemlock	*Conium maculatum*
prostrate peppergrass	*Lepidium strictum*
ragwort	*Senecio* sp.
red willow	*Salix laevigata*
ripgut brome	*Bromus diandrus*
rose clover	*Trifolium hirtum*
sandbar willow	*Salix exigua*
smilo grass	*Stipa mileacea*
soft chess	*Bromus hordeaceus*
sowthistle	*Sonchus* sp.
stork's bill (various species)	*Erodium* spp.
tamarix	*Tamarisk* sp.
tomcat clover	*Trifolium willdenovii*
tree of heaven	*Ailanthus altissima*
Valley oak	*Quercus lobata*
wall barley	*Hordeum murinum*
Washington fan palm	*Washingtonia robusta*
wild oats	*Avena* sp.
wild radish	*Raphanus sativus*
willow	*Salix* sp.
willowherb	*Epilobium* sp.
yellow starthistle	*Centaurea solstitialis*
Invertebrates	
monarch butterfly	*Danaus plexippus*
viceroy butterfly	*Limenitis archippus*
Birds	
Cooper’s hawk	*Accipiter cooperii*
Eurasian collared-dove	*Streptopelia decaocto*
mourning dove	*Zenaida macroura*
Anna’s hummingbird	*Calypte anna*
Allen’s hummingbird	*Selasphorus sasin*
Nuttall’s woodpecker	*Picoides nuttallii*
northern flicker	*Colaptes auratus*
black phoebe	*Sayornis nigricans*
Hutton’s vireo	*Vireo huttoni*
California scrub-jay	*Aphelocoma californica*

Common Name	Scientific Name
American crow	*Corvus brachyrhynchos*
northern rough-winged swallow	*Stelgidopteryx serripennis*
oak titmouse	*Baeolophus inornatus*
bushtit	*Psaltriparus minimus*
Bewick's wren	*Thryomanes bewickii*
northern mockingbird	*Mimus polyglottos*
European starling	*Sturnus vulgaris*
yellow-rumped warbler	*Setophaga coronata*
spotted towhee	*Pipilo maculatus*
song sparrow	*Melospiza melodia*
white-crowned sparrow	*Zonotrichia leucophrys*
golden-crowned sparrow	*Zonotrichia atricapilla*
house finch	*Haemorhous mexicanus*
purple finch	*Haemorhous purpureus*
lesser goldfinch	*Carduelis psaltria*
house sparrow	*Passer domesticus*
Mammals	
feral cat	*Felis catus*
California ground squirrel	*Otospermophilus beecheyi*
eastern fox squirrel	*Sciurus niger*

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Appendix C

Noise Calculations

Methodology – Noise Appendix

As discussed further below, noise levels and subsequent impacts from the Proposed Project are analyzed based on estimated noise levels from the operation of the two loudest pieces of construction equipment as measured from the center of the project site. This impact methodology follows recommended construction noise analysis methods from the Federal Transit Administration's (FTA's) *Guidelines for Construction Vibration in Transit Noise and Vibration Impact Assessment* (FTA 2006).

Construction

Because residences are located adjacent to the project site's boundaries, an evaluation of the noise levels compared to the values recommended by FTA was also conducted. The FTA has established guidance on noise and vibration impact assessments for construction equipment (FTA 2006). The FTA recommends that for a rough estimate of construction noise levels that the noisiest two pieces of equipment be used to analyze the anticipated noise levels at sensitive receptors assuming the following:

- full power operation for a full one hour is assumed,
- there are no obstructions to the noise travel paths,
- typical noise levels from construction equipment are used, and
- all pieces of equipment are assumed to operate at the center of the project site.

Using these assumptions, the noise levels at specific distances can be obtained using the following equation:

$$L_{eq}(equip) = EL_{50ft} - 20log_{10}(D/50)$$

Where:

L_{eq} (equip) = the noise emission level at the receiver at distance D over 1 hour.

EL_{50ft} = noise emission level of a particular piece of equipment at reference distance of 50 feet.

D = the distance from the receiver to the piece of equipment in feet.

In order to add the two noisiest pieces of equipment together, the following equation applies:

$$L_{total} = 10\ log_{10}(10^{\frac{L1}{10}} + 10^{\frac{L2}{10}})$$

Where:

L_{total} = The noise emission level of two pieces of equipment combined

L1 = The noise emission level of equipment type 1

L2 = The noise emission level of equipment type 2

Noise levels at the Proposed Project's nearest sensitive receptors generated by equipment used during project construction were estimated using the FTA reference guide (FTA 2006). The values used for the reference noise level at 50 feet were 88 and 85 dBA.

Noise Calculations for Arroyo Mocho

Daytime calculations - Arroyo Mocho

Construction Equipment 1 (Haul Trucks)	88	dBA at 50 feet
Construction Equipment 2 (Scraper)	89	dBA at 50 feet

Source: *Federal Transit Administration. 2006. Transit Noise and Vibration Impact Assessment Manual.*

Combined Daytime Noise at 50 feet (Ltotal at 50 feet) 91.5 dBA

Ltotal=10 log(10^L1/10+10^L2/10)

Distance (feet) from Center of Project Site to Sensitive Receptors	Construction Noise level dBA	Noise Level Equation: Leq = EL50-20*log(D/50)
75	88.0	None
400	73.5	Residences along Cross Creek Place, Peary Way, Creek Road, Anza Way, Holmes Street, Aaron Street, South S Street, and College Avenue.
1050	65.1	Tiffany Gardens, Silver Oak Manor, Mocho Park Care Center, Bloomingdale Court (Assisted Living Facilities/Nursing Homes)
300	76.0	Residences along College during long basin excavation phase

Noise Threshold Limits and Distances from Project Sites to those Limits for Construction Equipment

Noise Threshold	Threshold Level - Leq (dBA)	Distance to Leq Threshold from Middle of Project Site (feet)	
Daytime Limit (7 am-8 pm, M-F; 9 am - 6 pm Sa)	75	335.7	Noise Element has >75 dBA for single-family residential as Clearly Unacceptable
Nightime Limit (8 pm-7 am, M-Th; 8 pm Fr - 9 am Sa; 6 pm Sa - 7 am M)	No Construction		Construction 7 am - 8 pm. M-F, 9 am -6 pm Sa Public agencies can get exemption from hours

Source: Combination of Noise Ordinance and Noise Element from Livermore

Nearest Sensitive Receptors and Approximate Distances from Middle of Project Site

Sensitive Receptor	Distance (feet)	Construction Noise level dBA	Noise Level Equation: Leq = EL50-
Nearest residences to center Project Site	400	73.5	Residences along Cross Creek Place, College Ave., Anza Way
Nearest nursing home/ assisted living facilities to center of Project Site	1050	65.1	Assisted Living Facilities

Vibration Source Levels for Construction Equipment (FTA 2006)

Equipment	PPV at 25 feet	VBA
Loaded Trucks	0.076	86
Large Bulldozer	0.089	87

Vibration Calculations with Equations for Vibration-Causing Equipment (use of Loaded Trucks) for Project Site

Threshold	Distance to Threshold from Middle of Project Site (feet)	Notes	
PPV=PPVref * (25/d)^1.5	18.4	Building damage threshold (sensitive buildings)	
	125.3	Human Perception (65)	65 VdB
Lvd=Lvref-30log(D/25)	39.6	Annoyance (Federal)	Federal - Annoyance 80 VdB, Damage 0.3 PPV,

Vibration Calculations with Equations for Vibration-Causing Equipment (use of Large Bulldozer) for Project Site

Threshold	Distance to Threshold from Middle of Project Site (feet)	Notes	
PPV=PPVref * (25/d)^1.5	20.5	Building damage threshold (sensitive buildings)	
	135.3	Human Perception (65)	65 VdB
Lvd=Lvref-30log(D/25)	42.8	Annoyance (Federal)	

Reference levels from the Federal Transit Administration (2006) Transit Noise and Vibration Impact Assessment Manual.

Equipment	dBA 50 (FTA & FHWA)	PPV at 25 feet	VBA
excavators (e.g., Caterpillar 336F)	85		
scrapers	**89**		
bulldozers (e.g., Caterpillar D8	85	**0.089**	**87**
haul trucks	**88**	**0.076**	**86**
medium backhoe	80		
forklift			

The two loudest/highest vibration- or noise-generating equipment types are shown in bold.

Appendix D

Mitigation Monitoring and Reporting Plan

MITIGATION MONITORING AND REPORTING PROGRAM

The following mitigation monitoring and reporting program (MMRP) summary table includes the mitigation measures identified in the Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7) Arroyo Mocho Medeiros Reach Floodplain Reconnection Project (Proposed Project) initial study/mitigated negative declaration (IS/MND). For each mitigation measure, this table identifies monitoring and reporting actions that shall be carried out and the monitoring schedule. This table also includes a column where responsible parties can check off monitoring and reporting actions as they are completed.

As lead agency, Zone 7 would be responsible for ensuring that mitigation measures identified in this IS/MND are fully implemented. However, some mitigation measures would be implemented by contractor(s) on behalf of Zone 7. Contract documents for the Proposed Project would identify the obligations of the contractor, including relevant mitigation measures. Zone 7 would require that the contractor provide Zone 7 with documentation that contractual obligations, including applicable mitigation measures, have been adequately implemented.

Thus, in the descriptions of the mitigation measures provided in the table that follows, while Zone 7 may be the only party referenced in implementing a mitigation measure (i.e., where the measure states "Zone 7 shall"), this is intended to be inclusive of the contractor's role in implementing certain mitigation measures during construction or as part of design.

ACRONYMS AND ABBREVIATIONS USED IN THIS MMRP

CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
F&G Code	California Fish and Game Code
IS/MND	initial study/mitigated negative declaration
LARPD	Livermore Area Recreation and Park District
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendant
MMRP	mitigation monitoring and reporting program
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
Proposed Project	Arroyo Mocho Medeiros Reach Floodplain Reconnection Project
Zone 7	Alameda County Flood Control and Water Conservation District, Zone 7

	Mitigation Measure	Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
Aesthetics					
	None Required				
Agriculture and Forestry Resources					
	None Required				
Air Quality					
	None Required				
Biological Resources					
BIO-1	**Conduct Preconstruction Survey for Western Pond Turtles.** Zone 7 shall require that a qualified biologist conduct a survey for western pond turtles within 48 hours prior to commencement of work within the channel banks in any given area where water is present. If a western pond turtle is found in an area where it could be injured or killed by project activities, the qualified biologist will relocate the turtle to an appropriate site outside the project area (i.e., upstream or downstream of the activity area).	▪ Preconstruction surveys shall be conducted by qualified biologist 14 days before and 24 hours before the start of construction activities. ▪ Contact California Department of Fish and Wildlife for authorization to capture and relocate any turtles found within a portion of the construction area where they could be injured or killed.	▪ Before and during construction ▪ Before construction	Zone 7 will complete the biological survey work. No project work may occur before the survey(s) are complete, nor without approval of a qualified biologist. Contractor will schedule project work accordingly, and will commu-nicate to Zone 7 immediately should any	

Mitigation Measure		Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
				wildlife species be encountered during project activities.	
BIO-2	**Avoid and Minimize Impacts on Nesting Birds.** Zone 7 will implement the following measures to ensure that project activities comply with the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (F&G Code): A. Avoidance. To the extent feasible, construction activities should be scheduled to avoid the nesting season. If construction activities are scheduled to take place outside the nesting season, all impacts on nesting birds protected under the MBTA and F&G Code will be avoided. The nesting season for most birds in Alameda County extends from February 1 through August 31. B. Preconstruction/Pre-disturbance Surveys. If it is not possible to schedule construction activities between September 1 and January 31, preconstruction surveys for nesting birds should be conducted by a qualified ornithologist to ensure that no nests will be disturbed during project implementation. Surveys should be conducted no more than seven days prior to the initiation of construction activities. During this survey, the ornithologist will inspect all trees and other	▪ When feasible, construction activities will be scheduled outside the nesting season (i.e., September 1 to January 31). ▪ Qualified biologist shall conduct a nesting bird survey within 7 days prior to work start if vegetation clearing or ground-disturbing activities begin between February 15 and August 31. ▪ 300-foot buffer for non-listed raptors and 100-foot buffer for other species will be established around nests if active nests are found near construction work areas. These buffers will be maintained until young have fledged.	▪ Before construction ▪ Before construction ▪ During construction ▪ Before construction	Zone 7 will complete the biological survey work. No project work may occur before the survey(s) are complete, nor without approval of a qualified biologist. Contractor will schedule project work accordingly and will communicate to Zone 7 immediately should any wildlife species be encountered during project activities.	

	Mitigation Measure	Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
	potential nesting habitats in and immediately adjacent to the impact area for nests. C. Buffers. If an active nest is found sufficiently close to work areas to be disturbed by these activities, the ornithologist will determine the extent of a construction-free buffer zone to be established around the nest (typically 300 feet for raptors and 100 feet for other species), to ensure that no nests of species protected by the MBTA and F&G Code will be disturbed during project implementation. D. Inhibition of Nesting. If construction activities will not be initiated until after the start of the nesting season, all potential nesting substrates (e.g., bushes, trees, grasses, and other vegetation) that are scheduled to be removed by the project may be removed prior to the start of the nesting season (e.g., prior to February 1). This will preclude the initiation of nests in this vegetation and prevent the potential delay of the project due to the presence of active nests in these substrates.	▪ All nesting substrates that are scheduled to be removed may be removed prior to the start of the nesting season (i.e., prior to February 1).			
Cultural Resources					
CR-1	**Immediately Halt Construction If Cultural Resources Are Discovered, Evaluate All Identified Cultural Resources for Eligibility for Inclusion in the National Register of Historic Places (NRHP) / California Register of**	▪ Halt construction activities in the event any cultural resources are encountered.	▪ During construction ▪ During construction	Construction supervisor; consult with Zone 7 as needed	

Mitigation Measure		Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
	Historical Resources (CRHR), and Implement Appropriate Mitigation Measures for Eligible Resources. Zone 7 shall include this measure in construction plans and specifications. If any cultural resources, such as structural features, unusual amounts of bone or shell, flaked or ground stone artifacts, historic-era artifacts, human remains, or architectural remains, are encountered during any project construction activities, work shall be suspended immediately at the location of the find and within a radius of at least 50 feet and Zone 7 will be contacted. All cultural resources accidentally uncovered during construction within the project site shall be evaluated for eligibility for inclusion in the NRHP/CRHR. Resource evaluations will be conducted by individuals who meet the U.S. Secretary of the Interior's professional standards in archaeology, history, or architectural history, as appropriate. If any of the resources meet the eligibility criteria identified in Public Resources Code (PRC) Section 5024.1 or 14 California Code of Regulations (CCR) Section 21083.2(g), mitigation measures will be developed and implemented in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(b) before construction	▪ If cultural resources are uncovered, retain a qualified individual who meets the U.S. Secretary of the Interior's standards to conduct resource evaluations. ▪ If uncovered resources meet eligibility criteria, implement mitigation measures consistent with State CEQA Guidelines Section 15126.4(b). ▪ If cultural resources are uncovered, mitigation measures will be developed in consultation with SRWA and Native American tribes before construction resumes.	▪ During construction ▪ During construction		

	Mitigation Measure	Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
	resumes. For resources eligible for listing in the NRHP/CRHR that would be rendered ineligible by the effects of project construction, additional mitigation measures shall be implemented. Mitigation measures for archaeological resources may include (but are not limited to) avoidance; incorporation of sites within parks, greenspace, or other open space; capping the site; deeding the site into a permanent conservation easement; or data recovery excavation. Mitigation measures for archaeological resources shall be developed in consultation with responsible agencies and, as appropriate, interested parties such as Native American tribes. Native American consultation is required if an archaeological site is determined to be a tribal cultural resource. Implementation of the approved mitigation would be required before resuming any construction activities with potential to affect identified eligible resources at the site.				
CR-2	**Immediately Halt Construction if Human Remains Are Discovered and Implement Applicable Provisions of the California Health and Safety Code.** Zone 7 shall include this measure in construction plans and specifications. If human	▪ In the event that human remains are encountered, halt work and contact the County Coroner. ▪ If discovered remains are those of a Native	▪ During construction ▪ During construction	Construction supervisor; consult with Zone 7 as needed	

	Mitigation Measure	Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
	remains are accidentally discovered during the Proposed Project's construction activities, the requirements of California Health and Human Safety Code Section 7050.5 shall be followed. Potentially damaging excavation shall halt in the vicinity of the remains, with a minimum radius of 100 feet, and the Alameda County Coroner shall be notified. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (California Health and Safety Code Section 7050.5[b]). If the Coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (California Health and Safety Code Section 7050[c]). Pursuant to the provisions of PRC Section 5097.98, the NAHC shall identify a Most Likely Descendent (MLD). The MLD designated by the NAHC shall have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods. Zone 7 shall work with the MLD to ensure that the remains are removed to a protected location and treated with dignity and respect.	American, he or she must contact the NAHC by phone within 24 hours of making that determination. ▪ NAHC shall identify an MLD, upon which this person shall be notified and given at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods. ▪ Cooperation with MLD is required.	▪ During construction ▪ During construction		
Geology and Soils					
	None Required				

Mitigation Measure		Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
Greenhouse Gas Emissions					
	None Required				
Hazards and Hazardous Materials					
	None Required				
Hydrology and Water Quality					
	None Required				
Land Use and Planning					
	None Required				
Mineral Resources					
	None Required				
Noise					
	None Required				
Population and Housing					
	None Required				
Public Services					
	None Required				

Mitigation Measure		Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
Recreation					
	None Required				
Transportation and Traffic					
TRAN-1	**Limit Truck Traffic to Off-Peak Hours on Weekdays.** Zone 7 shall limit the hours of off-hauling truck traffic to 9:00 a.m.-4:00 p.m. Monday through Friday to avoid impacts on circulation patterns during peak traffic hours.	▪ Restrictions on truck traffic will be included in the contractor's plans and specifications. ▪ Trucks will off-haul material only between 9:00 a.m. and 4:00 p.m. Monday through Friday.	▪ Before approval of plans and specifica-tions ▪ During construction	Construction supervisor; consult with Zone 7 as needed	
TRAN-2	**Provide an Alternate Route for the Arroyo Mocho Trail during Closures.** Zone 7 shall work with the City of Livermore and Livermore Area Recreation and Park District (LARPD) to identify a suitable alternate route for bicyclists and pedestrians during construction closure of the Arroyo Mocho Trail that provides connectivity around the project area. The following measures will be implemented by Zone 7 and its contractors to minimize impacts on trail users: ▪ Trail closure signs shall be posted at the Arroyo Mocho Trail intersections with Holmes Street and Arroyo Road. The signs shall state the date range during which the	▪ Zone 7, the City, and LARPD will designate a suitable alternate trail route. ▪ Signs will be posted during periods when construction would interrupt trail access.	▪ Before construction ▪ During construction	Zone 7 will coordinate and plan for alternative routes with the City of Livermore. Contractor will be responsible for installing and maintaining trail and detour signage during project activities.	

Mitigation Measure		Monitoring and Reporting Action	Monitoring Schedule	Responsible Party	Completion Date and Initials
	trail will be closed and shall indicate the route of pedestrian and/or bike path detours during construction. Signs shall be posted at least 2 weeks in advance of trail closure or per City of Livermore and/or LARPD request. ▪ Upon City of Livermore and/or LARPD request, Zone 7 and its contractors shall place "share the road" signs along the bicycle detour route during trail closure.				
Tribal Cultural Resources					
CR-1	*See description above in "Cultural Resources"*				
CR-3	*See description above in "Cultural Resources"*				
Utilities and Service Systems					
	None Required				

Appendix E

Public Comments Received on the IS/MND

Letter A

Debra Lilly

From: FRANK CHAMBERS <frankquack@comcast.net>
Sent: Friday, December 21, 2018 1:39 PM
To: Rank, Elke; frankquack@comcast.net
Subject: Arroyo Mocho Trails and Homeless

I have just read the most recent

Arroyo Mocho Medeiros Reach Floodplain Reconnection Project

plan which sounds good but I have two inputs:

The trails within the OGNR are in fact firebreaks which were first created after a series of fires were set in about 1990 and have since been maintained by the city each year. Their placement was decided by the bulldozer driver (with requests from residents desiring easier trail access). The breaks have widened over time. I would suggest that you have someone with an aesthetic eye review and adjust their locations. Perhaps a little meandering would improve things for the walkers. I like the idea of their being improved.

I did not find any mention of the homeless in the document (may have missed it) and realize this may well not be the place for that. However the homeless folks who sometimes take up residence are a concern and they should be kept in mind both for the construction cycle and future OGNR development.

Thanks for your time and consideration,

Frank Chambers

1583 Cross Creek Place (the corner lot)

Letter B

23187 Connecticut Street
Hayward, CA 94545

T: (510) 783-7744
F: (510) 783-3903

acmad@mosquitoes.org

January 18, 2019

Elke Rank
Alameda County Flood Control and Water Conservation District, Zone 7
100 North Canyons Parkway
Livermore, CA 94551

Subject: Comments regarding Arroyo Mocho Medeiros Reach Floodplain Reconnection Project

Dear Ms. Rank:
The Alameda County Mosquito Abatement District appreciates the opportunity to comment on the Arroyo Mocho Medeiros Reach Floodplain Reconnection Project. As a public health organization responsible for protecting the residents of Alameda County from mosquitoes, we encourage the reduction of any mosquito breeding habitat. Please see the comments below organized by the sections in which they refer to.

2.4 Description of the Proposed Project
Floodplain Reconnection – In order to avoid mosquito production, the Oak Grove Nature Reserve must have complete discharge of all captured water in 4 days or less. We request that the trail design include the 12-inch-diameter, reinforced concrete pipe culvert with a one-way flap as opposed to a duckbill gate connecting the basin to Arroyo Mocho to facilitate drainage.
Revegetation – We request that willow trees are not used in the revegetation plan to replace the removed trees. Willow trees in seasonally flooded areas are the primary habitat for *Aedes washinoi*, an aggressive day biting mosquito.

General Comments:
Access – Access to all areas holding water needs to have a route with all-weather paths that will accommodate vehicle travel.

Coordination – The Alameda County Mosquito Abatement District requests to be notified if water stands more than 4 days during the construction process so we may abate any mosquito breeding.

Thank you again for the opportunity to provide comments on the Arroyo Mocho Medeiros Reach Floodplain Reconnection Project. Should you have any questions about these comments or the work done by the Alameda County Mosquito Abatement District, please contact me at (510) 925-1747 or via email at erika@mosquitoes.org.

Sincerely,

Erika Castillo
Regulatory & Public Affairs Director
Alameda County Mosquito Abatement District

Letter C

Debra Lilly

From: Rank, Elke
Sent: Tuesday, January 22, 2019 9:20 AM
To: Debra Lilly (debra@horizonh2o.com)
Cc: Jeff Thomas (jeff@horizonh2o.com)
Subject: FW: Arroyo Mocho Project

see below -

Elke Rank | Zone 7 Water Agency | E-mail: erank@zone7water.com | Tel: 925-454-5005

From: Moshier, Emily
Sent: Tuesday, January 22, 2019 8:38 AM
To: Rank, Elke
Subject: FW: Arroyo Mocho Project

From: Karen Anderson [mailto:jprng4ever@yahoo.com]
Sent: Sunday, January 20, 2019 5:44 PM
To: Moshier, Emily
Subject: Arroyo Mocho Project

Hi Emily,

Know comments for Arroyo Mocho Medeiros Floodplain Project are due January 22nd. Tomorrow library is closed so am hoping dealine for 22nd is 5:00 as I do my work from the library.

In case that is not the case, here are my comments in a nutshell - which might be better in the long run. I may think of something in between and will add to final copy on the 22nd.

Thanks for the extension for the public due to the holidays, but I am afraid I have not been able to review as much as I would have liked. My January has consisted of veterinary visits for my two beloved dogs, now 14 and 16, both with grade 6/6 heart murmors and senior issues. Please know my interest is still there but I have had to devote most of my time to my little dogs' well being.

Therefore, my comments that I can post at this time:

1) Commendations to Zone 7 Water Agency for setting a high bar for other public agencies as to the importance of gathering public opinion prior to commencing a project. You have set a new standard for future projects of environmental issues and this is much appreciated.

2) As to the specific Arroyo Mocho Medeiros Floodplain Project, following are recommended considerations:

a) Have a qualified biologist(s) enter the area for removal prior to any action. Two days were mentioned in the original project for finding specific species, but recommend additional days.

b) Have a qualified biologist(s) enter the area for removal of species not only mentioned on the threatened list to give the animals an opportunity to leave the area in a humane manner.

c) Come up with a plan for any injured animals that are native species to be transported to the Lindsay Wildlife Museum for hopeful rehabilitation.

d) Should another wildlife refuge - possibly Hayward but have not confirmed - be willing to take in non-native injured species, have a plan to transport them.

e) Give compassionate consideration to slow moving species, in particular, the Western Pond Turtle.

f) Give compassionate consideration to species in the area for the project as to ways to remove them, especially burrowing animals, pond animals, and the lizards, whom I believe are within the area. Contact a professional pest control management as to the most humane way to remove them. Inform the qualified biologist and come up with a plan prior to any project beginning.

g) Check with the man who spoke at the earliest public meeting and who lives adjacent to the entry way from College Avenue to the Oak Grove Nature Preserve whose son knows where the salamanders are located. True, they may be different salamanders, but in case they are in the area of the project, no matter what salamander they are, the qualified biologist can be informed as to how to get the burrowing animals out humanely.

h) Inform those who are working on the project that you want to set the same standard for public relations as you have set prior to beginning the project by showing the humane way in which to conduct such an excavation.

i) As planned, do a thorough check for any nests in the tree areas. Special note re ground laying birds: I have seen but off the top of my head can't recall the name of the bird that lays its eggs in the ground and walks around pretending it has a broken wing to distract the viewer away from the nest - Please be mindful of them and have a qualified biologist/biologists watch for these birds along the path.

j) Consider contacting feral cat rescue for the feral cat colony in the area as to whether the cats should be relocated.

k) Have a group discussion as to any other ideas which may minimize the animal life affected.

Library is about to close so must send. Will give an update Tuesday of I think of anything else. Saw a lizard in project area so wanted to mention.

Thank you.

Karen Anderson

Letter D

Debra Lilly

From: Rank, Elke
Sent: Tuesday, January 22, 2019 9:20 AM
To: Debra Lilly (debra@horizonh2o.com)
Cc: Jeff Thomas (jeff@horizonh2o.com)
Subject: FW: One other question

See below -

Elke Rank | Zone 7 Water Agency | E-mail: erank@zone7water.com | Tel: 925-454-5005

From: Moshier, Emily
Sent: Tuesday, January 22, 2019 8:38 AM
To: Rank, Elke
Subject: FW: One other question

From: Karen Anderson [mailto:jprng4ever@yahoo.com]
Sent: Sunday, January 20, 2019 5:54 PM
To: Moshier, Emily
Subject: One other question

Hi again, Emily,

Can you give me an idea as to when project equipment might be entering the area as I would like to get a few pictures before the changes. Also, last day to walk through the park before beginning project. Also, historically, a few other comments for consideration:

1) Heritage guild might be interested in the iron from the railroad that ran through there.

2) Might be good p.r. to have a few plaques indicating historically what was there prior to the digging.

3) Pepper tree at entrance to the Oak Grove Nature Reserve indicates a home may have been there and part of Mr. Clary's farm. Hope it can be saved.

Will swing by with hard copies on Tuesday.

Many thanks!

Karen Anderson

Debra Lilly

Subject: FW: Clarification 're Fw: Comments from Karen Anderson (3 emails)

From: "Karen Anderson" <jprng4ever@yahoo.com>
To: "Emily Moshier" <emoshier@zone7water.com>
Cc:
Sent: Wed, Jan 23, 2019 at 7:53 AM
Subject: Clarification 're Fw: Comments from Karen Anderson (3 emails)

Hi Emily and Elle,

Clarification re my letter of January 20: On f) by pond animals, this includes the frogs and frog eggs found along the banks where the excavating may take place. I would really appreciate this being inserted into this section as I am hoping any eggs and frogs can be moved further downstream.

Sending this from my mobile to expedite delivery. Thank you.

Karen Anderson

Sent from Yahoo Mail on Android

Debra Lilly

To: Rank, Elke
Subject: RE: Final Thoughts Re Arroyo Mocho Medeiros Reach Floodplain Reconnection Project from Karen Anderson (in addition to emails from Sunday) Sent to Emily Moshier today.

From: Karen Anderson <jprng4ever@yahoo.com>
To: Emily Moshier <emoshier@zone7water.com>
Sent: Tuesday, January 22, 2019, 3:17:16 PM PST
Subject: Final Thoughts Re Arroyo Mocho Medeiros Reach Floodplain Reconnection Project from Karen Anderson (in addition to emails from Sunday)

Hi Emily,

I did get a chance to review the environmental section just now re the Arroyo Mocho Medeiros Reach Floodplain Reconnection Project. Below are some final thoughts. I will deliver a hard copy of everything sent to you by 4:30 p.m. today as well as a hard copy for Valerie Pryor and Elke Rank whose name I just caught when I reviewed the proposal. I will also email Elke Rank what I have sent you.

Again, please forgive typos as I am dealing with so much with my senior dogs at home, I can't perfect everything and time is of an essence.

In addition to what I wrote in my first email from Sunday:

- Have a qualified biologist check those trees for nests before project begins and additionally, periodically recheck in case something does occur.

- The bird whose name I could not think of Sunday but mentioned in my letter is the killdeer. I have seen them, or if not, a very similar bird, along the Arroyo Mocho bike trail , especially in approaching the area right before the tennis courts. Their eggs could easily blend in with the gravel and a qualified biologist hopefully would be able to know how to relocate them should a mother and nest be found. To distract predators, including human, these birds often act like they have a broken wing if they have a nest nearby.

- Ayn Wieskamp has said she has seen the western pond turtles climb up to her yard even, so they may migrate from the pond area to where there are sprinklers, etc. A thorough check in the project area in addition to where their habitats are most likely to appear is urged so that none of the potential crushing of animals or being buried alive happens. Hopefully, the lizards and other animals are able to scamper away but the turtles may just retreat to their shells.

- Please note there are lizards living in the area around those trees.

- I do want to reiterate with regard to the salamanders that that man who lives adjacent to the College Avenue entrance made a point to mention that his son knows where they are located. Please consider asking the man and his boy where they were found. Though the report says that the area no longer is able to support them for a breeding ground; nevertheless, it would be nice to help the salamanders no matter what kind they are. My sister recalled her high school teacher doing a special study of them down there and, as she remembers how they **go under and hibernate in their burrows and do not come out for a long time.** I do not know a great deal about salamanders, but if compassion could be shown for them and if the biologist can be informed where this little boy has seen them, that would be appreciated. If I am able to find out from them before the project begins, I will let you know.

- Also want to reiterate to please have the qualified biologist check ahead for burrowing areas near the planned area and see if there are some natural ways to get them to vacate the area so that they don't retreat to their burrows.

- Would like to pass on one comment a petition signer made to me while I was getting signatures last summer - it is with regard to why the creek always has to dry up every year during the summer. In the spring there is all this cheerful

croaking of the frogs, but then the creek dries up and the frogs die along with their eggs. Though this may not relate directly to your project, I wanted to throw that out there as am wondering whether there is any way the creek can stay permanently filled.

- Finally, much as I hate to write it, should an animal get so severely injured that it is clear that the creature stands no chance of survival, have a plan of how to humanely euthanize the animal to put the creature out of its suffering.

Thank you so very much for whatever compassionate ways you can address the project. I know I have written a great deal, but my heart had to do this as this area was where I spent the happiest days of my childhood, thanks to all the beauty of nature found there.

I would like to say at this juncture that all involved at Zone 7 in this project really made a difference by letting us speak and by the polite and serious way you listened to us. No one made me feel like my ideas were not taken seriously, and I will be forever grateful to all of you for that. You had a right at the last meeting in the tactful way you reminded everyone that this is your property, and though I can't recall the exact words, that usage for the public has been something you have been gracious to allow. I would also like to acknowledge Michael Murphy for his letter in the Independent which first made me take notice of what was happening. Ayn Wieskamp helped a great deal with gathering the petitions. Though I would like to attend the final meeting for the approval, in all likelihood, due to my dogs' hearts growing weaker, I will be unable, but I would like to send a message of thanks via you to everyone for your polite listening to me both times and for looking and thinking about the posters I made re the area. When I heard about the almond trees staying, and I thought of all those baby birds that will be able to be raised, I felt all my hours of reading and preparing helped make a difference in some precious little lives. Know that you have made a difference in your profession that will be forever appreciated by me and without their realizing it, the animals and their ecosystem of this area.

Sincerely,

Karen Anderson

-

Letter G

LIVERMORE
CALIFORNIA

January 18, 2019

Emily Moshier, P.E.
Alameda County Flood Control and Water Conservation District, Zone7
100 North Canyons Parkway
Livermore, CA 94551
emoshier@zone7water.com

Dear Ms. Moshier,

Thank you for the opportunity to comment on the proposed Arroyo Mocho Medeiros Reach Floodplain and Riparian Restoration Project- Phase 1. We appreciate your willingness to work with the City and area residents and for scaling back your project to move forward with improvements that will minimally impact residents now while allowing more time for additional analysis and review of the larger project.

The City respectfully requests the following additions/minor revisions to the 90% Phase 1 plans and the corresponding Initial Study/Mitigated Negative Declaration.

1. Plans: The trail design within the section where water overflows the trail looks good. We did not see a raised trail that the public use when the lowered section is submerged. Please raise the perimeter trail to provide a secondary access for the public to use when the lowered section is submerged.

2. MND
a. Page 3-77- Traffic/ Transportation 3.16d, Substantially increase hazards due to a design feature - Consider checking less than significant with mitigation incorporated. With the proposed design the trail will be lowered causing water to flood it during storms greater than a 25 year frequency. Providing a raised secondary trail along the perimeter of Oak Grove Park to use during the time the trail is flooded along with signage and a closure gate will mitigate the hazard to less than significant.

2. Consider referencing the City's active transportation plan.

3. Consider identifying Holmes Street as the preferred exit for the haul route rather than exiting on College Avenue.

Thank you for considering our comments.

Please let us know if you have any questions.

Sincerely,

Pamela Lung
Senior Civil Engineer
Engineering Division
Community Development Department
(925)960-4538
(925)960-4500

Letter H

To: Elke Rank erank@zone7water.com
Alameda County Flood Control and Water Conservation District, Zone 7

From: Ken Condreva condreva@sbcglobal.net

Subject: Comments regarding Arroyo Mocho Medeiros Reach Floodplain Reconnection Project

Before commenting, I would like to summarize my interpretation of the latest proposal for the modifications of the Madieros Reach Floodplain area.

1) Lower the paved bicycle trail by 3 feet in the yellow colored area shown in Figure 1 below.

2) *Maybe* install a 8-12 inch diameter, 120 foot long pipe culvert on the south side of the bicycle trail that would connect the Oak Grove Nature Area (OGNR) to the Arroyo Mocho creek. This pipe *might* include a "one-way flap" to allow water captured in the OGNR basin to flow back into the Arroyo Mocho after floodwaters have subsided.

3) Remove about 2500 cubic yards of material from the OGNR. (*editorial note*: it is not clear whether this means scraping the top few inches from the entire approximately 20 acre OGNR area, or specific deeper dredging of a smaller portion of the OGNR).

4) Conduct revegitation and invasive species management activities in the Arroyo Mocho area.

If I have missed something, I would appreciate your feedback.

I have lived within a block of the area included in your *Arroyo Mocho Madeiros Reach Floodplain Reconnection Project* document for over 40 years. I also commuted to work daily to one of those National Laboratories on East Avenue via bicycle using the Bike Path through this area for over 30 years, entering the Bike Path on South S Street. I consider myself very familiar with the area you are proposing to modify during this project. I would like to submit the following comments.

First, In order to guarantee that sufficient flood water finds its way into the OGNR, you propose lowering the paved Bike Path that currently exists between the Arroyo Mocho and the OGNR area by 3 feet, to deliberately allow flood water to flow over the Bike Path into the OGNR. You may not realize it, but this Bike Path is very popular among local residents It is used by many walkers, runners (including both local high school Cross Country teams), bicyclists (including myself), dog walkers, and families out for a stroll.

I have witnessed many occasions over the years where water flowing rapidly down the Arroyo during heavy rains has breached the Bike Path, and on each and every occasion the Bike Path was sufficiently damaged that the City of Livermore chose to close the Bike Path until it could be made safe. These closures typically last for about 9 to 12 months, preventing hundreds of people each and every day during that period from using the Bike Path. For example, the most recent Bike Path closure within your project area occurred during the high rainfall period of January and February of 2017. Repair work did not begin until November of 2017 (probably due to budget constraints), and completion of the work and re-opening of the Bike Path did not occur

until January of 2018. The repairs would have been delayed even longer were it not for the fortuitous lack of rain during November and December of 2017.

Next, You are considering installing an 8-12 inch diameter, 120 foot long pipe culvert on the south side of the bicycle trail that would connect the OGNR to the Arroyo Mocho. This pipe would include a “one-way flap” to allegedly allow water captured in the OGNR basin to flow back into the Arroyo Mocho after floodwaters have subsided. You might be interested to know that the section of the Arroyo Mocho bicycle path between Arroyo Road and South Livermore Avenue crosses the Arroyo Mocho in 2 places. There are currently suspension bridges in place for these crossings. They were installed about 15 years ago. However, prior to that, these crossings were culverts about 10 feet wide and about 50 feet in length. Three 10 foot long, 20 inch diameter pipes were installed through the concrete structure of these culverts to allow water to pass under the upper surface of the culvert. These pipes had no “flaps” or any other gadgets within them. I can vouch for the fact that these pipes would become completely blocked with dirt, rocks, dislodged vegetation, and other debris during any large rain event. I would estimate that this condition would occur about once every 3 winters. This resulted in all of the flow from the Arroyo going over the top of the culvert! This condition would persist until the Arroyo was completely dry before maintenance workers could attempt to clear the clogged culvert pipes. I know this because my 30 year daily bicycle commute included passing over these culverts. Because of these observations, it is my opinion that the first time the proposed 120 foot pipe culvert is activated, it will quickly clog with debris from the captured flood water in the OGNR rushing toward the Arroyo Mocho, trapping the vast majority of the floodwater in the OGNR. This condition will persist until the following summer when the Arroyo is dry, allowing access by maintenance personnel. For this reason, you should seriously consider forgoing the expense of installing the “pipe culvert” you discuss in the proposal.

Finally, a significant rain event has the potential to fill the OGNR area to a depth of up to 7 feet. I measured the elevation at various points within the OGNR. This elevation data is shown in Figure 1. Since the bike path is 10 feet higher in elevation than the nearby low point within the OGNR, and the bike path will be lowered by 3 feet, this allows the adjacent part of the OGNR to fill to a depth of 7 feet. As you may know, Livermore received about 1.4 inches of rain over a 3 day period this week that ended on January 17, 2019. I walked through the OGNR area on the morning of the 17th, and observed many puddles of water in the area. I chose one of the larger puddles in the OGNR, which was also close to the area near the proposed bicycle path modifications (see Figure 1). On the morning of January 17th the water in the deepest spot in this puddle was 2 inches deep (see Figures 2 & 3). 24 hours later, the depth was 1-1/4 inches (see Figures 4 & 5), 48 hours later the depth was ½ inch (see Figures 6 & 7), and 72 hours later the puddle was a small patch of mud, with no standing water.

In summary, this project, if completed, would enable an area of several acres within the OGNR to fill with water to a depth of seven feet, with this water level decreasing at less than 1 inch per day. This low water absorption rate would enable the development of a significant mosquito population in this residential area! I suppose that, under ideal conditions, once the OGNR becomes flooded, Zone 7 could notify the appropriate agencies, and if all goes according to plan, those agencies could respond in a timely manner with appropriate mitigation. However, in my opinion, “an ounce of prevention is always worth many pounds of cure”. I think the best option would be to find another method to mitigate flooding concerns rather than using the OGNR as a seasonal lake!

Figure 1:OGNR Elevation Data

Figure 2: Pond Day 1 (Jan. 17, 2019 10:40 am)

Figure 3: Water Depth Day 1 (Jan. 17, 2019 10:40 am)

Figure 4: Pond Day 2 (Jan. 18, 2019 10:30 am)

Figure 5: Water Depth Day 2 (Jan. 18, 2019 10:30 am)

Figure 6: Pond Day 3 (Jan. 19, 2019 10:53 am)

Note: Approximately 6 foot diameter pond is in the center of the photograph

Figure 7: Water Depth Day 3 (Jan. 19, 2019 10:53 am)

LIVERMORE
CALIFORNIA

June 8, 2018

Emily Moshier, P.E.
Alameda County Flood Control and Water Conservation District, Zone 7
100 North Canyons Parkway
Livermore, CA 94551
emoshier@zone7water.com

Dear Ms. Moshier,

Thank you for the opportunity to comment on the proposed Arroyo Mocho Medeiros Reach Floodplain and Riparian Restoration Project. We appreciate your willingness to work with the City and area residents, your extension of the public comment period, and the opportunity to walk the project site with your staff and nearby neighbors. We understand this project is intended to achieve the objectives of the 2006 Stream Management Master Plan (Projects R3-3 and R3-4). These objectives are to protect existing development near the Holmes Street bridge area and further downstream by reducing the flood risk associated with storms greater than 10-year and less than 50-year storm events, provide a healthy ecosystem along the Arroyo Mocho corridor by improving habitat quality, and manage sedimentation occurring upstream of Holmes Street by providing sediment maintenance zones. We appreciate your coordination with us to more effectively manage sedimentation in the vicinity of the project site, which would represent a cost savings of approximately $100,000 to $200,000 annually, to reduce flooding potential of the City's major arterial and of homes and businesses.

The City respectfully requests the following additions to the Initial Study/Mitigated Negative Declaration, as well as analysis of alternative approaches to completing the project that would meet project objectives while minimizing potential impacts to the local residential and natural communities located in the project vicinity. Changes are also proposed to the text for consistency with the Master Plan.

Section 2.2.2 Proposed Project Objectives

- Proposed change: **Recreation/Community**: Preserve/enhance recreational value of site and allow for future recreational development pursuant to the City of Livermore and Livermore Area Recreation and Park District Oak Grove Nature Reserve Master Plan (Master Plan), adopted October 10, 2005.

Section 2.3 Project Area

- Proposed change: The arroyo passes through ~~areas of undeveloped open space (i.e.,~~ the Master Plan site, which consists of approximately 16 acres located adjacent to Arroyo Mocho, bounded by South S Street to the west, College Avenue to the north, and McGlinchey Drive to the east, (Master Plan, City of Livermore and LARPD 2005)~~)~~, with the existing Arroyo Mocho Trail along its north bank.

Section 2.4.1 Proposed Project Features, Oak Grove Nature Reserve Floodplain Reconnection and Flood Attenuation

- Current Text: *The proposed grading plan would require excavation of approximately 100,000 cubic yards (CY) of native soil, sand, and gravel.*
- Comments:

    - The City has received comments from area residents with significant concerns about this project. Zone 7 should provide a better description of how this incremental storage project fits within the overall flood reduction needs of Zone 7 and more clearly quantify the benefits of the project at downstream locations. Zone 7 should also include a discussion on the projects considered in the SMMP amendments and describe the potential of other upstream detention and/or in-stream detention and whether any of these other projects could reduce the scale of the proposed project.

    - Has Zone 7 evaluated the flood protection benefit that would result from a reduced excavation of the flood attenuation basin, for example from eight (8) to four (4) feet in depth, and/or forgoing the proposed excavation of the eastern portion of the basin? Approximately how many truck trips would be required to implement reduced alternatives?

    - The City strongly recommends grading of proposed paths at a 10-year flood elevation, which would facilitate development of planned recreation activities identified in the Master Plan. The City further recommends the project include the installation of the perimeter pathway identified in the Oak Grove Nature Reserve Master Plan and utilize this as an opportunity to create a buffer from excavation areas of approximately 75 feet, or as far away as possible, from surrounding residential properties.

Section 2.7 Required Permits and Approval

Table 2-4. Proposed Project Best Management Practices

Proposed Change:

BMP-8	Dust Management Controls and Air Quality Protection	Zone 7 will implement the following applicable Bay Area Air Quality Management District's (BAAQMD's) Basic Construction Mitigation Measures, in addition to other relevant mitigation measures, to reduce emissions of fugitive dust and equipment exhaust: A. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. B. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. C. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. D. All vehicle speeds on unpaved roads shall be limited to 15 mph. E. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. F. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure [13 CCR Section 2485]). Clear signage shall be provided for construction workers at all access points. G. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. H. Post a publicly visible sign with the telephone number and person to contact at Zone 7 regarding dust complaints. This person shall respond and take corrective action within two business days. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations. I. Provide active dust control measures, such as watering during construction. J. Construction activity shall be stopped during periods of strong winds (such as gusts over 25 mph). K. Due to the likelihood of dust impacts to surrounding residential properties, the construction contractor shall offer to clean properties directly adjacent to the project site at the completion of construction (i.e., pressure wash building walls and hard pavement surfaces, and clean exterior windows).

BMP-10	Work Site Housekeeping	Zone 7 employees and Contractors will implement the following site housekeeping measures during construction: A. Maintain the work site in neat and orderly conditions on a daily basis. B. Leave the site in a neat, clean, and orderly condition when work is complete at the end of each construction season. C. As needed, paved access roads and trails will be swept and cleared of any residual vegetation or dirt resulting from the construction activity. D. All trash will be properly disposed of. E. Prior to excavating or grading on the site, Zone 7 shall contact the Alameda County Vector Control Services District to determine if any pre-baiting requirements are necessary to control migration of vermin to adjacent property.

Section 3.4 Biological Resources

Criterion b. Riparian Habitat or Other Sensitive Natural Community

- Proposed change: **Mitigation Measure BIO-2. Prepare and Implement Riparian Habitat Restoration Monitoring Plan.**

  Zone 7 or its contractor shall prepare a Riparian Habitat Restoration Monitoring Plan (RMP) to guide the restoration effort for the on-site enhancement area. The RMP will meet the requirements of the USACE, CDFW, and Regional Water Quality Control Board (RWQCB), consistent with the Master Plan landscape design, and will include the following information, at a minimum:

Criterion e. Conflict with Local Policies or Ordinances Protecting Biological Resources

- Proposed change: Because the proposed project would remove trees protected by the City's tree ordinance, we recommend the following change to Mitigation Measure BIO-3b.

  Mitigation Measure BIO-3b: Obtain a Tree Removal Permit
  Zone 7 shall comply with the City of Livermore Tree Ordinance and submit permit applications for removal or damage of all trees covered by the ordinance, and ~~if necessary,~~ develop a tree avoidance, minimization, and replacement plan in consultation with a certified arborist, and the City of Livermore Department of Public Works and/or Community Development Department that is consistent with the City of Livermore Street Tree and Tree Preservation Ordinance Chapter 12.20.

Section 3.6 Geology, Soils, and Seismicity

Criterion a.3, 3. Seismically Induced Ground Failure, Including Liquefaction

- Current text: *In addition, the Proposed Project includes the active channel and floodplain of Arroyo Mocho and is underlain by alluvial soils (Livermore very gravelly, coarse sandy loam and Riverwash) and a shallow water table that increase the risk of liquefaction and differential settlement (CGS 2008; Natural Resources Conservation Service [NRCS] 2018; Wagner et al. 1991).*

- Comment: The City recommends Zone 7 consider the feasibility of amending the soil with lime and/or concrete to stabilize areas within the pathways in group recreation areas, as proposed by the Master Plan.

Section 3.10 Land Use and Planning

Criterion b. Conflict with Land Use Plans or Policies

- Proposed change: The project was developed as part of the *Zone 7 Stream Management Master Plan* (Zone 7 Water Agency 2006a) and would implement the plans or policies of the SMMP (Zone 7 Water Agency 2006b), which are not in conflict with the City's General Plan. In addition, the Proposed Project would be located within the Oak Grove Nature Reserve Master Plan (City of Livermore and LARPD 2005). The Plan proposes redeveloping the site into a passive recreational area. Therefore, there would be **no impact** on land use plans and policies.

Section 3.10 Noise

Criterion a. Expose People to Noise Levels in Excess of Local or County Standards

- Proposed change: Appendix D does not describe the methodology used or the source of the reference noise levels. Please provide a description to clarify the less-than-significant determination. Also, please clarify the discrepancy between BMP-1 and the noise analysis. While BMP-1 implies that stationary equipment would be used continuously for dewatering activities or diversions, the noise analysis states that no nighttime activity would occur. If this is the case, please consider limiting the use of stationary equipment to daylight hours, consistent with the LMC, or provide a calculation and methodology for 24-hour noise levels that would result from continuous operation of such equipment, including a consistency evaluation with Table 9-7 of the adopted City of Livermore General Plan.

Criterion b. Expose People or Buildings to Excessive Groundborne Vibration or Noise

- Proposed change: The following are ideas for incorporating best practices to ensure noise levels are reduced to the extent possible.

Mitigation Measure NOI-1: Minimize Noise and Vibration Disturbances to Residential Areas

Zone 7 shall implement the following practices to minimize noise and vibration disturbances to residences adjacent to the project area:

A. T~~Design the~~ Project shall be designed to maintain a distance of at least 40 feet between vibration- generating equipment (loaded trucks) and residential structures, except for proposed trail construction areas.

B. Construction equipment, particularly stationary equipment, will be placed as far away as possible, but no less than 75 feet from residences, except for proposed trail construction areas.

C. Material stockpiling shall be located as far as feasible from nearby residences.

D. Unnecessary engine idling shall be curtailed to no more than 10 minutes, to the extent feasible in order to minimize potential noise impacts from acceleration and braking.

E. 'Smart' back-up alarms, which automatically adjust the alarm level based on the background noise level, shall be employed on all trucks and construction vehicles OR back-up alarms shall be disabled and replaced with human spotters. If the City receives complaints from nearby residents regarding the back-up alarms, then back-up alarms shall be disabled and replaced with human spotters.

F. Grade surface irregularities on the construction sites shall be minimized to the extent feasible in order to minimize potential noise impacts from acceleration and braking.

G. Consider haul routes that completely avoid residential streets. If it is determined that such a route is infeasible, construction traffic shall be limited to the haul routes established on Figure 2-2, Construction Access, Staging and Haul Route of this IS/MND.

H. Due to the duration of potential noise impact from this project to surrounding properties, please limit construction activities to 8:00AM to 5:00PM, Monday through Friday.

I. Advanced notification will be provided one week prior to the start of

construction to properties that have residences within 300 feet of a proposed construction site where heavy equipment will be used. The notification shall include a brief description of the project, the activities that would occur, and the durations/hours when construction would occur. The notification shall also include a phone number of the construction superintendent(s).

J. A sign shall be posted on construction zone fencing that is clearly visible to site passers-by and that includes a contact name and telephone number of the construction superintendent(s). If the superintendent(s) receives a noise or vibration complaint, the superintendent(s) shall investigate, take appropriate corrective action, and report the action to Zone 7 and to the City of Livermore Community Development Department, Engineering Division.

K. Noise-producing project equipment and vehicles using internal combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or noise-reducing features in good operating condition that meet or exceed original factory specification. Any enclosure openings or venting shall face away from sensitive receptors.

~~L. Construction equipment, particularly stationary equipment, will be placed as far from residences as possible.~~

M. If a n~~N~~oise or vibration complaint is received by the superintendent(s), the superintendent(s) ~~s will~~ shall ~~be~~ document and respond~~ed to~~ within 48 hours of receipt, investigate, take appropriate corrective action, ~~and Zone 7 will make a good faith effort to resolve a noise sensitivity issue~~ and report the action to Zone 7 and the City of Livermore Community Development Department, Engineering Division.

Section 3.16 Transportation/Traffic

Criterion a. Conflict with Applicable Circulation Plans

- Comments:
  - Current City policy prohibits truck traffic on residential streets, unless that street is a direct route between a truck route and the truck's origin or destination. Please consider the feasibility of locating a single staging area at Holmes Street to avoid locating staging areas at College Avenue and Anza Way, as well as other potential haul routes.

  - The ISMND assumes that each truck has a capacity of 16 cubic yards (CY) (pg. 3-82). What would be the impact to the number of truck trips required if the project required trucks with a capacity of 26 CY?

- Peak traffic hours occur between the between 7:00AM and 9:00AM, and 4:00PM and 6:00PM Monday through Friday. In order to minimize potential impacts to traffic congestion levels (per Livermore Municipal Code Section 9.36.040 and the General Plan Circulation Element), please consider the feasibility of limiting truck trips to the hours of 9:00AM and 4:00PM Monday through Friday.

Sincerely,

Paul Spence
Community Development Director
Community and Economic Development Department
(925) 960-4474
(925) 960-4459

Appendix F

Recreational Use License Agreement

05-2397

A 05-58-LIV

CITY CLERK'S FILE

RECREATIONAL USE LICENSE AGREEMENT

THIS LICENSE AGREEMENT (hereinafter "LICENSE"), is made and entered into this 12 day of December, 2005, by and between Zone 7 of Alameda County Flood Control and Water Conservation District, a body corporate and politic (hereinafter "ZONE 7") and the City of Livermore, a Municipal Corporation (hereinafter "CITY").

RECITAL

A. Both parties are authorized by the acts governing them to plan, improve, maintain and operate facilities and parks for public recreation;

B. ZONE 7 has accepted and/or will be accepting certain rights of way (hereinafter "LICENSED AREAS"), which can be used for park and recreation uses in accordance with this LICENSE AGREEMENT and amendments thereto;

C. CITY has indicated its desire that these rights of way be developed so that a park-like atmosphere can be created within and about the LICENSED AREAS;

D. The purpose of this LICENSE AGREEMENT is to amend and supersede the original License Agreement entered into by the CITY and ZONE 7 on August 6, 1968, and all modifications thereto; and

E. ZONE 7 is agreeable to such use by CITY on the LICENSED AREAS and hereby grants a non-exclusive LICENSE for said use upon the following terms and conditions.

NOW, THEREFORE, BE IT MUTUALLY AGREED as follows:

1. Permitted Use. Subject to the terms of this LICENSE, the CITY is permitted to construct, improve, maintain and operate the LICENSED AREAS for park and recreation purposes.

2. Licensed Areas. The LICENSED AREAS are identified in Exhibit A (Location Map) and more particularly described and delineated in Exhibits B-1 through B-9, which are attached hereto and made a part hereof.

3. Additional Licensed Areas. Additional LICENSED AREAS, as mutually agreed upon by CITY and ZONE 7, may be added by written amendment to this LICENSE.

4. License Fee. This LICENSE shall not require payment of any rent or other charges to ZONE 7 by CITY for the use of the LICENSED AREAS for the purposes for which it is permitted.

5. Term of License.

   a. The term of this LICENSE shall be for twenty-five (25) years from the date of execution of this LICENSE with an option to CITY of renewal for additional periods of twenty-five (25) years thereafter upon application therefore accompanied by a showing of faithful exercise thereof according to the covenants herein; either this original LICENSE or any renewal thereof to be subject to termination under the covenants provided herein to govern such termination. Renewals shall be subject to updating the conditions on use of the LICENSED AREAS.

   b. CITY's obligations under Section 11 ("Indemnity") and Section 13 ("Waiver of Claims") shall survive the termination of this LICENSE.

6. Limitations

a. This LICENSE is granted solely for the purpose of authorizing CITY to provide park and recreational uses at the LICENSED AREAS for general public use without discrimination as to place of National origin, Ancestry, Ethnicity, race, color, gender, age, marital status, pregnancy, sexual orientation (real or perceived), medical condition, physical or mental disability, or religion.

b. It is understood and agreed by CITY that the primary purpose for which ZONE 7 has acquired and owns the LICENSED AREAS is for flood control and water management and that operations in furtherance of said purpose must take precedence over any and all other uses of the subject LICENSED AREAS.

c. ZONE 7 shall have all reasonable and necessary rights of entry to the subject LICENSED AREAS, including the right to alteration or repair and maintenance and operation for flood control and water management purposes. Use of the LICENSED AREAS by CITY or the public in general, shall be at all times subject to the primary use of the aforesaid LICENSED AREAS for flood control and water management purposes.

d. CITY shall obtain and comply with all required permits, agreements and/or regulatory approvals relating to the improvement, maintenance or operation of the LICENSED AREAS for park and recreational purposes including all federal, state, or local government requirements. This requirement includes compliance with CEQA as well as any necessary construction, building or use permits, including any progress inspections that may be required by any regulatory body.

e. Prior to installation of any permanent facilities or landscape improvements, CITY shall submit plans and specifications and any related approvals required in 6.d. to ZONE 7 for review. The facility or improvements shall not be installed by CITY without first obtaining written approval from ZONE 7's General Manager. Written approval shall not be unreasonably withheld and said approval shall be given unless ZONE 7, in its sole discretion, determines that such structures, facilities or improvements would interfere with the primary use of said areas for flood control and water management purposes. Zone 7 hereby acknowledges that all permanent facilities and landscape improvements on the Licensed Areas as of February 16, 2005 have been approved by Zone 7 and do not require further approvals under this subsection 6.e.

f. Should ZONE 7, in its sole discretion, reasonably determine that any of CITY's activities or improvements interfere with any ZONE 7 activities or operations, ZONE 7 may require CITY to eliminate said interference, by providing CITY with written notice of ZONE 7's requirement and the reasons therefore. Within 30 days of its receipt of such notice, CITY shall proceed forthwith to remedy the problem, as directed by ZONE 7. In the event CITY fails to remedy or correct the problem within such thirty day period, ZONE 7 may take such action as ZONE 7 deems reasonably necessary to remedy such interference, all at CITY's sole expense.

g. CITY agrees to abide by any future LICENSED AREAS Rules and Regulations which may be adopted by ZONE 7's Board of Directors.

h. CITY agrees to accept this LICENSE to the LICENSED AREAS on an "as-is" basis, and ZONE 7 has no obligation for maintenance or repair of LICENSED AREAS during the term of this LICENSE.

i. CITY shall be solely responsible for any damage or loss to CITY's improvements resulting from theft or vandalism or resulting from any other cause. ZONE 7 shall not provide security for CITY's improvements nor LICENSED AREA in general. ZONE 7 shall not be responsible for any loss or damage suffered by CITY (including direct or indirect loss or damage, or incidental or consequential loss or damage) resulting from any damage to CITY's improvements or loss of use thereof suffered in connection with this LICENSE.

j. Suspension or Limitation of Use: ZONE 7 shall have the right, without liability to CITY, to suspend any licensed uses temporarily or to limit this LICENSE and the use of the LICENSED AREAS by the CITY during such periods of time as ZONE 7 determines that such suspension or limitation is necessary in the interest of public safety, national security, or the operation or maintenance of its flood or water facilities. Zone 7 will provide notice of its determination to suspend or limit use to CITY pursuant to section 14 of this License Agreement.

7. Park Maintenance and Operation

a. CITY shall cause any park and recreational improvements to be constructed, maintained and operated in an orderly, safe, and sanitary manner at all times. Said park and recreational improvements may include but not limited to: pathways for bicycle, pedestrian or equestrian uses, non-standard flood control fencing, information & warning signs and landscaping.

b. The removal of litter, vegetation and other items from the LICENSED AREA shall be the responsibility of the CITY.

c. The LICENSED AREA may be subject to slides, erosion, subsidence, flooding and other damages. In the event that CITY's use of the LICENSED AREA is impacted by such damages, ZONE 7 will make its best efforts to repair ZONE 7's facilities to Zone 7 standards; however, such repairs will be subject to available funding and other maintenance priorities as determined by ZONE 7 in its sole discretion. Repair of damage to recreational facilities shall be the responsibility of CITY and at CITY's sole cost. CITY shall perform such repair, as CITY may deem necessary for proper and safe operation of the LICENSED AREA.

d. In the performance of routine and/or emergency repair activities ZONE 7 will exercise reasonable care to avoid removal or damage to existing CITY installed structures and improvements and CITY, at its sole cost, shall be responsible for any reinstallation, repair or reconstruction work.

e. CITY agrees to give Zone 7 reasonable notice of its major maintenance activities that may conflict with ZONE 7's maintenance of its flood control channel. Major maintenance activities include but are not limited to work on any permanent structure, facility and/or vegetation work that may conflict with ZONE 7's maintenance of its flood control channel properties.

f. CITY shall adopt such rules and regulations as it deems necessary to facilitate the orderly and safe operation and control of the use of the LICENSED AREAS by the public for recreational purposes. If any such rule or regulation is contrary to the primary interest of flood control and water management, or is deemed by ZONE 7 to be adverse to its interest, ZONE 7 may give 60 days notice of such fact to CITY and CITY shall change such rule or regulation in conformance with ZONE 7's request.

8. Violations of Permitted Use. Should the CITY, its employees, contractors, subcontractors, agents, or the general public construct, install, operate or maintain any park improvements in violation of the terms of this LICENSE, or in violation of any of the approvals granted hereunder, ZONE 7 may direct CITY, at CITY's sole cost, to remove the improvements from the LICENSED AREAS or to take other remedial action, as ZONE 7 may, in its sole discretion, determine to be appropriate CITY shall be afforded a period of fifteen (15) days, within which to cure any such violations and comply with ZONE 7's directive. In the event CITY fails to cure within the above stated period, ZONE 7 shall have the right to take any and all actions to remediate the LICENSED AREAS and CITY shall reimburse ZONE 7 for all costs associated therewith. Zone 7, as it reasonably determines, may extend the period as may be necessary to cure the default, provided that the City has commenced the cure within the fifteen (15) day period.

9. Assignment. CITY may assign all of its rights, duties and liabilities under this LICENSE to another public agency provided that such assignment is agreeable to ZONE 7 and provided further that such agency gives written notice to ZONE 7 that it accepts all of the rights, duties and liabilities imposed upon CITY under this LICENSE.

10. Acknowledgment of Title. It is understood and agreed that CITY, by the acceptance of this LICENSE and by the use or occupancy of said LICENSED AREAS, has not acquired and shall not acquire hereafter any property rights or interest in or to said LICENSED AREAS through this LICENSE, and that CITY may use the LICENSED AREAS only as herein provided. ZONE 7 shall retain the right to sell or change areas, but in the event that CITY is damaged by such action, CITY shall be compensated for any damage to facilities which it has installed based on an agreed upon value.

11. Indemnity

CITY shall indemnify, defend, reimburse and hold harmless Zone7, its officers, agents, contractors and, employees (collectively, "Indemnitees") from and against any and all demands, claims, legal or administrative proceedings, losses, costs, penalties, fines, liens, judgments, damages and liabilities of any kind (collectively, "Liabilities"), arising in any manner out of: (a) any injury to or death of any person or damage to or destruction of any property occurring in, on or about the SITE, or any part thereof, whether the person or property of CITY, its officers, agents, employees, contractors and subcontractors (collectively, "Agents"), its invitees, guests or business visitors or third persons (collectively, "Invitees"), relating in any manner to any use or activity under the LICENSE and modifications thereto; (b) any failure by CITY to faithfully observe or perform any of the terms, covenants or conditions of this LICENSE or (c) the use of the LICENSED AREAS or any activities conducted thereon by CITY, its Agents or Invitees. This provision applies except to the extent of Liabilities resulting directly from the sole negligence or willful misconduct of ZONE 7 or ZONE 7's authorized representatives.

The foregoing indemnity shall include, without limitation, reasonable attorneys' and consultants' fees, investigation and remediation costs and all other reasonable costs and expenses incurred by the Indemnitees, including, without limitation, damages for decrease in the value of the LICENSED AREAS and claims for damages or decreases in the value of adjoining property. CITY shall have an immediate and independent obligation to defend ZONE 7 from any claim

which actually or potentially falls within this indemnity provision even if such allegation is or may be groundless, fraudulent or false, which obligation arises at the time such claim is tendered to CITY by ZONE 7 and continues at all times thereafter. CITY's obligations under this Condition shall survive the expiration or termination of the LICENSE and modifications thereto.

12. Insurance Requirements

CITY shall carry public liability and property damage insurance or monetary coverage in an amount which will adequately protect ZONE 7 from all such liabilities or claims, such amount to be no less than $1,000,000 each person and $1,000,000 each occurrence for bodily injury or death and $1,000,000 on each occurrence for property damage. These amounts shall be reviewed by the parties every five years, and increased by no less than the amount of increase in the Consumer Price Index for the Oakland – San Francisco SMSA. Policies for such insurance shall name ZONE 7 of Alameda County Flood Control and Water Conservation District, Alameda County Flood Control and Water Conservation District, the County of Alameda, their officers, agents and employees as additionally insured and copies thereof, certificates of payment of premiums thereon, or other proof of insurance or monetary coverage acceptable to ZONE 7, shall be furnished ZONE 7 by CITY. It is agreed that such insurance or monetary coverage as is afforded by the policy to ZONE 7 of Alameda County Flood Control and Water Conservation District, et al., shall apply as primary insurance or monetary coverage. No other insurance or monetary coverage effected by ZONE 7 of Alameda County Flood Control and Water Conservation District, et al., shall be called upon to contribute to a loss covered by the policy.

CITY has the right and option to self-insure the requirements under this Section 12 upon written notice to ZONE 7 that CITY assumes the obligations in the place and stead of any insurance carrier, any reference to failure to coverage notwithstanding. In the event that CITY elects to self-insure, CITY shall provide to ZONE 7 a certificate or other evidence of self-insurance acceptable to ZONE 7.

13. Waiver of Claims

CITY fully releases, waives, and discharges forever any and all claims, demands, rights and cause of action against, and covenants not to sue, Indemnities, under any present or future laws, statutes, or regulations: (a) for any claim or event relating to the condition of the LICENSED AREAS or CITY's use thereof; or (b) in the event that ZONE 7 exercises its right to suspend, revoke or terminate the LICENSE.

14. Duties of ZONE 7. ZONE 7 agrees to give CITY reasonable notice of flood control and water management operations and maintenance which would affect recreational facilities or park operations of CITY and keep CITY informed of any conditions which might result in such operations and maintenance. ZONE 7 further agrees to furnish any plans for improvements to the LICENSED AREAS to the CITY for review and comments. ZONE 7 will maintain the LICENSED AREAS to the extent necessary for flood control and water management purposes. Repairs to flood and water facilities/structures shall be the responsibility of ZONE 7 except when such repairs arise from damage caused to these facilities/structures by CITY, its officers, agents, employees, contractors and subcontractors, its invitees, guests or business visitors or third persons. Such ZONE 7 responsibilities shall not relieve the CITY from its Liabilities as described in Section 11.

15. Property Taxes. Pursuant to California Revenue and Taxation Code section 107.6, notice is hereby given that CITY is responsible for any possessory interest taxes that may be imposed as a result of, or related to, this LICENSE.

16. Notice. Any demand or notice which either party shall be required, or may desire to make upon or give to the other shall be in writing and shall be delivered personally upon the other or be sent by prepaid certified mail to the respective parties as follows:

ZONE 7: General Manager
Zone 7, Alameda County Flood Control
And Water Conservation District
100 North Canyons Parkway
Livermore, CA 94551

CITY: City Manager
City of Livermore
1052 S. Livermore
Livermore, CA 94550

Either party may, from time to time, designate any other address for this purpose by written notice to the other party, given with 10 business day notice.

17. Miscellaneous

a. This LICENSE constitutes the entire LICENSE and understanding between the parties, and supersedes all offers, negotiations and other agreements concerning the subject matter contained herein. Any amendments to this LICENSE must be in writing and executed by both parties.

b. If any provision of this LICENSE is invalid or unenforceable with respect to any party, the remainder of this LICENSE or the application of such provision to persons other than those as to whom it is held invalid or unenforceable, shall not be affected and each provision of this LICENSE shall be valid and enforceable to the fullest extents permitted by law.

c. This LICENSE shall be governed by the laws of the State of California.

IN WITNESS WHEREOF, the parties hereto have executed this LICENSE on the dates appearing below their respective authorized signatures.

ZONE 7:

Zone 7 of Alameda County Flood Control and Water Conservation District

By: Dale Myers
General Manager

Date: 12-21-05

CITY:

City of Livermore

By: Linda Barton
City Manager

TITLE:

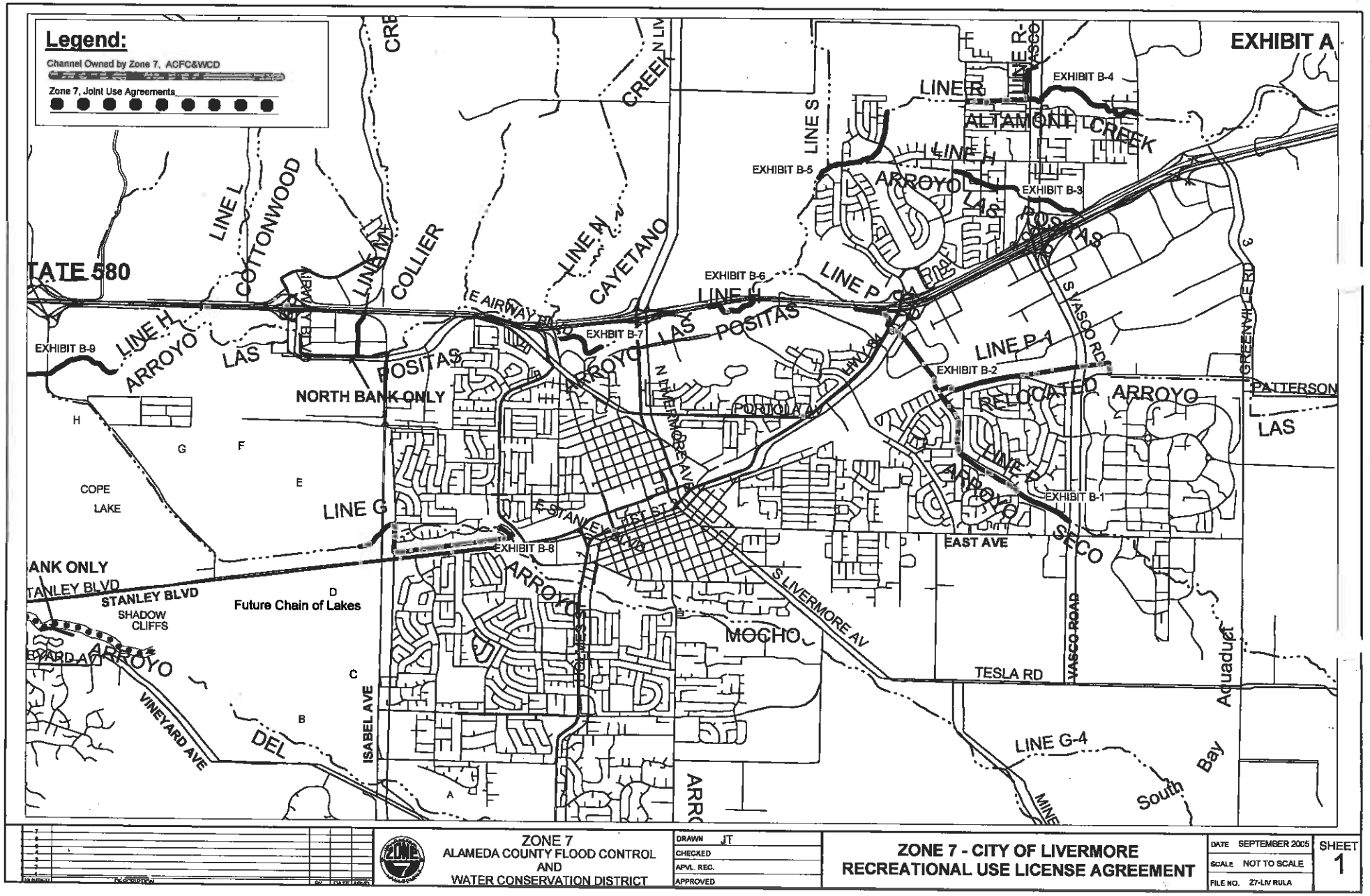
Date: December 12, 2005

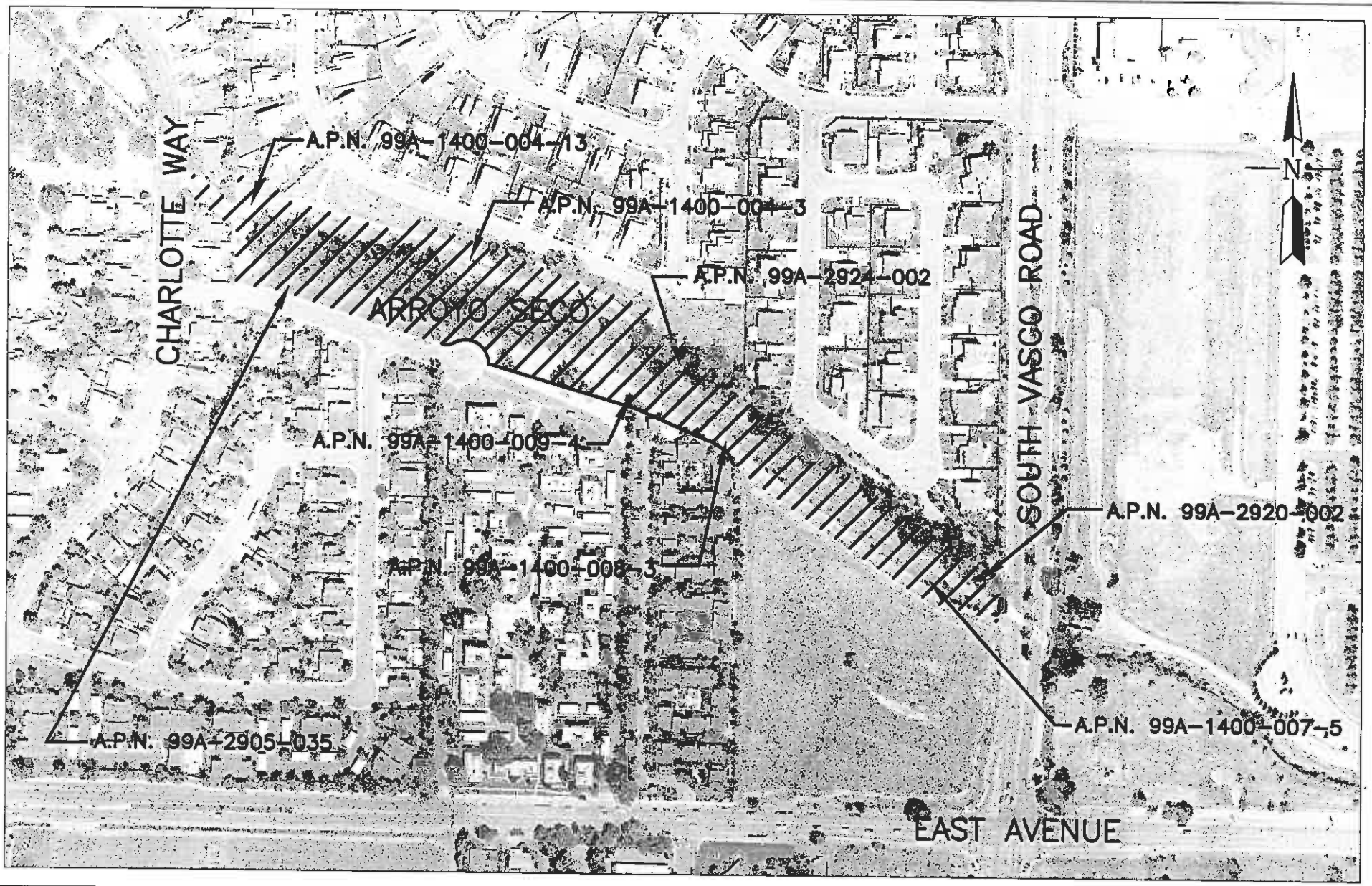
APPROVED AS TO FORM:

Assistant City Attorney

Approved as to Form
Amy Naamani
Zone 7 General Counsel

By:


Legend:
Channel Owned by Zone 7, ACFC&WCD
Zone 7, Joint Use Agreements
EXHIBIT A
TATE 580
LINE L
COTTONWOOD
LINE M
COLLIER
LINE N
CAYETANO
LINE S
LINE R
ALTAMONT CREEK
EXHIBIT B-4
EXHIBIT B-5
EXHIBIT B-3
EXHIBIT B-6
LINE P
LINE H
EXHIBIT B-7
EXHIBIT B-9
LINE H
ARROYO LAS POSITAS
NORTH BANK ONLY
LINE P-1
EXHIBIT B-2
RELOCATED ARROYO LAS
PATTERSON
PORTOLA AV
N LIVERMORE AV
COPE LAKE
LINE G
E STANLEY BLVD
1ST ST
EXHIBIT B-8
EXHIBIT B-1
LINE K
ARROYO SECO
EAST AVE
ANK ONLY
STANLEY BLVD
SHADOW CLIFFS
Future Chain of Lakes
ARROYO
S LIVERMORE AV
MOCHO
VASCO ROAD
TESLA RD
Aquaduct
BYARD AV
VINEYARD AVE
DEL
ISABEL AVE
LINE G-4
South Bay
ZONE 7
ALAMEDA COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
DRAWN JT
CHECKED
APVL. REC.
APPROVED
ZONE 7 - CITY OF LIVERMORE
RECREATIONAL USE LICENSE AGREEMENT
DATE SEPTEMBER 2005
SCALE NOT TO SCALE
FILE NO. Z7-LIV RULA
SHEET
1



CITY OF LIVERMORE, CALIFORNIA
INCORPORATED 1876
COUNTY OF ALAMEDA

Exhibit "B-1" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE: February 2005
SCALE: 1" = 300'
DWN. BY: DES

ARROYO SECO LICENSED AREAS

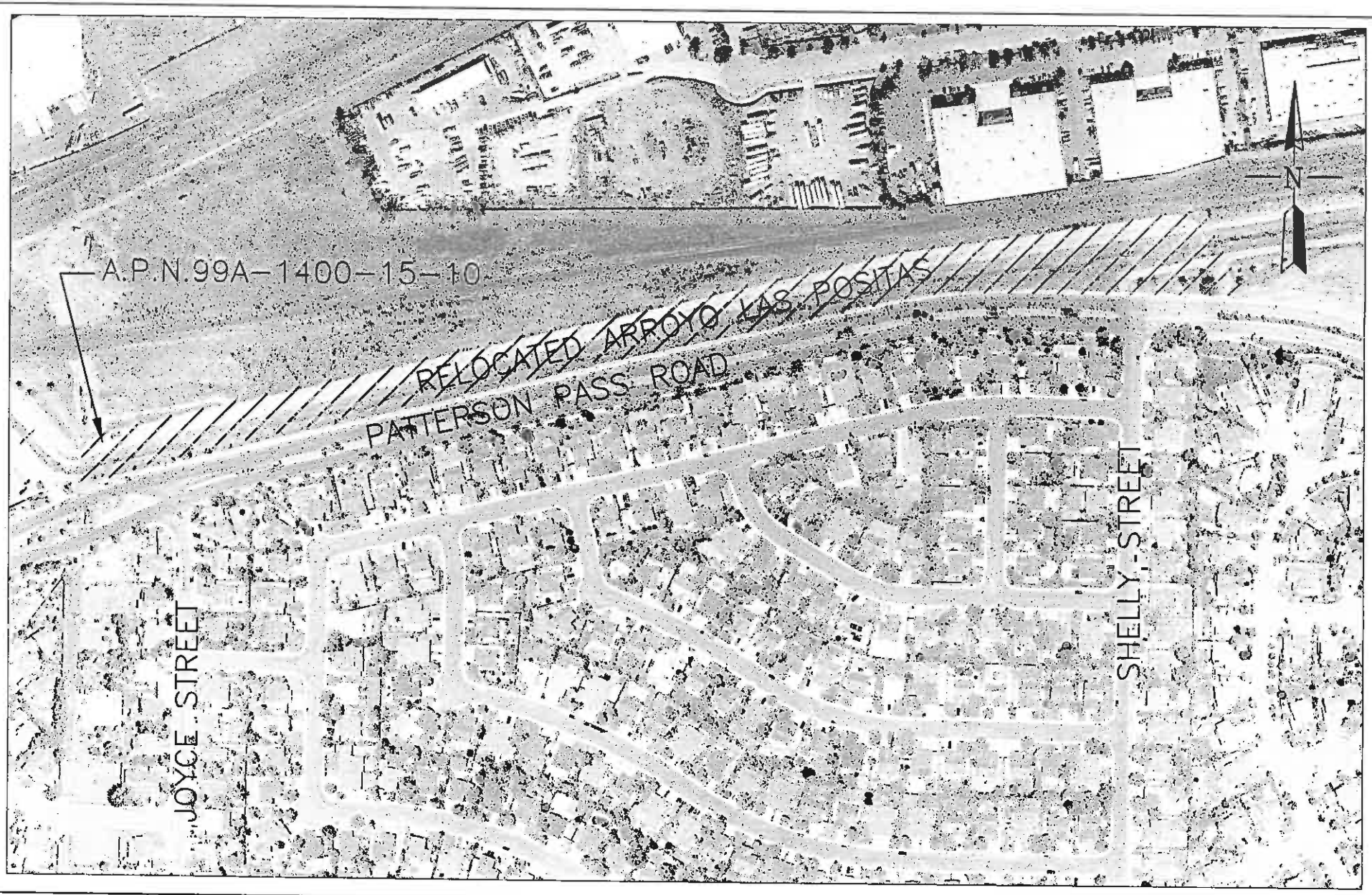
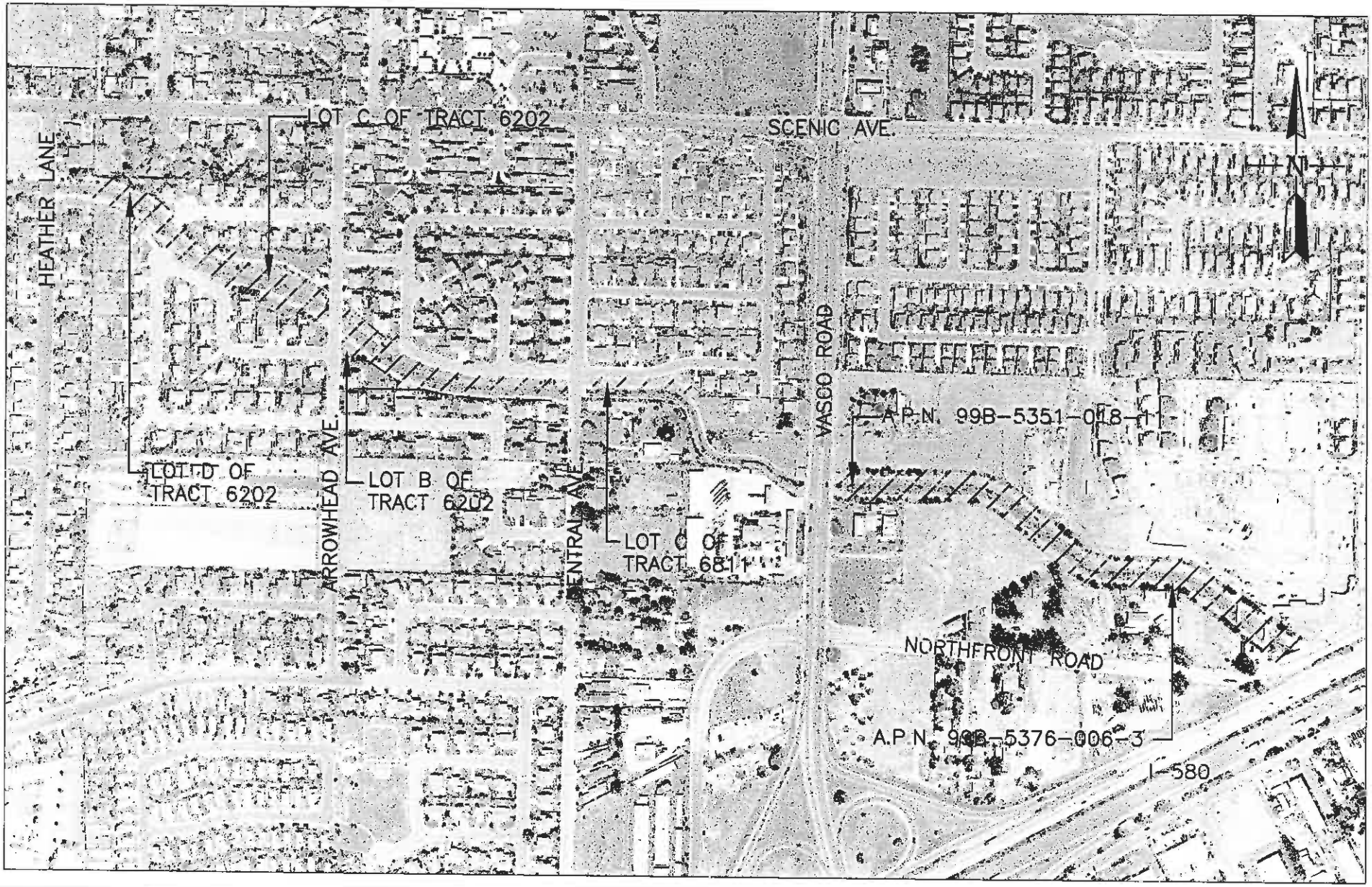


Exhibit "B-2" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE: February 2005
SCALE: 1" = 300'
DWN. BY: DES

RELOCATED ARROYO LAS POSITAS LICENSED AREA



CITY OF LIVERMORE, CALIFORNIA
INCORPORATED 1876
COUNTY OF ALAMEDA

Exhibit "B-3" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE:	February 2005
SCALE:	1" = 500'
DWN. BY:	DES

ARROYO LAS POSITAS LICENSED AREAS

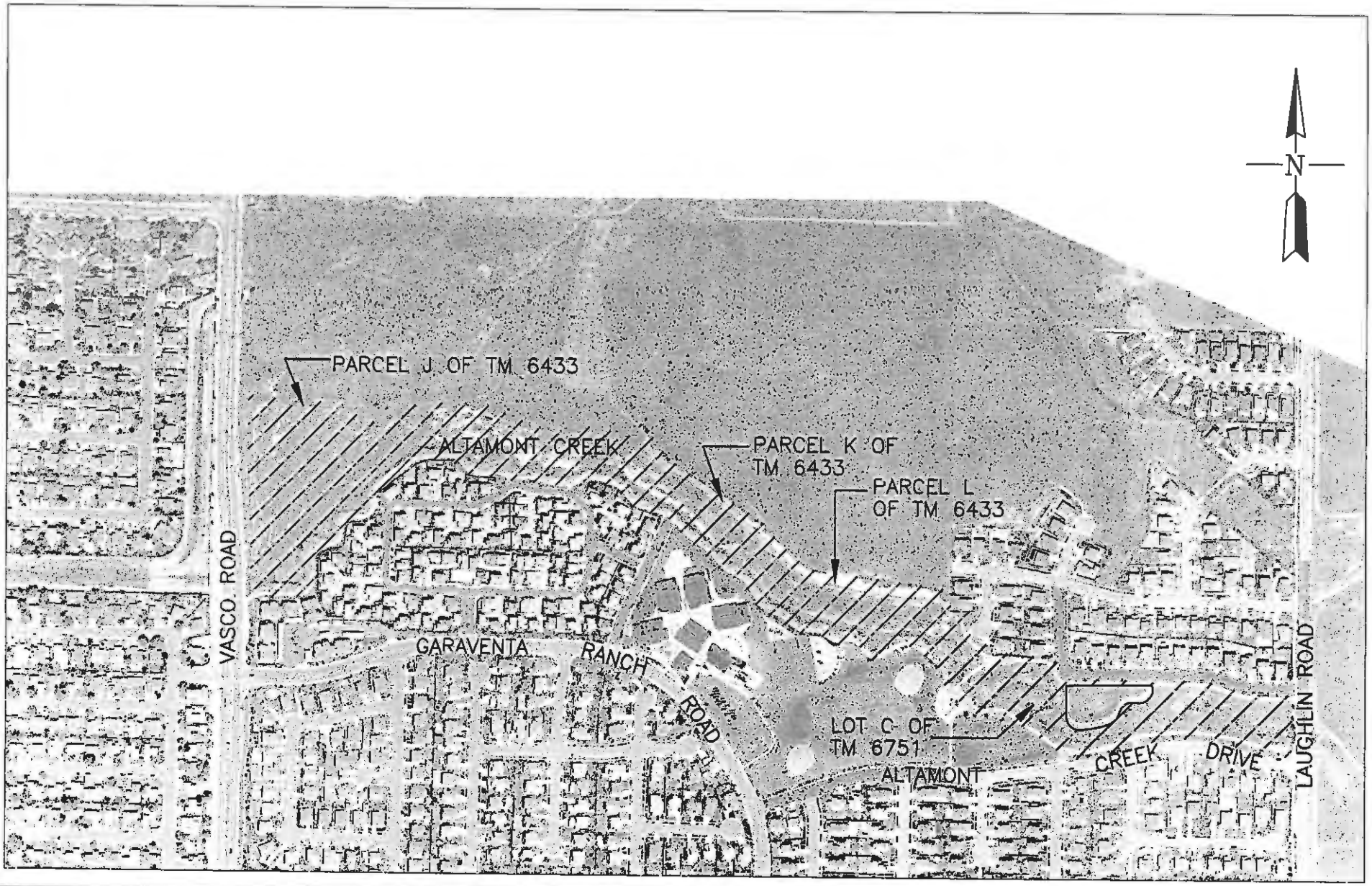


Exhibit "B-4" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE: February 2005
SCALE: 1" = 500'
DWN. BY: DES

ALTAMONT CREEK LICENSED AREAS

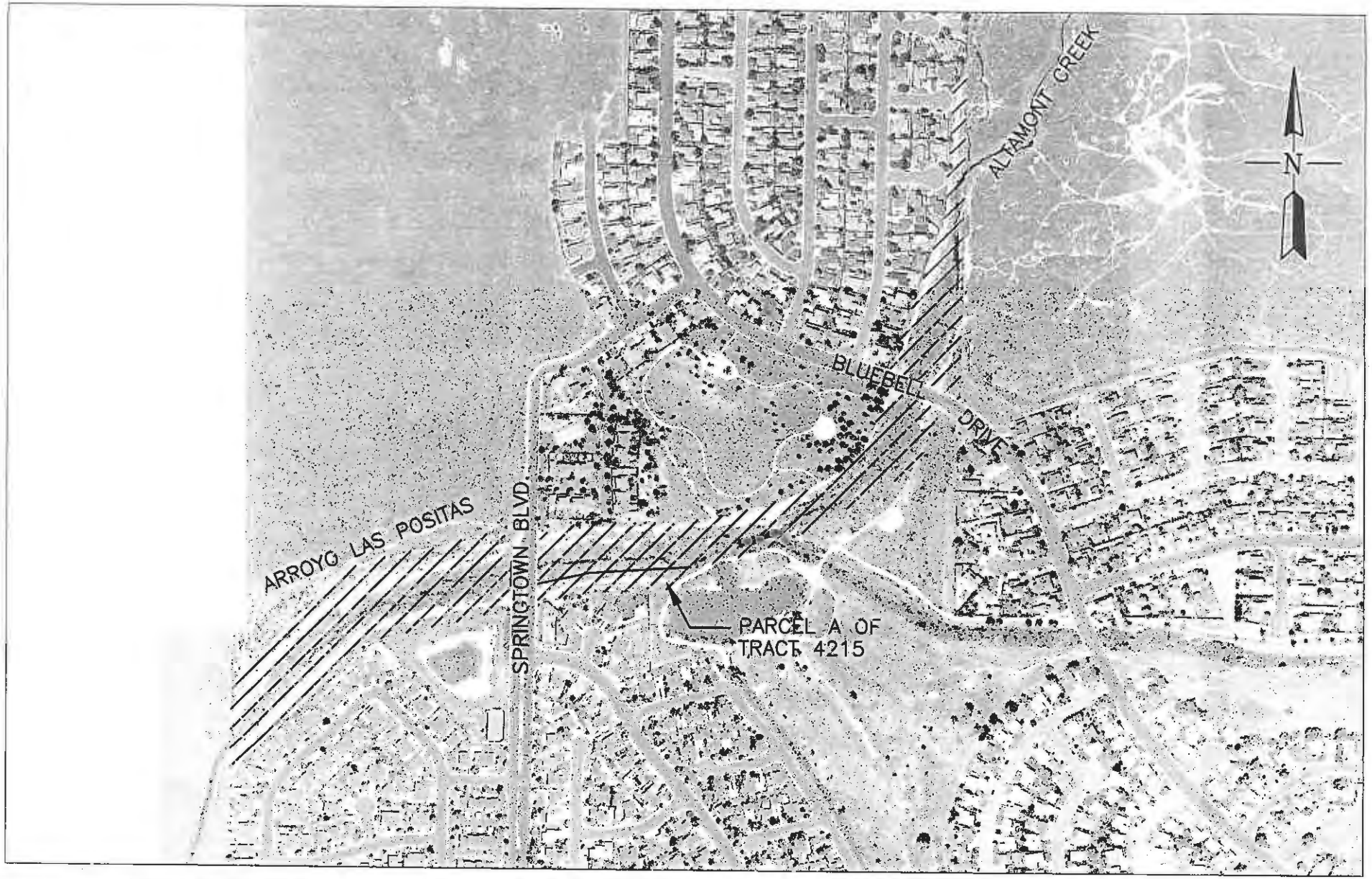


Exhibit "B-5" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE: February 2005
SCALE: 1" = 500'
DWN. BY: DES

ALTAMONT CREEK AND ARROYO LAS POSITAS LICENSED AREAS

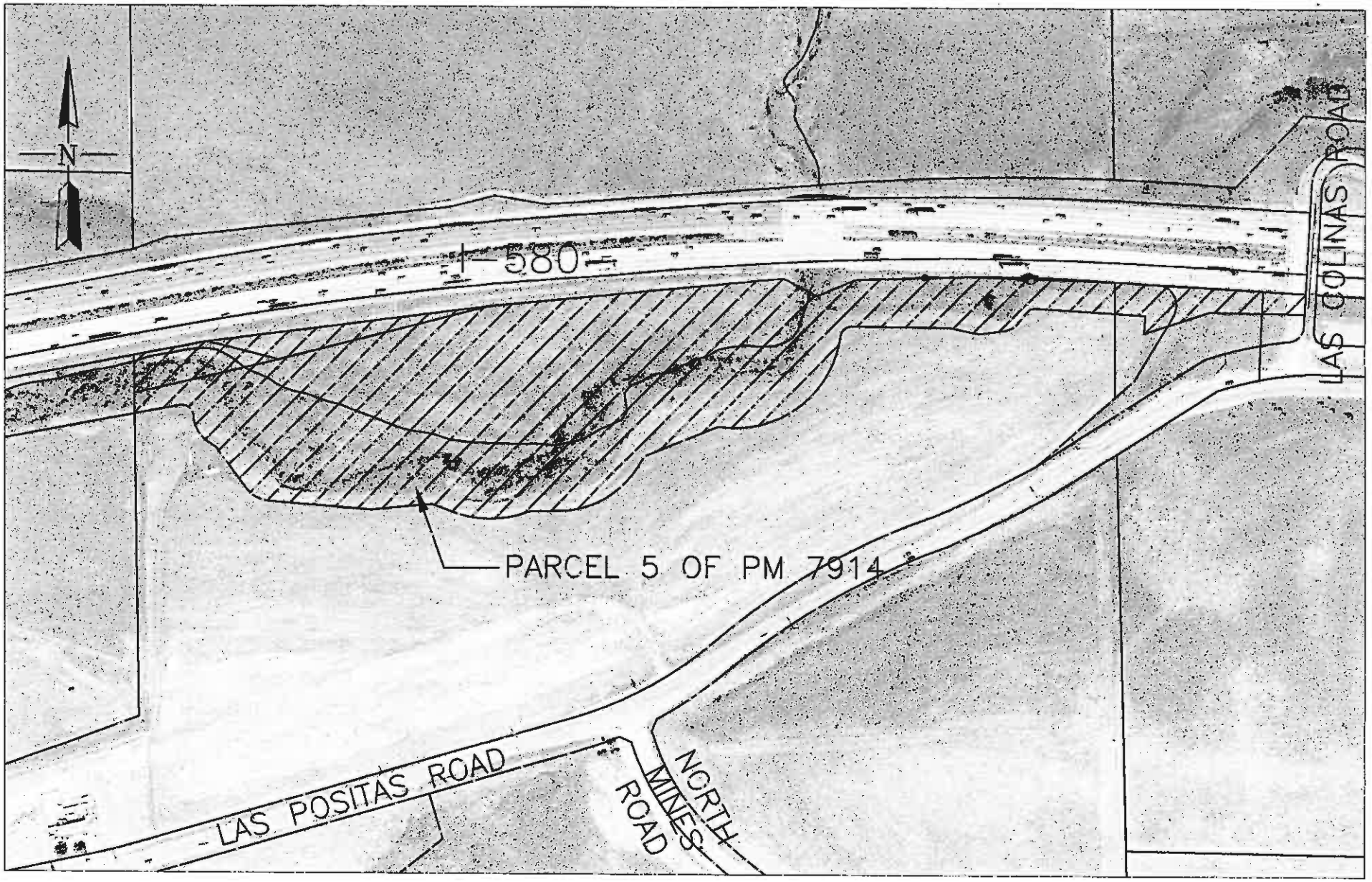


Exhibit "B-6" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE: February 2005
SCALE: 1" = 300'
DWN. BY: DES

ARROYO SECO LICENSED AREAS

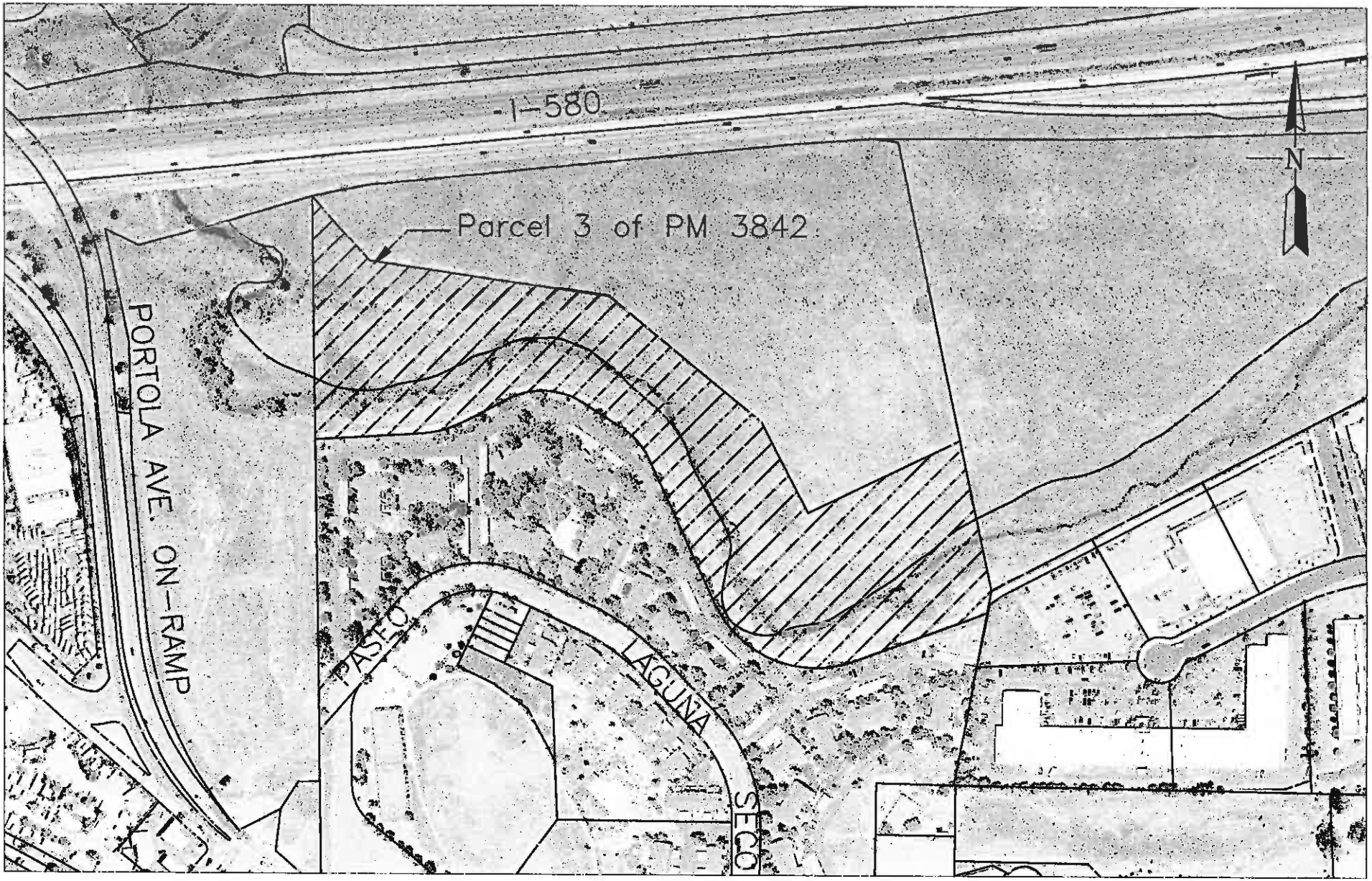


Exhibit "B-7" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE:	February 2005
SCALE:	1" = 300'
DWN. BY:	DES

ARROYO LAS POSITAS LICENSED AREA

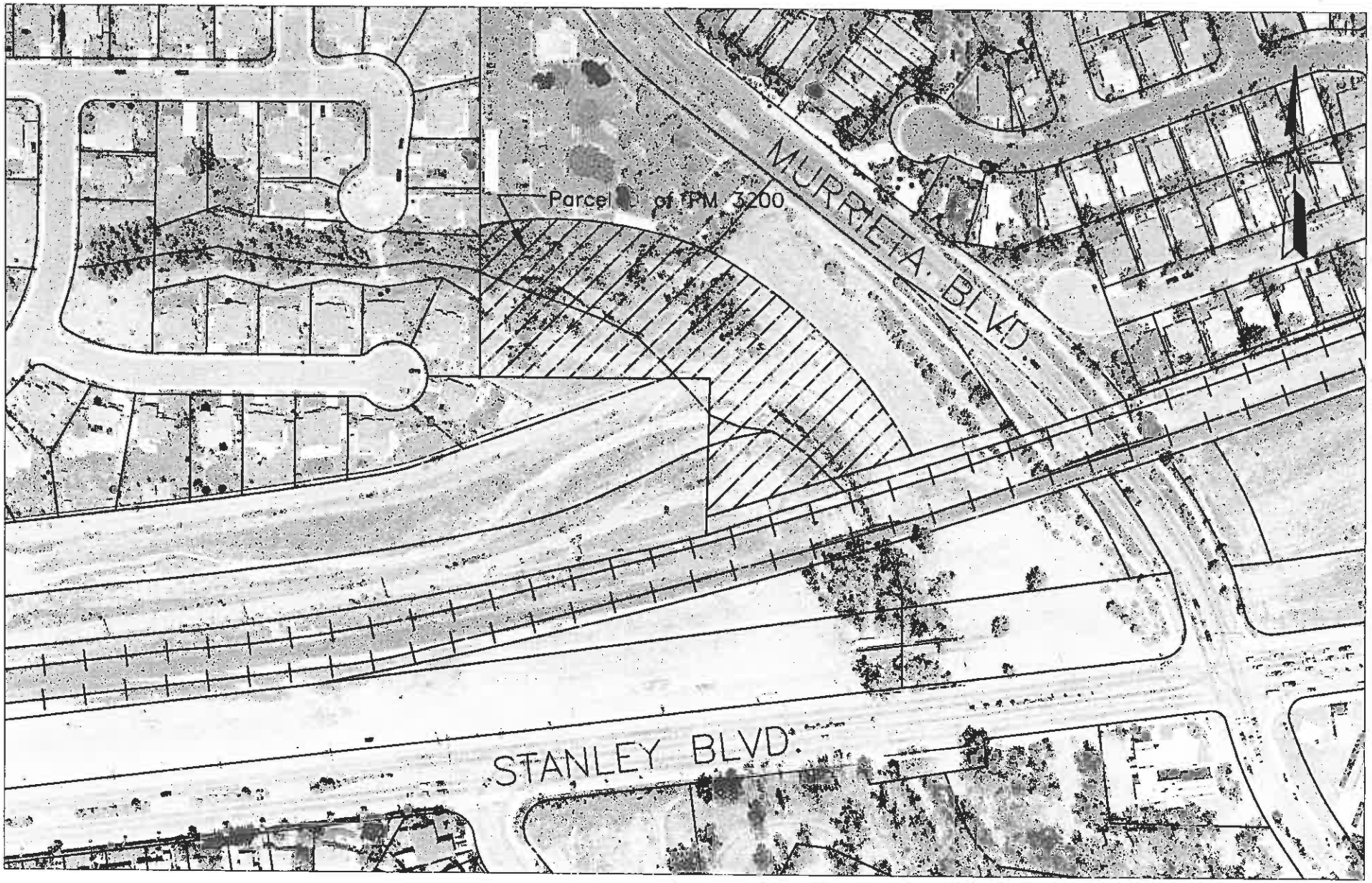


Exhibit "B–8" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE: February 2005
SCALE: 1" = 200'
DWN. BY: DES

ARROYO MOCHO LICENSED AREA

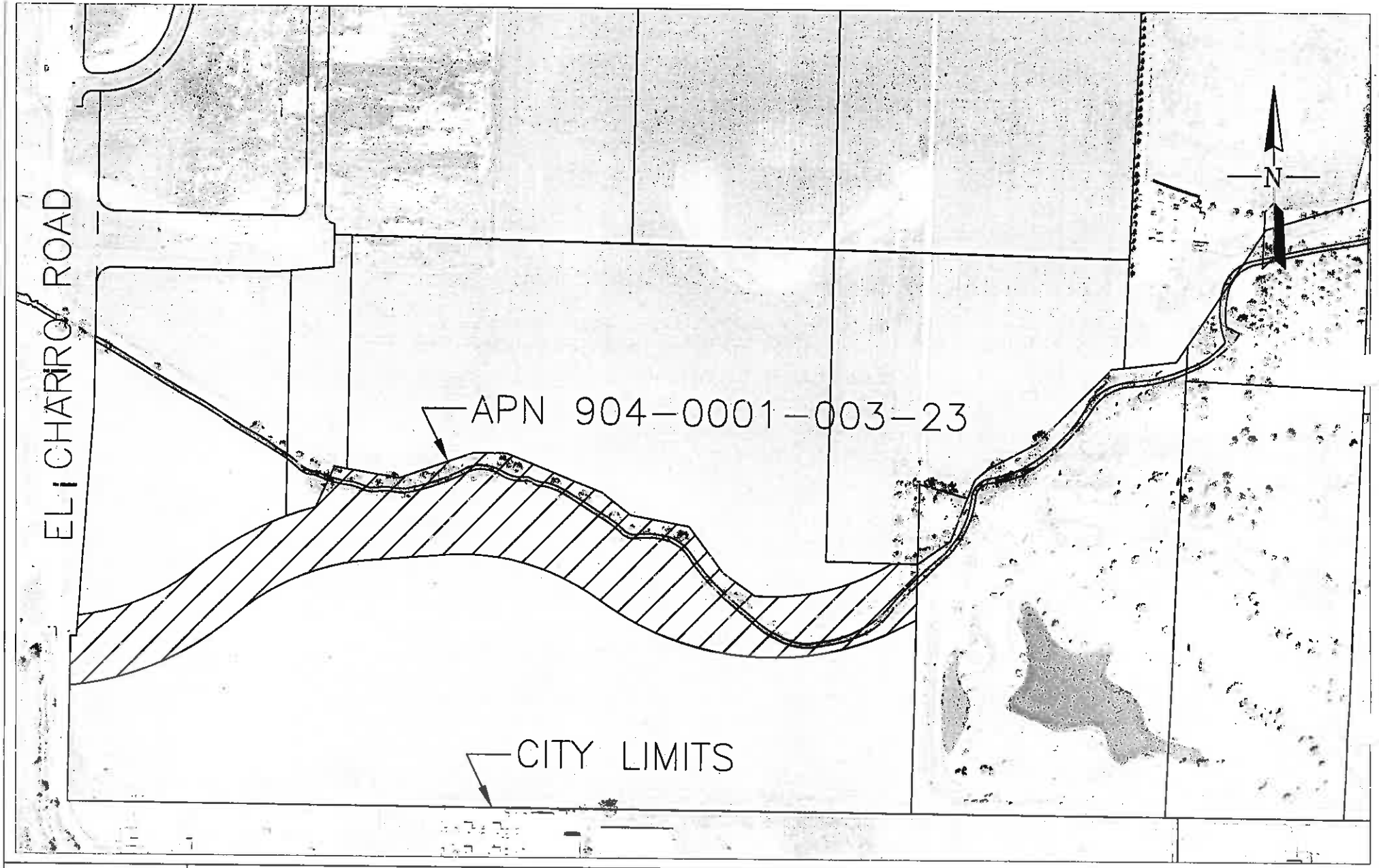


Exhibit "B-9" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE:	November 2005
SCALE:	1" = 400'
DWN. BY:	JHW

EL CHARRO LICENSED AREA

09-076

A05-58-LIV M1

AMENDMENT NO. 1
TO THE RECREATIONAL USE LICENSE AGREEMENT BETWEEN THE CITY OF LIVERMORE AND ZONE 7 OF THE ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

THIS AMENDMENT TO THE RECREATIONAL USE LICENSE AGREEMENT ("AMENDMENT"), is made and entered into this 18th day of March, 2009 by and between Zone 7 of Alameda County Flood Control and Water Conservation District, a body corporate and politic, hereinafter referred to as "ZONE 7", and the City of Livermore, a Municipal Corporation, hereinafter referred to as "CITY".

RECITALS

This AMENDMENT is entered into on the basis of the following facts, intentions and understandings of ZONE 7 and CITY hereto:

WHEREAS, ZONE 7 and CITY previously entered into that certain Recreational Use License Agreement between the Zone 7 of Alameda County Flood Control and Water Conservation District and the City of Livermore dated December 12, 2005, as authorized by City Resolution No.2005-256 and Zone 7 Resolution No.06-2799 ("LICENSE"); and

WHEREAS, ZONE 7 has agreed to allow CITY to use certain flood control channel properties (LICENSED AREAS) to construct, improve, maintain and operate the LICENSED AREAS for park and recreation purposes; and

WHEREAS, it is mutually agreed between ZONE 7 and CITY to add additional channel properties to the LICENSE for the privilege of using said properties for park and recreational facilities use under the terms of said LICENSE as modified by this AMENDMENT; and

NOW, THEREFORE, in consideration of the mutual covenants and promises set forth herein, the receipt and adequacy of which is hereby acknowledged, ZONE 7 and CITY hereby agree to the following AMENDMENT:

1. LICENSED AREA to be added to LICENSE, as provided under Section 3, is the property delineated in Exhibit "A" and Exhibit "B-10", which is attached hereto and made a part hereof and more particularly described as follows:

   Lot 9 of Tract Map 7300, filed April 11, 2006, in Book 291 of Maps, Pages 3 through 10, Official Records of Alameda County.
   Assessor's Parcel No. 904-0012-017

2. Park Maintenance and Operation Responsibilities of CITY and its Authorized Agents.

   a. Park and Recreational Improvements, as denoted under Section 7a. of the LICENSE, shall also include all vegetation/landscaping, irrigation systems and non-standard flood control fencing.

   b. Channel bank related maintenance and repair obligations, including, but not limited to damages to Zone 7 fencing and gates, resulting from, in connection with or necessitated by CITY's use of all LICENSED AREAS or exercise of privileges granted under the LICENSE, shall be at the sole cost of CITY.

3. Duties of Zone 7. ZONE 7's maintenance and repair obligations shall be limited solely to that which, in ZONE 7's sole and reasonable discretion is determined to be necessary for ZONE 7's flood control and water conservation related needs and/or activities.

4. In all other respects, the terms and provisions of the LICENSE are to continue in full force and effect.

IN WITNESS WHEREOF, ZONE 7 and CITY have caused their corporate names to be affixed hereto by their respective officers authorized to do so.

ZONE 7 OF ALAMEDA COUNTY
FLOOD CONTROL AND WATER
DISTRICT

By: _____
G. F. Duerig
General Manager, Zone 7

APPROVED AS TO FORM:

AMY NAAMANI, GENERAL COUNSEL

By: _____
General Counsel

Date: 2-26-09

CITY OF LIVERMORE

By: _____
Linda Barton
City Manager, City of Livermore

APPROVED AS TO FORM:

CITY ATTORNEY

By: _____
Sr. Asst. City Attorney

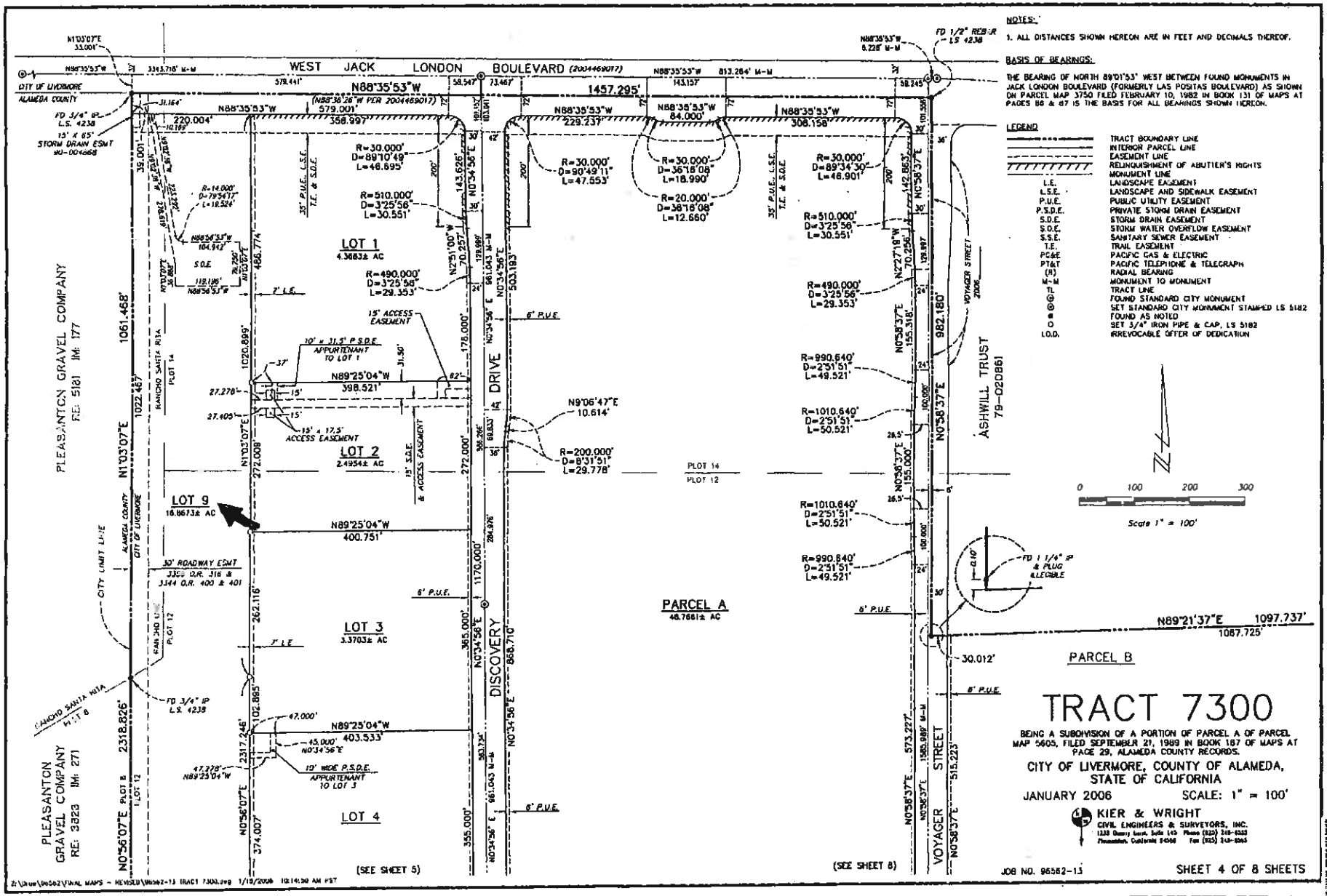
Date: February 12, 2009

ATTEST:

By: _____
Secretary, Board of Directors

ATTEST:

By: _____
Interim City Clerk



NOTES:

1. ALL DISTANCES SHOWN HEREON ARE IN FEET AND DECIMALS THEREOF.

BASIS OF BEARINGS:

THE BEARING OF NORTH 89°01'53" WEST BETWEEN FOUND MONUMENTS IN JACK LONDON BOULEVARD (FORMERLY LAS POSITAS BOULEVARD) AS SHOWN ON PARCEL MAP 3750 FILED FEBRUARY 10, 1982 IN BOOK 131 OF MAPS AT PAGES 86 & 87 IS THE BASIS FOR ALL BEARINGS SHOWN HEREON.

LEGEND

	TRACT BOUNDARY LINE
	INTERIOR PARCEL LINE
	EASEMENT LINE
	RELINQUISHMENT OF ABUTTER'S RIGHTS
	MONUMENT LINE
L.E.	LANDSCAPE EASEMENT
L.S.E.	LANDSCAPE AND SIDEWALK EASEMENT
P.U.E.	PUBLIC UTILITY EASEMENT
P.S.D.E.	PRIVATE STORM DRAIN EASEMENT
S.D.E.	STORM DRAIN EASEMENT
S.O.E.	STORM WATER OVERFLOW EASEMENT
S.S.E.	SANITARY SEWER EASEMENT
T.E.	TRAIL EASEMENT
PG&E	PACIFIC GAS & ELECTRIC
PT&T	PACIFIC TELEPHONE & TELEGRAPH
(R)	RADIAL BEARING
M-M	MONUMENT TO MONUMENT
TL	TRACT LINE
⊙	FOUND STANDARD CITY MONUMENT
⊙	SET STANDARD CITY MONUMENT STAMPED LS 5182
●	FOUND AS NOTED
○	SET 3/4" IRON PIPE & CAP, LS 5182
I.O.D.	IRREVOCABLE OFFER OF DEDICATION

TRACT 7300

BEING A SUBDIVISION OF A PORTION OF PARCEL A OF PARCEL MAP 5605, FILED SEPTEMBER 21, 1999 IN BOOK 187 OF MAPS AT PAGE 29, ALAMEDA COUNTY RECORDS.

CITY OF LIVERMORE, COUNTY OF ALAMEDA, STATE OF CALIFORNIA

JANUARY 2006 SCALE: 1" = 100'

KIER & WRIGHT
CIVIL ENGINEERS & SURVEYORS, INC.
1333 Quarry Lane, Suite 145 Phone (925) 245-6333
Pleasanton, California 94566 Fax (925) 245-6345

JOB NO. 96562-13 SHEET 4 OF 8 SHEETS

Z:\Draw\96562\FINAL MAPS - REVISED\96562-13 TRACT 7300.dwg 1/19/2006 10:14:30 AM PST

EXHIBIT A

Tract Map 7300 Map Bk. 201 Pg 6 of 10

131076
131077
131078

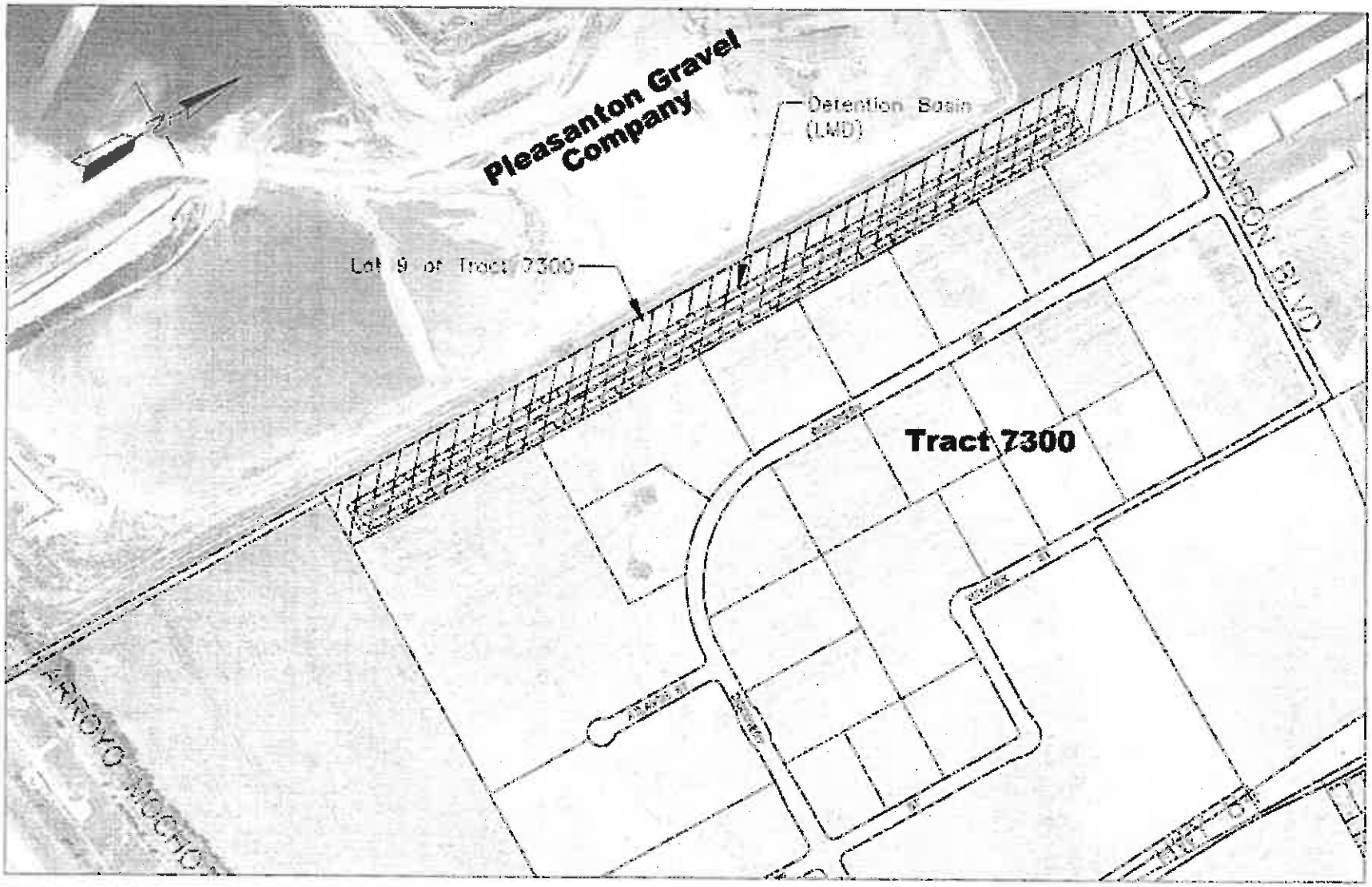


Exhibit "B–10" Recreational Use License Agreement

CITY OF LIVERMORE COMMUNITY DEVELOPMENT DEPARTMENT ENGINEERING DIVISION

DATE OCTOBER 2007

SCALE 1" = 500'

DRAWN BY

ARROYO MOCHO BY–PASS LICENSED AREA

ZONE 7
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

BOARD OF DIRECTORS

RESOLUTION NO 09-3291

INTRODUCED BY DIRECTOR KALTHOFF
SECONDED BY DIRECTOR QUIGLEY

AMENDMENT NO. 1 TO LICENSE AGREEMENT WITH THE CITY OF LIVERMORE

BE IT RESOLVED that the Board of Directors of Zone 7 of Alameda County Flood Control and Water Conservation District does hereby approve Amendment No. 1 to the License Agreement (A05-58-LIV) between the City of Livermore and Zone 7 of Alameda County Flood Control and Water Conservation District for a portion of the future bypass channel to the Arroyo Mocho in Livermore; and

BE IT FURTHER RESOLVED that this Board hereby authorizes and directs the General Manager to execute said Amendment on behalf of Zone 7.

ADOPTED BY THE FOLLOWING VOTE:

AYES: DIRECTORS FIGUERS, GRECI, KALTHOFF, PALMER, QUIGLEY, STEVENS

NOES: NONE

ABSENT: DIRECTOR MYERS

ABSTAIN: NONE

I certify that the foregoing is a correct copy of a resolution Adopted by the Board of Directors of Zone 7 of Alameda County Flood Control and Water Conservation District on

March 18, 2009

By _____
President, Board of Directors

15-347

A05-58-LIV M2

AMENDMENT NO. 2

TO THE RECREATIONAL USE LICENSE AGREEMENT BETWEEN THE CITY OF LIVERMORE AND ZONE 7 OF THE ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

This is the SECOND AMENDMENT to the Recreational Use License Agreement between the Zone 7 of Alameda County Flood Control and Water Conservation District and the City of Livermore dated December 12, 2005, as authorized by City Resolution No. 2005-256 and Zone 7 Resolution No.06-2799 ("LICENSE"). This SECOND AMENDMENT is made and entered in this 12th day of October, 2015 by and between Zone 7 of Alameda County Flood Control and Water Conservation District, a body corporate and politic, hereinafter referred to as "ZONE 7" , and the City of Livermore, a Municipal Corporation, hereinafter referred to as "CITY".

RECITALS

This SECOND AMENDMENT is entered into on the basis of the following facts, intentions and understanding of ZONE 7 and CITY hereto:

WHEREAS, ZONE 7 and CITY previously entered into the LICENSE; and

WHEREAS, ZONE 7 and CITY previously entered into a FIRST AMENDMENT to the LICENSE dated March 18, 2009; and

WHEREAS, pursuant to the LICENSE, ZONE 7 has agreed to allow CITY to use certain flood control channel properties defined as LICENSED AREAS, to construct, improve, maintain and operate the LICENSED AREAS for park and recreation purposes; and

WHEREAS, it is mutually agreed between ZONE 7 and CITY to add additional channel properties to the LICENSE for the privilege of using said properties for park and recreational facilities use under the terms of said LICENSE as modified by this SECOND AMENDMENT; and

WHEREAS, the LICENSE utilizes the terms LICENSED AREAS and SITES but does not state a definition of the term SITES, and ZONE 7 and the CITY desire to clarify the LICENSE to reflect the intent of both parties that these terms have the same meaning.

AMENDMENTS

NOW, THEREFORE, in consideration of the mutual covenants and promises set forth herein, the receipt and adequacy of which is hereby acknowledged, ZONE 7 and CITY hereby agree to the following amendments to the LICENSE:

1. The property, delineated in Exhibit "A" attached hereto and made a part hereof, is to be added to the LICENSED AREA as defined at Section 3 of the LICENSE, more particularly described as follows:

   Grant Deed to the City of Livermore, recorded June 9, 1972 at reel: 3153, Image;359 (72-77729) Official Records of Alameda County
   Assessor's Parcel No. 097-0090-0039-07, 097-0137-002-09, 097-0149-089-00 and 097-0149-070-00.

2. Recital B to the LICENSE is deleted and replaced with the following language:

   "ZONE 7 has accepted and/or will be accepting certain rights of way (hereinafter "LICENSED AREAS" or "SITES"), which can be used for park and recreation uses in accordance with this LICENSE AGREEMENT and amendments thereto."

3. In all other respects, the terms and provisions of the LICENSE and FIRST AMENDMENT are to continue in full force and effect.

IN WITNESS WHEREOF, ZONE 7 and CITY have caused their corporate names to be affixed hereto by their respective officers authorized to do so.

ZONE 7 OF ALAMEDA COUNTY
FLOOD CONTROL AND WATER
DISTRICT

By: _____
G.F. Duerig
General Manager, Zone 7

CITY OF LIVERMORE

By: _____
Marc Roberts
City Manager, City of Livermore

Approved as to form

By: _____
Robert Mahlowitz
City of Livermore, Assistant City Attorney

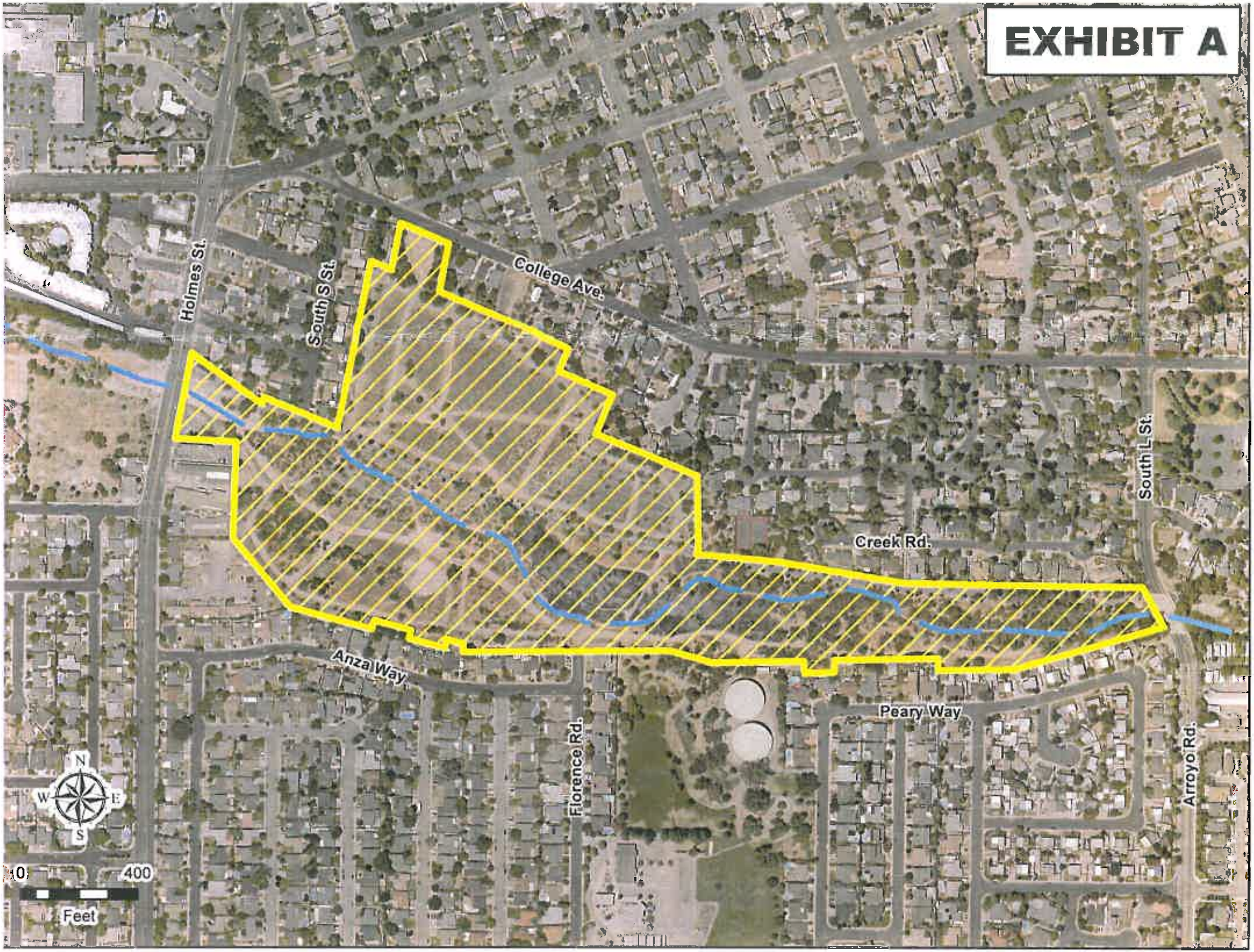


EXHIBIT A
Holmes St.
South S St.
College Ave.
South L St.
Creek Rd.
Anza Way
Florence Rd.
Peary Way
Arroyo Rd.
N
W
E
S
0
400
Feet

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA } SS.
COUNTY OF ALAMEDA }

On October 12, 2015 before me, SUSAN NEER, CITY CLERK,

personally appeared Marc Roberts, City Manager,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

CORPORATE SEAL OF THE CITY OF LIVERMORE, CA.

Signature Susan Neer